

An Economic and Demographic History of São Paulo, 1850-1950

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São Paulo Agriculture in the Nineteenth Century

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[-] Abstract and Keywords

Describes the origin, growth and eventual domination of the coffee economy in the state, and the role coffee production played in the entire paulista economy. How coffee was grown, the nature of the coffee plantations, their changing labor force from slave to free labor are the themes analyzed. The impact of the railroad construction in the second half of the nineteenth century is examined and its role in creating a coherent internal market and promoting foreign trade. Finally the place of São Paulo coffee production on the international market is examined.

Keywords: Slavery, Free Labor, Coffee, Plantations, railroads

There is little question that the single most important change in the province of São Paulo in the second half of the nineteenth century was the introduction of coffee into the mix of sugar and food products. By mid-century, sugar and cotton were important local crops, but neither of these crops could replace coffee. The expansion of coffee is the single most important factor in explaining the extraordinary growth of São Paulo in this period. Understanding the dynamics of the coffee industry, its culture, the functioning of its market, and the relative position of São Paulo in the international coffee market is essential to understanding the history of the province in the second half of the nineteenth century.

Coffee had been cultivated in Brazil since the mid-eighteenth century. It arrived in the province of Rio de Janeiro in the last quarter of that century, and in the first decade of the nineteenth century a modest amount was exported to Lisbon. From Rio de Janeiro, coffee farms slowly expanded north and west into the province of Minas Gerais and south and southwest into São Paulo. In the province of São Paulo, coffee entered the northern portion of Vale do Paraíba, which the province shared with the neighboring province of Rio de Janeiro. This Paulista zone had the same natural resources as the surrounding region, which was then the largest producer of coffee in Brazil. At the same time, coffee production spread along the coast of Rio de Janeiro and reached the coastal towns of São Sebastião and Ubatuba on the northern coast of São Paulo.

From there, production crossed **(p.2)** over the Serra do Mar coastal range, entering other parts of the Vale do Paraíba. From its dominant position in Vale do Paraíba in the 1820s and 1830s, coffee then spread to the rest of the province and reached the interior plains in the final years of the nineteenth century. In turn this new zone became the main coffee-growing region of Brazil in the twentieth century.

To study the evolution of this rural economy from early in the nineteenth century, we examined censuses taken in each *município*, or county, of São Paulo from the late eighteenth century with some consistency until well into the nineteenth century.¹ By 1829 there are enough of these censuses to form a rather complete picture of agricultural production in the province.² These county censuses report that the province in 1829 had 40,000 households, of which 24,000 were dedicated to agricultural activities. Of these agricultural households, 7,000 possessed slaves. The remaining rural households relied on family labor, since in this period there were few wage workers in agriculture. Some 1,725 of these rural households produced coffee, and 61 percent of these coffee fazendas owned slaves (with just under 10,000 slaves working the coffee fields). The average coffee fazenda had fewer than 10 slaves, and only 60 coffee farmers owned more than 30 (two farmers had more than 100). Coffee fazendas were concentrated in Vale do Paraíba, especially in the município of Areias and on the province's northern coast. In this same year there were 585 farms producing sugar in the province, and they owned 18,000 slaves, for an average of 31 slaves per sugar mill (*engenho*). Another 316 farms produced *aguardente* (cane alcohol) from sugarcane. Of these 316 farms, 84 percent owned slaves, for an average of a dozen slaves per estate. These sugar and alcohol producers were concentrated in the Central region of the province, especially in the municípios of Porto Feliz and Campinas.³ Of the 24,000 farms listed in the province in that year, 8 of 10 also produced food crops.⁴

By 1836 there existed the fairly complete census compiled by Daniel Müller, which provides data on both population and farm production.⁵ Although coffee production was expanding rapidly by this date, corn still represented half the value of provincial agricultural output. In fact, products grown for the domestic market (corn, rice, beans, and aguardente) represented close to two-thirds of the value of total agricultural production. Coffee accounted for only 20 percent and sugar for 14 percent of the total. There was even some production of tobacco and cotton in the province. Clearly, Vale do Paraíba and the Central region were the most important growing areas, accounting for 81 percent of the value of all crops produced in that year. In these two areas resided 72 percent of the free persons and 79 percent of the slaves. As in 1829, coffee production was still concentrated **(p.3)** in Vale do Paraíba region (87 percent) and sugar in the Central region (91 percent).

Almost two decades later, an 1854 census prepared by José Antonio de Saraiva showed that coffee production had attained much greater importance in the province.⁶ In that year the coffee crop was 3.4 million arrobas, the equivalent of 50,827 metric tons, or 847,000 sacks of coffee at 60 kilograms per sack. This was seven times greater than the crop harvested in 1836. Sugar also increased in the same period, by 50 percent, but coffee now represented six times the value of sugar production. In 1829 coffee estates had 10,000 slaves, and by 1854 they contained 50,000 slaves. Coffee also now had 2,000 *colonos*, or free immigrant workers, helping produce the crop. As Nabuco D'Araujo, the president of the province, noted in 1852, coffee was prospering and promised a great future. He declared that "changing the cultivation of sugar for coffee and tea is a natural trend for our farmers," not only because coffee was easier to produce and paid higher returns but also because it was easier to transport over the very poor roads of the province.⁷ The poor quality of roads was a fundamental restriction on the São Paulo economy. Few wagons

could navigate them, which meant that the primary form of transport of persons and goods was mule train. Aside from the usual difficulties these poor roads created for movement within the province, an additional difficulty was accessing the main port of Santos. The main Paulista agricultural region then in production was at an elevation of 700 meters, with a complex and difficult path leading down to the port of Santos, which was about 140 kilometers from the county of Campinas, a major agricultural production area in the nineteenth century. Thus, creating a comprehensive transport system in the second half of the nineteenth century was crucial for the provincial government.

Despite the major growth of coffee production in two decades, little changed in the regional concentration of coffee fazendas: Vale do Paraíba contained two-thirds of them, and the Central region was second in importance. Sugar was still concentrated in the Central and Mogiana regions, but unlike with coffee, there were no colonos on the sugar plantations, and the average number of slaves per producer was less than in 1829.⁸ Because mules were the primary transport for moving all crops to port, coffee fazendas had 22,000 mules and sugar estates had another 13,000 (Table 1.1).

In 1854, Bananal, Taubaté, Pindamonhangaba, and Campinas were the most important coffee-producing areas (see Map 1.1) and accounted for half the production of the province.⁹ Bananal, with an average fazenda output of 116 metric tons, was the largest producer, compared to an average of 19 metric tons in the province as a whole.¹⁰ **(p.4)**

Table 1.1 Coffee and Sugar in São Paulo in 1854: Workers, Quantity Produced, and Value of Production

| Region | WORKERS | | | | | PRODUCTION | | | |
|------------------|---------|-----------|---------|--------|--------|--------------|------------------|-------------------|--|
| | Farms | Agregados | Colonos | Slaves | Total | Quantity (t) | Value (mil réis) | Transport animals | |
| <i>Coffee</i> | | | | | | | | | |
| Capital | 2 | 17 | | 60 | 77 | 48 | 3,560 | 24 | |
| Vale do Paraíba | 1,830 | 2,951 | 90 | 36,949 | 39,990 | 38,473 | 6,852,062 | 15,353 | |
| Central | 556 | 666 | 844 | 12,489 | 13,999 | 7,716 | 1,582,391 | 4,550 | |
| Mogiana | 72 | 174 | 38 | 1,382 | 1,594 | 1,201 | 327,000 | 1,589 | |
| Baixa Paulista | 134 | 353 | 1,173 | 3,234 | 4,760 | 3,282 | 611,290 | 842 | |
| Araraquarense | | | | | | | | | |
| Noroeste | | | | | | | | | |
| Alta Sorocabana | | | | | | | | | |
| Baixa Sorocabana | 6 | 32 | | 161 | 193 | | | 60 | |
| Santos | 12 | 30 | 14 | 206 | 250 | 107 | 29,200 | | |
| Total | 2,612 | 4,223 | 2,159 | 54,481 | 60,863 | 50,827 | 9,405,503 | 22,418 | |
| <i>Sugar</i> | | | | | | | | | |
| Capital | | | | | | | | | |
| Vale do Paraíba | 29 | 40 | | 276 | 316 | 51 | 28,380 | 62 | |
| Central | 473 | 356 | 1 | 12,239 | 12,596 | 8,542 | 997,970 | 8,241 | |
| Mogiana | 83 | 40 | 9 | 2,203 | 2,252 | 3,506 | 480,700 | 3,734 | |
| Baixa Paulista | 55 | 130 | | 689 | 819 | 624 | 126,700 | 700 | |

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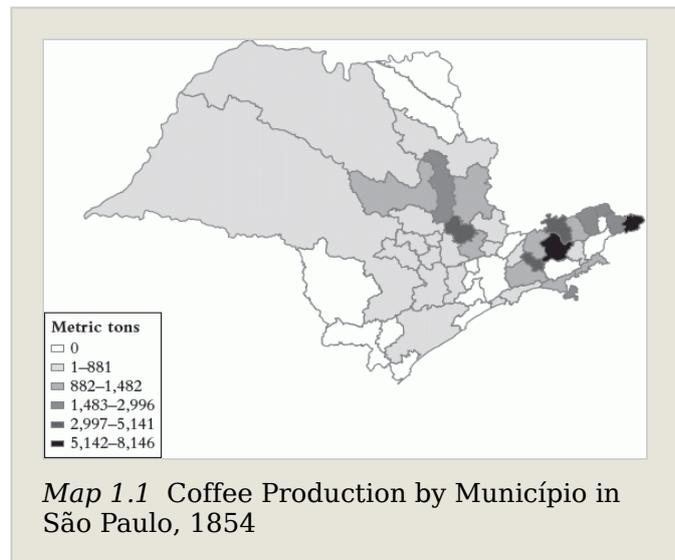
| Region | WORKERS | | | | | PRODUCTION | | |
|------------------|---------|-----------|---------|--------|--------|--------------|------------------|-------------------|
| | Farms | Agregados | Colonos | Slaves | Total | Quantity (t) | Value (mil réis) | Transport animals |
| Araraquarense | | | | | | | | |
| Noroeste | | | | | | | | |
| Alta Sorocabana | | | | | | | | |
| Baixa Sorocabana | 3 | 5 | | | 47 | 52 | | 8 |
| Santos | 22 | 49 | | | 117 | 166 | 2 | 11,000 |
| Total | 665 | 620 | 10 | | 15,571 | 16,201 | 12,725 | 1,644,750 |
| | | | | | | | | 12,745 |

SOURCE: Saraiva, "Quadro estatístico de alguns estabelecimentos rurais da Província de São Paulo (1855)."

note: The original production quantity data were given in arrobas and have been converted to metric tons.

(p.5)

Sugar was less distributed throughout the province. The ten counties producing the most sugar accounted for 96 percent of the crop, whereas the ten counties producing the most coffee accounted for only 73 percent of total production. The four counties of Mogi Mirim, Itu, Piracicaba, and Capivari produced almost three-quarters of the sugar. Itu had more fazendas (164 out of a total of 665) than any other município. Mogi Mirim generated the largest output per fazenda: 3,334 metric tons of sugarcane, or 58 metric tons of sugar, compared to an average of 19 metric tons per fazenda for the province. Campinas had the highest average (45) of slaves per fazenda (see Table 1.2).



Unfortunately, the 1854 census does not provide data on other crops, but it does give information on ranching. The province had 532 ranches, which is probably an undercount. These cattle ranches had 4,342 slaves and 1,767 *agregados* (free wage workers) who raised 24,000 head of cattle in that year. Population, as could be expected, was concentrated in the same zones as the major agricultural crops and farms. The Central and Vale do Paraíba regions accounted for almost two-thirds of the provincial population (see Map 1.2).

By mid-century coffee and sugar were thus firmly established in the province. But despite the existence of large virgin territories propitious for **(p.6)**

Table 1.2 Coffee and Sugar Production in the Ten Leading Municípios, 1854

| Município | WORKERS | | | | CROP PRODUCED | | Fazenda average (t) | AVERAGE | | | Kilos per worker |
|-----------------|----------|-----------|---------|--------|---------------|------------------|---------------------|---------|---------|-----------|------------------|
| | Fazendas | Agregados | Colonos | Slaves | Quantity (t) | Value (mil réis) | | Slaves | Colonos | Agregados | |
| <i>Coffee</i> | | | | | | | | | | | |
| Bananal | 70 | 330 | 10 | 7,622 | 8,146 | 1,227,750 | 116 | 108.9 | 0.14 | 4.71 | 1,023 |
| Taubaté | 240 | 272 | | 4,345 | 5,210 | 1,221,235 | 22 | 18.1 | 0.00 | 1.13 | 1,128 |
| Pindamonhangaba | 112 | 316 | | 2,800 | 5,141 | 700,000 | 46 | 25.0 | 0.00 | 2.82 | 1,650 |
| Campinas | 177 | 28 | 198 | 6,000 | 4,929 | 1,006,650 | 28 | 33.9 | 1.12 | 0.16 | 792 |
| Jacarei | 96 | 176 | | 2,435 | 2,996 | 742,999 | 31 | 25.4 | 0.00 | 1.83 | 1,148 |
| Queluz | 76 | 800 | | 2,300 | 2,938 | 600,000 | 39 | 30.3 | 0.00 | 10.53 | 948 |
| Areias | 341 | 338 | 1 | 4,069 | 2,733 | 379,628 | 8 | 11.9 | 0.00 | 0.99 | 620 |
| Lorena | 57 | 43 | | 1,621 | 1,836 | 250,000 | 32 | 28.4 | 0.00 | 0.75 | 1,103 |
| Limeira | 65 | 40 | 942 | 1,747 | 1,789 | 365,400 | 28 | 26.9 | 14.49 | 0.62 | 656 |
| Vila Bela | 225 | 75 | | 1,725 | 1,652 | 337,000 | 7 | 7.7 | 0.00 | 0.33 | 918 |
| Subtotal | 1,459 | 2,418 | 1,151 | 34,664 | 37,370 | 6,830,662 | 26 | 23.8 | 0.79 | 1.66 | 977 |
| Total province | 2,612 | 4,223 | 2,159 | 54,481 | 50,827 | 9,405,503 | 19 | 20.9 | 0.83 | 1.62 | 835 |
| <i>Sugar</i> | | | | | | | | | | | |
| Mogi Mirim | 57 | | 9 | 1524 | 3,334 | 452,000 | 58 | 26.7 | 0.16 | 0.00 | 2,175 |
| Itu | 164 | 40 | | 3408 | 2,336 | 254,512 | 14 | 20.8 | 0.00 | 0.24 | 678 |

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| Município | WORKERS | | | | CROP PRODUCED | | Fazenda average (t) | AVERAGE | | | Kilos per worker |
|---------------------------|----------|-----------|---------|--------|---------------|------------------|---------------------|---------|---------|-----------|------------------|
| | Fazendas | Agregados | Colonos | Slaves | Quantity (t) | Value (mil réis) | | Slaves | Colonos | Agregados | |
| Constituição (Piracicabã) | 51 | | | 1889 | 1,924 | 262,000 | 38 | 37.0 | 0.00 | 0.00 | 1,019 |
| Capivari | 70 | | | 1500 | 1,469 | 140,000 | 21 | 21.4 | 0.00 | 0.00 | 979 |
| Campinas | 44 | | | 1967 | 915 | 99,694 | 21 | 44.7 | 0.00 | 0.00 | 465 |
| Porto Feliz | 38 | | | 942 | 636 | 61,950 | 17 | 24.8 | 0.00 | 0.00 | 675 |
| Pirapora | 47 | 10 | 1 | 962 | 632 | 81,950 | 13 | 20.5 | 0.02 | 0.21 | 649 |
| Rio Claro | 30 | 108 | | 501 | 499 | 53,600 | 17 | 16.7 | 0.00 | 3.60 | 820 |
| Jundiaí | 19 | 60 | | 720 | 323 | 50,000 | 17 | 37.9 | 0.00 | 3.16 | 414 |
| Sorocaba | 10 | 3 | | 409 | 181 | 19,720 | 18 | 40.9 | 0.00 | 0.30 | 439 |
| Subtotal | 530 | 221 | 10 | 13,822 | 12,249 | 1,475,426 | 23 | 26.1 | 0.02 | 0.42 | 872 |
| Total province | 665 | 620 | 10 | 15,571 | 12,725 | 1,644,750 | 19 | 23.4 | 0.02 | 0.93 | 785 |

SOURCE: Saraiva, "Quadro estatístico de alguns estabelecimentos rurais da Província de São Paulo (1855)."

NOTE: Original data were given in arrobas and have been converted to kilos and metric tons.

(p.7)

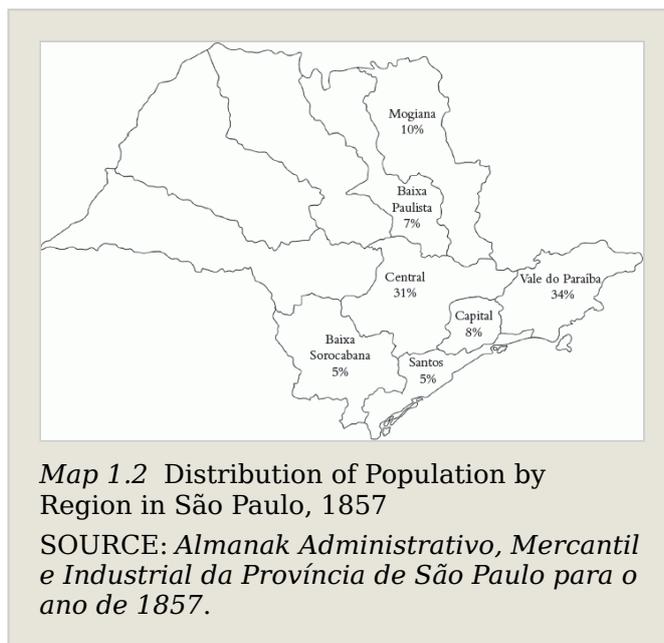
coffee production, expansion of coffee was limited by two key factors, shortage of labor and a very precarious system of transport, which made farming at any distance from the coast far too costly to be commercially profitable.

The end of the Atlantic slave trade in 1850 created a serious labor constraint on expanding coffee plantation agriculture. Although the province already had a large slave population by this time, and there would be internal transfers of slaves from less developed centers within Brazil, the end of the trade put into question the future of slave labor. This explains the first attempts to import free immigrant labor to coffee estates as early as the decade of the 1850s. But these two forms of labor were incompatible, and efforts to exploit the free wage

laborers more systematically led to intense conflict.¹¹ The new plantings in the interior plains were the most affected by the scarcity of labor, and it was in that region that the first attempts were made to use free wage immigrant laborers. These early efforts failed, and planters continued to make systematic attempts to find a solution to the labor question.

(p.8) The gradual transfer of slaves from other activities and other regions temporarily solved the demand for labor, but this supply was insufficient to meet the growing demand from the expanding coffee fazendas. Moreover, the transfer of slaves from the Northeastern provinces to the south was the subject of intense debates because of the economic and political consequences of this migration. On the one hand, it weakened the sugar economies of the Northeast because of the loss of labor, and on the other hand, it reduced Northeast support for slavery. The leadership of the Northeastern provinces was opposed to the interprovincial slave trade and demanded that the parliament prohibit it. But the initial debate led nowhere, and the trade continued. It was not until 1871, with the enactment of the Law of Free Birth, that the issue was again raised. The law declared that all children born after the enactment of the law would be free but remain under the control of their former masters until they reached age eight. Despite the massive loss of slaves to the south in this decade, the conservative leadership of the Northeast did not oppose the Law of Free Birth, which showed how the institution of slavery had lost its importance there. As the historian Evaldo Cabral de Mello has noted, the interprovincial slave trade represented for the Northeast “abolition with indemnity.”¹² This change in attitude by the other provinces caused serious concern for the southern coffee elite such that in the 1880s, when the parliament still refused to prohibit the trade, the principal slave-importing provinces imposed heavy taxes on imported slaves and prohibited new transfers of slaves from other provinces.¹³

Besides the individual initiatives to experiment with free wage laborers, such as the early experiments of Senator Nicolau Pereira de Campos Vergueiro,¹⁴ the government and the Paulista elite also sought a solution to the labor shortage. After passage of the Law of Free Birth,



Map 1.2 Distribution of Population by Region in São Paulo, 1857

SOURCE: *Almanak Administrativo, Mercantil e Industrial da Província de São Paulo para o ano de 1857*.

the provincial parliament approved a law that authorized the issuing of bonds to support the financing of farmers who wished to bring in free immigrant laborers.¹⁵ In this same year a group of Paulista entrepreneurs formed the Association to Aid Colonization and Immigration (Associação Auxiliadora de Colonização e Imigração), whose aim was to bring in immigrants to work the coffee fields.¹⁶ But despite all the public and private initiatives, the results were modest throughout the 1870s.¹⁷ The creation in 1881 of the province-supported labor exchange and residence called the Hospedaria dos Imigrantes was a major advance in the effort to foment immigration.¹⁸ The law that established this residence stipulated that immigrants would have their railroad fares paid from Santos to the capital and would also be paid the difference in cost between passage from Europe to Brazil and passage from Europe to the United States.¹⁹

(p.9) In the 1880s the slave regime began to fall apart, and the problem of labor for the coffee planters became acute. In 1884, under pressure from the coffee growers, the government of the province of São Paulo passed a law that required the province to assume the entire cost of passage of European male immigrants who came to work in Paulista agriculture. This financial aid was paid directly to the immigrant as long as he was married or accompanied by children.²⁰ With this law, the province established the basis for a massive migration of Europeans to São Paulo.

The last obstacle to this European migration was resolved by the abolition of slavery in 1888. Between 1827 and 1884, only 37,000 foreign immigrants had arrived; in the ten years following the 1884 law, 509,000 European immigrants arrived (see Figure 1.1). Of the 2.3 million immigrants who came to São Paulo between 1887 and 1928, half had their passage subsidized by the province (now a state). Although other states of the nation received immigrants in this period, the majority came to São Paulo.²¹ Thus, despite the progressive destruction of slavery during the 1880s, coffee production did not collapse, as immigrants replaced slaves.

The end of slave labor and the successful establishment of wage labor signified consolidation of the interior plains and other frontier regions of the province as the hegemonic areas of Paulista agriculture. The dominance of the western Paulista area began in the 1870s, as soil exhaustion brought the dominance of Vale do Paraíba to an end. The expansion of the coffee

(p.10) fazendas to these new regions was due to their virgin soil and a climate extremely favorable for coffee cultivation. Although Vale do Paraíba still produced coffee on a significant scale until the end of slavery, costs there were too high and productivity too low to compete with the frontier regions for wage labor.

To take full advantage of their labor, planters usually consigned immigrant workers to coffee production rather than other tasks, such as clearing land or planting trees. Land clearance and tree plantings were contracted out to so-called *empreiteiros* (contractors). Part of the payment for this work usually came in the form of the right to plant other crops among the coffee trees before the trees began producing coffee beans.²² This right also was granted to the colonos when they in turn came to care for the

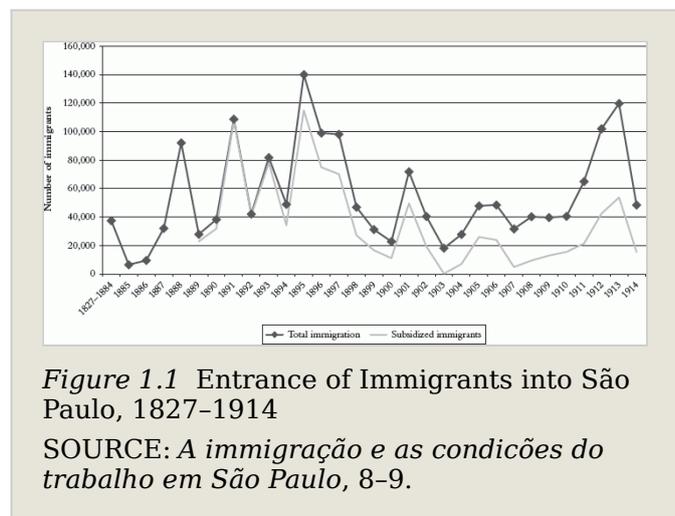


Figure 1.1 Entrance of Immigrants into São Paulo, 1827-1914
 SOURCE: *A imigração e as condições do trabalho em São Paulo*, 8-9.

maturing trees; they were authorized to plant subsistence crops among the coffee trees or in areas of the fazenda not occupied by coffee. In the newer and more productive zones, colonos also received a fixed income for the care of a given number of coffee trees and based in part on the amount of coffee their trees produced. The majority of colonos desired this wage-and-benefit system, and it predominated in the new frontier zones and western Paulista area. In the less advanced and poorer coffee zones of Vale do Paraíba, planters arranged for sharecropping, with the coffee planters and the colonos both assuming the risks associated with the production and sale of coffee. This option required less capital and diluted the risks of production.

But labor was not the only obstacle blocking the expansion of coffee production in the state. By the middle of the nineteenth century it became evident that an efficient system of rail transport was necessary to move the growing coffee crop.²³ The traditional Brazilian system of mule transport²⁴ was sufficient for the initial phase of coffee cultivation but eventually limited its expansion.²⁵ The early coffee plantations in Vale do Paraíba and in Rio de Janeiro and Minas Gerais used the same rough roads and trails that had been used to move gold to the coast in the eighteenth century, which directed most Paulista output to the port of Rio de Janeiro.²⁶ The coffee produced in the interior plains traveled to the port of Santos by roads far more difficult and costly to use.²⁷ It was even suggested at the time that the poor roads and slow transport of sugar from the Central region to the port of Santos affected the sugar's quality.

The first attempts to establish a railroad in Brazil started as far back as 1835. But despite the government's offer of exclusive rights to land along the route of the railroads, the necessary capital was not forthcoming. The solution came in 1852 with a law that guaranteed interest on investments **(p.11)** made in the railroad. The government guaranteed 7 percent interest on all capital invested, of which Rio de Janeiro paid 2 percentage points.²⁸ The Estrada de Ferro D. Pedro II, a railway connecting the port of Rio de Janeiro to Cachoeira in São Paulo, was the first railroad to be successfully established in Brazil.²⁹ The branch of the railroad to Vassouras opened in 1858, but not until 1875 did the railroad reach Paulista territory, when the station at Cachoeira was opened.³⁰ This railroad permitted the movement of coffee directly from Vale do Paraíba coffee producers to the port of Rio de Janeiro.³¹ For the port of Santos and its hinterland, the solution came in 1867 with the inauguration of the São Paulo Railway Company, linking the port of Santos to the city of Jundiaí, which was the traditional entrance to the interior plains. The company, which operated only 167 kilometers of railway, was created with English capital and had the same guarantee of a 7 percent return on investment, of which 2 percentage points was paid by the province of São Paulo.³²

The second half of the century was a period of rapid expansion of rail-roads throughout Brazil, with most construction occurring in São Paulo.³³ Much railway construction was financed by the coffee planter elite with some participation of foreign capital, and it resulted in a complex railroad network that eventually covered all areas of the state.³⁴ Although the impetus for building railroads was transporting coffee, railroads also moved people and noncoffee products throughout the state and across state borders and thus were crucial in expanding domestic and export markets.

The development of an extensive rail network also was an important stimulant to local manufacturing, since the railroads required maintenance and repair facilities, but the railroads were often deficit operations. The government had to either take them over or, if they were still independent, guarantee interest on investments in them. At the same time, the government was caught between the railroads and the planters over freight charges, which became a crucial

issue when world prices declined. As the president of the province of São Paulo noted in 1883, the cost of building railways through non-coffee-producing areas to reach coffee-producing zones, in addition to interest payments for railroads that were not always profitable, meant that the government could not accept the reduction of freight charges, since that would leave it “incapable of granting equal guarantees to new companies that would develop the areas that absolutely needed them.”³⁵

There were also other problems. Though the rail system in São Paulo was quite extensive, it was not well integrated. The system used various track gauges and often could not directly move wagons and engines **(p.12)** between lines.³⁶ As Caio Prado Jr. notes, the railroads were independent entities and not coherently linked. They were also designed for exporting coffee or other valuable commercial crops and thus did not always satisfy the needs of the internal market.³⁷ But whatever their deficiencies, these railroads promoted the growth of the port of Santos, which became the residence of the major coffee merchants, the headquarters of leading import houses, and a center for banking agencies.³⁸ The port itself was also modernized to accommodate the large volume of merchandise exported from and imported to the state. The expansion of Santos was directly related to the shifting production of coffee within the province. It is important to stress the fundamental difference between the production of Vale do Paraíba and that of the western plains—that is, between the old and the new zones. For these newer fazendas, the natural port of exit was through Santos via the São Paulo Railway, while for counties of Vale do Paraíba it was through the port of Rio de Janeiro. All the new coffee-producing zones were better located for exporting through Santos, and this further promoted development of the province’s capital city and linkage of its interior to Santos. Thus, the capital city had four different railroad lines entering it, and this furthered its role as the principal financial and commercial center of the state. But the capital was not a port city, and Santos carried out the typical functions of a major port city, including the marketing, financing, storage, transportation, and shipments of the main products imported or exported from the state.

Resolution of the labor and transport issues opened up the frontier lands to exploitation in the second half of the century. The soil of these areas was of exceptional quality, permitting Paulista coffee growers to easily meet growing international demand for coffee. Especially after the abolition of slavery, the state of São Paulo finally assumed a hegemonic role in the world production of coffee as it replaced Rio de Janeiro as the leading producer in Brazil. This was accomplished through the gradual penetration of western São Paulo, with its high-quality virgin soils. Between 1854 and 1900, Paulista coffee production grew by a factor of ten, yielding 9 million sacks of coffee by 1900, which was two-thirds of national production and 62 percent of the coffee consumed in the world in that year.³⁹ The frontier regions also allowed the average size of coffee fazendas to increase significantly.

Unfortunately, little systematic information is available on Paulista agriculture for the second half of the nineteenth century. Only after the proclamation of the republic in 1889 did the state begin gathering statistical information on local agriculture, population, commerce, and industry. The only systematic information we have for this period relates to exports to **(p.13)** national and international markets. From the information we do possess, it is evident that the patterns established earlier in the century continued to evolve. Not only did coffee and sugar production increase and their quality improve, but food crop production, mostly on the same estates that grew commercial export crops, also steadily expanded.

Some of these developments can be seen in the São Paulo almanac for 1873. It contains general information with respect to each county, including its major economic activities. In the case of agriculture, the almanac lists 4,872 farmers by type of production, without specifying quantities produced. In some counties the information is precise, specifying each farm's major product.⁴⁰ In other cases the information is less precise, and a farm's crops cannot be precisely determined. For example, it lists fazendas that produced both coffee and sugarcane without specifying which was the predominant crop. In other cases it uses generic terms such as *fazendeiros* (plantation owners) or *lavradores* (farmers). For the cases in which only one activity or product was clearly specified, we find 934 producers of coffee, 379 of sugarcane, 316 of cotton, and 110 of tobacco. Little information is available on cereals produced. The coffee producers were in Vale do Paraíba, Central, Mogiana, and Baixa Paulista regions. Sugarcane was in the Central region's municípios of the so-called sugar quadrangle (*quadrilátero do açúcar*: Sorocaba, Piracicaba, Mogi Guaçu, and Jundiaí)⁴¹ and in the Mogiana region and Vale do Paraíba. Cotton was concentrated in the Central region. The Vale do Paraíba region, which also produced tobacco, saw minor production of cotton, as did the Baixa Paulista region.

All the available data, including producers with multiple products or activities, show this same regional specialization, though with the Mogiana region increasing its importance in cotton and the Vale do Paraíba region in tobacco plantings. What is worth noting is the continued importance of Vale do Paraíba in coffee production, as well as in cotton and tobacco. There is also an evident increase in agricultural activity in the part of western São Paulo composed of municípios in the Central region and several in the Mogiana and Baixa Paulista regions, such as Mogi Mirim, Mogi Guaçu, Rio Claro, and Pirassununga, not far from the Central region (Table 1.3).

The next major survey we have is for 1886.⁴² In the annual report of the province submitted to its president is a partial census of population by município, as well as data on crop production, with the most complete information given for coffee. Unfortunately, a few localities are missing, including the município of Bananal, a traditional producer of coffee. For the province as a whole, the document lists an annual production of 157,209 metric tons of coffee. Vale do Paraíba, Central, Mogiana, and Baixa Paulista **(p.14)**

Table 1.3 Farmers by Region and by Product, São Paulo, 1873

| Region | FARMERS PRODUCING ONE CLEARLY IDENTIFIED PRODUCT | | | | | | | | FARMERS PRODUCING MORE THAN ONE PRODUCT | | | | | | |
|------------------|--|--------------------|--------------------|--------|---------|-----|--------|------|---|--------------------|--------------------|--------|---------|---------|----------------------|
| | Coffee | Sugar ^b | Sugar ^c | Cotton | Tobacco | Tea | Cattle | Pigs | Coffee | Sugar ^b | Sugar ^c | Cotton | Tobacco | Animals | Farmers ^a |
| Capital | 0 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 10 |
| Vale do Paraíba | 173 | 76 | 0 | 45 | 55 | 0 | 17 | 0 | 509 | 82 | 0 | 90 | 226 | 22 | 567 |
| Central | 169 | 105 | 5 | 201 | 6 | 16 | 19 | 0 | 165 | 57 | 35 | 187 | 0 | 23 | 454 |
| Mogiana | 306 | 63 | 11 | 3 | 5 | 0 | 84 | 15 | 295 | 6 | 7 | 270 | 12 | 132 | 91 |
| Baixa Paulista | 247 | 42 | 10 | 38 | 34 | 0 | 29 | 5 | 87 | 0 | 87 | 87 | 0 | 34 | 14 |
| Araraquense | 0 | 0 | 6 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 139 |
| Noroeste | | | | | | | | | | | | | | | |
| Alta Sorocabana | 39 | 47 | 0 | 27 | 0 | 0 | 0 | 0 | 34 | 34 | 0 | 0 | 0 | 34 | 6 |
| Baixa Sorocabana | 0 | 11 | 1 | 2 | 10 | 0 | 31 | 0 | 10 | 26 | 7 | 9 | 4 | 31 | 58 |
| Santos | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 |
| Total | 934 | 346 | 33 | 316 | 110 | 16 | 193 | 20 | 1,100 | 205 | 136 | 643 | 242 | 289 | 1,389 |

SOURCE: Luné and Fonseca, *Almanak da província de São Paulo para 1873*, 97-566.

(^a) Farmers listed without any specific crops.

(^b) Includes sugarcane farmers who also produce aguardente.

(^c) Includes producers of sugar who also produce aguardente.

(p.15) each accounted for 20 percent of the output. Given the lack of data from Bananal (which accounted for 21 percent of Vale do Paraíba production in 1854), the importance of Vale do Paraíba is probably underestimated. Nevertheless, the production numbers show the slow decline of the valley and the rise of new producing zones as major participants in the coffee economy. As for sugar, it remained concentrated in the Central and Mogiana regions with the counties of Itapetininga and Tatuí being significant sugar producers (see Table 1.4).

Using the more systematic export data that we have for the second half of the nineteenth century shows how coffee had come to completely dominate the local economy. Already in the harvest year of 1856/1857 coffee made up 96 percent of the value of exports from São Paulo and averaged 90 percent after 1870. Cotton, whose production increased greatly in the 1860s during the Civil War in the United States, had little importance as an export afterward (see Figure 1.2). Sugar, which had been a leader in the province's exports up until 1830, was supplanted by coffee, and production severely declined in later decades.

In 1877–1887, after the railroads opened up the port of Santos to the new western coffee regions, a significant share of Paulista exports moved through the port.⁴³ Along with coffee and sugar, cotton and hides were now mostly shipped through Santos. Santos also developed a significant coastal trade (cabotage) to other provinces, which involved the export of finished cotton textiles, bacon, and shoe leather, all destined for the national market. Only Paulista tobacco still went via coastal shipping to Rio de Janeiro for international export. In general, though, the coastal trade was only around 200 metric tons, compared to the 20,000 metric tons sent to the international trade. Coffee exports alone now represented 95 percent of the value of all exports shipped from Santos from 1877 to 1887.⁴⁴

The increasing importance of new coffee zones can be seen in their role in Brazilian exports. In the 1880s the “Rio zone” of coffee production, which referred to the provinces of Rio de Janeiro, Minas Gerais, and Espírito Santo and the Paulista part of Vale do Paraíba, shipped coffee through the port of Rio de Janeiro. In 1870 the zone accounted for 85 percent of Brazilian coffee exports, but by 1890 that was down to 51 percent and continued to decline throughout the twentieth century (see Table A1.1). Production from the Paulista part of the Rio zone remained stable between 1870 and 1890. In contrast, the production from the so-called Santos zone of producers, those shipping out of the port of Santos, increased by a factor of five in this same period. This result reflects both the rise of the western zones and the movement of some of the crop of the Paulista part of Vale do **(p.16)**

Table 1.4 Agricultural Production by Product and Region, São Paulo, 1886

| Region | Number of municípios | Population | Coffee (kg) | Sugar (kg) | Corn (L) | Aguardente (L) | Tobacco (kg) | Brown sugar (kg) | Beans (L) | Cotton (kg) | Rice (L) | Manioc flour (L) | Wine (L) |
|------------------|----------------------|------------|-------------|------------|------------|----------------|--------------|------------------|-----------|-------------|-----------|------------------|----------|
| Capital | 5 | 74,893 | | | 720,000 | | 130,000 | | 72,000 | | | 72,000 | |
| Vale do Paraíba | 3 | 325,216 | 31,487,000 | 484,000 | 72,540 | 2,556,000 | 465,242 | | 47,270 | 450,000 | | 41,400 | 160 |
| Central | 29 | 299,210 | 44,532,760 | 3,127,552 | 2,600,000 | 476,000 | 551,138 | | 750,000 | 5,170,104 | 100,000 | | 106,600 |
| Mogiana | 20 | 170,296 | 33,360,000 | 3,090,000 | 10,000,000 | 41,000 | 190,000 | | 400,000 | 207,000 | 800,000 | | 600 |
| Baixa Paulista | 12 | 133,607 | 36,932,000 | 470,000 | | 42,000 | 113,000 | | | 115,000 | | | |
| Araraquarense | 5 | 47,516 | 7,929,000 | 315,000 | | | 82,500 | | | | | | |
| Noroeste | | | | | | | | | | | | | |
| Alta Sorocabana | 10 | 71,903 | 2,430,000 | 540,000 | | 300,000 | 52,500 | | | | | 16 | |
| Baixa Sorocabana | 5 | 27,004 | 538,440 | 147,816 | 52,240,000 | 2,562,000 | 164,688 | 1,050,000 | 6,000,000 | | | 630,000 | |
| Santos | 5 | 42,434 | | | | | | | | | 3,000,000 | | |
| Total | 124 | 1,192,079 | 157,209,200 | 8,174,368 | 65,632,540 | 5,977,000 | 1,749,068 | 1,050,000 | 7,269,270 | 5,942,104 | 4,530,016 | 113,400 | 107,360 |

SOURCE: Relatório apresentado ao Exmo. Sr. Presidente da Província de São Paulo, 24 -26, app. 4.

NOTE: Except for coffee, products are not always presented with their total numbers, indicating just that these products are planted.

(p.17)

(p.18) Paraíba to the port of Santos after rail connected the northeastern region and Santos.

For 1881 and 1883, we can use the excellent work of C. F. Van Delden Laerne, who divided coffee production into zones according to whether it was shipped from the port of Santos or Rio de Janeiro.⁴⁵ He examined records of fazendas that obtained mortgages from the Banco do Brasil. These fazendas represent some of the biggest plantations and are thus atypical, but they give a reasonable view of the largest producers and are the best available data we have on coffee slave plantations at the height of their coffee boom. The data from

1881 for the Santos zone are a sample of 146 coffee fazendas. These fazendas produced only coffee, while another 61 fazendas grew coffee, sugar, tobacco, and cotton. The coffee group had an average of 36 slaves per fazenda, though with significant variations by region. For example, the 49 coffee fazendas of Campinas had an average of 53 slaves per farm. The average size of the 146 coffee fazendas was 633 hectares, and they cultivated on average 88,384 coffee trees. The fazendas producing coffee, sugar, tobacco, and cotton were on average larger—some 829 hectares, with an average of 42 slaves per farm. For the entire Santos group, Van Delden Laerne estimated that slaves represented approximately 40 percent of the value of the fazendas.

The sample of fazendas in the Rio zone that had Banco do Brasil mortgages in 1883 tended to be larger than those in the Santos zone, containing 727 hectares, and their average slave holdings were also larger, at 47 slaves per fazenda. The fazendas that produced only coffee in Rio de Janeiro in the Rio zone were on average 628 hectares but had more slaves, 56, per farm than the Santos zone. The 53 Paulista fazendas of Vale do Paraíba had an average of 37 slaves per farm. Slaves represented 46 percent of the total value of the Rio zone fazendas (see Table 1.5).

Although Brazil lost its dominant position in the world sugar market to the new Caribbean producers in the eighteenth century, it still produced a significant amount of sugar and exported to the world market when international conditions were favorable. Thus, when the Haitian Revolution at the end of the eighteenth century eliminated the world’s leading producer of cane sugar, the Brazilian industry took note. The resulting rise in world sugar prices initially stimulated local production, and with the introduction of new cane varieties and some improvement in local milling, Brazil began again exporting refined sugar.⁴⁶ But Cuba and other centers of production introduced innovations more quickly, and when prices once again fell Brazil found itself less able to compete on the international market. Later, the local industry faced two other problems that delayed its modernization. **(p.19)** The first was the end of the slave trade toward the end of the nineteenth century and the increase in the cost of labor, and the second was the expansion of the beet sugar industry in Europe. By 1853 beet sugar accounted for 14 percent of the world’s sugar market, rising to 25 percent by 1860 and

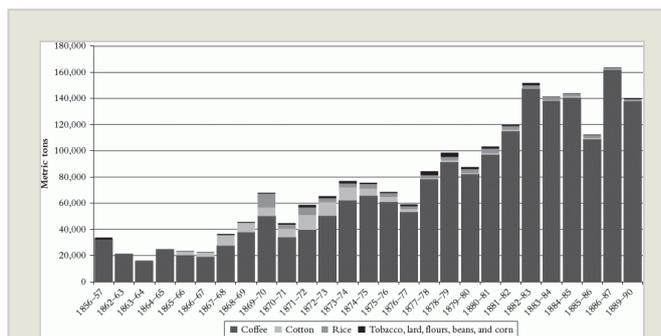


Figure 1.2 Exportation of Coffee, Cotton, Rice, Tobacco, Lard, Flours, Beans, and Corn, 1856 -1890

Assembleia Legislativa do Estado de São Paulo, leis orçamentárias, various years, <http://www.al.sp.gov.br/leis>.

accounting for over half of world consumption of sugar by the 1880s.⁴⁷ This considerably reduced world demand for cane sugar and lowered prices on the world market (see Figure 1.3).

Cane sugar's high production costs and low profits discouraged local planters from investing in new technology, making Brazilian sugar less competitive on the world market.⁴⁸ In the mid-1870s, when world sugar production reached 2.5 million metric tons, Brazil accounted for only 5 percent of world sugar production and 8 percent of cane sugar output.⁴⁹ Although in long-term crisis, the Brazilian sugar industry represents the main economic activity of the northern provinces. Both private and government income for Pernambuco and the neighboring provinces came from sugar production.

Other crops of the northeast could be expanded—cotton, for example—but none were more appropriate to the soil and climate in the region than sugarcane. Sugar production in the northeast played the same role as coffee in the provinces of Rio de Janeiro and São Paulo, with its multiplier effect for other activities and the government tax base.⁵⁰ But given the difficulties faced by northeastern producers in the international market, the majority of their sugar was sent to the national market. In 1904, for example, 72 percent of northeastern production was internally consumed. The Federal District (then Rio de Janeiro) was the primary consumer, and the state of São Paulo was the second.⁵¹ Thus, while coffee primarily went to the international market, sugar became the major agricultural product in inter-provincial and interstate trade. Although São Paulo itself remained a major producer, it could not satisfy local demand and remained dependent on imports from the northeastern states.

While other producers in the Americas installed modern steam-driven mills, only a few such mills were installed in Brazil. Not until the late adoption of modern massive central mills did Brazil's sugar finally reach a quantity and quality sufficient for world trade. In some countries cane-growing operations separated from sugar milling because of the size and expense of these new steam-driven central mills (*engenhos centrais*). They often could grind much more cane than one farm could produce, and thus farmers sought the cane of other farmers. In the 1870s these mills were much discussed in Brazil, and the imperial government launched a program to stimulate their creation. It offered the right to expropriate lands, removed **(p.20)**

Table 1.5 Sample of Coffee Plantations in The Santos Zone (1881) and Rio Zone (1883)

| Districts | Number of fazendas | Size of fazendas (ha) | Number of coffee trees (thousands) | Number of slaves | Value of slaves (contos) | Value of fazendas (contos) | Total value (contos) | Percentage of total value due to slaves | Slaves per fazenda | Coffee trees per slave | Average value of slave (mil réis) |
|--------------------------|--------------------|-----------------------|------------------------------------|------------------|--------------------------|----------------------------|----------------------|---|--------------------|------------------------|-----------------------------------|
| <i>Santos zone, 1881</i> | | | | | | | | | | | |
| GROWING ONLY COFFEE | | | | | | | | | | | |
| Campinas | 49 | 26,189 | 5,023 | 2,613 | 3,662 | 4,912 | 8,574 | 42.7% | 53 | 2 | 1 |
| Amparo | 19 | 4,102 | 1,153 | 397 | 575 | 915 | 1,490 | 38.6% | 21 | 3 | 1 |
| Belém do Descalvado | 14 | 15,215 | 1,397 | 486 | 695 | 1,439 | 2,134 | 32.6% | 35 | 3 | 1 |
| Casa Branca | 12 | 7,193 | 1,252 | 461 | 631 | 1,074 | 1,705 | 37.0% | 38 | 3 | 1 |
| S. João de Rio-Claro | 11 | 15,634 | 1,140 | 332 | 447 | 956 | 1,403 | 31.8% | 30 | 3 | 1 |
| Jundiahy (Jundiaí) | 9 | 4,895 | 514 | 260 | 336 | 555 | 890 | 37.7% | 29 | 2 | 1 |
| Itatiba | 5 | 840 | 335 | 108 | 168 | 246 | 414 | 40.6% | 22 | 3 | 2 |
| Pirassununga | 5 | 3,848 | 365 | 133 | 202 | 314 | 516 | 39.1% | 27 | 3 | 2 |
| S. Carlos do Pinhal | 5 | 4,026 | 288 | 88 | 124 | 252 | 376 | 32.9% | 18 | 3 | 1 |
| Brotas | 2 | 2,954 | 172 | 42 | 59 | 202 | 261 | 22.7% | 21 | 4 | 1 |
| Botucatú | 2 | 1,315 | 190 | 32 | 50 | 201 | 251 | 19.8% | 16 | 6 | 2 |
| Capivary | 2 | 984 | 143 | 73 | 99 | 144 | 243 | 40.8% | 37 | 2 | 1 |

São Paulo Agriculture in the Nineteenth Century

| Districts | Number of fazendas | Size of fazendas (ha) | Number of coffee trees (thousands) | Number of slaves | Value of slaves (contos) | Value of fazendas (contos) | Total value (contos) | Percentage of total value due to slaves | Slaves per fazenda | Coffee trees per slave | Average value of slave (mil réis) |
|--|--------------------|-----------------------|------------------------------------|------------------|--------------------------|----------------------------|----------------------|---|--------------------|------------------------|-----------------------------------|
| Jahú | 2 | 769 | 242 | 72 | 117 | 186 | 303 | 38.7% | 36 | 3 | 2 |
| Penha do Rio do Peixe | 2 | 790 | 141 | 26 | 36 | 130 | 166 | 21.6% | 13 | 5 | 1 |
| S. Simão | 2 | 1,591 | 260 | 31 | 44 | 198 | 241 | 18.1% | 16 | 8 | 1 |
| Araras | 1 | 329 | 80 | 18 | 21 | 60 | 81 | 26.4% | 18 | 4 | 1 |
| Mogy-Guassú | 1 | 329 | 44 | 14 | 22 | 40 | 62 | 35.0% | 14 | 3 | 2 |
| Serra Negra | 1 | 194 | 52 | 11 | 16 | 42 | 58 | 27.9% | 11 | 5 | 1 |
| S. João de Boã Vista | 1 | 621 | 68 | 35 | 43 | 81 | 125 | 34.6% | 35 | 2 | 1 |
| Tieté | 1 | 624 | 46 | 34 | 44 | 34 | 78 | 56.1% | 34 | 1 | 1 |
| Subtotal | 146 | 92,442 | 12,904 | 5,266 | 7,392 | 11,981 | 19,373 | 38.2% | 36 | 2,450 | 1,404 |
| GROWING COFFEE, SUGAR, TOBACCO, AND COTTON | 61 | 50,553 | 4,967 | 2,565 | 3,286 | 5,058 | 8,344 | 39.4% | 42 | 1,936 | 1,281 |
| Total Santos zone | 207 | 142,995 | 17,871 | 7,831 | 10,678 | 17,039 | 27,717 | 39% | 38 | 2,282 | 1,363 |
| (p.21) Rio zone (including parts of four provinces), 1883 | | | | | | | | | | | |

São Paulo Agriculture in the Nineteenth Century

| Districts | Number of fazendas | Size of fazendas (ha) | Number of coffee trees (thousands) | Number of slaves | Value of slaves (contos) | Value of fazendas (contos) | Total value (contos) | Percentage of total value due to slaves | Slaves per fazenda | Coffee trees per slave | Average value of slave (mil réis) |
|-----------------------------|--------------------|-----------------------|------------------------------------|------------------|--------------------------|----------------------------|----------------------|---|--------------------|------------------------|-----------------------------------|
| RIO DE JANEIRO | | | | | | | | | | | |
| Only coffee | 191 | 119,945 | 37,639 | 10,712 | 12,531 | 14,120 | 26,651 | 47% | 56 | 3,514 | 1,170 |
| Coffee and sugar | 160 | 130,876 | 14,269 | 8,170 | 9,114 | 9,549 | 18,663 49% | 51 | 1,747 | 1,116 | |
| Subtotal, Rio de Janeiro | 351 | 250,821 | 51,908 | 18,882 | 21,645 | 23,669 | 45,314 | 48% | 54 | 2,749 | 1,146 |
| MINAS GERAIS | 153 | 90,453 | 20,633 | 5,568 | 6,660 | 8,463 | 15,122 | 44% | 36 | 3,706 | 1,196 |
| ESPÍRITO SANTO SÃO PAULO | 12 | 24,794 | 791 | 569 | 551 | 506 | 1,057 | 52% | 47 | 1,390 | 968 |
| Pindamonhangaba | 14 | 7,495 | 1,925 | 444 | 566 | 732 | 1,298 | 44% | 32 | 4,336 | 1,275 |
| Bananal | 12 | 5,706 | 1,877 | 688 | 794 | 613 | 1,406 | 56% | 57 | 2,728 | 1,153 |
| Taubaté | 11 | 14,927 | 1,484 | 370 | 465 | 710 | 1,175 | 40% | 34 | 4,011 | 1,258 |
| Guaratinguetá | 5 | 9,393 | 794 | 176 | 243 | 402 | 645 | 38% | 35 | 4,511 | 1,381 |
| Jacarehy | 3 | 3,230 | 405 | 111 | 125 | 345 | 470 | 27% | 37 | 3,649 | 1,128 |
| Lorena | 3 | 3,277 | 791 | 30 | 40 | 387 | 427 | 9% | 10 | 26,367 | 1,340 |
| Caçapava | 2 | 895 | 205 | 51 | 79 | 81 | 160 | 49% | 26 | 4,020 | 1,553 |

São Paulo Agriculture in the Nineteenth Century

| Districts | Number of fazendas | Size of fazendas (ha) | Number of coffee trees (thousands) | Number of slaves | Value of slaves (contos) | Value of fazendas (contos) | Total value (contos) | Percentage of total value due to slaves | Slaves per fazenda | Coffee trees per slave | Average value of slave (mil réis) |
|------------------------------|--------------------|-----------------------|------------------------------------|------------------|--------------------------|----------------------------|----------------------|---|--------------------|------------------------|-----------------------------------|
| Mogy das Cruzes | 1 | 968 | 104 | 42 | 63 | 103 | 165 | 38% | 42 | 2,476 | 1,490 |
| Queluz | 1 | 1,089 | 170 | 42 | 34 | 107 | 142 | 24% | 42 | 4,048 | 817 |
| S. José dos Campos | 1 | 444 | 126 | 33 | 53 | 55 | 108 | 49% | 33 | 3,818 | 1,606 |
| Subtotal, São Paulo Province | 53 | 47,424 | 7,881 | 1,987 | 2,462 | 3,534 | 5,997 | 41% | 37 | 3,966 | 1,239 |
| Total Rio zone | 569 | 413,492 | 81,213 | 27,006 | 31,317 | 36,172 | 67,489 | 46% | 47 | 3,007 | 1,160 |

SOURCE: Laerne, Brazil and Java, 222-223.

NOTE: Fazendas listed here are those with mortgages from the Banco de Brazil as of June 30, 1881.

(p.22)

restrictions on importing machinery, and guaranteed a 5 percent return for twenty years on mill investment.⁵²

The hope was that these mills would not only make Brazilian sugar competitive on the world market but also reduce the slave labor required in the sugar-processing industry. Given the international market conditions, the survival of Brazil's sugar industry depended on cost reduction, better sugar processing, and better management.⁵³ The government also made the condition that central mills would be operated exclusively by wage workers. In 1882, the minister of agriculture expected the mills to make Brazil competitive on the

world market and help modernize national agriculture.⁵⁴ Although numerous permits were offered, few central mills were established in this period.⁵⁵ In 1890 the minister of agriculture reported that of the eighty-seven projects approved by the government program of the 1870s, only twelve were active, of which three were in the state of São Paulo.⁵⁶ Several reasons were offered for this failure: A lot of financial speculation occurred with some of these permits, and mills that were built experienced technical problems and never achieved the quality of the advanced Caribbean producers. Some of the mills were simple upgrades of older mills and used old and inadequate machinery.⁵⁷ And there was no systematic increase **(p.23)** in the quality of the cane milled. For all these reasons Brazil could not create a modern sugar-refining industry and produced low-quality sugar for national and international markets until the end of the century.

Even when a modern mill was built, it suffered from an insufficiency of raw material. Given the conditions of the market, most producers were content to mill low-quality sugar or produce alcohol, continuing to use their old mills and not systematically sending cane to the central mills, and thus the mills lacked regular large supplies of cane. The poor quality of roads was another impediment. In addition, these mills never reached international standards and thus could not pay the high prices for cane that might have attracted producers.⁵⁸ Not until the beginning of the twentieth century were central mills established, but unlike other world regions, in Brazil they mostly processed their own cane. With this transformation, the Brazilian sugar industry, especially in São Paulo, went from being one of the more backward producers to being the most modern of world producers by the second half of the twentieth century.⁵⁹

The São Paulo experience with central mills promoted by the provincial and national governments differed little from the rest of Brazil. In 1883, the president of the province, Francisco de Carvalho Soares Brandão, expressed great hope for the sugar industry and the benefits from the new central mills.⁶⁰ He noted that São Paulo had obtained five permits to build central mills, but only three mills were functioning. The three were established in 1881, and eventually all were capitalized at 500 contos each. These mills were in Porto Feliz, Piracicaba, and Lorena. Unfortunately, these central mills never reached the output expected of them for

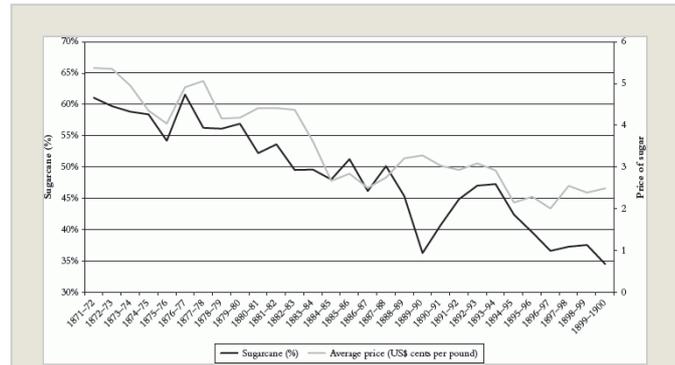


Figure 1.3 Price of Sugar and Importance of Sugarcane in Total World Sugar Exports, 1871-1900

SOURCE: U.S. Bureau of Statistics, *The World's Sugar Production and Consumption*, 2589.

technical reasons, such as poorly trained workers and the quality and volume of cane they processed.⁶¹ The government even established the agricultural colonies of Rodrigo Silva (in 1887) and Canas (in 1888) to encourage cane production. In the face of these difficulties, the three central mills established in the province, aside from having little effect on local sugar output, lived in permanent financial crisis, and eventually all of them ended up in the hands of French capitalists.⁶²

In 1886, a permit was granted for the Engenho Central de Capivari. Along with the usual subsidies, the imperial government authorized the company to buy lands and promote immigration. This was the solution needed, for the mills could now produce and grind all their own cane rather than relying on third parties. In effect, this marked the end of the central mills and presaged mills that used another model of sugar organization, called the *usinas* (central mills). Although for some time to come they would still be called *engenhos centrais*, their role had completely changed.

(p.24) The other major crop that had a significant development in the second half of the nineteenth century was cotton. Planted in São Paulo from the province's beginning, cotton was locally consumed to produce crude cotton textiles. Although other regions of the colony exported cotton to the international market, São Paulo always restricted its production to local consumption. In the 1836 census it was estimated that local production reached 132 metric tons, compared to the total of 7,344 metric tons for coffee and sugar.

The US Civil War in the middle of the nineteenth century profoundly altered the international cotton market. The United States, principal supplier to the world cotton market, practically withdrew from that market after 1861, provoking a profound crisis in the great producers of cotton textiles, particularly England, then the world's leading manufacturer.⁶³ US cotton exports went from more than 4.9 million bales of cotton (at 500 pounds per bale, the total was 101,854 metric tons) in 1859 to just 300,000 bales by 1864.⁶⁴ Although Brazil, Egypt, Turkey, and India and other Asian producers significantly increased their exports in the 1860s, global exports fell to half pre-Civil War volumes, because other producers were unable to replace the total supplied by the United States.

Paulista cotton production expanded to fill some of the gap in cotton supply. In the 1850s Brazil exported on average 14,000 metric tons per annum, with an average price of £45 per metric ton. The Northeast was traditionally the great producer of cotton. In the 1860s Brazil doubled its average exports to 29,000 metric tons, and the value of these cotton exports increased by a factor of four. In this period cotton replaced sugar as the second-most-important export of the country. Thus, Brazil, which in 1860 accounted for less than 1 percent of the world market, increased its share to 5 percent of the world market in the 1870s. Although cotton prices fell after the end of the Civil War, the increasing internal demand for cotton and the beginnings of a major national textile industry generated a steady demand for raw cotton at both the national and the provincial levels.⁶⁵

England encouraged Brazil to produce cotton during the crisis.⁶⁶ In the case of Paulista production, the English brought the latest technology and seeds to the province. English technicians introduced a variety of cotton with an annual cycle and suited to São Paulo's soil and climate. It became the primary type of locally grown cotton and, much later, the principal type produced in all of Brazil.⁶⁷ Because of the lack of government support, such as through agricultural agents and experimental farms, individuals⁶⁸ and private organizations like the

Sociedade Auxiliadora da Indústria Nacional⁶⁹ distributed the seed and published information about it.⁷⁰ Despite (p.25)

these difficulties, the increase in local production was exceptional. Cotton was grown in the Central, Mogiana, and Baixa Paulista regions and was especially important in the municípios of Cunha, Itu, Jundiaí, São Roque, Piedade, Bragança, Atibaia, Santa Barbara, Capivari, Amparo, and Rio Claro. São Paulo cotton exports, practically nonexistent until 1865, grew rapidly, reaching 11,364 metric tons in 1871, or a quarter of all Brazilian cotton exports (see Figure 1.4).

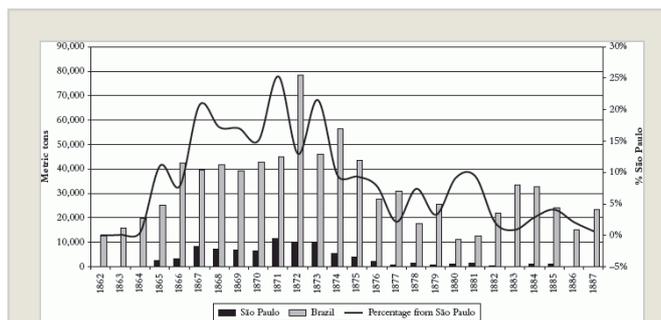


Figure 1.4 Exports of Cotton from Brazil and São Paulo, 1862-1887

SOURCE: Canabrava, *O algodão em São Paulo, 1861-1875*, app. 2; Instituto Brasileiro de Geografia e Estatística, *Séries estatísticas retrospectivas*, 3:308.

But for all the increase in sugar and cotton, they could not replace coffee, which remained the primary engine of expansion for the entire Paulista economy. Although coffee never turned Paulista agriculture into a monoculture economy, it did significantly reduce the relative importance of these other crops in the export market.

The explosive growth of coffee, along with increasing sugar and cotton production, allowed the provincial government to establish a significant tax base, which funded provincial government services and development. This development included everything from establishing a significant tax bureaucracy and provincial judicial and legislative systems to paying for crucial infrastructure needed to export coffee. Taxes on agriculture were the key factors that allowed the province to lay out roads and railroads, install infrastructure for potable water distribution and public illumination in cities, build schools, and provide health services and public safety for the province as a whole.

Notes:

- (1.) These censuses were called either “mappas” or “Listas Nominativas dos Habitantes” and can be found in the Archive of the State of São Paulo.
- (2.) “Listas nominativas dos habitantes do acervo do arquivo do estado de São Paulo,” various boxes, Archive of the State of São Paulo. For specific boxes used to construct the 1829 data set, see Francisco Vidal Luna and Herbert S. Klein, *Slavery and the Economy of São Paulo, 1750-1850* (Stanford, CA: Stanford University Press, 2003), 209-216.
- (3.) The 590 sugar producers included 130 in Porto Feliz, 107 in Itu, and 85 in Campinas.
- (4.) For more on sugar production in São Paulo, see the classic study by Maria Thereza Schorer Petrone, *A lavoura canavieira em São Paulo: Expansão e declínio (1765-1851)* (São Paulo: Difusão Europeia do Livro, 1968). Also see Luna and Klein, *Slavery and the Economy of São Paulo*, chap. 2. Maria Petrone has criticized the lack of attention to the “cycle of sugar” in Paulista historiography. See Maria Thereza Schorer Petrone, “O desprezado ‘ciclo do açúcar’

paulista (1765–1850),” in *História do estado de São Paulo: A formação da unidade paulista*, ed. Nilo Odalia and João Ricardo de Castro Caldeira (São Paulo: UNESP, 2010), 1:135–155.

(5.) Daniel P. Müller, *Ensaio d’um quadro estatístico da província de São Paulo* (São Paulo: Governo do Estado de São Paulo, 1978), <https://archive.org/details/ensaio1840sp>.

(6.) José Antonio Saraiva, “Quadro estatístico de alguns estabelecimentos rurais da província de São Paulo (1855),” in *Documentos com que o ilustríssimo e excelentíssimo Senhor Dr. José Antonio Saraiva, presidente da província de São Paulo, instruiu o relatório da abertura da assembleia legislativa provincial no dia 15 de fevereiro de 1855* (São Paulo: Antonio Louzada Antunes, 1855).

(7.) *Discurso com que o ilustríssimo e excelentíssimo Senhor Dr. José Thomaz Nabuco D’Araujo, presidente da província de São Paulo, abriu a assembleia legislativa provincial no dia 1o. de maio de 1852* (São Paulo: Antonio Louzada Antunes, 1852), 36, <http://brazil.crl.edu/bsd/bsd/986>.

(8.) More than 70 percent of sugar production remained concentrated between 1836 and 1854 in just four localities: Mogi Mirim (26 percent), Itu (18 percent), Piracicaba (15 percent), and Capivari 12 percent).

(9.) Bananal, Taubaté, and Pindamonhangaba are in Vale do Paraíba. Campinas is in the Central region.

(10.) Bananal is a município created through the division of the county of Areias. Before this, Areias was the major coffee producer in the province.

(11.) For more on the conflict with these first immigrants to the western regions, see Thomaz Davatz, *Memória de um colono no Brasil (1850)* (Belo Horizonte, Brazil: Itatiaia/Editora USP, 1980). A good survey of the immigrant experience is Warren Dean, *Rio Claro: A Brazilian Plantation System, 1820–1920* (Stanford, CA: Stanford University Press, 1976), chap. 4. Dean also shows the significant usage of agregados, the poor landless workers who lived on the fazendas.

(12.) Evaldo Cabral de Mello, *O norte agrário e o império, 1871–1889* (Rio de Janeiro: Topbooks, 1984), 51.

(13.) Some 200,000 slaves were transported in the interprovincial slave trade after 1850. See Robert W. Slenes, “The Demography and Economics of Brazilian Slavery, 1850–1888” (PhD diss., Stanford University, 1976), chap. 3; Herbert S. Klein, “The Internal Slave Trade in Nineteenth Century Brazil,” *Hispanic American Historical Review* 51 (1971): 567–585; José Flávio Motta and Renato L. Marcondes, “O comércio de escravos no Vale do Paraíba paulista: Guaratinguetá e Silveiras na década de 1870,” *Estudos Econômicos* 30, no. 2 (2000): 267–299; Evaldo Cabral de Mello, *O norte agrário e o império*; Erivaldo Fagundes Neves, “Sampauleiros traficantes: Comércio de escravos do alto sertão da Bahia para o oeste cafeeiro paulista,” *Afro-Ásia* 24 (2000): 97–128; Rafael da Cunha Scheffer, “Tráfico interprovincial e comerciantes de escravos em Desterro, 1849–1888” (master’s thesis, Universidade Federal de Santa Catarina, 2006); Ana Rosa Cloquet da Silva, “Tráfico interprovincial de escravos e seus impactos na concentração da população na província de São Paulo: Século XIX,” in *VIII Encontro nacional de estudos populacionais*, vol. 1, 341–366 (Brasília: Associação Brasileira de Estudos Populacionais, 1992), <http://www.abep.nepo.unicamp.br/docs/anais/pdf/1992/T92V01A18.pdf>.

(14.) During the pioneer phase of European immigration, there were constant conflicts between *fazendeiros* (owners of fazendas) and immigrants. For more on immigration, see Pierre Monbeig, *Pioneiros e fazendeiros de São Paulo* (São Paulo: Hucitec/Polis, 1984); Thomas H. Holloway, *Immigrants on the Land: Coffee and Society in São Paulo, 1886-1934* (Chapel Hill: University of North Carolina Press, 1980) Thomas H. Holloway, *Immigrants on the Land: Coffee and Society in São Paulo, 1886-1934* (Chapel Hill: University of North Carolina Press, 1980); Davatz, *Memórias de um colono; Dean, Rio Claro*; and Pedro Carvalho de Mello, "The Economics of Labor in Brazilian Coffee Plantations, 1850-1888" (PhD diss., Department of Economics, University of Chicago, 1977).

(15.) Law 42 of March 30, 1871, authorized the provincial government to issue bonds to "assist the farmers of the province who want to bring settlers to their farms, as well as to assist the settlers." The aid would be "for the payment of travel and other expenses to each settler on the farm that had solicited him" and be repaid in eleven years. See the text of the law at <http://www.al.sp.gov.br/norma/?id=138648>.

(16.) According to Rosa Guadalupe Soares Udaeta, the Associação Auxiliadora de Colonização e Imigração promoted immigrants for work on the coffee plantations. Founded in 1871, it had a contract with the provincial government to bring in European immigrants and was required to guarantee that immigrants who landed in any Brazilian port would be sent to São Paulo and not another province. Rosa Guadalupe Soares Udaeta, "As hospedarias de imigrantes em São Paulo: O caso da Maçan D'Oro," paper presented at XX Encontro Regional de História: História e Liberdade, Franca, September 6-10, 2010. Also see Sylvia Basseto, "Política de mão-de-obra na economia cafeeira do Oeste Paulista (período de transição)" (PhD diss., Universidade de São Paulo, 1982); and Kátia Cristina Petri, "Terras e imigração em São Paulo: Política fundiária e trabalho rural," *Histórica*, no. 2 (June 2005), <http://www.historica.arquivoestado.sp.gov.br/materias/anteriores/edicao02/materia01/>.

(17.) See, for example, *Relatório com que o Exmo. Sr. Conselheiro Francisco Xavier Pinto Lima, passou a administração da província ao exmo. Sr. Dr. João Theodoro Xavier, presidente da mesma* (São Paulo: Typographia Americana, 1872), 16-17.

(18.) In the second half of the nineteenth century several hostels for immigrants were established, but all of them were small and in poor condition. In 1883, for example, the Hospedaria Bom Retiro was opened, and it closed only after the opening of the specially built Hospedaria dos Imigrantes in the Brás district of São Paulo. The Hospedaria dos Imigrantes building now houses the Immigration Museum. *Relatório apresentado à assembleia legislativa provincial de São Paulo pelo presidente da província João Alfredo Corrêa de Oliveira no dia 15 de fevereiro de 1886* (São Paulo: Typographia a Vapor de Jorge Seckler, 1886), 33-34, <http://brazil.crl.edu/bsd/bsd/1030>.

(19.) Law 123, of July 16, 1881, allowed immigrants to stay for a maximum of eight days. For the text of the law, see <https://www.al.sp.gov.br/norma/139437>.

(20.) Law 29, March 29, 1884, set out these terms. For the text of the law, see <https://www.al.sp.gov.br/norma/138424>.

(21.) Instituto Brasileiro de Geografia e Estatística, *Anuário estatístico do Brasil, 1939/1940*, vol. 5 (Rio de Janeiro: Conselho Nacional de Estatística, 1940), 1307, <http://produtos.seade.gov.br/produtos/bibliotecadigital/view/singlepage/index.php?pubcod=10020584&parte=1>. In São Paulo

in 1890, there were 57 foreign born per thousand inhabitants; the average in Brazil was 25. In 1920 this same difference occurred, with São Paulo having 259 foreign born per thousand residents, and the rest of Brazil an average of just 73. *Ibid.*, 1302.

(22.) Rogério Naques Faleiros, *Fronteiras do café* (São Paulo: FAPESP-EDUSC, 2010).

(23.) Even in the nineteenth century, the poor state of the municipal, provincial, and regional highways offered little possibility for use of wheeled vehicles. With the movement of coffee plantings into the upland valleys and plains in the early decades of the nineteenth century and the necessity of shipping coffee overseas from the coastal ports, mule transport was the limiting factor in the growth of the coffee, as well as sugar, fazendas of the major coffee-producing provinces of Minas Gerais, Rio de Janeiro, and São Paulo. Herbert S. Klein, "The Supply of Mules to Central Brazil: The Sorocaba Market, 1825-1880," *Agricultural History* 64, no. 4 (1990): 4.

(24.) Use of mules as transport and cargo animals in Brazil differed from their use in the southern United States, where good wagon roads existed before railroads and where mules were used exclusively as draft animals in the nineteenth century. Klein, "The Supply of Mules to Central Brazil," 4.

(25.) The Estrada União e Indústria road linked Petrópolis (Rio de Janeiro) with Juiz de Fora (Minas Gerais) and was unique in the coffee region before the railroad era. This 144-kilometer macadam road, suitable for horse-drawn wagons, was completed in 1861 and opened up the Mata zone in Minas Gerais for coffee production. Coffee transported to the port of Rio de Janeiro via the road increased until well into the twentieth century. Fernando Gaudereto Lamas and Luís Eduardo do Oliveira, "As vicissitudes da escravidão e da imigração em Minas Gerais: A companhia união e indústria, os escravos e os alemães (1852-1879)," paper presented at 3^o. Encontro: Escravidão e Liberdade no Brasil Meridional, Maio, Cape Verde, 2007, <http://www.escravidaoliberdade.com.br/site/images/Textos3/fernando%20lamas%20e%20luiz%20eduardo.pdf>.

(26.) Until 1864 the roads also accessed ports in the region of present-day Angra dos Reis. See "Os caminhos do café," http://www.sebraerj.com.br/custom/pdf/cam/cafe/02_OsCaminhosDoCafe.pdf (accessed May 1, 2017). For more on the Minas Gerais and São Paulo coffee produced in Vale do Paraíba, see Paulo Mercadante, *Os sertões do leste: Estudo de uma região; a mata mineira* (Rio de Janeiro: Zahar, 1973); Francisco Iglésias, "Política econômica do estado de Minas Gerais (1890-1930)," paper presented at V Seminário de Estudos Mineiros: A República Velha em Minas, Belo Horizonte, Brazil, 1982; Stanley J. Stein, *Vassouras: A Brazilian Coffee County, 1850-1900*, 2nd ed. (New York: Atheneum, 1976); Humberto Fernandes Machado, *Escravos, senhores e café: A crise da cafeicultura escravista do Vale do Paraíba, 1860-1888* (Niterói, Brazil: Cromos, 1993); and Anderson José Pires, "Café, finanças e bancos: Uma análise do sistema financeiro da Zona da Mata de Minas Gerais" (PhD diss., Universidade de São Paulo, 2004).

(27.) Aside from requiring the labor of many slaves who could have been put to production, mule transport was expensive and inefficient. According to the Companhia Paulista de Estrada de Ferro, transport by mule cost around 440 réis per arroba of coffee, while the railroad cost was 140 réis per arroba. Flávio Azevedo Marques de Saes, *As ferrovias de São Paulo, 1870-1940* (São Paulo: Hucitec/Instituto Nacional do Livro/Ministerio da Educação e Cultura, 1981), 40.

(28.) This guarantee of government funding was essential to the construction of the railroads in all Latin American countries. See Vincent Bignon, Rui Esteves, and Alfonso Herranz-Loncán, “Big Push or Big Grab? Railways, Government Activism, and Export Growth in Latin America, 1865–1913,” *Economic History Review* 68, no. 4 (2015): 1277–1305.

(29.) Construction began in 1855 on the Estrada de Ferro D. Pedro II, a railway to connect the national capital of Rio de Janeiro with Cachoeira in São Paulo and Porto Novo do Cunha on the border of Minas Gerais. Tunneling made this a costly enterprise, and the government had to get British loans to complete the two lines, which reached Porto Novo in 1871 and Cachoeira in the Paulista part of Vale do Paraíba later that decade. Bruno Nascimento Campos, “Tropas de aço: Os caminhos de ferro no sul de Minas (1875–1902)” (master’s thesis, Universidade Federal de São João del Rei, 2012), 33.

(30.) Adolpho Augusto Pinto, *História da viação pública de São Paulo* (São Paulo: Governo do Estado de São Paulo, 1977), 21–31. The D. Pedro II rail-road at Três Rios linked to the Estrada de Rodagem União e Indústria.

(31.) According to William R. Summerhill, the Brazilian economy benefited more from the introduction of the railroad than most other nations’ economies: “The gains to the Brazilian economy from the new transport technology were likely greater than in those nations, such as the United States, England, France, Belgium, and the Netherlands, that enjoyed relatively efficient and cheap pre-rail transport systems. While the railroad’s impact in Brazil also exceeded that of several other backward economies, the degree of an economy’s overall relative backwardness is in fact a poor predictor of the impact of railroads. Russia and Thailand were relatively backward economies in the second half of the nineteenth century. Both possessed affordable and navigable waterways; in neither did railroads create especially large gains.... Only in ... Mexico and Spain did railroad freight services create gains of similar magnitudes as found in Brazil.” William R. Summerhill III, *Order Against Progress: Government, Foreign Investment, and Railroads in Brazil, 1854–1913* (Stanford, CA: Stanford University Press, 2003), 189.

(32.) In 1945 the São Paulo Railway was taken over by the federal government and renamed the Estrada de Ferro Santos a Jundiá.

(33.) In spite of its importance for coffee expansion, railroad construction under the empire was well behind that of the United States. In 1893 the United States had 176,000 kilometers of railroads compared to Brazil’s 11,000 kilometers.

(34.) For more on the railroads, see Saes, *As ferrovias de São Paulo*; Monbeig, *Pioneiros e fazendeiros de São Paulo*; Célia Regina Baidier Stefani, “O sistema ferroviário paulista: Um estudo sobre a evolução do transporte de passageiros sobre trilhos” (master’s thesis, Universidade de São Paulo, 2007); Odilon Nogueira de Matos, *Café e ferrovias: A evolução ferroviária de São Paulo e o desenvolvimento da cultura cafeeira* (São Paulo: Alfa-Omega, 1974); Summerhill, *Order Against Progress*; Robert H. Mattoon Jr., “Railroads, Coffee, and the Growth of Big Business in São Paulo, Brazil,” *Hispanic American Historical Review* 57, no. 2 (1977): 273–295; Pinto, *História da viação pública de São Paulo*; Maria Lúcia Lamounier, “Entre a escravidão e o trabalho livre: Escravos e imigrantes nas obras de construção das ferrovias no Brasil no século XIX,” *Revista Economia* 9, no. 4 (2008): 215–245; José Cechin, “A

construção e operação das ferrovias no Brasil do século XIX” (master’s thesis, Universidade Estadual de Campinas, 1978); and Campos, “Tropas de aço.”

(35.) *Fala dirigida à assembleia legislativa provincial de S. Paulo, na abertura da 2^a. sessão da 24^a. legislatura em 10 de janeiro de 1883 pelo Presidente Conselheiro Francisco de Carvalho Soares Brandão* (São Paulo: Typographia do Ypiranga, 1883), 39, <http://brazil.crl.edu/bsd/bsd/1027>.

(36.) Pinto, *História da viação pública de São Paulo*, 85–125. As Célia Regina Baidier Stefani notes, the width of major lines in Europe did not exceed 1.45 meters, but in Brazil, despite the modest volume of traffic, local builders first adopted a gauge of 1.60 meters. Construction of the wider gauge proved uneconomical, and later builders adopted narrower widths, from 1.00 meter down to 0.60 meter, resulting in serious interconnection problems between the lines that still exist today. Stefani, “O sistema ferroviário Paulista,” 38. By 1901 São Paulo had 538 kilometers of 1.60-gauge track; 9 kilometers of 1.36 meters; 22 kilometers of 1.05 meters; a little over 2,672 kilometers of 1.00 meter; and 230 kilometers of 0.60 meter for a total of 3,471 kilometers. Pinto, *História da viação pública de São Paulo*, 233.

(37.) Caio Prado Jr., *Evolução política do Brasil* (São Paulo: Brasiliense, 1972), 116.

(38.) For more on Santos and its commission houses, see Ana Lúcia Duarte Lanna, *Uma cidade na transição: Santos, 1870–1913* (São Paulo: Hucitec/Prefeitura Municipal de Santos, 1996); Maria Lúcia C. Githay, *Ventos do mar* (São Paulo: UNESP, 1992); Roberto Perosa, “Comércio e financiamento na lavoura de café de São Paulo no início do século,” *Revista Administração de Empresas* 20, no. 1 (1980): 63–78; Maria Aparecida Franco, “O comissário de café no Porto de Santos: 1870–1920” (master’s thesis, Universidade de São Paulo, 1980), 243; and Edmar Bacha and Robert Greenhill, *150 anos de café* (São Paulo: Marcelino Martins and Johnston Exportadores, 1992), 137–280.

(39.) According to Saraiva, coffee production in São Paulo reached 865,000 sacks in 1855. Saraiva, “Quadro estatístico de alguns estabelecimentos rurais da província de São Paulo.” In 1900 Paulista production was 8.9 million sacks, out of 13.8 million sacks produced in all Brazil. World consumption in 1900 was just 14.3 million sacks. Bacha and Greenhill, *150 anos de café*, tables 1.2 and 1.3.

(40.) Antonio José Baptista de Luné and Paulo Delfino da Fonseca, eds., *Almanak da província de São Paulo para 1873* (São Paulo: Typographia Americana, 1873).

(41.) Petrone, *A lavoura canavieira em São Paulo*, 24.

(42.) *Relatório apresentado ao exmo. sr. presidente da província de São Paulo pela Comissão Central de Estatística* (São Paulo: Leroy King Bookwalter, 1888), 284–578.

(43.) For more on the history of the port of Santos, see Alcindo Gonçalves and Luiz Antonio de Paula, *O grande porto: A modernização no Porto de Santos* (Santos: Realejo, 2008).

(44.) Data from 1871/1872 show that the state exported many other products, such as chickens, animals, beans, rock salt, harnesses, wagons, rice, tallow, wax, glue, and corn, but these amounted to less than 100,000 mil réis, with almost half the value made up of chickens and

animals. Luné and Fonseca, *Almanak da província de São Paulo para 1873*, 167; *Relatório apresentado ao exmo. sr. presidente da província*, 24–26, table 4.

(45.) C. F. Van Delden Laerne, *Brazil and Java: Report on Coffee-Culture in America, Asia, and Africa* (The Hague: Martinus Nijhoff, 1885). The origin of this classic study was explained in the newspaper *Correio Paulistano*: “The Dutch government, given the great Brazilian production, which represents over half the coffee consumed worldwide, decided it was fit to send to Brazil a competent and qualified emissary to accurately study our situation.” That emissary was Van Delden Laerne. “Cultura e comercio do café: O enviado do governo da Hollanda, S. vanDelden Laerne,” *Correio Paulistano*, January 18, 1884, http://www.arquivoestado.sp.gov.br/upload/jornais/BR_APESP_CPNO_18840118.pdf.

(46.) Alice P. Canabrava, “A grande lavoura,” in *História geral da civilização brasileira*, vol. 2, bk. 4, *Brasil monárquico*, ed. Sérgio Buarque de Holanda (São Paulo: Difusão Europeia do Livro, 1971), 85–137.

(47.) *Indústria assucareira: Produção e consumo mundial do assucar* (Rio de Janeiro: Imprensa Nacional, 1907), 2–3.

(48.) Gileno de Carli, *Gênese e evolução da indústria açucareira de São Paulo* (Rio de Janeiro: Irmãos Pongetti, 1943), 21.

(49.) Data are from 1874, given in Carli, *Gênese e evolução da indústria açucareira*, 24. In that year Brazil’s output was just 21 percent that of Cuba’s.

(50.) Henrique Augusto Millet, *A lavoura da cana de açúcar* (Pernambuco: Massangana, 1989), ix.

(51.) Gileno de Carli, *O açúcar na formação econômica do Brasil* (Rio de Janeiro: Instituto do Açúcar e do Alcool, 1937), 30.

(52.) Decree 2687 of November 6, 1875, article 1, authorized the government to guarantee up to 5 percent per year and to provide for amortization of mortgage notes issued by Banco de Crédito Real. For the text of the decree, see <http://www2.camara.leg.br/legin/fed/decret/1824-1899/decreto-2687-6-novembro-1875-549775-publicacaooriginal-65293-pl.html>.

(53.) This was the conclusion of an official study carried out in 1887. *Relatório da comissão encarregada de estudar a difusão applicada a cana de assucar, apresentado ao Exmo. Sr. Conselheiro Rodrigo Augusto da Silva, ministro e secretario de estado dos negocios da agricultura* (Rio de Janeiro: Imprensa Nacional, 1887), 30.

(54.) José Antonio Saraiva, *Relatório apresentado à assembleia geral legislativa na primeira sessão da décima oitava legislatura, pelo ministro e secretário da agricultura, comércio e obras públicas* (Rio de Janeiro: Typografia Nacional, 1882), 3.

(55.) For more on this theme, see Canabrava, “A grande lavoura,” 85–137; Roberta Barros Meira, “Banguês, engenhos centrais e usinas” (master’s thesis, Universidade de São Paulo, 2007); Carli, *Gênese e evolução da indústria açucareira*; Peter Eisenberg, *The Sugar Industry in Pernambuco: Modernization Without Change, 1840–1910* (Berkeley: University of California Press, 1974); Jonas Soares de Souza, “O engenho central de Porto Feliz: Subsídios para o estudo dos engenhos centrais do Brasil no século XIX,” *Anais do Museu Paulista* 25 (1974): 25–43; and Alcides Ribeiro

Soares, "A experiência dos engenhos centrais," in *História do estado de São Paulo*, ed. Nilo Odalia and João Ricardo de Castro Caldeira (São Paulo: Editora UNESP, 2010), 1:161-187.

(56.) *Relatório apresentado ao chefe do governo provisório por Francisco Glicério, ministro e secretário de estado da Agricultura, Comércio e Obras Públicas* (Rio de Janeiro: Imprensa Oficial, 1890), 49-51. The federal government later doubled the capital needed to receive guaranteed interest on investment in these enterprises.

(57.) Peter Eisenberg, in his study of the sugar industry in Pernambuco, found that some engenhos centrais were constructed with used or inadequate equipment. He also cited conflicts between the central mills and their cane suppliers. Eisenberg, *The Sugar Industry in Pernambuco*, 111-124.

(58.) Few mills were actually built using the state guarantees on investment. Carli, *Genese e evolução da indústria açucareira de São Paulo*, 51.

(59.) For more on the engenhos centrais, see Carli, *O açúcar na formação econômica do Brasil*; Carli, *Gênese e evolução da indústria açucareira de São Paulo*; Gileno de Carli, *Geografia econômica e social da canna de açúcar no Brasil* (Rio de Janeiro: Brasil Açucareiro, 1938), 64; Millet, *A lavoura da cana de açúcar*; Canabrava, "A grande lavoura," 85-137; Meira, "Bangues, engenhos centrais e usinas"; Eisenberg, *The Sugar Industry in Pernambuco*; Ruy Gama, *Engenho e tecnologia* (São Paulo: Duas Cidades, 1979); Mello, *O norte agrário e o império*; and José Evandro Vieira de Melo, "Café com açúcar: A formação do mercado consumidor de açúcar em São Paulo e o nascimento da grande indústria açucareira paulista na segunda metade do século XIX," *Seculum, Revista de História*, no. 14 (2006): 74-93.

(60.) In a speech to the provincial legislature, the president emphasized the importance of diversification of production for the state and said the government would offer support and protection to various crops and products, not just to the establishment of engenhos centrais. *Fala dirigida à assembleia legislativa Provincial de S. Paulo*, 71.

(61.) Alcides Ribeiro Soares, *Um século de economia açucareira: Evolução da moderna agroindústria do açúcar em São Paulo, de 1877 a 1970* (São Paulo: Cliper Editora, 2001), 49; Carli, *Gênese e evolução da indústria açucareira de São Paulo*, 46-48, 53.

(62.) The difficulties of the central mills operating in São Paulo led to a French enterprise acquiring all these mills. The enterprise eventually became the Société de Sucreries Bresiliennes. Meira, "Bangues, engenhos centrais e usinas," 144.

(63.) For more on this, see James A. B. Scherer, *Cotton as a World Power* (New York, Frederick A. Stokes, 1916).

(64.) US Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970*, bicentennial ed. (Washington, DC: US Bureau of the Census, 1975), 517-518, table K550-563.

(65.) The classic study about cotton in São Paulo is Alice P. Canabrava, *O algodão em São Paulo, 1861-1875* (São Paulo: T. A. Queiróz, 1984). Also see Alice P. Canabrava, "Uma fazenda-modelo na província de São Paulo (1863)," in *Anais do IX Simpósio da ANPUH*, vol. 4 (São Paulo: ANPUH, 1979), 1173-1219; Maria Regina C. Mello, *A industrialização do algodão em São Paulo* (São Paulo: Perspectiva, 1983). According to Marcelo de Paiva Abreu and Luiz Aranha Correa do Lago, after 1880 Brazilian cotton exports ranged between 4,000 and 14,000 metric tons, but

domestic consumption was already becoming important. Marcelo de Paiva Abreu and Luiz Aranha Correa do Lago, "A economia Brasileira no império, 1822-1889," Texto para Discussão no. 584, Pontifícia Universidade Católica, n.d.).

(66.) Canabrava, *O algodão em São Paulo*, 7.

(67.) This type of cotton was introduced by Jean Jacques Aubertin, superintendent of the Santos-Jundiaí railroad. *Ibid.*, 10.

(68.) The first agricultural research center created in São Paulo was the Campinas Agronomic Institute, which would have a key role in the development of agriculture in São Paulo and Brazil. Created in 1887 by Emperor Dom Pedro II, it passed to provincial control in 1892. Before its creation the lack of research institutes represented a fundamental constraint to the development of seeds and appropriate farming techniques. In the absence of appropriate agricultural research agencies, individuals promoted the expansion of cotton production in São Paulo. Among these was Carlos Ilidro da Silva, who according to Canabrava, "would be the greatest agronomist of the province of São Paulo." Canabrava, *O algodão em São Paulo*, 32-33; Alice P. Canabrava, "Uma fazenda-modelo na província de São Paulo"; Karina B. S. Quiroga and Gilmar Arruda, "Natureza, cafeicultura e modernização da agricultura no oeste de São Paulo: As ideias de Carlos Ilidro da Silva (1860-1864)," *Tempos Históricos* 15, no. 2 (2011): 269-298.

(69.) The society was founded in 1831 to promote industry. Patrícia R. C. Barreto, "Sociedade Auxiliadora da Indústria Nacional: O templo carioca de Palas Atena" (PhD diss., Instituto de Química, Universidade Federal do Rio de Janeiro, Rio de Janeiro, 2009), 5.

(70.) In publications of the Auxiliadora da Indústria Nacional are references to cotton production and reproductions of important documents on the subject. In its publication of January 3, 1862, was "Manual do cultivador de algodão." See Antonio Candido Nascentes D'Azambuja, "Manual do cultivador de algodão," *O Auxiliador da Indústria Nacional*, January 3, 1862, pp. 54-72, <http://www.brasiliana.usp.br/handle/1918/003601-02#page/1/mode/1up>. In the publication of the minutes of March 6, 1862, appears "Cultura do algodão herbáceo." See Antonio Caetano da Fonseca, "Cultura do algodão herbáceo," *O Auxiliador da Indústria Nacional*, March 6, 1862, pp. 152-160, <https://digital.bbm.usp.br/view/?45000033226&bbm/7057#page/56/mode/2up>.