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Living Standards in Angola, 1760–1975

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1. Introduction

The resurgence of quantitative economic history of Africa over the past two decades has provided researchers with valuable datasets on population, real wages, taxation, and institutional capacities (Frankema and van Waijenburg, 2012; Austin and Broadberry, 2014). This new data has allowed economic historians to build a more precise understanding of growth and inequality in sub-Saharan Africa (Broadberry and Gardner, 2022). Conventional viewpoints, such as the notion that African polities were inherently incapable of sustained growth, are being reconsidered. For instance, South African real wages grew consistently throughout the second half of the 19th century, and other evidence points to prosperity in earlier periods (de Zwart, 2011; Fourie and van Zanden, 2013). Furthermore, an examination of real wages in former British colonies suggested that unskilled West African workers enjoyed higher living standards than their counterparts in some Asian settings, such as Beijing, Shanghai, or Canton. In contrast, material living standards of unskilled workers in colonial East Africa were lower, though generally above subsistence (Frankema and Van Waijenburg, 2012). Nonetheless, all former British colonies appear to have experienced periods of growth during the 20th century, particularly post-1945.

Conversely, economic historians have questioned the extent to which colonial rule depressed real wages by artificially inflating the supply of coerced labor. While such labor policies may have spurred short-term growth, they simultaneously created obstacles to sustained economic development (Gardner, 2023). Furthermore, the ultimate beneficiaries of this growth remain unclear. The literature on colonial income inequality highlights that in former British and French colonies, only a small minority of indigenous people enjoyed income levels comparable to their European counterparts (Alvaredo et al., 2021). For example, settler societies often prioritized raising the real wages of Europeans, while indigenous populations saw no proportional benefits (De Zwart, 2011) Africans were not, however, necessarily better off in non-settler societies. Finally, coercive labor demand in colonial contexts has also been linked to higher mortality rates (De Zwart et al., 2022).

Despite the longevity of the Portuguese empire relative to others, the body of research on Portugal's former colonies in Africa and Asia remains limited, particularly when compared

to the extensive studies on former British and French empires (Porteous, 2022).[2] Consequently, little is known about how Portugal's colonial subjects fared in comparative terms during the early and later colonial periods.[3] Angola is a case in point. A long-term analysis of its inhabitants' living standards is of paramount importance, given its history as a major center of the slave trade and its association with other forms of coercion. Moreover, the Angolan case contributes to current debates by offering comparative potential alongside other non-settler colonies, such those of the former British and Dutch empires.

We examine the material standards of living of Angolan urban workers over two centuries of colonial rule. By leveraging a novel dataset assembled from archival and secondary sources, we establish, for the first time, decadal real wages and welfare ratios spanning the years 1760 to 1975. Our investigation commences in the 1760s, a period marked by the efforts of early colonial elites and the metropolitan government to implement new development policies for the coastal Angolan settlements under Portugal's control (Santos, 2008). This starting period aligns with a surge in annual slave exports from Western Central Africa, as evidenced by historical records.[4] Our study extends until 1975, encompassing the Angolan independence war (1961–1974), a period characterized by critical transformations in the country's social and economic landscape.

Our dataset encompasses 11,883 wage observations of skilled and unskilled coerced and non-coerced workers in two urban centers, Luanda and Benguela. These observations are then juxtaposed with those of their counterparts in Africa, the Americas, Asia, and Europe. Both cities have historical ties to the transatlantic slave trade, orchestrated by the Portuguese and Luso-African elites to meet the demands of the American plantation system (Miller, 1988; Ferreira, 2012). The independence of Brazil in 1822 prompted a shift in the priorities of the Portuguese empire towards its African possessions.[5] Although the colonization of Angola's hinterland (as opposed to a few coastal outposts) was effectively pursued only from the late 19th century onwards, Luanda and Benguela possess a substantial colonial history, marked by a long trajectory of socioeconomic activity (Freudenthal, 2001; Cândido, 2013).

[2] For example, for comparative work between the French and English former colonies, see Alvaredo et al. (2021).
[3] We opt for the term "early colonial" rather than "precolonial" for Angola during this period, given that proper colonial domination already existed before the end of the nineteenth-century (Cândido, 2022).
[4] Miller (1988); Lains (2003); see our Appendix, section A2 for additional details.
[5] Clarence-Smith (1985). See Lambais and Palma (2023) for living standards in colonial Brazil.

The mobilization of labor was pivotal in the establishment and maintenance of colonial rule in Africa (Cooper, 1996; van Waijenburg, 2018; Gardner, 2023). European empires in Africa utilized forced labor and taxation to varying degrees, ensuring a steady supply of workers for local public and private demands. The Portuguese empire allocated comparatively few resources to its colonies, while simultaneously endorsing enduring and stringent labor policies for the local populace (Cooper, 1996; Keese, 2014; Alexopoulou and Frankema, 2024; Jones and Gibbon, 2025). For instance, development plans for Angola in the late 1950s allocated only 6 percent of the budget to investments in social sectors, such as education, while contemporary Belgian Congo and Uganda dedicated 20 and 25.8 percent, respectively, to those domains (Jerónimo and Pinto, 2015). This low investment was consistent with practices in the metropole; Portugal was itself one of Europe's poorer countries at the time. During this period, Portugal invested only 1.3 percent and 0.8 percent of its GDP in education and social affairs, respectively, while European averages stood at 3.5 percent and 3.9 percent (Amaral 2019, pp. 181-82). Slavery and coercion existed prior to European presence in the region, but the colonizers perpetuated such practices, until the process of gradual abolition from the nineteenth century.

The literature suggests that living conditions in Angola improved in the 1960s, marked by the cessation of the forced labor regime and increased access to education and healthcare (Ball, 2005; Wheeler and Pélissier, 2009; Amaral, 2024; Dolan, 2025). Additionally, the persistence of cultural practices and the complex nature of labor and social reforms contributed to the maintenance and perpetuation of segregation between the European and African populations (Havik, 2018). Despite these insights, a comprehensive study on the evolution of urban real wages in Angola over the long term has yet to be undertaken — a limitation that we now address by offering the first assessment of living standards during both the early colonial and colonial periods.

Overall, we find that Angolan workers faced generally worse living standards than their counterparts in other regions of the globe. Despite being at comparable levels up to 1800, real wages declined during the 19th century, especially from the 1840s onwards, followed by modest improvements in the first half of the 20th century. Substantial growth arrived in the early 1960s — especially in the early 1970s — prior to the onset of a demographic transition.

These trends coincide with a varying incidence of labor market distortions stemming from the prevalence of coerced and indentured labor within the waged labor market.[6]

The enforcement of the prohibition of the slave trade since 1840 increased labor supply in coastal areas, while real wages decreased. The ambiguity of the legal status of workers during the commodification of the economy in the second half of the nineteenth century, together with the coexistence of several forms of coerced labor, were associated with the stagnation of living standards. Both state and private interests colluded in keeping a highly distorted labor market as a source of cheap labor to supply both public works and agricultural as well as industrial enterprises. Finally, the new legal framework introduced since 1899 in practice compelled many Angolans into forced labor, with real wages remaining depressed. This situation persisted until the abolition of forced labor in the early 1960s, after which a recovery in living standards became evident.

Our findings contribute to ongoing discussions concerning the economic history of sub-Saharan Africa, specifically those exploring how colonialism and coerced labor have shaped patterns of economic growth. Our argument centers on the legal framework of the Portuguese empire, coupled with relatively low investment and stringent policies towards its subjects, as factors that help explain the low living standards experienced by the Angolan population. We also contribute to ongoing debates surrounding the impact of colonial institutions on the economic performance of countries (Acemoglu et al., 2001).

The article proceeds as follows. Section 2 provides a historical background of early colonial and colonial Angola, assessing the evolution of labor markets for both periods, together with the changes in the coercive legal framework, and their impact on economic dynamics. Section 3 describes the sources and methods used. Section 4 analyzes real wages and welfare ratios for both skilled and unskilled Angolan workers over a 200-year period. Section 5 concludes.

2. Historical context

We examine the evolution of Angolan labor markets from 1760 to 1975 through the gradual impact of the colonial legal framework and its interaction with prior practices, as well as the

[6] For further information regarding the wage labor in Africa, see Cooper (2000, 2017). For a related finding for Brazil, see Palma et al. (2021) and Lambais and Palma (2023).

consequences of the growing Atlantic trade on the evolution of labor relations. Both of these factors impacted demographic trends and, consequently, living standards in the long run

Table 1: Evolution of the legal framework concerning labor, Angola, 1836-1961

Date	Summary	Enforcement
1836	Abolition of the slave export by sea	From the 1840s
1858	Abolition of all slavery in two decades	Partial
1869	Deadline for the future freedom of all *libertos* (former slaves)	Partial
1876	*Libertos* working for previous masters given 2-year contracts (indentured)	Yes
1899	Compulsory labor for Africans (*Regulamento do Trabalho Indígena*)	Yes
1928	Legal diploma abolishing forced labor	No
1961	Abolition of *Indigenato* [and forced labor]	From 1962 onwards

Sources: Heywood (1987); Seixas (2015); Guthrie (2022)

We suggest that the alterations in the legal framework significantly shaped the evolution of labor markets in Angola. After the Portuguese imperial slave trade ban in 1836, with stricter enforcement from the 1840s, slavery within Angola expanded. This growth may have been in response to the demand for labor brought about by subsequent agricultural transitions and increasing commercialization. However, there is disagreement in the specialized literature, and further research is needed to fully understand this dynamic (Freudenthal, 2005; Cândido, 2020; Vos and de Matos, 2021). The transition to waged labor accelerated with the increasing commercial demand from the late 19th century, as well as with the decline of slavery. However, this transition often involved the implementation of coercive work regimes to meet the demands of external markets (Austin, 2009; Neto, 2017). Around 1880, post-abolition coercive contracts coincided with diminishing welfare ratios of workers below subsistence in the south (Mossâmedes), while the coastal north experienced some degree of competition for day labor, with positive effects on the nominal wages of a few thousand laborers (Clarence-Smith, 1979; Dias, 1998). However, the benefits for Angolan urban workers were short-lived as rising food prices soon outpaced the wage increase. At the beginning of the 20th century, most Africans and "mixed" workers in Luanda, including the creole elites, were systematically relegated to low-paid, inferior jobs in the administration and

elsewhere, undermining their economic standing within the urban landscape (Clarence-Smith, 1983).

The process of land and job appropriation by European settlers and the subsequent displacement of Angolans toward peripheral urban areas — the slums known as *musseques* —originated before the early twentieth century (Dias, 1984). The period from 1900 to 1930 accelerated this process through legislation favoring colonizers, as mentioned. Starting in 1899, the "moral" obligation of African natives (then known as *indígenas*) to work was institutionalized, accompanied by various extraction mechanisms, including the implementation of the "hut tax" (Havik, 2018; Jerónimo, 2015, 2018). In addition to forced labor, which was commonly employed in public works, compulsory labor under the 1911 code was categorized into two groups: those who fulfilled their obligations without direct state intervention (*voluntários*) and those who had to be compelled to "offer" their services (*contratados*) (Clarence-Smith, 1979). This legal framework imposed a distinction between "civilized" and "native" Africans, with only the former theoretically entitled to the same rights and labor markets as white settlers (Clarence-Smith, 1985). While there were attempts to abolish forced labor, such as in 1928, these reforms were not enforced and could be easily circumvented. Economic circumstances dictated a temporary decline in the demand for forced labor in the early 1930s, followed by a new rise in the following decade, in a global war context (Clarence-Smith, 1985). Colonial elites were aware that forced labor policies could affect the population's welfare; some argued, for instance, that these policies should be mitigated and salaries should be allowed to rise to prevent migration (Coghe, 2022, pp. 206-243). Yet, the collusion between state and private parties, driven by the need to obtain cheap labor to supply sectors such as public works, agriculture, fishing, or extractive industries (among others), prolonged such practices until their abolition in the early 1960s.

Table 2: Estimates of the Angolan labor force, 1800-1900 (in number of individuals and percentage of the total)

		Africans	
	Unskilled coerced	Unskilled non-coerced	Skilled
1800			
Luanda	3264 (50.9%)	2707 (42.2%)	n. a.
Benguela	1185 (39.9%)	1619 (53.6%)	118 (3.9%)

1860			
Luanda	6870 (59.5%)	3338 (28.9%)	300 (2.60%)
Benguela	4289 (80.6%)	848 (15.3%)	n. a.
1900			
Luanda	6888 (43.6%)	n. a.	n. a.
Benguela	1140 to 1645 (34.4 to 49.7%)	n. a.	n. a.

Sources: see Appendix, sections A3-A4. The entries display the number of individuals covered by category, plus the percentage share regarding the total population of each city, including a residual number of Europeans and Asians (percentages not shown in the table). Unskilled coerced workers for the benchmarks of 1800 and 1860 include workers under enslavement, plus other forms of coercion. The benchmark of 1900 is based on the so-called *serviçais*, plus indetermined workers likely to be under coercion. In the table, n. a. stands for not available. For further information about the criteria we used, please see the respective sections of the Appendix.

Accurate estimates of the percentage of the Angolan population under forced labor are still to be determined, especially in the long run. In the early colonial periods of Luanda and Benguela, particularly before the 1880s, high rates of enslavement were evident, indicating a significant presence of unfree labor supply. Both Portuguese and Luso-African elites, along with many other local individuals, were reported to have owned a variable number of slaves. These performed various tasks, including household chores, and were sometimes directed to the commodified labor market, often being rented out (Oliveira, 2014). In 1781, 57.2 percent (5,583 inhabitants) of the civilian population of Luanda was listed as "enslaved". Although this percentage slightly decreased to 50 percent around the turn of the 1800s, it remained around that share fifty years later (Curto, 1999; Curto and Gervais, 2001; see Appendix, section A4). By the 1860s, the total percentage of the labor market under coercion in Luanda, including forced laborers, was around 60 percent. In the early 19th century, Benguela showed similar proportions between the civilian free and unfree populations. However, after the slave export ban, the percentage of slaves began to rise, reaching nearly 80 percent by the last reliable population count in 1860, just before the official abolition of slavery (Cândido, 2020).

Changes in the legal framework, together with land appropriation, compelled Angolans to transition from the subsistence sector and increase the supply of waged labor, a trend observed elsewhere in sub-Saharan Africa (De Zwart, 2011). In 1875, around 20 percent of the African population under the nominal control of Portuguese locations were enslaved. By 1914, the number of registered *serviçais* (coerced "contract" laborers) reached approximately

200,000 – representing slightly less than 10 percent of Angola's population.[7] Waged labor, already prevalent in the urban coastal context, proliferated under colonialism, and *serviçais* became the first significant group of commodified Angolan wage earners (Vos, 2014; Neto, 2017; see Appendix, section A5). At the turn of the 20th century, Luanda's share of forced labor surpassed 40 percent of the total pool; this figure includes *serviçais* and undifferentiated workers, the latter of whom were likely performing compulsory labor. Likewise, *serviçais* in Benguela at the same time accounted for more than a third of the total labor force, and the total forced labor share peaked at almost 50 percent. After 1900, estimates about urban forced labor are either unavailable or unrealistic. A good example of the latter appears in the official statistical periodical from 1950, where it is mentioned that no Angolan workers (*indígenas*) were hired with the intervention of the authorities to work in the municipality of Luanda.[8]

Despite such data inconsistencies, we suggest that forced labor was still common. Between 1940 and 1950, only a small proportion of black Angolans were considered "civilized" (around 0.7 percent).[9] In the 1940s, the share of the "native" population in Luanda accounted for approximately two-thirds of the total (67.7 percent), while in Benguela, it was 76.2 percent.[10] Unless they lived under subsistence, were self-employed with a minimum income, or developed a skilled occupation, members of the "native" population were seen (and, to a great extent, treated) as prospective coerced laborers (Clarence-Smith 1983). Evidence from specific sectors in Angola confirms this trend. For instance, mining relied heavily on "contracted" workers. Up until the early 1960s, these forced laborers accounted for between a third and around half of the total indigenous workforce in Diamang, the largest stakeholder of the sector (Dolan, 2025).[11]

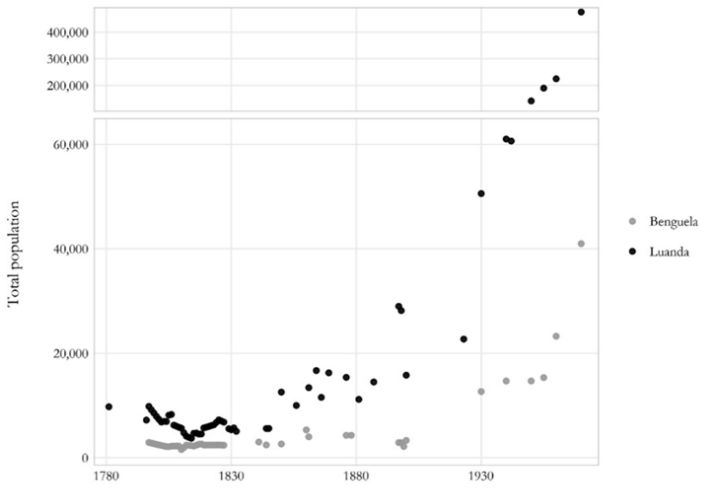
Compared with the pre-1900 period, the developments under the *Indigenato* system suggest an even greater distortion in the labor market, with adverse consequences for the welfare of unskilled workers due to the deterrent effect on wages. Demographic trends offer further

[7] Both denominators are not directly comparable, but they account for the persistence of coerced labour under both territorial expansion of the colonial rule and its newly implemented legal framework.
[8] Anuário Estatístico de Angola (1950-1951, p. 400).
[9] Bender (1978). For Angola as a whole, the number of blacks would have been 3.7 million, 28 thousand *mestiços*, and 44 thousand whites in 1940 (Censo, 1940).
[10] Censo (1940).
[11] This is a conservative estimate, as there is uncertainty about the degree of freedom of work concerning other indigenous workers, such as the so-called "volunteers".

valuable insights into the historical development of a region, despite the challenges related to the reliability of such data, as has been observed in other African cases.[12]

The Angolan labor market did not operate in autarky. Legal and illegal migration to surrounding countries in Western Central and Southern Africa was a constant since early times – in many ways replacing the outflows of enslaved workers to American plantations before 1850. Starting from around 1900 (or even slightly before), Angola provided thousands of workers per year to the cocoa plantations in São Tomé and Principe. Likewise, evidence reveals both seasonal and permanent migration of Angolans to countries nearby in search of better wages and living conditions – to South Africa, or to the Katanga mines in Congo, among other destinations (Juif and Frankema, 2018; Ribeiro da Silva and Alexopoulou, 2022; Dolan, 2024). Moreover, there is ample literature about the views of both colonial and metropolitan rulers regarding depopulation of Angola during the first half of the 20th century. Concerns about labor shortages to supply public works and agriculture were prevalent, and debates on how to improve welfare continued until the late colonial period (Coghe, 2022, pp. 206-243). Portuguese authorities were aware of the Angolan migration outflows. The authorities' awareness of this migration provides crucial context for the internal labor market's adjustment: imposing coercion was an effective state strategy to counter these outflows and secure a supply of cheap labor.

Figure 1: Demographic estimates for Luanda and Benguela, 1760–1975



Sources: A combination of secondary sources and data collected by us from primary sources, listed in the Appendix, Section A3, is used. The figure refers to the total population in both urban settings. The scale break in the vertical axis from tens of thousands to hundreds of thousands is designed to facilitate the visualization of Luanda's population after 1940.

[12] For a discussion of the quality and reliability of Portuguese early colonial and colonial demographic sources, please see Appendix, section A3.

Figure 1 illustrates a notable pattern of accelerated demographic growth in both Luanda and Benguela from the early 1900s onward. However, the nineteenth century reveals distinct trends between the two locations. Luanda experienced population growth during two specific periods: 1844-1850 and 1880-1900. Within the latter period, there was a substantial increase of 124 percent in population, rising from 5,605 to 12,565 inhabitants over a six-year span. This surge was primarily attributed to the growth of African and Luso-African residents, while the European population slightly declined (Mourão, 1997; Curto, 1999). It should be noted that there was no demographic transition in Angola during the period covered in this paper (United Nations, 2022).

There is uncertainty regarding the proportion of the enslaved population during the 1850s and 1860s, following the ban on the slave trade (but not slavery itself) two decades earlier. The increase in the 1880s is less documented, although it may be linked to a slight improvement in nominal wages for Angolan laborers, as previously noted (Dias, 1998). Furthermore, the period between 1870 and 1920 was marked by a significant epidemic in the hinterland of Luanda, resulting in a substantial decline not only in the population in the fertile riverine basins nearby (Zaire, Dande, Kwanza, and Lukala) but also in the food supply chain. This, in turn, led to a rise in urban prices (Dias 1981, 2011).

Nonetheless, another clear demographic increase is evident from the 1930s, accelerating between 1940 and 1960. Over these two decades, Luanda's population experienced a staggering growth of 267.9 percent (Amaral, 1978; Cruz, 2020). This demographic surge can be attributed to various factors, with the arrival of European settlers being considered a secondary factor when compared to the substantial migration of African laborers from the Angolan hinterland (Clarence-Smith, 1979; Castelo, 2007).[13] The literature has suggested that urban settings in early and mid-20th century Africa often had higher unskilled real wages than their rural counterparts, and that migration to cities often made economic sense (Frederick and van Nederveen Meerkerk, 2022; de Haas and Frankema, 2025).

The case of Benguela is different. Around 1930, there were 12,674 inhabitants, compared to Luanda's 50,588. Its growth over time was also different. The most significant distinction

[13] See Appendix, Section A3 (table A1), for estimates of the evolution of European population in both cities from 1800 onward.

lies in the absence of prominent demographic shifts during the 19th century. However, the persistence of slavery until the end of that period, following the ban on the slave trade in 1836, led to internal population changes due to the increased number of enslaved individuals, while the proportion of free inhabitants likely declined (Freudenthal, 2011; Cândido, 2020). Nevertheless, the extent of this impact on the living standards of those engaged in the waged labor market was not previously known. Regarding its overall population trend, Figure 1 illustrates that Benguela experienced modest population growth in the first half of the 20th century, with significant changes only becoming evident in the 1950s.

3. Sources and methods

We compiled a new dataset consisting of 1,178 price entries and 11,883 wage observations in two cities, Luanda and Benguela, spanning the period from 1760 to 1975.[14] Henceforth, we refer to "Angola" wages as the average across both urban centers. The dataset compiles evidence from both primary and secondary sources, mostly collected from the Historical Overseas Archive, in Lisbon (*Arquivo Histórico Ultramarino*), with additions from other Portuguese and Angolan archives and libraries, as detailed in the Appendix. The collected prices are urban retail prices gathered from the yearly accounts of the public granary (*Terreiro Público*, existing in Luanda since the 1760s), as well as from other local organizations. Exceptionally, when retail prices were not available, we collected export prices instead. We verified that, in years when both types are available, they are generally similar, although in certain benchmarks export prices are lower than retail. This is the case with staple grain within the 1930s and 1940s, which may lead to a slight overestimation of higher real wages for those periods.[15] The data refer primarily to staple goods, such as manioc/cassava flour, beans, meat, and palm oil. To evaluate the living standards of each category of workers, we construct welfare ratios following the methods proposed by Allen (2001), Allen et al. (2011), and Abad et al. (2012). At times, we also minimize assumptions about the working year and family size by calculating the number of subsistence baskets that a daily wage can buy (Allen and Weisdorf, 2011; Humphries and Weisdorf, 2019).

[14] For details, see our Appendix, sections A5–A10. The data and explanatory data appendix corresponding to this paper are available online (see Carvalhal and Palma, 2025).
[15] See details in Appendix, Section A11.

Table 3: Angolan subsistence basket, 1760–1975

Commodities (person/year)	Units per year	Calories (per kg)	Protein (per kg.)
Cassava flour (kg)	160	3610	17
Chicken (kg)	10	1310	120
Beans (kg)	60	1544	71
Palm oil/Ghee (kg)	3	8840	0
Linen/cotton (m)	3		
Soap (kg)	1.3		
Candles (kg)	1.3		
Firewood (M BTU)	2		
Fuel (M BTU)	1.3		
Totals per day (chicken)		1945	22
Total per day (pork)		1969	22

Source: Our calculations, based on the information in Miller (1988), and adapted using the African subsistence basket of Frankema and van Waijenburg (2012); see Appendix, Section A12.

We construct real wages and welfare ratios using the subsistence basket (Table 3). This provides approximately the number of calories needed to maintain an adult male body after a day of work (1,945 calories), together with 22 grams of protein (1,969 calories and 22 grams of protein in the case of pork). We acknowledge that the barebone basket as proposed initially by Allen (2001, 2011) and adapted later to the African context has received criticism in the literature. Subsequently, Allen himself suggested that 1,940 calories may have been insufficient to provide the required energy to meet daily work demands. Thus, he proposed 2,100 calories as a more appropriate estimate (Allen, 2015). Other scholars have also proposed variations based on indicators such as the Body Mass Index (BMI) and yearly average temperature. De Zwart and Lucassen (2020) found that 2,000 daily calories was an appropriate estimate for the barebones basket in India, given the relatively lower BMIs of the respective workers. In turn, a recent contribution has highlighted how indoor heating needs, as measured in million BTUs (M. BTU), imply different costs depending on average temperature. As such, while yearly indoor heating costs in Delhi do not cause changes in the respective real wages, the same does not hold true for Amsterdam or Stockholm – where a small decline is visible (Moatsos and de Zwart, 2024).

Given that our focus lies in the changes in trends over time, rather than in the absolute levels of living standards, we opted to use the original barebone basket (with slightly more than 1,940 calories) to enable broader direct comparisons with the established literature. While the protein count (grams per kg) is lower than other in cases, including British Africa, it

reflects the evidence available concerning diet at household level – particularly the overall low consumption of meat per year (see Appendix, section A12). We used a coefficient of 3.15 people per household, corresponding to 2 adults and 2 children (including rent).[16] We also assume 312 days of work per annum, or six days per week. [17]

Table 4: Angolan subsistence basket, 1760–1975, in compared perspective

Commodities (person/year)	Angola (urban)	Europe (Strasb.)	Mexico/Peru/Bolivia/Colombia	British Africa	Calories (per kg)	Protein (per kg)
Cassava flour (kg)	160	-	-	-	3610	17
Maize (kg)	-	-	165	185	3370	70
Wheat/oats (kg)	-	155	-	-	3370	88
Meat (kg)	10	5	35	3	2500	200
Beans (kg)	60	-	45	-	1455	71
Butter (kg)	-	3	-	-	7286	7
Sugar (kg)	-	-	-	2	3750	-
Palm oil/Ghee (kg)	3	-	-	3	8840	-
Soap (kg)	1.3	1.3	1.3	1.3	-	-
Linen/cotton (m)	3	3	3	3	-	-
Candles (kg)	1.3	1.3	1.3	1.3	-	-
Lamp oil (kg)	-	1.3	1.3	1.3	-	-
Firewood (M BTU)	2	-	-	2	-	-
Fuel (M BTU)	1.3	3	3	1.3	-	-
Total daily calories	1945	1936	1943	1939		
Total daily protein	22	60	60	43		

Sources: For Angola, see Table 3; for Europe, see Allen (2001) and Allen et al. (2012); for Latin America, see Abad et al. 2012; for British Africa, see Frankema and van Waijenburg (2012).

Due to the extensive duration of the period between 1760 and 1975, we sought to collect, whenever feasible, at least one wage observation for both skilled and unskilled labor, including both native Africans and European settlers, for each decade and for both locations. We collected and analyzed wages from both coerced and non-coerced labor sources, as in Allen et al. (2012).[18] We did not collect the wages that were occasionally paid to enslaved workers but acknowledge their impact on the labor market as a source of distortion. Most of the data represent labor hired directly by the organizations of the colonial administration — such as

[16] Evidence of household composition suggests an average of 4.5 persons per household in the northern Angolan hinterland circa 1910, while in the slums of Luanda at the end of our period (1971) this coefficient averaged 5.6 (Monteiro, 1973; Vos, 2024). We use the coefficient of 3.15, as is standard in the literature, for the purpose of global comparisons.

[17] Additional details concerning days and intensity of work can be found in the Appendix, section A12.

[18] By "coerced laborer", we refer to both the wage worker tied to a transitory legal status from the 1860s onwards (such as the so-called "libertos" and the "serviçais"), as well as most unskilled African laborers who were compulsorily remitted to unskilled work from the early 20th-century onward. For these definitions and context, see Clarence-Smith (1979, 1983); Neto (2017); and Jerónimo (2018).

municipality, army, naval port, or hospitals — and, less frequently, by the private sector, including the Luanda confraternity (*Misericórdia*) or maritime contractors.[19] Wages are calculated on a daily basis, although the majority - likely due to their public sector origin- suggest that workers were engaged in work throughout the year. We grouped these wages by location and occupation using HISCLASS, the state-of-the-art international classification scheme widely employed to categorize historical occupational groups (van Leeuwen and Maas 2011). Based on available evidence regarding skill levels and the nature of the work, we used 12 HISCLASS groups, ranging from high-echelon managers (Group 1) to unskilled farm workers (Group 12). Day laborers were used to represent unskilled wages (HISCLASS 11), while carpenters served as the reference for skilled wages (HISCLASS 7). If wages from these occupations were unavailable at a given benchmark, we substituted them with data from similar roles: guards and doormen (for unskilled) and masons (for skilled, also in HISCLASS 7).

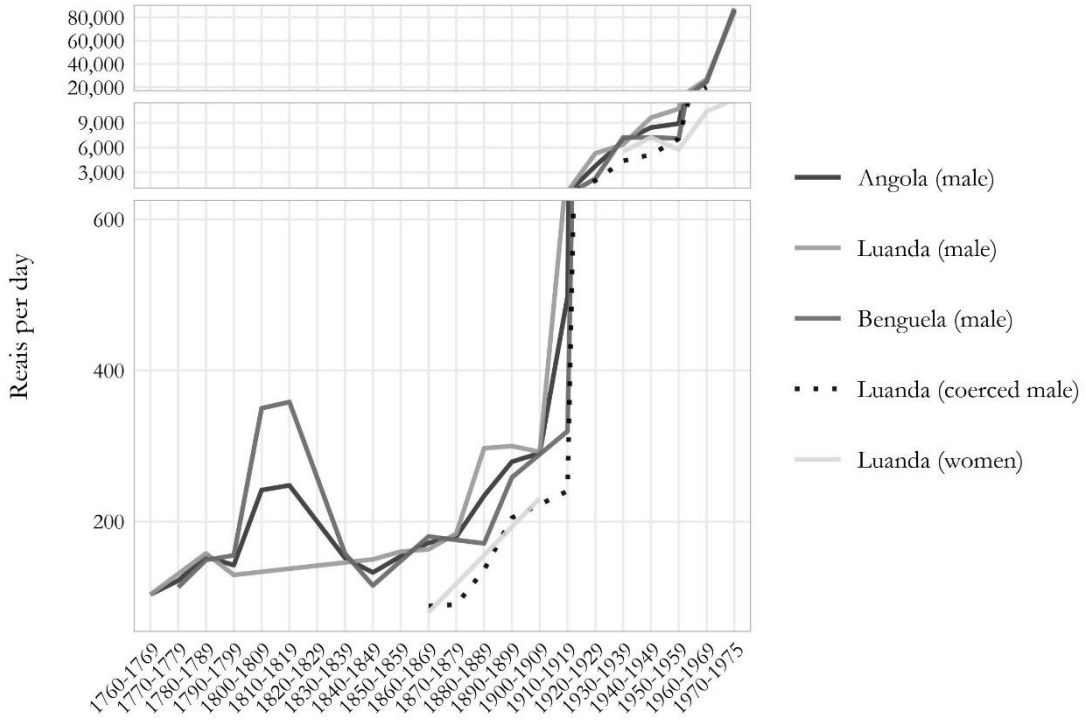
4. Real wages and living standards in urban Angola in comparative perspective

We will now examine the results for Angola before proceeding to international comparisons. We begin with the most important case: unskilled labor.

The evolution of nominal wages in Angola over the long run reveals two distinct stages (Figure 2). On the one hand, the first stage of relative wage stagnation continues until about 1900. Such a trend can be associated with the proliferation of enslaved labor, which lasted until the beginning of the 20th century. It is worth noting that in southern Angola in early 1910s – a region where state control was less effective than Luanda – there were around 5,000 slaves, which was 25 percent of the colony's total enslaved population (20,000) at the time (Clarence-Smith, 1985). Moreover, we suggest that a slightly lower average wage in Benguela until the 1920s, when compared to Luanda, might also be associated with state-private collusion to renew post-slavery contracts, in which freedmen were only paid token wages during an apprenticeship period (Clarence-Smith, 1979).

[19] We consider the matter of representativeness of public sector employment in Appendix, section A13 (tables A9 and A10). In sum, we find that for skilled workers public sector jobs generally do not pay a premium over the private sector, while for unskilled labor there is a premium. Yet, the fact that public sector jobs serve here as an upper bound only reinforces how low Angolan real wages were, and thus strengthens the main argument of the article.

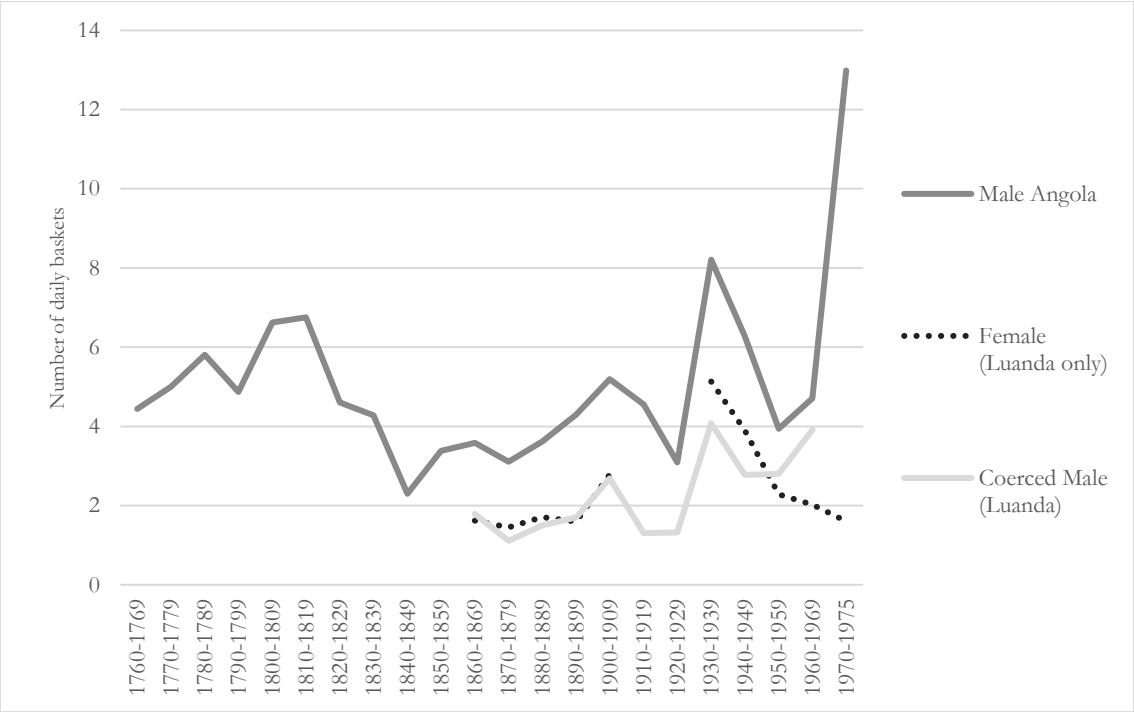
Figure 2: Evolution of nominal daily wages for African workers in Angola, 1760-1975 (in reais per decade)



Sources: See Appendix, Section A5. Angola stands for the average between Luanda and Benguela. Wages for both unskilled males coerced, and women, are only available for Luanda. The vertical axis on the left represents the evolution of nominal wages (measured in *reais* per day) up to 1975. It is separated into three partitions — hundreds, thousands, and tens of thousands — according to the exponential growth of nominal wages between 1910s-1930s, as well as from the 1960s.

On the other hand, a second stage is characterized by nominal increases that become evident from the 1920s onwards, particularly following the abolition of forced labor in the early 1960s. These two stages are especially pronounced for unskilled male workers in both cities. However, there is nuance regarding unskilled coerced workers, as well as women. Both groups consistently receive lower wages than their regular unskilled counterparts throughout the period. Women seem to fare slightly better than coerced workers until the 1950s, when the nominal wages of coerced workers surpass theirs.

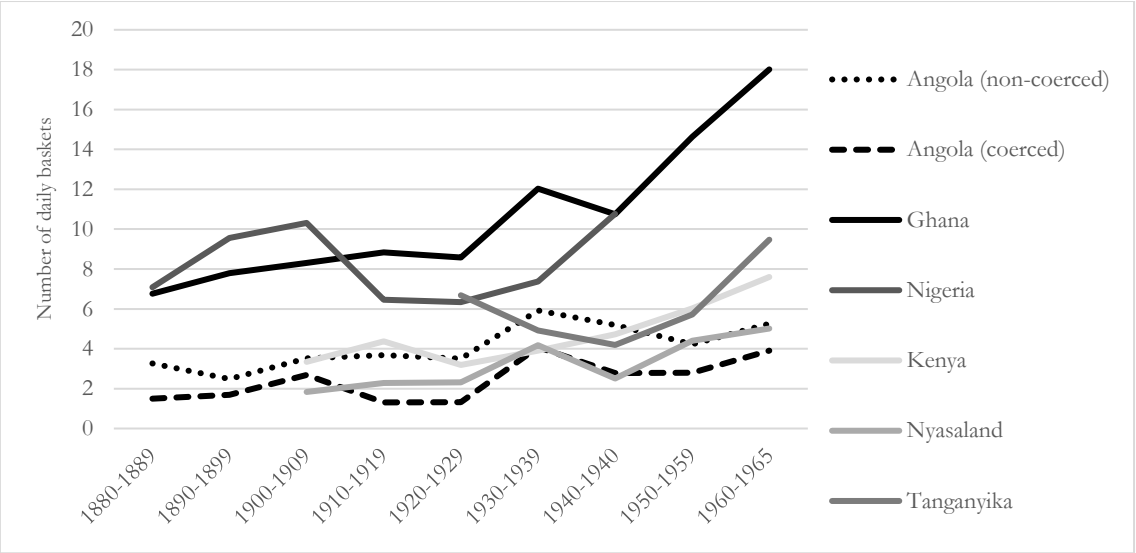
Figure 3: Number of subsistence baskets an African unskilled daily wage can buy, 1760–1975.



Sources: Appendix, Section A14. "Male Angola" represents the average unskilled daily real wage paid to non-coerced laborers between Luanda and Benguela over time.

Figure 3 illustrates the trajectory of real wages over the period, evaluating the purchasing power of an individual's daily salary in terms of subsistence baskets. Regarding male unskilled workers, whose wages also serve as an upper bound for those of unskilled African laborers, there is a discernible trend of increasing real wages until 1820. However, a decline in purchasing power is evident thereafter. Real wages begin to recover only at the turn of the 20th century, peaking temporarily around 1930, and were notably high in the early 1970s. An exception to this trend appears during 1920–1929, when a significant rise in the prices of consumables caused a temporary decline in the living standards of all workers, particularly those under coercion. This price surge might be associated with the period of epidemics that affected the Angolan hinterland between 1870 and 1930, leading to a reduced supply of foodstuffs to urban areas (Dias, 2011). Unskilled women generally had lower real wages compared to male workers but fared better than coerced laborers until the 1950s. While it is plausible that female wages were higher than those of their coerced male counterparts, the study of female welfare ratios is left for future research (see Appendix, Section A14). In contrast, coerced laborers, comprising the majority of African unskilled workers, experienced comparatively low real wages. They could afford less than two baskets until 1900 and never exceeded four daily baskets until 1975.

Figure 4: Angolan unskilled urban daily real wages in African perspective, 1860s-1960s



Sources: For both Angola non-coerced and Angola coerced, see Appendix, Sections A15; for the remaining African settings, see Frankema and van Waijenburg (2012). Daily real wages indicate how many subsistence baskets an unskilled daily wage could afford. Angola includes only real wages paid to African workers.

Angolan non-coerced workers enjoyed living standards generally above the poorest settings such as Nyasaland, and similar to, or above, Kenya; conversely, coerced Angolans had a similar level to workers in Nyasaland (Figure 4).[20]A major takeaway is that Angolan unskilled workers, both coerced and non-coerced, fared worse than their counterparts in other West African urban locations. The comparison of daily real wages with Ghana and Nigeria illustrates this point. While the trends of their respective welfare ratios show similarities from 1910-1920 – potentially influenced by the development of agriculture and commerce in Western Central Africa as a macro region – Angolan workers consistently experienced greater poverty. It took half a century for non-coerced Angolans (in 1930) to achieve real wage levels similar to those that Ghana or Nigeria's unskilled workers had enjoyed decades before, in 1880. The differences are more staggering when comparing the performance of Angolan coerced laborers with their West African counterparts. Ghanaian workers were able to attain between 8 and 18 daily baskets throughout the period, while coerced Angolans could not purchase more than 4.

In Angola, coercion was implemented in order to supply state and private companies with a steady flow of cheap labor. The real wages of non-coerced Angolans were typically similar

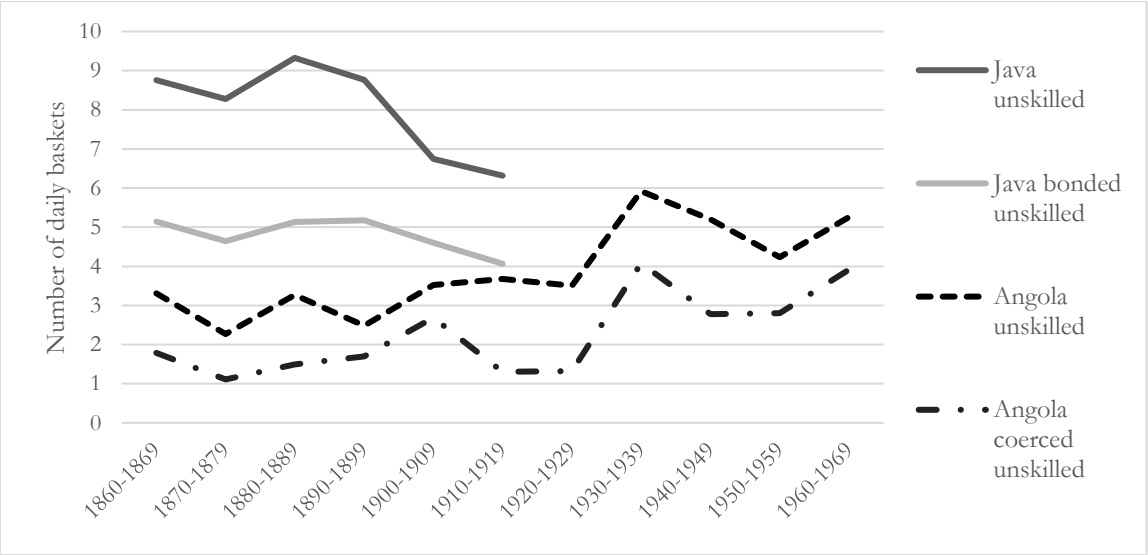
[20] Frankema and van Waijenburg (2012, p. 921) note that there was labor coercion in East Africa, and their data for Keyna, Nyasaland, and Tanganyika reflect this.

to or above those of Eastern Africa cases, such as Kenya, Nyasaland, and Tanganyika, but those of coerced Angolans were typically below them, as visible in Figure 4 (for the comparative data, see Frankema and van Waijenburg, 2012, p. 990). It makes most sense to compare Angolan real wages mostly with their West African counterparts, even though the East Africa evidence highlights comparatively low real wages for Angola. The regional labor market in Western Central Africa, especially regarding Angola, differs from its counterpart in East Africa. Despite enforcing forced labor well into the twentieth century, Kenya was able to attract a significant number of migrant laborers – around 120,000 African migrants from 1903 to 1923 (Okia 2022).[21] Authorities were able to maintain a steady supply of cheap labor at low costs. Thus, the labor markets of Angola and Kenya operated differently. Tanganyika and Nyasaland also have particularities. Around 1950 (and even before, given what we know about population), they respectively accounted for 7.8 and 2.5 million people; they had population densities of, respectively, 8.24 and 24.07 per km^2, while Angola had 3.32 (De Haas and Frankema, 2025). These were territories with a large pool of labor available, with a strong integration in the East African migration systems. Their relatively large populations allowed for authorities to keep wages low – and even to foster migration elsewhere, as the case of Nyasaland exemplifies best. Finally, the labor markets in these East Africa locations had a level of labor coercion which was absent in West Africa (Frankema and van Waijenburg, 2012, p. 921).

Moving to a global perspective, a comparison of purchasing power between Angola and Java for both non-coerced and coerced workers is particularly revealing (Figure 5). Coerced Angolan workers were significantly poorer than their non-coerced counterparts (with narrower gaps in the 1920s and 1940s) and consistently earned lower real wages than bonded Javanese workers, at least until the early 1910s. The disparity between coerced Angolans and bonded Javanese narrowed over time: in the early 1860s, the Javanese purchase power was more than the double concerning its Angolan counterpart, but this gap shrank to approximately one basket per day in the early 20th century. This pattern followed the trends of unskilled non-coerced real wages in both regions.

[21] This number does not account for the thousands of Indians who migrated to British East Africa, mostly to work in the railway construction, and eventually in other occupations after they settled.

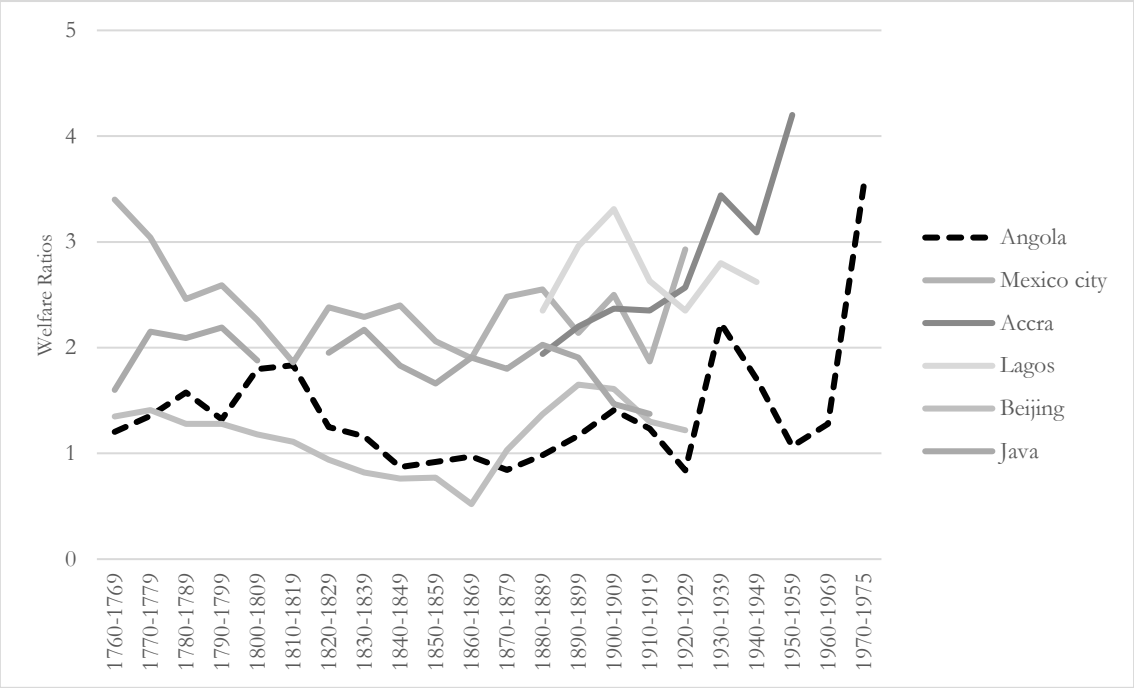
Figure 5: Number of subsistence baskets an unskilled daily wage can buy in Angola and Java, 1860-1969



Sources: For Java, see de Zwart and van Zanden, 2015; for Angola, see Appendix, Section A16. "Angola unskilled" represents the upper bound of non-coerced real wages, while "Angolan coerced unskilled" represents the majority of workers (in this case, from Luanda).

Comparing Angolan unskilled welfare ratios with counterparts around the world reveals a prevailing trend of poverty, albeit with nuanced variations over the long term (Figure 6). Following a modest rise and a plateau that endured until the 1810s, Angolan unskilled welfare ratios experienced a decline throughout the 19th century. However, a recovery began in the late 19th century, marked by significant peaks in welfare ratios during the 1930s and, notably, the 1970s. The drop in welfare ratios from the 1830s onward aligns with the abolition of the slave trade in 1836 and the increased availability of enslaved labor. This heightened availability of enslaved labor likely contributed to greater distortions in the labor market, impacting nominal wage growth in relation to the cost of living. Anecdotal evidence from 1850s correspondence among colonial government officers describes rising prices of foodstuffs due to supply issues with local chiefs in the hinterland. One of the proposed solutions was to reduce the high number of slaves owned by Luanda's free population, as these "non-sustained mouths" could cause public disruptions (Santos 1973, vol. V, pp. 315-316). Despite the existence of periods of high inflation, such as the 1850s and 1920s, the trend of increasing welfare ratios—ongoing since the early 1900s—is evident, with the most significant increase occurring from the 1960s to the 1970s, coinciding with the abolition of forced labor in 1962.

Figure 6: Unskilled Angolan urban welfare ratios in global perspective, 1760–1975



Sources: For Angola, see Appendix, Section A16; for Accra and Lagos, Frankema and van Waijenburg (2012); for Beijing, Allen et al. (2011); for Java, De Zwart and Van Zanden (2015); for Mexico City, Challú and Gómez-Galvarriato (2015). Welfare ratios indicate how many consumption baskets a worker could purchase for a family of four. Angola includes only real wages paid to African workers.

The welfare ratios of both Luanda and Benguela African unskilled workers are generally comparable to their Beijing counterparts throughout most of the 200-year period we cover, except for 1790–1840. This challenges the idea of Africa as the poorest continent in historical perspective. However, Javanese unskilled workers fared better throughout the 19th century; their welfare ratios largely stagnated, while Angolan welfare ratios declined after the slave trade ban in 1836. A comparison with Mexico City tells a similar story. Despite the comparatively high welfare ratios observed among Benguela workers at times (more on this later), Mexican urban unskilled workers fared better throughout the nineteenth century, with the difference becoming clearly noticeable after the 1830s.

In summary, the living standards of unskilled indigenous workers under Portugal's colonial domains were worse than their counterparts in the Dutch and British empires. This disparity is evident across all labor markets, and especially in the dominant, highly distorted low-skilled labor market, as seen in the relatively lower real wages of coerced laborers in Angola compared to their Javanese counterparts. This discrepancy likely reflects a comparatively lower level of colonial investment and the impact of harsher and more prolonged periods of

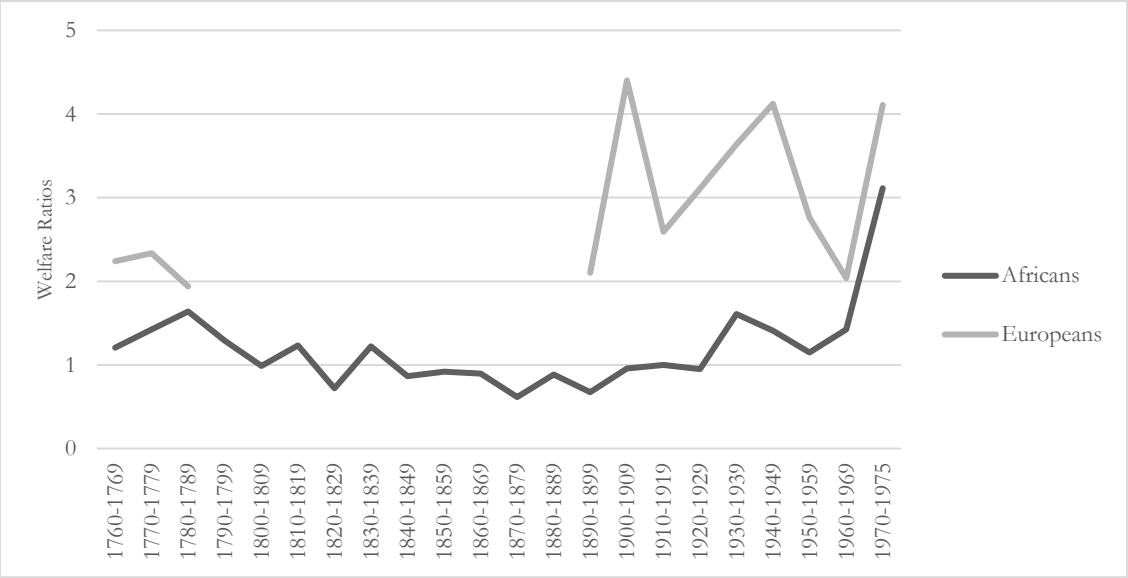
coercive laws and practices, at least until 1962 (Havik, 2018).[22] This finding is, however, unsurprising, given that Portugal itself was much poorer than the United Kingdom or the Netherlands around the mid-twentieth century (see, for example, Amaral, 2019).

In a comparative perspective, the coercive laws and practices of the Portuguese empire were at times harsher than those enforced in other colonial regions. This was especially true from the mid-1940s — when the postwar "development" approach toward the colonies gained momentum — until the advent of decolonization. (Havik, 2018, pp. 217-226; Keese, 2014). We hypothesize that Portugal's economic and political backwardness was a proximate cause of such practices.[23]

Figure 7 illustrates the evolution of welfare ratios for both African and European unskilled labor in Luanda over the long term. Real wages for African workers increased until the late 1780s. However, the pattern changed throughout the nineteenth century, with welfare ratios generally ranging between 0.8 and 0.9—a common occurrence in developing countries today (Allen, 2020). Indeed, some evidence from Luanda during the second half of the 18th century suggests that there were minimal differences between the value of the provisions given to enslaved workers and the pay rate for unskilled day laborers (Miller, 1988). This suggests a real impact of coercion on the labor markets. Notably, the purported increase in labor demand in Luanda from the 1880s was not matched by a rise in real wages at least until the 1910s. Welfare ratios close to one at the beginning of our period (1760s) and throughout most of the 19th century are not surprising. Unskilled laborers elsewhere in Western Central Africa observed similar ratios (about 0.7) in the mid-18th century, as seen along the Gold Coast (Rönnbäck, 2014; see also Rönnbäck, 2016).

[22] Following the beginning of the independence war in 1961, the metropolitan authorities revoked the "indigenous" legal classification (*Estatuto do Indigenato*).
[23] For comparative living standards and other developmental outcomes, see Cermeño et al. (2023); for background on the political situation and on human capital, see Palma and Reis (2021).

Figure 7: Unskilled welfare ratios in Luanda, 1760–1975



Sources: See Appendix, Section A17. "Africans" represents the welfare ratios of non-coerced unskilled workers.

Welfare ratios for African unskilled workers saw a temporary increase between the 1900s and the 1940s, followed by a more persistent rise from the late 1960s.[24] The low welfare ratios can be attributed to the absence of a demographic transition combined with the widespread availability of coerced labor.[25] That historical living standards for African unskilled workers were at subsistence until the 1960s is unsurprising, as this was a Malthusian society (Galor and Ashraf, 2011, Galor, 2022). However, it is notable that once the institutional constraints on labor markets were gradually removed, there was a rise in living standards despite the absence of a fertility transition (United Nations, 2022). Hence, as had happened decades earlier in Brazil, the labor market effects of lower coercion plausibly led to a rise in the living standards of unskilled workers (Lambais and Palma, 2023). Our evidence therefore lends support to the interpretation that an extractive elite was keeping wages artificially low (for related points, see, for example, Acemoglu and Robinson, 2012; Naidu and Yuchtman, 2013).

We might question whether these unskilled workers relied solely on wages, or if they also engaged in petty trading and subsistence agriculture. However, recent challenges to the

[24] After independence in 1975, living standards in Angola fell again (Birmingham, 1988; Maddison, 2007).
[25] For instance, in the Luanda parish of Rosário during the 1820s and 1830s, half of the slaves were employed in various occupations, including skilled and unskilled roles such as washers, tailors, barbers, and carpenters, among others (Ferreira, 2012). The consistently lower welfare ratios from 1840 to 1900 may have hindered family formation and reproduction. This trend could have influenced population growth, particularly during the period of epidemics in the hinterland and food shortages mentioned earlier (Dias, 2011). Population growth appears to have been stagnant after a notable increase between the 1840s and the early 1860s, partly due to the rise in the number of enslaved individuals following the slave trade ban.

notion of land surplus in Africa (Austin, 2005, 2009) and arguments related to land disputes in urban environments complicate this assumption. Changes in legislation during the mid-19th century allowed premium urban land to be gradually taken from previous African landowners as the process of colonial occupation intensified (Cândido, 2022). Legal disputes over land reduced land-labor ratios, making it more challenging for unskilled African workers to reside in urban areas and pushing them to seek better conditions elsewhere. Simultaneously, the appropriation of land by European settlers, particularly from the 1870s onwards, compelled Africans to become wage laborers in agricultural enterprises (Wheeler and Pélissier, 2009).

The welfare ratios achieved by European unskilled laborers are, as anticipated, higher—sometimes significantly so—than those of their African counterparts. Ratios consistently exceed 2, reaching two peaks of 4 around the 1900s and the 1940s. While the first peak coincides with the expansion of the colonial state, together with a labor shortage (see the evolution of skill premium on the Appendix, section A20), the second peak of 1940s coincides with the great migration wave beginning precisely during this decade. These migrants were likely attracted by the higher compensation and/or wage differentials provided by the colonial state in the postwar period. The second peak, however, followed the economic hardship of the 1930s recession. The policy undertaken by the Portuguese colonial rulers did not favor economic expansion in Angola during this period. The Portuguese government was concerned about the effects of the recession, which is evident in the ambiguity of its industrial policy for the colonial territories. Colonial markets were preserved, and the interdependent commerce of raw materials persisted, but settler capitalists with little capital saw their enterprises collapse due to inadequate conditions and lack of protection from the central government. Labor demand declined in the early 1930s, especially in agriculture and industry (Clarence-Smith, 1985; Lains, 1998). Against this backdrop of recession, the apparent rise in European welfare ratios leading up to 1940 requires explanation. Two main factors seem responsible. First, there were salary increases for colonial officers in 1930, despite the austerity and economic contraction. Second, the performance of real wages in this sector was synchronized with the onset of the Great Depression. Falling consumer prices during the Depression boosted the real value of largely fixed public-sector salaries. Given that much of our dataset relies on the latter, the spike appears to be a real phenomenon for this specific group, corroborating the government's intention to recruit reliable manpower for colonial service.

Note, however, that this trend does not extend to other segments of the labor market, as explained above.

It is worth noting the decline in unskilled European welfare ratios between 1950 and 1960, which correlates with the challenges faced by uneducated European settlers during that period. The earlier salary increases in the public sector failed to keep pace with rising living costs in urban areas, such as Luanda. Consequently, Europeans saw their real wages erode during the 1950s (Clarence-Smith, 1983, 1985).

Indeed, a report from a colonial inspector on the practices of the municipality of Luanda in 1961 stressed that European settlers and some individuals of "mixed" ethnicity were applying to perform work as third-class servants in the public sector — a low-tier job usually reserved for Africans. The inspector noted the illegality of this tendency (as forced labor for 'indigenous' workers would formally only end in 1962). Furthermore, the inspector emphasized how low the respective wage was, remarking that such wages were unfit for individuals expected to live in a "civilized" manner.[26] This evidence corroborates findings in the literature about how common it was to find white Europeans in urban Angola performing jobs initially designated for Africans, such as taxi drivers and waiters - even during the postwar period (Clarence-Smith, 1985). We suggest that the presence of unskilled European settlers applying for these low-paid jobs, in violation of the legal framework, can be interpreted as evidence of their declining living standards, at least until the abrupt reversal of this tendency in the early 1960s.

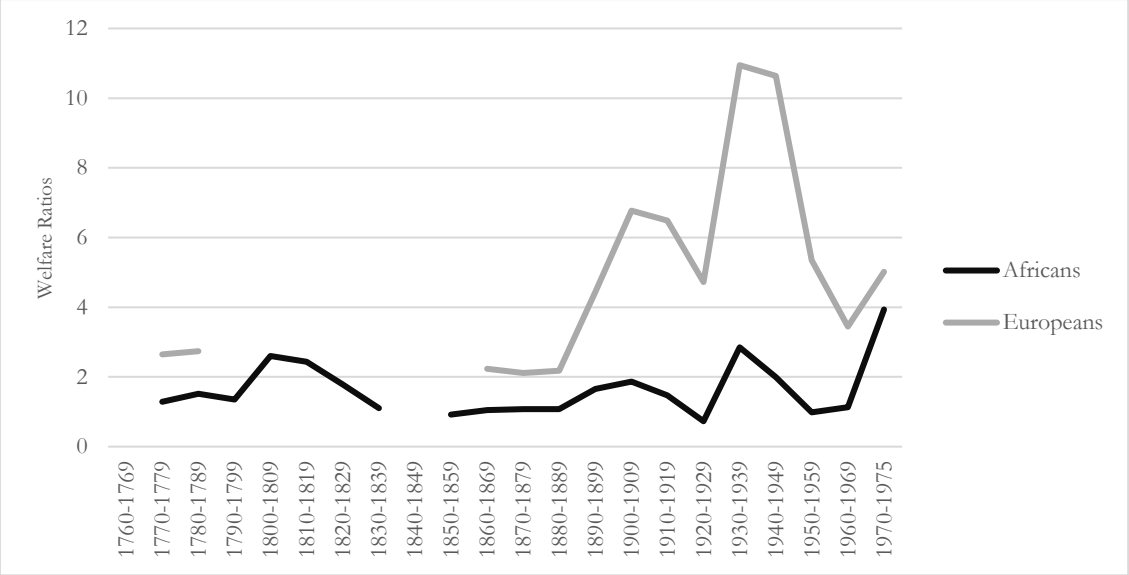
The welfare ratios for unskilled labor in Benguela exhibit a similar pattern to their counterparts in Luanda, with some minor nuances (Figure 8). After a promising start, with benchmarks peaking at 2.7 (1800–09) and 2.5 (1810–19), African unskilled real wages began to decline from the 1830s onwards, reaching approximately 1 between 1860 and 1890.

Welfare ratios began to rise beyond one from 1890 onward, with periods of temporary decline and two clear peaks in the 1930s and the 1970s. This long-term trajectory might suggest a higher impact of the abundant enslaved labor that was especially prevalent in Benguela for most of the century, as well as the highly coerced work coming from post-slavery contracts. The slave trade ban (1836) in particular might have had a significant impact on this trajectory,

[26] Costa, 1961, p. 5.

correlating with the start of the decline. It is also worth highlighting the substantial wage disparity between European and African unskilled workers, which widened after 1890 and diminished substantially in the postwar period.

Figure 8: Unskilled welfare ratios in Benguela, 1760–1975



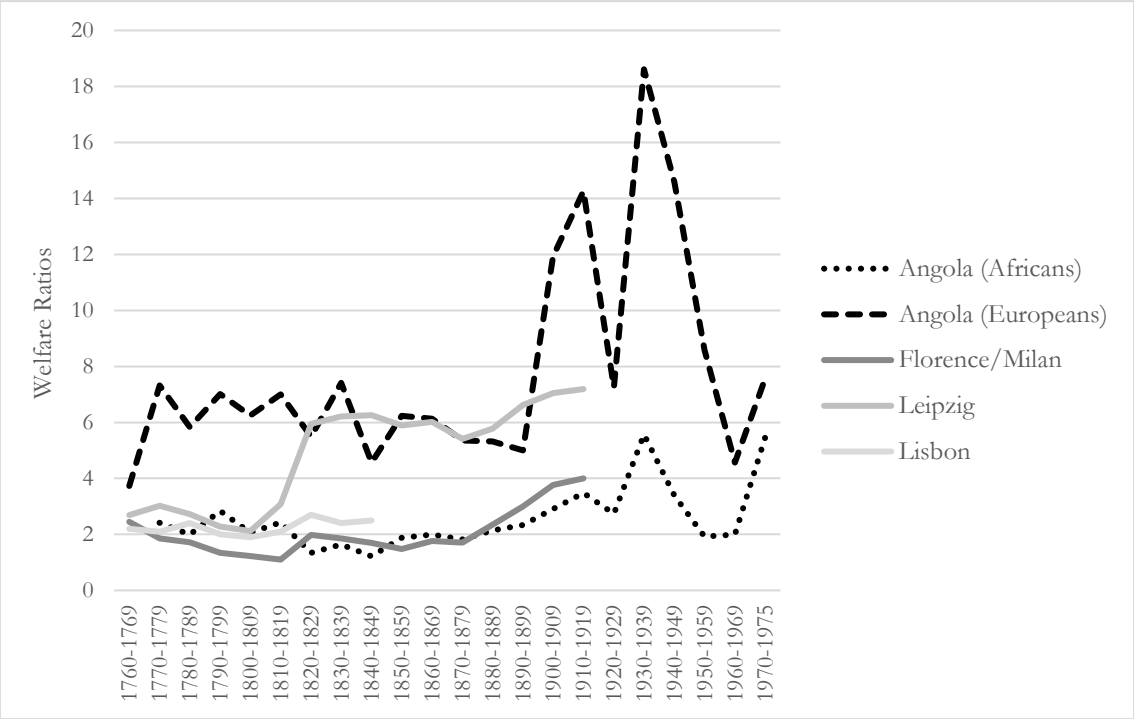
Sources: See Appendix, Section A18. "Africans" represents the welfare ratios of non-coerced unskilled workers.

We now turn to the case of skilled labor. The welfare ratios of urban skilled workers in Angola differ in notable ways from those in other parts of the world (Figure 9).[27] In particular, the welfare ratios for skilled labor in Leipzig, chosen as representative of Central Europe, are consistently three to four times higher than those of African skilled workers in Angola throughout the nineteenth century. The welfare ratios for African skilled workers in Angola are comparable to those in Southern Europe, specifically Florence and Milan, suggesting a similar demand for skilled labor in both Luanda and Benguela, especially from the early 1910s onward. An exception to this trend is Lisbon, where skilled welfare ratios are higher through the mid-19th century, indicating potential challenges in recruiting skilled labor from the mainland to Angolan urban settlements until the 1880s–1890s. Within Angola, European skilled workers fared better than other groups, especially their African counterparts. The increases in their welfare ratios around the 1900s and the 1930s were likely influenced by the creation of incentives for settler labor to immigrate, given the higher demand for skilled occupations. The 1930s saw a rise in nominal wages paid to workers from the colonial

[27] For the separate cases of Luanda and Benguela, see the Figures A6 and A7 of the Appendix.

administration, sometimes complemented with family subsidies and other incentives. The subsequent postwar decline aligns with the rising cost of living.

Figure 9: Urban skilled Angolan welfare ratios in perspective, 1760–1975



Sources: For Angola (Africans) and Angola (Europeans), see Appendix, Section A19; for Lisbon, see Palma and Reis (2019); for Florence/Milan and Leipzig, see Allen et al. (2011). Skilled workers are represented by carpenters and masons.

5. Conclusion

Angolan unskilled non-coerced workers experienced a decline in their welfare ratios from the early nineteenth century, with modest growth beginning in the early twentieth century. A significant increase in these ratios occurred from the 1960s onward. This trend applies to both Luanda and Benguela. In urban settings where waged labor was prevalent, welfare ratios remaining generally below one throughout the nineteenth century (especially from the 1830s) suggest widespread poverty among workers. Additionally, those under coercion had even lower ratios, indicating extreme poverty. The declining nineteenth-century welfare ratios for unskilled workers align with global trends, such as those observed in Beijing and Mexico City, albeit in varying proportions (Challú and Gómez-Galvarriato, 2015). Comparisons reveal that Angolan non-coerced unskilled workers were generally poorer than some of their African counterparts (namely, those in Ghana and Nigeria), while being close to those in

Eastern Africa (Kenya and Tanganyika), and better-off than the poorest settings (Nyasaland). Angolan coerced workers were typically as poor as their poorest counterparts elsewhere.

While further research is needed to assess the living standards in other Portuguese colonial territories, our examination suggests that urban workers in former British and Dutch colonies may have had better outcomes than their Angolan counterparts. Our analysis also supports the notion that coercion played a role in the decline of real wages for African unskilled labor in Angola. It is important to note that this trend was not exclusive to the Portuguese empire, as the widespread availability of enslaved or coerced labor also contributed to low unskilled wages elsewhere (Abad et al., 2012). Specifically in Angola, comparatively low investment, coupled with harsh and prolonged labor policies, contributed to particularly poor living standards for its indigenous subjects.

It is worth noting the comparatively high historical welfare ratios of Angolan non-coerced skilled labor prior to 1900. Although these workers constituted a small portion of the urban proletariat – since most Africans were confined to low-paying jobs particularly within the administration and public sector – this skilled segment exhibited welfare ratios comparable to Southern Europe until 1900, especially Florence and Milan. This observation implies a strong demand for these skilled professionals. This persistent demand for scarce skilled labor also likely explains the higher incentives, risk premiums, and compensating differentials required to attract European skilled settlers in later periods.

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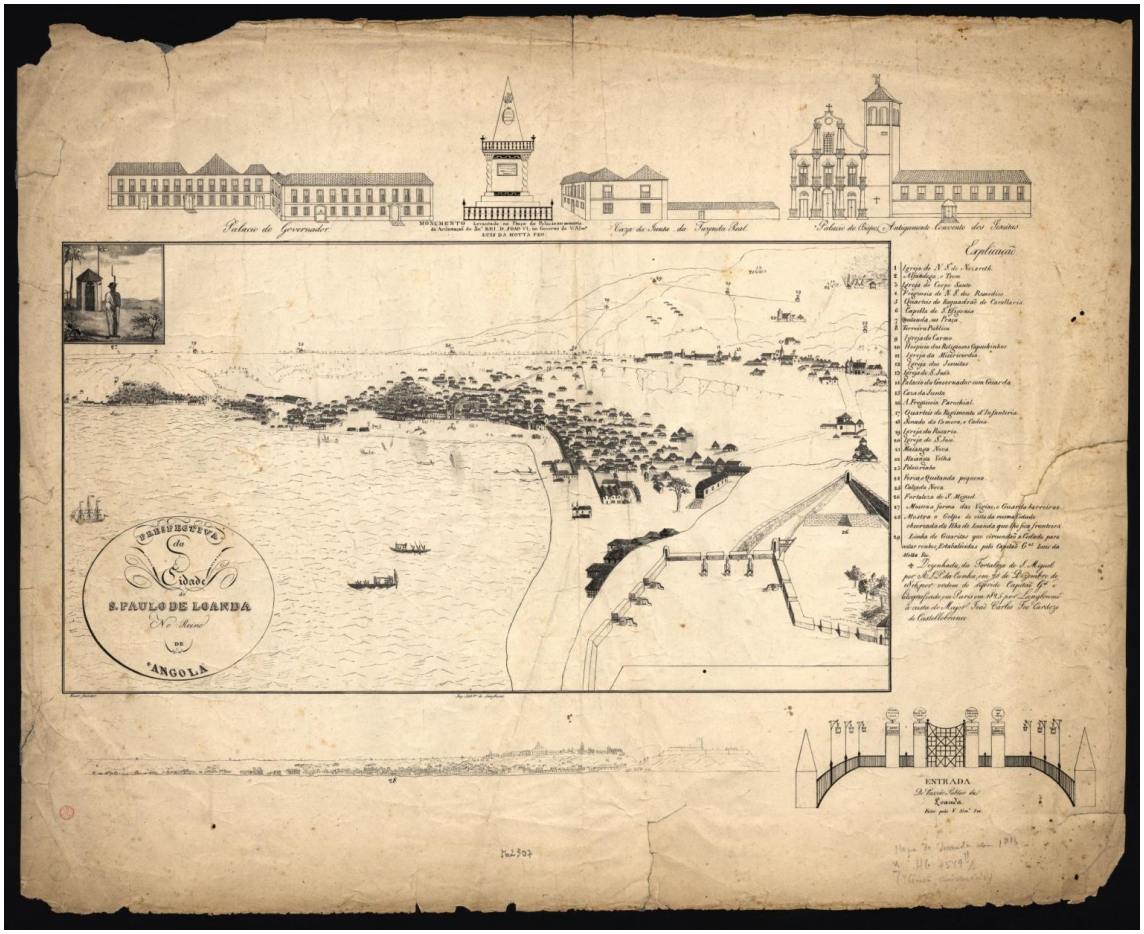
Appendix for: Carvalhal & Palma,
«Living Standards in Angola, 1760-1975»

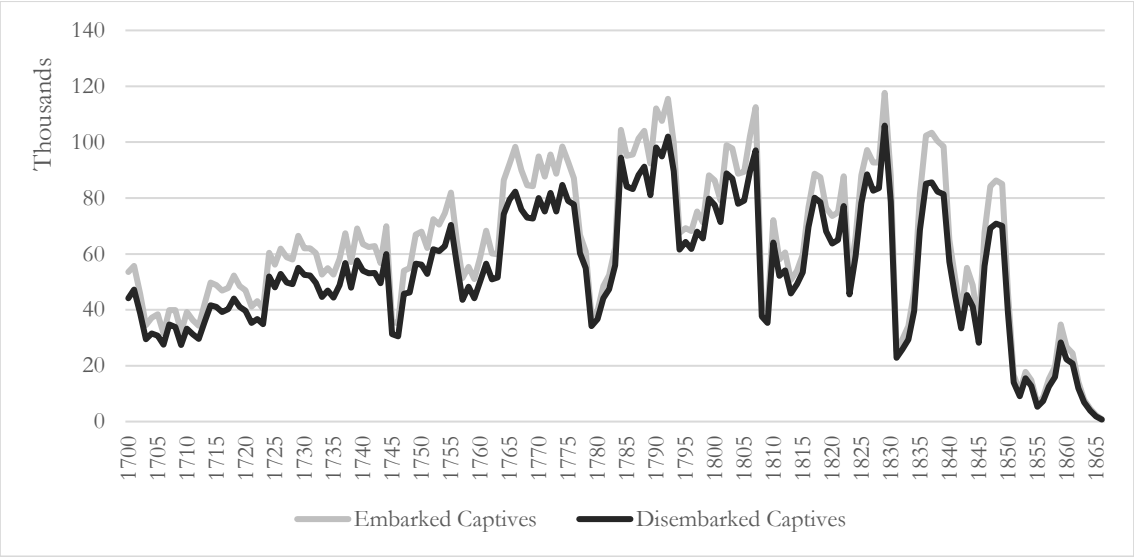
Section A1 – A perspective of the city of Luanda, c.1825



Source: Biblioteca Nacional de Portugal (Lisbon, Portugal), C.C. 1698 A. Reproduced with permission.

Section A2 – The slave trade

Figure A1. Number of captives embarked and disembarked per year (West Central Africa), 1700-1866



Source: Slave Estimates on Trans-Atlantic Slave Trade - Slave Voyages (https://www.slavevoyages.org/; accessed 19/09/2023; 17h00 CET). Note: West Central African ports include mainly Luanda and Benguela.

Section A3 – Demographics

Sources for Figure 1. Demographic Estimates for Luanda and Benguela, 1760-1975

Luanda per benchmark year:

1781, 1796, 1829-1832: Curto & Gervais (2001).

1797-1827: Datasets of the Project COLDEMO [http://colonialpopulations.fcsh.unl.pt/Angola/PopulacaoEnglish.php]; accessed 26th April 2023; 12h00].

1844: Curto (1999).

1845: Curto & Gervais (2011).

1850: *Almanack Statístico* (1851).

1856: Curto (1999) *apud* Thomas (1969 [1860]).

1861: Menezes (1867).

1864: Curto (1999) *apud* Oliveira (1866).

1866: AHU, SEMU_CU, Angola, Correspondência entrada, cx. 36 (637, 1-1L), doc. 38.

1869: *Relatórios das Direcções* (1886).

1876: *Relatórios das Direcções* (1886).

1881: Amaral (1983).

1897: Annuario Estatístico (1897).

1898: Amaral (1983); Censo (1940, p. 16).

1900: Anuário Estatístico (1900); Anuário (1955).

1923: Anuário Estatístico (1934).

1930: Amaral (1978, 1983); Censo (1940).

1940: Amaral (1978); Censo (1940).

1950: Amaral (1983); Anuário Estatístico (1955).

1955: Amaral (1983); Anuário Estatístico (1955).

1960: Amaral (1983).

1970: Amaral (1978).

Benguela per benchmark year:

1797-1827: Datasets of the Project COLDEMO

[http://colonialpopulations.fcsh.unl.pt/Angola/PopulacaoEnglish.php; accessed 26th April 2023; 12h00].

1841: Cândido (2013) *apud* Tams (1850).

1844: Cândido (2000).

1850: Menezes (1867).

1860: Cândido (2020).

1861: *Relatório das Direcções* (1886).

1876: *Relatórios das Direcções* (1886).

1878: Cândido (2020).

1897: Annuario Estatístico (1897).

1898: Censo (1940), p. 16.

1899: Censo (1940), p. 17.

1900: Anuário Estatístico (1900).

1930: Amaral (1978); Censo (1940).

1940: Amaral (1978); Censo (1940).

1950: Anuário Estatístico (1955).

1955: Anuário Estatístico (1955).

1960: Anuário Estatístico (1960).

1970: Amaral (1978).

Reliability and quality of demographic sources: the case of (urban) Angola, 1760-1975

Colonial population statistics have traditionally been seen as unreliable or of low quality, an issue that is even more pronounced for precolonial (here referred as 'early colonial') demographic counts and estimates (Manning 2010; Frankema and Jerven 2014). Demographic evidence often comes as incomplete, uneven, scarce across time and space, and even misleading. Regarding the two Angolan case studies explored in this paper – Luanda and Benguela –, a reappraisal of the quality and reliability of demographic evidence for both early colonial and colonial periods is necessary.

We decided to build our demographic estimates of Luanda and Benguela using empirical evidence, following the method suggested by Vos and De Matos (2013). They argued that, given the primary data available for Portuguese colonial setting for the period before 1900,

this was a more efficient method than resorting to backward projections based on debatable assumptions. We also opted to use the primary data provided by the colonial administration to assemble population estimates for the period of 1900 onwards.

Luanda is certainly the case study with higher-quality and more consistent evidence. From 1773 to 1845, no less than thirty counts (censos) were made by the colonial authorities (Curto and Gervais 2001). In turn, Benguela presents a similar case of relatively high concentration of counts between c.1799 and the 1840s (Cândido, 2013). Despite the attempt to count and classify urban colonial populations per sector, especially since early 1800s, these sources suffer from a number of issues (De Matos and Vos, 2013). These issues lie not only in the fact that the numbers are not exact, but also on how the gradual change of the classification system – dividing population per civilian/military, white/mixed/black, and free/enslaved – might also create an erroneous picture of the population. One of the major problems lies in the fact that many creoles and/or even high-status black individuals were frequently classified as "white" – thus creating a phenomenon of "whitening" the population which led to a distortion of the categories of classification (Curto, 1999). Yet, they provide a rough estimate of the share of the population that was not only under slavery, but occasionally also under other forms of coercion. Counts for the period between 1845-1900 are sparser, appearing only at five- to ten-year intervals. These are provided by a plethora of primary sources, as well as by travel descriptions and government reports.

Demographic sources for the 20th century are not known for their profusion. Yet, they are richer than their past counterparts, as well as more robust and accurate, especially regarding the age and gender structure of the population (Vos, 2014). Despite the existence of a nationwide census in 1940, the most reliable and complete census only appeared by 1960 (Vos, 2014). It is also worth highlighting that the census of 1960, despite its generally good condition, does not provide information about the civil status of the population, namely the number of individuals who were considered "civilized" or "non-civilized". The last references to these estimates are found indeed in the census of 1940, even if its scope was less ambitious than its successor. All the aforementioned evidence provides relatively sound information about the demography of both case studies – Luanda and Benguela – while the same cannot be said regarding other regions within the Angolan hinterland.

Table A1 – Estimate of the evolution of the number of Europeans in Luanda, Benguela, and Angola as a whole, 1800-1970

Benchmark year	Europeans, Luanda	Europeans, Benguela	Europeans, total	Europeans as total pop. (percent)
1800	433	101	8148	0.33
1850	830	144	N/A	N/A
1900	3479	1287	9197	0.34
1930	6008	1115	30000	N/A
1940	8944	1461	44083	1.18
1950	20710	3346	78826	1.90
1960	55567	8706	172529	3.57
1970	126233	10175	280101	4.94

Sources: Censo (1940); Amaral (1978); Castelo (2007); Curto and Gervais (2001); De Matos and Vos (2013); Vos (2014).

References for Section A3

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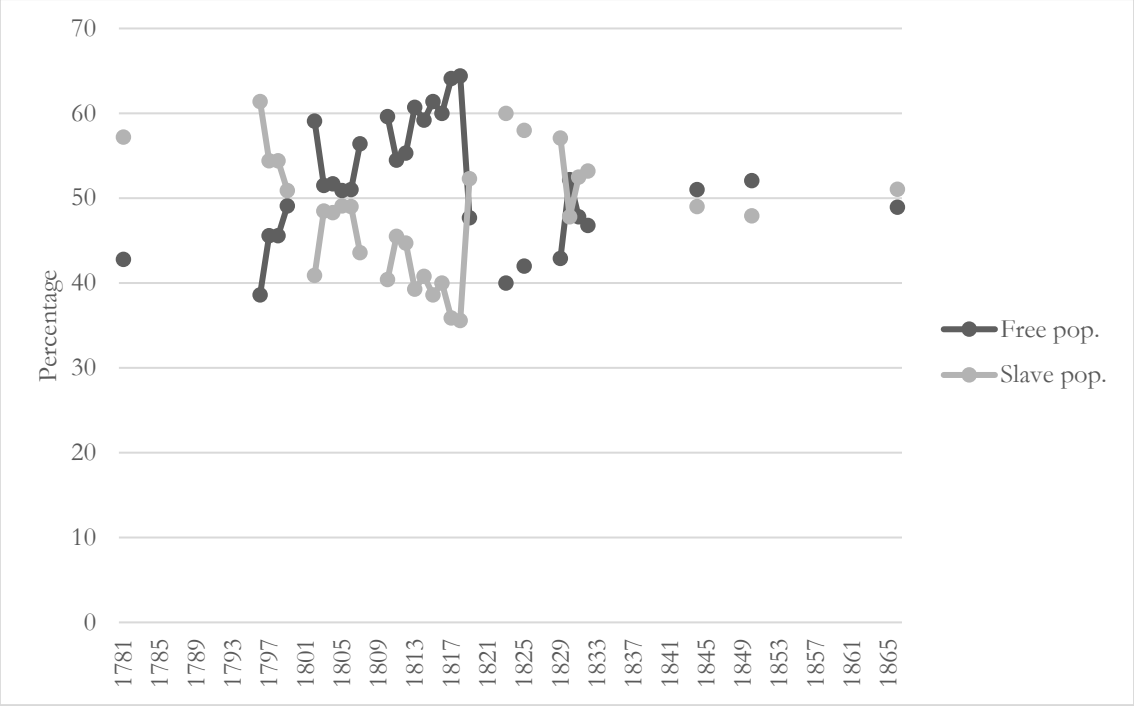
Section A4- Civilian free and enslaved population in Luanda

Figure A2: Evolution of civilian free and enslaved shares of population in Luanda, 1781-1866



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Section A5 – Waged labor and wages in colonial Angola

Alongside coercive and slave labor, the significance of waged labor in the economic history of pre-colonial Africa has only recently regained attention (Rönnbäck, 2016; Alfagali, 2018; Channing and Everill, 2020). How waged labor interacted with early colonial living standards has been a subject of debate for decades. Current scholarship generally acknowledges the coexistence of "free" and various unfree labor regimes, with waged labor expanding during periods of increased commercial demand (Austin, 2009; De Zwart and Van Zanden, 2015; Cooper, 2017). In the North American context, enslaved and forced labor did not affect the wages of European settlers, as the two groups performed different, complementary jobs (Allen et al., 2012). However, in the case of late colonial Angola, coerced labor did impact the wages of European unskilled settlers (Clarence-Smith, 1983).

Pre-colonial West African labor markets were influenced by factors such as proximity to the coast, labor availability, and employment conditions. Even in coastal European outposts around the Gold Coast, where waged labor was more present and observable, employers still sought enslaved workers (Hernaes, 2006; Hopkins, 2019; Rönnbäck, 2016). The increasing commercial demand from the late 19th century accelerated in tandem with both the decline of slavery and the gradual rise of waged labor. However, this transition often involved the implementation of coercive work regimes to meet the demands of external markets (Austin, 2009; Neto, 2017).

There is clear evidence of waged labor in early colonial Luanda and Benguela, employed both by the Portuguese administration and the private sector. For example, in the 1770s, carpenters were hired by the colonial state, and residents of Luanda Island supplied the city with fish (Ferreira, 2012). In the mid-nineteenth century, Lima (1846) asserted that Luanda had approximately 2,500 individuals working in the secondary sector, representing 44.6 percent of the city's population. In the early-nineteenth century (1806), the parish of S. Filipe in Benguela reported various categories of waged labor in its urban labor force — including 22 men of the sea, 52 tavern/innkeepers, 71 day laborers, 215 cashiers and craftsmen, and 315 servants — which constituted around one quarter of the urban labor force.[28]

Table A2: Nominal wages of skilled and unskilled workers in Luanda, 1760-1975 (in *réis* per day)

	Unskilled Male Afr	Unskilled Male Eur	Skilled Male Afr	Skilled Male Eur	Unsk Afr Women	Coerced Male Afr
1760-1769	103.53	192.31		320.51		
1770-1779	130.73	214.51		821.92		
1780-1789	157.93	186.96	192.31	636.31		
1790-1799	129.44	255.01	285.10	766.88		
1800-1809	133.55	323.06	278.08	897.44		
1810-1819	137.66	391.11	271.06	925.93		
1820-1829	141.78	459.16	264.04	954.42		
1830-1839	145.89	527.21	257.02	982.91		
1840-1849	150.00	595.25	250.00	1011.40		
1850-1859	160.26	663.30	287.50	1039.89		
1860-1869	163.33	731.35	325.00	1068.38	80.00	88.29

[28] AHU, *CU*, Angola, cx. 118 [120], d. 8526.

1870-1879	184.19	799.40	332.71	1096.87	117.69	90.07
1880-1889	297.12	867.45	471.97	1125.36	155.39	136.11
1890-1899	300.00	935.50	670.97	1153.85	193.08	205.00
1900-1909	292.31	1345.16	600.00	2048.08	230.77	222.70
1910-1919	675.48	1754.81	1174.08	2942.31		240.39
1920-1929	5291.67	17307.69	9250.00	29326.92		2000.00
1930-1939	6370.19	14423.08	14523.24	64883.81	5523.84	4387.02
1940-1949	9615.38	28125.00	14423.08	67427.88	7211.54	5141.72
1950-1959	10673.08	25673.08	17074.55	60685.10	5769.23	7067.31
1960-1969	26923.08	38461.54	38461.54	92307.69	10358.08	20054.79
1970-1975	84519.23	111538.46	114019.23	177884.62	11846.15	

Sources: Arquivo Histórico de Angola, cx. 1-A, mç. 8, doc. 8; cx. 2, mç. 1; cx. 3, mç. 3; cx. 7, mç. 5; cx. 18, mçs. 2-3; cx. 19, mç. 1; cx. 29, mç. 3; cx. 248-A, non-numbered mç., doc. 442; cx. 373, Papéis Avulsos, cap. 3, nº 14; Arquivo Nacional/Torre do Tombo [henceforth, ANTT], *Condes de Linhares*, liv. 50, fl. 2; ANTT, *Erário Régio*, Junta da Administração e Arrecadação da Fazenda Real de Angola, livs. 17, 19; ANTT, *Feitos Findos*, Livros dos Feitos Findos, liv. 62; ANTT, *Ministério do Reino*, mç. 605, doc. 33; *Arquivos de Angola*, 2ª série, vol. 2 (9-10); Arquivo Histórico Ultramarino [henceforth, AHU], *CU*, Angola, cx. 56, doc. 5061; cx. 57, docs. 5166, 5208; cx. 83, doc. 6818; cx. 119 [121], docs. 8628, 8663; AHU, *CU*, Livros de Angola, livs. 400, 1960; AHU, *Obras Públicas*, OP16781, 3/2526-1; AHU, *SEMU_CU*, Angola_Correspondência, cx. 7B (600-1L), doc. 139; cx. 34 (635, 2-1L) (22), doc. 44; Boletim Oficial do Governo [henceforth, BOA], nº 1 (39-40) [1912]; nº 1-3, 10 (3ª série) [1934]; nº 5 [1903]; nº 6 (1), 49 [1874]; nº 6 (1), nº 6 (35) (supplement) [1875]; nº 7 [1866]; nº 8 (supplement) [1884]; nº 12 [1876]; nº 12 [1877]; nº 17 (3ª série) [1923, 1935]; nº 18 (3ª série) [1924, 1935]; nº 20 [1871]; nº 20 (3ª série) [1924]; nº 24 (3ª série) [1933]; nº 26 [1914]; nº 28 [1867]; nº 28 (3ª série) [1935]; nº 29 (3ª série) [1935]; nº 32 [1885]; nº 35 [1890]; nº 37 (Apenso) [1890]; nº 40 [1865]; nº 40 (3ª série) [1935]; nº 41 (3ª série) [1935]; nº 43 (3ª série) [1935]; nº 50 [1890]; nº 604 [1857]; Monteiro 1973; Nunes 1961; *Orçamento da Colónia de Angola* [1923-1924; 1933-1934; 1938-1939; 1940-1941; 1946; 1952; 1957; 1961; 1965; 1968; 1971; 1975]; *Orçamento da Receita e Tabelas da Despesa* [1896-1897, 1912-1913]; *Relatório das Direcções* 1886.

Criteria: table A1 presents both African and European male nominal wages (skilled and unskilled) throughout the entire period. Nominal wages of African female unskilled workers are also available for the 1860-1975 period. In turn, nominal wages of African male coerced unskilled workers are available since the 1860s until the end of the *Indigenato* legal system (1962). For the respective occupations of each skilled and unskilled worker, see the

HISCLASS distribution in section A8. Given the lack of appropriate wage evidence for some benchmarks, the following interpolations were made:

- for African unskilled male workers, 1770-1779, 1800-1839;
- for European unskilled male workers, 1789-1889;
- for African skilled male workers, 1800-1839, 1850-1859;
- for European skilled male workers, 1790-1799, 1810-1889, 1900-1909;
- for African unskilled women workers, 1870-1899;
- for African unskilled male coerced workers, 1900-1909.

Table A3: Nominal wages of skilled and unskilled workers in Benguela, 1770-1975

	Unskilled Male Afr	Unskilled Male Eur	Skilled Male Afr	Skilled Male Eur
1760-1769				
1770-1779	113.08	232.27	212.82	500.00
1780-1789	149.24	269.23	194.94	500.00
1790-1799	155.32			733.33
1800-1809	350.00			785.89
1810-1819	358.33			838.46
1820-1829	258.01			891.02
1830-1839	157.69		161.64	943.59
1840-1849	115.38		300.00	996.15
1850-1859	147.85		338.63	1048.72
1860-1869	180.31	384.62	377.26	1101.28
1870-1879	175.73	346.15	415.89	1153.85
1880-1889	171.15	346.15	454.52	1153.85
1890-1899	258.46	692.31	493.15	1153.85
1900-1909	289.04	1050.00	597.54	2660.26
1910-1919	319.62	1407.69	701.92	4166.67
1920-1929	2244.14	14551.00	11730.77	28478.83
1930-1939	7211.54	27694.31	18910.26	52791.53
1940-1949	7211.54	38461.54	16826.82	69711.54
1950-1959	7115.36	38461.54	14423.08	76682.69
1960-1969	24615.38	75000.00	42307.69	92307.69
1970-1975	87500.00	111538.46	149038.46	190384.62

Sources: Arquivo Histórico do Tribunal de Contas (henceforth, AHTC), *Erário Régio*, liv. 4198; ANTT, *Erário Régio*, Junta de Administração e Arrecadação da Fazenda Real de Angola, livs. 12, 17, 23; ANTT, *Ministério do Reino*, mç. 605, doc. 20; AHU, *CU*, *Angola*, cx. 56, doc. 5066; cx. 118 [120], doc. 8526; cx. 119 [121], doc. 8663; cx. 126 [129], doc. 9233; cx. 128 [131], doc. 9345; cx. 175, doc. 26; AHU, *SEMU_CU*, Angola, Correspondência, cx. 4B (594-1L), doc. 60; cx. 7B (600-1L), doc. 139; cx. 34 (635, 2-1L), doc. non-numbered; BOA, nº 1

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Criteria: table A2 presents both African and European male nominal wages (skilled and unskilled) throughout the entire period. For the respective occupations of each skilled and unskilled worker, see the HISCLASS distribution in section A9. Given the lack of appropriate wage evidence for some benchmarks, the following interpolations were made:
- for African unskilled male workers, 1820-1829, 1850-1859, 1870-1879, 1900-1909;
- for European unskilled male workers, 1900-1909, 1920-1929, 1960-1969;
- for African skilled male workers, 1850-1889, 1900-1909;
- for European skilled male workers, 1800-1869, 1900-1909, 1920-1929. Additionally, the nominal wage for the European skilled male worker in the benchmark of 1770-1779 assumed the same vale as its counterpart of 1780-1789.

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Section A6 – Source coverage

Table A4: Source coverage: percentage of years for which we have data

	Unskilled wages	Skilled wages	Manioc flour	Meat	Beans	Cotton/ Linen	Wood	Soap	Oil	Candles (Wax)
1760 - 1800	33	20	45	23	38	3	5	3	0	3
1801 - 1850	16	10	27	14	23	2	2	6	0	12
1851 - 1900	45	35	41	31	31	29	14	16	0	6
1901 - 1950	31	27	23	51	67	29	41	37	60	18
1951 - 1975	33	33	25	29	29	25	21	29	88	21

Sources: see Appendix, sections A5, A7-A10.

Section A7 – HISCLASS distribution - Urban Angola

Table A5: HISCLASS distribution in urban Angola, 1760-1975

	H2	H3	H4	H5	H6	H7	H9	H11	H12
1760-1769			1	4		3	4	10	
1770-1779	1	1		4		4		45	
1780-1789		1	1	4		5		21	
1790-1799		1		2		1		1022	
1800-1809	7	3		7				93	
1810-1819								129	
1820-1829									
1830-1839						1		56	
1840-1849						5		81	
1850-1859									
1860-1869					1	467		2395	
1870-1879		4		7	15	478		2019	
1880-1889		1		8	1	35		94	
1890-1899		2		1		12		51	
1900-1909					1	4		8	
1910-1919					7	14		240	2
1920-1929		1			1	13		469	200
1930-1939				7	1	24	1	492	
1940-1949					1	33		587	
1950-1959					1	44		440	
1960-1969						73		1000	
1970-1975				103		240		768	
Total	8	14	2	147	29	1456	5	10020	202

Sources: see sections A8 and A9. Notes: Captions of the different groups follow hereby: H2 for higher professionals; H3 for lower managers; H4 for lower professionals; H5 for lower clericals; H6 for foremen; H7 for skilled workers; H9 for lower skilled workers; H11 for unskilled workers; and H12 for unskilled farm workers. Most relevant occupations in HISCLASS 7 were carpenters, followed by masons. Most relevant occupations in HISCLASS 11 were day laborers and servants.

Section A8 – HISCLASS distribution – Luanda

Table A6: HISCLASS distribution in Luanda, 1760-1975

	H2	H3	H4	H5	H6	H7	H9	H11	H12
1760-1769				4		1	4	10	
1770-1779		1		2				5	
1780-1789		1	1	2		2		8	
1790-1799						1		1022	
1800-1809	6	3		5					
1810-1819									
1820-1829									
1830-1839									
1840-1849						1		51	
1850-1859								2	
1860-1869						467		2394	
1870-1879		3		7	14	478		1995	
1880-1889				4		35		79	
1890-1899		1		1		12		33	
1900-1909					1	4		8	
1910-1919					6	10		93	1
1920-1929					1	10		361	
1930-1939						18		310	
1940-1949						23		406	
1950-1959						37		398	
1960-1969						65		850	
1970-1975				89		234		700	
Totals	**6**	**9**	**1**	**114**	**22**	**1398**	**4**	**8725**	**1**

Notes: Captions of the different groups follow hereby: H2 for higher professionals; H3 for lower managers; H4 for lower professionals; H5 for lower clericals; H6 for foremen; H7 for skilled workers; H9 for lower skilled workers; H11 for unskilled workers; and H12 for unskilled farm workers.

Sources: Arquivo Histórico de Angola, cx. 1-A, mç. 8, doc. 8; cx. 2, mç. 1; cx. 3, mç. 3; cx. 7, mç. 5; cx. 18, mçs. 2-3; cx. 19, mç. 1; cx. 29, mç. 3; cx. 248-A, non-numbered mç., doc. 442; cx. 373, Papéis Avulsos, cap. 3, nº 14; Arquivo Nacional/Torre do Tombo [henceforth, ANTT], *Condes de Linhares*, liv. 50, fl. 2; ANTT, *Erário Régio*, Junta da Administração e Arrecadação da Fazenda Real de Angola, livs. 17, 19; ANTT, *Feitos Findos*, Livros dos Feitos Findos, liv. 62; ANTT, *Ministério do Reino*, mç. 605, doc. 33; *Arquivos de Angola*, 2ª série, vol. 2 (9-10); Arquivo Histórico Ultramarino [henceforth, AHU], *CU*, Angola, cx. 56, doc. 5061; cx. 57, docs. 5166, 5208; cx. 83, doc. 6818; cx. 119 [121], docs. 8628, 8663; AHU, *CU*, Livros de Angola, livs. 400, 1960; AHU, *Obras Públicas*, OP16781, 3/2526-1; AHU, *SEMU_CU*, Angola_Correspondência, cx. 7B (600-1L), doc. 139; cx. 34 (635, 2-1L) (22), doc. 44; Boletim Oficial do Governo [henceforth, BOA], nº 1 (39-40) [1912]; nº 1-3, 10 (3ª série) [1934]; nº 5

[1903]; nº 6 (1), 49 [1874]; nº 6 (1), nº 6 (35) (supplement) [1875]; nº 7 [1866]; nº 8 (supplement) [1884]; nº 12 [1876]; nº 12 [1877]; nº 17 (3ª série) [1923, 1935]; nº 18 (3ª série) [1924, 1935]; nº 20 [1871]; nº 20 (3ª série) [1924]; nº 24 (3ª série) [1933]; nº 26 [1914]; nº 28 [1867]; nº 28 (3ª série) [1935]; nº 29 (3ª série) [1935]; nº 32 [1885]; nº 35 [1890]; nº 37 (Apenso) [1890]; nº 40 [1865]; nº 40 (3ª série) [1935]; nº 41 (3ª série) [1935]; nº 43 (3ª série) [1935]; nº 50 [1890]; nº 604 [1857]; Monteiro 1973; Nunes 1961; *Orçamento da Colónia de Angola* [1923-1924; 1933-1934; 1938-1939; 1940-1941; 1946; 1952; 1957; 1961; 1965; 1968; 1971; 1975]; *Orçamento da Receita e Tabelas da Despesa* [1896-1897, 1912-1913]; *Relatório das Direcções* 1886.

Section A9- HISCLASS distribution - Benguela

Table A7: HISCLASS distribution in Benguela, 1760-1975

	H2	H3	H4	H5	H6	H7	H9	H11	H12
1760-1769			1			2			
1770-1779	1			2		4		40	
1780-1789				2		3		13	
1790-1799		1		2					
1800-1809	1			2				93	
1810-1819								129	
1820-1829									
1830-1839						1		56	
1840-1849						4		30	
1850-1859									
1860-1869					1			1	
1870-1879		1			1			24	
1880-1889		1		4	1			15	
1890-1899		1						18	
1900-1909									
1910-1919					1	4		147	1
1920-1929		1				3		108	200
1930-1939				7	1	6	1	182	
1940-1949					1	10		181	
1950-1959					1	7		42	
1960-1969						8		150	
1970-1975				14		6		68	
Totals	**2**	**5**	**1**	**33**	**7**	**58**	**1**	**1297**	**201**

Notes: Captions of the different groups follow hereby: H2 for higher professionals; H3 for lower managers; H4 for lower professionals; H5 for lower clericals; H6 for foremen; H7 for skilled workers; H9 for lower skilled workers; H11 for unskilled workers; and H12 for unskilled farm workers.

Sources: Arquivo Histórico do Tribunal de Contas (henceforth, AHTC), *Erário Régio*, liv. 4198; ANTT, *Erário Régio*, Junta de Administração e Arrecadação da Fazenda Real de Angola, livs. 12, 17, 23; ANTT, *Ministério do Reino*, mç. 605, doc. 20; AHU, *CU*, *Angola*, cx. 56, doc. 5066; cx. 118 [120], doc. 8526; cx. 119 [121], doc. 8663; cx. 126 [129], doc. 9233; cx. 128 [131], doc. 9345; cx. 175, doc. 26; AHU, *SEMU_CU*, Angola, Correspondência, cx. 4B (594-1L), doc. 60; cx. 7B (600-1L), doc. 139; cx. 34 (635, 2-1L), doc. non-numbered; BOA, nº 1 (39-40) [1912]; nº 6 (35) (supplement) [1875]; nº 8 (supplement) [1884-1885]; nº 32 [1885]; nº 35 [1890]; nº 50 (supplement) [1863]; Esteves, *Caminho de Ferro*, vol. II (tables 132, 134); *Orçamento da Colónia de Angola* [1923-1924, 1927-1928, 1933-1936, 1938-1939, 1940-1941, 1946, 1952, 1957, 1961, 1965, 1968, 1971, 1975]; *Orçamento da Receita e Tabelas da Despesa* [1896-1897, 1912-1914, 1916-1917].

Section A10 - Sources for the price entries of Luanda and Benguela, 1760-1975

Luanda

Manioc flour: AHU, *CU*, Angola, cx. 47, doc. 4305; cx. 50, doc. 4599; cx. 100, doc. 1; cx. 128 [131], doc. 9340; cx. 167, doc. 50; AHU, *SEMU_CU*, Angola, Correspondência, cx. 8B (602-1L), doc. 167; cx. 19 (619-1L), non-numbered doc.; *Almanack statístico* 1851; ANTT, *FF*, Livros dos Feitos Findos, liv. 61; ANTT, ER, Junta da Administração e Arrecadação da Fazenda Real do Reino de Angola, liv. 2; ANTT, *Ministério do Reino*, mç. 605, doc. 33; *Anuário Estatístico* 1938, 1944-1947, 1955, 1961, 1965, 1971, 1973; *BOA*, nº 1 (7) [1845]; nº 1 (102) [1847]; nº 5 [1863]; nº 6 (1, 22) [1874-5]; nº 7 [1866]; nº 10 [1865]; nº 12 [1876]; nº 12 [1877]; nº 18 [1879]; nº 20 [1871]; nº 24 [1867]; nº 26 [1890]; nº 26 [1903]; nº 47 [1885]; nº 445 [1854]; nº 531 [1855]; nº 644, 563 [1858]; Corrêa 1937, vol. 1; *Estatística das Alfândegas* 1913; Lima 1846, vol. 3; Menezes 1867.

Maize: AHU, *CU*, Angola, cx. 128 [131], doc. 9340; AHU, *SEMU_CU*, Angola, Correspondência, cx. 8B (602-1L), doc. 167; cx. 19 (619-1L), non-numbered doc.; ANTT, *FF*, Livros dos Feitos Findos, liv. 61; *Almanack statístico* 1851; *Anuário Estatístico* 1938, 1955, 1960, 1961, 1965, 1971; *Boletim Mensal* 6 (XXI) [1965]; *BOA*, nº 1 (7) [1845]; nº 1 (20) [1846]; nº 1 (102) [1847]; nº 5 [1863]; nº 6 (1) [1875]; nº 7 [1866]; nº 10 [1865]; nº 11 [1903]; nº 12 [1876]; nº 12 [1877]; nº 18 [1879]; nº 20 [1871]; nº 24 [1867]; nº 26 [1890]; nº 445 [1854] nº 563 [1858]; *Boletim Trimestral de Estatística*, ano IV, nº 3; Lima 1846, vol. 3.

Beans: Arquivo Histórico de Angola, *Fundo Geral*, Cód. 1707/6-3-26; AHU, *CU*, Angola, cx. 57, doc. 5208; cx. 100, doc. 1; cx. 128 [131], doc. 9340; cx. 167, doc. 50; AHU, *SEMU_CU*, Angola, Correspondência, cx. 8B (602-1L), doc. 167; cx. 19 (619-1L), non-numbered doc.; *Almanack statístico* 1851; ANTT, *FF*, Livros dos Feitos Findos, livs. 61-62; ANTT, *Ministério do Reino*, mç. 605, doc. 33; *Anuário Estatístico* 1938, 1955, 1960, 1961, 1965, 1971, 1973; *BOA*, nº 1 (7) [1845]; nº 1 (20) [1846]; nº 1 (102) [1847]; nº 5 [1863]; nº 6 (1) [1874-5]; nº 7 [1866]; nº 10 [1865]; nº 12 [1876]; nº 12 [1877]; nº 18 [1879]; nº 20 [1871]; nº 24 [1867]; nº 26 [1903]; nº 531 [1855]; nº 644, 563 [1858]; *Boletim Trimestral de Estatística*, ano IV, nº 3; Lima 1846, vol. 3.

Meat: Arquivo Histórico de Angola, *Fundo Geral*, Cód. 1707/6-3-26; Cód. 1935/7-1-4; AHU, *CU*, Angola, cx. 167, doc. 50; *Almanack statístico* 1851; ANTT, *FF*, Livros dos Feitos Findos, liv. 61; *Anuário Estatístico* 1938, 1955, 1961, 1965, 1971, 1973; *BOA*, nº 1 (167) [1848]; nº 26 [1890]; nº 26 [1903]; *Boletim Trimestral de Estatística*, ano IV, nº 3; Corrêa 1937, vol. 1.

Fish: Arquivo Histórico de Angola, *Fundo Geral*, Cód. 1707/6-3-26; AHU, *CU*, Angola, cx. 167, doc. 50; AHU, *SEMU_CU*, Angola, Correspondência, cx. 20 (620-1L), doc. 120; *BOA*, nº 6 (22) [1875]; nº 6 [1891]; nº 10 [1895]; nº 12 [1877]; nº 17 [1885]; *Estatística do Comércio e Navegação* 1903.

Cotton: AHU, *SEMU_CU*, Angola, Correspondência, cx. 19 (619-1L), non-numbered doc.; cx. 28 (629-1L), non-numbered doc.; cx. 34 (635, 2-1L), non-numbered doc.; *Almanack statístico* 1851; ANTT, *FF*, Livros dos Feitos Findos, liv. 61; *Anuário Estatístico* 1938, 1944-1947, 1955, 1965, 1971, 1973; *BOA*, nº 6 (22) [1875]; nº 6 [1891]; nº 10 [1865]; nº 10 [1903]; nº 11 (Apenso) [1914]; nº 12 [1877]; nº 17 [1885]; nº 26 [1890]; *Estatística das Alfândegas* 1913; *Estatística do Comércio e Navegação* 1903.

Palm oil: AHU, *CU*, Angola, cx. 167, doc. 50; AHU, *SEMU_CU*, Angola, Correspondência, cx. 19 (619-1L), non-numbered doc.; cx. 22 (622, 1-1L), non-numbered doc.; cx. 28 (629-1L), non-numbered doc.; cx. 36 (637, 1-1L), non-numbered doc.; *Almanack statístico* 1851; ANTT, *FF*, Livros dos Feitos Findos, liv. 61; *Anuário Estatístico* 1938, 1944-1947, 1955, 1961, 1965, 1971, 1973; *BOA*, nº 1 (5) [1845]; nº 1 (20, 53) [1846]; nº 1 (102) [1847]; nº 6 (20) [1875]; nº 6 [1891]; nº 6 [1895]; nº 10 [1903]; nº 12 [1877]; nº 17 [1885]; Corrêa 1937, vol. 1; *Estatística das Alfândegas* 1913; *Estatística do Comércio e Navegação* 1903.

Firewood: Arquivo Histórico de Angola, *Fundo Geral*, Cód. 1707/6-3-26; Cód. 1935/7-1-4; AHU, *CU*, Angola, cx. 57, doc. 5208; *Anuário Estatístico* 1938, 1955, 1960, 1961, 1965; *BOA*, nº 10 [1903]; nº 26 [1890]; nº 47 [1885]; *Boletim Trimestral de Estatística*, ano IV, nº 3.

Soap: Arquivo Histórico de Angola, *Fundo Geral*, Cód. 1707/6-3-26; Cód. 1935/7-1-4; AHU, *CU*, Angola, cx. 167, doc. 50; AHU, *SEMU_CU*, Angola, Correspondência, cx. 19 (619-1L), non-numbered doc.; ANTT, *Ministério do Reino*, mç. 605, doc. 46; *Anuário Estatístico* 1938, 1955, 1960, 1961, 1965, 1971, 1973; *BOA*, nº 10 [1903]; nº 26 [1890]; nº 47 [1885]; *Boletim Trimestral de Estatística*, ano IV, nº 3; *Estatística do Comércio e Navegação* 1903.

Candles: AHU, *CU*, Angola, cx. 167, doc. 50; ANTT, *FF*, Livros dos Feitos Findos, liv. 61; *Anuário Estatístico* 1938, 1944-1947, 1955, 1965; *BOA*, nº 1 (5) [1845]; nº 1 (20, 53) (supplement) [1846]; nº 1 (102) [1847]; nº 10 [1895]; nº 17 [1885]; *Estatística do Comércio e Navegação* 1903.

Oil: *Anuário Estatístico* 1938, 1955, 1960, 1961, 1965, 1968, 1969, 1970, 1971, 1973; *Boletim Trimestral de Estatística*, ano IV, nº 3.

Benguela

Manioc flour: AHTC, *ER*, liv. 4918; AHU, *CU*, Angola, cx. 119 [121], doc. 8613; cx. 126 [129], doc. 9233; cx. 128 [131], doc. 9345; cx. 175, doc. 26; AHU, *SEMU_CU*, Angola, Correspondência, cx. 8B (602-1L), doc. 167; cx. 22 (622, 1-1L), non-numbered doc.; cx. 36 (637, 1-1L), non-numbered doc.; ANTT, *ER*, Junta da Administração e Arrecadação da Fazenda Real do Reino de Angola, livs. 1, 13, 21, 23; ANTT, *Ministério do Reino*, mç. 605, doc. 20; *Anuário Estatístico* 1938, 1944-1947, 1955, 1965, 1971, 1973; *Boletim da Associação Comercial de Benguela*, 1 (1, 7), 3 (5); *BOA*, nº 1 (102) [1947]; nº 17 [1885]; nº 674 [1858]; *Estatística das Alfândegas* 1912; *Estatística do Comércio e Navegação* 1903.

Maize: AHU, *CU*, Angola, cx. 74, doc. 6281; cx. 105, doc. 7735; cx. 126 [129], doc. 9233; cx. 128 [131], doc. 9345; AHU, *SEMU_CU*, Angola, Correspondência, cx. 22 (622, 1-1L), doc. 590; *Anuário Estatístico* 1934, 1938, 1944-1947, 1955, 1960, 1961, 1971, 1973; *Boletim da Associação Comercial de Benguela*, 1 (1, 7), 3 (5); *Boletim Mensal* 6 (XXI) [1965]; *BOA*, nº 17 [1885]; *Boletim Trimestral de Estatística*, ano IV, nº 3.

Beans: AHTC, *ER*, liv. 4918; AHU, *CU*, Angola, cx. 56, doc. 5064; cx. 126 [129], doc. 9233; cx. 128 [131], doc. 9345; AHU, *SEMU_CU*, Angola, Correspondência, cx. 8B (602-1L), doc. 167; cx. 22 (622, 1-1L), non-numbered doc.; ANTT, *ER*, Junta da Administração e Arrecadação da Fazenda Real do Reino de Angola, liv. 22; ANTT, *Ministério do Reino*, mç. 605, doc. 20; *Anuário Estatístico* 1934, 1938, 1944-1947, 1955, 1960, 1961, 1965, 1971, 1973; *Boletim da Associação Comercial de Benguela*, 1 (1, 7), 3 (5); *BOA*, nº 1 (102) [1847]; nº 17 [1885]; *Boletim Trimestral de Estatística*, ano IV, nº 3; *Estatística das Alfândegas* 1913.

Meat: AHU, *CU*, Angola, cx. 56, doc. 5064; cx. 128 [131], doc. 9345; cx. 168, doc. 12; AHU, *SEMU_CU*, Angola, Correspondência, cx. 8B (602-1L), doc. 167; ANTT, *ER*, Junta da Administração e Arrecadação da Fazenda Real do Reino de Angola, liv. 22; ANTT, *Ministério do Reino*, mç. 605, doc. 20; *Anuário Estatístico* 1934, 1938, 1944-1947, 1955, 1960, 1961, 1965, 1971, 1973; *Boletim da Associação Comercial de Benguela*, 1 (1, 7); Boletim Mensal – Rep. Est. Angola, 6 (XXI) [June 1965]

Fish: AHU, *SEMU_CU*, Angola, Correspondência, cx. 20 (620-1L), doc. 120; *BOA*, nº 4 [1891]; nº 9 [1890]; nº 10 [1895]; *Boletim da Associação Comercial de Benguela*, 1 (1).

Cotton: AHU, *CU*, Angola, cx. 126 [129], doc. 9233; AHU, *SEMU_CU*, Angola, Correspondência, cx. 22-A (622, 2-1L), doc. 590; cx. 34 (635, 2-1L), non-numbered doc.; cx. 36 (637, 1-1L), non-numbered doc.; *Anuário Estatístico* 1938, 1944-1947, 1955, 1971; *BOA*, nº 6 (22) [1875]; nº 9 [1890]; nº 10 [1895]; nº 25 [1885]; nº 29 (apenso) [1890]; *Boletim da Associação Comercial de Benguela*, 1 (1, 7), 3 (5); *Estatística das Alfândegas* 1912; *Estatística do Comércio e Navegação* 1903.

Palm oil: AHTC, *ER*, liv. 4918; *Anuário Estatístico* 1938, 1944-1947, 1955, 1965, 1971, 1973; *BOA*, nº 1 (102) [1847]; nº 4 [1891]; nº 9 [1890]; nº 10 [1895]; nº 10 [1903]; nº 25 [1885]; *Boletim da Associação Comercial de Benguela*, 1 (1, 7), 3 (5);

Firewood: AHU, *CU*, Angola, cx. 119 [121], doc. 8613; *Anuário Estatístico* 1934, 1938, 1944-1947, 1955, 1960, 1961; *Boletim da Associação Comercial de Benguela*, 1 (1, 7); *Boletim Trimestral de Estatística*, ano IV, nº 3.

Soap: AHU, *CU*, Angola, cx. 128 [131], doc. 9345; AHU, *SEMU_CU*, Angola, Correspondência, cx. 22 (622, 1-1L), non-numbered doc.; cx. 34 (635, 2-1L), non-numbered doc.; cx. 36 (637, 1-1L), non-numbered doc.; ANTT, *Ministério do Reino*, mç. 605, doc. 20; *Anuário Estatístico* 1934, 1938, 1944-1947, 1955, 1960, 1961, 1965, 1971, 1973; *BOA*, nº 29 (apenso) [1890]; *Boletim Trimestral de Estatística*, ano IV, nº 3; *Estatística do Comércio e Navegação* 1903.

Candles: AHU, *CU*, Angola, cx. 126 [129], doc. 9233; *Anuário Estatístico* 1938, 1944-1947, 1955, 1971; BOA, nº 10 [1895]; *Estatística do Comércio e Navegação* 1903.

Oil: *Anuário Estatístico* 1938, 1944-1947, 1955, 1960, 1961, 1965, 1967, 1968, 1969, 1970, 1971, 1973.

Criteria: most prices obtained for food staples are retail prices, namely for goods such as manioc flour, beans, meat (either chicken or pork), and palm oil. When available, utilities such as cotton, firewood, and soap were also collected accordingly. When retail prices were lacking, evidence from import and export records were used as indicated in section A11. Candles were inferred from the cost of wax. Given the relatively scarcity of prices available of utilities as firewood, soap, oil and candles, within the 200-year period, we decided to estimate the average cost of this bundle using the cost of benchmark years where evidence was fully available. For Luanda, the average cost of these utilities was 6.01% of the total of the basket. This average was calculated from the decadal benchmarks of 1920-1929, 1930-1939, 1940-1949, 1950-1959, 1960-1969, and 1970-1975. For Benguela, the average cost of these utilities was 7.48% of the total of the basket. This average was calculated from the decadal benchmarks of 1930-1939, 1940-1949, 1950-1959, 1960-1969, and 1970-1975. Conversions from early modern and modern capacity measures to liters and/or kilograms were made taking into account the state-of-the-art literature. These include the following conversions:

- 1 almude = 16.95 liter (Lisanti, 1973).
- 1 alqueire (Lisbon, 18th century) = 13.1 liter.
- 1 arrátel = 459 grams (c.0.5 kilogram).
- 1 canada = 1.4 liter.
- 1 cazunguel = 12.5 kilograms.
- 1 exeque (*nseke*, c.1760) = 50 kilograms.
- 1 feixe (of wood) = 102.8 to 176.3 kilograms (Lisanti 1973).

All prices are in *reais*. We are aware of the depreciation of the currency in colonial contexts vis-à-vis its metropolitan counterpart (*reais* or *réis*), as highlighted by works such as Clarence-Smith (1985, pp. 226-227), Santos (1998, p. 72), and recently by Cândido (2022, pp. xiii-xiv). Given that such depreciation led to the existence of *réis fortes* (strong currency) and *réis fracos* (weak currency), we have opted whenever possible to collect the latter, as they are representative of the local reality. Furthermore, the fact that we are measuring nominal wages against consumption baskets minimizes the risk of possible distortions.

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Section A11 - Sources and prices obtained from import and export records

Criteria: if evidence was to be collected from an import or export price, the latter prevailed. Our dataset highlights all the prices that came from either import or export records. As a reference, they hereby follow per case study and decadal benchmark:

Luanda

1830-1839: Manioc flour, maize, and fish use export prices.
1850-1859: Maize uses export prices.
1870-1879: Fish uses export prices.
1880-1889: Fish uses export prices.
1890-1899: Fish uses export prices.
1910-1919: Manioc flour is estimated based on the ratio with other grain staple – wheat.
1920-1929: Manioc flour uses export prices.
1930-1939: Manioc flour uses export prices.

Benguela

1840-1849: Manioc flour and palm oil use export prices.
1850-1859: Manioc flour, maize, beans, and soap use export prices.
1860-1869: Cotton and soap use export prices.
1870-1879: Fish use export prices.

1880-1889: Fish and cotton use export prices.
1890-1899: Fish and cotton use export prices.
1900-1909: Manioc flour and fish use export prices.
1910-1919: Fish use export prices.
1930-1939: Manioc, palm oil, and cotton use export prices.
1940-1949: Manioc, palm oil, and cotton use export prices.
1950-1959: Manioc, palm oil, and cotton use export prices.

Section A12 - Angolan subsistence basket, 1760-1975: methodology and criteria

The literature has already provided several insights about African patterns of everyday consumption. Miller (1988), based on works such as Clark and Haswell (1970) and Curtin (1975), as well as in a set of primary sources, indicates that the mid-18th century adult male laborer received *c.*1.03 kg of carbohydrates on a daily basis. This ration of one kilo seemed to be routine in early colonial and colonial West Africa, with the largest portion as manioc flour/millet, while the remainder was provided by beans. Thus, we opted to use, respectively, 160 kg of the former (manioc) and 60 kg of the latter (beans) on an annual basis. Manioc (cassava) and maize were the staple grains in West coastal Africa (McCann, 2005). Both were available at the public granary in Luanda from the earliest period of analysis. We opted for manioc given the above-mentioned daily laborer consumption rations. In order to assess whether maize could have been a more effective solution as a staple grain, we have assembled an alternative subsistence basket (see table A7). We find that for both Luanda and Benguela, outcomes in terms of welfare ratios are mostly similar regardless of the use of manioc or maize as the staple grain (see figures A3 and A4). While there might be sporadic moments where it would have been more cost-effective to purchase maize instead of cassava, the general trend presents no significant difference and welfare ratios are largely similar.

Regarding meat, the yearly 10 kg - chicken to Benguela, and pork to Luanda -, seem consistent with the relative low consumption level by Angolans. Costs of meat at the city markets were prohibitive to indigenous populations (Parreira, 1990, Venâncio, 1996). An alternative for protein inclusion would be to use fish. The literature suggests that fish was part of the consumption habits of the inhabitants in coastal Angola, especially given the existence of a substantial fishing industry in the south (Clarence-Smith, 1979). It could be purchased fresh

or, alternatively, acquired dried or salted, given the preservation purposes. Dried fish could then be consumed with palm oil and some form of cereal or tuber, as potatoes (Nascimento, 1892 apud Clarence-Smith, 1979). A robustness test using fish instead of meat yielded slightly more favorable outcomes regarding African unskilled real wages (see figures A3 and A4). Yet, the differences are of little or no significance. Palm oil was also used to prepare meals, especially by families of the lower strata. The remaining commodities are adapted from the Sub-Saharan subsistence basket adopted by Frankema and van Waijenburg (2012). While we collected price evidence for soap, candles, and firewood, the absence of complete series led us to estimate a percentage from the years where retail prices are available. Thus, the three items account for 6.01% of the average whole basket for Luanda and 7.48% for Benguela, respectively. Finally, housing expenses were added at 5% of the total cost of the basket, as it is standard practice of the literature.

While the long period under analysis could have provoked changes in diet and household consumption, it is noteworthy that most of the components that are part of the basket persisted throughout the 200 years (Miller, 1988; Dias, 2011; Nunes, 1961; Monteiro, 1973). The literature has noted some changes in food staples for the last decades of our period (early 1960s and early 1970s), although manioc and palm oil continued to be used by Africans. Within the slum neighborhoods (*musseques*) in Luanda around 1961, wheat bread, olive oil, and butter were used simultaneously with palm oil, even if these non-African foodstuffs were acquired only irregularly due to its higher cost (Monteiro, 1973 apud Nunes, 1961). Households with higher purchasing power within the 1960s and 1970s slums would acquire such foodstuffs more regularly, depending on availability. Yet, it is safe to assume that, on an everyday basis, non-European foodstuffs formed the basis of the diet for most of the population.

Concerning days of work, we assume 312 days per year. The seasonality of labor in Africa varied across regions. For instance, in the Asante kingdom, part of modern-day Ghana, there was no established pattern of regular annual, monthly, or seasonal wage labor (Austin, 2005). Conversely, interwar and postwar labor reports indicate a working week of six days (or 312 days per year) in urban contexts of former British colonies (Frankema and van Waijenburg, 2012). While the diverse reality of Angola may present alternative scenarios, there is strong evidence suggesting a six-day working week in both Luanda and Benguela, particularly in the public sector. A pay sheet from the public works department of the municipality of Luanda,

dated December 11-17, 1864, reports that within a sample of 499 workers, 87.6 percent (437) worked six days, while the remainder worked either five days (4.8 percent) or one day (4.6 percent).[29] Moreover, workers in both plantations and fisheries in southern Angola during the 19th century typically had only one day of rest per week, commonly observed on Sundays. These work schedules persisted into the post-slavery period (Clarence-Smith, 1979, pp. 33–35).

The intensity and duration of employment could vary based on the contractual terms and the employer. Given that a substantial number of wages were disbursed by the public sector, annual salary payments were prevalent, particularly in skilled occupations. However, it was also common for Angolan urban skilled and unskilled labor to be remunerated on a weekly or daily basis. This payment structure applied to various roles, such as Cabinda rowers, employed by the administration during both the 19th and 20th centuries. Others were engaged by the private sector, serving as unskilled workers such as servants and washermen, or skilled workers like carpenters and masons (Martin, 1985).

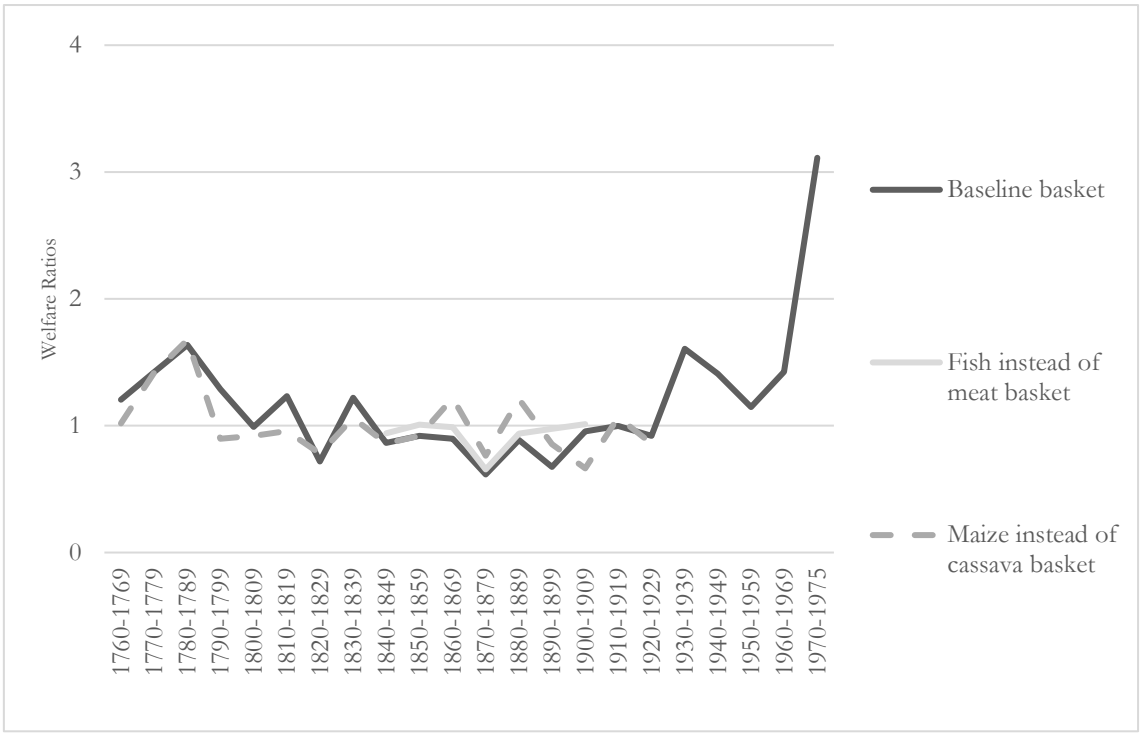
Table A8: Angolan subsistence baskets in perspective, 1760-1975

Commodities (person/year)	Angola (Baseline)	Angola (Fish instead of meat)	Angola (Maize instead of cassava)	British Africa	Calories (per kg)	Protein (per kg)
Cassava flour (kg)	160	160	-	-	3610	17
Maize (kg)	-	-	160	185	3370	70
Meat (kg)	10	-	10	3	2500	200
Fish (kg)		10	-	-	1150	190
Beans (kg)	60	60	60	-	1455	71
Sugar (kg)	-	-	-	2	3750	-
Palm oil/Ghee (kg)	3	3	3	3	8840	-
Soap (kg)	1.3	1.3	1.3	1.3	-	-
Linen/cotton (m)	3	3	3	3	-	-
Candles (kg)	1.3	1.3	1.3	1.3	-	-
Lamp oil (kg)	-	-	-	1.3	-	-
Firewood (M BTU)	2	2	2	2	-	-
Fuel (M BTU)	1.3	-	-	1.3	-	-
Total daily calories	1945	1940	1940	1939		
Total daily protein	22	87	50	43		

Sources: for Angola, see section A10 with adaptations inspired in the literature; for British Africa, see Frankema and van Waijenburg, 2012. For calorie and protein contents, see FAO (2025).

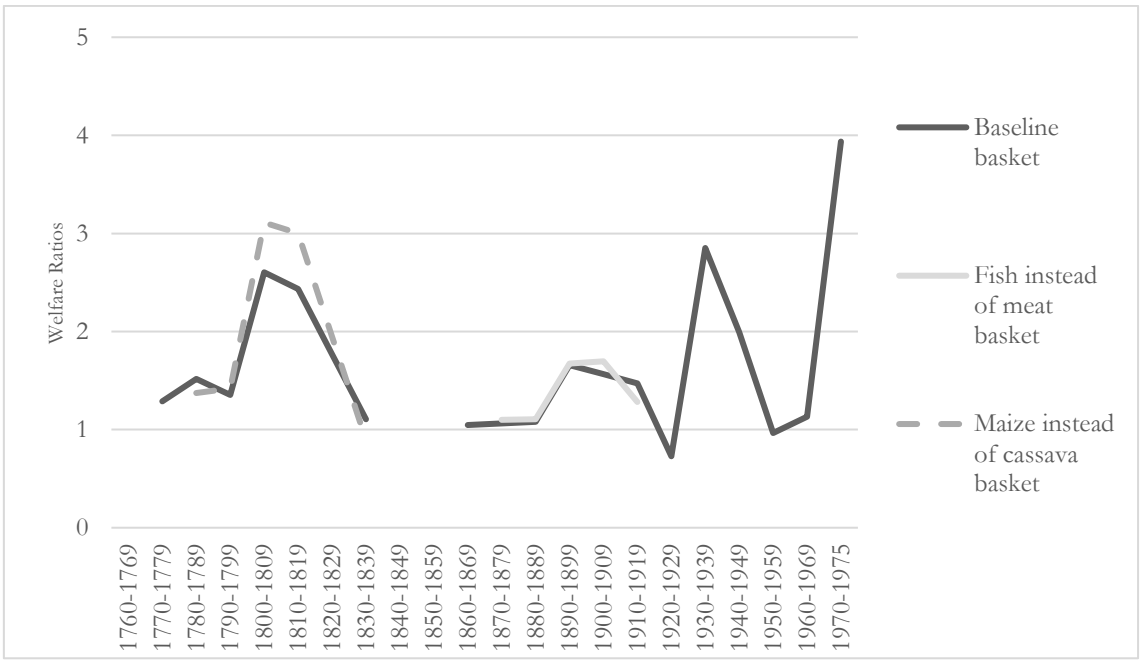
[29] AHU, *SEMU*, CU, Angola, cx. 34 (635, 2-1L) (22), doc. 44.

Figure A3: Unskilled African Welfare Ratios in Luanda, 1760-1975



Sources: see sections A5 and A7-A9

Figure A4: Unskilled African Welfare Ratios in Benguela, 1770-1975



Sources: see sections A5 and A7-A9

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Section A13 – Representativeness of public versus private salaries (premium jobs)

Most of our evidence on wage payments comes from the public sector, a fact that is consistent throughout the entire period of about 200 years of analysis. However, we have compared a small set of evidence on public jobs and their private counterparts to assess the extent to which our dataset is representative of a larger universe of total employment. The limited amount of comparative evidence is justified by the fact that the occupations studied within this work rarely have a counterpart in the private sector.

Table A9: Daily wage premium of the public sector, Luanda, 1959-1961

Occupation (Gender)	Private wage	N	Public wage	N	Premium (in percentage)
Carpenter (M)	37884.62	8	38461.54	1	2
Servant (M)	21113.46	76	26923.08	118	28
Washerwoman (F)	10358.08	58	26923.08	18	159

Sources: Orçamento Geral da Província de Angola, 1961; Nunes, 1961.Wages paid in the private sector date from 1959-1960, while their public sector counterparts are from 1961. Wages are in converted to reais (sing. real).

Table A9 compares the wages of the public and private sector, paid to the same occupation. Our benchmark occupation for skilled male labor, the carpenter, observes practically no change between the daily wages paid in the public and private sectors, resulting in an insignificant 'public' premium of 2%. Unskilled male labor, using servant as an occupation, presents a more significant 'public' wage premium of 28%. Although these estimates solely refer to the later period of the Angolan legal coercive framework and thus cannot be representative of the whole period of analysis, an important point emerges. The vast majority of the population engaged in unskilled labor would have earned less money working for the private sector. While this means our unskilled public-sector wages are not representative of a wider population, this fact only reinforces our previous assumptions: the general low performance of Angolan real wages and living standards throughout the period where the coercive legal framework was imposed when compared with other case studies both in the West African coast and elsewhere around the globe.

Lastly, unskilled female labor shows a high 'public' premium of 159% using the occupation of washerwomen as a benchmark. While again these estimates are only from c.1960, when coercion was still imposed, a comparison with the premium of ten years later – of 322%

around 1970/71 – suggests that female unskilled wages in the private sector were close to stagnation (Monteiro, 1973; Orçamento, 1971). Although women's work during the benchmark of early 1970s only represented 8.6% of the household income, this tendency also corroborates the main argument of the article.

Table A10: Representativeness of the public sector in Luanda, 1800-1950 (in percentage)

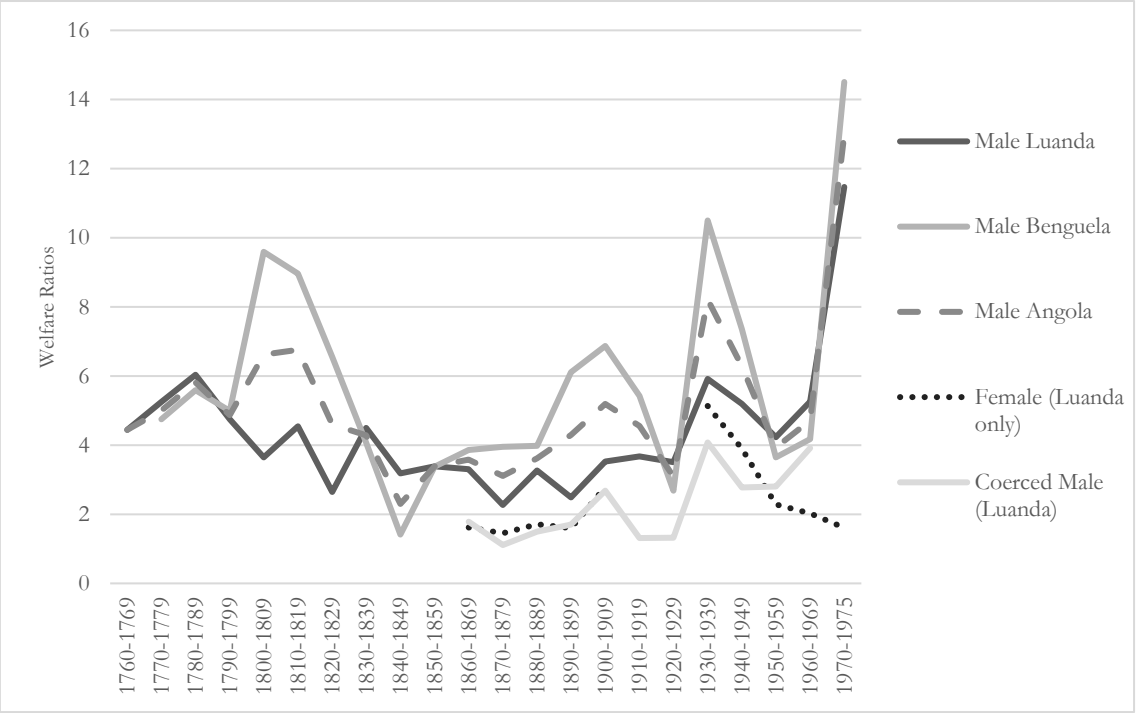
Year	Public sector employees	Total Population	Public sector representativeness (percent)
1800	1235	6414	19.3
1850	945	5605	16.9
1900	4335	15799	27.4
1950	9594	141510	6.8

Sources: Curto and Gervais (2011); Orçamento Geral da Província de Angola 1897-98; 1950. The benchmark of 1850 uses the year 1844, while 1900 is provided by 1897. Public sector employees include the sectors of administration, army and police, as well as education, among others. It does not count ecclesiastical servants and/or religious orders.

Section A14 - Sources for Figure 3: Number of subsistence baskets an Angolan unskilled daily wage can buy, 1760-1975

For the sources concerning Angolan male unskilled daily subsistence ratios, see Figure A5 below. For the sources concerning Luandan women unskilled daily subsistence ratios, see sections A5 (table A1) and A8. For the sources concerning Luandan coerced male unskilled daily subsistence ratios, see sections A5 (table A1) and A8.

Figure A5: Number of subsistence baskets an Angolan unskilled daily wage can buy (Luanda, Angola, and average), 1760-1975



Sources: see sections A5 (tables A1-A2) and A8.

While we have left the study of female real wages for another occasion, it is interesting to note that they are similar to – and even higher within the period 1930-1950 - than those of their coerced male counterparts. An inflection in visible from the 1950s onwards, when the income of coerced male workers surpasses female wages. We hypothesize that this trend could be related to labor market participation. Statistically, this later decline is primarily attributed to the occupation "washerwoman" (*lavadeira*), which, by the end of the period, was both the most common (42.5 percent of the sample) and the lowest-paid female occupation among the slums in Luanda, where most Africans lived. Moreover, irrespective of earlier periods, the average share of income that female labor represented for Luanda households was around 8.6 percent in 1970 (Monteiro, 1973). Such evidence for the earlier period (1940s or earlier) is not available. A higher urbanization rate, propelled by increased African migration to the urban centers from the 1930s onwards (with Luanda being a case in point), may have had an effect on gradually lowering female labor participation in the wage labor market. The gradual increase of both nominal and real male wages, combined with the relegation of women to low-paying jobs, may explain the reversal of the trend of comparatively better female real wages.

Section A15 - Sources for Figure 4: Angolan unskilled urban daily wages in African perspective, 1860-1960s Number of subsistence baskets and unskilled wage can buy in Angola and Java, 1860-1969

For Angola, see sections A5 (tables A1-A2) and A8-A10.

Section A16 - Sources for Figures 5 and 6: Number of subsistence baskets an unskilled daily wage can buy in Angola and Java, 1860-1969 and **Unskilled Angolan urban welfare ratios in perspective, 1760-1975**

For Angola, see sections A5 (tables A1-A2) and A8-A10.

Section A17 - Sources for Figure 7: Unskilled welfare ratios in Luanda, 1760-1975

For Luanda, see sections A5 (table A1) and A8.

Section A18 - Sources for Figure 8: Unskilled welfare ratios in Benguela, 1760-1975

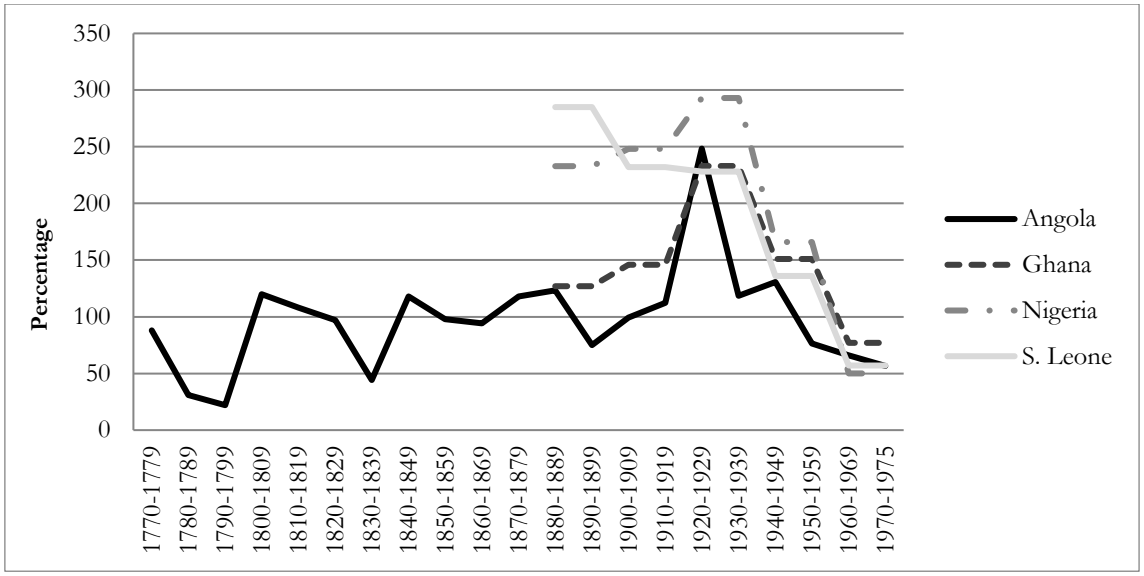
For Benguela, see sections A5 (table A2) and A8.

Section A19- Sources for Figure 9: Urban skilled Angolan welfare ratios in perspective, 1760-1975

For Angola, see sections A5 (tables A1-A2) and A8.

Section A20 - Angolan urban skill premium, 1770-1975

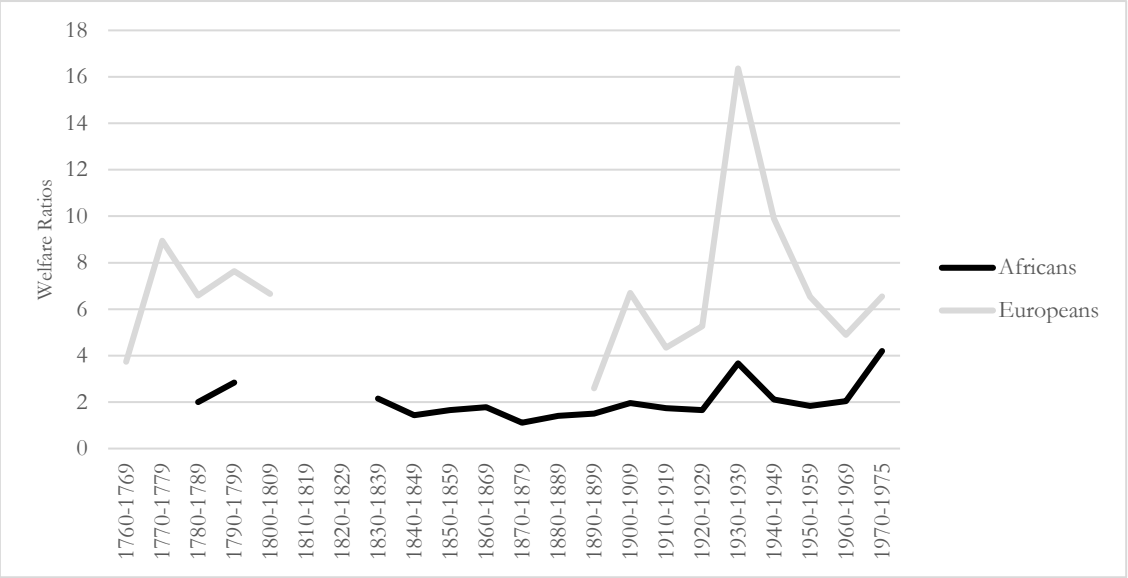
Figure A8: Angolan urban skill premium in a West African context, 1770–1975 (in percentage)



Sources: See Appendix, Section A20. "Angola" is an average of the two cities of Benguela and Luanda. For Angola, see Appendix, Section A5. For the remaining cases, see Frankema and van Waijenburg (2012). Following this literature, we refer to a 100% magnitude as indicating that a skilled worker earns twice as much as an unskilled worker.

The Angolan skill premium showed a similar trend to other West African cases, especially Ghana – a non-settler colony, from the late 19th century. However, the premium was already lowering in the 1880s and declined more rapidly than in other cases. Did the Angolan skill premia decline so abruptly due to the gradual transformation of colonial labor markets? While the sample of Angolan skilled laborers is certainly minimal - given that most of the population did unskilled work - we hypothesize that this change in labor markets is a key reason for the decline. Our benchmark for the skilled occupation (carpenter, H7 in HISCLASS) showed a constant demand in the workforce until the end of our period. However, the arrival of skilled European settlers from the 1940s onward, particularly in urban environments, may have contributed to the decline of the premium for the indigenous labor force. The evolution of the skill premium vis-à-vis changes and continuities in colonial labor markets constitutes a line of research that should be explored further in future work.

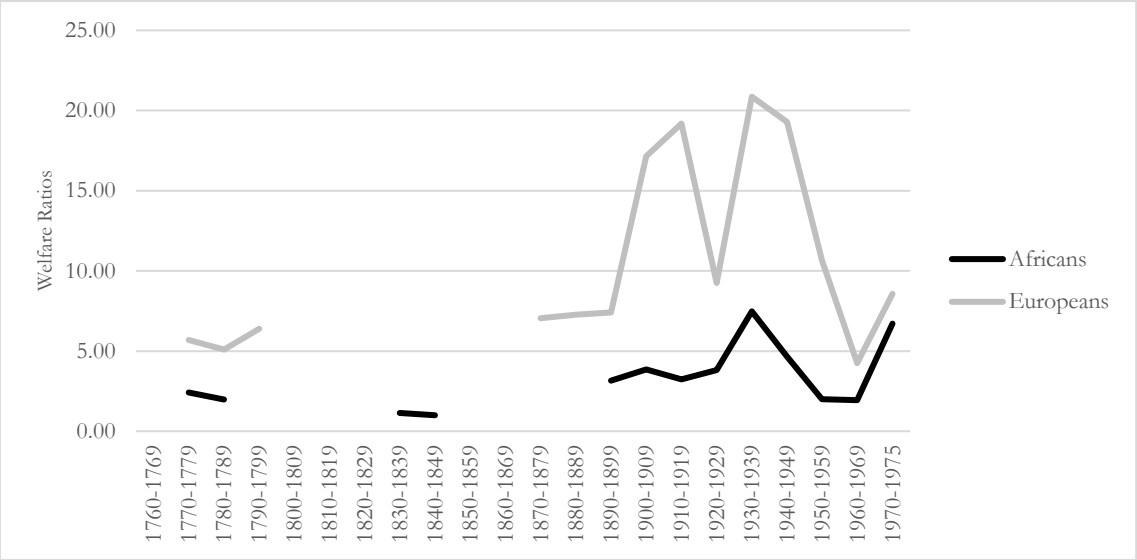
Section A21 - Figure A6: Skilled welfare ratios in Luanda, 1760-1975



Sources: see sections A5 (table A1) and A8. "Africans" represents the welfare ratios of non-coerced unskilled workers. Skilled workers are represented by carpenters and masons.

In comparison to unskilled labor, the welfare ratios of skilled African workers in Luanda generally showed a stronger performance (Figure A6). Throughout the 19th century, they were mostly higher than one and even experienced substantial increases as the 20th century unfolded. However, African "free" skilled workers constituted a minority within the labor market, meaning improvements in their living standards may not reflect the overall urban workforce. Consequently, most of the African population likely experienced lower standards of living. Conversely, the welfare ratios of European skilled labor in Luanda, after a phase of decline in the 1910s, generally began rising again from 1920, oscillating between 14 and 16 until the 1940s before experiencing a steep fall through the 1960s. This increase was likely influenced by the creation of incentives for settler labor to immigrate, given the higher demand for skilled occupations. The subsequent decline aligns with the rising cost of living.

Section A22 - Figure A7: Skilled welfare ratios in Benguela, 1760-1960



Sources: see sections A5 (table A2) and A8. "Africans" represents the welfare ratios of non-coerced unskilled workers. Skilled workers are represented by carpenters and masons.

While evidence for skilled labor in Benguela is limited (Figure A7), the welfare ratios of African workers appear generally higher than those in Luanda. They were notably better during the late 18th century and the 1830s, reaching an impressive 8.2 in the 1930–1939 period. However, the small number of workers in this labor segment was not representative of the entire labor market, which limits broader findings. Moreover, European skilled workers in Benguela consistently exhibited high welfare ratios, peaking above 15 during the 1910s and the 1930s–1940s, despite temporary declines in the 1880s-1890s and the general downturn of the 1920s.