Colonialism and rural inequality in Sierra Leone: an egalitarian experiment

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We analyze the level of inequality in rural Sierra Leone in the early colonial period. Previous research has suggested that the colony was established under highly egalitarian ideals. We examine whether these ideals also are reflected in the real distribution of wealth in the colony. We employ a newly assembled dataset extracted from census data in the colony in 1831. The results show that rural Sierra Leone exhibited one of the most equal distributions of wealth so far estimated for any preindustrial rural society.

1. Introduction

Inequality has for a long time attracted the interest of scholars from multiple disciplines, because it affects every aspect of life: from socio-economic status to growth, from mobility to political stability (Deininger and Squire 1998; Thorbecke and Charumilind 2002; Easterly 2007). In an attempt to understand the determinants of inequality, scholars have started to quantitatively measure inequality levels in a historical perspective. A rich literature has emerged dealing with historical inequality in Europe and the Americas, and increasingly also with Asia (see Di Matteo 1997; Shanahan and Corell 2000; Frank 2005; Williamson 2010; Abad 2013; Alfani 2015). However, studies on historical inequality in Africa have remained scarce (see Fourie and von Fintel 2011 as one of the few examples).

But studies on colonies and in particular the wealth inequality in colonies would be of special importance for several reasons. First, much research has been undertaken on both historical wealth inequality and income inequality. The literature on wealth inequality has consistently recorded higher levels than for income, since wealth accumulates over time, in contrast to income (see, for example Milanovic et al. 2011, table 2). Despite a recent surge of interest in historical economic inequality, Branko Milanovic has argued that these estimates “are fragmentary and often not fully comparable”, reminding us that the work toward understanding historical levels of economic inequality is far from complete (Milanovic 2018, p. 1031). In this regard, studies of historical wealth inequality can provide a complementary picture of historical economic inequality to that of income, particularly when income data are lacking for large shares of the population (Lindert and Williamson 2016, ch. 1). Second, the rich literature on historical inequality has consistently shown that colonies recorded higher inequality levels than non-colonies, including a higher extraction ratio than their counterparts (Atkinson 2014; Van Zanden et al. 2014; Milanovic 2018). Colonies are, however, far from homogenous, and vary for example regarding climate, type of settlers, and presence and structure of indigenous societies (Horvath 1972; Lloyd et al. 2013; Veracini 2013, chap. 1). Furthermore, the institutional setup of colonies differed substantially. One strand of literature has argued that colonial institutions were determined by the type of European settlement,
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conditional on epidemiology and geography in a largely deterministic manner (Sokoloff and Engerman 2000; Acemoglu et al. 2002). In contrast, another strand of literature has stressed the importance of the process of frontier expansion in shaping settlements and institutions, adding an otherwise overlooked time component to the debate. In his seminal work, Frederick J. Turner claimed that the existence of a frontier “promoted individualism, economic equality, [and] democracy” by shaping institutions according to these ideals (Turner 1920, p. 266). Yet, not all frontiers exhibited the same outcomes. In Argentina, for instance, frontier expansion resulted in increased inequality and in a polarization of political power among the elites (Hennessy 1978, p. 129). A recent attempt to combine these seemingly incompatible results has formulated the “conditional frontier thesis”. The thesis argues that the outcomes of a frontier expansion were dependent upon the ideals and institutions in existence at the time of expansion, which shaped resource distribution as the frontier expanded (García-Jimeno and Robinson 2011, 3–6). Thus, the institutional framework was one key factor determining the levels of wealth inequality in a settler society.

In our study, we examine the case of rural Sierra Leone a few decades after its foundation in the early nineteenth century. The case is of particular importance to scholars interested in inequality as it enables an examination of the relationship between ideals, institutions, and the outcome in the form of the actual distribution of resources. It is well-established in previous scholarship that the colony of Sierra Leone had been founded on ideals of egalitarianism. According to the conditional frontier thesis, we expect that if these ideals were acted upon, inclusive institutions would emerge. This would in turn lead to a comparatively egalitarian society, as measured by low inequality levels. If ideals, on the other hand, were not acted upon in practice, we would expect the emergence of institutions favoring the ruling elite—leading to a more unequal distribution of resources in the society. Previous research has claimed that, in the Sierra Leone case, the egalitarian ideals were acted upon in practice. This has, however, not been shown by a quantitative study of the resulting distribution of resources.

The institutional framework was not, however, the only factor determining the level of inequality in the case studied. Other factors of key importance for the distribution of wealth in a settler society could be the opportunities to accumulate wealth (e.g., factor endowments), the pattern of the settlement, and the duration to time of observation. If settlers arrived at different points in time, and if settlers held no or few assets at the time of settlement—as we believe was the case in Sierra Leone—wealth inequality might arise simply because the first settlers had more time to accumulate wealth. These elements therefore need also to be considered in the following analysis.

The main contribution of this study is thus the estimation and analysis of wealth inequality levels from a newly assembled dataset compiled from census data collected by the Sierra Leone colonial government in 1831. The census is one of the earliest reliable examples of demographic research in Africa, and recorded key aspects of the wealth owned by rural households in the colony. Our study thereby contributes to the global literature on historical inequality, by providing evidence on historical inequality in Sub-Saharan Africa.

2. The foundation of the settlement of Sierra Leone

The Colony of Sierra Leone was situated at the heart of “the White Man’s Grave” of West Africa, an area characterized by extremely high mortality rates for Europeans (Curtin 1964, p. 179; Öberg and Rönnbäck 2016). Since the seventeenth century, various European powers had attempted to establish a colony in the region due to the favorable characteristics of its
natural harbor (Fyfe 1962; Colonial Office 1828, p. 7). These attempts had, however, failed due to the high mortality rates of European settlers (Peterson 1969, pp. 139–48; Frenkel and Western 1988).

Only in 1787 did the British manage to acquire a small tract of land from a local king, in what was then a sparsely populated area of marginal productive interest to the local kingdoms, and founded the first British colony after the American Revolutionary War (Asiegbu 1969, p. 6). The initial territory, extending over a few square kilometers in the area of modern-day Freetown, came to be inhabited by a group of settlers that comprised of a few hundred people divided between “destitute blacks” and a few white individuals (Cox-George 1961, 13). The creation of the colony resulted from a deliberate action of the British government, whose aim was to create, in an act of “humanitarian imperialism”, a colony that would operate as a re-allocation space for groups of African descent (Frenkel and Western 1988, p. 212). The freedom granted to slaves in the British Isles by the Somerset ruling of 1772 had, in fact, stirred a heated debate concerning where to settle all of the former slaves, the so-called “black issue”. The Black Poor Committee suggested the possibility of establishing a settlement on the Sierra Leone peninsula (Asiegbu 1969, pp. 2–4), known today as the Freetown Peninsula. As this proposal could serve the twin aims of solving the “black issue” while simultaneously developing a strategically positioned trading and navy post, the British government accepted it and paid for the passage of the initial group of settlers (Porter 1963; Peterson 1969; Fyfe 1987; McDaniel 1995, p. 25).

With the settlement afflicted by high mortality, new waves of settlers brought new life just as the original colonial population was beginning to languish. First arrived a group of Afro-American settlers from the British colony of Nova Scotia, who had been granted freedom in return for their support of Britain during the American Revolutionary War. This group was very heterogeneous, with some having been born slaves in America, and others having been sold into slavery after crossing the Atlantic (Colonial Office 1791). The group had first been settled in Nova Scotia in Canada. The combination of an unfriendly climate and scarce protection led them to petition the British government to relocate them to Sierra Leone, considered to be a more suitable location. The group that landed in 1792, roughly a thousand individuals, brought along very little, having either abandoned or sold their possessions in Nova Scotia for very little money (Peterson 1969; Colonial Office 1827, 8–15). A few years later, in 1800, the population grew with the arrival of the Maroons. This group, consisting of 550 individuals, consisted of runaway slaves from Jamaica who had been removed from the country on the initiative of the Jamaican government—who considered them a threat to the slave plantation system (Lockett 1999). Together with the Nova Scotians, they came to be known as the original settlers and would form the core of the colony’s population in the decades to come (Walker 1976; Fyfe 1987).

The colony grew even more central to the cause of abolition after the Slave Trade Bill was approved in 1807. Thanks to its natural harbor, the settlement was chosen as the landing point for those slaves liberated from the ships caught crossing the Atlantic by the British Navy (Kuczynski 1948, chap. 2). The inflow of so-called “liberated Africans” proved much larger than initially foreseen, with nearly 50,000 individuals having landed by 1831 (Anderson 2013). Although they shared the experience of enslavement, the recaptives were otherwise very heterogeneous as to ethnicity, language, and customs, as a result of the large area involved in the slave trade (Northrup 2006; Silva et al. 2014). To make room for new villages in which to settle the rapidly growing population, new portions of the Sierra Leonean peninsula were acquired, until the entire peninsula came under British control in the 1820s (Scanlan 2016). The frontier thus expanded drastically, from an area of just a few square kilometers
in 1787 to some 550 km² in the 1830s (Montagu 1875; Clarke 1863; Fyfe 1962). Practices to facilitate marriages between liberated Africans were in place, involving placement of women “among their countrymen” as well as others (Silva et al. 2014, p. 359; Schwarz 2012, p. 190). Nonetheless, it appears that some liberated Africans also married natives, tapping into new opportunities for business and trade (Fyfe 1962, p. 136).

In the minds of its founders, the colony’s antislavery attitude was to be complemented by egalitarianism. The first constitution, drawn up by the abolitionist Granville Sharp, deemed each settler responsible for the colony’s government and resources while banning slavery and discrimination (Fyfe 1962, p. 15). Egalitarianism was to take various forms, from a non-discriminatory provisioning of public goods to an egalitarian distribution of resources—mainly land—leading to the emergence of a class of small landowners that Bronwen Everill has termed “democratic yeomanry” (Everill 2013, p. 183). Land distribution had been intended to play an important role toward the creation of an egalitarian society, as most of the settlers had little or nothing with them upon arrival and thus relied upon the colonial government for initial support and the provision of resources to enable them to make their own living (Colonial Office 1842, 10). Original settlers’ households thus received set amounts of land based on their household composition, in a quite non-discriminatory manner, thereby creating a situation of quite high equality of outcome (Galli and Rönnbäck 2019).

However, the large influx of liberated Africans proved an unforeseen burden for the colony and required a shift in the type of egalitarianism employed therein (Thorpe and Wilberforce 1815, p. 15; Kuczynski 1948, p. 86). The land distribution policy shifted around the first decade of the nineteenth century from equality of outcome, the principle applied when distributing land to the original settlers, to being based instead on equality of opportunity (Galli and Rönnbäck 2019). Rather than receiving a set amount of land, liberated Africans were henceforth free to clear a plot of land of their own choice, with government support provided for their first few months in the country. Government support at that time included tools and clothing, as well as a daily allowance for food and other expenses (Colonial Office 1828, pp. 28–29). How this shift in institutional policies affected the distribution of total household wealth in the colony has, however, not been analyzed in the previous literature.

3. Data and method

Previous research on historical wealth inequality has employed numerous sources—from probate inventories (Main 1977; Jones 1980), to tax records (Darroch 1983; Fourie and von Fintel 2010), and census data (Kearl et al. 1980; Gregson 1996; Sarson 2000).

In the present study, the level of wealth inequality in the early days of the Colony of Sierra Leone is studied using census data. To estimate the aggregate wealth distribution, we first estimate the value of each separate asset by household using contemporary local market prices—or proxy estimates, if prices are missing—and then we aggregate these values into one single variable giving account of each household’s total wealth.

These figures are employed to estimate the distribution of total household wealth in the colony. The data is used to estimate the aggregate wealth distribution in two ways: firstly, by estimating Gini wealth indices—both by asset and for total household wealth—and secondly, by constructing the top fractiles of the aggregate wealth distribution. Lorenz curves and Gini indices are also presented separately for each individual asset that comprises the aggregate wealth index, with the aim of examining each and every component’s contribution to wealth and, possibly, identifying the determinants of wealth for the Sierra Leone Colony. The
Table 1. Summary statistics for rural household assets, Sierra Leone 1831

| Variable | Number of households owning | Mean | Standard Deviation | Min | Max | Observations |
|----------|-----------------------------|------|--------------------|-----|-----|--------------|
| Livestock |                             |      |                    |     |     |              |
| Horses   | 1                           | 0.0  | 0.0                | 0   | 1   | 5,565        |
| Donkeys  | 2                           | 0.0  | 0.0                | 0   | 3   | 5,565        |
| Cows     | 68                          | 0.0  | 0.3                | 0   | 8   | 5,565        |
| Oxen     | 57                          | 0.0  | 0.2                | 0   | 3   | 5,565        |
| Sheep    | 66                          | 0.0  | 0.3                | 0   | 6   | 5,565        |
| Goats    | 171                         | 0.1  | 0.5                | 0   | 8   | 5,565        |
| Pigs     | 1,077                       | 0.4  | 1.2                | 0   | 23  | 5,565        |
| Poultry  | 3,327                       | 2.9  | 4.2                | 0   | 50  | 5,565        |
| Housing  |                             |      |                    |     |     |              |
| Stone    | 33                          | —    | —                  | —   | —   | 5,565        |
| Frame    | 75                          | —    | —                  | —   | —   | —            |
| Grass    | 5,457                       | —    | —                  | —   | —   | —            |
| Apprentices | 1,168                  | 0.4  | 0.9                | 0   | 18  | 5,565        |
| Acreage  | 5,052                       | 3.0  | 3.5                | 0   | 90  | 5,565        |

Source: own calculations based on Colonial Office 1831.

aggregate figures are finally used for a comparison of wealth inequality in the colony of Sierra Leone with that estimated for other rural settler colonies in previous research.

3.1. Primary sources

The major source for our study is the 1831 Census of the Population of the Colony of Sierra Leone. This was the first comprehensive census of its kind from colonial Africa and accounted for the entire population of what was then the Colony of Sierra Leone, separately surveyed in the capital and in the countryside. The aim of the census was to gather information on the rapidly growing population and on the alleged process of re-enslavement taking place in the colony; it had no taxation purposes (Kuczynski 1948, pp. 23–24; Colonial Office 1842, p. 83).

We employ the rural part of the census, in which several key household assets were registered: the size of landholdings, the type of housing, the type and number of livestock owned by the household, and the number of “apprentices” living in each household. All information on assets, except for landholdings, was reportedly surveyed personally by the census takers. The size of the landholdings was instead self-reported by the head of the household (Colonial Office 1831, p. 70). We have full information on assets for 80 percent of all rural households. Unfortunately, the census takers in Freetown omitted to record information on households’ assets; therefore, Freetown cannot be included in our estimate. Appendix 1 reports missing data for urban and rural areas, discusses possible biases arising, and the value of each particular asset in greater depth. Table 1 presents summary statistics of our data.

Aggregate household livestock value was estimated using data on the prices the livestock fetched in the local markets (table 2). Prices were mainly extracted from the Colonial Blue Books for Sierra Leone. The price of poultry was elaborated from Clarke (1843, p. 12), and prices for donkeys had to be calculated as a proxy, using modern day data from rural Africa (Fernando and Starkey 2000).

All households in our sample were recorded as owning either a “grass” (wattle-and-daub), “frame” (i.e., wood), or stone house. The variable for housing quality is crude and does not
allow us to study the extent of within-category differences in housing. The value of houses has been estimated using valuations found in reports to the Colonial Office or in the previous literature (Colonial Office 1827, 33; Colonial Office 1828, p. 33; Fyfe 1962, 100, 164).

The census reports of so-called “apprentices” hosted by settler households often argued to have been slaves in disguise. In our study, we treat apprentices as a form of wealth held by the hosting households. The value is assumed to be equivalent to the gains they could bring about, rather than by the official fee host families had to pay for them. The possible gains from hosting an apprentice could be significant: between £8 and £28, but possibly more if those apprenticed were treated as slaves rather than as indentured individuals. To compensate for the lack of information on each apprentice’s age, we calculate their value based on the economic gains at the median length of apprenticeship (5 years), a value of £18.

Land, finally, was not a homogenous factor of production; rather some plots of land were more valuable than others, due to soil fertility and level of market access (Salvati et al. 2017; Colonial Office 1827, 33; Birchall et al. 1980). Nonetheless, price data for the countryside is missing. To tentatively fill this gap, we have constructed proxy estimates for land values for rural Sierra Leone based on three scenarios, each associated with a median farmland value: land-abundance; land limited but not yet scarce; land scarcity (see Appendix 2 online for further details). As land in the Sierra Leone peninsula during the time of our study was no longer abundant but not yet scarce, our second scenario forms the baseline for our estimates. Each scenario’s median farmland value was then combined with a ranking of desirability by village, dependent on three elements (soil quality, communication quality, and distance; summary statistics in online appendix table A2.2) to form a proxy for the value of land in the individual villages. The value of an acre of land in each village was finally multiplied by the size of each individual landholding to provide a proxy for the wealth held in the form of land by each household.

## 4. Results

### 4.1. Livestock distribution

Our estimated Gini index for livestock wealth stood at 0.664. On average, households held between three to four heads of livestock of some type, but the distribution was quite uneven (see online Appendix 1 for more detailed information on the distribution of each household.
assets). More than one-third of the households owned no livestock at all, whereas less than one percent owned more than 20 heads of livestock. That the vast majority of settlers owned little or no livestock at all confirms what is reported by contemporary sources: that most livestock, along with foodstuffs, was imported in the colony. Imports of cattle and horses, but also of some types of poultry, occurred with frequency even in the rural areas through trade with indigenous peoples from the close and distant hinterlands (Clarke 1863, 11–13). Pigs, goats, and to a lesser extent chickens and sheep, were typically reared locally—and were therefore also found more commonly in our sample (see table 1).

Figure 1 reports the household distribution of livestock-based wealth. It shows that three-quarters of the households in our sample held less than £1 in livestock, whereas only a few hundred held more than £3; a mere 16 households owned more than £10 worth of livestock.

4.2. Housing distribution

Housing was more homogeneously distributed than livestock, and the Gini index of 0.507 confirms this. Table 1 shows that the overwhelming majority of the households for which we possess information lived in grass houses; simple wattle-and-daub huts that could be erected in a very short time with little to no resources. On the other hand, we find that a small rural elite could afford some more comfortable types of housing built either of wood or stone, despite the countryside having only been recently settled (Fyfe 1962; Colonial Office 1827). Households living in frame or stone houses owned, on average, more than twice the wealth in the form of livestock than those living in the more common grass houses. One possible interpretation of these data is that these settlers might have arrived earlier in the colony and therefore have had more time to accumulate greater wealth. Figure 2 shows that most of the
frame or stone houses were concentrated in the settlements nearer to the capital or in York, a flourishing trading station along the western coast of the peninsula.
4.3. Apprentices’ distribution

The distribution of apprentices was highly unequal between households, with a Gini index standing at 0.850. Only 21 percent of the households in the sample (n. 1,168) were recorded as hosting one or more of the 1,961 apprentices distributed throughout the countryside. Although most households hosted only one apprentice, the number of households hosting more than one was not insignificant, with the maximum being 18 (figure 3).

The estimated value of hosting apprentices in the long run could be large if used as a replacement for free labor. Even though the direction of causality is difficult to determine, we find that over 70 percent of those living in more luxurious dwellings hosted on average two apprentices, whereas only a minority of grass house owners hosted any apprentices at all (see online Appendix table A1.1).

4.4. Land distribution

The distribution of land, in terms of absolute acreage per household, appears to be more even than that of other assets and the Gini index for land distribution is consequently the lowest of all assets, at 0.453. The mean allotment size per household was three acres (median two acres per household), with only nine percent of the rural households recorded as being landless. Many of these households had presumably settled in the colony only recently and had not yet had the time to clear a suitable plot. Of the landowners, over 60 percent held plots in the range of 0.01 to four acres, whereas only a small share were reported to own larger plots of land; the largest single holding was reported as 90 acres of land (figure 4). The relative equality in
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Figure 4. Distribution of land, by household. Obs. 5,565. Source: see table 1.

land ownership seems to confirm our expectations for a newly settled society oriented toward subsistence agriculture.

By employing our proxy for the value of households’ landholdings to estimate inequality, we are also able to take land heterogeneity into consideration and find a Gini coefficient of 0.525 for the distribution of wealth in the form of land. This suggests a positive association between the size of landholdings and the geographical characteristics of the land.

4.5. Aggregate household wealth distribution

Our results show that different assets exhibited different patterns of distribution (summary in table 3).

On the one hand, wealth in the form of land and houses was quite evenly distributed. The ownership of livestock, and even more so the hosting of apprentices, were on the other hand concentrated only to a few households. Nonetheless, the two latter types of assets contributed with a substantially smaller share to total wealth for our rural sample than housing or land did. Our estimated between-household aggregate wealth inequality corresponds to a Gini index of 0.511 (figure 5; see also online Appendix 3 for sensitivity analysis).

If we examine the contribution of each asset to aggregate household wealth by decile (figure 6), we find that the distribution of the different asset types seems to be quite highly correlated, so that a household owning a larger plot of land often also owned a more valuable house, more livestock, and hosted (a higher number of) apprentices. Livestock had a quite negligible impact upon total household wealth, despite increasing slightly up through the deciles. Housing constituted the most important asset for households at the bottom of the
Table 3. Gini coefficients for the distribution of household assets in Sierra Leone in 1831

| Asset                      | Estimated Gini coefficient | Share of total household wealth (%) | Observations |
|---------------------------|----------------------------|-------------------------------------|--------------|
| Livestock (aggregate, £)  | 0.664                      | 2.7                                 | 5,565        |
| Housing (£)               | 0.507                      | 35.8                                | 5,565        |
| Apprentices (heads)      | 0.850                      | 6.1                                 | 5,565        |
| Land                      | —                          | —                                   | 5,565        |
| Acres                     | 0.453                      | —                                   | 5,565        |
| Estimated value (£)       | 0.525                      | 55.4                                | 5,565        |
| Total household wealth    | 0.511                      | 100.0                               | 5,565        |

Source: see table 1 and figures 1–4.

Figure 5. Lorenz curve for total household wealth distribution. Source: see tables 1–2 and figure 1.

distribution (first and second decile), made up of those who owned little more than the house in which they lived, as well as for households at the top of the distribution due to the concentration of the very valuable frame- and stone-house owners in the top decile.

Our results also show that the contribution of apprentices to wealth was zero for the lower half of the households in our sample. This is not surprising since only a few households were recorded as hosting any apprentices at all. The importance of apprentices, however, grew substantially through deciles six to ten. Yet only a minority of households in deciles six to nine hosted any apprentice at all, contrasting with the top decile who owned a quarter of its wealth in the form of apprentices, and hosted an average of two apprentices per household (see online appendix table A1.2).
Wealth in the form of land ownership contributed, on average, more than any other asset to aggregate wealth in rural Sierra Leone and constitutes the main explanatory factor behind rural inequality. This is hardly surprising, given that one aim when establishing the colony was...
Table 4. The most important occupations of the top wealth fractiles, in alphabetical order

| Occupation   | Share of top percentile (%) | Share of top decile (%) | Share of total sample (%) |
|--------------|----------------------------|-------------------------|----------------------------|
| Blacksmith   | 1.8                        | 1.3                     | 0.6                        |
| Boattman     | 1.8                        | 1.4                     | 0.6                        |
| Carpenter    | 10.7                       | 6.1                     | 5.6                        |
| Constable    | 3.6                        | 1.4                     | 0.6                        |
| Farmer       | 46.4                       | 56.6                    | 49.2                       |
| Fisherman    | 1.8                        | 1.3                     | 0.7                        |
| Laborer      | 5.4                        | 16.2                    | 29.4                       |
| Sawyer       | 12.5                       | 6.6                     | 5.1                        |
| Shinglemaker | 3.6                        | 2.5                     | 3.1                        |
| Shopkeeper   | 5.4                        | 0.5                     | 0.1                        |
| Tailor       | 1.8                        | 1.8                     | 1.6                        |
| Trader       | 1.8                        | 0.7                     | 0.1                        |

Source: see Table 1.

to develop a class of small landowners able to produce for the domestic market and, ideally, also for export (see, for instance, Everill 2013). The importance of wealth in the form of land increased progressively with the deciles: in the first decile, land contributed on average only £0.4 to household wealth; in the sixth decile £14.6, while reaching £41.4 per household in the top decile.

The top decile (n = 556) owned 41 percent of the total aggregate wealth in the colony. Wealth was distributed between housing, accounting for 42 percent of the total, followed by land and apprentices, with 30 and 25 percent. The share contributed by livestock was, by contrast, only negligible. The top percentile of households in our sample, n = 55, owned nearly 15 percent of the total rural wealth, resembling that of the top decile in the assets’ distribution.

The sources used shed little light on how the individual households in the top decile had gotten rich, with the exception of the occupational title of the households’ head. Table 4 shows data on the most common occupational titles of the top fractile wealth-holders.

The table shows that farmers were slightly overrepresented in the top decile (but slightly underrepresented in the top percentile), along with some types of craftsmen, such as carpenters or sawyers. Traders and shopkeepers were also highly overrepresented in the top percentile. Households headed by people described simply as “laborers” were, perhaps hardly surprising, on the other hand underrepresented in the top decile—and even more so in the top percentile. The top decile also included a small number of households headed by females, many of them likely to have inherited wealth from their deceased husband. The single richest household in our sample was headed by Jack Mobray, a “liberated African” by socio-ethnicity and a fisherman by trade. Fishing was, however, likely not the only source of income for the household, as it also owned a considerable acreage of land, and housed two apprentices apart from the members of the family. The second richest household in the sample was headed by Matthew Peacock, also a “liberated African”, but a farmer by trade. The household was seemingly quite dedicated to farming as it, apart from owning one of the largest plots of land in the colony (nearly 67 acres), also owned a number of livestock of different types, and housed no less than seven apprentices.

The lower deciles tended to register a higher share of laborers and a lower share of farmers and craftsmen than those at the top of the distribution. This result seems to suggest that
laborers were, on average, worse off than farmers and craftsmen. It is nonetheless difficult to determine whether our result is driven by the time elapsed since landing in the colony and, thus, the time available for accumulation of wealth and/or by selection effects since our source does not report information on the time of arrival or personal background.

Geographical differences in wealth can also be detected across the peninsula (figure 7). Our data shows that the districts of Wellington and York exhibited the highest levels of intradistrict wealth inequality, whereas the Banana Islands and Waterloo showed low intradistrict wealth inequality levels. Interestingly, if York and Wellington also recorded the highest average per-household wealth in the sample, both the Banana Islands and Waterloo registered similar wealth levels to those of the rest of the districts. In the case of Wellington, wealth was mostly held in land, with land inequality driving aggregate wealth. In York, in contrast, a high number of valuable houses drove up average wealth and inequality. In this latter case, we find that most of the luxurious houses were owned by traders and sawyers. It would seem as if York had been chosen by traders and sawyers for its geographical position, favorable for trading wood and goods in general. In the rest of the districts, despite some differences in average wealth, assets were more evenly distributed.

5. Was Sierra Leone unequal in a comparative perspective?

While our data only allows for studying wealth inequality in Sierra Leone at one specific point in time (the year of 1831), comparing it to the development in other settler colonies in other parts of the world can contribute to our understanding of the extent to which the institutions impact the actual distribution of resources.

Figure 8 reports Gini estimates for wealth distribution from a number of rural settlements around the world, from the seventeenth to the late nineteenth century. Despite the common denominator of rurality, previous studies of settler colonies exhibit a very large range of Gini index estimates, spanning from 0.450 to 0.850 (figure 8). Soon after foundation, settlements in Massachusetts recorded much lower levels of inequality than frontier settlements in Missouri, Maryland, Utah, and the Cape Colony (in current-day South Africa). Although we find initial differences in inequality levels, these levels grew nearly everywhere in later decades (even if at a different pace), likely due to the gradual closing of the frontier. A sharp increase in inequality characterized settlements in Maryland, the Cape Colony, and Brazil. In contrast, inequality grew comparatively slowly in Massachusetts until the late eighteenth century, when it reached the levels of more unequal settlements, and in Utah, where inequality levels had been high already from the foundation of the settlement. As a rule, furthermore, studies of urban wealth inequality in pre-modern settler colonies show much higher levels of inequality in urban areas than those from the rural settler colonies included in figure 8 (see for example Lindert and Williamson 2016, tables 5–11).

Our newly estimated figure for rural Sierra Leone’s wealth inequality in 1831, with a Gini coefficient of 0.511, is quite similar to the inequality levels estimated for settler colonies in the lower part of the figure, such as those in seventeenth-century Massachusetts. The comparison thus suggests that in rural Sierra Leone wealth inequality was relatively low when put into a global context.

Our conclusions are robust to other measures of inequality such as the Size Share Top Ten (SSTT), which defines how much of the total wealth is held by the wealthiest decile (Roine and Waldenström 2015, 517–18). Figure 9 shows that the top decile in rural Sierra Leone owned 41 percent of the total wealth, just a few percentage points higher than the
Figure 7. Gini index for wealth\(\circ\) and average wealth\(\ast\), by district. Source: see tables 1–2 and figure 2.
Figure 8. Gini indices for the wealth distribution in rural settlements, 1650s–1870s. Sources: Cape Colony from Fourie and von Fintel 2010, figure 2a; Massachusetts and six counties from Main 1977, tables 3–4; Missouri from Gregson 1996, table 1; Utah from Kearl et al. 1980, table 1; Maryland from Sarson 2000, see text; Minas Gerais from Frank 2005, table 5; Sierra Leone: table 3.

share owned by the richest 10 percent in newly founded settlements in Massachusetts, but much lower than that owned by the top decile in Maryland, Brazil, and Utah.

Cross-country comparisons of inequality are certainly problematic. One issue, for example, is the sources used for the estimates in each country forming part of the comparison. Most studies of historical wealth levels have relied upon probate records for their source, rather than on census data. Estimates based on probate inventories are notoriously affected by two issues: inclusiveness and wealth bias. Typically, no more than half of the wealth-holders would get their wealth probated, with large variations across regions. Additionally, it was far more likely that inventories would be prepared for wealthy individuals than for the poor, thus causing a downward bias on wealth inequality estimates (Smith 1975; recently Lindert and Williamson 2016, p. 26, argued that existing estimates from probate inventories are more biased than previously claimed). Interestingly, the only historical studies using census data—Utah and Missouri—show much higher levels of wealth inequality than estimated here for rural Sierra Leone. To what extent this is a reflection of methodological problems or actual, historical patterns of differing inequality levels remains an open question.

Another issue is whether to compare the results against other contemporary societies, or instead against colonies with a similar duration since their establishment. The estimated levels of inequality for Sierra Leone in 1831 seem consistently lower than for all contemporary settler colonies—including Brazil and all estimates of wealth inequality from the United States of
the early nineteenth century. The estimated level of inequality in Sierra Leone is also lower than for many settlements of the same duration (time from settlement to observation), as the Sierra Leone Colony was in 1831—such as Utah, Missouri, and the early Cape Colony. The only previously studied early modern region that recorded comparable levels of inequality at a similar duration was Massachusetts, even if these estimates relied on probate inventories as opposed to census data.

6. Conclusion

Using newly unearthed census data for early nineteenth century Sierra Leone, we are able to study wealth inequality in a large sample of households in the colony. As previous research on historical inequality in Africa has been scarce, this is a valuable contribution to the literature. The data available in the primary sources only allow us to study the distribution of rural wealth. Although this could be seen as a drawback, most rural settler colonies relied on, and developed around, urban trading hubs. It is likely that there existed differences between rural and urban wealth that we are not able to capture in this study, with levels of inequality potentially higher in the urban part of the colony (Freetown). This pattern would, however, not be unique to Sierra Leone, and the urban elites of Freetown were arguably likely to have been comparatively poorer than those residing in many American port cities. Thus, the
difference between urban and rural inequality levels was potentially smaller in Sierra Leone than in, for instance, settler colonies in the Americas.

Our results show that inequality levels in rural Sierra Leone in 1831 were lower than those recorded in any previous studies of contemporary rural settlements in Africa and the Americas. In a global context, the distribution of resources in rural Sierra Leone was at this time still comparatively egalitarian and on a par with the low inequality levels found in an early rural settler colony such as seventeenth-to-eighteenth century Massachusetts. The expansion of the frontier into the interior of the Sierra Leone peninsula had, at least by 1831, thus seemingly not led to a situation of heavily concentrated resource distribution.

Our data shows that some of the inequalities certainly might be attributed to the duration of settlement, as more luxurious housing, for example, was more common in the villages settled the earliest. Duration cannot, however, account for all differences, as some of the largest farms were located in more recently settled villages. Some of the inequalities might furthermore be attributable to differences in the factor endowments so that the wealthy households in some villages might have gotten rich from trading or from forestry, whereas agriculture dominated in many other parts of the colony. We do, however, believe that our results also show that the egalitarian ideals on which the colony had been founded had an impact on inequality by shaping the type of institutional arrangements that emerged in the colony, most importantly by providing a framework for how land could be acquired by the settlers. In conclusion, the case set a valuable example of how ideals can shape the institutions that drive inequality, and potentially contributes to further research on how and why inequality levels tended to increase over time in so many of the settler colonies.

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Appendix 1: Further notes on the primary sources

A The census

The 1831 census was the first extensive door-to-door censuses taken in Sub-Saharan Africa. The census takers benefitted from employing standardized forms in which they entered the information gathered (Kuczynski 1948, p. 23). The operation lasted for more than 5 months in 1831, and surveyed 29,000 individuals across more than 9,000 households—80 percent of which resided in the countryside.

The census thus includes data on four types of assets: livestock, houses, apprentices, and land. It is not possible to determine a priori what the distribution of other types of assets would have looked like in rural Sierra Leone. On the one hand, personal wealth in the form of consumer durables and perishables might have been concentrated among the same households that possessed real estate and livestock, since the latter forms of wealth constituted key forms of agricultural capital and could contribute to the further enrichment of their owners. If that were the case, our types of wealth would lead to an underestimate of the levels of total wealth inequality. On the other hand, there might have been socio-economic specialization, so that some households seemingly poor in land or livestock instead possessed other types of wealth (e.g., merchants owning stores of goods and financial assets). From previous research on the distribution of wealth in the Continental Colonies in North America, it is known that the vast majority of wealth in early modern rural communities was either
invested in capital in the form of land or livestock, or was used for the consumption of durables such as housing (compare Jones 1980, table 5.2), all of which are captured by the variables in our study. For this reason, we do not believe that the omission of other household assets distorts the picture of rural wealth drastically.

Unfortunately, the census takers did not survey assets equally across the colony, but excluded noting this information in the capital Freetown. Nevertheless, the value of the information on the assets recorded in the census would have been limited for the households in Freetown even if it had been recorded, as many Freetonians were involved in the commercial sector (Galli 2019), so that the assets recorded in the census might have played a comparatively limited role for many urban households’ wealth.

The reliance of a rural majority on an urban trade hub is, however, not exceptional to Sierra Leone. In his study of settler colonies in the Southern Hemisphere, Donald Denoon argued that most rural settler colonies were highly dependent on trade (Denoon 1983, chap. 2), which must have generated much commercial wealth in portside trade hubs. Studying the distribution of wealth in rural Sierra Leone while omitting urban Freetown does therefore not necessarily lead to any problematic bias so long as the comparison is made to other rural (parts of) settler colonies. If anything, we would expect—due to a combination of the colony’s recent foundation and the limited trading opportunities offered by its rural area (discussed in the historical context)—that the Freetonian commercial elites would have been less wealthy than many of their American counterparts.

Even in the countryside, however, not all assets were equally surveyed. The census–takers claimed the impossibility to survey certain landholdings, noting that the average acreage “may be estimated at three acres per house” (Colonial Office 1838, p. 86; p. 237). This fits with the average for the sample for which information was reported (compare table 1). Nevertheless,
due to the lack of additional information on these households from which inference may be
drawn, we have been forced to exclude them from our analysis.

The four recorded assets reflect different aspects of socio-economic inequality. While
three of them—land, livestock, and apprentices—were possibly the consequence of unequal
incomes and could be important class markers per se, they would also constitute a potential
source of future income (and wealth) for their owners, i.e., capital (Tegebu et al. 2011).
Wealth in the form of housing, in contrast, was to a much larger extent the outcome and an
indicator of unequal wealth distribution, but could probably not contribute much to further
enrichment for those already in possession of a valuable house. When estimating the total
wealth distribution, however, we have not made a distinction between the different functions
that the assets might have had for their owner.

**B The value of assets**

**B.1 Livestock**

The prices of most types of livestock were extracted from the Colonial Blue Books, with the
exception of poultry and donkey. Prices for poultry were found in Clarke (1843). His figures
for the price of other livestock indicate a 20 percent increase in price relative to the prices
reported in the Blue Books. We have consequently deflated the figure for poultry, arriving
at an estimated price of 3s 6d for one head of poultry. Donkeys were quite rare in Sierra
Leone, which is the probable reason why prices for them were missing (Clarke 1843, 11–13).
Nonetheless, studies referring to modern-day rural Africa illustrate a constant ratio between
donkey and oxen of $\frac{1}{8}$ (Fernando and Starkey 2000). Given the similar needs they were required to fulfil, we have assumed the same ratio for our case.

**B.2 Housing**

The value of a grass house in the villages did not exceed £5 according to a Report of the Commissioners (Colonial Office 1827, 33). Frame houses in Freetown were valued at around £180 in the early 1800s. We assume this value to also hold true for the countryside, since much of the houses’ value came from the material and labor invested to build them (Fyfe 1962, p. 100). Stone houses were luxurious dwellings, their value estimated at around £500, a large sum that reflects in their limited number: just over 30 in the entire countryside (Colonial Office 1828, p. 33; Fyfe 1962, p. 164). The variable for housing quality is crude, and does not allow us to study the extent of within-category differences in the value of the houses.

**B.3 Apprentices**

Officially, apprentices were recently landed, underage, liberated Africans that were distributed throughout the colony and hosted by “respectable settlers” for educational and apprenticeship purposes (Colonial Office 1842, 95). Yet, to what extent apprenticeship translated into slavery has long been debated, as claims of a re-enslavement problem were frequent at the time (Colonial Office 1842; Schwarz 2012; Law 2002).

The practice of apprenticeship was introduced into the colony with the Slave Trade Bill of 1807, which regulated the length and terms of the indenture. Liberated Africans not older than 21 years of age could be apprenticed for a period not exceeding 7 years (Everill 2013a, 20). In this early period, evidence suggests that an apprentice was considered an important form of property and that it was common to advertise the disappearance of an apprentice in, for instance, newspapers (Schwarz 2012, 202–3). Governor McCarthy (1816–24), concerned with the mismanagement of apprenticeship and eager to expand the colony in the interior of the peninsula, decided to use newly-landed recaptives to colonize the new territories; new

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**Table A1.1. Asset distribution by housing type**

| Variable | Mean | Std. Dev. | Min | Max |
|----------|------|-----------|-----|-----|
| Livestock (£) | — | — | — | — |
| Stone | 1.75 | 2.81 | 0 | 14.9 |
| Frame | 1.77 | 5.2 | 0 | 44 |
| Grass | 0.75 | 1.23 | 0 | 16.3 |
| Apprentices (£) | — | — | — | — |
| Stone | 37.9 | 31.1 | 0 | 126 |
| Frame | 37 | 45 | 0 | 324 |
| Grass | 4.96 | 12.9 | 0 | 162 |
| Landholdings* (£) | — | — | — | — |
| Stone | 35.95 | 62.81 | 0 | 333.3 |
| Frame | 28.88 | 72.59 | 0 | 445 |
| Grass | 15.6 | 19.5 | 0 | 375 |

Source: authors’ elaboration based on Colonial Office 1831, 1836, 1837, 1838; Clarke 1843; Colonial Office 1842, 1828; Birchall et al. 1980.

*Land heterogeneity assumed. See Appendix 2 for a discussion of methods and sources.
regulations had to thus be drawn up to regulate the system (Sibthorpe 1970, 29). As a result, only children of 12 years or below could be indentured against the payment of a fee of £1 for a period that could vary from 3 to 7 years, depending on the age of the child (Colonial Office 1842, 92–95). Even then, however, frequent changes in regulations and administration left room for mismanagement, and apprenticeship again started to be perceived as a way to accumulate wealth (Everill 2013a, 85). An investigation into the practice found that the £1 fee often was considered to represent the price of the apprentices’ liberty, perceived simply as cheap labor and deprived of any opportunity for education (Colonial Office 1842, 12; 94–95).

Furthermore, the £1 fee would only pay for 60–80 working days of free domestic or agricultural labor, for which the wage varied between 3d–4d per day in the countryside (Colonial Office 1836, 160, 1837, 160). If we further assume 250 working days in a year and factor in the length of the official apprentice’s indenture, we estimate that the gains from apprenticeship would be large, in the range £8–£28, depending on the length of the apprenticeship, between 3 and 7 years.

### Appendix 2: Land

While exchanges of plots of land in Freetown can be found in the sources (Fyfe 1962, p. 143), efforts to find data on the prices of rural land in the colony during the period of our examination have been fruitless. This is perhaps not surprising given that land around the villages could be appropriated for free, by clearing a plot of one’s choice (Colonial Office 1827, 29). Cleared plots of land would, however, presumably have had an economic value, as clearing the land was labor-intensive. The vast majority of the villages in the sample had, however, been established very recently—on average just around a decade prior to our study—so second-hand sales of land were possibly quite rare at this stage (Colonial Office 1828, p. 33). We have, thus, proceeded to develop proxy estimates for land values to fill the gap in the sources, discussed more in depth below.
C Median land prices

For our study, we have identified three median prices reflecting three different scenarios. In the first scenario, the median price was set at £1 per acre. This price represents a scenario characterized by extreme land-abundance and low-population density. One British pound per acre was the national average price in the United States in 1805 (Lindert 1988, table 1). At this stage, the United States had only recently completed the Louisiana Purchase, which doubled its size at once. The land frontier expanded vastly, while population density dropped to about 1.3–1.4 per km² (Mitchell 2003; Maddison 2008). In our second scenario, which we consider the most plausible, we assume farmland to be valued with a median value of £5 per acre. This median value represents a scenario where land availability was limited but not yet scarce. Due to the rapid influx of liberated slaves during the first decades of the nineteenth century, population density in the Sierra Leone Colony had increased greatly. In just three decades the population rose ten-fold, whereas the land frontier remained pretty much stable (Colonial Office 1831; Kuczynski 1948, chap. 2; Fyfe 1962). If we factor in the picture land quality, we find that Sierra Leone’s population stood within the range of critical population density calculated by William Allan, even approaching its upper limit (reported in Austin 2005, 62–63). This means that land was not yet scarce, but would become increasingly so if population growth was not paired with an increased land supply. As a result, land was much scarcer in Sierra Leone than in the United States, by an order of magnitude, but not nearly as contested as that of the United Kingdom at the time (table A2.1).

If we would assume that Sierra Leone exhibited a similar price ratio between land and livestock as the United States, land prices in Sierra Leone would be around £1.4–2.8 per
Figure A1.4. Lorenz curve for land wealth*. *Land heterogeneity assumed. See Appendix 2 for a discussion of methods and sources. Source: see table A1.1

Table A2.1. Population densities, cattle and land prices in the UK, USA, and Sierra Leone

|                         | UK     | USA    | Sierra Leone |
|-------------------------|--------|--------|--------------|
| Population density (per km²) | 99.1   | 1.3–1.4| 52           |
| Cattle (per head)        | £9.25  | £1.45  | —            |
| Farmland (per acre)      | £30–40 | £1–1.5 | £2.5         |
| Farmland/cattle (price ratio) | 3.2–4.3 | 0.6–1.1| —            |

Sources: United Kingdom data from Holderness (1988, table 1.11) for livestock, Norton et al. (1962); and Lloyd (1992, table A.5) for farmland values and Maddison (2008) for population data; US data from Guice (1977, 182) for livestock, Lindert (1988, table 1) for farmland values and Maddison (2008) and Mitchell (2003) for population data; Sierra Leonean data from Colonial Office (1836, 160, 1837, 160, 1838, 160) for livestock and (Colonial Office 1831) for population data.

Note: UK data from 1830. United States livestock prices from 1816, land prices from 1805 and 1850, respectively, and population data from 1805 and 1830. Sierra Leone prices from 1836–38, and population data from 1831.

 acre. If we instead assume a price ratio similar to the United Kingdom, the corresponding land prices in Sierra Leone would be around £8–11 per acre. However, population density in Sierra Leone was higher than in the United States, but lower than in the United Kingdom, halfway between the two benchmarks. To reflect this element, we take the average between the land prices calculated from the land/livestock ratio for the UK and USA, arriving at a benchmark assumption of £5 per acre.
Figure A1. Soil quality, village level. Note: Overlapping minor settlements collapsed into one graphic indicator to improve readability. Source: own calculations based on Birchall et al. 1980.
Table A2.2. Summary statistics of geographical characteristics

| Variable               | Observations | Min | Max | Share of total |
|------------------------|--------------|-----|-----|----------------|
| Soil quality           |              | 1   | 3   |                |
| Less good              | 2,128        |     |     | 38.2           |
| Good                   | 1,388        |     |     | 24.9           |
| Very good              | 2,049        |     |     | 36.8           |
| Communication quality  |              | 1   | 3   |                |
| Less good              | 1,629        |     |     | 29.3           |
| Good                   | 1,182        |     |     | 21.2           |
| Very good              | 2,754        |     |     | 49.5           |
| Distance               |              | 1   | 3   |                |
| Less good              | 1,777        |     |     | 31.9           |
| Good                   | 1,620        |     |     | 29.1           |
| Very good              | 2,168        |     |     | 39.0           |

Source: authors’ elaboration based on Colonial Office 1831, 1827a, 1827b; Birchall et al. 1980.

Our extreme upper boundary for land prices represents a third scenario were land is scarce, similarly to the situation of Freetown in the early nineteenth century. For this reason, farmland price in this scenario was set equal to the average price of a lot in Freetown, £20, before the inflationary trends of a price bubble in the 1820s led the price to first skyrocket, and suddenly drop (Fyfe 1962a, 143). Land in Freetown, even before the 1830s, was of great interest due to the vicinity with one of the major Navy bases in the continent and one of the busiest trading routes of West Africa (sensitivity test in Appendix 3). In this third scenario, the price of land would approach that found in England and Wales around the same period of time, around £30–40 per acre (Norton et al. 1962; Lloyd 1992, table A.5).

D Geographical characteristics and ranking

Soil quality, reported in figure A1 below, is a three-point scale variable representing the average soil quality at village level, and developed from data from the report *Land in Sierra Leone: A Reconnaissance Survey and Evaluation for Agriculture* (Birchall et al. 1980). The importance of physical transaction costs for market participation is taken into account through measures of communication quality and distance from the market, combined into a proxy for degree of market access (Gatare et al. 2015; Porter 2012; Obare et al. 2003; Buckmaster 2012; Kazuko et al. 2015). Qualitative information on communications contained in *The Report of the Commissioners* was used in combination with cartographic representations of the communications in the peninsula of Sierra Leone to construct a categorical variable of communication quality, depending on the ease of communication between the countryside and the primary market in the capital Freetown (Colonial Office 1827). The variable for distance, also categorical, was designed to represent the distance from the market—with breaks at multiples of 10 km.

Original settlement locations were geo-referenced against present-day maps and their distance from the capital extrapolated.

The three characteristics were then combined into a ranking of desirability for each possible combination of soil quality, communication quality, and distance. These were later paired with the actual characteristics of the villages in our study to create the score element of our proxy (table A2.3).
Table A2.3. Ranking of desirability and distribution

| Soil | Communication | Distance | Possible combinations | Level   | Observations | %   |
|------|---------------|----------|-----------------------|---------|--------------|-----|
| 3    | 3             | 3        | 333                   | Very good | 0            | 0   |
| 3    | 3             | 2        | 332                   | Very good | 0            | 0   |
| 3    | 3             | 1        | 331                   | Good     | 0            | 0   |
| 3    | 2             | 3        | 323                   | Very good | 0            | 0   |
| 3    | 2             | 2        | 322                   | Very good | 674          | 9.40|
| 3    | 2             | 1        | 321                   | Good     | 353          | 4.92|
| 3    | 1             | 3        | 313                   | Very good | 0            | 0   |
| 3    | 1             | 2        | 312                   | Good     | 70           | 0.98|
| 3    | 1             | 1        | 311                   | Good     | 952          | 13.28|
| 2    | 3             | 3        | 233                   | Very good | 626          | 8.73|
| 2    | 3             | 2        | 232                   | Good     | 0            | 0   |
| 2    | 3             | 1        | 231                   | Less good | 0            | 0   |
| 2    | 2             | 3        | 223                   | Good     | 0            | 0   |
| 2    | 2             | 2        | 222                   | Less good | 23           | 0.32|
| 2    | 2             | 1        | 221                   | Less good | 920          | 12.83|
| 2    | 1             | 3        | 213                   | Less good | 0            | 0   |
| 2    | 1             | 2        | 212                   | Less good | 290          | 4.05|
| 2    | 1             | 1        | 211                   | Less good | 412          | 5.75|
| 1    | 3             | 3        | 133                   | Bad      | 2,248        | 31.36|
| 1    | 3             | 2        | 132                   | Bad      | 601          | 8.38|
| 1    | 3             | 1        | 131                   | Bad      | 0            | 0   |
| 1    | 2             | 3        | 123                   | Bad      | 0            | 0   |
| 1    | 2             | 2        | 122                   | Bad      | 0            | 0   |
| 1    | 2             | 1        | 121                   | Bad      | 0            | 0   |
| 1    | 1             | 3        | 113                   | Bad      | 0            | 0   |
| 1    | 1             | 2        | 112                   | Bad      | 0            | 0   |
| 1    | 1             | 1        | 111                   | Bad      | 0            | 0   |
| Total|               |          |                       |          | 7,169        | 100.0|

Source: see table A2.1

E Land values

In our study, agricultural land values per village are estimated from the combination of geographical factors (score element) and monetary value per acre (median prices). In order to take geographical differences into account, we employed a four-point Likert-scale. To determine the land values associated with each level of desirability we devalued/revalued the median price of a share as represented in figure below:

Variations in the distribution were employed for sensitivity analysis purposes, varying the distribution in two opposite directions: halving or doubling the differences assumed above. The heterogenous land values emerging from the process of combination of median prices and geographical characteristics are summarized in table A2.4 below. Our analysis is based on
Table A2.4. Summary statistics for land values (£)

| Median price | Observations | Mean  | Std. Dev. | Min  | Max  |
|---------------|--------------|-------|-----------|------|------|
| £1            | 5,565        | 0.97  | 0.28      | 0.67 | 1.33 |
| £5            | 5,565        | 4.84  | 1.39      | 3.33 | 6.67 |
| £20           | 5,565        | 19.37 | 5.59      | 13.33| 26.67|

Figure A3.1. Gini distribution. Obs. 2,268.

the median price of £5, while land median prices of £1 and £20 are employed for sensitivity analysis.

Appendix 3: Sensitivity analysis

To test the sensitivity of our results to our assumptions, we have created a large set of alternative assumptions. We have allowed for variations in the monetary values assigned to each asset by raising or lowering the value of each asset in respect to our preferred estimate. We allowed our prices to take four levels. The first involved removing the asset from the inequality estimation; the second lowering the value to one-fourth of our preferred estimate; the third corresponds to the preferred estimate; the fourth involved increasing fourfold the preferred estimate. We also allowed for different inequality’s distributions by reducing or expanding the relative differences in values for housing and land. For housing, we reduce inequality by increasing the value of a grass house by a quarter and reducing the value of a stone house by the same amount, whereas we increase inequality by reducing the value of a grass house by a quarter and increasing that of a stone house by the same amount. For land, the process is discussed in Appendix A2 above.
Table A3.1. Effect of varying assumptions

| Variable      | Preferred value | Coefficient | Reference category |
|---------------|-----------------|-------------|--------------------|
| Land          | Removing        | 0.083***    |                    |
|               | Low values      | 0.049***    |                    |
|               | High values     | 0.008*      |                    |
|               | Homogeneity     | −0.075***   |                    |
|               | Preferred distribution |            |                    |
|               | Small differences | −0.036***  |                    |
|               | Large differences | 0.040***    |                    |
| Livestock     | Preferred value | 0.006**     |                    |
|               | Removing        | 0.006**     |                    |
|               | Low values      | 0.006**     |                    |
|               | High values     | −0.016***   |                    |
| Housing       | Preferred value | 0.020***    |                    |
|               | Removing        | 0.007***    |                    |
|               | Low values      | −0.009**    |                    |
|               | High values     | 0.048***    |                    |
|               | Preferred distribution |            |                    |
|               | Small differences | −0.036***  |                    |
|               | Larger differences | 0.040***    |                    |
| Apprentices   | Preferred value | −0.007***   |                    |
|               | Removing        | −0.010***   |                    |
|               | Low values      | 0.022***    |                    |
|               | High values     | 0.545***    |                    |
|               | Constant        | 0.884       |                    |
|               | Observations    | 2,268       |                    |
|               | R-squared       | 0.884       |                    |

***p < 0.01,  p < 0.05,  *p < 0.1

Figure A3.1 below reports the distribution of the Gini indices emerging from all possible combinations mentioned above, allowing for each asset to contribute to wealth. The distribution extends from 0.389 to 0.789, a comparatively narrow distribution despite the large number, and the magnitude, of the variations we allowed for. We are aware that uncertainty might arise even when employing contemporary values and the distribution allows us not only to take this uncertainty into account, but also to establish a range of values within which we are confident the most correct value will fall.

Table A3.1 below examine how the Gini estimate is influenced by varying our assumptions. All changes for all assets appear to be statistically significant, with the sole exception of apprentices. Unsurprisingly, a change in the assumptions related to land and housing have the largest impacts on inequality, due to the relative importance of the two assets for aggregate wealth, followed by livestock and apprentices. Removing assets, meaning not allowing a factor to contribute to aggregate wealth, is seen to increase inequality in all cases, with the effect of land being the most apparent.

When decreasing prices to a quarter of the default value, we find different patterns. A reduction in the price of land leads to a reduction in inequality levels, conversely to the effect...
of both livestock and housing, increasing slightly inequality. The opposite is true for increased prices, with land boosting inequality while livestock and housing would tend toward a slight reduction.

Shifting the distribution toward smaller or larger differences has a non-negligible impact on our estimates in the expected direction. In fact, smaller differences have an equalizing effect, while bigger differences tend to inflate inequality, in both cases the effect being of about 0.03–0.04, a greater effect than that of varying prices. The results of the regression confirm the effect of land homogeneity on inequality. When treating land as a homogenous factor, we find that our inequality estimates are greatly reduced.

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