Fruits of the boom*
Urban rents, cash crop growth and wages in Dakar, 1914–1960

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Abstract

This paper offers a new real wage series for colonial Dakar, French Senegal, from 1914 to 1960. It presents estimates of housing costs for unskilled labourers, both a time series for Dakar and a cross-section for other cities in colonial Africa. It argues that housing costs were sometimes an important share of household budgets, and the traditional method of accounting for them in the 'welfare ratio' literature will tend to overstate income gains in economic booms. Income gains for urban workers during Dakar's growth were muted due to higher housing costs, particularly in the 1920s and 1950s in Dakar. The cross-sectional evidence presented for the late colonial period displays considerable heterogeneity, suggesting that housing costs were a substantial burden for unskilled workers, though though not always and not in all locations. Since international commodity price booms can translate into rapid income growth in agricultural exporters, but the supply of urban housing is often constrained, major housing price booms can dampen the growth in urban living standards during periods of rapid export growth or positive terms-of-trade shocks.

Keywords: real wages • African economic history • Dakar • Senegal • French colonial history

1. Introduction

The purpose of this paper is to document changes in the real wage for unskilled labourers in the Senegalese city of Dakar from 1914 to 1960, when Senegal gained independence. The real wage grew considerably over the colonial period, as did the city of Dakar itself—the capital of the federation of French West Africa, and the home to much of the imperial bureaucracy. By the end of the colonial

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period, it was the largest urban settlement in France's colonial empire in West Africa, reflecting not only its imperial administrative importance but also its centrality to the export economy of Senegal and of the region of the Western Sudan more generally. It was the terminus of the Dakar-Niger railway and the Dakar-Saint Louis railway, which between them served much of the rapidly expanding groundnut economy. It also boasted a superlative deepwater port, which was a major spoke in Atlantic seaborne trade. The finding of this paper that the real wage grew considerably from 1914 to 1960, though this depends crucially on how we account for a variable that has often been neglected in the new harvest of real wage studies in the past two decades since Allen's (2001) seminal paper: housing costs. I find that accounting for housing costs in Dakar changes both the level and the growth of real wages, particularly during economic booms in the 1920s and 1930s.

In general, the growth of the real wage in Dakar fits with a broader trend of rising urban incomes in tropical export economies in the 19th and 20th centuries. The cash crop revolution of the nineteenth and twentieth centuries constituted one of the major historical hinges of the economic development of the tropics. If Hla Myint's invocation of a Smithian 'vent-for-surplus' in the land-abundant tropics has somewhat fallen out of scholarly favour (Austin 2014), it is nonetheless clear that the arrival of cash cropping in tropical Asia, Africa and the Americas led to a substantial increase in per capita incomes in most circumstances (Broadberry and Gardner 2021). Real wages in cities across British Africa and Southeast Asia generally increased, in some cases substantially, over the course of the late nineteenth and early twentieth centuries. From 1885 to 1935, the real wage in Freetown increased by a cumulative 73%; in Rangoon by 31% and in Bangkok by 57% (Frankema and van Waijenburg 2012; Bassino and van der Eng 2021). Though the annualised rate of growth was not particularly high (1.1% and 0.9% respectively), in the context of the preceding economic history of these countries it was very likely quite rapid: according to the Maddison Project estimates, for example, annualised per capita GDP growth in Thailand (a rough proxy for the land-abundant tropics, for which 19th century GDP data is generally lacking) between 1820 and 1870 was a mere 0.1% a year (Bolt and van Zanden 2024). Elsewhere in the tropics, the increase was not necessarily as pronounced: in Singapore, for example, one wage series suggests that the increase in unskilled wages during the rubber boom was muted or non-existent (Choy and Sugimoto 2018). A crucial difference here is probably between labour-abundant economies, in which an increase in the demand for labour could be met by previously unutilised or underutilised workers and land-abundant ones, in which the major constraint to increasing output was finding enough workers to produce the cash crops demanded by largely Western consumers, meaning greater competition and a higher market-clearing wage for unskilled labourers.

Where there were increases in aggregate income, it was not always equally shared (De Haas 2021; Aboagye and Bolt 2021; Bolt and Hillbom 2016) and indeed the cash crop boom itself may have aggravated inequality, driven by the capital-intensive nature of some exports and unequal access to suitable land (Hillbom et al. 2023). This paper suggests that another process driving higher inequality — one which has tended to be obscured in work on historical living standards in the

tropics to date — is the reaction of urban housing markets to a positive shock to the income terms of trade. Increases in urban nominal wages in the tropics were to some degree swallowed up by surging housing rents. What workers won from their employers, they lost to landlords. This process is obscured, however, in studies that do not explicitly gather data on housing costs, and instead rely on the standard assumption in the welfare ratio literature that housing at subsistence levels costs 5% of the rest of the subsistence basket.

The rest of this paper is structured as follows. In Section 1, I consider the conceptual and methodological complexities of the welfare ratio as a way of measuring living standards, or the purchasing power of wages. I argue that these complexities are particularly acute when we consider the case of housing. In Section 2, I give a brief historical overview both of the growth of the economy of Dakar in the French colonial period, as well as of its housing market. In Section 3, I discuss previous attempts to calculate a real wage for colonial Dakar, and present my own method and data sources. In Section 4 I discuss the resulting wage series, and in particular argue that accounting for housing costs changes how we should understand growth in real incomes across the colonial period. In Section 5, I broaden the discussion to consider other cities in colonial Africa, drawing on a set of house rents collected mainly for the later colonial period from archival and published sources. I document great variability in the weight of housing in the subsistence basket, pointing to the need for more research into the heterogeneous evolution of housing costs in cities across Africa. Section 6 concludes.

2. The welfare ratio: a universal indicator?

Allen's now-ubiquitous (2001) welfare ratio is a simple measure, with a nominal income (usually a money wage) in the numerator and the price of a basket of goods in the denominator. The basket of goods is meant to reflect 'barebones' human needs, including the bare minimum level of calories needed for a family of two adults and two or three children, as well as allowances for a small amount of soap, cloth, heating and lighting, and housing. The welfare ratio is used for two related but separate purposes: one is as a measure of living standards, and another is as a measure of the purchasing power of wages. These two coincide to the extent that the subsistence basket is an adequate reflection of actual consumption patterns of households, and the composition of the theoretical household (two adults and two or three children) is an historically accurate representation of the actual households, and to the extent that the source of income for households is represented by the source of income used for the welfare ratio calculation (often, but not always, the male unskilled labourer wage). When these conditions are met, the Allen-style welfare ratio can usefully be compared across space and time as both a proxy for the purchasing power of wages and as a proxy of living standards. Where historical conditions and the assumptions of the methodology diverge, historians must choose between maintaining comparability across space and time (the purchasing power concept) and adapting the method to local conditions, which may give a better representation of the changes in living standards over time.

The concept of the welfare ratio runs into several conceptual challenges in the historical context of African cities. The purpose of this section is not to litigate every one of the limitations of the (undoubtedly powerful) method, but instead to point out some flaws that relate to the main subject of this article: housing costs in a colonial African context. These flaws are as follows: firstly, the conceptual problem that we do not really know how to measure a 'subsistence' amount of housing in the same way that we do for caloric intake. Secondly, the problem that the Allen-style notion of a wage fit for a family of four is quite alien from the prevailing patterns of urban growth in early and mid-20th century Africa, where the dominant form of household was often the unmarried male worker without dependents — or at least, dependents in the city in which they worked. Thirdly, like much economic activity in the arid tropics, employment in tropical cities was very often markedly seasonal. Because the demand for seasonal workers was met by temporary rural-urban migrants, the size of the urban population and consequently the demand for housing was also not seasonally stable. I will discuss each of these challenges in turn.

Firstly, defining the relevant unit of housing is by no means straightforward. Housing is very different from the other goods in the standard subsistence basket. We have a reasonably good idea of what it might mean to calculate the cost of a 'subsistence requirement' of staple grains: adults require a certain number of carbohydrates, proteins and other nutrients to stay alive. Housing—like clothing—is partly a necessary and partly a social good, in the sense that some climates, and particularly cold ones, are unliveable without basic protection against the elements, while in milder climates homes and clothes are certainly desirable but not strictly necessary for life itself. There being no objective measure of housing quantity—we cannot measure a 'unit' of housing in the same way that we measure, say, a kilogram of millet—some kind of methodological compromise is necessary. Even if we were able to settle on a definition of a 'subsistence' quality and quantity of housing (say, for example, 3 square metres per person of an earthen-floored hut – it is difficult to imagine that that kind of housing will be easily priced in every market for which we want to construct real wage estimates.

Allen chose to ford this particular river by inflating the cost of his subsistence basket by a fixed factor — 5% — to account for housing, a number chosen on the basis of some early household budgets in England (Horrell and Humphries 1992). This solution has been adopted ever since in most (though not all) of the real wage studies conducted. In general, the 5% assumption does not seem a particularly bad one. Household budget studies from the nineteenth and early twentieth centuries tend to suggest that for most working people in most countries, housing formed only a small part of regular expenditure: between roughly 5-20% of the household budget, as summarised in Table 1. With the exception of Ireland, the differences between the share of housing in the budgets of the poorest and richest categories are quite small, suggesting that demand for housing was close to unit-elastic. A small housing share would also be consistent with the idea that, following Engel's Law, food was the most important expenditure category for poorer households, declining in importance as income rose.

Table 1: Share of housing in low-income family budgets, various countries. Source: International Labor Office/League of Nations (1927).

Country of study	Year of study	Lowest Income Category (%)	Highest Income Category (%)
Belgium	1853	8.5	7.4
Belgium	1921	7.7	4.8
United States	1900-2	16.9	17.4
United States	1918-19	14.5	10.6
Switzerland	1912	8.5	10.4
Switzerland	1921	10.6	11.4
Sweden	1923	9.2	10.4
Japan	1920-1	11.0	9.7
Finland	1920-1	5.4	3.8
British India	1920-1	12.0	10.0
Ireland	1922	5.3	12.4

However, it is by no means clear that a 5% assumption will hold true universally, particularly in periods of rapid urbanisation. To take an example from Dakar itself, in 1944 the annual report of the city's Labor Inspectorate noted that "rents for wooden or straw huts for African workers are outrageously expensive (*hors de prix*) and often eat up half of a worker's income, particularly for unskilled workers on modest wages." (Inspection du Travail de la Circonscription de Dakar, 1944). To be clear, this was an observation made during the Second World War, when difficult economic circumstances drove many in rural Senegal to migrate to Dakar; it is by no means the case that housing rents always weighed so heavily on unskilled workers' budgets. But it does suggest that an assumption of a fixed percentage, either of income or of the subsistence basket, may lead economic historians to fail to detect periods of declining purchasing power and living standards during urban housing crises.

Another possible solution, which is highly dependent on the kinds of data available in archives, is to collect prices on a fixed set of dwellings over time. Sometimes, this will be possible when institutional landlords have left good records, where rental values are taxed, or where official price statistics are kept. In some cases, taking into account actual housing costs would change the estimates of living standards only a little (Drelichman and González Agudo 2014). In the case of Lima during the nineteenth century, Zegarra (2020) finds that using the rental price of low-income housing (*callejones*) significantly influences both the level and the trend of the welfare ratio for unskilled workers. The main challenge with this approach for economic historians of developing economies,

particularly in Africa, is that the statistical material necessary to compile such series does not exist, either in published sources or in the archives.

Another, certainly imperfect solution, which I have adopted in this paper, is to find evidence of rents actually paid by unskilled or lower-class workers. The major practical advantage of this approach is that it is much more feasible in many developing-country contexts where there was no institutionalised statistical apparatus until the second half of the twentieth century, and where land registration and taxation does not appear to have left thick records of rental payments. However, it has the considerable drawback that we cannot be sure that these rents are representative, or that we can compare the burden of housing costs across time.

The intuition behind this approach is that if labourers are, when ignoring housing costs, at roughly a subsistence level of income, they are unlikely to be spending a very large proportion of their income on housing simply by choice. Given ordinary consumer preferences, it would not be too surprising to discover that the income elasticity of demand for housing was somewhat above unity for families living at subsistence, but it is unlikely to be so far above unity that a family only barely making enough to feed itself would spend 50% of their income on housing if less expensive options were available. This of course does not resolve the question of defining 'subsistence' housing costs, but it does offer a partial justification for this kind of approach.

In estimating 'subsistence' housing costs as the amount actually paid by labouring families for housing, there is a risk that the comparability of the welfare ratio across time and space is affected, but the use of the welfare ratio as a measure of living standards *within* a particular society over time is still meaningful, even if this method of accounting for housing costs admittedly elides the possibility of quality upgrading over time.

We cannot easily delineate in these observations from apparent price increases that are due to changes in the *price* of some theoretical 'unit of housing' and changes in quality. Even if colonial officials are asked to collect the rental price of a typical dwelling inhabited by an unskilled labourer in 1920 and in 1950, it may be that economic growth has allowed unskilled labourers to consume a much higher quality of housing in 1950 than in 1920, and a quality-adjusted measure would show much less price inflation than a naïve comparison of those two prices might suggest. (Accounting for quality changes in price indices is of course a challenge that is not limited to historical work). In contexts where there are abundant individual observations of dwellings and their prices, hedonic regressions could be used to tease out the difference between 'pure' price changes and those due to changes in average quality. Regrettably, however, this is not possible for 20th century Dakar. Therefore the series I have collected may depart from some theoretical notion of a 'subsistence' quantity of housing, whatever that would mean.

Another problem with the welfare ratio methodology in an African urban context is that it can be misleading to consider the (deflated) unskilled wage as a metric of household welfare because lower income households typically have several sources of income. In many societies, the male breadwinner

model came historically quite recently, if ever, while in many other contexts the work of women and children was considerable (Horrell, Humphries and Weisdorf, 2022; Burnette, 2024). This explains why the welfare ratio, in Dakar and elsewhere, may fall below 1, perhaps for a substantial period of time: those who relied only on an unskilled male wage for income did not have families to support, and those who had families to support did not rely solely on a male unskilled wage for income. Moreover the assumption of a family of two adults and two children is quite arbitrary: many families in the past had far more than two children, and some—indeed many in Africa—had more than one wife, though one can debate how useful the concept of a 'household' is in polygamous groupings in which the rights of one wife to the resources of the other wives are often circumscribed.

In many growing colonial African cities, another problem with the standard welfare ratio lies not only in the number of income-earners but also in the number of dependents. Many men who worked as unskilled labourers were unmarried and childless. (This is to say nothing of the unmarried women who also worked in Dakar.) It was not until the 1940s and 1950s that both French and British colonial officials in Africa began to consider the stabilisation of urban workforces, with wages high enough to support married men with children, a policy priority (Cooper, 1996). Before that time, unskilled workers may have only been responsible for their own consumption, though they may have remitted money to relatives in their village of origin. In 1955, when the first methodologically modern census was undertaken in Dakar, 40% of men were single, a fact that the census report writers attributed to a relatively high age at marriage, which was around 27 or 28. Only a little over half of households had any children at all. The relevant subsistence basket then depends on whether we are interested in a *purchasing power* concept or a *standard of living* concept. If we are primarily interested in the purchasing power of wages, then adopting the standard assumption about the number of children and partners and then multiplying the cost of the subsistence basket appropriately is a defensible solution. Though in this paper I have calculated the welfare ratio based on the usual assumption of four adult male equivalents, when considering the real wage as a measure of changes in *living standards*, particularly in the 1950s, it must be borne in mind that workers may have been responsible for more dependents in later periods, as family formation in Dakar became more common.

If an unskilled labourer did have a wife and children in earlier periods, they may not have lived with the labourer in Dakar: instead they might live in the worker's village of origin in the countryside, with our unskilled labourer sending remittances. If we were to construct a historically relevant price deflator for the expenditures of such a family, it would have to take account of the fact that some of its spending was on goods purchased in Dakar, at Dakar prices, and some in rural areas, at rural prices. Given the wide divergence in prices across space, accounting for the spatial distribution of household spending might have a significant impact on the cost of the subsistence basket. To give one example, in March 1929, when millet was sold at a wholesale price of 140 francs per 100 kg in Dakar, it was being sold for as little as 45 francs per 100 kg in the southeastern town of Kédougou, and as much as 175 francs per kilogram in Ziguinchor, the main town of the Casamance region

on the south coast.[1] Consider a family in which the male household head is living in Dakar with his wife and two children living in Kédougou (and ignore for the moment the fact that the woman and her children may be growing millet for their own consumption). Under the assumption that the man's wages are being spent entirely in Dakar, his daily wage of around 8.5 francs could buy around 6 kilograms of millet. Under the assumption that two-thirds of his household expenditure is taking place in Kédougou, he could buy around 10.5 kilograms of millet with his daily wage. Given that housing was almost always constructed with household labour in rural West Africa, with no formal rural housing market at all, this would have meant that a geographically dispersed family would have only have had to pay for housing for the household head in Dakar.

A final conceptual problem with translating the welfare ratio methodology to Senegalese circumstances is the question of the seasonality of employment and hence of the population, a factor which would have greatly influenced the supply of rental housing. Though quantitative information on this point is scarce, one useful source of information about the scale of seasonality of employment in Dakar is a 1939 survey in the Senegalese national archives, sent only to firms and government departments employing more than fifty people. The 50-employee-or-more size restriction does limit the extent to which we can generalise to the Dakar labour market. Nonetheless, the figures in it suggest very strong seasonality in labour demand for major employers. The survey asked for the total number of permanent workers in various categories, as well as for the maximum, minimum and average number of 'temporary workers'. Not all firms hired temporary workers: the beer and lemonade brewing company *Brasseries de l'Ouest africain*, for example, employed 75 unskilled labourers, but all were permanent employees. On the other hand, the lighterage service run by the Dakar Chamber of Commerce at the port of Rufisque employed around 150 day labourers in peak season, but only around half that in the slack season. The median ratio of minimum to maximum temporary employment for those large firms in the sample that *did* employ temporary workers was about 0.44: that is, in the median firm the number of temporary employees halved from seasonal peak to seasonal trough.

Of course, seasonality of certain kinds of employment does not necessarily mean that population was seasonal, which is what matters for the housing stock. But unskilled labourers did leave Dakar during the peak agricultural season: monthly economic reports between 1927 and 1929 regular mention that labour became scarcer from around May to around August. One estimate of the population of Senegal's second-largest city, Kaolack, in 1935 suggested that the city doubled in size during the peak trading season, from 21,973 residents in the slack season to 44,904.[2] What this meant is that the demand for housing in Senegalese towns was highly seasonal, and some housing used for seasonal migrants would not have been occupied throughout the year. Consequently, the

[1] 'Bulletin de renseignements économiques'. April 1927, May 1927 and June 1927, ANS 1 Q 60, versement 19.

[2] 'La population de Kaolack', in Gouvernement général de l'Afrique occidentale française, *Bulletin hébdomaire d'information et de renseignements* 25 March 1935, Dakar, p.6.

rental yield for dwellings would have needed to be high to compensate landlords for the period during which rooms stood empty.

Another consequence may have been that nominal wages displayed seasonality, and if so, the pattern of seasonality was probably the reverse of the cost of housing. During the agricultural slack season, labour was likely abundant in Dakar and housing scarce; when the rains came and workers returned to their villages to assist with planting and harvesting, labour was scarce in Dakar and, probably, short-term rentals relatively easy to find. We have next to no evidence on the seasonality of housing rents, and this must remain a conjecture only. There is a little more evidence for nominal wages. Owing to the fragmentary nature of the archives, we do not possess long monthly series for unskilled labourer wages, but some surviving economic reports from 1927 do however tell a clear story of seasonality in unskilled labourer's wages, at least for that year: in April, labour was 'abundant' and wages at 'normal levels'; for jobs that did not require onerous exertion, this level was 'just under 10 francs' per day. The next month, as the rainy season drew closer and the opportunity cost of urban work began to rise, workers unloading groundnuts abandoned their posts, 'demanding a wage of 20 francs' per day. Whether they were successful or not was not recorded, but by June 'labour [was] becoming less abundant' and the cost of labour varied 'between 15 and 17.50 to 20 francs' per day.[3] Seasonal fluctuations like this tend to suggest that the agricultural calendar was not perfectly suited to supplying seasonal labour demand in Dakar.

This had certain implications for the nature of the urban property market, including a preference for renting over ownership for many workers. Even when workers stayed several years or even several decades, it was often with the intention of returning home to a village of origin, creating significant demand for rental accommodation or other forms of shared occupation (Peil, 1976). Legal disputes between landlords and renters in early twentieth-century Dakar often reveal that effective occupation of rented property was sometimes extremely irregular, and while landlords attempted to enforce rent payments even when their renters were absent, it was often difficult to enforce this, and substantial arrears were often accrued by renters who did not believe themselves to be liable to pay rent when they were not physically present in the lodgings they had procured (Petrocelli, 2011).

3. The supply and demand for housing in colonial Dakar

Dakar was the capital of French West Africa, a federation of eight colonies. It had been founded in the mid-nineteenth century as an eventual colonial capital for French Senegal to replace the space-constrained northern city of Saint-Louis, though prior to its annexation by France the land belonged to local Lébu polities. For decades, it failed to attract much migration, and was economically outshone by Rufisque, a trading post around 30 kilometres away. The completion of a railway line along the western seaboard of Senegal in 1885, through the fertile groundnut basin from Saint Louis to Dakar, encouraged the development of Dakar's port and strengthened the town's economic role

[3]'Bulletin de renseignements économiques'. April 1927, May 1927 and June 1927, ANS 1 Q 60, versement 19.

in the booming export sector. In 1904, Dakar was given a new imperial purpose as a federal capital of France's West African territories, and it began to grow rapidly. By 1914, it was so overcrowded that the outbreak of bubonic plague in that year prompted the colonial authorities to establish a new suburb, Médina, for African residents, with the intention that the original quarters of the city, in what is now known as Plateau, would be a segregated space for Europeans. However, efforts to entice Africans to Médina were only partially successful (Bigon, 2009).

Because Dakar was also an administrative centre, its economy was also heavily influenced by a relatively well-paid expatriate bureaucracy. The demand for housing among employees of the administration became so acute that it was deemed necessary at the beginning of Dakar's history as federal capital to institute fiscal incentives to promote the development of salubrious housing in the city: in 1905 the government announced it was willing to guarantee landlords who built new housing of minimum standard an annual income of 20% of the total cost of construction for five years. Assane Seck, in his history of Dakar, argued that this extraordinarily generous guaranteed rate of return was nonetheless probably not substantially out of line with the market rental rate for new housing in Dakar in the early twentieth century (Seck, 1970: 112).

Migration from rural areas of Senegal, as well as from the landlocked colony of French Soudan, contributed greatly to the rapid urban expansion of Dakar. The total population grew from about 20,000 permanent residents in 1910 to well over 200,000 people in 1955. Though strong fertility no doubt contributed to this increase, internal migration was perhaps the largest factor: of the Africans who lived in Dakar in 1955, only 45% had been born in the city. Unlike in many British African cities, there were no designated quarters of the city for migrants, though unsurprisingly they tended to accumulate in the expanding outer suburbs of the city, where land was not as scarce (Fourchard, 2009). The annual population growth rate hovered around 4 per cent, except for two 'boom' periods: the first in the 1920s, and then in the late 1950s; during both periods the growth rate shot up to around 8 per cent. Permanent residents also had to compete in housing markets with temporary ones: during the 1955 census, about seven per cent of the total resident population were seasonal workers or otherwise living temporarily in Dakar.

On the supply side of the market, housing construction — at least, for rent — was an activity that required a certain minimum level of capital. Sometimes, in the early days of urban expansion, there were 'joint ventures' between traditional Lebu landowners, who supplied the land, and Lebanese or French entrepreneurs, who supplied the capital for the construction of basic dwellings that could be rented out. As we saw above, the colonial government also offered guarantees to provide an incentive for construction, at least in the early days of Dakar's growth as federal capital. For individual property entrepreneurs, the most common paths to building up enough capital to invest in Dakar's rental housing market were trade and public service. The first route is perhaps best exemplified by the case of Alassane N'Dir, a Lebu notable who made his initial fortune trading kola nuts across France's West African territories, and invested his profits in building residential housing in Dakar in the early twentieth century (Amin, 1969). His investments were extremely profitable: a report on

rental regulations in 1939 cited N'Dir's buildings as an example of investment that yielded an *annual* rental value equivalent to the total original cost of construction.[4] The report also suggested that rents in some buildings had increased tenfold since the mid 1920s. In periods of property market gloom, like the 1930s, smaller investors often lost out to major ones, with major financial institutions like the Credit foncier de l'Afrique occidentale building substantial portfolios by reclaiming the property of defaulting landlords (Thioub, 1989). The other major route, public service, was a consequence of the fact that, unlike the vast majority of private sector workers in Dakar, publicly employed bureaucrats often received free housing. If a bureaucrat also happened to own their own house, they could rent it out while living in government quarters. In the 1950s in the northern city of Saint Louis, some African civil servants were alleged to have been given free accommodation in government-owned buildings and then rented out their own houses 'for 15 to 20,000 francs per month' — the equivalent of three or four times the unskilled nominal wage.[5]

If these were the two most common paths to substantial property ownership in Dakar, they were not the only ones. Indeed, across colonial Africa, purchasing urban property was one of the most profitable ways to invest money made elsewhere in the colonial economy and turn it into a source of sustainable income. Cocoa farmers in the Gold Coast (Hill, 1963) sex workers in Nairobi (White, 1983) and the Islamic clerics who organised the Senegalese groundnut boom (Coquery-Vidrovitch, 2006) all reinvested profits in real estate in fast-growing African cities in the 20th century (see also Mann, 1991). Very small-scale property ownership could make a huge difference to incomes: in the late 1950s, for example, one budget study noted that an unskilled labourer earning 6000 francs per month could more than double his income if he owned a hut that he rented out, from which he could hope to earn 7000 or 8000 francs per month (Mersadier 1957).

Constraints to increases in supply were substantial. Land tenure was a complicated affair: prior to European occupation of the Cap Vert peninsula, rights were generally communally rather than individually held. French colonial rule introduced land tenure law that allowed for the expropriation with compensation of traditional landowners, and a classic European-style grid system was imposed that overrode local patterns of settlement (Bigon and Hart, 2018). But it was not all smooth sailing for the administration: the signing of an agreement between traditional landowners and the colonial government in 1905 about the status of a large 47-hectare portion of central Dakar handed a legal weapon to African owners which was the subject of endless litigation (Bouche, 1981). Regulations and zoning were also in place to prevent rapid urban growth. Building permits were generally required within the core of the city, preventing African entrepreneurs from using vernacular building materials and techniques and requiring the use of European ones (Njoh, 2016: 173). Though the colonial government maintained broad legal powers to expropriate land for urban expansion, the

[4]Archives nationales d'outre mer, 1 AFFPOL 2163

[5]'Voici la situation qui est faite, au point de vue des logements à certains fonctionnaires de Saint Louis', Archives nationales d'outre mer, 1 AFFPOL 2163.

way in which they exercised those powers was frequently contentious, and resulted in a major economic boycott of white colonial settlers in 1914 (Bigon, 2016: 109).

Another major reason for the high cost of housing was the scarcity of credit, particularly long-term credit. General banking was relatively primitive, and while a specialised mortgage credit company, the Crédit foncier, did operate from 1926 in Dakar, its lending was limited compared to more traditional sources, like notarial credit, which, according to a report on property credit in the early 1930s in the *Quinzaine coloniale* newspaper, was 'the real credit supplier for property in Senegal'.[6] Notarial credit was, however, both relatively inefficient, involving a matching problem between debtor and creditor, and was generally granted only for short time periods. This would have constricted new supply by preventing those without their own access to funds from building. Even if they had access to credit, its short-term nature would have meant that investments needed to be amortized relatively quickly. Consequently, rental yields tended to be high relative to property values. As an example, when the federal government of Afrique occidentale française was implementing a new law limiting rents, the major point of contention between it and the landlord lobby was over the assumed period of amortization: in the government's calculations, a period of 50 years was assumed, while landlords preferred to calculate on the basis of 25 years—which, of course, led to a higher estimate of the minimum profitable rental yield.[7] Further evidence for very high rent-to-value ratios in French West Africa comes from documentation of a series of restrictions on the amount of rent chargeable by landlords, imposed from the 1930s onwards, which were alleged to have stifled new investment in housing construction by reducing the rate of expected return. A letter from Pierre Chichet of the Syndicat des Entrepreneurs et Industriels de la Côte d'Ivoire to the Minister of Overseas France about a law restricting rents to 8% of the value of the dwelling was explicit on this point for Abidjan: imposing this limit "would result in a total halt to all construction in Treichville", he said.

Furthermore, government regulation could often have unintended consequences on the pace and nature of construction. One particularly strong preoccupation of colonial urban regimes was "hygiène", or sanitation, a haunting obsession that frequently structured official policy towards indigenous African practices and dwellings. Frequent epidemics in urban Senegal led to distinctive regimes of urban planning, designed to protect European settlers and officials by separating them, as much as physically possible, from insalubrious African dwellings. The outbreak of bubonic plague in 1914 was a catalysing factor in the construction of the Médina, north of Plateau, as a segregated area for African dwellings. Concerns about sanitation could result in an official preference for low-quality dwellings for Africans. One solution to epidemics, for example, was to completely burn the houses of those who had been infected, which was certainly cost-effective from the point of view of the Administration; once it began requiring property-owners to use more expensive building materials than the typical mud and straw, it was required to compensate homeowners when their

[6]('Le credit foncier dans les colonies françaises de la Côte occidentale d'Afrique' *Quinzaine Coloniale*, 25 November 1932, p 522).

[7]'Note pour M. Debay a/s de la reglementation des loyers', Archives nationales d'outre mer, 1AFFPOL 2163

houses were burned for sanitary reasons. This fiscal problem, from the government's point of view, could even be a justification for banning durable constructions in the 'African' suburbs of colonial towns, like Guet N'Dar in Saint-Louis. Substantial regulatory intervention in the informal housing market would have driven up costs.

4. Living standards and housing

Welfare ratios have been calculated for several countries in colonial African contexts (De Zwart 2011; Frankema and van Waijenburg 2012; Frankema and Juif 2018; Channing and Everill 2020; Carvalhal and Palma 2024). All but two of them (Frankema and Juif 2018 for the Congolese copperbelt, and Carvalhal and Palma 2024 for Luanda in Angola) are former British colonies, for which the collection of data is greatly facilitated by the existence of the annual *Blue Books*, a set of statistical compendia which typically include a section on wages and another on retail prices, of varying statistical quality (Westland 2022). No such document exists for French Africa, at least prior to the statistical revolution of the 1950s. Though there were statistical yearbooks (*Annuaires statistiques*) published occasionally for French West Africa, they were not annual, and only one edition contained sufficient detail for retail prices (for 1945-1954 for Dakar and Abidjan; for 1949-54 for other capital cities in the federation).

Prior to the development of the Allen-style 'welfare ratio' methodology, three other scholars constructed real wage indices for colonial Dakar. None used a methodology that facilitates easy comparison and none extend back as far as 1914, as this paper does. Ibrahima Thioub's (1994) is the most comprehensively documented, but the way in which his series are presented — chiefly as the index of the nominal wage deflated successively by the index of the price of individual commodities, like rice or meat — make interpretation difficult and comparison across space next to impossible. His series also extend back at most to the start of the 1930s, and most are even shorter, documenting only the Second World War and its aftermath, up until 1954. Monique Lakroum (1976) gathered nominal wages for a variety of different workers in the Port of Dakar during the Great Depression. However, her deflator was relatively crude: she simply used the INSEE retail and wholesale index for France for that time period; this probably tracked reasonably closely with Dakar import prices, but is unlikely to have reflected local food prices. Elliot Berg's (1964) series is limited to the post-World War II period and relies on the colonial administration's (unpublished) Dakar CPI series rather than an Allen basket. For none of these series are the underlying retail price data available.

Nominal wages are slightly better documented than prices. Recently Van Waijenburg (2018) drew on the abundant government budget data to collect nominal wages in order to estimate the shadow price of forced labour across the French Empire in Africa. The budget documents have many advantages for the purposes to which van Waijenburg puts them: they give wages for many locations across colonies and represent the rates at which colonial administrations obtained labour when they were obliged to pay for it. For this reason, they make an excellent resource for estimating the shadow price of forced labour, much of which took place outside capital cities, and for government

purposes, like road-building. However, since they are only nominal wages, they do not allow us to track the evolution of living standards. They are also presented as colony-level averages, rather than for capital cities.

A reconstruction of the real wage in the long run therefore requires substantial archival work to construct a set of retail prices for standard wage goods and for nominal wages. I construct an entirely new series from a wide variety of sources on wages and prices, obtained mainly in the Archives nationales du Sénégal in Dakar, but also incorporating published material, including the few editions of the *Annuaire statistique* that were published in the late colonial period and the publications of the *Agence économique de l'Afrique occidentale française*, whose monthly bulletin occasionally included retail price observations. In the archives, the sources were again varied and heterogenous in coverage, and included official inquiries into the cost of living (usually for the purposes of determining wage rates to be paid to unskilled workers hired by the government) and scattered price bulletins. It appears that while retail prices were gathered relatively frequently in Senegal, in the form of a document called the *Bulletin de renseignements économiques*, filled out by district-level officials, price bulletins seem to have been treated as administrative ephemera. They do not appear to have survived in bulk in the Senegalese archives, and were usually found attached to other documents.

The only exception to my use of primary sources in reconstructing the real wage is that I take Elliot Berg's nominal unskilled wage series from 1938-1960. Nominal wages were taken from the annual administrative budgets either of Senegal or of the *circonscription de Dakar* (Dakar was from the mid 1920s a separately governed federal territory, like Washington DC or Canberra), where I take the daily wage (where available) or annual cost of an unskilled worker working on the maintenance of the grounds of the African hospital. These workers were reliably among the lowest paid unskilled workers working in the administration in Dakar. I chose the lowest wage among those available because there is a possibility that the colonial government paid its workers more than the private sector, especially during the deflation of the Great Depression. As Figure 2 shows, the nominal wage was remarkably stable during the 1930s, even though both the rent-exclusive subsistence basket and the cost of housing declined dramatically with the economic crisis. When considering the major spike in the real wage in the 1930s, it should be borne in mind that a wage series that reflected private sector wages may not display this kind of nominal stickiness. By 1955, unskilled labourers (*manœuvres*) represented 42% of the formal African workforce in Dakar (*Annuaire statistique de l'Afrique occidentale française*, 1954, vol 5/2, p.136). The *manœuvre* wage is therefore likely to be reasonably representative of living standards for a large segment of the African population of the city.

The construction of the subsistence basket is relatively straightforward and follows the standard approach of the economic history literature (see Table 2). The optimal contents of the subsistence basket may change depending on the relative prices of goods. I calculate the separately the contents basket for each year, minimising the cost of the basket while meeting requirements for calories and

protein. In the first stage, I calculated the required quantities of millet, rice and cassava that would be necessary to obtain a slightly higher number of calories from grains as in Frankema and van Waijenburg (2012)—1985 calories instead of 1825 as in their study. This reflects the new consensus among economic historians on the minimum daily calorific requirements of 2100 calories, somewhat above the 1940 calories assumed in the initial wave of Allen-style studies, and using a four-adult-male-equivalent family basket instead of a three-adult-male basket.[8] In Appendix 1, I also give new figures for Lagos and Accra based on Frankema and van Waijenburg's price series but calculated using the new family basket composition to ease comparison between my Dakar series and their figures for the two most important capital cities in British West Africa. In the case of Lagos, I also add a yam price series to the data, which more accurately represents dietary patterns in Lagos, taking the prices from the Nigerian *Blue Books*. The resulting real wage series is somewhat higher than the maize basket presented in Frankema and van Waijenburg (2012). I then calculated how much protein each starchy staple would supply, given that grains also contain protein. For years in which millet was the cheapest grain, no additional protein was required; a rice-based diet, however, required additional protein. I therefore added the requisite amount of the cheapest form of protein — in Dakar, this was fresh fish in all years, probably Nile perch or tuna. Finally, I add 2 kg of sugar and 3 litres of oil to the basket, following Frankema and van Waijenburg, as well as 58kg of charcoal, 1.3 litres of petrol and 1.3 kg of soap.

Table 2: Contents of Dakar subsistence basket (2100 calories/day). Based on Frankema and van Waijenburg (2012).

Item	Quantity (Annual)
Rice	200 kg
or Millet	239 kg
Fish or beef	3 kg
Groundnut oil	3 litres
Sugar	2 kg
Cloth	3 metres
Soap	1.3 kg
Petrol	1.3 litres
Charcoal	58 kg
Candles	Additional 2.5%

Unlike Frankema and van Waijenburg, however, I account for housing costs by calculating both the '5% standard' basket — in which the cost of the family basket is inflated by 5% to account for

[8]Estimates that are comparable to Frankema and van Waijenburg's estimates, using the 1940 calorie daily requirements, are available from the author on request.

housing costs — as well as by estimating housing rents directly from the sources. Operationalising the idea of a rent-inclusive subsistence basket in a context such as colonial Dakar is easier said than done. Even prices for basic consumer goods like rice and millet were not systematically documented until the final decade of colonial rule, so we cannot expect the kind of information on the evolution of housing costs contained in contemporary consumer price indices: that is to say, repeated observations of similar dwellings over time. I have collected around 20 observations of working-class rents in Dakar from archival sources across the period 1914-1960, and have linearly interpolated between them to arrive at a rough estimate of a rent price series. The sources are generally reasonably spread over the period 1914-1960, though there are some gaps (for example, between 1930 and 1935, or between 1944 and 1951). This is an unavoidable consequence of the fact that the series has not been built on the back of regular statistical evidence.

The other main drawback of this data is that it is a heterogeneous set of observations: though there are some repeated observations from the same source which are probably comparable over time (for example, the rent observations for 1914 and 1919-25), mostly these are from very disparate sources. In the earliest period for which we have observations (1914 and 1919-1925) these were collected by officials inquiring into the standard of living in Senegal. They simply list the rental price for a 'room for Africans (*indigènes*)' without giving any further indications about the nature of the room for which a price was given. Though it is difficult to be certain how representative this price was, given the instructions given to local officials in collecting these prices have not survived, the rest of the prices listed suggest that they had gathered the price data with a frugal African lifestyle in mind: basic food staples like millet and yams and cloth predominate. For 1928-30, I take the indemnity for housing costs which was paid to African unskilled workers on the Port of Dakar docks. Similarly, for 1936-8, I use the monthly cost of lodging for seasonal workers in the *caravanserails* of the Port of Dakar. Though it is difficult to say whether this indemnity was representative of the broader cost of housing, the Port was a major employer of unskilled workers in Dakar at this time (Castillo Hidalgo, 2024) and the *caravanserails* were explicitly built to house relatively unskilled workers. It is possible both that the seasonal nature of work in the Port and the fact that it was government-owned may have meant that the quality of the accommodation and its price differed systematically from housing used by private sector workers; however, the fact that the Port was such a large employer of unskilled labour does make it an economically meaningful observation. For 1942, 1944, 1953 and 1958 I use estimates of housing costs for unskilled workers from a variety of administrative surveys of the cost of living found in the Senegalese archives, as well as an estimate of AOF national income. These sometimes include information about the kind of housing for which prices are being quoted: for example, the national income estimates describe the rent of a renting 'straw hut' in the capital city.

It is of course quite possible that the use of these disparate sources introduces a considerable margin of error. We cannot be sure that changes in the kind of rents I observe are not driving the changes in levels that I estimate. Unfortunately, there are no 'cross over' years, in which we have multiple rental observations from different kinds of sources, which we might have otherwise used

to validate whether the different sources were commensurable. The resulting rent price series is therefore a best estimate from imperfect sources. Nonetheless, the 5% rent assumption is also an imperfect one, based on (originally) a very limited sample of English household budgets. The use of interpolated or projected price estimates is also a feature of other real wage studies in the African context (for example, the existing British African real wage series available often do not have direct evidence on the price of staple foodstuffs, like maize in Accra, until the early 1930s, and maize prices are estimated using a regression-based approach before then). Moreover, the descriptions that we have of working class housing (see those in Table 3 suggest that quality upgrading was relatively limited: for example, in Dakar in 1950 the rent estimates comes from a description of a 'case en paille' – i.e., a straw hut – which was the traditional form of housing in Dakar and probably of a similar quality to the 'room for Africans' that formed the basis of the earliest housing cost estimate, for 1914, in the same city. The quality of the housing for the 1950s estimates in Table 3 is generally suggestive of very low-quality housing stock (straw huts and mud huts), with relatively high prices.

5. The real wage in Dakar

First, in Figure 1, I present the welfare ratio using the traditional Allen-style assumption of a fixed additional 5% of the basket for housing alongside the adjusted welfare ratios for Accra and Lagos as discussed above.

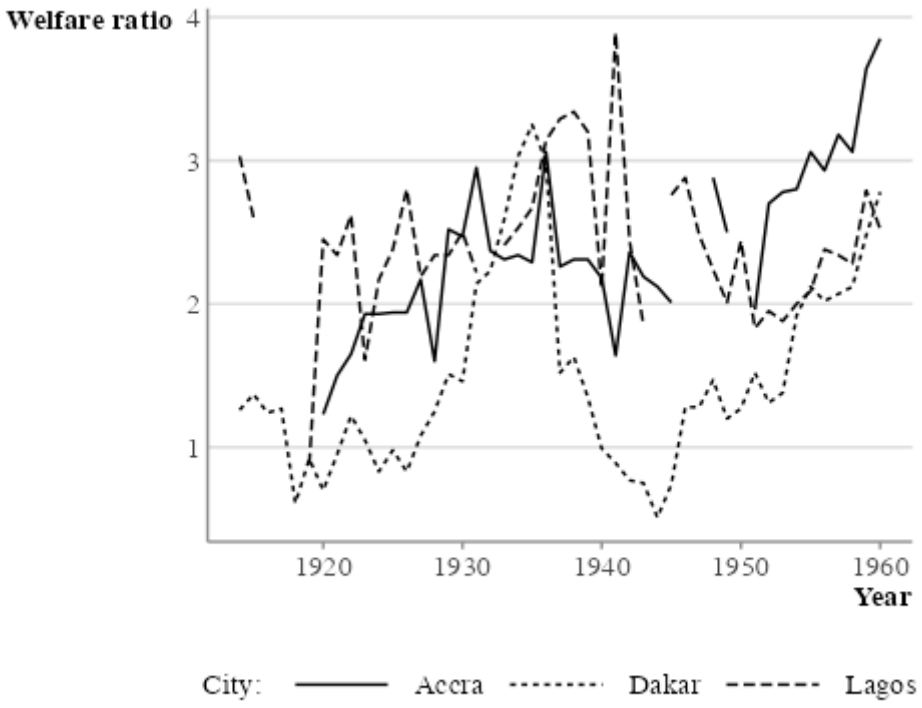

Figure 1: Welfare ratios across West Africa

Workers in Dakar, on this measure, were generally less well-off than their counterparts in the two major cities of British Africa except for the Depression years and the very last years of colonial rule. Workers in the main West African capitals seems to have enjoyed substantial income growth in the 1940s and 1950s. Dakar, though, was growing from a very low base. The Allied blockade of Dakar and its subsequent isolation from the metropole during World War II was a substantial hit to real wages, because nominal wages—which had not followed prices downwards during the Great Depression—subsequently did not catch up to rapid wartime inflation until the end of hostilities. The overall trajectory of the real wage is perhaps quite surprising in the interwar years: an increase in the 1920s, in line with Accra and to some extent Lagos, and then a major spike at the beginning of the 1930s; however, the latter is probably a result of almost completely sticky nominal wages, at least in the public sector: An index of the nominal wage, rent-exclusive subsistence basket and the rent series is given in Figure 2, allowing for comparison of these three components of the real wage over time. The series show that growth in housing rents outstripped nominal wage growth and inflation in other subsistence goods in the 1910s and 1920s, a time of major export growth in Senegal; when the Great Depression hit, nominal wages remained roughly while the cost of the subsistence basket fell rapidly. The index of rents also fell during the Depression but much more slowly. The spike at the beginning of the Depression almost certainly gives a misleading impression of living standards: it may have been a particularly good time to have a permanent employment in government, but many Dakarois would have lost all employment, and been forced to return to the countryside or become indigent in the city. For this reason, the aggregate income of all those workers who had been in unskilled positions prior to the Depression probably fell, even if the real wage as measured did not.

Figure 2: Index of welfare ratio, nominal wage and rent series, 1914=100

In Figure 3 I present the traditional '5% of subsistence basket' style welfare ratio as well as the welfare ratio using my own rental series as the rental portion of the basket. Here, when incorporating these figures into the subsistence basket, I simply add the rental price to the cost of the *family* basket, rather than (for example) taking the price of a room and multiplying it by three to obtain the cost of housing for a family of four. I believe this is a conservative step, in the sense that it will tend to lower the estimated cost of housing for a family. Given that the rental price observations do not contain information on (for example) amenities or the size of rooms, it is difficult to know whether the rooms for which we have prices would have been adequate 'subsistence' accommodation for a whole family. Comparing the two series, it can be seen that adding my housing price series tends to temper the increase in real wages, both in the Depression (where housing rents, at least as I have measured them, took much longer to fall than other items in the subsistence basket), and in the post-World War II boom period, where the traditional Allen-style real wage increased from below 1 in the nadir of the War blockade to nearly 4 at the end of colonial rule; accounting for the housing crisis of the 1950s and its impact on rents, the increase is still substantial, but much more modest.

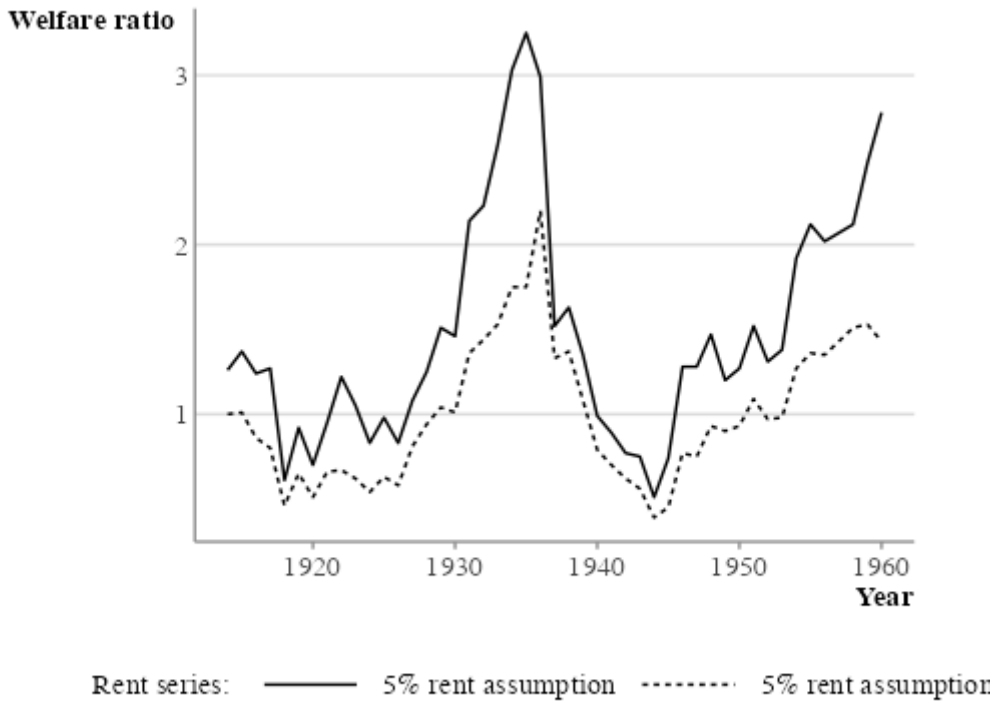

Figure 3: Welfare ratio with different rent assumptions, 1914-1960.

Regardless of its precise magnitude, the increase in real wages in the postwar period can also be seen as a consequence of two developments: firstly, the increasingly militant labour movement in Senegal, and secondly, the abolition of forced labour with the Loi Houphouët-Boigny. Strikes were not by any means a post-war novelty (Thiam 1993). But the arrival of the Popular Front government in Paris in 1936 signalled the beginning of an era more friendly to organised labour: a number of new unions were formed, and a wave of strikes hit the Senegalese labour market. After the repression of the Vichy years, union activity struck up again in earnest at the end of the war, though the efforts of the Labour Inspectorate helped to tamp down militancy (Guèye 2011). Though much forced labour was devoted to public works, and as such served as an implicit tax it was also sometimes used for private enterprises. Most notoriously, African farmers were coerced into working at sisal plantations and processing factories in eastern Senegal (Touré 1984; Tiquet 2019). The institution was abolished, officially, with the loi Houphouet-Boigny in 1946. Though the legislation did not entirely abolish the use of coerced labour—the Société des Salins de Kaolack still used penal labour in its saltworks up until 1956 (Fall 1993)—it almost certainly led to an increase in wage labour demand on the part of the colonial government, which could no longer rely on free labour to undertake arduous tasks on public works. This probably resulted in a positive shock to the real wage.

For the postwar period, we can compare both of these series with Elliot Berg's for the same time period. His data suggests more moderate growth in the post Second World War period than I do: taking 1949 as a base year, Berg calculates that the real wage for unskilled workers in Dakar grew a cumulative 26% by 1954, and 48% by 1959; in contrast, my series using the Allen-style 5% assumption suggests growth of a cumulative 60% by 1954 and 106% by 1959; the series using the interpolated rental observations suggests cumulative growth of 38% to 1954 and 63% by 1959, more in line with Berg's figures. It is unfortunately not clear if the (undocumented) CPI series Berg used to deflate nominal wages incorporated any allowance for housing.

6. Housing costs in colonial Africa: a broader view

Dakar's high housing costs was by no means an exception in colonial Africa. Across the continent, major cities experienced major housing crises, particularly in the final decades of imperial rule (Brennan 2007), but also in the boom years of the interwar period. Compiling a full rental series for all of Africa for the purposes of comparison is beyond the scope of this paper, and indeed may be impossible given the archival limitations. To give an indication of the interest in gathering housing cost data, in Table 3 I present a range of estimates of rental costs for unskilled labourers in various African cities from 1926 to 1960. In the third column, I calculate the rental amount as a proportion of the cost of the subsistence basket. These estimates suggest that the 5% standard is a considerable underestimate, and that for certain periods and certain cities—consider Cotonou, Freetown, or Niamey—housing costs for unskilled workers may have constituted the single largest portion of the subsistence basket.

Table 3: Working class rents as a share of subsistence basket costs across colonial Africa. Sources: ILO/League of Nations, Orde Browne, Frankema & van Waijenburg.

Location	Year	Description	Rent (% of Basket)
Abidjan	1926	Rent for a worker, 10 francs par mois	26%
Abidjan	1950	'the right to put down one's sleeping mat…'	25%
Accra	1940	Zongo accomodation for casual labourers, single rooms	43%
Bamako	1926	Rent for a worker – 7.5 francs par mois	21%

Location	Year	Description	Rent (% of Basket)
Bamako	1950	"a mud-walled room…400-500 francs"	36%
Bangui	1957	rent	12%
Bathurst/Banjul	1940	"For the unskilled labourers…4s for the rent"	16%
Brazzaville	1954	rent	35%
Cotonou	1926	Rent for a worker, 50 francs par mois	69%
Cotonou	1950	"monthly rent… 800 to 1000 francs"	84%
Dakar	1951	"straw hut monthly rent of 800 francs"	46%
Dolisie	1954	rent	61%
Fort Archambault	1956	rent	10%
Fort-Lamy	1957	rent	23%
Freetown	1940	"rent… four to six shillings monthly"	34%
Kampala	1950	"Dwellings built of stabilised earth… Sh. 13"	45%
Lagos	1960	"House rent …in Lagos between £3 and £4."	101%
Libreville	1956	'logement'	17%
Niamey	1950	"mud-walled room…750-1000 francs"	45%
Ouagadougou	1926	Rent for a worker – 50 francs per year	9%
Ouagadougou	1950	"Mud-walled room…1000 francs"	70%

Location	Year	Description	Rent (% of Basket)
Pointe-Noire	1954	rent	30%
Pointe-Noire	1958	rent	27%

The resulting impacts on welfare ratios are economically meaningful, though would not always have had dramatic impacts on living standards. In the case of Kampala, to take one example, the standard methodology (with 4 baskets per family) yields a welfare ratio of 1 in 1950 (Frankema and van Waijenburg 2012)—that is to say, the urban unskilled male wage was sufficient to purchase the essentials required to feed one families at a barebones subsistence level of income. If we instead calculate the cost of the subsistence basket using the rent for a stabilised earth house, the welfare ratio declines to just over 0.85: perhaps not a major fall in absolute terms, but given that the nominal wage was just enough to cover barebones subsistence needs, this higher rent price would have required either uncomfortably low consumption-or a second earner More dramatically, the Lagosian real wage declines from 2.5 in 1960 to 1.36 if we take the house rent observation into account. In Table 4, welfare ratios for 15 towns in French West Africa are compared with both the 5% assumption and taking into account actual labourer rents in 1950-1. Among the observations for the later colonial period, an unweighted average suggests that the rent-inclusive welfare ratio is only 74% of the welfare ratio calculated by assuming that rent is 5% of the rest of the subsistence basket. Rent was on average 44% of the rest of the subsistence basket, though with considerable variation: 88% in Porto-Novo, in what is now Benin, and 'only' 21% or so in Kayes and Gao.

Table 4: Impact of using actual labourer rents on welfare rations across Afrique occidentale française, 1951. {#tbl-impact}

City	Monthly Rent (fr)	Welfare Ratio (5% Method)	Welfare Ratio (Actual Rents)	Rent % of Basket	Rent Share of Wage
Kayes	350	1.1	0.9	21%	19%
Segou	350	1.6	1.3	33%	20%
Zinder	375	1.2	1.0	28%	23%
Gao	400	1.0	0.8	22%	23%
Bamako	450	1.8	1.4	36%	20%
Abidjan	550	1.1	1.09	25%	22%
Maradi	550	1.5	1.1	43%	28%
Rosso	600	1.8	1.3	38%	22%
Saint Louis	600	1.0	0.8	33%	34%
Bobo-Dioulasso	800	1.4	1.0	51%	36%

City	Monthly Rent (fr)	Welfare Ratio (5% Method)	Welfare Ratio (Actual Rents)	Rent % of Basket	Rent Share of Wage
Niamey	875	1.0	0.7	45%	46%
Cotonou	900	1.7	0.9	84%	50%
Ouagadougou	1000	1.3	0.8	70%	56%
Dakar	1200	1.52	1.09	46%	29%
Porto-Novo	1500	1.0	0.7	88%	60%
Average	**700**	**1.33**	**0.99**	**44%**	**33%**
Std Dev	**341**	**0.30**	**0.22**	**0.21**	**0.14**

There are five cities for which we have multiple observations, apart from Dakar: Abidjan, Bamako, Cotonou, Ouagadougou, and Pointe-Noire. For the West African cities, these repeat observations come at economically significant times: the first in the mid-1920s, during the post World War I economic boom, and the second in the early 1950s, again during a time of rapid economic and urban growth. They probably represent, therefore, time periods when housing was particularly scarce, and rents particularly high. Comparing between time points, as with Dakar, is difficult because the units of housing are not the same in both time periods: for example, for Abidjan, we have an observation in 1926 from an unstructured inquiry on the cost of living completed by colonial official, and it merely gives a figure for 'rent' for a worker (*ouvrier*), of 10 francs per month. The second observation, in the postwar period, gives the amount a worker would be required to pay for a place to sleep in a traditional *baraque*. Both amounts were the equivalent of around quarter of the rest of the subsistence basket. There does appear to have been a major decrease in affordability of housing in Ouagadougou between the two time periods: these estimates suggest that unskilled workers would have been paying around 9% of the cost of the subsistence basket in rent in 1926, and around 70% in 1950. Similarly, housing in the main city of Benin, Cotonou, became somewhat less affordable on these measures, as in Bamako. In contrast, Abidjan, there was stability in the weight of rent in the subsistence basketwhere rents were around quarter of the cost of the subsistence basket in both 1926 and 1950.

Overall, what is worth noting about the estimates in Tables 3 and 4 is the heterogeneity of housing as an influence on the standard of living. To take only those in Table 4, it is striking that housing costs accounted for under 19% of the unskilled labourer's wage in the Malian town of Kayes (which was a key node on the main Dakar-Niger railway) but 60% in the port city of Porto-Novo in what is now Benin. The standard deviation of welfare ratios using the actual 'working class' rents is lower than for the welfare ratios using the classic '5% of the basket' method, which does suggest that housing rents capitalised some of the income gaps between locations in the colonies of French West

Africa. The observations in Table 4 from France's Central African territories (Dolisie, Pointe-Noire, Brazzaville, Fort-Lamy, Fort-Archambault, and Bangui) do suggest that in the backwaters of the interior, like Bangui and Fort-Archambault, housing rent was rarely a particularly heavy imposition on unskilled labourers, though in more economically advanced parts of the territory, rents could be substantial. The conclusion is not, then, that housing was always and everywhere a major burden. Instead, economic historians of living standards in Africa need to be attentive to local context. The factors determining the supply and demand for rental housing would, in some locations and at some times, lead to true housing crises, which must be taken account of when estimating real wages in order to give an accurate portrayal of the evolution of living standards. In some contexts, though, the usual 'Allen' assumption of a housing cost equivalent to 5% of the rest of the subsistence basket is probably close enough to be a useful approximation.

6.1. 6. Conclusion

Housing costs matter. Interpreting changes in welfare metrics without them can give seriously misleading estimates of comparative living standards — both over time and across space. As the cross-sectional and time series evidence presented in this article suggests, housing costs have historically capitalised some of the income amenities associated with urban growth. The upshot is that measures of living standards that focus on the purchasing power of nominal wages may overstate the degree of change over time, as well as the spatial variation in living standards, if they fail to take into account often dramatic differences in the price of housing,

More generally, a new effort to gather data on the price of an important non-tradeable good like housing will have the benefit of helping us to understand the distributional impact of the tropical cash crop revolution of the 19th and 20th centuries, perhaps among the least well-understood of the major economic changes of the twentieth century. Canonical trade models, like Corden and Neary's (1982) 'booming sector' model, predict that export booms will under ordinary conditions lead to substantial increases in the price of non-tradeables, like urban housing. If the ownership of land or buildings in cities is concentrated, then export booms may lead to widening wealth and income inequality. As Henderson and Liu (2023) have recently argued, low owner-occupancy rates in contemporary Africa suggest that a large number of renters may be renting from a relatively small group of landlords, with the implication that increases in urban wealth during property market booms may accrue very unequally. Recent studies of inequality in colonial Africa using social tables (see for an overview Hillbom et al, 2023) tend to focus exclusively on agricultural and labour income, since capital income is so difficult to document. If income from urban property is very unequally distributed though, these social tables may be missing some of the top incomes in colonial African societies.

The results I present in this paper may be relevant beyond Africa, too: much of the developing world, and particularly Asia, experienced periodic housing crises during the 19th and 20th centuries. As in Africa, then, the question for Asian and other developing regions is not to simply change the

weight of housing in a standard basket since the importance of housing costs was not constant over time. But there were moments of acute housing difficulties that, if not accounted for properly by price series, would distort our estimates of living standards. In the 1920s, in Bombay, for example, the lowest-income families were paying up to a quarter of their income for housing, which in some cases might consist of a single room 'occupied by several families' (Burnett-Hurst, 1925). In Rangoon, Indian labourers were sometimes housed in boarding houses with '40 or 50 people' to a room, (Benison, 1928). In Singapore, food prices in the CPI increased around 50% from 1914 to 1929; house rents more than tripled. The pattern observed for Dakar, in which housing rents were slow to follow broader deflationary trends, can be seen elsewhere too: a Chinese resident of Penang in 1931, at the beginning of the Depression, complained that though food was 'now quite cheap, most of the house rents are still as they were in previous years' (Lim C. Beow, 'House rents',*Pinang Gazette and Straits Chronicle*). In Hanoi, the official CPI in 1931 was at 107 compared to the base of 100 in 1925; the housing sub-index, however, was at 159. Even by 1935, when the overall price level was 70% of of its 1925 level, rents had not declined below their 1925 level. Overall, the evidence from the early twentieth century from across the tropical world suggests that Dakar and African cities more broadly were not anomalous: the evolution of housing costs in urban centres does not always follow broader price trends, and failing to account for them can lead to inaccurate assessments about levels and trends in living standards.

There are also implications for structural change. Venables (2017) has posited that one of the reasons for sluggish growth in manufacturing in African cities has been a general problem of high costs. In his model, when the cost of non-tradable goods is high in urban centres, firms in those cities never 'break into' tradable production. Inefficiencies in construction and housing sectors can weigh down urban economies and prevent them from diversifying. A city can become locked into a low-level equilibrium of an inefficient spatial form that raises costs and makes growth in the tradable sector difficult well into the future, owing to the long life span of buildings and other kinds of infrastructure. The legacy of colonial institutions for urban development and urban costs is also a new avenue of research. Baruah, Henderson and Peng (2021) document a striking pattern of urban morphology in African cities: cities in former British Africa tend to sprawl much more than their more compact former French African counterparts, a result of much more thorough French spatial planning in the colonial period. Cities which sprawl more. are more costly places to build basic infrastructure like electricity connections and sewerage, and Baruah, Henderson and Peng find that even within cities, more sprawling areas are less well-provided with infrastructure. An interesting future avenue of research might be into the legacy of this differential compactness for housing markets in Anglophone and Francophone Africa.

The tentative evidence presented in this paper suggests that high urban costs in Africa do indeed have a long history, and this points to a need for more detailed investigations into the economic history of urbanisation in Africa: not just to document the size of cities, but also their patterns of growth and the relative costs of construction.

6.2. Data availability statement

The data and methods underlying this article are available in the article and in its online supplementary material.

6.3. A.1 Data sources

6.3.1. Private sector nominal wages

1914-1938: *Manœuvre* wage taken from *the Budgets généraux de l'Afrique occidentale française* and the *Budget de la circonscription de Dakar*. I took the unskilled wage from the *manoeuvres* who did basic maintenance and grounds work at the Hôpital indigène de Dakar. From 1938, I use the private sector wage series in Berg, 'Trends in Real Incomes'

6.3.2. Retail prices

Prices for years not mentioned were estimated by linear interpolation.

Rice: ANS 6Q 39 (1914, 1919-1925, 1929, 1931), 'Valeurs mercuriales' in Journal officiel (1915-1917), Bulletin mensuel de l'Agence économique de l'Afrique occidentale française (1926, 1935, 1936), Bulletin mensuel des renseignements économiques in ANS 1 Q 60 (19) (1928, 1930, 1933), Import prices marked up 22

Millet: ANS 6Q 39 (1914, 1919-1925, 1929, 1931), 'Valeurs mercuriales' in Journal officiel (1917), ANS FCCD 368 (1938-1944), Bulletin mensuel de l'Agence économique de l'Afrique occidentale française (1926, 1935, 1936), Bulletin mensuel des renseignements économiques in ANS 1 Q 60 (19) (1928, 1930, 1933, 1934), ANS K 273 (1937-1944), Annuaire statistique de l'Afrique occidentale française (1945-1954), ANS 11D1/500 (1956) others interpolated or extrapolated from rice prices.

Fish: ANS 6Q 39 (1914, 1919-1925, 1929, 1931), 'Valeurs mercuriales' in Journal officiel (1917), Bulletin mensuel des renseignements économiques in ANS 1 Q 60 (19) (1928, 1933), ANS 1 Q 161 (1934-1936), ANS K 273 (1937-1944), Annuaire statistique de l'Afrique occidentale française (1945-1954), Bulletin statistique de l'Outre-mer (1955), ANS 11D1/500 (1956), ANS 22G 316 (1958, 1959), ILO October Inquiry 1960 (1960)

Beef: ANS 6Q 39 (1914, 1919-1925, 1929, 1931), Bulletin mensuel des renseignements économiques in ANS 1 Q 60 (19) (1928, 1933), ANS 1Q 161 (1934-1944) Annuaire statistique de l'Afrique occidentale française (1945-1954), Bulletin statistique de l'Outre mer (1955), ANS 11D1/500 (1956), ANS 22G 316 (1958, 1959), ILO October Inquiry 1960 (1960)

Sugar: ANS 6Q 39 (1914, 1919-1925, 1929, 1931), Import prices, marked up 22% (1926, 1930, 1933) ANS Q 161 (1934-1944), Annuaire statistique de l'Afrique occidentale française (1945-1954), Bulletin statistique de l'Outre mer, (1955- 1957) ANS 22G 316 (1958, 1959), ILO October Inquiry 1960 (1960)

Soap ANS 6Q 39 (1914, 1919-1925, 1929, 1931), Import prices marked up by 22% (1915-1918, 1924-25, 1930, 1932), Bulletin mensuel des renseignements économiques in ANS 1 Q 60 (1928,

1934, 1935) Annuaire statistique de l'Afrique occidentale française (1945-1954), Bulletin statistique de l'Outre mer, (1955- 1957), ANS 22G 316 (1958, 1959), ILO October Inquiry 1960 (1960)

Groundnut oil: Extrapolated backwards from 1929 (from ANS 1 Q 19) using unit price of groundnut exports (1914-1929); Import prices marked up 22%, (1930, 1932); ANS 1Q 161 (1934-1944); Annuaire statistique de l'Afrique occi- dentale française (1945-1954); Bulletin statistique de l'Outre mer, (1955-1957); ANS 22G 316 (1958, 1959), ILO October Inquiry 1960 (1960)

Cotton cloth ANS 6Q 39 (1914, 1919-1925, 1929, 1931), Import prices marked up 22%, (1930, 1932) Bulletin mensuel de l'Agence économique de l'Afrique occi- dentale française (1935), Annuaire statistique de l'Afrique occidentale française (1945-1954), ANS 11D1/500 (1956), ANS 22G 316 (1958, 1959)

Petrol Projected backwards from 1929 (ANS 1 Q 60) using the index price of huiles lourdes imports (1914-1929); ANS 1 QD (1929, 1931), ANS FCCD 382 (1934), ANS 1Q 161 (1934-1944), Annuaire statistique de l'Afrique occidentale française (1945-1954), ANS 11D1/500 (1956), ANS 22G 316 (1958, 1959), ILO October Inquiry 1960 (1960)

Charcoal: Projected forward and backward from 1925 prices from coal import price index. (1914-1930), Bulletin mensuel de l'Afrique occidentale française (1931-1933), ANS 1 Q 161 (1934-1944), ANS Annuaire statistique de l'Afrique occidentale française (1945-1954), Annuaire statistique de l'Afrique occiden- tale française (1945-1954), 11D1/500 (1956), Bulletin statistique de l'Outre mer, (1955-1957), ANS 22G 316 (1958, 1959)

Room rent: 'chambre pour indigène', ANS 6Q 39 (1914, 1919-1925), Indemnité de logement pour matelot, Budget du Port de Dakar (1928-1930), ANS 4G 107 (1935), Total price for rent of room in caravanserail for itinerant workers in Dakar, Budget de la circonscription de Dakar et dépendences (1936-8), ANS K 273 (1942), ANS FCCD 368 (1944), FR ANOM BIB SOM 314723 (1951), FR ANOM 1 AFFPOL 2163 (1953), 'loyer mensuel' in ANS 22G 316, 'Rapport de l'inspection de travail' (1958), extrapolated forward to 1962 using UNECA briefing note E/CU,14/HCUPA/3 'Housing problems and policies'

A.2 Real wage estimates for Dakar and updated estimates for Lagos and Accra

The following table presents the real wage estimates for Dakar described in this paper, using both the 'Allen'-style rents and the rent series described in the paper. The family subsistence basket is constructed on the basis of 4 adult-male-equivalent baskets per family and 2100 calories per adult-male-equivalent per day. Two updated series for the two most important British African cities are also presented for purposes of comparison: the Accra series uses prices and nominal wages from Frankema and van Waijenburg (2012) but updates the basket to reflect the higher calory requirements and four-basket standard; the Lagos series also updates the basket this way and adds a yam price series to reflect Lagosian diets. The yam prices were taken from the produce price reports in the Nigerian *Blue Books*.

	Dakar	Dakar	Lagos	Accra
	Allen rents, new family basket	*This paper rent series, new family basket*	Allen rent, with yams, new family basket	Allen rent, new family basket
1914	1.26	1.00	2.01	
1915	1.37	1.01	2.01	
1916	1.24	0.86		
1917	1.27	0.80		
1918	0.61	0.46		
1919	0.92	0.65	0.40	
1920	0.70	0.51	1.75	1.23
1921	0.95	0.66	1.30	1.50
1922	1.22	0.67	0.91	1.65
1923	1.05	0.62	0.35	1.93
1924	0.83	0.54	0.64	1.93
1925	0.98	0.63	2.07	1.94
1926	0.83	0.58	1.90	1.94
1927	1.08	0.81	1.52	2.17
1928	1.25	0.94	1.00	1.60
1929	1.51	1.04	1.00	2.52
1930	1.46	1.01	1.01	2.47
1931	2.14	1.36	1.02	2.95
1932	2.23	1.44		2.37
1933	2.59	1.53	2.00	2.31
1934	3.03	1.75	2.11	2.34
1935	3.25	1.75	2.11	2.29
1936	2.99	2.20	2.68	3.06
1937	1.52	1.33	2.83	2.26
1938	1.63	1.37	2.37	2.31
1939	1.35	1.08	2.43	2.31
1940	0.99	0.79	1.85	2.18
1941	0.89	0.70	1.94	1.64

	Dakar	Dakar	Lagos	Accra
1942	0.77	0.62	2.44	2.36
1943	0.75	0.56	1.62	2.19
1944	0.51	0.39		2.12
1945	0.74	0.45	2.21	2.01
1946	1.28	0.77	2.31	
1947	1.28	0.75	2.48	
1948	1.47	0.93	2.24	2.88
1949	1.20	0.90	2.01	2.50
1950	1.27	0.93	2.44	
1951	1.52	1.09	1.83	1.96
1952	1.31	0.97	1.95	2.70
1953	1.38	0.98	1.88	2.78
1954	1.92	1.27	2.00	2.80
1955	2.12	1.36	2.09	3.06
1956	2.02	1.35	2.38	2.93
1957	2.07	1.43	2.34	3.18
1958	2.12	1.51	2.28	3.06
1959	2.48	1.53	2.79	3.64
1960	2.78	1.43	2.52	3.85

6.4. References

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