

## Globalisation, Inequality and Institutions in West Sumatra and West Java, 1800–1940

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# Globalisation, Inequality and Institutions in West Sumatra and West Java, 1800–1940

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## ABSTRACT



How did globalisation affect living standards and inequality in colonies relying on exports? This question is investigated through a comparison of social and economic developments in two regions of the Dutch East Indies (colonial Indonesia): Minangkabau in West Sumatra and Priangan in West Java, looking at the period between 1800 and 1940. These two regions were remarkably similar in terms of export crops grown and factor endowments and the Dutch colonial government implemented a comparable system of forced coffee cultivation in both these areas in the nineteenth century. Outcomes in terms of levels of income and economic inequality in these areas differed markedly, mainly as a result of different indigenous property rights regarding land and the power of local elites. This article highlights the interaction between indigenous and colonial institutions and the importance of this interaction for social and economic development in an age of rising global trade.

## KEY WORDS

colonialism; Indonesia; inequality; property rights; living standards; trade

Exports from tropical countries increased 12-fold between 1830 and the start of World War I (Federico and Tena-Junguito 2017, 1244). This growth was even faster in colonial Indonesia: in per capita terms the increase was over 13-fold between 1830 and 1928 (Booth 1998, 204–206). As a share of total gross domestic product (GDP), trade increased from about 10% in the 1830s to almost 40% in the 1920s (van Zanden and Marks 2012, 22). That this rising trade generated large profits for the Dutch government and many private Dutch entrepreneurs has been examined in a series of recent articles (Gordon 2010, 2012, 2018). The effects of rising global trade during the nineteenth and twentieth centuries on economic growth, living standards and inequality in the colonised countries, however, are still not well understood. This article examines these relationships for colonial Indonesia in the nineteenth and early twentieth centuries.

Following the literature, the relationship between globalisation and inequality in colonial economies is influenced by: (i) the commodity produced for export; (ii) factor endowments – the availability of land, labour and capital; and (iii) institutions – the formal and informal rules that shape social interaction, such as laws and customs – that organise trade and production. These three contextual factors are expected to influence the relation between globalisation and inequality as follows. First, those regions specialising in cash crops like sugar and tobacco became more unequal over time as these are

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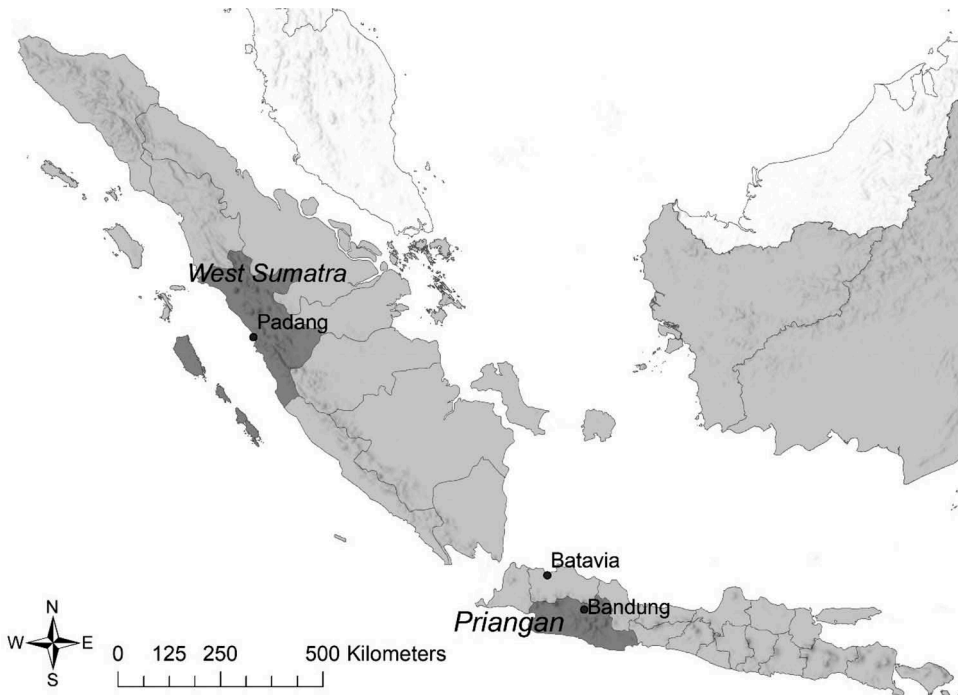
most efficiently produced on large plantations (Sokoloff and Engerman 2000). As plantation owners were the main beneficiaries of export growth, they were able to defend their interests better, which led to the development of institutions that entrenched inequality. Food crops like rice and wheat, on the other hand, are well-suited to smallholder production, leading to institutions causing equalisation. Second, trade theory as postulated by Heckscher (1949) and Ohlin (1935) suggests that in land-abundant tropical countries, globalisation increases inequality as countries specialise in land-intensive cash crops, thereby increasing land rents (benefitting large landholders) *vis-à-vis* wages for labourers (Williamson 2011, 156–159). Third, it matters how export production was organised by colonial governments; whether it was organised under an extractive regime of forced cultivation benefitting only the colonisers and local elites or via more benign, or “inclusive,” institutions that allowed local producers to reap more of the profits from their labour (see, for example, Acemoglu and Robinson 2012, 73–76).

In this article, the role of indigenous institutions regarding property rights and local power relations will be emphasised in determining the consequences of globalisation. In order to do so, as much as possible the effects of other factors, like crops grown and factor endowments, are excluded to isolate the effects of indigenous institutions. Two regions in the Dutch East Indies (colonial Indonesia) are compared. West Sumatra and West Java were remarkably similar in terms of climate, geography and population densities. Over most of the nineteenth century export agriculture was dominated by the forced production of coffee under the Cultivation System implemented by the Dutch in both these regions. Despite these similarities, by the early twentieth century, after the abolition of the Cultivation System, export production in West Sumatra (also known as Minangkabau) was overwhelmingly in the hands of indigenous smallholders (about 90% of total exports in the 1920s), while in West Java (Priangan) plantation produce had become dominant (about 80% of exports).<sup>1</sup> Levels of inequality were substantially higher in Priangan, while average incomes were lower.

## Factor Endowments

Exogenous variables, such as geography and climate, exert a strong influence over social economic outcomes. The comparison between Minangkabau and Priangan was selected as these regions are similar in terms of geography, climate and population densities. Minangkabau and Priangan have the same equatorial climate with equal amounts of annual rainfall and a rainy season between October and March and a dry season from May/June to September. In addition, both places have long, swampy, coastal areas as well as mountainous inland areas with active volcanoes (Figure 1). Furthermore, in West Sumatra, as in Java, most rice comes from irrigated wet fields (*sawah*), rather than dry fields (*ladang*) (Geertz 1963, 116). The residencies – the largest of the colonial administrative units – had similar numbers of livestock in the 1850s at about two per arable hectare (KV 1851–1860). By the late twentieth century, West Java had more fertile soil than West Sumatra, but this difference was likely smaller in the colonial era (Lindert 2000, 182–186, 200–201).

In the mid-nineteenth century, both areas specialised in the production of coffee and, later, other crops that can grow in more mountainous areas like coconuts, tea and rubber. These crops have limited returns to scale, with many studies showing an inverse



**Figure 1.** Map of Sumatra and Java, with West Sumatra and Priangan in dark grey. Residential borders from the 1920s

relationship between the size of farms and productivity in coffee cultivation, as it is labour intensive and needs to be done with great care (Nugent and Robinson 2010, 49). This latter characteristic favours smallholders. Coffee and tea are grown on land that would not otherwise be used as rice fields, thus limiting encroachment on land used for local food production. At the same time, coffee trees require a long-term investment as they need some five years before bearing fruit. It may be assumed that such investments are easier to make for plantation companies than for smallholders.

The two residencies had similar population densities (see Table 1). Until the early decades of the twentieth century, both regions probably were still labour scarce. Using the total land area as reported in the 1930 census for these residencies, this leads to mid-

**Table 1.** Population and arable lands in Priangan and West Sumatra, 1820–1940

	Population (1,000s)		Population per km <sup>2</sup> total area		Arable lands (km <sup>2</sup> )		Population per arable km <sup>2</sup>	
	PRG	WS	PRG	WS	PRG	WS	PRG	WS
1820	198	632	9	13	710	n.a.	280	n.a.
1850	737	734	34	15	879	1,347	839	545
1880	1,598	943	74	19	1,860	1,964	859	459
1900	2,436	1,188	113	24	4,309	2,878	565	413
1920	3,811	1,522	177	31	7,759	3,792	491	401
1940	3,909	2,049	181	41	7,127	4,460	549	459

Note: PRG is Priangan, WS is West Sumatra.

Sources: Population data from Boomgaard and Gooszen (1991), Bosma (2015), Touwen (2001); Total Land Area from Volkstelling (1934–1936); on Arable Lands, see Appendix.

nineteenth-century population densities of 15 and 34 persons per square kilometre respectively for West Sumatra and Priangan. By the 1940s, these figures had increased to 41 and 181 persons per square kilometre. However, such figures distort the comparison as these are both mountainous areas and the total size of these residencies tells us little about the population relative to arable lands. On the basis of evidence on the growth of arable lands in Priangan (Boomgaard and Van Zanden 1990), as well as information about the amounts of rice fields and rice production in West Sumatra in the 1850s–1870s and the 1920s from the *Koloniale Verslagen* (Colonial Reports, henceforth KV), it is clear that the ratio of people to arable land was not that different throughout the period under consideration (Table 1).

These ratios suggest that the population grew faster in Priangan, but until the early twentieth century there was still enough land for the expansion of agriculture. In part, fast population growth in the nineteenth century was the result of underestimation of early population figures, as local heads provided lower population numbers to the colonial government in order to reduce taxation of their villages. Data reporting and collection improved as administrative capacity increased and surveys were implemented (see Boomgaard and Gooszen 1991, 14–19). Demographic growth may also be explained by high rates of immigration into Priangan from early in the nineteenth century as a result of the Java War (Elson 1994, 12). In-migration later in the nineteenth century resulted from people leaving more densely populated parts of Central Java for Priangan (Bosma 2019, 80–82).

Slower population growth in West Sumatra was partially driven by higher emigration, a result of the particular matrilineal inheritance system of the Minangkabau (Fernandez and Kambhampati 2017, 184). In combination with the higher number of women in this region, this probably meant that some men had no access to economic resources, causing them to migrate. This hypothesis gains support from the fact that the number of male emigrants was especially high from the district of Old Agam, considered the Minangkabau heartland (Volkstelling 1934–1936, IV, 37). Furthermore, property was equally divided among all adult women of the household which suggests measures to reduce the number of children. Abortion was widely practiced among the Minangkabau in the late nineteenth century (Verkerk Pistorius 1871, 57). Contemporary observers found an average of just three children per woman (Lucieer 1924, 557).

## The Cultivation System

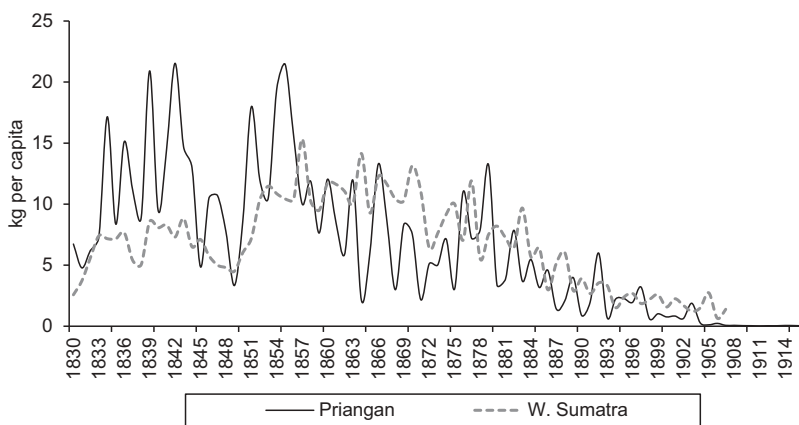
The Dutch East India Company (VOC) extended its hold over parts of Priangan beginning in the seventeenth century and trading posts were established along the western coast of Sumatra from the mid-seventeenth century. The Dutch initiated coffee production in Priangan but left the production and transport of coffee to the local ethnic Sundanese rulers – the *bupati* (regents) – who were paid a fixed price for the amounts of coffee delivered. The *bupati*, in turn, forced local farmers to grow coffee. It was only in the 1820s that the Dutch came to intervene directly in the economic and political affairs of the Minangkabau highlands.

The infamous Cultivation System implemented in Java in the 1830s worked somewhat differently in Priangan. In most residencies of Java, villages were forced to assign about 20% of their land and labour to produce one or more of the major cultivation crops of

sugar, coffee and tea (van Baardewijk 1994). In return for the delivery of these crops to the colonial government, peasants received a certain amount of cash for their produce, which was to be used to pay the land tax. In Priangan, no land tax was levied until 1872, but instead farmers had to pay local taxes to their *bupati*. Furthermore, peasants were expected to establish and maintain coffee gardens and sell it to the colonial government at low prices (only half the price paid in other parts of Java). In 1840, Priangan produced almost 30% of all coffee from Java (Elson 1994, 69). In Minangkabau, the Dutch implemented a similar system of coerced coffee cultivation in 1847, in which the population had to deliver a specified amount of coffee to the government at fixed prices. The system was a success initially for the Dutch and the amount of coffee exported rose in the 1850s and 1860s.

The amount of labour demanded for the forced cultivation of coffee in both regions was high. In the 1840s, some 71,000 households, or 50% of the total in Priangan were engaged in forced coffee cultivation.<sup>2</sup> This figure increased to 62% in 1850, declining to 37% in 1880 and 10% in 1910 (van Baardewijk 1994; KV 1911). As an increasing number of households were exempted from cultivation labour, pressure increased on the remaining households. The exempted households included not only the elites, but also those peasants who performed services exclusively for those elites. In West Sumatra, only a few households were exempted; in 1889 there were 166,991 households involved in forced coffee cultivation, a staggering 82% of the total number of households (KV 1890, 215). By 1900, this number had increased to 187,382 households (or 79%) (KV 1901, Appendix YY). The higher number of households engaged in this cultivation, combined with similar amounts of coffee produced (see Figure 2), meant that the overall burdens of the system were more widely distributed in Sumatra. In 1900, a Minangkabau household delivered only an average of 8 kilogrammes of coffee to the government, while the (non-exempted) Sundanese peasants delivered on average 33 kilogrammes per household.

Estimates on amounts of *corvée* and cultivation labour services in Priangan differ substantially, but perhaps amount to as much as half of agricultural households' total labour time in the middle of the nineteenth century (Breman 2010, 267–268). Besides

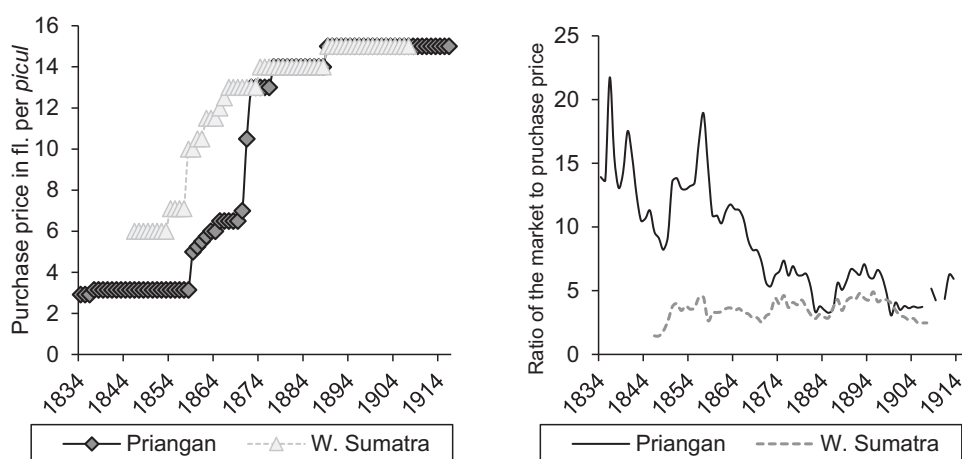


**Figure 2.** Government coffee purchases in Priangan and West Sumatra, 1830–1916.

Sources: Breman (2010); Lulofs (1904); Oki (1977); KV (1871–1917).

these services to the colonial government, peasant households had to pay taxes to *bupati* and lower level elites, as well as perform household labour services and work the fields of local gentry (Bremar 2010, 268). Considering the relatively low rewards for the cultivation services and the purely extractive nature of all other taxes, substantial coercion was necessary to make the Sundanese perform this work.<sup>3</sup> For West Sumatra, it was estimated that for the production of one *picul* of coffee – 61.76 kg – a family spent 120 days working (Van Vollenhoven 1872, 6–8). This probably reflects the amount of labour per household around 1870. Additional labour duties amounted to about ten days per household in the 1880s. While there is evidence of Minangkabau villagers who have been arrested as a result of their failure to perform the required labour duties (Graves 1981, 65), it seems that both the colonial state and the indigenous elites had insufficient means to coerce the Minangkabau to perform this labour (Young 1994, 202–209). As long as the price of rice was low, while the money received for coffee was substantial and there were limited other opportunities for earning cash income, the Minangkabau had no problem with delivering the requested amounts. Yet whereas the rice price was initially between fl. (*guilder*) 2 and 4 per *picul*, as shown in Appendix 3, by the late 1860s, this had increased to some fl. 8 to 10 per *picul* or more, while the coffee price had only doubled (see Figure 3a), thus reducing the appeal of coffee cultivation. By 1900, coffee deliveries had declined to such an extent that only about 16 days of labour (plus transport) were performed per family and an additional ten days were requested as *corvée* labour in 1900 (KV 1901, Appendix K).<sup>4</sup> In Priangan, only five days of *corvée* were requested, in addition to the services to local elites, by 1900, as these duties were mostly replaced by a poll tax of fl. 1 per liable household (KV 1901, Appendix J).

Coffee could be grown nearby the peasants' villages and on large plantations that could be located as much as 20 kilometres away from their villages (Elson 1994, 64–66). The latter was obviously the least favoured method of production by the peasants. Work on the plantation required men to stay away from their homes and villages for long periods,



**Figure 3.** (a) Farmers' purchase prices and (b) Ratio of the market to purchase price for coffee, 1834–1916.

Sources: Bremar (2010); Lulofs (1904); KV (1871–1917); Oki (1977).



during which they could not engage in subsistence production. Locally produced coffee could be cultivated next to their other work, thus being less burdensome. The colonial authorities preferred plantations as it was easier to monitor production and trade while limiting trade outside the colonial system.

Comparing the methods of production between the two regions reveals considerable differences. Figures for Priangan suggest that 69% of all coffee was grown on plantations in 1853, increasing to 84% in 1864 (Bremen 2010, 275). It later declined in percentage terms, to 60% in 1882 (KV 1883, Appendix CCC). In West Sumatra, of the coffee trees newly planted in 1853, only 11% were on plantations and the rest near the villages (KV 1853, 159). The following year, newly planted coffee trees in plantations constituted only 2% of the total (Couperus 1856, 301). It may be assumed that this is indicative of the generally smaller share of total coffee production on plantations, as the colonial report of 1855, and an article from 1856, also noted the far greater share of production near villages in West Sumatra (KV 1855, 136; Couperus 1856, 298–300). Another important difference between compulsory coffee cultivation in the two regions was the money received by the peasants (Figure 3a), and the difference between that payment and the market prices for coffee in Padang and Batavia (Figure 3b). The price per *picul* received by growers was only 3 guilders in Priangan until the 1850s, while it was 6 guilders in West Sumatra, and when the price in Priangan was raised to 6 guilders in the 1860s, it was again double that number in West Sumatra. It was only in the 1870s that prices received by farmers for their coffee were similar in both areas. Until then, the Priangan system was clearly more extractive than that of West Sumatra, especially since there was hardly any difference in rice prices in both regions (see Appendix A3).

In the early twentieth century, compulsory coffee cultivation was abolished in both areas; in West Sumatra it ended in 1908 while in Priangan it ended nine years after that (Oki 1977, 139; Li, Pelletier, and Sangadji 2016, 599). By that time, however, forced coffee cultivation had been in long decline (Figure 2). One reason for the decline in both areas was the leaf blight that struck in the 1880s (Fernando 2003, 164). More important for the decline, however, was expanded commercialisation, creating other, more attractive opportunities, such as wage labour and the cultivation of other cash crops. Neither the colonial government nor local elites retained sufficient power to force the peasantry to work in Sumatra (Young 1994, 180).

Thus, while there were similarities in these exporting coffee regimes in the nineteenth century, with comparable amounts and trends in the export of coffee, there were three important differences. First, the Priangan system was more “extractive” in terms of the money received by the peasants until the 1880s and the consequent profits reaped by the colonial government. Second, plantation production was much more important in Priangan. Third, the burden of forced coffee cultivation was more equally distributed in West Sumatra as there were a greater number of households that each delivered a smaller amount of coffee to the colonial authorities.

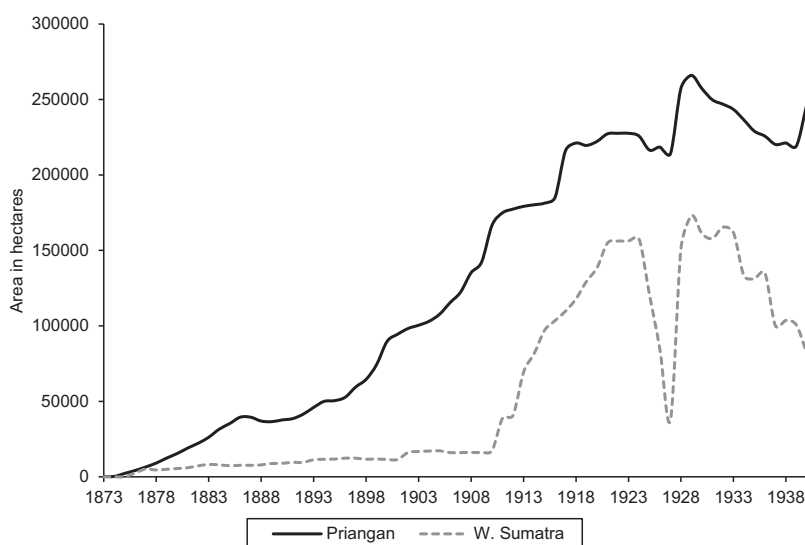
## Colonial Policies in the Twentieth Century

Until the 1870s, agricultural production in both areas had been narrowly focussed on coffee for export and rice for subsistence needs. The implementation of the Agricultural Law in 1870 allowed Western capitalist enterprises to lease still uncultivated lands, or



“waste lands,” from the colonial government for periods of 75 years for 1 guilder per *bouw* (0.71 ha) annually. This resulted in exports becoming more diversified. Following this law, the process of land alienation was quicker and at a greater scale in Priangan (see [Figure 4](#)). The expansion of estates on long-term lease there was massive, reaching 266,000 hectares at the end of the 1920s or a third of all arable land (CKS 1930, 28–29). In West Sumatra, only after the abolition of forced coffee cultivation in 1908 was there a serious increase in the amount of land under long-term lease. After that year, the increase was relatively rapid, although this rise is misleading as most of these grounds were not actually being cultivated. Most of this land alienation took place in sparsely populated areas where the lands were not used. By 1920, the planted estate area in Priangan was still 23 times the size of that in West Sumatra, this number declined to 22 times in 1925, and 11 in 1930 (see [Table 2](#)).

[Table 2](#) provides information on the production of the most important export crops grown on estates and by indigenous farmers for 1920–1930, which was a high point of Dutch East Indies exports. In order to not interfere with government coffee cultivation, lands under long-lease in Priangan produced relatively limited amounts of coffee (see, for example, KV 1877, Appendix R). Furthermore, the spread of the leaf blight in the 1880s had a negative effect on coffee production. This hindered the rise of a large-scale coffee economy in the early twentieth century, and by that time coffee had become largely a smallholder crop. Instead, most estates in Priangan produced rubber and tea; only about 15–20% of production was in the hands of indigenous smallholders. The contrast with export production in West Sumatra in this period is striking as almost all of it was in the hands of native producers ([Table 2](#)).<sup>5</sup> Only small amounts of copra, coffee and rubber came from plantations in West Sumatra.



**Figure 4.** Arable land under long-lease contracts by Western enterprises in Priangan and West Sumatra, 1873–1940.

Sources: KV (1874–1922); SJNI (1923–1929); IV (1930–1940).

**Table 2.** Production of main agricultural export crops (in tons) in Priangan and West Sumatra, 1920–1930<sup>a</sup>

		Priangan			West Sumatra		
		1920	1925	1930	1920	1925	1930
Coffee	Estate	95	95	112	839	735	1,245
	Indigenous	0	0	55	5,073	6,109	14,701
Copra	Estate	29	463	1092	125	177	25
	Indigenous	n/a	n/a	n/a	16,422	23,853	25,659
Kina	Estate	7,780	7,165	7,339	146	783	979
	Indigenous	0	0	37	0	0	0
Rubber	Estate	5,116	9,743	14,369	918	314	346
	Indigenous	0	263	456	0	2,301	532
Tea	Estate	26,739	23,852	33,700	119	3	522
	Indigenous	7,314	10,831	15,602	0	0	0
Estate	Planted area (ha)	97,115	118,765	147,887	4,194	5,506	13,908

Note: <sup>a</sup>Estate agriculture as defined in the sources as non-Indonesian agriculture.

Sources: CKS (1920–1930); Touwen (2001). Also see Appendix.

With the demise of the system of forced cultivation after 1870, the Dutch colonial government had to look for new sources of revenue. It increased revenues from existing sources, like the land tax and various excises, but also introduced new taxes, such as a poll tax, personal tax and an income tax (Wahid 2013, 43). *Corvée* labour was gradually abolished in Java but continued to be levied in the Outer Islands, including Sumatra. Furthermore, export taxes disproportionately fell on smallholders in the Outer Islands. Land taxes were only levied in Java, Bali, Lombok and Southern Sulawesi (Booth 1980, 102). As a result, the tax burden could differ substantially between different parts of colonial Indonesia. A study estimated that in the late 1920s, taxes were about 6% of income in Java, and about 11% in the other islands of Indonesia (Götzen 1933, 473). A more recent study came to similar conclusions for 1939 and notes that the calculations did not take account of labour duties owed to local heads, arguing “these labour imposts, to the extent that they were heavier in Java than elsewhere, may have served to even out the relative tax burdens” (Booth 1980, 106).

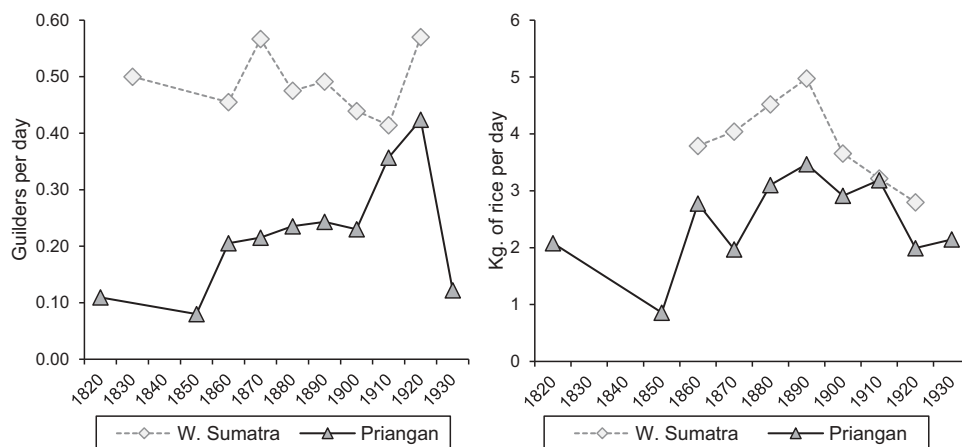
Was this difference of a similar magnitude between Priangan and West Sumatra? In the 1920s, the colonial government issued a number of investigations into the well-being of the local population. These studies surveyed the average incomes and the pressure of taxation in several residencies, sparked by concerns about famines, tax burdens and potential social and political unrest. These data are generally considered relatively reliable (see, for example, Hüsken 1994; Booth 1998). While there is a potential downward bias in the income figures presented in these sources, this should not affect the comparison.<sup>6</sup> For the various residencies of Java, Meijer Ranneft and Huender (1926, 1–4) assessed incomes via estimations of the value of production and income at the sub-district and village levels, as well as via surveys among a random sample of 1,425 families. For a few districts in Priangan, this study makes clear that the average tax burden was between 6% and 9%, with a mean of 7.5% of gross income (Meijer Ranneft and Huender 1926, Appendix 6). For West Sumatra, more detailed estimates of average incomes and the tax burdens are available. The drafter of the West Sumatran report, Malines van Ginkel (1928, 8–15), did field research and collected information on income for a random sample of 159 families scattered across the residency. Total taxation as a percentage of

gross income in West Sumatra lies between 4% and 10%, with a mean of 6.3% for eight districts.

## Living Standards and Inequality

The investigations on average incomes and the tax burden introduced in the previous section provide information about living standards and inequality in these regions. The average annual gross income per person found for Priangan ranged between fl. 27 and 37, depending on district and method of estimation (Meijer Ranneft and Huender 1926, Appendix 6). In West Sumatra, reported gross incomes per person were between fl. 55 and fl. 66 in the main towns of Padang and Pariaman. These estimates were mainly based on the incomes of craftsmen and wage labourers. Outside of the towns, rural families could have substantially higher incomes, reaching fl. 132–fl. 167 in areas that were important centres of smallholder coffee, copra and rubber production. Even in the poorest and least commercialised region of West Sumatra average income was estimated to be over fl. 51 per person – a full 14 guilders higher than the maximum estimate for Priangan (Malines van Ginkel 1928, 14). After taxes, the gap remains of a similar size: net annual incomes in Priangan lie between fl. 24 and fl. 34 (Meijer Ranneft and Huender 1926, Appendix 6), while the lowest net income in West Sumatra was almost fl. 48 per person (Malines van Ginkel 1928, 14). Since rice prices were more or less equal in the two areas in these years this meant that the average Minangkabau inhabitant was substantially better off than its Sundanese counterpart.

In order to say something about differences in incomes in the nineteenth century, we are dependent on the evidence on real wages, as other indicators on living standards are lacking. Booth (2012) has reasonably doubted whether real wages are a proper indicator of living standards for the majority of the population. As will become clear below, real wages initially reflected the standard of living of a far larger proportion of the population in Priangan than in West Sumatra. Figure 5 shows the comparative developments in wages in Priangan and Minangkabau. Whereas nominal wages were substantially higher



**Figure 5.** Wages expressed (a) in guilders and (b) in rice per day, decadal averages, 1820–1940.

Sources: KV (1853–1930); Anonymous (1937); Dros (1992); Lulofs (1904), Malines van Ginkel (1928).

in West Sumatra over most of the nineteenth century, there is wage convergence up to the early twentieth century. Real wages (expressed in kilogrammes of rice per day) show a somewhat different picture. We can again see a gap in the nineteenth century, with West Sumatra having higher real wages than workers in Priangan, but there is some divergence up to the 1890s and then clear convergence in the first decades of the twentieth century. In the 1910s, real incomes of wage labourers are on the same level. This wage convergence may in part be the result of increased migration between Java and Sumatra from the late nineteenth century (Hugo 1980, 106–110). These graphs show that wage labourers were noticeably more affluent in West Sumatra until the early twentieth century.

How many people in these regions were dependant on wages? Breman (2010, 284) notes that already in the 1860s, 30–50% (depending on the source) of the households in Priangan engaged in agriculture did not own any rice fields. Data on the distribution of land in Java in 1903 suggests that over 50% of the total adult male population did not have their own lands in Priangan and that even 63% of the adult male population were engaged in by-employment such as wage labour, suggesting that for a certain group of landholding peasants, incomes from their land were too small to make ends meet (Fernando 1989, 157). Landownership in Priangan had declined to about 40% by the late 1920s (Ploegsma 1936, 52). For West Sumatra, in 1905, only 4.5% of the agricultural population did not own land (KV 1907). By the 1920s the number of people engaged in wage labour in West Sumatra had increased to almost 20% of the total adult male population (Malines van Ginkel 1928, 20–21).

Data on income taxes from the 1920s provides more insight into the income distribution of these two regions. The 1920s are an appropriate period to study income differentials in more depth as this was again a period of export growth for both these regions – after the slump of the 1910s and before the global economic crisis of the 1930s. Therefore, it provides a useful snapshot of the high-point of global export trade in these regions. As we will see, there were substantial discrepancies in the degree of inequality in these regions by the 1920s.

In 1920 a general income tax was implemented in the Dutch East Indies. Income earners from the same households were taxed together. These data have been used by Leigh and van der Eng (2010) to analyse developments in the income share of the top 1% income earners of the population. They note that the coverage of this tax was exceptionally high. In 1920, already 2.6 million people or 22% of households were paying the income tax, which increased to over four million or 30% of households in 1930 (Leigh and van der Eng 2010, 177). The coverage differed substantially between the different provinces, however. Assuming five persons per household in both residencies, the tax was levied on 19% (1920) to 36% (1928) of households in Priangan and 103% (1920) to 117% (1928) of households in West Sumatra.<sup>7</sup> The reason for the much lower coverage for Priangan is that those peasants liable to pay the land tax in Java were exempted from the income tax, as were those people with incomes below fl. 120. Using data on agricultural production and landholding and its distribution in Priangan in 1903, the incomes of the 50% of people holding land were added to the income tax data, as were incomes of the group with incomes below fl. 120. The Appendix describes the procedures and shows that they are biased against the conclusions of this article.

In addition, the tax assessments showed figures separately for different ethnic groups: “Europeans,” “Foreign Asiatics” and “Indigenous.” Leigh and Van der Eng (2010, 177) note that these categories are misleading, as Chinese, for example, could be noted as “Foreign Asiatics” or as “Europeans.” Therefore, these distinctions are not used in the article and instead inequality is calculated for the population at large.<sup>8</sup> Finally, assessments for the income tax were made by village heads rather than by the colonial officials and it is likely that these heads may have under-reported the actual incomes to be assessed (Leigh and van der Eng 2010, 177). Especially among the lower income brackets, under-reporting means that the figures shown in Table 3 may understate the true level of inequality. In this article, only figures for 1920 and 1928 from KV 1922 and 1930 are used as after 1930 the data on the income tax that appeared in the Indian Reports (*Indische Verslagen*) reported only information for Java and the Outer Islands as a whole and do not allow a calculation of inequality for separate residencies.

Both the land tax and the income tax were, to an extent, progressive taxes, so after-tax inequality figures can differ from pre-tax figures. Tax rates for incomes above the minimum of fl. 120 increased from 1% plus a lump sum of fl. 1.20 on the lowest taxable incomes to 25% plus a lump sum of fl. 29,566.80 for incomes above 180,000. The land tax was levied on both *sawah* and dry lands and took into account information about the productivity of the fields as well as the average price for rice in a region. In the Appendix the procedures to arrive at pre- and post-tax estimates of inequality are detailed. Table 3 shows the after-tax figures, while Table A2 in the Appendix includes pre- and post-tax numbers (the differences are negligible).

Table 3 first shows the Gini – the most commonly used measure of inequality – in both areas. In both 1920 and 1928 the Gini was much larger in Priangan and the gap increased substantially during this period. Following the methodology used by Milanovic, Lindert, and Williamson (2011), an estimate of the “inequality extraction ratio” (IER) can be made. This considers there is a maximum amount of inequality in pre-industrial societies since incomes of the poorest parts of society cannot drop below subsistence level. They define an inequality possibility frontier where the maximum Gini is 0 in a society with incomes at subsistence level, but rises to about 60 when average incomes are 2.5 times subsistence level. Table 3 shows that the IER was also higher in Priangan and the gap again increasing over the 1920s. In both Sumatra and Priangan there is a decline in the IER over the 1920s, driven by an increase in average assessed incomes and a large decline in prices – pushing up the maximum feasible inequality. Larger inequality, and a growing difference in the degree of inequality, when incomes were going up resulting from the trade boom of the 1920s clearly suggests that the gains from trade were distributed differently in these areas, benefitting the wealthy in Priangan, while in West Sumatra the gains were more widely enjoyed.

While the evidence presented here is not without problems, it is difficult to escape the conclusion that inequality and poverty were greater in Priangan than in West Sumatra. It is likely that more complete information would only strengthen the picture sketched here, as the procedures followed were biased against the conclusions developed in this article.

## Indigenous Institutions

Why did areas that were so similar in terms of geography, climate and factor endowments develop differently in terms of income and inequality outcomes? In seeking to answer this question, the argument is that different indigenous institutions play an important role in the divergence. The focus here is on: (i) the power of local elites; and (ii) different property rights regimes that were related to family systems. These institutions were the result of a long-run path-dependent process, as the discussion below demonstrates.<sup>9</sup> Especially because pre-colonial Indonesia has a long history of political fragmentation, the position and power of local elites differed greatly across the archipelago (Watson Andaya 1992).

The VOC in the eighteenth century did not establish direct rule over the Priangan region. Instead the regents remained in charge of the administration. They had to recognise VOC sovereignty and were put in charge of the forced deliveries of coffee, for which they were paid by the VOC. The Priangan regents in this system wielded substantial power, as evidenced by their success in delivering large amounts of coffee at low prices. Meanwhile, village institutions and the village head were “not very powerful” (Wolters 1998, 297). The power of the local aristocracy across Java was diminished under the nineteenth-century Cultivation System, as the heads were in principle placed under the supervision of European superiors. This was not the case in Priangan, however, as there the regents continued to be the most important authority. Because of the regents’ success in obtaining large amounts of coffee from a Sundanese population that was apparently obedient to them, the colonial government thought that maintaining the system (with substantial power for the regents and district heads) would be the most effective way of reaping economic benefit from the area (Breman 2010, 193). The regents in Priangan thus held much more autonomy than in other parts of Java, village (*desa*) institutions were significantly weaker than elsewhere and European supervision of the delivery system was more limited. By the middle of the nineteenth century, the extraordinary wealth of the Sundanese aristocracy had become a nuisance to the colonial government as it implied smaller profits for the colonial government and greater exploitation of peasants (Breman 2010, 290).

Only after a re-organisation of the coffee cultivation system of the early 1870s did village institutions, the village headman and administrators, in Priangan become more significant with the regents and supra-village elites losing some of their power to colonial officials. The number of European officials in the residency doubled to 38 (Breman 2010, 314). Some district heads were incorporated in the colonial bureaucracy, while other local elites, whose function was unclear to the colonial authorities, lost their position. Another elite group, the Islamic clergy, despite efforts of the colonial government, continued to have substantial influence; they played a role in education and the village administration because they were the most literate group. While there were thus some changes taking place over time, compared with other areas in Java, the *desa* remained a weak institution: the village head continued to have little power and, as will be discussed below, village authorities were unable to protect uncleared waste lands against alienation by outsiders (Wolters 1998, 298).

In contrast, West Sumatran villages (*nagari*) traditionally were highly independent units of governance. Sometimes called “village republics,” *nagari* were associations of

matriclans, consisting of one or more matrilineal families that were each headed by a lineage head (*panghulu*). The *nagari* was headed by the council of lineage heads, which formed both the “village government and highest judicial authority, on the basis of equal status of all lineage heads” (Von Benda-Beckmann and Von Benda-Beckmann 2013, 49). While the *nagari* were not entirely egalitarian, as some members had higher positions than others, the decision-making in the councils was based on reaching consensus after thoughtful reasoning and discussion. The *panghulus* often consulted with their lineage members before taking part in the village council deliberations; the *panghulus* did not “wield ‘despotic’ power over their subordinates” (Oki 1977, 33). Stamford Raffles expressed his annoyance of having to deal with hundreds “of equally powerful *panghulu* merely to get permission for his party to cross *nagari* lands,” while Dutch colonial officials complained that “Minangkabau traditional democratic government ... was not compatible with the modern needs of centralisation and the creation of a professional cadre of civil servants” (cited in Ambler 1988, 50–51).

The Dutch colonial government did attempt, and succeeded to some extent, to change power relations in Minangkabau. They elevated the positions of some *panghulu* that were part of the colonial administration at the village or district levels. As Dobbin (1983, 233) notes, it was their goal to create a Minangkabau “aristocracy” whose fortunes were tied to those of the Dutch. After first failed attempts of installing Javanese-style regents, it was thought, in the words of the Minister for the Colonies, J. C. Baud, that only gradually the “democratic principle” of administration was to be supplanted by the “aristocratic principle” (cited in Dobbin 1983, 233). There was gradual change and some *panghulu* became increasingly powerful and even abused their power (Ambler 1988, 53). The colonial government also tried to limit the growth of the number of *panghulu* and started to interfere with the membership of councils. However, as Von Benda-Beckmann and Von Benda-Beckmann (2013, 94) concluded:

These new administrative structures, while domesticated and important in *nagari* politics, never fully replaced the old one, which lived on as ideal patterns and actual institutions. The positions of some lineage heads were weakened and others were strengthened, but there is no evidence that *panghulu* councils were “reduced to a ceremonial gathering.”

Thus, there were clear differences between the two regions in terms of power structures and the balance of power between the elites and peasant population. This had important consequences: the powerful aristocracy of Priangan was able, not only to demand substantial labour service from the local peasantry, they were also able to arrange exemptions from government services for their own families as well as families providing services to them. The increasing share of the population that was exempted meant that the labour and cultivation services requested from the remainder of the population increased. These poorer farmers were sometimes forced to sell their land in order to be relieved from the high labour demands, which meant that increasing labour services consequently pressed on an even smaller part of the population. In contrast, the local consultative institutions of the Minangkabau meant that almost no one was exempted from government labour and that cultivation services were spread – less demandingly – across almost the entire population. In addition, no other “feudal” services were requested. The average amount of labour requested from Minangkabau families was thus lower than from those not exempted from labour services in Priangan. West Sumatrans also received higher prices for the coffee



delivered, making the forced cultivation of the product less burdensome; in fact, it seems that until the 1870s the coffee price was favourable for its cultivation even without coercion. Additionally, the powerful regents and district heads of the Priangan also left village institutions rather weak. This meant that they offered little protection against both the confiscation of private lands by elites, as well as the alienation of village lands after the Agrarian Law of 1870. Meanwhile, much stronger village institutions of the Minangkabau provided greater security and limited the alienation of both family and village lands.

There has been academic debate about the nature of landholding in colonial Indonesia, and Java in particular, since the nineteenth century. Two categories of landholding can be distinguished: hereditary private property and communal property (Boomgaard 1989, 2). Large-scale research into the rights of the Javanese to land was conducted in the late 1860s and showed substantial variation between the various regencies in terms of property rights regimes.

In Priangan, almost all *sawah* land was heritable private property that could be bought and sold (Kano 1977, 13). Land as private property could also be created by clearing wastelands and turning them into *sawah*. In contrast to modern private property, however, there were often restrictions on who could own land in Java, requiring an owner to be able to cultivate it. At times, no sale or purchase was allowed at all. In Priangan, however, there seem to have been relatively few restrictions to the transfer of the land (Kano 1977, 13).

These rights over land were not very secure and the research into the land rights of the Javanese population in the late nineteenth century demonstrated that it was normal practice of the local aristocracy in Priangan to alienate lands from the lower classes (Bergsma 1880, vol. II, 43). For land rights to be secure there is the need for a formal registration and a means to proof possession of the land. As Van der Eng (2016, 230) also observed, there was little accurate land registration in nineteenth-century Java, as the costs of extensive cadastral surveys were likely to exceed any tax revenues that could be based on such surveys (see also Kano 2008, 321). However, at the end of the nineteenth century, in order to aid the collection of the newly implemented landtax in Priangan, there were renewed attempts at land registration in a number of districts. In the late 1910s, however, legal documents recording native land possession, “such as certificates of registry and ownership documents, were absent” (Wolters 1998, 309). Without proper institutions, like a land register and a notary and registry offices, it was impossible to prove land possession in court. Furthermore, as noted above, weak village institutions meant poor protection of village lands. This meant that most of the still uncleared lands in Priangan were quickly leased out to Western enterprises after the Agrarian Law of 1870 (see Figure 4). Weak private property and village institutions meant that many of the Sundanese smaller farmers lost their access to both their own plots of land, as well as the possibility to open up new lands by clearing wastelands.

The increasing inequality in land ownership, especially the accumulation of land by a small group of wealthy landowners has been noted for Priangan (Wertheim 1956, 111). Forced coffee cultivation had stimulated this as small landowners sometimes had to sell their lands in order to be relieved from the pressing labour services that were attached to the land (Scheltema 1927, 292). Most of the increased land inequality developed after 1876. At that time, a government report noted that large landownership was still largely absent from Priangan (Bergsma 1876, vol. I, 185–187). Scheltema (1927, 299) notes that

the relatively “free” land market with individual private property rights in Priangan aided land accumulation in the hands of the few. Land also accrued to the wealthy via the capital market. Small farmers who needed money could pledge their land to a local moneylender, yet if the farmer defaulted, the land would become the property of the moneylender (Wolters 1998, 304–306). Often the goal of these moneylenders was to acquire land. These lenders included the *bupati*, their families and other aristocrats, as well as members of the Islamic clergy and wealthy landowners and merchants (Scheltema 1927, 301–303).

The land tenure situation in West Sumatra could not have been more different (see von Benda-Beckmann and von Benda-Beckmann 2006). Irrigated rice fields and houses were generally the communal property of an extended family and were inherited through the female line. Lands that had been cleared by a families’ ancestors could be subject to redistribution among different sub-lineages for necessary demographic or economic reasons (via processes of deliberation among lineage members). Members of a lineage that cleared new lands held some autonomy over this self-acquired property, especially during their lifetimes. This land would only be inherited by members of the sub-lineage of the pioneer cultivator. Sale, or any other kind of permanent alienation, of family property was not allowed, but these fields could be pawned if a lineage needed money. A final type of communal property was the uncleared wastelands that were common property of the *nagari* controlled by the *nagari* council. Village members had free access to these lands. Under traditional law (*adat*) these lands could not be permanently alienated.

Schrieke (1955, 95–110) thought that the increased pawning of lands and expanding commercialisation and monetisation of the West Sumatran economy in the early twentieth century meant that traditional Minangkabau institutions of communal property were breaking down. He was wrong. Data from 1934 showed that no permanent conversion of family land to private property had taken place in the areas on which Schrieke based his conclusions (Oki 1977, 101). While it is clear that colonial rule and rising export trade meant considerable changes for Minangkabau society, many facets of *adat* law and local customs persisted. Both village councils and communal property rights have remained largely intact. When the Dutch issued the Domain Declaration for Sumatra in 1874, this theoretically transformed all village lands into government lands overnight. In practice, village rights to “waste lands” continued to be recognised by the government and the declaration was initially kept secret in West Sumatra, as the government feared widespread rebellion. At the same time, especially after the abolishment of the coffee cultivation system in 1908, the process of land alienation also took off in West Sumatra (see Figure 4). This was mostly in areas that were not densely populated and before such leases were given out “agreement with village governments was sought” (von Benda-Beckmann and von Benda-Beckmann 2006, 206; see also Oki 1977 and Young 1994).

Both in the views of nineteenth- and twentieth-century colonial administrators, as well as present-day “new institutional economic history” scholars, institutions of village and lineage property are seen as inhibiting economic growth. At the same time, Minangkabau village and property institutions may have provided better protection against land alienation than the (insecure) heritable private property rights to land in Priangan. The consequences were clear: landlessness was much more widespread in Priangan and

Western enterprises had alienated a far bigger share of the total land area there, inequality was greater and overall incomes were lower.

## Conclusion

Inequality changes slowly over time. Recent data from the Indonesian statistical office show that differences in degrees of inequality observed for the early twentieth century have persisted into the twenty-first. In 2018 the Gini in West Java (0.41) was still substantially higher than that in West Sumatra (0.31) (BPS 2019a). In addition, poverty rates were similarly higher in the former region (7.35% versus 6.6%) (BPS 2019b). Of course, there are many factors influencing this gap at present, but access to and distribution of land are a part of this story, as shown by Bachriadi and Wiradi (2011). They found that landlessness and land inequality are important drivers of rural conflict and poverty in present-day Indonesia. Despite the changes imposed by the post-colonial period, land distribution remained more skewed in West Java with a land Gini of 0.50 there while it was 0.43 in West Sumatra by 1983 (IFAD 1988, 68). This article has examined the roots of these modern differences.

Both areas have a long history of producing goods for overseas markets and an export boom occurred during the nineteenth and twentieth centuries. This article's in-depth comparison has led to several insights that may complement the literature on the relationship between export trade, institutions and inequality during the colonial era. Despite many geographic similarities, the mode of production of these crops differed between the regions; already in the nineteenth century forced coffee cultivation in Priangan was predominantly done on plantations, while it was carried out in and around the villages as a side activity in West Sumatra. By the early twentieth century, coffee and coconuts were grown mainly by smallholders in West Sumatra, while production was concentrated on estates in Priangan. Tax records from the 1920s show that inequality was greater in Priangan. Furthermore, during the 1920s, when exports boomed, the Gini decreased in West Sumatra, while it increased in Priangan.

The results of this investigation emphasise the variation of indigenous institutions in terms of colonial power and property rights in influencing the relationship between globalisation and inequality. Priangan had a system of individual and heritable property rights to land that were, however, not secure, while Minangkabau did not have any individual private property, but instead had various forms of communal property rights that were more secure. We know that in Priangan land inequality increased over time, as a wealthy elite was able to accumulate large tracts of land. In Minangkabau, there were fewer proletarians, and while figures on land distribution are entirely lacking, it seems unlikely that a similar trend towards greater inequality took place there. This raises doubts on theories, put forth by North (1990), suggesting the superiority of private property rights. In addition, local elites were more powerful in Priangan than they were in West Sumatra. This meant that it was especially elites in Priangan who were able to both get more exemptions from colonial taxation for themselves and their cronies and to accumulate greater amounts of land at the cost of the smaller farmers. Furthermore, these powerful elites left village institutions rather weak, leading to the relatively fast appropriation of uncleared wastelands in Priangan, further limiting the access of destitute farmers to additional means of subsistence. Meanwhile, more or less

“democratic” and relatively autonomous village institutions were better able to protect lands against alienation in West Sumatra. The comparison has shown that the effects of globalisation, even when largely forced upon societies by an external colonial power, are crucially influenced by local institutions.

## Notes

1. Percentages represent the averages for the years 1920, 1925 and 1930 for the most important crops: coffee, kina, rubber, tea and copra (see Table 2).
2. Assuming a family of five persons (Boomgaard 1989, 153–154).
3. Breman (2010, 271) provides some examples of different types of punishment for misconduct and the use of arms to force workers onto plantations.
4. By the mid-1920s, this number had declined to about two days and almost 90% of people liable to these services bought themselves out (KV 1926).
5. Indigenous rubber production declined in West Sumatra after 1925, a peak year, probably in response to declining world prices.
6. The investigators expected a downward bias in the average income figures as they could not be certain to have included all potential sources of income. Furthermore, the local population may have reported lower income figures out of fear for higher taxes.
7. For Priangan, see Boomgaard (1989, 149); for Minangkabau, see Young (1994, 154). The assumption of five per household is slightly too high in West Sumatra, but that coverage of the tax is near universal.
8. The Appendix also shows data on inequality for the indigenous population separately, with similar results.
9. For a discussion of path dependency in the development of local institutions for market exchange in Java, see Henley (2015).

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## Appendix

### A1. Calculating Population Densities

For Priangan, arable lands were reported in the KVs annually. These figures were gathered and checked by Boomgaard and Van Zanden (1990). These were combined with population numbers from Boomgaard and Gooszen (1991) to compute the population densities of arable land. For West Sumatra, no accurate overall estimates are available on the amounts of arable lands. For 1925 and 1926, however, the KVs report the amount of *sawah* land in West Sumatra, the total production of paddy from *sawah*, and the quantities of paddy produced on dry lands. Using estimates by Van der Eng (1996, 174) on gross yields of irrigated and upland paddy (2.25 and 1.20 tons per hectare respectively), it was possible to estimate rice land. For the 1850s, 1860s and 1870s, the KVs only report on the total amount of rice produced. Assuming similar productivity of *sawah* and dry lands and similar relative shares of *sawah* and dry lands allowed the computation of the lands for West Sumatra in the mid-nineteenth century. An additional 20% was added to these figures to take into account non-rice arable lands, which is the average percentage for Priangan in this period. Data were linearly interpolated between the 1870s and 1920s. Data were extrapolated to the 1940s by fitting a linear trend to the data. While these figures are not entirely accurate, they suggest that the growth of the arable area remained in step with population growth in both areas.

### A2. Smallholders vs Plantations

Data from CKS (1920–1930) showed amounts of estate land and the estate production of all important export crops and gave estimates of smallholder production. For Priangan, 1925 and 1930 smallholder production volumes of rubber, coffee and tea were estimated by using the estimate of hectares planted and assuming similar productivity per hectare as plantations. Since plantations are known to have higher productivity, this likely over-estimates smallholder production in Priangan (biased against my suggestion of plantation dominance). Smallholder estimates of copra production were not available for Priangan.. For West Sumatra, total exports were also available from Touwen (2001). Smallholder production was assumed to equal export quantities minus plantation produce. Figures from Touwen (2001) were somewhat higher than those from CKS (1920–1930). Table 2 shows the average of the figures from the two sources for West Sumatra.

### A3. Rice Prices

For Sumatra's west coast, rice prices were reported for the period 1856–1938 in the KVs, with some gaps at the end of the period. For Priangan, market prices for white rice were reported consistently in the KVs between 1878 and 1897. To create a continuous price series for the entire period discussed (Figure A1), the remaining price series was extrapolated on the basis of the correlation between Priangan and Batavia prices ( $R^2 = 0.78$ , suggesting a strong correlation), using Batavia prices for the period 1848–1938 from Mansvelt and Creutzberg (1978) using the following equation Figure A1:

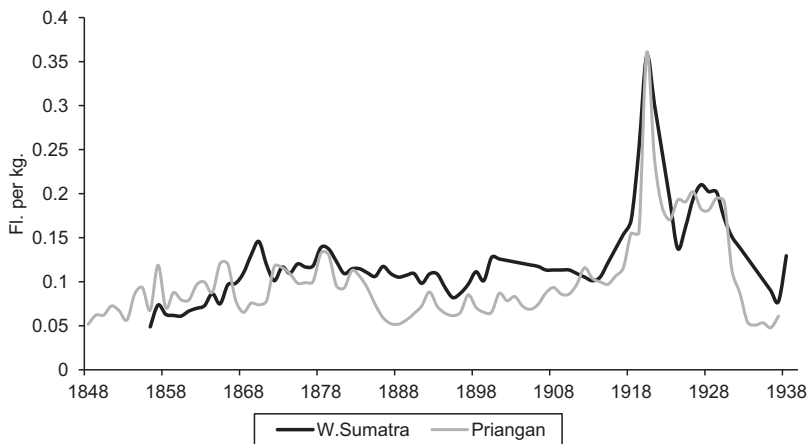
$$P_{\text{Priangan}} = 1.16 P_{\text{Batavia}} - 2.46.$$

### A4. Inequality and the Land Tax

As noted above, the coverage of the tax in Priangan among all households was low, because those people already paying land taxes were exempted from having to pay income taxes. Also exempted were those at the bottom end of the income scale: those with total household incomes below fl. 120 per annum.

The first step in computing inequality including those households is to add incomes from those people holding lands. The amount of land held by peasants could differ significantly and peasant incomes can be differentiated by using the data on land holding from a large-scale research into the welfare of the Javanese population conducted at the beginning of the twentieth century, known as the Declining Welfare Study ("Onderzoek Mindere Welvaart": OMW 1905). These reports show the number of people holding land of varying sizes in Java in 1903. In order to translate this information on landholding into monetary incomes, we add to this information on average production and estimate the costs of labour inputs. For this exercise, it was assumed that only rice was being produced on these lands. While other crops were also being produced, most of the land was devoted to rice and this seems a safe assumption to get an indication of the income that could be derived from such lands.

Average production of paddy per hectare was calculated for Priangan in the 1920s using data from Boomgaard and Van Zanden (1990). For 1920, one hectare yielded 1,846 kg paddy per hectare, while for 1928 it was 2,081 kg. A milling rate of 0.65 kg of rice per paddy is used to calculate the output of rice per hectare at 1,200 kg in 1920 and 1,353 kg in 1928 (van der Eng 2004, 348). These figures are roughly in line with the 1.1 ton rice per hectare estimated for Java in the 1920s by Van der Eng (2004, 355). Using the average retail price of Cianjur rice for 1920 and 1928 from official publications, being fl. 0.18 and fl. 0.16 respectively (CKS 1933), it is possible to



**Figure A1.** Rice prices in West Sumatra and Priangan.

Sources: *Koloniale Verslagen* and Mansvelt and Creutzberg (1978).

estimate the gross income per hectare of land in the Priangan as 219 and 221 guilders per hectare respectively.

In order to produce these quantities of rice, it is assumed that this required substantial inputs of labour, but no capital. For Java in the 1920s it was estimated that 1 hectare of land required a labour input of 210 working days (Van der Eng 2004, 355). The 1930 census provides figures on labour market participation rate: 0.3 for West Java (Volkstelling 1934–1936). Assuming a full year of work consists of 250 working days, this leads to 375 working days per household of five persons. In order to estimate household incomes it is therefore assumed that households can work 1.75 hectares of land themselves without having to hire additional labour. Households with plots of land less than 1.75 hectares can use their remaining days to work for wages. This wage income then augments the income from the land. Households with greater plots, on the other hand, would have to hire workers to work their fields. The wage in the 1920s was on average fl. 0.40 per day. Combining this information with the figures on the sizes of plots allows for the calculation of household incomes derived from land.

Data from 1903 suggest that almost 50% of households held land. Combining this with the coverage of 20–30% of the income tax, that leaves another 20–30% of households who held no land nor paid the income tax; that is, households with combined incomes lower than fl. 120. These were undoubtedly the poorest strata of society. In order to take this group into account, we can add an income group of about 20% of the total population – 105,000 households in 1920 and 130,000 in 1928 – that earned fl. 115. This is a conservative estimate, close to the fl. 120 benchmark, biased against my results of high inequality in the Priangan. Combining this information with data on the sizes of the various income classes from the taxation records, Ginis can be estimated. Table A1 shows the computed Ginis with and without corrections for landholders in the Priangan. The method of correction clearly decreases the Gini coefficient. In this article, corrected Ginis are shown, which are thus biased against the conclusion drawn. Finally, it should be noted that the figures on land inequality used stem from 1903, rather than the 1920s. Unfortunately, such data are currently unavailable. Land inequality probably increased towards the 1920s as Meijer Ranneft and Huender (1926, 11 and Appendix 8) note a substantial growth in large landholding in the Priangan between 1905 and 1925 as the number of landholders with over 25 *bouw* of land increased from 556 in 1905 to 1,226 in 1925. We would prefer to have better data – such as data on the distribution of land in the 1920s – but in the absence of such figures, the procedures followed here to take the missing information into account were biased against the conclusion of high inequality in Priangan in the 1920s. More complete information would increase the observed level of inequality.

### A5. Pre- and Post-Tax Ginis

*Land taxes.* Land taxes differed according to location. Based on data about location and climate conditions as well as other factors, districts were classified in three groups based on the “state of economic development.” For districts classified as “low development,” the tax rate was 8–11%, for “average development” tax rates of between 12% and 16% applied, and for districts with “high development” rates were between 17% and 20% – although in practice a maximum of 18% applied. These percentages were then levied on the total paddy produced per *bouw* minus 10 *picul* of paddy, but with a minimum of the monetary value of 2 *picul* paddy per *bouw*. So on a field of 1 *bouw*

**Table A1.** Pre-tax Ginis, corrected pre-tax Ginis and coverage, Priangan, 1920, 1928

	Income tax data		With corrections	
	1920	1928	1920	1928
Gini	62	63	48	53
Avg. household income assessed (fl.)	419	425	331	347
% of households covered <sup>a</sup>	19	36	83	85

Note: <sup>a</sup>Calculations are based on five persons per household.

Sources: See text.

producing 30 *picul* of paddy in a low development district the tax would be the monetary value of 8–11% of 20 *picul* paddy (Tjhan 1933). Contemporaries have suggested that the tax was in practice regressive as fields that were highly productive were taxed only marginally higher (see Wellenstein 1926, 129; Tjhan 1933, 114–115). Further problems arise if unproductive lands are situated in districts classified as highly developed. In addition, tax percentages did not increase with the amount of land, so that large landowners were not taxed more heavily than small landholders.

Dry lands were taxed less than *sawah* land. Land tax rates in Priangan were on average fl. 5.47 per *bouw sawah* and fl. 1.08 per *bouw* dry land. This could impact on inequality. Above, it was calculated that per hectare of land a farmer could earn fl. 155 per *bouw* in 1920 and fl. 157 in 1928. The difference in taxes of dry land and *sawah* is only fl. 4.39 per *bouw* (Meijer Ranneft and Huender 1926, 32). This difference means that having more dry land rather than *sawah* is beneficial *only* when productivity of this dry land is over 90% of that of *sawah*. This is unlikely to have been the case for many small farmers as it was noted in the primary sources that the productivity of dry lands was dependant on capital inputs (Meijer Ranneft and Huender 1926, 193), suggesting that lands of the wealthiest peasants were the most productive. Van der Eng (1996, 174) calculated that dry lands were on average only 53% as productive as *sawah*. Thus, including any assumptions about whether small landowners held significant proportions of dry fields would probably only reduce their incomes and thus increase inequality. Instead, average land taxes of fl. 0.19 per *picul* rice were reduced from landed incomes in the after-tax calculations (Meijer Ranneft and Huender 1926, 34). No land taxes were levied in West Sumatra.

*Income taxes.* Income taxes were progressive and higher incomes had to pay more taxes. Different income tax brackets and the amounts of taxes due are available in the income tax law in the *Indisch Staatsblad* (1921, Art. 678). The lowest rate was 1% on incomes below fl. 120 and a lump sum of fl. 1.20 (to be paid only if total income was above that), increasing to 2% on incomes between fl. 120 and fl. 1,800, 3% on incomes above fl. 1,800 up to fl. 3,600, reaching up to 25% for all incomes earned over fl. 180,000 and a lump sum of fl. 25,966.80. For all the income brackets reported in the income tax records, the amount of taxes due were calculated from the assessed incomes in order to generate after tax Ginis. From Table A2 it becomes clear that pre-tax and post-tax Ginis and household incomes differ only minimally and have no real effect on the calculation of inequality.

## A6. Inequality Extraction Ratio

As explained earlier in this article, Milanovic, Lindert, and Williamson (2011) developed the “extraction ratio.” In order to define what income reflects subsistence level in colonial Indonesia in the 1920s, a consumption basket was created. The basket is inspired by the methodology pioneered by Allen (2015), who defines a “barebones basket” that contains a minimum of 2,100 calories per day from the main staples, as well as some necessities in terms of lighting, fuel and clothing. The colonial Indonesia basket was created according to these principles, but also using information on the “cost of some important articles consumed by the native inhabitants of Java” from

**Table A2.** Pre-tax and post-tax Ginis and household incomes, 1920, 1928

		Year	Avg. household income assessed	Gini
Priangan <sup>a</sup>	Pre-tax	1920	331	48
		1928	347	53
	Post-tax	1920	323	47
		1928	335	52
West Sumatra	Pre-tax	1920	295	39
		1928	308	33
	Post-tax	1920	287	39
		1928	300	33

Note: <sup>a</sup>Priangan shows corrected figures.

Sources: See text.

**Table A3.** Prices for a “barebones” consumption basket, 1920, 1928

	Unit	Quantity per person per annum	Nutrients per kg		Nutrients per day		Annual costs in fl.	
			calories	protein	kcal	protein	1920	1928
Rice	kg	100	3,620	75	992	21	13.73	8.45
Soy beans	kg	20	4,460	360	244	20	0.00	2.88
Cassava	kg	165	1,590	14	719	6	6.14	2.46
Sweet potatoes	kg	55	860	160	130	24	1.96	0.97
Fish	kg	6	1,301	192	21	3	3.72	2.91
Salt	kg	3	n.a.	n.a.	n.a.	n.a.	0.39	0.39
Lamp oil <sup>a</sup>	litres	1.2	n.a.	n.a.	n.a.	n.a.	1.08	0.52
Cotton	m <sup>2</sup>	3	n.a.	n.a.	n.a.	n.a.	2.46	1.06
Petrol	litres	12	n.a.	n.a.	n.a.	n.a.	2.52	2.28
Totals					2,105	74	37.02	21.93

Note: <sup>a</sup>Coconut oil.

Sources: See text.

published sources of the Dutch East Indies statistical office (CKS 1933). The basket and annual costs incurred on its various contents is shown in Table A3.

As can be seen, most calories are delivered by rice and cassava, followed by soy beans. Cassava was the cheapest way to consume calories, due to its low price. This basket represents a humble lifestyle. Average consumption information from official colonial publications suggests that locals also consumed meat, eggs and peanuts. Budget studies from the 1920s and 1930s found that many Javanese consumed tobacco, sugar and tea (Boeke 1926). A higher cost of living, resulting in a lower maximum Gini, would have led to higher inequality extraction rates. Further, in order to account for rent and the consumption of family members, Allen (2015) multiplied the cost of this basket by 4.2. For this article, a multiplier of 4.0 is used in order to take into account households of five members. The total increase of 20% for rent, however, seems too high for Priangan in the 1920s. A budget study for Priangan in this period suggests families spent between 3% and 16% of the total expenditure on housing, with an average of 9% (Boeke 1926, 245–259). This results in a household cost of living of fl. 151 in 1920 and fl. 90 in 1928. Table 3 shows inequality extraction rates for Priangan and West Sumatra, using the average income assessed. These numbers are used to compute the maximum feasible Gini.

## A7. Inequality and Ethnic Groups

The income tax data allowed the differentiation of the level of inequality between different ethnic groups. However, as people could acquire a different ethnic status, these groups do not provide accurate information about inequality among the various groups (see main text). Table A4 shows computed Ginis for all groups as well as the “indigenous” group separately, in order to demonstrate that including such information would not alter the conclusions from the main text: also when only looking at the group of “indigenous” taxpayers, inequality was higher in Priangan.

**Table 3.** Post-tax Gini and inequality extraction rate in West Sumatra and Priangan

	Priangan		West Sumatra	
	1920	1928	1920	1928
Average household income assessed (fl.) <sup>a</sup>	323	335	287	300
Gini	47	52	39	33
Max Gini	53	72	47	69
Inequality extraction rate <sup>b</sup>	90	72	82	48

Note: <sup>a</sup>These figures are much higher than the average incomes reported in the income and tax pressure studies mentioned at the beginning of this section. This is because the high incomes of Europeans are also included in these averages.

<sup>b</sup>Inequality extraction rate = Gini/Max Gini.

Sources: KV 1922 and KV 1930.

**Table A4.** Post-tax Ginis for ethnic groups, Priangan and West Sumatra, 1920, 1928

		Year	Avg. household income assessed	Gini	Inequality extraction rate
Priangan <sup>a</sup>	All taxpayers	1920	323	47	90
		1928	335	52	72
	Indigenous taxpayers	1920	274	39	89
		1928	252	39	61
West Sumatra	All taxpayers	1920	287	39	82
		1928	300	33	48
	Indigenous taxpayers	1920	264	34	80
		1928	274	27	41

Note: <sup>a</sup>Priangan shows corrected figures.

Source: See text.