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Abstract:

This article examines the distribution of land ownership in the northeastern part of the state of São Paulo, Brazil, the leading coffee export region in the world during the early twentieth century. Based on a detailed agricultural census, we find a widespread presence of small and medium-size farms, with varied degrees of land concentration across subregions and municipalities. Still, large farms and latifundia controlled most of the productive resources in northeast São Paulo, resulting in high levels of inequality when compared to those of other export regions in South and North America.

Keywords: Land Inequality, Coffee, São Paulo, Brazil

JEL Codes: N5, N50, Q15

Land Inequality in a Coffee Economy: São Paulo During the Early Twentieth Century

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For several decades now Latin America has been a laboratory to test different theories about the origins of inequality and its relationship to economic development. Wealth, land and income inequality figured prominently in the historical syntheses of Latin American development in classic works of the 1940s to 1960s (Prado Jr 1942, 1945a; Bagú 1949; Furtado 1959, 1969). Likewise, the recent revival of interest in the causes and consequences of inequality has highlighted regions and countries of Latin America as a basis for comparison with the former colonies of North America and other parts of the world (Engerman and Sokoloff 1997, 2012; North, Summerhill and Weingast 2000; Acemoglu, Johnson and Robinson 2001, 2002; Easterly 2007; Galor, Moav and Vollrath 2009).

Despite all the interest, the data available to calculate past inequality in Latin America are scarce and frequently unrepresentative. Different methods have been employed to circumvent the paucity of evidence, such as assigning incomes to occupational classes and extrapolating to whole countries, or estimating labor income shares for national economies (Prados de la Escosura 2007; Bértola et al 2010). Others have used rental-wage ratios (proxied by land prices-unskilled urban wages) derived from the Stolper-Samuelson theorem as direct measures of observed inequality (Williamson 1999; Arroyo Abad 2013). Yet problems of unrepresentative sampling, fragile evidence, and unwarranted extrapolations and generalizations continue to limit the findings of the recent research, and for extension, the understanding of inequality in different epochs and regions of Latin America in the past.

One alternative and not mutually exclusive strategy is to ground analyses in carefully collected primary data on landholding, wealth and income which allow for the varieties of regional experience within countries.[1] Probate inventories, for example, are a well-known source for estimating wealth distribution in pre-statistical periods but have been scarcely employed in

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[1] Regional and local data have been used in recent studies that investigate the relationship between inequality and long-run development outcomes in the Americas: Nunn (2008); Acemoglu, Bautista, Querubin and Robinson (2008); Carvalho Filho and Colistete (2010); Summerhill (2010); Acemoglu, García-Jimeno and Robinson (2012); Naritomi, Soares and Assunção (2012).

comparative studies on Latin America. Other sources include tax records, electoral lists and economic censuses carried out by regional or national authorities. All these sources of data have their own conceptual difficulties, which demand adjustments and a balanced view of their advantages and limitations. Nonetheless they can provide detailed evidence which offers a more consistent basis to deal with issues of sampling representativeness and generalizations. Besides, apart from being of interest in its own right, a focus on regions helps to identify the influences of factors such as productive specializations, as well as labor and land institutions at the subnational level which are often overlooked when the only unity of analysis is the national economy.

This article deals with a particular but important aspect of past inequality in the Americas: how unequal was the distribution of land ownership in regions with a dynamic export agriculture? Rather than exploring the relationships between inequality and development outcomes, we focus on estimating and interpreting complementary measures of land inequality in an agricultural region producing a commodity – coffee – which was going through a quite exceptional export boom in Brazil since the second half of the nineteenth century. As far as Brazil is concerned, there still remains a wide gap in our knowledge about the level of land inequality from colonial times to the early twentieth century, even in relatively well-known areas such as the coffee economy in São Paulo. Therefore, we examine the degree to which large or small landholdings prevailed in a representative area of the most successful export-oriented agriculture in nineteenth and twentieth-century Brazil: the northeast region of the state of São Paulo during the golden years of the coffee economy. We concentrate on the early twentieth century, when São Paulo coffee production was already the largest in Brazil and the world over, and the northeast region was the biggest coffee-producing area in the state of São Paulo. This was also a time in which the industrial sector was growing fast in the main urban centres in Brazil, especially in São Paulo. We rely on data concerning 3,893 landowners for the period 1904-1905, as drawn from the *Estatística Agrícola do Estado de São Paulo*, a detailed census carried out by the Secretary of Agriculture of the state of São Paulo.

Our analysis highlights the regional variation in landholding structures, even though they were located in the same geographical area where economic growth was largely driven by coffee exports. We find substantial differences in the concentration of land ownership across subregions and municipalities, and show that the largest majority of farms was owned by small and medium landholders. Nonetheless, a high degree of concentration in land ownership predominated in

northeast São Paulo in the early twentieth century. The vast number of small and medium properties did not translate into a "democratic" land structure, as the majority of total or cultivated area, as well as coffee trees, was owned by relatively few big farmers. Land in northeastern São Paulo was as concentrated as in other Latin America's coffee areas such as the district of Yauco in Puerto Rico, while inequality indicators in São Paulo were significantly higher than those recorded in traditional coffee areas of relatively small-scale production in Costa Rica and Colombia.

Also important for comparative purposes is that the northeast São Paulo's coffee agriculture shows as high or even higher land inequality than the U.S. South's cotton export region during the antebellum era. This result corroborates the notion advanced by Stanley Engerman and Kenneth Sokoloff (1997; 2012) that landholdings tended to be more concentrated in Latin America than in the United States, which led to more concentrated political power and elitist public policies. Even though based on free-labor and a massive immigrant workforce, the coffee agriculture of northeast São Paulo in the early twentieth century was in a unfavorable situation in terms of land inequality when compared with the U.S. northern agricultural states or even the slave export economy of the U.S. cotton South.

The following sections provide an overview of the coffee economy in São Paulo and of the main issues to be addressed. We then present evidence on the distribution of land in northeast São Paulo using a set of quantitative measures. The final section summarizes the findings and conclusions.

LARGE AND SMALL FARMS IN SÃO PAULO AGRICULTURE

After Brazil became independent in 1822, both the parliament and provincial governments tended to favor land policies that preserved the large estate as the foundation of the agrarian system, as the old institution of royal grants (*sesmarias*) had done throughout colonial times.[2] Although intellectuals, ministers of state and high bureaucrats of the imperial government sometimes tried to highlight the advantages of small landholdings in Western Europe and in the United States, they were not able to win over the landed interests of northeast and southeast Brazil which were firmly represented in parliament. The settlement of smallholders – mostly European immigrants – by the imperial government was successful only in the provinces of the south (Rio Grande do Sul and Santa Catarina) and one small region of the southeast (Espirito Santo), probably as a result of the

[2] On *sesmarias* and land legislation in the nineteenth century, see Freitas Jr (1882), Vasconcellos (1885) and Lima (1935).

need to protect the new nation's frontiers and the lack of a mobilized landed class in those regions (Carvalho 1910; Smith 1954, ch. 17; Dean 1971).

In the traditional agricultural areas where large-scale production had developed, there were several obstacles to the expansion of small farms (Costa 1977, pp. 151-52). For example, during the nineteenth century, provincial governments usually eschewed promoting the settlement of smallholders even in the newly-expanding regions of the agricultural frontier. Describing the transformation of Rio Claro into a big coffee county in mid-nineteenth century São Paulo, Warren Dean remarked that "[s]tanding on its head the image of society that served as ideology for the small-holders in English North America, the makers of policy in Brazil believed that only the rich and the well-born could be expected to display entrepreneurial qualities". And this despite the fact that the number of small-scale landholders in Rio Claro had been increasing and diversifying their production of foodstuffs for the market in the early decades of the nineteenth century, just before the emergence of coffee as a main crop (Dean 1976, pp. 7-10, 12-14).

Even in the absence of a homestead policy, smallholders continued to buy, occupy, clear and cultivate land in the São Paulo's frontier throughout the nineteenth century, as they had done before. However, with the advent of export crops such as sugar and coffee, smallholders faced the threat of eviction by new owners who bought or simply took over large plots of land. In such cases, some of these small producers were dispossessed and forced to move on with the frontier and others were taken on as dependent laborers (*agregados*) at the large farms. Still others succeeded in keeping their small tracts of land, although this was usually in areas which were beneath the interest of large landowners. The Land Law of 1850, which ruled that public land could be alienated only by sale, did not improve the lot of smallholders (Dean 1976, ch. 1; Katzman 1975, pp. 275-78). Similarly, their position in the agrarian economy changed only marginally with the arrival of European immigrants to São Paulo in the mid-nineteenth century. From 1887, mass European immigration was mostly channeled to provide abundant labor for the large coffee estates (Beiguelman 1968a, 1968b; Holloway 1984, ch. 3; Dean 1976, chs. 1 and 6). For example, the few official colonization nuclei spread out over the São Paulo countryside, which sold small plots in installments, settled only 933 families by 1908 (São Paulo 1909, p. 180, table 7).

Smallholders lacking property titles were not alone in the agricultural frontier. Large-area squatters were able to take over huge tracts of land through their special connections with legal and political authorities. Land titles could be granted upon an alleged first occupation of public land

(*terra devoluta*) or simply by forging the documentation with the help of local officials and politicians. Most of these lands were partitioned in the following years, either by selling or by another round of squatting, but the remaining agrarian structure tended to keep a disproportionate share of land in the hands of large-scale landowners (Cobra 1923; Dean 1971). Only in the early twentieth century did the increase in the number of smallholdings become more substantial, as a result of immigration, increasing incomes and the relative decline of extremely large estates in both old and new agricultural zones. Colonization companies, for example, began to sell small plots of land in the northwest and southwest regions of the state of São Paulo (and north Paraná) which had only been sparsely occupied by the non-native population before 1900. In these plots, smallholders raised cattle and grew coffee and other products such as rice, cotton, corn and beans, depending on the location, type of land and market opportunities (Monbeig 1984, pp. 139-47; Holloway 1984, ch. 6).

Therefore, coffee was flexible enough to be grown on a variety of types and sizes of land. As a matter of fact, this was a distinguishing feature of the coffee-export economies in Latin America as a whole. As Lowell Gudmundson pointed out, "coffee was produced by a broad variety of social elements, from the peasantry to the plutocracy […]. Indeed, of all of the major agricultural export activities developed in the region [Latin America] after mid-nineteenth century, coffee was perhaps the most reconcilable, in certain contexts, with small-scale landownership and cultivation." (Gudmundson 1989, p. 221). Thus, coffee plantations prevailed in certain regions, such as Guatemala, Central Colombia and El Salvador, in which there was also a significant sector of small and medium-size farms. In other areas, the spread of coffee was predominantly associated with small-scale and commercially-oriented farms, such as in central Costa Rica, western Colombia, parts of Venezuela, and western Puerto Rico, although in such cases large properties were found alongside smaller ones. Explanations for regional variations and the predominance of large or small-scale production in any one region have ranged from factor endowments to the mobilization of elites and political institutions (Gudmundson 1989; Roseberry 1995; Samper 1994; Nugent and Robinson 2010).

One of the main difficulties in the characterization of landholding patterns is how to define what exactly constitutes a large, small or medium-sized farm. In order to ascertain which landholding structure predominates in one region a size classification of the farms needs to be adopted, even though this may be conventional and somewhat arbitrary. A number of attempts have

been made recently to define the meaning of small, medium and large farms in specific regions in nineteenth-century Brazil. Some have established categories of land size, as in the case of Minas Gerais (Bergad 1998, pp. 62-70; Saraiva 2002). Most references to land size, however, are difficult to transpose onto other areas or are not associated with land tenure itself, but rather with the number of slaves owned. And in some cases, the classifications suggested are simply too vague to be useful.

More important, although data on the number and average size of landholdings highlight important aspects of the agrarian structure, the concentration of land ownership is a quite different issue. Even the traditional picture of a coffee agriculture based on smallholdings, such as that in Costa Rica, for example, is blurred when the concentration of land ownership is considered (Samper 1994). For the crucial issue of distribution of economic power and its long-term implications, it is the concentration of land rather than the absolute number or average size of landholders that matters most. For São Paulo, for example, the very few works that have estimated land concentration either in the colonial period or in the nineteenth century have founded a highly unequal distribution of land ownership, despite the large number of small landholders (Canabrava 1972a, 1972b; Rangel 1998; Nozoe 2008).

THE COFFEE ECONOMY IN NORTHEAST SÃO PAULO

The geographical area focused here is the northeast region of the state of São Paulo during the golden age of the coffee economy in the early twentieth century. This region comprised the *municípios* (municipalities) of Ribeirão Preto, Cravinhos, Sertãozinho, São Simão, Cajuru, Santo Antonio d'Alegria, Batatais, Nuporanga, Jardinópolis, Franca, Ituverava, Patrocínio do Sapucaí and Santa Rita do Paraíso (later known as Igarapava). Together they accounted for 9.3 percent of the population of the state of São Paulo (in 1907); however, their share of total coffee production was much higher: 20.1 percent (in 1905). At that time, Ribeirão Preto and São Simão were the largest growers of coffee in the state of São Paulo, with São Paulo's port of Santos making up 72.8 percent of Brazilian exports and 52.1 percent of world coffee exports.[3]

Colonization of the northeast of São Paulo dates to the early eighteenth century, when a locality situated farther north (Arraial Bonito do Capim Mimoso) began to sell salt and cattle to the recently discovered mines in Goiás and Mato Grosso and other neighboring regions. In 1805, the locality was established as a separate parish becoming the municipality of Vila Franca do Imperador

[3] Calculated from Brazil (1916), pp. 345-49; São Paulo (1906-1907); Graham (1912), pp. 10-11. Export data refer to 1906.

in 1824, and re-named Franca in 1856. With the economic and population growth of the region, new districts and municipalities were created in the years that followed, such as Batatais (1839), São Simão (1865), Cajuru (1865), Ribeirão Preto (1871), Santa Rita do Paraíso (1873, later known as Igarapava) and Sertãozinho (1896) (Brazil 1957, pp. 126-28, 323; Brioschi 1999; Garavazo 2006, pp. 31-41). Travelers crossing the region in the early nineteenth century recorded the production of foodstuffs, rough cotton fabrics, hats and firearms, although they pointed out that its most dynamic activity was the export of livestock to other regions in São Paulo and Brazil (D'Alincourt 2006, pp. 39, 43, 48-49; Cazal 1845, pp. 200-01; Saint-Hilaire n.d., pp. 119, 136, 143-44). In 1836, the northeast area (then consisting only of Franca) produced 5.5 percent of manioc powder, 4 percent of maize and 3 percent of tobacco of the province of São Paulo. However, where the region stood out was in the production of livestock, with 20.1 percent of sheep, 10.3 percent of cattle and 9.4 percent of pigs raised in São Paulo coming from the northeast area. Production of coffee was negligible at the time in the northeast region and remained so until the middle of the century (Müller 1978, pp. 124-29; Oliveira 1855).

Coffee began to be cultivated in the state of São Paulo at the end of the eighteenth century in the northern coast area and the Paraíba Valley, reaching Campinas in the central area of the state by the mid-1830s. In the decades that followed, coffee spread further to the countryside, including the northeast part of the state. The expansion of the coffee frontier was greatly stimulated by the development of a railway network built up by privately-owned railway firms such as the Paulista and Mogiana companies. The *municípios* in the agricultural frontier of northeast São Paulo served by the railway at the end of nineteenth century and the beginning of the twentieth century included: São Simão (1882), Ribeirão Preto (1883), Batatais (1886), Franca (1887), Sertãozinho (1899), Ituverava (1903) and Igarapava (1914).[4] In the 1880s, a new wave of European immigrants destined to work in the farms and cities of São Paulo began to arrive. The northeast region of the state received 22.6 percent (8,052) of the registered immigrants (35,631) entering São Paulo through the Immigration House (*Hospedaria dos Imigrantes*) in 1905. Ribeirão Preto was the largest recipient of immigrants in the state of São Paulo at the time (São Paulo 1907, pp. 38-43).

The arrival of coffee had a direct impact on land markets, with widespread speculation and a dramatic increase in land prices. The price per hectare of fertile land in the municipalities of

[4] Pinto (1903), pp. 36-58; Saes (1981), chs. 1-2; "Estações Ferroviárias do Brasil". Dates refer to the year when the cities were connected to the railway system.

Batatais and Nuporanga rose twelvefold between 1850 and 1890 (Bacellar 1999, p. 111). However, as scholars have pointed out, the effect on the landholding structure differed significantly across the northeast region of the state of São Paulo. Ribeirão Preto, for example, is well known for its huge plantations and legendary landowners, such as Henrique Dumont, Francisco Schmidt and Martinho Prado Jr. Although small and medium-size farmers were able to occupy or buy land, the consolidation of large tracts of land predominated in the wake of coffee expansion. By the end of the century, coffee cultivation was mainly carried out on large estates by landowners with large amounts of capital (Gifun 1972, chs. 5 and 7; Zamboni 2001, pp. 206-07; Marcondes 2007, pp. 181-84).

Franca, on the other hand, has been described as an example where small family farms dominated the landscape. The fact that it was an old settlement area inhabited by farmers with few resources, who specialized in the supply of foodstuffs and livestock to the domestic market, as well as the fact that they lacked the best soil for coffee growing, are the reasons usually cited to explain the alleged preponderance of small landholdings based on family labor in Franca (Tosi, Faleiros and Teodoro 2007; Oliveira 1997, 2006). In the next sections, we will gather evidence that will help to assess these views.

LANDHOLDING STRUCTURE AND SIZE DISTRIBUTION

The source of data for our analysis is the census carried out by the Secretary of Agriculture of the state of São Paulo in the early twentieth century, the "*Estatística Agrícola e Zootécnica do Estado de São Paulo no Ano Agrícola de 1904-1905*" (São Paulo 1906-1907). This census provides detailed data on farms, including the name of the owner, the size of the property, the area cultivated, and the crops produced at the time of the census. There are 3,893 landholders in the thirteen municipalities which constitute what has been defined here as the northeast region of the state of São Paulo. Since we are interested in measuring size and concentration of landholdings, we have put together the properties of individual farmers where they owned more than one farm in a single municipality.[5] We also classified the municipalities according to region in order to facilitate analysis. Thus the thirteen *municípios* of northeast São Paulo are divided into four regions: Ribeirão Preto, Cajuru, Batatais and Franca. The descriptive statistics are shown in Table 1.

[5] As the municipality is the unit of interest here, we only take into account a farmer's properties in a given *município*. It means that the following indicators underestimate land concentration, since a farmer could own properties in more than one municipality.

Table 1 - Descriptive Statistics of Total Landholding Area in Northeast São Paulo, 1904-1905

Regions and Municipalities	Number of landholders	Mean Area (*alq*)	Median Area (*alq*)	Standard Deviation	Coefficient of Variation	Minimum Area (*alq*)	Maximum Area (*alq*)
Ribeirão Preto	*882*	*164*	*20*	*789*	*4.80*	*1*	*13,988*
Ribeirão Preto	243	201	21	743	3.70	1	8,000
Cravinhos	83	181	80	395	2.18	3	2,600
São Simão	291	112	22	287	2.56	2	2,500
Sertãozinho	265	183	12	1,195	6.53	1	13,988
Cajuru	*726*	*49*	*12*	*193*	*3.91*	*0.5*	*3,000*
Cajuru	499	60	14	230	3.87	0.5	3,000
Santo Antônio d'Alegria	227	27	10	40.7	1.52	1	300
Batatais	*1,173*	*213*	*80*	*745*	*3.50*	*1*	*17,000*
Batatais	405	136	21	332	2.44	1	4,000
Jardinópolis	261	93	8	649	6.99	2	10,000
Nuporanga	507	336	160	977	2.91	10	17,000
Franca	*1,112*	*146*	*60*	*333*	*2.28*	*0.25*	*4,000*
Franca	381	152	80	302	1.99	3	3,155
Ituverava	252	177	60	411	2.32	1	4,000
Patrocínio do Sapucaí	108	189	102	284	1.50	2	2,150
Santa Rita do Paraíso	371	107	25	314	2.95	0.25	3,500
Northeast São Paulo	*3,893*	*152*	*39*	*591*	*3.88*	*0.25*	*17,000*

Source: São Paulo (1906-1907).
Note: *alq* = *alqueire paulista*. 1 *alqueire* = 5.98 acres, 2.42 hectares or 24,200 square meters.

As we can see from the basic statistics, the figures vary significantly amongst municipalities and regions. The number of landowners ranged from 507 in Nuporanga to 83 in Cravinhos, while the mean area of properties was also the highest in Nuporanga (336 *alqueires*) and the lowest in Santo Antônio d'Alegria (27 *alqueires*). The mean farm size is always much higher than the median, indicating an asymmetric distribution, skewed to the right, that is, with few large values of land size relative to the small ones. The standard deviation and the coefficient of variation show that heterogeneity of land size in localities such as Jardinópolis and Sertãozinho was well above that, for instance, in Patrocínio do Sapucaí and Santo Antônio d'Alegria. The minimum area ranges from 0.25 *alqueire* to huge farms with more than 1,000 *alqueires* – the largest being one property in Nuporanga with 17,000 *alqueires*. All these measures suggest asymmetry and the coexistence of small and very large farms, but we need further evidence to evaluate the distribution of landholding.

The first means we have to assess the degree of inequality in northeast São Paulo is to use the traditional size classification of land ownership. Recent literature on Brazil's agrarian structure has argued that the role of small and medium-sized farms was greater than that previously assumed by classic historiography (Linhares 1983; Castro 1988; Fragoso and Florentino 1993; Fragoso 1998;

[6] The classic historiography is mainly represented by Prado Jr (1942; 1945a) and Furtado (1959).

Barickman 1998; Caldeira 2009).[6] However, a precise definition of what should be classified as a small, medium or large farm is lacking in most of the literature.

In an article published in 1935, Caio Prado Jr outlined a landholding classification based on typical characteristics of farms in terms of the social and economic features of São Paulo agriculture. Small farms were defined as being based on family labor, without engaging outside workers; medium farms employed outside labor but the owners occasionally or even regularly worked on the land; and large farms depended exclusively on hired labor. Prado Jr then related these sociological categories to a quantitative classification of farms, while acknowledging that such an association would be elusive and somewhat arbitrary. Small properties were defined as those of up to 25 *alqueires*; medium properties, between 25 and 100 *alqueire*s, and large properties as being those which had above 100 *alqueires*.[7] The relatively high intervals were meant to fit with the huge territorial extension and low demographic and economic density of São Paulo and Brazil (Prado Jr 1945b, pp. 692-93).

The existence of vast tracts of occupied and non-occupied land in São Paulo led another historian, Sérgio Milliet, to reformulate the original classification adopted by Caio Prado Jr, noting that the class of properties above 100 *alqueires* included farms with distinct features that required a category of their own. Estates between 100 and 500 *alqueires* could be properly defined as large farms, whereas those with more than 500 *alqueires* would be better characterized as *latifundia*, the very large estate widespread in Brazil and most of Latin America (Milliet 1941, pp. 76-77).[8]

The Prado Jr-Milliet classification is not without its problems, as they were careful to recognize. Caio Prado Jr's assumption that small holdings only engaged family labor is hard to reconcile with historical evidence, since farms of up to 25 *alqueires* often seem to have employed one or more workers on their premises.[9] By the same token, Milliet's definition of *latifundium* has no sociological features to distinguish it from the "large farm" class. Milliet does not refer to the traditional concept of *latifundia* as very large estates with archaic methods and under-utilized land – either because he saw such features as implicit in his definition or because he rejected the idea that a *latifundium* would be necessarily associated with such features.

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[7] As already mentioned, 1 *alqueire* equals 5.98 acres, 2.42 hectares or 24,200 square meters.
[8] *Latifundium* is usually defined as a very large estate characterized by monoculture, archaic methods of production and under-utilized land. See, for example, Lambert (1969), chs 3-4; Guimarães (1989).
[9] In northeast São Paulo, 1,297 out of 1,705 small properties employed one or more laborers. Small farms employed 10 workers on average (median = 9). Calculated from São Paulo (1906-1907).

Despite these problems, the Prado Jr-Milliet typology is a useful basis to help describe landholding patterns of the coffee economy in São Paulo, especially when complemented by the other quantitative measures presented in the next section. The four size-classes reflect a vast territory filled with huge areas of unexploited private land, in a very sparsely populated countryside in the early twentieth century. For example, the upper limit of 25 *alqueires* (60.5 hectares or 149.5 acres) for the smallholding class is much higher than what could be an upper limit for small properties in El Salvador (7 hectares or 2.9 *alqueires*) or Colombia (10 hectares or 4.1 *alqueires*), two other coffee producers in Latin America (Samper 1994, pp. 152-53; Palacios 2002, p. 176). In the same vein, a property of 400 hectares (165.3 *alqueires*) could be regarded a *latifundium* in Colombia (Palacios 2002, pp. 175-76). Jacques Lambert's definition of *latifundium* as comprising more than 2,500 acres (418 *alqueires*) in Latin America is also below the lower limit (500 *alqueires*) of the Prado Jr-Milliet classification (Lambert 1967, p. 61). Even though the size classes adopted here were regarded as too high, it is further assurance that our analysis does not overestimate the concentration of land ownership in São Paulo coffee economy.

We may start by considering the distribution of the number of landowners according to the Prado Jr-Milliet typology in Table 2. Small landholders represented no less than 43.8 percent of all landowners in northeast São Paulo. The shares of medium-size landowners (28.8 percent) and large landowners (22.8 percent) were significantly lower than this, and the share of the "latifundists" even lower, at only 4.5 percent of the total landowning class. A look at the figures of the *municípios* is also revealing. The percentage of small landholders ranged from 2.8 percent in Nuporanga to 74 percent in Santo Antônio d'Alegria. Perhaps surprisingly in view of what has been stated by historiography, Franca had one of lowest shares of small landholders (10.5 percent) among the municipalities. The large majority of landowners in this *município* was made up by medium-sized landholders (50.1 percent) and large (34.9 percent) landholders – whereas the share of the latifundists (4.5 percent) was the same as the average for the northeast region. Also surprising, perhaps, is that small farmers made up 53.9 percent of landowners in Ribeirão Preto, an area known for its "coffee kings". The share of latifundists (7.8 percent) in Ribeirão Preto was higher than the regional average, but its relative number of medium-size landholders (19.8 percent) and large landholders (18.5 percent) was below both the regional average and the values for Franca.

Table 2 – Number and Percentage of Farms by Size Class in Northeast São Paulo, 1904-1905

Regions and Municipalities	Small	Medium	Large	Latifundium	Total
Ribeirão Preto	*487 (55.2)*	*196 (22.2)*	*160 (18.1)*	*39 (4.4)*	*882 (100.0)*
Ribeirão Preto	131 (53.9)	48 (19.8)	45 (18.5)	19 (7.8)	243 (100.0)
Cravinhos	25 (30.1)	24 (28.9)	29 (34.9)	5 (6.0)	83 (100.0)
São Simão	150 (51.5)	73 (25.1)	61 (21.0)	7 (2.4)	291 (100.0)
Sertãozinho	181 (68.3)	51 (19.2)	25 (9.4)	8 (3.0)	265 (100.0)
Cajuru	*506 (69.7)*	*173 (23.8)*	*36 (5.0)*	*11 (1.5)*	*726 (100.0)*
Cajuru	338 (67.7)	125 (25.1)	25 (5.0)	11 (2.2)	499 (100.0)
Santo Antônio d'Alegria	168 (74.0)	48 (21.1)	11 (4.8)	0 (0)	227 (100.0)
Batatais	*424 (36.2)*	*271(23.1)*	*405 (34.5)*	*73 (6.2)*	*1,173 (100.0)*
Batatais	217 (53.6)	76 (18.8)	86 (21.2)	26 (6.4)	405 (100.0)
Nuporanga	14 (2.8)	153 (30.2)	298 (58.8)	42 (8.3)	507 (100.0)
Jardinópolis	193 (73.9)	42 (16.1)	21 (8.0)	5 (1.9)	261 (100.0)
Franca	*288 (25.9)*	*483 (43.4)*	*288 (25.9)*	*53 (4.8)*	*1,112 (100.0)*
Franca	40 (10.5)	191 (50.1)	133 (34.9)	17 (4.5)	381 (100.0)
Ituverava	40 (15.9)	139 (55.2)	58 (23.0)	15 (6.0)	252 (100.0)
Patrocínio do Sapucaí	19 (17.6)	35 (32.4)	46 (42.6)	8 (7.4)	108 (100.0)
Santa Rita do Paraíso	189 (50.9)	118 (31.8)	51 (13.7)	13 (3.5)	371 (100.0)
Northeast São Paulo	*1,705 (43.8)*	*1,123 (28.8)*	*889 (22.8)*	*176 (4.5)*	*3.893 (100.0)*

Source: same as for Table 1.
Notes:
a) farm size according to the classification by Prado Jr (1945b) and Milliet (1941):
small farms = between 0 and 25 *alqueires*
medium farms = between 25 and 100 *alqueires*
large farms = between 100 and 500 *alqueires*
latifundia = more than 500 *alqueires*
b) 1 *alqueire* = 5.98 acres, 2.42 hectares or 24,200 square meters.

The major point of interest for the analysis of land concentration, however, is the relative area controlled by individual landowners. Table 3 shows the share of total land area in northeast São Paulo in the early twentieth century according to the Prado Jr-Milliet typology. Now we can see that the share of small farms (2.8 percent) was only a tiny fraction of total agricultural land in 1904-1905. Medium-size farms also held a relatively meager share, with 11.4 percent of the agricultural area. Large farms and *latifundia* controlled most of total agricultural area – 33.1 percent and 52.6 percent, respectively. These figures show that a large number of small properties did not translate into a more "democratic" land tenure structure in northeast São Paulo during the early twentieth century.

Table 3 - Percentage of Total Farmland by Size Class in Northeast São Paulo, 1904-1905

Regions and Municipalities	Small	Medium	Large	Latifundium	Total
Ribeirão Preto	*3.4*	*8.0*	*24.0*	*64.6*	*100.0*
Ribeirão Preto	2.5	5.7	16.1	75.8	100.0
Cravinhos	1.3	9.9	40.1	48.7	100.0
São Simão	5.7	13.9	44.5	35.9	100.0
Sertãozinho	3.5	5.8	14.1	76.5	100.0
Cajuru	*13.2*	*25.1*	*19.4*	*42.4*	*100.0*
Cajuru	10.7	21.1	17.2	51.1	100.0
Santo Antônio d'Alegria	25.7	44.5	29.8	0	100.0
Batatais	*1.5*	*7.5*	*36.6*	*54.4*	*100.0*
Batatais	3.6	7.4	35.3	53.8	100.0

Regions and Municipalities	Small	Medium	Large	Latifundium	Total
Nuporanga	0.2	7.1	39.4	53.4	100.0
Jardinópolis	5.9	10.5	20.6	63.0	100.0
Franca	*2.1*	*17.5*	*38.9*	*41.6*	*100.0*
Franca	1.2	19.7	44.4	34.7	100.0
Ituverava	1.5	19.2	30.7	48.6	100.0
Patrocínio do Sapucaí	1.6	9.6	50.3	38.6	100.0
Santa Rita do Paraíso	4.3	16.3	34.2	45.3	100.0
Total Northeast region	*2.8*	*11.4*	*33.1*	*52.6*	*100.0*

Source: same as for Table 1.
Notes: same as for Table 2.

The distribution of land showed significant variation across regions and *municípios* in northeast São Paulo, but the only region in which small farms were of some importance in terms of area occupied was Cajuru, where they held 13.2 percent of total farmland. In all the other regions, smallholders usually held no more than 3.5 percent of farmland, although some municipalities such as Jardinópolis (5.9 percent) and São Simão (5.7 percent) showed slightly higher percentages. Even most of the *municípios* of the Franca region followed this overall pattern, again contrary to what has been argued in the historiography. In Franca, for example, only 1.2 percent of the total agricultural area was owned by smallholders, a percentage even lower than that recorded in Ribeirão Preto (2.5 percent), the place famous for its coffee barons and huge plantations.

The other size classes showed more geographical variations. Medium-size farms were particularly prevalent in the Cajuru (25.1 percent) and Franca (17.5 percent) regions, so that *municípios* such as Santo Antônio d'Alegria (44.5 percent) and Franca (19.7 percent) held relatively high shares of the total farmland occupied by this size class. The Ribeirão Preto region, in turn, is noticeable for its quite low share of medium-size properties – just 5.7 percent in Ribeirão Preto and 5.8 percent in Sertãozinho, for instance.

Large farms and *latifundia* also showed substantial variations across regions. Ribeirão Preto and Sertãozinho were the localities with the most widespread presence of *latifundia* – 75.8 percent and 76.5 percent of the total area, respectively. These figures were much higher than those observed, for example, in Franca and Patrocínio do Sapucaí (34.7 percent and 38.6 percent, respectively). Yet, even in the region where *latifundia* were more prevalent (Ribeirão Preto), in one *município* (São Simão) a much smaller area (35.9 percent) was occupied by these very big farms. In other regions, large farms (i.e., between 100 and 500 *alqueires*) had a more balanced share compared to *latifundia*, in particular in the Franca region. The *municípios* of Franca and Patrocínio

do Sapucaí showed a higher percentage of large farms than *latifundia* (44.4 and 50.3, respectively), and the same goes for São Simão (44.5) and Santo Antônio da Alegria (29.8) (Table 3).

Despite the variation of land structures in different localities, the dominance of large landholdings was a noticeable feature of northeast São Paulo in the early twentieth century. Together, large farms and *latifundia* covered over 91 percent and 88.6 percent of total agricultural area in the regions of Batatais and Ribeirão Preto, respectively. The main *municípios* of these regions are illustrative of the prevalence of large properties, with 91.9 percent in Ribeirão Preto and 89.1 percent in Batatais. Even in regions with a lower relative share of *latifundia*, such as Franca, large properties were still the prevalent form of landholding (80.5 percent). A similar pattern can be seen in municipalities such as Nuporanga and Franca, with 92.8 percent and 79.1 percent of the land held by large farms and *latifundia*, respectively. The only exception is Santo Antônio d'Alegria in the Cajuru region, where larger landholdings made up just 29.8 percent of the farm area (Table 3).

Although the size distribution indicates a high degree of concentration of land ownership, there are at least two major problems with the typology adopted: first, it does not provide a precise measure of land concentration, as it relies on arbitrary size classes and, second, it is based on total farmland, when for our purposes, what was actually produced on the farms – including the area of land cultivated and other similar parameters – would be more relevant indicators. The next section presents additional estimates on land concentration in an attempt to address these problems.

LAND CONCENTRATION

Table 4 estimates offer a more precise view of the inequality in land ownership in northeast São Paulo during the early twentieth century. A key statistical measure used to summarize the degree of inequality among farmers is the Gini coefficient of concentration, which ranges between 0 (perfect equality) and 1 (perfect inequality) for positive values, so that the closer the coefficient is to 1, the more unequal is the distribution of land. As most similar estimates available for other countries are for inequality among property holders, Gini estimates presented below also refer only to landowners recorded in the 1904-1905 agricultural census, that is, not including the remaining rural population which included colonists, tenants and other forms of hired labor for which the official statistics only provide an aggregate classification as "workers". Thus the figures should be taken as lower-bound estimates of land concentration, as the inclusion of landless workers would substantially increase inequality indicators.

We also calculate the share of total farmland owned by the top 5 percent and 20 percent of farmers, as well as the bottom 50 percent of farmers, as complementary indicators of concentration. As the latter measures are relative to the land size in each region and municipality, we need to take into account the absolute figures of land area owned by the farmers in order to assess the differences in land size among municipalities. We also present alternative measures of concentration in addition to the Gini coefficients. To save space, percentiles of farmland and other measures of concentration are provided in the Appendix.

Table 4 – Distribution of Total Farmland in Northeast São Paulo, 1904-1905

Regions and Municipalities	Share of top 5 percent	Share of top 20 percent	Share of bottom 50 percent	Gini Index
Ribeirão Preto	*66.3*	*86.4*	*3.0*	*0.838*
Ribeirão Preto	65.3	87.9	2.1	0.847
Cravinhos	45.1	70.7	7.9	0.703
São Simão	42.6	73.3	5.4	0.730
Sertãozinho	80.5	88.8	1.8	0.911
Cajuru	*57.5*	*79.2*	*5.7*	*0.769*
Cajuru	62.5	82.2	4.9	0.794
Santo Antônio d'Alegria	29.8	62.2	9.8	0.628
Batatais	*50.9*	*75.1*	*5.8*	*0.743*
Batatais	47.4	81.3	3.0	0.777
Nuporanga	46.5	65.2	14.5	0.618
Jardinópolis	75.1	90.7	3.3	0.880
Franca	*41.6*	*70.5*	*10.1*	*0.674*
Franca	36.4	61.6	15.2	0.575
Ituverava	43.3	66.1	10.4	0.669
Patrocínio do Sapucaí	28.9	62.8	11.2	0.599
Santa Rita do Paraíso	51.6	79.4	4.3	0.779
Northeast São Paulo	*52.7*	*79.5*	*4.1*	*0.773*

Source: same as for Table 1.

The distribution of farmland shows trends similar to those of the size-class typology of the previous section. In northeastern São Paulo, more than half the land was owned by the top 5 percent of farmers, whereas the bottom 50 percent held only a total of 4.1 percent of the land. The Ribeirão Preto region presents the highest concentration, with 66.3 percent of land held by the top 5 percent of farmers and 3.0 percent by the bottom 50 percent. Franca was the region with the lowest share by the top-largest landholders – 41.6 percent, compared to 10.1 percent of land owned by the bottom 50 percent of rural producers. High concentration is also exhibited by the upper-middle landowners group of the top 20 percent: their share reached 79.5 percent in northeast São Paulo and 86.4 percent of the farmland in the Ribeirão Preto region, compared with the 70.5 percent in the Franca region (Table 4). As we have noted, however, these figures must be seen in perspective, since the typical land size of each of these categories was very different across the regions. Thus, for

example, the top 5 percent of farmers in the Ribeirão Preto region (corresponding to the 95th percentile of the distribution) owned a minimum of 420 *alqueires*, whereas the same top group in the Cajuru region was constituted by farmers whose holdings were on average much smaller, with a minimum of 144 *alqueires* (Appendix, Table 1A).

Sertãozinho and Jardinópolis were by far the *municípios* with the highest shares of the top 5 percent of landholders (80.5 percent and 75.1 percent, respectively). As for the top 20 percent group, Ribeirão Preto (87.9 percent), Cajuru (82.2 percent), Batatais (81.3 percent) and Santa Rita do Paraíso (79.4 percent) showed shares nearly as high as Jardinópolis (90.7 percent) and Sertãozinho (88.8 percent). The *municípios* of Patrocínio do Sapucaí (28.9 percent), Santo Antônio d'Alegria (29.8 percent) and Franca (36.4 percent) exhibited the lowest shares of the top 5 percent of landowners. The area owned by the bottom 50 percent of farmers was larger in Franca (15.2 percent) than in any other *município*, followed by Nuporanga (14.5 percent) and Patrocínio do Sapucaí (11.2 percent).

Table 4 shows another interesting fact: although municipalities such as Santo Antônio d'Alegria, Franca and Ituverava exhibited relatively low shares of the top 5 percent of landowners, their top 20 percent controlled more than 60 percent of total land, indicating a major presence of upper-middle farmers in these localities. Even more important, *municípios* such as Franca and Ituverava had a high threshold for their upper landholding class: the percentile distribution shows that the top 20 percent of farmers (the 80th percentile) in Franca, for instance, owned a minimum of 184 *alqueires* – higher than that in Ribeirão Preto (133 *alqueires*). The same feature can be observed for other municipalities such as Patrocínio do Sapucaí (243 *alqueires*) and Ituverava (200 *alqueires*). Overall, the top 5 percent of landowners (95th percentile) in the Franca region owned a higher minimum area (500 *alqueires*) than their counterparts in the Ribeirão Preto region (420 *alqueires*). The Batatais region had the highest minimum area (95th percentile) for the top 5 percent of landowners (600 *alqueires*). Thus, a lower relative percentage of the top 5 percent of farmers does not imply that small landholdings predominated in one locality (Appendix, Table 1A).

The Gini coefficient, a summary measure of inequality of the entire distribution, reached a value of 0.773 for all landholdings in northeastern São Paulo (Table 4). The Gini coefficients of two

or more distributions can be compared and ranked only under certain conditions.[10] Since such conditions do not apply to the regions and municipalities in northeastern São Paulo, the Gini indexes calculated are not always unambiguous regarding the classification of specific landholding structures as more or less concentrated. In order to save space, Generalized Entropy inequality measures are presented along with Gini coefficients in the Appendix (Tables 4A, 5A and 6A). The Ribeirão Preto region had the most unequal land distribution (Gini = 0.838), whereas the Franca region showed the lowest inequality index (Gini = 0.674) in northeastern São Paulo.[11] The *municípios* with the highest Gini indexes were Sertãozinho (0.911), Jardinópolis (0.880) and Ribeirão Preto (0.847), but the order does not necessarily follow these values, since alternative inequality measures show different conclusions for Sertãozinho and Jardinópolis. The same is true for the municipalities with the lowest Gini coefficients: Franca (0.575), Patrocínio do Sapucaí (0.599), Nuporanga (0.618), and Santo Antônio d'Alegria (0.628) (Table 4; Appendix, Table 4A).[12]

Another important fact is that relatively low Gini indexes did not necessarily imply the presence of smaller properties. For example, in Franca and Patrocínio do Sapucaí, the size of property of both lower and upper classes of landowners (between 10th and 50th percentile and between 50th and 90th percentile, respectively) was consistently higher than in Ribeirão Preto and Sertãozinho (Appendix, Table 1A). This result is consistent with the fact shown before in Table 1: the median size (or the 50th percentile) of rural properties in the Franca region (60 *alqueires*) was three times higher than that for the Ribeirão Preto region (20 *alqueires*), that one with the highest Gini indexes. Only in the top percentiles did the Ribeirão Preto region's big landowners stand out in terms of the land inequality in northeast São Paulo. In other words, very big landowners adds disproportionately to the inequality measures in such cases. In Ribeirão Preto, for instance, the minimum sizes of landholdings rose to a massive 990 *alqueires* in the 95th percentile and 2,898 *alqueires* in the 99th percentile, higher than the 457 *alqueires* and 1,530 *alqueires* recorded for their respective counterparts in Franca. Sertãozinho, the *município* with the highest Gini coefficient, registered 4,500 *alqueires* in its 99th percentile (Appendix, Table 1A).

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[10] Comparison and ranking are possible when the underlying Lorenz curves of two or more distributions do not cross, that is, when their values lie entirely above or below the others. Otherwise, the Gini coefficient is not an unambiguous measure of the relative standing of each distribution, so that an evaluation of the ranking will require an additional set of inequality measures. Atkinson (1983), pp. 54-56.

[11] As shown by Table 4A in the Appendix, the Generalized Entropy indexes converge with the Gini coefficients in both cases.

[12] For instance, the GE(2) index, which is more sensitive to land size differences at the top end of the distribution, shows the lowest inequality for Patrocínio do Sapucaí (1.112), followed by Santo Antônio d'Alegria (1.145) and Franca (1.965). See Appendix, Table 4A.

Overall, these indicators reinforce the previous findings, according to which a high degree of concentration of land ownership was a key feature of northeast São Paulo, even though smallholders predominated in number and there were considerable differences in inequality across regions and municipalities. Similar Gini indexes for land ownership are registered for other coffee-growing regions in the Americas, such as the district of Yauco in Puerto Rico – 0.750 in 1897 (Bergad 1998, p. 69). Still, such levels of inequality are greater than in other coffee-producing areas based on smallholdings in Colombia and Costa Rica, which supports the notion that coffee production is adaptable to different landholding patterns (Roseberry 1995, pp. 5-7; Samper 1994, pp. 152-53, 156-59; Gudmundson 1989).

Also relevant for our purposes is a comparison with the levels of land inequality in the United States during the nineteenth century. Engerman and Sokoloff (1997; 2012) argue that farm size was a central aspect of inequality in wealth, human capital and political power across the North and South America which led to different paths of development in the long run. Distribution of total land in northeast São Paulo during the early twentieth century seems to be at least as unequal as, or even more unequal than in the antebellum U.S. South: for instance, Lee Soltow calculated from Kentucky's tax lists a land gini of 0.744 in 1800, compared to 0.773 in northeast São Paulo in 1904-1905. Still, in nine counties of Tennessee the land gini was 0.616 in 1810. In the U.S. North, total land ownership tended to be less concentrated than in the South, for example with a land Gini of 0.588 in Ohio in 1810 (Soltow 1981, p. 283; 1983, p. 625). A more reliable comparison, however, can be made with 1860 census data for improved land in the U.S. cotton South, as we will see in the following.

Total land owned by farmers is an important dimension of land inequality. Yet farmlands were only partially cultivated and sometimes had a minor area devoted to subsistence or commercial crops.[13] Vast tracts of farmlands might be used for pasture or left fallow due to poor soil conditions, lack of capital, scarcity of labor or simply for speculative purposes. Cultivated land, that is, land actually used for crop production, is an important measure of economic status and wealth and therefore a further aspect to be considered in our analysis. Table 5 presents inequality indicators for cultivated land in northeast São Paulo.

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[13] Cultivated land represented 28.5 percent of total farmland in northeast São Paulo in 1904-1905, although there was huge variation in the shares among *municípios*: for example, 65.2 percent in Cravinhos, 64.9 percent in Ribeirão Preto and 56.8 percent in São Simão, compared to 4.9 percent in Nuporanga and 10.8 percent in Franca. Calculated from São Paulo (1905-1906).

Table 5 – Distribution of Cultivated Land in Northeast São Paulo, 1904-1905

Regions and Municipalities	Share of top 5 percent	Share of top 20 percent	Share of bottom 50 percent	Gini Index
Ribeirão Preto	*49.5*	*80.1*	*5.0*	*0.761*
Ribeirão Preto	48.8	78.2	4.4	0.762
Cravinhos	34.0	63.7	10.6	0.643
São Simão	39.1	74.4	6.1	0.720
Sertãozinho	67.9	86.0	6.2	0.822
Cajuru	*36.3*	*60.0*	*18.2*	*0.560*
Cajuru	40.0	64.5	17.1	0.597
Santo Antônio d'Alegria	14.5	42.9	22.1	0.405
Batatais	*33.9*	*65.6*	*10.7*	*0.643*
Batatais	44.8	67.5	11.7	0.620
Nuporanga	37.1	64.7	15.8	0.585
Jardinópolis	39.8	78.2	5.7	0.737
Franca	*37.7*	*67.1*	*13.0*	*0.616*
Franca	35.9	69.9	13.1	0.646
Ituverava	35.6	63.1	21.6	0.556
Patrocínio do Sapucaí	28.7	54.0	31.0	0.508
Santa Rita do Paraíso	32.5	63.1	19.5	0.568
Northeast São Paulo	*55.9*	*82.4*	*4.4*	*0.757*

Source: same as for Table 1.

The landed elite exerted greater control over cultivated land than over total farmland: 55.9 percent was held by the top 5 percent and 82.4 percent was held by the top 20 percent of farmers. At the same time, the bottom 50 percent of landowners kept practically the same area of total cultivated land as they did in total farmland, that is, around 4 percent. Again, the Ribeirão Preto region stands out with the highest share of cultivated land (49.5 percent) held by the top 5 percent of farmers, while the lowest amount of cultivated land was owned by the top farmers in the Batatais region (33.9 percent). The share of the top 20 percent remained high, even in *municípios* with a relatively low participation of the top 5 percent, such as São Simão (74.4 percent), Franca (69.9 percent) and Nuporanga (64.7 percent) (Table 5). As expected, the meaning of these categories in terms of land size was quite different depending on the locality. For example, the minimum size of the holdings of the top 5 percent of farmers (95th percentile) was 200 *alqueires* in the Ribeirão Preto region compared to 16 *alqueires* in the Cajuru and 44 *alqueires* in the Franca regions (Appendix, Table 2A).

Contrary to what was observed for total farmland, upper-medium landowners in the Ribeirão Preto region had consistently larger cultivated areas than those in other regions. For example, the top 20 percent of farmers (the 80th percentile) in Cravinhos owned a minimum of 100 *alqueires* of cultivated area whereas in Franca they owned 15 *alqueires* and in Ituverava, 7 *alqueires*. The explanation for this is that Ribeirão Preto was the region with the highest proportion of cultivated

area in northeastern São Paulo. Moreover, the minimum landholding of the top largest landowners (95th percentile) was much greater in Ribeirão Preto region than in the others: 200 *alqueires* in the Ribeirão Preto region compared to 44 *alqueires* in the Franca region and 70 in the Batatais region, as can be seen in Table 2A of the Appendix.

The land Gini index in northeastern São Paulo declines slightly when the cultivated area is taken into account (0.773 to 0.757), with more substantial differences among regions and *municípios*. For cultivated land, the Ribeirão Preto region again shows the highest Gini coefficient (0.761), and the Cajuru region the lowest (0.560). As for the municipalities, Sertãozinho (0.822) and Ribeirão Preto (0.762) have the highest Gini coefficients, but not all alternative indexes agree with this ordering.[14] The lowest Gini coefficients were registered for Santo Antônio d'Alegria (0.405) and Patrocínio do Sapucaí (0.508). Franca was the only municipality whose cultivated land Gini was substantially higher (0.646) than the farmland index (0.575) (Tables 4 and 5).

These coefficients suggest that inequality in the ownership of cultivated land in northeast São Paulo was high even when compared to other geographical areas with a plantation-like structure. As calculated by Gavin Wright, the cotton region of the U.S. South (Gini index = 0.575) showed a higher concentration of improved land than the Northern states in 1860 (for example, Gini indexes for Wisconsin and Minnesota were 0.452 and 0.342, respectively), but the former's Gini coefficient was much lower than the level recorded in northeast São Paulo (0.757). The top 5 percent of farmers controlled 29.6 percent of improved land in the U.S. cotton South in 1860, against the 55.9 percent of improved land controlled by their counterparts in northeast São Paulo in the early twentieth century.[15] Interestingly, however, the median farm size by cultivated area was not only substantially smaller in northeast São Paulo (5.8 alqueires or 34.7 acres) than in the U.S. cotton South (70.6 acres) during the antebellum period, but even smaller than in U.S. Northern states such as Ohio (64.8 acres), Indiana (50.9 acres), and Wisconsin (41.8 acres) (Wright 1970, pp. 71-74).[16] Therefore, despite the considerable number of landholdings with a relatively small cultivated area, the more ubiquitous and influential presence of very large landowners boosted the levels of land inequality in northeast São Paulo when compared to the antebellum U.S. South.

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[14] According to the GE(2) index, inequality of cultivated land was higher in São Simão (4.297) than in Ribeirão Preto (3.807). See Appendix, Table 5A.

[15] The concept of "improved land" employed by Wright (1970) is only roughly comparable with that of "cultivated land", since the former may comprise other land in different conditions – for example, land that has been cleared but not yet sown.

[16] Median size figures for cultivated area in northeast São Paulo are not shown in the tables.

As northeast São Paulo was the world's largest coffee region in the early twentieth century, another relevant indicator to be evaluated is a more direct measure of coffee production capacity such as coffee trees – was their distribution as unequal as the results for total farmland and cultivated land above? Table 6 shows the results.

Table 6 – Distribution of Coffee Trees in Northeast São Paulo, 1904-1905

Regions and Municipalities	Share of top 5 percent	Share of top 20 percent	Share of bottom 50 percent	Gini Index
Ribeirão Preto	*43.2*	*75.9*	*5.0*	*0.743*
Ribeirão Preto	46.5	79.1	4.2	0.766
Cravinhos	35.0	65.6	8.4	0.649
São Simão	*32.6*	*69.0*	*7.0*	0.677
Sertãozinho	64.3	87.9	4.4	0.836
Cajuru	*39.3*	*66.8*	*10.9*	*0.646*
Cajuru	45.1	73.9	7.2	0.706
Santo Antônio d'Alegria	10.5	38.4	27.9	0.326
Batatais	*34.5*	*70.8*	*8.3*	*0.673*
Batatais	35.4	73.1	8.7	0.678
Nuporanga	31.0	66.6	12.6	0.640
Jardinópolis	22.6	53.9	11.9	0.583
Franca	*27.0*	*69.1*	*11.0*	*0.646*
Franca	31.6	69.2	10.1	0.653
Ituverava	27.4	54.1	11.8	0.583
Patrocínio do Sapucaí	20.0	57.6	11.7	0.584
Santa Rita do Paraíso	34.8	69.3	10.5	0.645
Northeast São Paulo	*50.2*	*83.5*	*5.5*	*0.766*

Source: same as for Table 1.

The concentration of coffee trees is similar to that recorded for cultivated land. The landed elite controlled one-half of the coffee trees while the bottom 50 percent of landowners grew only 5.5 percent of the trees in northeast São Paulo. The Ribeirão Preto region led the way with 43.2 percent of the trees owned by the top 5 percent and just 5.0 percent by the bottom 50 percent of farmers. At the other end of the spectrum was the Franca region, with 27 percent of coffee trees grown by the top 5 percent and 11 percent by the bottom 50 percent of landowners. There is more convergence between regions when we take the top 20 percent of landholders: in the Franca region they held 69.1 percent, and in the Ribeirão Preto region 75.9 percent of the coffee trees. These upper-middle landholders continued to have a key role in localities where the top 5 percent of farmers had a smaller share. Once more, Sertãozinho stands out as the *município* with the highest share (64.3 percent) of coffee trees owned by the top 5 percent of landowners and only 4.4 percent of coffee trees owned by the bottom 50 percent of farmers. The lowest share held by the top largest landholders are found in Santo Antônio d'Alegria (10.5 percent), Patrocínio do Sapucaí (20 percent) and Jardinópolis (22.6 percent). A similar ranking is found for the top 20 percent, except for

Patrocínio do Sapucaí, which had a higher share (57.6 percent) than Ituverava (54.1 percent). Most of the smallest owners had higher shares of coffee trees in Santo Antônio d'Alegria (27.9 percent) and Nuporanga (12.6 percent) (Table 6).

The number of coffee trees owned by each class of farmers also varied substantially from region to region: for example, in the Ribeirão Preto region, the minimum number owned by the top 5 percent of farmers (95th percentile) was 400,000 coffee trees, a much higher figure than in the Cajuru region where the minimum number of trees owned by the top 5 percent was 30,000 coffee trees. In fact, the *municípios* of Ribeirão Preto, Cravinhos and São Simão in the Ribeirão Preto region had a greater number of coffee trees in nearly all classes of the distribution, with one exception being Jardinópolis in the Batatais region (Appendix, Table 3A).

Inequality in coffee-tree ownership as measured by the Gini index reached 0.766 in northeast São Paulo. While the Ribeirão Preto region showed the highest Gini coefficient (0.743), the result is not as clear regarding the least unequal distribution of coffee-tree ownership – the Cajuru and Franca regions had the same Gini coefficient (0.646), but the alternative indexes point to Franca as the region with the lowest inequality.[17] Sertãozinho (0.836), Ribeirão Preto (0.766) and Cajuru (0.706) were the municipalities with the highest indicators of coffee-tree concentration – and not only in terms of the Gini coefficient. The lowest inequality index of coffee-tree ownership was recorded in Santo Antônio d'Alegria (Gini = 0.326), which was again rather atypical compared to other *municípios* in northeast São Paulo.

CONCLUSIONS

This article has addressed different aspects of land inequality in Brazil's most dynamic export region during the early twentieth century. Land ownership varied substantially across regions and municipalities in the northeast area of the state of São Paulo, with most farms owned by small and medium landholders. Yet a high degree of inequality prevailed among landowners, irrespective of the concepts and measures utilized to evaluate this parameter. The size-class distribution shows that most of the land was owned by large farmers and latifundists, with only a minor fraction of the area controlled by small and medium-size landholders. The fact that there was a vast number of small and medium farmers in comparison with larger landowners did not translate into a more "democratic" landholding structure in northeast São Paulo.

[17] GE(0), GE(1) and GE(2) for the Franca region were 0.803, 0.810 and 1.500, respectively; the same indexes for the Cajuru region were 0.849, 0.932 and 2.762, respectively (Appendix, Table 6A).

This finding is corroborated by estimates on inequality. Both percentile shares and alternative measures of total farmland, cultivated land and coffee-tree concentration indicate that the landed elite controlled most of the productive resources in the coffee economy of the region studied. The upper-middle class of landowners was important in nearly all municipalities and regions, even in those with relatively lower inequality among landholders. In others, big landowners held sway and led to very high inequality indexes. Despite their widespread presence, small and medium-size properties controlled a small part of agricultural wealth in northeast São Paulo. The bottom 50 percent of landholders were of some importance in a few municipalities, but in the aggregate their share was around 4-5 percent of the land area or number of coffee trees.

Similar levels of inequality are found in other coffee regions of the Americas such as in Puerto Rico, although concentration of land ownership in northeast São Paulo was significantly higher than that of traditional coffee regions in Colombia and Costa Rica. Comparison with the antebellum U.S. agriculture indicates that land inequality in northeast São Paulo was substantially higher than in the U.S. Northern agricultural states, and at least equivalent to, or even higher than that of U.S. cotton South, in particular when improved land is used as a yardstick. This result is not due to a lack of small or medium-size productive units in São Paulo. The median cultivated area of farms in northeast São Paulo during the early twentieth century was significantly smaller than that either in the U.S. cotton South or in the U.S. Northern agricultural states in 1860. That was the very large landowner that contributed disproportionately to the inequality indicators in northeast São Paulo in comparison with the antebellum U.S. agriculture.

It is certain that these conclusions apply to a region that should not be regarded as necessarily representative of the export agriculture in Brazil as a whole – at least unless land concentration in other geographical areas during the nineteenth and early twentieth centuries is more fully investigated. Yet the scenario described for the export region of northeast São Paulo is one step further to understand the forms of inequality which influenced long-term development in Brazil and other parts of the Americas.

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APPENDIX

Table 1A – Distribution of Total Farmland by Percentile in Northeast São Paulo, 1904-1905 (area units in *alqueires*)

Regions and Municipalities	10 percentile	25 percentile	50 percentile	75 percentile	80 percentile	90 percentile	95 percentile	99 percentile
Ribeirão Preto	*4*	*9*	*20*	*100*	*120*	*250*	*420*	*2,500*
Ribeirão Preto	4	6	21	119	133	250	990	2,898
Cravinhos	6	10	80	150	200	325	550	2,600
São Simão	8	12	22	100	150	258	350	2,000
Sertãozinho	3	6	12	40	60	160	350	4,500
Cajuru	*2*	*5*	*12*	*30*	*40*	*80*	*144*	*800*
Cajuru	2	5	14	35	45	80	175	1,500
Santo Antônio d'Alegria	2	4	10	27	40	80	100	220
Batatais	*4*	*10*	*80*	*200*	*220*	*380*	*600*	*3,000*
Batatais	3	6	21	130	160	308	653	1,500
Nuporanga	70	90	160	273	300	453	960	3,800
Jardinópolis	3	5	8	30	50	100	250	1,200
Franca	*7*	*25*	*60*	*140*	*177*	*300*	*500*	*2,000*
Franca	25	42	80	155	184	280	457	1,530
Ituverava	20	40	60	150	200	320	600	2,000
Patrocínio do Sapucaí	20	33	102	213	243	440	760	1,060
Santa Rita do Paraíso	3	6	25	70	100	220	465	1,500
Northeast São Paulo	*4*	*10*	*39*	*120*	*153*	*280*	*500*	*2,150*

Source: same as for Table 1.
Note: Percentiles refer to values that divide the observations (total farmland in this case) into 100 equal parts (that is, into groups of 1 percent), ordered from lowest to highest values. A specific percentile corresponds to a value below which lies a certain percentage of the ordered observations. The 50th percentile (or 2nd quartile) corresponds to the median. 1 *alqueire* equals 5.98 acres, 2.42 hectares or 24,200 square meters.

Table 2A – Distribution of Cultivated Land by Percentile in Northeast São Paulo, 1904-1905 (area units in *alqueires*)

Regions and Municipalities	10 percentile	25 percentile	50 percentile	75 percentile	80 percentile	90 percentile	95 percentile	99 percentile
Ribeirão Preto	*3*	*5*	*11*	*45*	*66*	*125*	*200*	*890*
Ribeirão Preto	2	4	14	50	78	126	250	1,111
Cravinhos	4	8	40	95	100	195	280	1,055
São Simão	4	8	12	50	80	150	200	500
Sertãozinho	2	4	8	15	21	50	100	890
Cajuru	*1*	*2*	*3*	*5*	*6*	*10*	*16*	*48*
Cajuru	1	2	3	5	6	12	20	62
Santo Antônio d'Alegria	1	2	3	6	6	9	10	18
Batatais	*2*	*4*	*6*	*15*	*20*	*45*	*70*	*140*
Batatais	2	4	8	19	25	50	70	130
Nuporanga	2	5	6	10	15	22	50	180
Jardinópolis	1	2	4	15	20	51	95	182
Franca	*2*	*2*	*4*	*10*	*11*	*20*	*44*	*100*
Franca	2	3	5	11	15	35	50	150
Ituverava	2	2	3	6	7	13	19	77
Patrocínio do Sapucaí	3	5	10	15	15	20	60	100
Santa Rita do Paraíso	2	2	4	7	9	18	26	76
Northeast São Paulo	*2*	*3*	*6*	*15*	*20*	*50*	*95*	*250*

Source: same as for Table 1.
Note: same as for Table 1A.

Table 3A – Distribution of Coffee Trees by Percentile in Northeast São Paulo, 1904-1905 (number of coffee trees)

Regions and Municipalities	10 percentile	25 percentile	50 percentile	75 percentile	80 percentile	90 percentile	95 percentile	99 percentile
Ribeirão Preto	*5,000*	*10,000*	*23,000*	*100,000*	*140,000*	*260,000*	*400,000*	*1,500,000*
Ribeirão Preto	4,000	8,000	26,000	110,000	150,000	250,000	500000	2,112,700
Cravinhos	7,000	15,000	60,000	160,000	171,000	340,000	435,000	1,800,000
São Simão	9,000	16,000	24,250	100,000	160,000	300,000	390,000	1,000,000
Sertãozinho	3,000	5,000	15,000	30,000	43,600	150,000	278,000	1,580,600
Cajuru	*1,000*	*2,000*	*5,000*	*10,920*	*13,000*	*21,250*	*30,000*	*100,000*
Cajuru	750	1,500	3,500	10,000	12,600	25,000	40,000	160,000
Santo Antônio d'Alegria	2,500	5,000	8,125	12,500	14,500	15,000	21,250	27,250
Batatais	*2,400*	*5,000*	*12,000*	*35,000*	*50,000*	*96,750*	*150,000*	*320,000*
Batatais	2,000	4,000	8,000	23,000	30,000	75,000	118,000	208,000
Nuporanga	4,000	6,000	20,000	41,000	60,000	110,000	200,000	335,548
Jardinópolis	6,000	15,000	30,000	100,000	130,000	174,000	220,000	600,000
Franca	*2,000*	*4,000*	*8,000*	*20,000*	*26,000*	*50,000*	*100,000*	*170,000*
Franca	2,500	4,000	8,000	24,500	30,000	67,500	100,000	240,000
Ituverava	2,000	4,000	11,000	24,000	30,000	50,000	80,000	140,000
Patrocínio do Sapucaí	2,000	4,000	12,500	23,500	28,000	45,000	100,000	180,000
Santa Rita do Paraíso	2,000	3,000	5,000	15,000	18,000	36,000	60,000	151,000
Northeast São Paulo	*2,000*	*5,000*	*12,000*	*32,000*	*50,000*	*120,000*	*200,000*	*500,000*

Source: same as for Table 1.
Note: same as for Table 1A.

Table 4A – Indexes of Inequality for Total Farmland in Northeast São Paulo, 1904-1905

Regions and Municipalities	GE(0)	GE(1)	GE(2)	Gini
Ribeirão Preto	*1.764*	*1.971*	*11.510*	*0.838*
Ribeirão Preto	1.946	1.834	6.817	0.847
Cravinhos	1.192	1.052	2.341	0.703
São Simão	1.177	1.184	3.262	0.730
Sertãozinho	2.322	2.841	21.247	0.911
Cajuru	*1.287*	*1.591*	*7.629*	*0.769*
Cajuru	1.413	1.705	7.462	0.794
Santo Antônio d'Alegria	0.815	0.726	1.145	0.628
Batatais	*1.423*	*1.364*	*6.120*	*0.743*
Batatais	1.583	1.282	2.977	0.777
Nuporanga	0.693	1.022	4.215	0.618
Jardinópolis	1.954	2.594	24.368	0.880
Franca	*0.999*	*0.989*	*2.596*	*0.674*
Franca	0.606	0.738	1.965	0.575
Ituverava	0.862	1.012	2.683	0.669
Patrocínio do Sapucaí	0.735	0.669	1.122	0.599
Santa Rita do Paraíso	1.503	1.403	4.341	0.779
Northeast São Paulo	*1.458*	*1.503*	*7.537*	*0.773*

Source: same as for Table 1.
Note: GE indexes are Generalized Entropy measures. GE(0) is the mean logarithmic deviation; GE(1) the Theil's T index, and GE(2) is half the square of the coefficient of variation. GE(0) is more sensitive to differences at the bottom of the distribution; GE(2) is more sensitive to differences at the top of the distribution; GE(1) puts equal weight on differences in the entire distribution. The term "Gini index" is explained in the text. See Cowell (2000), pp. 109-10; (2011), ch. 3.

Table 5A – Indexes of Inequality for Cultivated Land in Northeast São Paulo, 1904-1905

Regions and Municipalities	GE(0)	GE(1)	GE(2)	Gini
Ribeirão Preto	*1.295*	*1.369*	*4.816*	*0.761*
Ribeirão Preto	1.360	1.307	3.807	0.762
Cravinhos	0.941	0.805	1.488	0.643
São Simão	1.112	1.205	4.297	0.720
Sertãozinho	1.479	2.055	12.065	0.822
Cajuru	*0.551*	*0.741*	*2.311*	*0.560*
Cajuru	0.631	0.841	2.534	0.597
Santo Antônio d'Alegria	0.289	0.273	0.324	0.405
Batatais	*0.792*	*0.834*	*1.749*	*0.643*
Batatais	0.728	0.743	1.443	0.620
Nuporanga	0.615	0.743	1.642	0.585
Jardinópolis	1.225	1.111	2.325	0.737
Franca	*0.678*	*0.788*	*1.677*	*0.616*
Franca	0.781	0.845	1.690	0.646
Ituverava	0.529	0.684	1.510	0.556
Patrocínio do Sapucaí	0.463	0.520	0.882	0.508
Santa Rita do Paraíso	0.557	0.674	1.384	0.568
Northeast São Paulo	*1.184*	*1.483*	*8.080*	*0.757*

Source: same as for Table 1.
Note: same as for Table 4A.

Table 6A – Indexes of Inequality for Coffee Trees in Northeast São Paulo, 1904-1905

Regions and Municipalities	GE(0)	GE(1)	GE(2)	Gini
Ribeirão Preto	*1.268*	*1.222*	*3.626*	*0.743*
Ribeirão Preto	1.404	1.340	4.170	0.766
Cravinhos	0.974	0.827	1.551	0.649
São Simão	0.972	0.907	1.829	0.677
Sertãozinho	1.683	1.902	8.597	0.836
Cajuru	*0.849*	*0.932*	*2.762*	*0.646*
Cajuru	1.044	1.116	3.251	0.706
Santo Antônio d'Alegria	0.206	0.175	0.180	0.326
Batatais	*0.953*	*0.869*	*1.563*	*0.673*
Batatais	0.937	0.908	1.806	0.678
Nuporanga	0.824	0.769	1.257	0.640
Jardinópolis	0.728	0.609	0.889	0.583
Franca	*0.803*	*0.810*	*1.500*	*0.646*
Franca	0.826	0.830	1.523	0.653
Ituverava	0.649	0.611	0.894	0.583
Patrocínio do Sapucaí	0.727	0.639	0.996	0.584
Santa Rita do Paraíso	0.773	0.827	1.576	0.645
Northeast São Paulo	*1.326*	*1.401*	*5.831*	*0.766*

Source: same as for Table 1.
Note: same as for Table 4A.