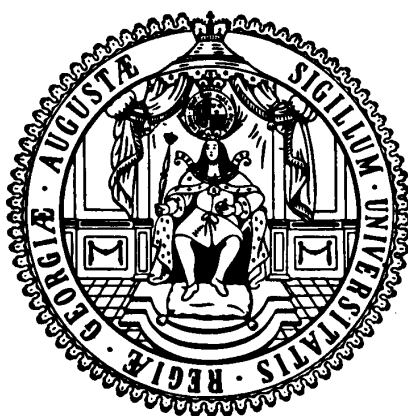


**Ibero-Amerika Institut für Wirtschaftsforschung
Instituto Ibero-Americano de Investigaciones Económicas
Ibero-America Institute for Economic Research
(IAI)**

**Georg-August-Universität Göttingen
(founded in 1737)**



Diskussionsbeiträge · Documentos de Trabajo · Discussion Papers

Nr. 239

**The rationale of sharecropping: immigrant
bonded laborers and the transition from
slavery in Brazil (1830-1890)**

Bruno Gabriel Witzel de Souza

June 2019

The rationale of sharecropping: immigrant bonded laborers and the transition from slavery in Brazil (1830-1890)*

Bruno Gabriel Witzel de Souza[†]

Summary

This paper studies the history of bonded labor in the plantations of São Paulo. Brazilian farmers proposed various contracts to bond immigrant households with a credit-labor interlinkage. The aim is to discuss why different labor-rental arrangements were adopted. In particular, *vis-à-vis* the alternatives of fixed rents and wage systems, it asks why sharecropping contracts were offered to European laborers during the transition from slavery in Brazil. Building on some new historical evidence and a formal model, the paper makes two propositions about the rationale of bonded labor and sharecropping. First, the credit dimension was more important to landowners than specific labor-rental regimes. The credit supplied by landowners allowed for the tying of immigrants via indebtedness. This mechanism guaranteed a secure and stable supply of labor to local agricultural elites and permitted the immigration of poor and credit-constrained Europeans. This prepared the insertion of Brazil into the global circuit of the Age of Mass Migration without promoting institutional reforms to attract non-bonded immigrants. Second, sharecropping became the most prevalent contract in the first phase of the transition from slavery not because of an economically rational decision taken by landowners, but more as an emulation of other historical and international experiences with this labor-rental arrangement.

* I thank Stephan Klasen, Jan Luiten van Zanden and Holger Strulik for their comments on the PhD thesis that embeds this paper. Renato Colistete, Samuel Garrido, Hakan Mihci and Andrew Seltzer provided invaluable comments on a preliminary draft and the discussions with Bram van Besouw, Piet Groot, Jakob Molinder and Sebastian Schöttler helped to improve the original ideas. Finally, I thank Marilia Max Jordan, Sylvester Davatz (*in memoriam*) and Ursula Davatz for sharing important primary sources with me. Usual disclaimers apply and the author is solely responsible for the content of this paper and any remaining mistakes.

[†] Research associate: Chair of Development Economics & Institute of Economic and Social History
University of Göttingen.

Contact: bwitzel1@gmail.com

Address: Platz der Göttinger Sieben 3, Oeconomicum, room 2.206 – 37073, Göttingen, Germany.

The rationale of sharecropping: immigrant bonded laborers and the transition from slavery in Brazil (1830-1890)

Bruno Gabriel Witzel de Souza

1. Introduction

Bonded labor and sharecropping have pervaded the entire history of agricultural production as mechanisms of factor allocation¹. In particular, indentured servants, redemptioners, indebted peons, *coolies* and contract laborers played a major role in the settlement of the Americas since the seventeenth century². Europeans and Asians thus immigrated bonded their labor force for a fixed period or until the repayment of the outstanding debts incurred in the process. In a period when high transportation costs and low average incomes in the source countries majorly constrained international migration, these arrangements allowed for the allocation of people to regions with a high land per labor ratio³. With the expansion of agricultural frontiers in the nineteenth century, especially in the U.S., sharecropping acquired the similar status of an institution to allocate labor to land. In that context, sharecropping started to be seen as an intermediate rung in the socioeconomic ladder that led from rural employment to landownership. Criticized for its empirical inadequacies and ideological ballast, this hypothesis remains nonetheless resilient to explain the settlement of agricultural frontiers.⁴ In line with such criticism, a different and much less favorable view about sharecropping focuses on the post-Civil War American South⁵. This literature aims at explaining the coexistence of various types of contracts, including sharecropping, in a post-slavery economy.

This paper contributes to these branches of the literature by studying the combined history of bonded labor and sharecropping in the context of the transition from slavery in Brazil. Studying

¹ For the global history of sharecropping in the long run, see Byres (1983). For classical views on coercion – a stricter category than bonded labor –, see Domar (1970), Evans (1970), Lagerlöf (2009) and Acemoglu and Wolitzky (2011).

² Hatton and Williamson (2009, p. 22) and Ferrie and Hatton (2015, pp. 53-6). Eltis (1983) and Donoghue (2013) survey the history of indenture servitude in the Atlantic economy. For the U.S., see Galenson (1981, 1984, 1991), Heavner (1973), Menard (1973), Grubb (1985, 1994), Grubb and Stitt (1994) and Abramitzky and Braggion (2006). For the West Indies, see Roberts and Byrne (1966) and Engerman (1983).

³ Hatton and Williamson (1994, p. 542; 2009, p. 18), Wegge (2002, p. 370) and Engerman and Margo (2010). Sánchez-Alonso (2007, pp. 408-10) and Engerman and Sokoloff (2011, p. 24) compare indentures in the U.S. to subsidized European immigration to Brazil.

⁴ Spillman (1919), Tungeln (1927) and Wehrwein (1931). Cox (1944) first opposed the concept, which Lee and Kaufmann (1997) revisited for the American South; and Engerman and Sokoloff (2011, p. 31) discussed implicitly.

⁵ Black and Allen (1937), Taylor (1943), Reid (1973, 1979), Higgs (1974), Alston and Higgs (1982) and Shlomowitz (1984). Alston (1981) and Alston and Ferrie (1985) explain tenure choices in the twentieth century.

these questions in the context of the Brazilian transition from slavery also provides some new analytical features of interest⁶. First, the technology of production in coffee plantations differed from that of cotton, sugarcane and winery, which have been the crops mostly studied by the literature on historical sharecropping. Second, the trends in nationalities and immigration policies prevailing in São Paulo tended to run counter those in the U.S. and in the Caribbean⁷. In a period when mass immigration of Europeans to the U.S. was becoming spontaneous, *i.e.* non-bonded, Europeans in São Paulo were mainly laborers tied to a debt obligation. Relatedly, while the re-emergence of indentures in the Caribbean and South America was mainly related to Asian immigrants, the hiring of Chinese *coolies* in São Paulo failed throughout the nineteenth century, before the consolidation of the Japanese immigration at the beginning of the twentieth century⁸.

From the 1830s, plantation owners in São Paulo started looking for labor arrangements to substitute the evermore-threatened institution of slavery. The Brazilian ban on the transatlantic slave traffic in 1850 prompted new contractual experiments that aimed at securing a stable and cheap supply of unskilled laborers to the plantations. One of the solutions was to propose different labor-rental contracts interlinked to a credit dimension to poor and credit-constrained European immigrants. Brazilian landowners supplied loans to cover the transportation and installment costs of foreigners, who then bonded the labor of their entire households to the repayment of these debts. In this form of immigrant bonded labor, sharecropping became the most prevalent labor-rental arrangement in the 1850s. Immigrants retained a share of the net profits from harvesting the cash crops – usually coffee – and of their foodstuff cultivation⁹. From the late 1840s to the early 1870s, about 8,000 German-speakers were hired as contract laborers to the plantations of São Paulo under this regime¹⁰. Free Brazilians, Portuguese and other immigrant minorities complemented this non-captive labor force in the plantations¹¹.

⁶ The Brazilian historiography on contract labor is very rich. Classical studies include Buarque de Holanda (1941), Witter (1974), Dean (1977), Stolcke and Hall (1983), Lamounier (1986) and Viotti da Costa (1998). The current paper attempts to update some debates they raised in light of new theoretical and historiographic developments.

⁷ Eltis (1983), Engerman and Margo (2010) and Engerman and Sokoloff (2011).

⁸ Engerman (1983), Hatton (2011, pp. 205-6) and Ferrie and Hatton (2015, pp. 62-4).

⁹ I partially follow Premchander *et al.* (ILO 2014, p. iii) in defining *bonded labor* as labor tying associated with an outstanding debt. However, I do not follow the definition that bonded labor is a form of *forced labor*. Bonded labor here is similar to Engerman's (1983, p. 639) *indentured labor*, an arrangement that "entailed an exchange of transport costs for labor services". However, I differentiate between indentured and contract labor. I understand the former as the bonding of labor for a fixed period and the latter, for a variable period (*e.g.* via debt obligations). That is how Lamounier (1986, p. 20) differentiates between European contract laborers and Asian *coolies* in Brazil.

¹⁰ The exact number of German-speakers is disputable (Witzel de Souza, 2012, p. 85). See Heinke (1905, p. 267), Scheler (1905, p. 171), Buarque de Holanda (1941, pp. 27-8), Sommer (1953, V) and Methner (1962, p. 49).

¹¹ Bassanezi (1998, pp. 395-409).

These experiments were limited in scale, especially if compared to the mass immigration of Italians to the plantations of São Paulo that started in the 1880s¹². Nevertheless, the period 1830-90 witnessed fundamental changes in Brazilian labor markets, inextricably related to the abolition of slavery. Bonded labor was the first non-captive labor arrangement considered acceptable in a plantation system that had been fueled by an elastic supply of African slaves for three centuries¹³. Moreover, the experience with bonded labor paved the way to transform São Paulo into a major destination in the Americas during the Age of Mass Migration. The Brazilian expertise in hiring Europeans and the networks of immigrants influenced future migratory flows, especially of German-speakers. Most importantly, the credit-labor interlinkage first tried in this period long outlived the sharecropping contracts. The focus on poor and credit-constrained households became a core strategy of the Brazilian immigration policy. Finally, the clauses of the sharecropping contracts experimented with in this period influenced the formulation of subsequent contracts and those old labor-rental arrangements had long-standing consequences for the Brazilian rural markets deep into the twentieth century.

The Brazilian experience with sharecroppers bonded to a credit obligation raises two questions of interest to the literature. First, considering that sharecropping prevailed as the first non-captive labor-rental arrangement during the transition from slavery, one is led to inquire about the economic rationale for its adoption at that particular moment. Was the employment of sharecropping a necessary condition for the success of credit the interlinkage or were other labor-rental arrangements also feasible? A branch of the Brazilian historiography has even considered sharecropping as the least efficient labor arrangement *because* it was applied in the first phases of the transition from slavery, in a period when, allegedly, more efficient arrangements would be unfeasible¹⁴. The question is thus whether sharecropping had any inherent feature that made it the most adequate labor-rental arrangement for the prevailing circumstances. Furthermore, by noticing that the credit dimension pervaded the entire history of immigration to Brazil in the nineteenth and early twentieth century, the second question deals with the economic and political rationale of the credit-labor interlinkage. To put it more explicitly, the question is whether Brazilian rural elites strategically tailored the country's immigration policy towards poor and credit-constrained European households.

¹² Viotti da Costa (1998, p. 169).

¹³ Leff (1972, p. 492), Klein (1995, p. 208), Viotti da Costa (1998, pp. 73-4) and Oberacker Jr. (2004, p. 271). For the efficiency of the international allocation of slaves, see Engerman and Sokoloff (2011, pp. 20-1).

¹⁴ Witter (1973, 1974, 1982), Viotti da Costa (1998), Ianni (2004) and Petrone (2004). See Section 5 for a distinction between their arguments.

In this context, a conceptual contribution of this paper is to analyze the historical pervasiveness of the credit-labor interlinkage jointly (*i.e.* sharecropping bonded-labor), rather than the labor-rental regime separately (*i.e.* sharecropping only). To this end, I develop a model in which a landowner maximizes his/her rents subjected to the participation constraint of contract laborers. Landowner's rents comprehend two dimensions. The production dimension requires labor for a fixed amount of land and labor can be obtained under sharecropping, fixed rents, or wage systems. The credit dimension allows for the immigration of contract laborers and the resulting indebtedness provides landowners with a control mechanism that was familiar to a slaveholder.

The model shows that sharecropping, fixed rents and wage systems interlinked to a credit dimension can lead to the same *per worker costs* (PWC), as perceived by landowners in the absence of productivity differentials. This condition is important, as differences in productivity preclude the existence of perfectly competitive labor markets or of less efficient labor arrangements. The historical analysis, in turn, shows the obvious nonexistence of perfectly competitive labor markets and that landowners had no preoccupation with the efficiency of specific labor-rental arrangements in the first phases of the adoption of bonded labor. In complement to the model, the historical evidence thus indicates that landowners were indifferent to specific labor-rental arrangements in the first phases of the transition from slavery. The analysis hence proposes that sharecropping was not a theoretically necessary first step in this process. The consolidation of this labor-rental arrangement resulted mainly from the emulation of other historical and international experiences. Moreover, the credit dimension permitted the immigration of Europeans who otherwise would not have been able to cover the costs. This allowed Brazilian elites to obtain immigrants without promoting institutional reforms to make the country more attractive to non-bonded immigrants. The model shows the feasibility of this approach, as a linear credit-labor interlinkage can lead to the same optimality conditions independent of the labor arrangement chosen. The historical analysis, in turn, provides vast evidence that Brazilian politicians, diplomatic authorities and landowners were well aware of this strategy.

The paper derives its historical conclusions from a systematic review of the *Brazilian Digital Newspapers' Repository*. This online platform of the Brazilian National Library Foundation digitized different kinds of periodicals and press material. The *Repository* currently comprises 6,449 titles from 1740 to 2018 and covers most Brazilian states and some international publications¹⁵. I created a sample with 20 newspapers of the capital and 20 of the countryside

¹⁵ Available at <http://bndigital.bn.gov.br/hemeroteca-digital>, accessed last on October 12 2018.

and coastal regions of São Paulo, from which I selected news that contained at least one of 31 terms related to the immigration of contract laborers or rural settlers¹⁶. In a first round of selection, I identified *ca.* 11,000 entries related to these themes. I then selected about 2,000 entries, which constitute the primary sources for this study.

The historiography on the transition from slavery in Brazil has extensively used newspapers as primary sources; I attempted to indicate all references that used the same news as I did in the footnotes. What this analysis does differently is to benefit from the unification of sources in a single *Repository* that allows for automatized research, raising the potentials and challenges of big data analyses to the study of qualitative sources¹⁷. In this, I do not explore the quantitative dimension of the research thus conducted – *e.g.* I do not quantify the incidence of terms to assess trends of topics per region or over time. However, the automatized search allowed me to group the news thematically, providing a broad overview of similar topics covered in different sources and periods. This approach led to the finding of a document of particular interest to the Brazilian historiography¹⁸. On January 23, 1836, the newspaper *O Paulista Official* published a contract of a consortium signed in 1835 to hire German and Swiss immigrants. This contract was a mix between bonded labor and rural settlement, similar to the *headright system* and *homesteading* in the U.S. The firm that proposed the consortium was headed by Luiz Vergueiro, son of one of the most important promoters of bonded European immigration to Brazil. Although mentioned *en passant* by the literature, this study is, to the best of my knowledge, the first to analyze the actual clauses of this contract, which might provide an important benchmark to the history of immigration to Brazil¹⁹.

The paper is organized as follows. Section 2 provides a historical contextualization of the transition from slavery in Brazil. It focuses on the alternatives that landowners in São Paulo envisaged to substitute the slaves. Sections 3 and 4 present a chronological analysis of the rise and decline of sharecropping bonded labor in São Paulo. Based on this historical evidence, Section 5 discusses three theoretical propositions: (i) sharecropping was not a necessary first stage in the Brazilian transition from slavery; (ii) its expansion resulted from the path dependence created by the first hirers of immigrants; (iii) the credit interlinkage outlived the

¹⁶ These 31 terms refer to the roots of the words. The research included adaptations to nineteenth century spelling as well. See *Appendix III* for a detailed description of these sources and methodology.

¹⁷ See the illustrative research lines in Michel *et al.* (2011) and Shiller (2017). I thank Manuel Santos Silva for the references and debates on this theme.

¹⁸ Marília Jordan obtained this source independently. I thank her readiness in sharing this important document.

¹⁹ Calógeras ([1933] 1998, p. 353) and Castro (n.d., p. 28) mention the 1835 contract, but they do not explore its content, nor its consequences for the history of immigration to Brazil.

specific labor-rental regime of sharecropping. Section 6 concludes with some comparisons between the prevalence of sharecropping in São Paulo and recent research about the historical rationale of this labor-rental arrangement.

2. Bonded labor and the abolition of slavery in Brazilian coffee plantations

Brazil is infamous for being the last country in the Americas to abolish slavery. The legal abolition in 1888 was the result of socioeconomic and political changes that matured over almost a century. A myriad of forces influenced this long-termed transition, including the increased resistance of slaves, manifested in mass escapes, conflicts and a daily opposition to captive work²⁰; changes in the social perception about slavery bolstered by abolitionists²¹; international pressure in the context of the consolidation of industrial capitalism²²; and modifications in Brazilian institutions and local labor markets. The transition was gradual and deliberately sluggish, providing enough time for the rural elites, sometimes with diverging regional interests, to weave compromises that safeguarded their investments in captives and granted them alternative sources of labor²³.

For the purposes of this paper, it is useful to categorize the history of the transition into two phases²⁴. The first spanned until 1850 and aimed at banning the Brazilian transatlantic slave traffic. Economically, the period was characterized by the expansion of the coffee plantations towards the central-western plateau of São Paulo, departing from the older farms in the *Paraíba Valley*, *i.e.* the region bordering the province of Rio de Janeiro. The second phase witnessed the passing of laws that gradually led to the unconditional abolition of slavery. This period was marked by the political and economic consolidation of the coffee planters of the central western-plateau of the province. The agricultural frontier, in turn, kept expanding to the west of the São Paulo, gradually reached by the new railway infrastructure, especially after the 1870s²⁵.

An increasing diplomatic and military pressure from Britain marked the abolition of the Portuguese and Brazilian slave traffic between 1807 – when the British banned slave trade under their own flag – and 1850 – when Brazil started enforcing laws in this direction. Clauses

²⁰ Dean (1977, pp. 90-4, 125-7, 138-46) and Viotti da Costa (1998, Part II, Chapter 3).

²¹ Viotti da Costa (1998, Part III – Chapters 1 and 2).

²² Beiguelman (1967) and Viotti da Costa (1998, pp. 17-9).

²³ See Leff (1972, p. 490) for different regional economic performances in nineteenth century Brazil.

²⁴ See Engerman and Margo (2010, pp. 298-9) for a similar periodization.

²⁵ Viotti da Costa (1998, pp. 219-20) and Lamounier (2000).

prescribing the ban of the traffic embedded the British recognition of the Brazilian independence in 1822 and were soon followed by similar laws in 1827 and 1831. However, their enforcement was so lax that the Brazilian expression “*Law for the English to see*” survives until today to describe a dead-letter legislation. As a result, the *Aberdeen Act* was passed in the UK in 1845. The Act gave the status of piracy to Brazilian ships trafficking slaves and allowed the British Admiralty to trial the slave-traders. Foreseeing shortages in the supply of slaves, Brazilian landowners invested heavily in the traffic, paradoxically increasing the entries of slaves in this period²⁶. The Brazilian public opinion rolled back against this imposition in 1851, when British warships entered Brazilian territorial waters in pursuit of slave-traders²⁷.

Under this diplomatic pressure, the Brazilian government approved and started to enforce the ban on slave trade in 1850. The price of captives rose significantly, even in the face of the increased interprovincial slave trade²⁸. The expected shortage in the supply of slaves met an increased demand for labor caused by the expansion of coffee plantations towards the central-western plateau in the 1850s²⁹. Moreover, lacking natural endowments of direct interest to the mercantilist economy of the colonial period – e.g. in comparison to the gold mines of the province of Minas Gerais –, São Paulo had a relatively low stock of slaves in the first decades of the nineteenth century³⁰. This relative shortage of captive laborers was especially acute in the central-western plateau by the 1840s³¹.

Under these circumstances, landowners had three potential alternative sources of labor³².

The most obvious was to indurate slavery and to increase the stock of captives in the agriculturally expanding regions of São Paulo³³. The economic expertise with this labor arrangement and the socio-political status of slaveholders explain the ferocious attempts of plantation owners in smuggling African slaves until the late 1850s; in promoting the interprovincial traffic of captives; and in fighting for the last remnants of slavery until 1888³⁴. Nevertheless, the import of African slaves became too risky after 1850, contributing to an

²⁶ *Ibid.* (1998, p. 254).

²⁷ For a description of the legal and diplomatic consequences of this period, see Viotti da Costa (1998, pp. 74-86).

²⁸ Dean (1977, p. 66) shows that the prices of male slaves (15-29 years old) in the municipality of Rio Claro rose from 550 *mil-réis* in 1843 to a peak of 2,300 *mil-réis* in 1880. See also Viotti da Costa (1998, pp. 49-50, 97-8).

²⁹ See Witter (1974, pp. 395-9) for a case study of farm *Ibicaba*.

³⁰ Laborsaving physical capital was also scarce. For theoretical implications, see Leff (1972, pp. 492-3).

³¹ Buarque de Holanda (1941, p. 16) and Viotti da Costa (1998, p. 69).

³² Witter (1974, p. 398) and Viotti da Costa (1998, pp. 69-71). These alternatives are similar to Engerman and Margo's (2010, pp. 291-9) description of types of laborers employed in the settlement of the U.S.

³³ Viotti da Costa (1998, p. 70).

³⁴ *Ibid.* (1998, pp. 86-92). Engerman (1983, p. 644) argues that plantation owners preferred ex-slaves to immigrants due to higher productivity and lower transaction costs in hiring and employing them.

increased risk-premium in the price of captives³⁵. The interprovincial traffic took pace in the 1860s, but its costs also grew prohibitively high *vis-à-vis* the increased demand and as new taxes attempted to restrain the outflow of slaves from Northern Brazil³⁶.

Consequently, proposals to substitute the slave workforce in the plantations gradually gained political prominence³⁷.

A second alternative was to employ free Brazilians. Various forms of peonage and patron-client relations had always coexisted with slavery in the plantations. Free Brazilians tended to be employed in rural activities that involved a high risk of escapes or depreciation of the capital invested in slaves, such as in the cleansing of forestry for the formation of plantations³⁸. However, the systematic employment of free Brazilians in ordinary tasks in the coffee plantations of São Paulo was limited by many reasons. The demographic density of São Paulo was low, estimated at about 0.7 inhabitants per square kilometer in the 1820s-30s. The literature has shown, however, that the absolute supply of Brazilian labor was not low, but only unevenly distributed³⁹. Hence, the question remains as to why free Brazilians did not migrate to regions like the central-western plateau of São Paulo. First, because the high land per labor ratio prevailing in some regions did not translate into higher remuneration to labor, as technological barriers impaired gains in labor productivity. Second, the established rural elite imposed institutional constraints that limited access to land, impeding a potentially more efficient distribution of factors⁴⁰. Third, patron-client relations between landowners and freemen living in their orbit of influence limited the mobility of free Brazilians⁴¹. Finally, in a slave-based economy, physical and rural works were considered socially degrading. The reluctance of locals to accept employment in the plantations reinforced prejudices about the laziness and vagrancy of the Brazilian population; combined with racist arguments, landowners tended to idealize European immigrants, at least until the outbursts of their labor riots⁴².

A third alternative was to increase the supply of labor with immigrants. While the central government favored the foundation of rural colonies, plantation owners strived for the immigration of bonded laborers. The bonding of immigrant labor with debt mechanisms first

³⁵ Slaves were smuggled until 1856 (Viotti da Costa, 1998, pp. 85-6).

³⁶ Dean (1977, pp. 69-73) and Viotti da Costa (1998, pp. 155-7, 256-68).

³⁷ Leff (1972, p. 492) and Viotti da Costa (1998, pp. 143-5).

³⁸ Viotti da Costa (1998, pp. 73-4).

³⁹ Witter (1974, p. 401), Lamounier (1986) and Stolcke and Hall (1983, p. 170).

⁴⁰ Leff (1972, p. 495) and Stolcke and Hall (1983, p. 170).

⁴¹ Ianni (2004, p. 360-1) and Viotti da Costa (2004, pp. 172-3).

⁴² Lamounier (2000, p. 66), Oberacker Jr. (2004, pp. 263-5) and Viotti da Costa (2004, pp. 197-8).

essayed in the 1840s-50s provided a mainstay for the Brazilian immigration policy until the late 1920s. In the 1850s, the credit-labor interlinkage was associated mainly with sharecropping contracts. This labor-rental arrangement expanded significantly until the 1860s, when it began to be substituted by fixed remunerations per piece rate, per time worked, or by fixed rents and wage systems.

The last two decades of slavery in Brazil were marked by the passing of palliative laws aiming to temper the increased pressure of slaves and abolitionists⁴³. In 1871, a law declared free the newborn children of slaves, but established that the offspring should serve the slave master until the age of majority, *i.e.* 18 and 21 years old for females and males, respectively. In 1885, slaves older than 65 years were legally freed. By the same law, slaves between 60 and 65 years old, however, had to serve their masters for three years as a compensation⁴⁴. The political fight for an unrestricted abolition continued until the final shattering of the old socio-political order in 1888, when it was finally proclaimed. It took little more than one year for the centralist Brazilian monarchy to fall under a new federalist republican government.

Foreseeing the impossibility of holding back the abolitionist movement, new projects to obtain labor for the plantations in this period focused on the coercion of Brazilians, freed slaves and projected future freedmen⁴⁵. The proposals aimed at bonding those individuals for fixed periods (between five and seven years); or involved penal labor for rebellious slaves and the tightening of vagrancy laws⁴⁶. However, the most successful policy built on the experience accumulated with bonded immigrants. From the 1880s, the government of São Paulo started subsidizing the transport of immigrants to work in the coffee plantations. The credit-labor interlinkage became a cornerstone of the insertion of São Paulo into the global circulation of labor. Between 1885 and 1914, about 1.15 million people gross-immigrated to São Paulo. Combined with the position of Italy as a major sending country – supplying an impressive 82% of immigrants to São Paulo in 1885-9⁴⁷ –, this policy granted a stable supply of labor to the plantations, even if landowners kept complaining about the turnover and mobility of free laborers⁴⁸.

⁴³ Viotti da Costa (1998, p. 251).

⁴⁴ Dean (1977, pp. 126-34, 139) and Viotti da Costa (1998, p. 322).

⁴⁵ Stolcke and Hall (1983, pp. 180-3) and Lamounier (1986, *e.g.* pp. 81-90, 98-103). For similar proposals in the U.S., see Engerman and Sokoloff (2011, footnote 11).

⁴⁶ For the actual indenture of freed slaves at the eve of the abolition, see Dean (1977, pp. 134, 139-43, 146-8).

⁴⁷ Own calculations with data from Levy (1974, Appendix Table 8).

⁴⁸ Petrone (2004, pp. 342-3) and Martins (1989, p. 16).

3. The rise of European bonded labor under sharecropping (1835-60)

3.1. The rise and primacy of *Vergueiro & Co.* (1835-47)

In July 1847, a first successful experiment with European bonded labor, hired under sharecropping contracts, started in farm *Ibicaba*⁴⁹. At the time located in the municipality of Limeira, in the central-western plateau of São Paulo, *Ibicaba* was proprietary to the firm *Vergueiro & Co.*, founded and administered by Senator Nicolau Pereira de Campos Vergueiro and sons⁵⁰. *Vergueiro & Co.* became a leading firm in the international trade of Brazilian coffee and was deeply associated with the immigration policy. Nicolau Vergueiro participated actively in the elaboration of the immigration policies carried out in the province since 1827. He strongly opposed immigration policies based on rural settlements, as carried out in São Paulo since 1828 with German-speakers. By 1847, this leading political figure of the Brazilian empire seized the opportunity to essay his own immigration policy, *i.e.* the hiring of bonded labor to the plantations. Certainly not unintentionally, Senator Vergueiro labeled the experience carried out with immigrants in his farm in 1847 as ‘*Colony*’ *Senador Vergueiro*, implicitly suggesting a very different type of settlement than the actual bonding of immigrant labor being practiced⁵¹.

Colony Senador Vergueiro was inaugurated with 423 German-speakers hired in Rhenish Prussia and Holstein⁵²; sixteen Portuguese remnants from an older experiment with bonded labor joined them. Other immigration waves in 1849 and 1851 expanded the number of these pioneers by 65 German-speakers and 50 Portuguese⁵³. In less than eight years, the farm reached a peak of about 900 bonded laborers, a number that stabilized around 670 in 1855⁵⁴.

These immigrants were bonded to loans supplied by *Vergueiro & Co.*, which covered migratory costs and the yearly advances in cash, foodstuff and other goods obtained in the farm’s grocery store. To supply the loans, *Vergueiro & Co.* obtained a funding of about 3.2 million *mil-réis* from the imperial budget in 1845-6⁵⁵. The firm then subcontracted the hiring of the laborers in

⁴⁹ Buarque de Holanda (1941) and Witter (1974). Heflinger Jr. (2007, 2009) provides new archival research.

⁵⁰ Witter (1982, pp. 107-16).

⁵¹ For the ideological ballast of the word, confounding bonded labor in plantations with settlement colonies, see Buarque de Holanda (1941, pp. 7-8), Oberacker Jr. (2004, p. 271) and Petrone (2004, p. 325). *Sharecroppers* were also labelled *colons* in Loire-Inférieure (Garrido, 2017, p. 983). See also footnotes 183 and 191.

⁵² Grubb (1994, p. 813, footnote 16) highlights the importance of Rhineland for immigration to the Americas.

⁵³ Report of the President of S. Paulo in *Correio Paulistano* (20/02/1855, p. 1). See also Dean (1977, p. 98).

⁵⁴ *Idem* (20/02/1855, p. 1). The numbers of the first immigrant wave vary between 423 and 426.

⁵⁵ In 1855, the provincial presidency required information from the treasury about a loan amounting to 32,271.755 *réis* received by *José Vergueiro & Co.* according to the budgetary law of September 18 1845 (*Correio Paulistano*, 27/04/1855, p. 4, my underline). See Bassanezi, Scott, Bacellar, Truzzi and Gouvea (2008, p. 15).

Hamburg with Dr. Fr. Schmidt and Captain M. Valentin. Lacking their own vessels, these agents further subcontracted the transatlantic transport with other ship-owners.

Immigrants were hired under a sharecropping contract. The shares applied over a labor and a land-rental dimension. In terms of labor, immigrants received a fifty percent share of the net yearly profit obtained from the coffee they harvested and processed; *Vergueiro & Co.*, in turn, was responsible for transporting and marketing the produce. New contracts from 1852 onwards excluded immigrants from the processing of the coffee beans; as a compensation to the farmer, the laborers now had to pay a fixed amount for the coffee beans processed by the landowner at his own cost. In terms of land-rentals, immigrant households received a plot for own cultivation and paid a fifty percent share of produce they sold in the market, but not of goods they consumed themselves⁵⁶. The land-rental shares were mostly abandoned in later periods, most likely because of high monitoring costs⁵⁷.

The 1847 hiring was relatively successful; as discussed in Section 3.2, the contracts signed by the German-speakers in *Ibicaba* laid the foundations for an extensive adoption of sharecropping by other farmers in the 1850s. However, this first case of relative success was preceded by two failed attempts of family Vergueiro to hire bonded laborers in 1835 and 1840. These experiences demonstrate a learning process that led to the consolidation of the contractual formulae of 1847.

The first immigrants actually hired by Senator Vergueiro as bonded laborers were 80 Portuguese who arrived at farm *Ibicaba* in 1840. This experiment with non-captives was short-lived and most laborers abandoned the farm by 1842⁵⁸. The senator attributed this failure to politically-motivated hostilities against him, caused by his participation in a political upheaval against the central government in 1842. However, other critical accounts explain the stampede of the Portuguese from *Ibicaba* as the consequence of contractual clauses that leaned towards excessive controls and of mismanagements in enforcing the contracts.

The 1840 contract included a credit-labor interlinkage. The credit dimension offered to the Portuguese was similar to that accepted by the German-speakers in 1847. However, while the tying of the German-speakers extended until the repayment of outstanding debts, it seems that

⁵⁶ Dean (1977, p. 172) and Stolcke and Hall (1983, p. 184).

⁵⁷ Lamounier (1986) and Witzel de Souza (2012).

⁵⁸ See *Correio Paulistano* (20/02/1855, p. 1) for a brief contemporaneous account of the 1840 hiring. Two Spanish were among these immigrants (*Correio Paulistano*, 20/02/1855, p. 1).

the Portuguese were submitted to a fixed-term indenture⁵⁹. The labor dimension, on the other hand, differed substantially. Some Portuguese worked under a regime of fixed monthly payments. Others received plots of land under fixed-rent contracts, but were obliged to work for the landowner as well⁶⁰. There were two main complaints of the Portuguese about the enforcement of the labor dimension of the contracts. First, they were subjected to excessive monitoring. Second and relatedly, the labor arrangements were seen as too similar to the slaves' gang system⁶¹.

This failed but actual hiring was preceded by another attempt made by family Vergueiro to promote European immigration of bonded laborers. In 1835, a consortium named *Luiz Vergueiro & Co.* proposed the hiring of Swiss or southern German laborers⁶². This proposal came out in a period of intense debates about the banning of the transatlantic slave trade, when the Brazilian government announced its intention to increase the inflow of immigrants to substitute the captives. Simultaneously, some interest groups started stressing the role of private firms in promoting the business of immigration, rather than relying on public efforts in this direction⁶³. Proposals of private ventures to foster immigration received ample press coverage in the 1830s⁶⁴.

Luiz Vergueiro & Co. planned a public-private joint venture financed by the provincial government and by a well-connected political and economic elite⁶⁵. *Luiz Vergueiro & Co.* supported the enterprise with an equity of 1.44 million *mil-réis*, corresponding to 90% of the value of the venture, which it obtained with stocks traded in Rio de Janeiro. This amount would back-up the credit dimension of the contracts offered to the immigrants. Each of the 240 "suitable" Swiss or southern Germans were entitled to a loan of 60 *mil-réis*⁶⁶. The consortium commissioned another firm, *H. Hiller & Co.*, as its representative in the Brazilian capital, which, in turn, would subcontract the hiring of immigrants in Europe with the captain of a ship named *Creole*.

⁵⁹ According to my interpretation of Calógeras ([1933] 1998, p. 353).

⁶⁰ Dean (1977, p. 96).

⁶¹ Calógeras ([1933] 1998, pp. 353-4), Buarque de Holanda (1941, p. 16), Dean (1971, pp. 612-3), Lamounier (1986, p. 24) and Heflinger Jr. (2007, pp. 26-34).

⁶² He was not a member of the societal composition of *Vergueiro & Co.* as founded in 1846.

⁶³ Calógeras ([1933] 1998, pp. 337-8, 351).

⁶⁴ O Novo Farol Paulistano (08/08/1835; 29/08/1835 – p. 3; 08/10/1836, p. 1). Bassanezi *et al.* (2008, pp. 14-5).

⁶⁵ O Paulista Official (23/01/1836, pp. 3-4).

⁶⁶ The firm offered additional five *pezos* per person to cover extraordinary expenses. "Suitable" were males and females in the age ranges 8-45 and 10-35 years old, respectively; "suitable" is a free-translation to "*de número*".

The 1835 consortium proposed a *sui generis* contract to the immigrants. Divided into three phases, the contract combined an indenture with a conditional promise of landownership. Upon arrival, an agent would match immigrants and private employers under an indenture of three years. The contract stipulated two labor regimes. Unskilled laborers would earn a fixed payment per day worked (*jornal*). Remunerations ranged from 0.1 to 0.24 *mil-réis* per day according to age-sex groups. Specific laborers, probably associated with higher skills – including carpenters, blacksmiths and different types of potters –, would earn according to their “capacity and merits” and to the conditions prevailing in the labor markets of São Paulo⁶⁷. Upon the completion of three years of private employment, immigrants would receive plots demarcated in public lands, which they were expected to cultivate for six years. At a final stage, immigrants who settled in their plots for that period would then receive property titles over the land. Civil and religious liberty were also assured.

The propositions contained in the 1835 contract never materialized and no immigration wave consolidated upon it⁶⁸. Nevertheless, this document is of great value for three reasons.

First, it adds an important benchmark to the history of immigration to Brazil. Changes between the contract proposed in 1835 and that enforced in 1847 demonstrate the learning process in designing the contracts and how their clauses related to the generally prevalent immigration policies in the country. As noticed, Nicolau Vergueiro severely opposed the foundation of rural colonies in the 1820s. Nevertheless, that immigration policy was so preponderant at the time that it permeated the proposal of the 1835 contract as well: rural settlement automatically followed the three-year indenture in it. In 1847, however, plots of land in the farm of the proprietor were leased-out under shares to the immigrants as a constituent part of the credit-labor interlinkage; the guarantee of settlement upon the completion of the contractual obligations had been dismissed altogether⁶⁹.

Second, the document enlarges our perspectives on labor arrangements proposed in the 1830s-40s. This supports the proposition that sharecropping was not an obvious solution in the first periods of the transition from slavery. The 1835 consortium had no clause based on shares;

⁶⁷ Unskilled males older than 45 years were also subjected to this remuneration system. The objective in this case was most likely to set an earning lower than the fixed daily payments.

⁶⁸ Viotti da Costa (1998, p. 111) reports the immigration of 27 families in 1836 to work in the roadways of Santos. They probably have no connection to *Luiz Vergueiro & Co.* See also Calógeras ([1933] 1998, pp. 342-3).

⁶⁹ Buarque de Holanda (1941, p. 13) argues that José Vergueiro and his father-in-law, Mr. Gavião Peixoto, considered sharecropping an intermediate step between labor in the plantations and landownership in settlement colonies, somewhat similar to the agricultural ladder hypothesis. See also Lamounier (1986, p. 23).

rather, it interlinked credit to a labor dimension that mixed fixed remunerations and varying salaries per occupation. Likewise, the 1840 contract treated the Portuguese as agricultural laborers earning fixed payments. To this, I would like to add a fact already extensively surveyed by the historiography, which has nonetheless received less attention in theoretical terms⁷⁰. In 1847, it was not obvious that sharecropping would become the prevailing labor-rental arrangement in the 1850s. It seems that *Vergueiro & Co.* even considered proposing two contracts to the German-speakers, namely sharecropping itself and a labor system based on fixed payments per time worked (*locação de serviços*). The latter was the only labor arrangement covered by the Brazilian legislation, incentivizing its adoption to diminish institutional uncertainties⁷¹. Finally, there is also evidence that *Vergueiro & Co.* assisted subgroups of specific German-speakers – with whom the firm “was not pleased” –, to buy land close to the municipality of Campinas as early as 1851⁷². Related to this effervescent mix of contractual clauses and potential labor arrangements, by 1855, the ex-director of immigrants in farm Ibicaba – Ms. Carlos Kruger – bought a coffee farm in the municipality of Paraibuna for the selling of small installments; interestingly, a sharecropping contract was offered as a mean to amortize the debt incurred in the buying of such plots⁷³.

Third, the structure of the 1835 contract shows how the Brazilian experience with bonded laborers emulated other historical and international experiences. The joint inclusion of clauses bonding labor and allowing for posterior settlement in a single contract was very similar to the American *headright system*, applied in the thirteen colonies since the seventeenth century. The *headright system* granted land to immigrants upon the completion of a three-year period of indentured servitude⁷⁴. The *homesteading system* applied in the U.S. in the nineteenth century followed in the footsteps of that older arrangement⁷⁵. It is hardly by chance that *Luiz Vergueiro & Co.* proposed a contract with exactly the same stipulations as those tried in the U.S. for about two hundred years.

⁷⁰ Stolcke and Hall (1983, p. 171, footnote 189) and Lamounier (1986, p. 25).

⁷¹ *Ibid.* (1983, p. 194); *ibid.* (1986, pp. 15, 53, 62, 96).

⁷² O Mercantil (04/10/1851, p. 2). See also Dean (1977, p. 98).

⁷³ Correio Paulistano (20/02/1855, p. 1).

⁷⁴ Engerman and Sokoloff (2011, p. 26).

⁷⁵ *Ibid.* (pp. 30-3). I thank Renato Colistete for suggesting this point.

3.2. *The expansion of bonded labor under sharecropping contracts (1847-60)*

After the consolidation of sharecropping in farm *Ibicaba* between 1847 and 1851, the period from 1851 to 1856 was characterized by a substantial expansion in the employment of bonded laborers in other coffee plantations. An official estimate calculated that about 30 farms employed *ca.* 3,500 bonded laborers in 1856⁷⁶. This official report remarked that a significantly larger number of bonded laborers worked in smaller farms not included in the estimates. In a previous work, I identified 109 farms in 24 municipalities that employed various forms of contract labor between 1847 and 1860⁷⁷.

This augmented number of farmers employing immigrants implied a gradual increase in the competition for the still scarce supply of bonded laborers. Newspapers' advertisements reflect the novelty of this process. In the sample of news researched for this paper, landowners demanded unskilled labor, while immigrants who advertised their skills were either craftsmen or demanded positions as farms' administrators⁷⁸. The reaching of an equilibrium took long; as late as 1873, farm *Morro Azul*, neighboring farm *Ibicaba*, advertised vacancies for contract laborers in French, German and Portuguese⁷⁹. These announcements stressed that immigrants should have no pending obligations with other landowners and that their tasks would involve not only the cultivation of coffee, but also of cotton⁸⁰.

The first explanation for this initial expansion of sharecropping relates to the intense propagandistic effort carried out by *Vergueiro & Co.* The firm gradually became an agent in the hiring of bonded laborers to other landowners, profiting from a fee charged per worker imported. The periodical *O Mercantil* served as platform for the political positions of family Vergueiro⁸¹. This periodical reproduced *ad nauseam* a pamphlet in which the Swiss ex-consul, Charles Perret-Gentil, advocated the advantages of sharecropping and described very positively

⁷⁶ Correio Paulistano (23/02/1856, p. 1).

⁷⁷ Witzel de Souza (2012, p. 85).

⁷⁸ For skilled German-speakers (including teachers and preceptors), see *e.g.* Correio Paulistano (12/01/1870, p. 3; 13/01/1870, p. 3; 14/01/1870, p. 4); Gazeta de Campinas (25/09/1873, p. 3; 28/09/1873, p. 4; 03/05/1874, p. 4; 07/05/1874, p. 4); Jornal da Tarde (14/06/1881, p. 4).

⁷⁹ The German version mentioned employment only in the coffee plantations. The Portuguese asserted that coffee trees were mature, but below the age of peak production. This information was not available in German.

⁸⁰ Correio Paulistano – Feb. 1869 (13, p. 3; 14, 16, 17-9, 21, 23-6 – p. 4); Diário de S. Paulo – March 1869 (6, 7, 9 – p. 3; 13, p. 4; 16, p. 3; 19-20, p. 3; 31, p. 3); April 1869, p. 3 (3, 7, 22, 23, 28, 29); May 1869 (1-2 – p. 4; 4-5 – p. 3; 15, 20, 23, 26 – p. 3); June 1869, p. 3 (1-5, 12, 15, 16); October 1871 (11, p. 3; 12-3, 17, 21 – p. 4); May 1873, p. 4 (8-10, 16-7, 21, 30-1).

⁸¹ Newspapers with critical views were also active; *e.g.* A Aurora Paulistana (22/09/1851, p. 1), which nonetheless published some of *Vergueiro & Co.*'s announcements in 1852.

the experience in *Ibicaba*⁸². Perret-Gentil had abandoned his diplomatic career to pursue businesses related to the European immigration to Brazil, including the foundation of a private settlement colony in the current state of Paraná⁸³. He soon encountered family Vergueiro and, united to them by kinship, became a fiery defender of the labor arrangement designed by *Vergueiro & Co.*

There is some suggestive evidence that Perret-Gentil's publication in 1851 could have been a reaction against some immigrants who accused *Vergueiro & Co.* of breaching contractual clauses. In that year, a commission of four German-speakers intended to present their complaints to the president of the province, but were dissuaded by Senator Souza Queiroz⁸⁴. This premature upheaval of bonded laborers was not powerful enough to discourage other landowners to hire immigrants. On the contrary: the propaganda bore the expected results. Between 1851 and 1852, *Vergueiro & Co.* announced new arrivals of German-speakers and advertised the manifold possibilities of employing them as agricultural laborers⁸⁵. The firm stressed its promptitude to fulfil the demands of interested farmers, tailored to their proposals⁸⁶. In a procedure that became frequent in that decade, interested landowners were invited to check the results reached with bonded labor in farm *Ibicaba*⁸⁷. Landowners seem to have responded positively to those calls. An example is described in 1854, when a farmer from the municipality of Taubaté went to Limeira not only to gain personal experience, but also to inform his fellow farmers at home about the new labor system of *Ibicaba*⁸⁸.

Two major developments influenced the adoption of bonded labor as of 1852. Both show how political laces were becoming increasingly more intricate with the interests of plantation owners in elaborating and conducting the immigration policy of the province. First, Senator Souza Queiroz joined the efforts of his brother-in-law, Senator Vergueiro, in hiring laborers from

⁸² O Mercantil – 1851 (02/04, p. 2; 23/04, p. 3; 24/05, p. 4; 02/06, pp. 3-4; 19/07, p. 4; 23/07, p. 1; 30/07, p. 4; 02/08, p. 4; 12/11, p. 4). Complete chapters published in – 1851 (23/04, pp. 1-2; 17/05, pp. 1-2; 28/05, p. 1; 04/06, pp. 1-2; 14/06, pp. 1-2; 05/07, pp. 1-2; 08/07, pp. 1-2; 12/07, p. 3; 16/07, pp. 3-4; 23/07, pp. 2-3).

⁸³ <https://www.swiss-archives.ch/detail.aspx?ID=10364453> – document E2200.67-02#1000/675#121*, accessed on December 07 2018, and Arlettaz (1979, p. 162). I thank Marília Jordan for providing me with all references about Perret-Gentil.

⁸⁴ O Mercantil – 1851 (04/10, pp. 1-2); A Aurora Paulistana (21/11/1851, pp. 2-3).

⁸⁵ A Aurora Paulistana – 1852, p. 4 (14/08, 21/08, 29/08).

⁸⁶ O Mercantil (22/10/1851, p. 4).

⁸⁷ For the role of *Ibicaba* as a farm-model, see Diário de S. Paulo (16/01/1868, pp. 1-2); Gazeta de Campinas (17/10/1872, pp. 1-2). A praising about Vergueiro's initiative is in Correio Paulistano (28/06/1866, p. 2).

⁸⁸ Correio Paulistano (20/10/1854, p. 3). In 1856, only one farm employed contract laborers in Taubaté (*idem*, 23/02/1856, p. 3), although farmers had petitioned in favor of it (Viotti da Costa, 1998, p. 123).

Europe. Second, *Vergueiro & Co.* signed its first successful public contract to hire German-speakers and Portuguese to plantations and public works.

Without exaggerating the importance of individuals at the expense of macro determinants, the solutions found for the labor problem in São Paulo owe much to a closely networked elite, which shared economic interests, held highly-ranked political positions and influenced the course of the immigration policy of the province deep into the twentieth century⁸⁹. To a large extent, the expansion of sharecropping in the 1850s resulted from the positional advantage of the first main hirers, whose proposed contracts were then adopted by other landowners.

Families Vergueiro and Souza Queiroz are the most distinguishable representatives of these interconnections. Most of their relations are well-illustrated by the laces we find already in 1835 in the private-public consortium proposed by *Luiz Vergueiro & Co.* The signatories of that document were the core of an elite that was directly or indirectly related by familiar ties. *Luiz Vergueiro & Co.* was the firm responsible for the business, whose liability was shared with João da Silva Machado, father-in-law of Luiz. Family Silva Prado was represented by Antonio and his half-brother Joaquim, son-in-law of Silva Machado⁹⁰. Bernardo Gavião Peixoto was another signatory. His daughter Umbelina married José Vergueiro, the future head of *Vergueiro & Co.*⁹¹ Finally, family Souza Queiroz was represented by Francisco, Vicente and Luis. Francisco and Vicente were sons of Brigadier Luiz A. de Souza Queiroz, the first business partner of Senator Vergueiro in Brazil; Luis, in turn, was a grandson of Senator Vergueiro⁹².

This elite carefully defended its economic interests in the course of the nineteenth century, especially in conducting the immigration policies. João da Silva Machado was one of the founders of the German colony of Rio Negro in the 1820s⁹³. The same imperial dispatch that ordered its creation also routed to São Paulo the German-speakers who settled in the colonies of Santo Amaro and Itapecerica – *i.e.* that immigration policy arduously opposed by Nicolau Vergueiro. Gavião Peixoto was president of the province in 1836 and vice-president in 1847, *i.e.* in periods crucially around the 1835 consortium and the consolidation of the 1847 hiring⁹⁴.

⁸⁹ Lagerlöf (2009) rationalizes the role of political elites as setters of property rights over land and labor. Engerman and Sokoloff (2011), however, notice that even elites were constrained by endowments, mainly by labor scarcity.

⁹⁰ Waldman (2009, pp. 23-9).

⁹¹ Buarque de Holanda (1941, p. 13).

⁹² Castro (n.d., pp. 22-33) provides a detailed account about the family ties between Souza Queiroz and Vergueiro.

⁹³ For the political interests of this Baron in consolidating large-scale estates, see Dean (1971, p. 610).

⁹⁴ Egas (1926, p. 805), Buarque de Holanda (1941, pp. 12, 19) and Viotti da Costa (1998, pp. 121-3, 328).

Besides all other connections, Senator Souza Queiroz brokered the renewal of the contract to hire immigrants between *Vergueiro & Co.* and the presidency of São Paulo in the 1850s⁹⁵.

As the pioneers in the hiring of European bonded laborers, families Vergueiro and Souza Queiroz set a strong foothold in the business and politics of immigration. The contracts they first proposed set the standards over which labor negotiations took place for a long time; although sharecropping declined in the 1870s, most rural labor arrangements adopted later on had their origins in the regimes designed in the 1840s and 1850s⁹⁶.

To farmers not accustomed to non-captive labor in ordinary agricultural tasks, the contracts proposed by these hirers were a benchmark to be followed. As other landowners accumulated experience with new labor regimes, contractual modifications started varying more widely later on. However, the scope for changes in this early expansion period was limited by the ready-made formulae written by the main hirers. The following excerpt provides a picturesque image of this phenomenon. It describes how Joaquim Bonifácio do Amaral negotiated his first hiring of immigrants with Senator Souza Queiroz in 1851. Bonifácio do Amaral became himself an innovative hirer in the 1870s, with his own immigration projects. However, at the beginning of the 1850s, the propositions of Senator Souza Queiroz fully determined the labor regime to be adopted. Bonifácio do Amaral describes: “[Senator Souza Queiroz said]: ‘You told me elsewhere that you want colonists. I know, however, that you have no single coffee tree. Tell me whether you nevertheless want them, because I have my quill in my hand, ready to place an order. ‘I want them’, replied [Bonifácio do Amaral]. The senator replicated: ‘What type of contract would be considered more suitable for you?’ ‘The same that is suitable for your Excellency’ [...]. And nine months later [...] the small colony was formed with about eighty German workers”⁹⁷. The new landowner employing non-captive laborers was indifferent to the type of contract because he knew no alternative. At the time, the choice was not about incentives, controls, or efficiency. On a related note, the influence of *Vergueiro & Co.* on the hiring of bonded laborers was such that contracts interlinking sharecropping to a credit dimension became known as the *Vergueiro system* among planters and public authorities.

This advantageous economic position of the hirers was reinforced by the political connections that allowed them to design the immigration policy itself⁹⁸. *Vergueiro & Co.* reached the apex

⁹⁵ Siriani (2005, p. 97).

⁹⁶ Buarque de Holanda (1941, p. 34), Dean (1977, p. 164) and Stolcke and Hall (1983, p. 183).

⁹⁷ Gazeta de Campinas (27/01/1870, p. 2), reproduced in Correio Paulistano (08/02/1870, p. 1).

⁹⁸ Buarque de Holanda (1941, p. 17), Witter (1974, pp. 403-6) and Lamounier (1986, pp. 24, 39, 52).

of the intermingling between politics and private interests in the business of immigration between 1852 and 1856. In this interval, the firm signed two contracts with the government of São Paulo to hire 4,500 European agricultural laborers⁹⁹. To be eligible to the public budget that renewed the contract – a loan of 2.5 million *mil-réis* –, the firm had to increase the number of hired immigrants¹⁰⁰. *Vergueiro & Co.* signed other two contracts to hire Portuguese, Swiss and southern Germans as laborers to roadway construction and posterior settlement¹⁰¹.

The similitude between these two last contracts and that proposed by the 1835 consortium is worth noting¹⁰². Immigrants signed a labor arrangement by which 20% of their fixed daily salaries were withheld to amortize the loans received; contracts terminated upon three years of work¹⁰³. The strategy of hiring the poor prevailed here as well. Moreover, with the objective of promoting the Brazilian image in Europe, the presidency of São Paulo refused to lower wages in the hiring process. However, there were large gaps between remunerations proposed in Europe and the actual earnings of immigrants in Brazil, with a clear discrimination against the Portuguese¹⁰⁴.

According to the budgetary laws, the public contracts with *Vergueiro & Co.* prevailed until 1857. In 1856, the presidency signed new contracts with *Theodor Wille & Co.* and with Captain Joaquim de Andrada to hire European contract laborers¹⁰⁵. In 1858, *Theodor Wille & Co.* advanced loans to mere 49 emigrants departing to São Paulo from Antwerp, Bremen, Hamburg, Havre and Liverpool¹⁰⁶. In the following year, however, the number of immigrants hired by this firm increased to 519¹⁰⁷. Finally, in 1856 Mr. Achilles d'Estadens endorsed an interesting contract with the charterer *Leroy & Steinmann*, in Antwerp, which formulated the conditions of a general sharecropping contract between a European laborer and a Brazilian landowner¹⁰⁸. This contract offered more benefits to immigrants than those of *Vergueiro & Co.*, including a longer maturation of interest-free-debt and lower interest rates¹⁰⁹.

⁹⁹ Correio Paulistano (26/08/1854, p. 1; 28/08/1854, p. 1; 17/02/1855, p. 2; 11/05/1855, p. 1; 18/05/1855, p.1).

¹⁰⁰ *Idem* (12-13/09/1854, p. 1; 19/09/1854, p. 3; 17/02/1855, p. 2). Viotti da Costa (1998, p. 151) remarks that *Vergueiro & Co.* made similar propositions to the provincial governments of Minas Gerais and Maranhão.

¹⁰¹ A small group was transferred to private employers, who paid for their debts. *Idem* (23/02/1856, p. 3).

¹⁰² Correio Paulistano (12/09/1854, p. 1; 27/12/1854, pp. 3-4; 03/01/1855, p. 1; 11/01/1855, p. 1).

¹⁰³ The presidency allowed for contractual lengths between 2 and 3 years, varying according to the ease of obtaining laborers in Europe (Correio Paulistano, 03/01/1855, p. 1).

¹⁰⁴ In total, 204 German-speakers, 199 Portuguese and 96 family members (*idem*, 23/02/1856, p. 3).

¹⁰⁵ *Idem* (12/09/1856, p. 1; 25/07/1857, p. 1). See also Viotti da Costa (1998, p. 124) and Siriani (2005, p. 97).

¹⁰⁶ Brazil received 6,089 immigrants in 1859, corresponding to only 4.5% of emigrants departing from those ports (Correio Paulistano, 21/12/1859, pp. 1-2).

¹⁰⁷ Lamounier (1986, p. 50).

¹⁰⁸ Correio Paulistano (03/06/1856, p. 4).

¹⁰⁹ The case cited in Davatz ([1858] 1941, p. 218) most likely refers to a signatory of this contract.

4. The decline of sharecropping (1860-90)

From the 1860s, labor regimes based on fixed payments per piece-rate or time worked, wage systems and contracts that mixed shares and fixed remunerations gained ground against sharecropping. This section discusses three reasons for this relative decline of sharecropping. First, riots by bonded laborers led to gradual modifications in the contracts. Second, labor markets and immigration policies adapted endogenously to the novelties introduced by sharecropping. Finally, an elastic supply of immigrants from the 1880s started substituting the more direct bonding of labor. However, this did not imply that the credit dimension was abandoned. On the contrary, it became a consolidated policy once the government started to subsidize the immigration of agricultural laborers.

4.1. Labor riots and movements of social unrest

Contrary to the idea that sharecropping harmonized the interests of laborers and landowners – a concept vastly prevalent among contemporary observers¹¹⁰ –, the expansion of this contract in the 1850s was characterized by conflicts from the start. The petition of the German-speakers that led to Perret-Gentil's pamphlet in 1851 is one example. German-speakers had led riots and movements of social unrest since the 1820s, when the immigration policy was still focused on settlement colonies¹¹¹. The disputes as of 1847 had new motivations, related to the economic interests of bonded laborers. *De facto*, landowners resisted following the letter of the contracts and preferred the enforcement of contracts based on patron-client and paternalistic relations¹¹². Immigrants, in turn, had exaggerated expectations about working conditions in the coffee plantations, usually nourished by the pro-emigration propaganda in Europe¹¹³.

Quarrels about contracts were recurrent throughout the period, but reached a peak in 1856 with the so-called *Sharecropper's Riot*. Led by the Swiss schoolmaster Thomas Davatz, this riot broke out in farm *Ibicaba*. It is probably the best-known episode in the history of the German-speaking immigration to São Paulo, not only due to its long-termed and international repercussions, but also because its leader published a detailed account about the movement in

¹¹⁰ Tschudi ([1866] 1953, pp. 129-30) is a representative example.

¹¹¹ *Appendix II* surveys news referring to labor riots and movements of social unrest from the 1820s to the 1890s.

¹¹² Dean (1977, p. 124).

¹¹³ Siriani (2005, p. 95) and Witzel de Souza (2012, pp. 83, 104) for Brazil, and Grubb (1994, p. 810) for the U.S.

1858¹¹⁴. However, this was by no means an isolated episode. Two other riots preceded it in the same year. They occurred in different municipalities, conducted by different nationalities, who had been hired by different agents in Europe¹¹⁵. Nevertheless, the similarity in the structure of these riots reveals that conflicts were all related to the non-enforcement of contracts, to biased interpretations of clauses by landowners and laborers, to problems with labor monitoring and to the lack of transparency in the accountancy of immigrants' debts and yearly revenues.

In the aftermath of the *Sharecroppers' Riot*, the Swiss Confederation, Prussia and the Duchy of Saxe-Coburg-Gotha conducted intense diplomatic inquiries into their emigration policies to Brazil¹¹⁶. In 1858, the Prussian government enacted a censure motion inviting the German States to oppose emigration to Brazil. This directive mentioned the precarious situation of Protestants in the officially Roman-Catholic Brazilian Empire and the working conditions that allegedly equated German-speakers to African slaves¹¹⁷. This thesis of a "white slavery" perpetuated in political circles of the German States¹¹⁸. The bonding of labor and malpractices related to patron-client relations led to the consolidation of this view as an academic thesis as well¹¹⁹. Similar to other international abuses practiced against bonded laborers, some Europeans were subjected to extreme rights violation in São Paulo. These cases included foreigners been whipped, in a procedure applied only to slaves and even the tying of a worker "for days" in a farmyard after a laborers' riot, ten years after the abolition of slavery¹²⁰. Notwithstanding, there are enough reasons to reject the thesis of white slavery. Landowners never acquired property over laborers. Abuses were never generalized and the episodes described always rose public outcries and consular inspections. The legal status of the foreigners, their domestic and international safeguards and, most importantly, the voice they had were features not compatible with the definition of slavery¹²¹.

¹¹⁴ Davatz ([1858] 1941).

¹¹⁵ *Correio Paulistano* (27/05/1856, pp. 2-3). See also Heflinger (2014 pp. 55-70).

¹¹⁶ Dean (1977, p. 107) and Heflinger Jr. (2007, pp. 65-6; 2009, pp. 55, 71).

¹¹⁷ *Gazeta de Campinas* – 1870, pp. 1-2 (14/04; 08/05). Switzerland passed a motion demanding a more humane treatment of immigrants by the Brazilian government; *idem* (05/05/1870, p. 1).

¹¹⁸ Citing Molinari, even José Vergueiro argued that "[... a] foreigner who leaves the fatherland without possessing capital [...] subjects himself to a 'truly temporary slavery' in order to pay for his fare" (*Gazeta de Campinas*, 31/03/1870, p. 1). See further debates on the theme in *idem* (10/04/1870, pp. 1-2).

¹¹⁹ Particularly influential in the German-speaking academia (see Rossfeld and Ziegler, 2003). In the Portuguese-speaking world, a softened version is from Witter (1974, pp. 420-1). Dean (1977, pp. 97, 173) classifies bonded laborer as a type of serfdom, but rejects the idea of white slavery. Viotti da Costa (2004, p. 193) argues that contract laborers were in a condition of serfdom – a position she later abandons (Viotti da Costa, 1998).

¹²⁰ *Correio Paulistano* – 1874 (04/03, p. 3; 05/03, p. 2). Consular inspections likely related to these cases are reported in *idem* – 1874 (19/04, p. 2; 25/04, p. 2; 11/07, p. 3). For the latter case, see *A Nação* (26/03/1898, p. 2).

¹²¹ Engerman (1983, pp. 645-6). See also a discussion of the legal status of slaves in Dean (1977, p. 77).

In any case, abuses reported after the *Sharecropper's Riot* were strong enough to support the enactment of the *Rescript von der Heydt* by Prussia in 1859. This governmental regulation canceled hiring licenses of some agents and prohibited the pro-emigration propaganda, first to São Paulo and later to Brazil¹²². This implied that Brazilian landowners had to look for alternative hirers, majorly diminishing the inflow of German-speakers to São Paulo, even if the *Rescript* did not prohibit emigration by itself¹²³.

Brazilian immigration policies remained a source of diplomatic discomfort with the German States and with the German Empire throughout the 1860s and 1870s¹²⁴. Opinions about Brazil as a destination country oscillated substantially over time. Opposition to emigration to Brazil was active in the German-speaking press since the early 1850s and intensified in the 1870s, in some cases with public support, as alleged by a self-interested Brazilian press¹²⁵. Brazilian political elites attempted to counteract with strong publicity¹²⁶. In this, immigrants' letters remained the favorite supporting material, being considered the ultimate proof of immigrants' satisfaction and an important stimulus for chain migration¹²⁷.

4.2. Endogenous market responses: migratory costs and immigrants' networks

In this relatively unfavorable diplomatic scenario, the landowner Joaquim Bonifácio do Amaral attempted to conduct the hiring of German laborers in person in 1871¹²⁸. Even if also characterized by labor riots later on, his experiments with bonded labor included important contractual innovations, such as the possibility given to immigrants in his farm to finance the travel costs of their compatriots.

Bonifácio do Amaral first hired German-speaking laborers to *Colony Sete Quedas* in 1852, in the process intermediated by Senator Souza Queiroz, as described before. He became prominent

¹²² See Heflinger Jr. (2009, pp. 55-63).

¹²³ The misinterpretation that the *Rescript* prohibited emigration appears in current studies and primary sources. See e.g. *Correio Paulistano* (29/05/1879, p. 1) and *Diário de S. Paulo* (04/09/1872, p. 2). In the latter, the misinterpretation was politically motivated and the *Rescript* was considered "[...] the Aberdeen Act of a new type from the Prussian government".

¹²⁴ See *Appendix II*.

¹²⁵ *A Aurora Paulistana* (04/05/1852, pp. 1-2); *Correio Paulistano* (21/11/1854, pp. 1-2); *Gazeta de Campinas* (14/04/1870, pp. 1-2).

¹²⁶ Paraphrased from *Correio Paulistano* (12/10/1865, p. 1; 11/03/1866, pp. 3-4) in an attempt to increase the inflow of Europeans and Americans to Brazil. In line, *Idem* (19/09/1875, p. 2) reported an attempt to establish a newspaper to be circulated within Brazil and in foreign countries, especially in Portugal, to attract immigrants.

¹²⁷ *Correio Paulistano* (09/01/1859, p. 4; 15/01/1876, p. 2 – the latter about a colony in the province of Paraná).

¹²⁸ Buarque de Holanda (1941, p. 33) and Viotti da Costa (1998, p. 233).

in the immigration debate for opposing José Vergueiro's view on the Brazilian immigration policy¹²⁹. Bonifácio do Amaral urged at solving an agency problem: because European hirers received a commission per immigrant, he argued, the hirers had no incentives to screen for laborers with adequate skills and high morals¹³⁰. Landowners had raised similar cries since the 1850s; although partially exaggerated, this point was not completely devoid of truth. In 1859, Brazilian consular authorities were concerned that the most accredited charterers promoting the emigration from the German States to the U.S. refused to enter the Brazilian market due to the lack of adequate regulations in Brazil¹³¹. Bonifácio do Amaral expected to circumvent similar problems and to recover some confidence of the German States in the Brazilian immigration policy by conducting the hiring himself¹³². His focus on German-speakers was based on an idealized, laudatory view about the German States¹³³.

The difficult circumstances of his mission worsened with the outbreak of the Franco-Prussian War when Bonifácio do Amaral had left for Europe. After some exploratory travels in the German States and neighboring countries, and in spite of his fierce critics against European agents, Bonifácio do Amaral finally contracted the services of a hirer based in Hamburg¹³⁴. Notwithstanding these problems, *Colony Sete Quedas* received 207 bonded laborers in 1871.

New types of mixed contracts had evolved in the 1860s, partially combining fixed payments for the caring of the coffee trees during the lean season with shares of the yearly profits from the harvested product. The contracts signed by the new immigrants with Bonifácio do Amaral had a similar structure, but the landowner added a novelty to the land-rentals. Immigrants received the option of leasing-in plots of land for independent agricultural production, most likely of foodstuff easily marketable in the neighboring municipality of Campinas. Land was supplied by the landowner in a regime of fixed rents; however, the marginal rents increased with the area demanded by the immigrants¹³⁵. Hence, the contractual mix provided a screening mechanism to the landowner and gave more agency to the immigrants. Foreign households less

¹²⁹ See debate in *Gazeta de Campinas*, as mentioned in this thesis and analyzed by Stolcke and Hall (1983, footnote 56). Manuel de Campos Sales, future Brazilian president, tended to agree with Amaral (*idem*, 05/05/1870, p. 1).

¹³⁰ *Gazeta de Campinas* (27/01/1870, pp. 1-2), reproduced in *Correio Paulistano* (08/02/1870, p. 1). For José Vergueiro's opposite view, see *Gazeta de Campinas* (27/03/1870, pp. 1-2).

¹³¹ *Correio Paulistano* (21/12/1859, p. 2).

¹³² *Idem* (01/07/1870, p. 1); *Gazeta de Campinas* (24/07/1870, p. 1). Relatedly, in the 1880s, Francisco de Queiroz Telles commissioned an ex-sharecropper to conduct the hiring in Switzerland to avoid exactly the same problem of agency. See Scheler (1905, p. 180) and Grininger (1991).

¹³³ *Gazeta de Campinas* – 1870 (24/07, p. 1; 06/01, p. 2); *Correio Paulistano* (15/10/1871, p. 1). For a similar view of José Vergueiro about the German-speakers, see *Gazeta de Campinas* – 1870 (10/04, pp. 1-2; 21/04, p. 1).

¹³⁴ For a description of the travel in times of war, see *Correio Paulistano* (19/11/1870, pp. 2-3) and *Gazeta de Campinas* (24/11/1870, p. 1), which reproduce Amaral's letter first published in *O Diário do Rio* (07/11/1870).

¹³⁵ *Correio Paulistano* (15/10/1871, p. 1).

efficient in harvesting the cash crop could lease-in more land, from which the proprietor derived a fixed remuneration. The increasing marginal rents for leasing-in land, however, implied that the average immigrant household would not completely specialize in the production of foodstuff at the expense of cultivating and harvesting coffee.

The experiment prospered and Bonifácio do Amaral repeatedly commented on the wellbeing of the laborers¹³⁶. Consequently, the landowner planned the hiring of about 1,000 northern Germans to his farms in the municipalities of Campinas and Amparo. To this end, he obtained a declaration of 24 household heads asking for the hiring of friends and relatives. According to this document, immigrants working in Amaral's farms expressed their willingness to supply credit to their compatriots. The proposed scheme included the supply of loans amounting to 140 *mil-réis* to people older than 10 years and 70 *mil-réis* to the younger, as well as free inland transportation to the farms¹³⁷.

As immigrants became potential suppliers of credit to friends and relatives, the old direct control of landowners over laborers' indebtedness diminished in importance. Immigration enhanced by networks abroad partially dismissed the indebtedness control designed by *Vergueiro & Co.* This did not imply, however, that the credit dimension of the interlinkage faded out. In imperfect credit markets, as in rural Brazil in the nineteenth century, these laborers probably had their credit as a positive annual account with the farmer, rather than in cash or savings. Paraphrasing Dean (1976, p. 489), not only the debt but also the credit of laborers bonded them to the landowner. Moreover, the focus remained on poor and credit-constrained potential immigrants, who could not finance on their own the costs of the move. By using the funds of immigrants, the landowner avoided the risk of the credit operation and likewise obtained laborers. What Bonifácio do Amaral essayed privately here would consolidate as the state policy of fully subsidizing the immigration of contract laborers in the 1880s.

¹³⁶ *Gazeta de Campinas* – 1874 (16/07, pp. 2-3; 30/07, p. 2; 02/08, p. 2; 06/08, pp. 1-2) and *Correio Paulistano* (17/07, p. 1) – for instance, report a laborers' get-together in Amaral's farm, under obvious patron-client relations, probably published as a propagandistic reaction against some personal and work-related conflicts.

¹³⁷ *Idem* (06/08/1874, p. 1).

4.3. New labor arrangements and subsidized mass immigration (1860-90)

By the end of the 1880s, São Paulo became a major destination for immigrants in the Americas¹³⁸. This was mainly a consequence of the landowners' response to the abolition of slavery in 1888; to accommodate the shock in the labor supply, the government of São Paulo started to publicly subsidize the migratory costs of foreign households who accepted employment as rural laborers. This section discusses how these economic and institutional conditions in the 1880s-90s matured over the 1860s-70s and how these, in turn, had been influenced by the experiences with bonded labor in the 1840s-50s.

The intermediary period of the 1860s-70s was marked by an important dualism. On the one hand, the rural elite of São Paulo attempted to preserve immigration channels that had been established since the 1820s. The immigration policy remained focused on poor, credit-constrained and, initially, German-speaking immigrants. On the other hand, landowners experimented more intensely with alternative labor-rental arrangements, until the consolidation of the so-called *colonato system* – usually associated to the mass immigration of Italians as of the 1880s.

In terms of labor-rental arrangements, the *colonato system* was the most important and enduring innovation of this period¹³⁹. It consolidated a mixed contract that had two complementary remuneration systems. The first comprehended a variable remuneration based on the performance of the households in the annual harvesting. This was usually a share of the yearly profit from the harvest, constituting a remnant of sharecropping as applied in the 1840s-50s¹⁴⁰. The second included fixed remunerations per piece-rate executed during the lean season for the maintenance of the coffee trees. This scheme commenced as a variation of sharecropping contracts that stipulated side payments for agricultural tasks not specified in the contracts¹⁴¹. These tasks tended to have high monitoring costs and outcomes that could not be assessed as clearly as the harvesting, e.g. the pruning and weeding of the coffee trees.

¹³⁸ Hatton and Williamson (2004, pp. 23-7) and Ferrie and Hatton (2015, p. 65) outline the position of Brazil in international labor markets in this period. Dean (1977, p. 162), Holloway (1978), Stolcke and Hall (1983, p. 182) and Lamounier (1986, pp. 20, 146, 154) discuss the establishment of a rural proletariat in São Paulo.

¹³⁹ For a contemporaneous description of labor arrangements in 1870 by José Vergueiro, see *Correio Paulistano* (11/10/1870, pp. 1-2). For a general review of the *colonato system*, see Bassanezi (1986).

¹⁴⁰ Stolcke and Hall (1983, p. 179), Martins (1989, pp. 8, 20-2) and Viotti da Costa (1998, p. 240) also interpret the *colonato system* as a continuation of the experiments carried out with sharecropping.

¹⁴¹ Bardhan (1977), Lucas (1979), Alston and Ferrie (1985) and Kotwal (1985) discuss the application of side payments in sharecropping arrangements for tasks with high monitoring costs.

Another novelty was the expansion of labor arrangements based on fixed payments per piece-rate or time worked. These regimes had been applied for long to rural laborers who cleansed forestry for the formation of plantations¹⁴². However, in the 1860s, landowners started employing these labor arrangements systematically for ordinary rural tasks as well¹⁴³. This paved the way to wage-based remunerations, including a first systematic experiment with a farm run only with free Portuguese laborers in the 1860s¹⁴⁴.

Finally, contracts started being diversified for the cultivation of different crops. This was the case with Bernardo Gavião, who offered alternative contracts to Portuguese laborers after a failed coffee harvest in 1870. In his coffee plantations, the *colonato system* prevailed at the time. For planting sugarcane, laborers were offered a sharecropping contract with a 2/3 share to be paid as land-rentals. Disillusioned with the outcomes, the immigrants abandoned the crop, but received a fixed payment for the completed tasks. A similar contract was applied to tobacco cultivation; the 2/3 share was used to amortize the debt incurred by households during the planting of the trees¹⁴⁵.

Despite these important innovations, sharecropping retained a prominent position in the 1870s.

Some of the leading hiring families of the 1850s kept their enthusiasm for this specific labor-rental arrangement: Francisco de Souza Queiroz considered sharecropping as the usual employment system in São Paulo by the end of the 1860s; praising the accomplishments of the deceased Senator Vergueiro, Francisco kept hiring German-speaking sharecroppers¹⁴⁶. Moreover, the accumulated expertise of landowners with this labor arrangement implied a greater acceptance of its clauses than those of alternative contracts, even if the latter proved to be successful, as it seems to have been the case with the first application of the wage system mentioned above. Furthermore, the defense of sharecropping became a Brazilian response against accusations raised in the German parliament in 1872 about the precarious working conditions of immigrants. To defend sharecropping as a non-exploitative labor relation meant

¹⁴² Labeled as *camaradas*. For Italian immigrants in these positions, see Stolcke and Hall (1983, footnote 85).

¹⁴³ Martins (1989, p. 23) shows the simultaneous application of these various types of contracts in the plantations.

¹⁴⁴ Witter (1974, pp. 409-10) and Lamounier (1986, pp. 45-7). There are innumerable contemporary references to this farm, named *Nova Lousã*. The reports in *Diário de S. Paulo* (11/03/1870, p. 2; 22/03/1872, p. 2) are particularly interesting in their analysis of the hiring method applied by the farmer. For the biography of its founder and the history of this institutionally advanced farm, see Freitas (2013).

¹⁴⁵ *Correio Paulistano* (01/11/1872, p. 2).

¹⁴⁶ For the arrivals of immigrants see *idem* (20/06/1869, p. 1; 10/08/1869, p. 2; 15/06/1870, p. 1).

also defending the foundations of the immigration policy carried out in São Paulo since the 1840s¹⁴⁷.

On the other hand, the idea that the indebtedness of immigrants could be a source of economic inefficiency or of political distress gained attention, especially in light of the sharp and recurrent critics against the Brazilian immigration policy raised in the German States¹⁴⁸. A simple solution would be the substitution of a perfectly elastic supply of immigrant labor for the control that farmers had over labor via indebtedness. As paradoxical as this may sound, José Vergueiro was one of the first proponents of this idea¹⁴⁹; his suggestion was to promote a massive immigration from 10,000 to 20,000 settlers for public lands and from 100,000 to 200,000 agricultural laborers¹⁵⁰. Similar views underpinned the projects for the full subsidization of immigration¹⁵¹. According to this policy, foreign households who accepted agricultural employment upon arrival in São Paulo would have their transportation costs covered by the provincial budget. This proposition required about one and a half decade to mature. Nevertheless, publicly subsidized immigration attracted a substantial share of the *ca.* 1.15 million foreigners gross-immigrated to São Paulo from 1885 to 1914¹⁵².

Nevertheless, this radically new solution to the labor question kept the credit interlinkage fundamentally unaltered. Clearly, the political and economic elites of São Paulo insisted in the policy of attracting poor and credit-constrained foreign laborers. As argued in the next section, this was a deliberate strategy to obtain foreign labor without reforming domestic institutions to make Brazil more attractive to non-bonded immigrants. The credit interlinkage allowed for the consecution of this goal in the 1880s-90s as it had done since its proposal in 1835. Relatedly, the credit interlinkage permitted ex-slaveholders to constrain pure market-oriented labor relations. Planters kept attempting to restrain the competition for labor. Even forward-thinking landowners like Bonifácio do Amaral, Gavião Peixoto and José Vergueiro complained about the supply of incentives to lure laborers from other farmers¹⁵³. In this context, credit obligations

¹⁴⁷ *Idem* – 1872 (04/08, p. 2; 04/09, p. 2; 05/09, p. 1). For the centrality of sharecropping contracts in the Bonifácio do Amaral – José Vergueiro debate, see *Gazeta de Campinas* (08/05/1870, p. 1).

¹⁴⁸ See *Correio Paulistano* (04/03/1874, p. 2) and the quote in Viotti da Costa (1998, p. 130).

¹⁴⁹ José Vergueiro maintained his prominence in the immigration policy, but had to deal with the economic crisis of *Vergueiro & Co.* He defended the bailout of the firm in 1865 also to preserve “60 years of intelligent and active work as well as the patriotic efforts of an entire family” (*Diário de S. Paulo*, 16/01/1868, pp. 1-2).

¹⁵⁰ *Correio Paulistano* (11/10/1870, p. 2).

¹⁵¹ Levy (1974, p. 55), Dean (1976, p. 488; 1977, p. 95), Holloway (1978, pp. 194-5, 204-6), Lamounier (1986, pp. 152, 154), Viotti da Costa (1998, p. 328) and Petrone (2004, pp. 327 ff.).

¹⁵² Levy (1974, Appendix Table 8).

¹⁵³ *Correio Paulistano* (11/10/1870, pp. 1-2; 01/11/1872, p. 2; 11/07/1874, pp. 1-2) and the case described in *Gazeta de Campinas* (06/08/1874, pp. 1-2). A similar opposition to competition for indentured labor was observed in the U.S. in the seventeenth and nineteenth centuries (Reid, 1973, pp. 109-10, 124; Alston and Higgs, 1982, pp. 338-

partly restrained the high turnover and mobility that characterized labor markets in São Paulo after the beginning of mass immigration.

Finally, this period was marked by the founding of new organizations to promote immigration. They aimed at regaining credibility in Europe and functioning as joint ventures to increase the gross-immigration of laborers¹⁵⁴. Having José Vergueiro as one of its proponents, *Associação Auxiliadora da Colonização e Imigração* hired mainly German-speakers in a process resembling that established by *Vergueiro & Co.*¹⁵⁵. As of 1886, the *Sociedade Promotora da Imigração* became a cornerstone for the mass immigration of Italians to São Paulo¹⁵⁶. Founded as a consortium of coffee planters, this society integrated the processes of hiring, transporting, lodging and matching landowners and laborers. Given its importance, it ended up incorporated by the state of São Paulo in 1895¹⁵⁷.

In conclusion, profound contractual and institutional innovations in immigrant labor markets took place between 1835 and 1890. Most of them were responses to the socioeconomic convulsions stemming from the long abolition of slavery, as well as a learning process triggered by labor riots and endogenous changes in immigration policies. Nevertheless, the history of labor-credit interlinkages in São Paulo is one of continuity. Sharecropping expanded as a contractual arrangement because of the emulation of its clauses by farmers following the first hirers, who enjoyed privileged and powerful economic and political positions. Clauses from contracts signed in the 1840s-50s continued to influence the design of other labor arrangements far after the heydays of sharecropping. The bonding of labor via credit, in turn, was a constant in the Brazilian immigration policy. Although the private-public relations in the provision of credit to immigrants changed substantially over time, bonding labor via an outstanding debt was the main response of Brazilian public authorities and of landowners demanding immigrant labor to the relatively low attractiveness of the coffee plantations in international labor markets. The next section attempts to explain the two principal phenomena discussed in this historical analysis. I first ask why sharecropping prevailed as the first labor-rental arrangement. In the

9; and Galenson, 1984, p. 5). Acemoglu and Wolitzky (2011) argue that producers tend not to compete with each other in coercive regimes.

¹⁵⁴ Correio Paulistano (21/05/1875, p. 1).

¹⁵⁵ *Idem* – 1875 (10/03, p. 2; 02/04, p. 3; 03/04, p. 4; 04/04, p. 4; 21/05, p. 1; 23/06, p. 3; 24/06, p. 3; 26/06, p. 4; 02/07, p. 4; 03/07, p. 4; 11/08, p. 3; 07/09, p. 3; 08/09, p. 3; 12/09, p. 3). For the history of the association, see *Gazeta de Campinas* (03/04/1870, p. 2), Viotti da Costa (1998, p. 234) and Petrone (2004, pp. 328-9).

¹⁵⁶ Viotti da Costa (1998, p. 237) and Petrone (2004, pp. 330-1).

¹⁵⁷ Dean (1977, p. 152), Holloway (1978, pp. 193-7) and Siriani (2005, p. 99).

sequence, the inquiry is on why the Brazilian immigration policy depended so extensively and for so long on the credit interlinkage.

5. The rationale of sharecropping and bonded labor: a theoretical analysis

The prevalence of sharecropping in different historical contexts and across regions with the most diverse geographic characteristics is a puzzle that has intrigued theorists and historians alike¹⁵⁸. The literature has attempted to explain this pervasiveness by either dismantling the argument that sharecropping is an inefficient labor-rental arrangement or by demonstrating other benefits that it entails. The prevalence of sharecropping in the transitional economy of São Paulo adds to this puzzle.

This section proposes some theoretical explanations as to why sharecropping consolidated as the first labor-rental arrangement applied to European bonded laborers in Brazilian coffee plantations. In particular, I am interested on why sharecropping predominated over the alternatives of fixed rents and wage systems as the labor-rental dimension of the first contracts successfully enforced with non-captives.

To this end, I develop a simple model in which landowners maximize their rents subjected to the participation constraint of potential immigrant bonded laborers; a linear credit-labor interlinkage allows landowners to derive rents from immigrants' labor supply and from loans advanced to them¹⁵⁹. Although the model is derived primarily to explain the adoption of sharecropping in the initial phases of the transition from slavery – *i.e.* it has no dynamic component and is based on assumptions that characterize well, I argue, only that specific historical moment –, it nonetheless allows for some further inquiry into the relationship between sharecropping contracts and the bonding of labor. Considering that the latter outlived the specific clauses of sharecropping, the final question of this section is then about the economic and political rationale of the credit interlinkages.

The theoretical analysis implies that a rent-maximizing landowner looking for a stable supply of laborers had no particular reason to adopt sharecropping as the labor-rental dimension of an interlinked contract. In particular, the model shows that landowners faced potentially the same

¹⁵⁸ For a review, see Bardhan (1980), Byres (1983) and Caballero (1983). Moreover, see the research motivation in Bardhan and Srinivasan (1974), Quibria and Rashid (1984) and Garrido (2017).

¹⁵⁹ I discuss the model and its results in the main text, leaving its formal derivation to the appendix.

per worker costs if sharecropping, fixed rents, or wage systems constituted the labor-rental dimension of the contracts. I therefore argue that the first propositions to adopt this specific contract resulted from the emulation of similar arrangements applied internationally and in other historical periods. Relatedly, I argue that the expansion of sharecropping in the 1850s and the influence it exercised on other labor arrangements were a consequence of path dependence. The expertise accumulated with sharecropping by the mid-nineteenth century determined the perpetuation of some of its characteristics into other arrangements, such as the *colonato system*.

A similar argument about path dependence applies to the credit interlinkage. The continuity of this contractual component has important implications to the history of immigration to Brazil. The focus on poor and credit-constrained immigrants, with fewer or no alternative destinations, was constant in the Brazilian immigration policy. The theoretical model shows that the credit dimension was malleable enough to lead to the same optimality conditions, irrespective of the labor-rental dimension of the contract. This partially explains the survival of credit interlinkages long after the decline of sharecropping.

5.1. The adoption of sharecropping: theoretical and historical explanations

5.1.1. A review of theoretical explanations

Theoretical explanations for the prevalence of sharecropping during the first phase of the transition from slavery in Brazil oscillate between two traditions. On the one hand, more macro-oriented explanations assume an evolutionary perspective about changes in labor relations in the economy at wide. On the other hand, more micro-oriented approaches emphasize the economic rationale of different labor arrangements applied at the level of the farms¹⁶⁰.

Theories of stages of development usually support the macro approach, being particularly influential in classical historical analyses in Latin America¹⁶¹. Simply put, these theories posit an evolutionary process that starts with slavery and closes with modern labor markets. One strand of the Brazilian historiography used this benchmark to describe the transition from slavery as a process that led to the adoption of increasingly more efficient labor arrangements. Under this perspective, labor markets for non-captives would have departed away from the least

¹⁶⁰ This is only a schematic view, as both are concerned with the adoption of contracts by farmers and the consequences for the total labor supply. Lagerlöf (2009, pp. 321) proposes a similar divide in surveying the literature on coercion.

¹⁶¹ See the review in Otsuka *et al.* (1992, p. 1973, footnote 51) and Sadoulet (1992, pp. 1031-2).

productive arrangement of sharecropping, as this was the first labor-rental arrangement that prevailed in the coffee plantations during the transition from slavery¹⁶². Another strand, broader in scope, characterized slavery as a backward stage of economic development¹⁶³. Its gradual abolition was endogenously related to technological adoption and innovation, to the freeing up of capital previously invested in slaves, to the development of market institutions and to a rationality more tilted towards efficiency. In this all-encompassing sociological and economic interpretation, labor regimes employed in the final periods of the transition would necessarily overtake previous arrangements because of their earlier proximity to slavery¹⁶⁴.

The observation that different labor regimes coexisted in relatively narrow areas led to the first implicit rejection of theories of a transition based on clearly identifiable phases¹⁶⁵. Other criticisms of theories of stages of development gained strength with the advancement of a literature that attempted to rehabilitate the rationale of sharecropping against ingrained theoretical traditions that linked share contracts to allocative inefficiency¹⁶⁶; disincentives towards investments¹⁶⁷; and patron-client relations¹⁶⁸. As Stiglitz (1974, p. 251) summarizes, “[i]t is not as if landlords and workers, anticipating the analysis of Marshall and other economists, discovered that [sharecropping] provided too little incentive to work and therefore they replaced an inefficient payments system with a more efficient one”. These new theoretical developments stressed the role of sharecropping as a mechanism of risk-sharing¹⁶⁹; of screening for land-renters of different risk and productivity types¹⁷⁰; of lowering transaction costs in labor markets¹⁷¹; and of creating implicit markets for non-tradable services, such as managerial skills and labor monitoring¹⁷². Moreover, this literature has shown how missing or incomplete markets affect each other. If land, labor, or credit markets are interlinked and at least one is missing or incomplete, then sharecropping can lead to higher allocative efficiency¹⁷³. Finally, recent empirical evidence has shown that the historical enforcement of sharecropping in

¹⁶² Witter (1973, 1974, 1982). Petrone (2004, pp. 324-6) adopts a similar categorization of phases of development, but stresses the importance of the coexistence of various labor arrangements in the coffee plantations.

¹⁶³ The view that slavery was economically backward has been continually challenged since the 1970s. For a review, see Eltis (1983, p. 266), Lagerlöf (2009, pp. 319, 335) and Acemoglu and Wolitzky (2011, pp. 557-60).

¹⁶⁴ Ianni (2004, pp. 363-4) and Viotti da Costa (1998).

¹⁶⁵ Stolcke and Hall (1983) and Lamounier (1986). Hints in this direction are also in Buarque de Holanda (1941).

¹⁶⁶ For a review of opposing theories on the efficiency of sharecropping, see Otsuka *et al.* (1992).

¹⁶⁷ Newbery (1977, p. 585) and Quibria and Rashid (1984, pp. 103) discuss the history of this negative perception.

¹⁶⁸ Higgs (1894, pp. 4-9), Camara (2006, pp. 215, 226) and Garrido (2017, pp. 989-90) discuss norms supporting sharecropping. For paternalism and indenture, see Bardhan (1980, pp. 94-6) and Lee and Kaufmann (1997, p. 467).

¹⁶⁹ Cheung (1969), Stiglitz (1974), Reid (1975) and Newbery (1977).

¹⁷⁰ Allen (1982), Shetty (1988) and Basu (1992). Braverman and Guasch (1984) deal simultaneously with screening and credit-labor interlinkages.

¹⁷¹ Cheung (1969), Reid (1975), Bell and Zusman (1976), Lucas (1979) and Alston, Datta and Nugent (1984).

¹⁷² Eswaran and Kotwal (1985) and Braverman and Stiglitz (1986).

¹⁷³ Bardhan (1980) and Braverman and Stiglitz (1982).

southern Europe was indeed allocative-inefficient; nevertheless, this land-rental arrangement had a clear economic rationale, as it allowed for long-term investments in the planting of crops, especially in viticulture¹⁷⁴.

In this context, Stolcke and Hall (1983) pioneered the more micro-based explanations for the choice of labor arrangements in the plantations of São Paulo. They identified two main reasons for the adoption of sharecropping. The first recognized that sharecropping contracts had a labor and a land-rental dimension. This gave more agency to immigrant households in allocating their labor force; and because these households could produce subsistence goods, the sharecropping contract reduced the unitary costs faced by landowners in maintaining the laborers. Moreover, contrary to prevailing interpretations that sharecropping was inefficient, these authors defended that an income that varied with the annual harvest incentivized immigrants to increase their labor effort.

While the first explanation has the merit of recognizing the different dimensions imbued in a single contract, the second ignores the classical argument that sharecropping is inefficient precisely because it extracts a fixed share of produce independent of the level of effort. Furthermore, the direction of the effect is not as obvious as Stolcke and Hall (1983) propose. Because labor was interlinked to a credit dimension, the expectation of a poor harvest could indeed incentivize risk-averse households to put more effort into production. However, nothing impeded that the disillusionment with a bad harvest - implying an increasing indebtedness - could lead bonded laborers to abandon the cash crops or to riot, as they frequently did¹⁷⁵.

This motivates us to look for an alternative rationale of sharecropping. The historical analysis suggests three other explanations for its consolidation in Brazilian plantations.

First, by exploring the credit dimension of the interlinkage, landowners could have used the alleged allocative inefficiency of sharecropping to increase the length of the contracts. This proposition assumes that sharecropping induces laborers to put a sub-optimal level of effort into production, *i.e.* the classical Marshallian inefficiency of sharecropping. In this case, landowners could be trading effort for a secure supply of labor: with laborers bonded by debt, low effort would imply a longer duration of the contract. The validity of this explanation depends on the adequacy of the Marshallian inefficiency of sharecropping to characterize that specific

¹⁷⁴ Carmona and Simpson (1999, 2012) and Garrido (2017). Camara (2006) presents a similar argument without focusing on specific crops; Garrido and Calatayud (2011) adopt the same reasoning, but for fixed rents in Spain.

¹⁷⁵ Stolcke and Hall's (1983) argument would be in line with Acemoglu and Wolitzky (2011, pp. 557, 567-8, 571-2), whose model posits that coercion and effort are complementary.

historical moment; its actual occurrence in the coffee plantations of São Paulo is an empirical question that has been so far scrutinized only under thin evidence, given the scarcity or spread of the required data. Moreover, it ignores that suboptimal efficiency cannot generate a long-term equilibrium and that risk-averse landowners would not accept contracts that increased excessively the risk of default of laborers.

Second, sharecropping could have been adopted because its risk-sharing feature increased the pool of potential immigrants also among the most risk-averse European laborers. However, fixed remunerations or wage systems would have been a simpler solution in this case, as landowners would bear the risk alone. This was, indeed, an important motivation to substitute sharecropping with fixed remunerations in the 1860s¹⁷⁶. Furthermore, in the sharecropping contracts designed by *Vergueiro & Co.*, the shares applied not only to the land-rentals, but also and most importantly to the labor dimension¹⁷⁷. Under this setting, it is not clear whether sharecropping provides a risk-sharing mechanism to the laborer, because not only the land-rental paid to the landowner is a share, but the labor-income of the immigrant also becomes a share of a varying output. Variations in the international price of coffee and the lack of immigrants' control over its marketing were important sources of risk to the bonded laborers¹⁷⁸. Finally, this explanation ignores that landowners could be risk-averse as well. While this was not a problem for the potentates that first employed sharecropping, the risk-aversion of farmers gained importance with the expansion of sharecropping in the 1850s – even if *Vergueiro & Co.* carefully increased contractual controls to give more security to landowners¹⁷⁹.

Third, sharecropping can be designed to explore the comparative advantages of the contracting parties over labor and capital. In this case, sharecropping compensates for the nonexistence or incompleteness of markets. From a purely economic point of view, this explanation describes well the experience in the Brazilian coffee plantations¹⁸⁰. In the rural economy of São Paulo, landowners provided the managerial skills in organizing production and marketing output; immigrants, in turn, supplied an adequate level of effort in production by closely monitoring the labor of each household member. Sharecropping allowed immigrants to choose their level

¹⁷⁶ Viotti da Costa (1998, pp. 148-9).

¹⁷⁷ Stolcke and Hall (1983) discuss this theoretical channel as well.

¹⁷⁸ Buarque de Holanda (1941, p. 31), Witter (1974, p. 434) and Viotti da Costa (1998, p. 149; 2004, pp. 193-5).

¹⁷⁹ Dean (1977, p. 101), Stolcke and Hall (1983, p. 177) and Viotti da Costa (1998, p. 131). Petrone (2004, p. 325) highlights the importance of transparency in the design of labor contracts. Lamounier (1986, pp. 39, 51, 70, 116-7, 121-2), in turn, shows that the period was marked by intense legislative discussions on how to judicially protect landowners' investments in immigrants.

¹⁸⁰ Eswaran and Kotwal (1985). In particular, "[...] sharecropping would dominate when markets are either absent or underdeveloped and the class structure is polarized" (p. 361).

of effort and gave them operational freedom¹⁸¹. At the same time, a firm like *Vergueiro & Co.* had a clear comparative advantage in the international marketing of the agricultural output¹⁸². However, this view has an implication to the political economy of labor relations that is fundamentally at odds with the historical analysis of the current paper. By exploring the synergies between capital and labor, this theoretical explanation considers sharecropping as an arrangement that harmonizes the interests of the contracting parties. As Eswaran and Kotwal (1985, p. 353) put it, sharecropping is “a partnership arrangement in which both agents have incentives to self-monitor”¹⁸³. This harmonious view fails to explain the intense labor disputes, violent riots and their long-termed consequences for immigration policies, which triggered deep contractual modifications over time¹⁸⁴. On a related note, this explanation disregards potential inequality in assets between landowners and laborers. As Acemoglu and Wolitzky (2011, p. 569-72) show, inequality is central for the emergence of more stringent forms of labor coercion.

5.1.2. *Alternative explanations: credit-labor interlinkages and the historical dependence of sharecropping*

Notwithstanding the abundance of mechanisms suggested, none of the previous theoretical explanations provides a clear-cut reasoning for why sharecropping prevailed in Brazilian coffee plantations in the 1850s. A central argument of the current paper is that sharecropping was not an unequivocal solution to the labor problem in the transition from slavery. The lack of an all-encompassing theoretical underpinning for its adoption suggests, in addition to the historical discussion, that other arrangements could have led to the same economic results.

Sharecropping, fixed rents and wage systems can indeed lead to the same *per worker costs* with a contract that interlinks these labor-rental dimensions to credit. From an economic point of view, it is possible to design an interlinkage that makes landowners indifferent among these three arrangements. That is what appendix does by modelling a partial equilibrium, in which a landowner maximizes rents subjected to the participation constraint of bonded laborers. Landowner's rents include two dimensions. The production dimension implies that labor is demanded under either sharecropping, or fixed rents, or wage systems. The credit dimension

¹⁸¹ Stolcke and Hall (1983, p. 174) and Lamounier (1986, p. 24) as well as quotes of Tschudi therein (footnote 9).

¹⁸² Dean (1971, pp. 613-4, 617-9) and Levy (1974, p. 51). For a view on the capital needs to succeed in that export economy, see Leff (1972, p. 491).

¹⁸³ They notice that “[...] in the Philippines the word for sharecropping also means partnership” (*ibid.*, 1985, p. 353). Remarkably, the Portuguese term for sharecropping can be translated literally as *partnership* as well.

¹⁸⁴ See *Appendix II*.

determines the participation constraint of the laborers, as I assume that laborers are foreigners that require credit to immigrate to a Brazilian plantation.

The model is derived under two scenarios.

The first assumes no productivity differentials among the three labor-rental regimes. Under this circumstance, the credit-labor interlinkage allows for the equalization of the *per worker costs* of sharecropping, fixed rents and wage systems. Consequently, landowners could have been indifferent among these alternative labor-rental arrangements once the credit dimension was added to the contract. This result describes well the situation faced by landowners in the early 1850s, when the adoption of sharecropping still had a tentative nature and the parties involved were not preoccupied with the efficiency of the labor-rental arrangements.

The second scenario is based on the assumption that sharecropping was less efficient than fixed rents and wage systems, which are treated as equally efficient in the model. The first part of the assumption – *i.e.* the low efficiency of sharecropping – is based on the classical interpretation of the Marshallian inefficiency of sharecropping arrangements¹⁸⁵. For the second part of the assumption to hold – *i.e.* the efficiency equalization of fixed rents and wage systems –, one needs further to assume that labor monitoring was costless to the landowner and perfectly enforceable. Under these circumstances, the model shows that there is no possibility of equating the *per worker costs* among the three labor-rental regimes. Results thus lead to the conclusion that the consolidation of a perfectly competitive wage system would either cancel productivity differentials among the labor arrangements or lead to the elimination of the least productive.

Ranking productivity differentials between sharecropping, wage systems and fixed rents is an empirical question that cannot be answered satisfactorily with data currently available.

Nevertheless, the assumption of no-productivity differentials in the first scenario describes well the first phase of adoption of sharecropping in Brazilian coffee plantations. The historical analysis showed that, in the early expansion of sharecropping, farmers had little knowledge about contractual clauses and their mechanisms. Even well-informed landowners, such as Bonifácio do Amaral, adopted sharecropping in the early 1850s only because they were unaware of alternatives. Therefore, at least in the initial economic calculations of landowners, the first scenario does seem adequate. Moreover, from a theoretical point of view, interlinkages

¹⁸⁵ See discussion in Stolcke and Hall (1983, p. 174): “It has long been maintained that sharecropping is less efficient than wage labour [...]”, a proposition they justify with the Marshallian inefficiency of sharecropping.

allow landowners to play with the credit dimension of the contract to lead to an efficient allocation in the labor dimension. Under this perspective, no-productivity differentials in the labor dimension could even be seen as an outcome of the interlinkage, not as an assumption¹⁸⁶.

To be sure, this proposition that landowners were indifferent between these three labor-rental dimensions under a credit interlinkage provide a hypothesis to the literature, not a tested result. Nevertheless, this hypothesis is endorsed by theoretical reasoning and solid historical evidence.

On the other hand, the assumption of productivity equality between wage system and fixed rents in the second scenario might be questionable both historically and contemporaneously. Nevertheless, in our view, the fact that immigrants were hired as entire households supports this assumption. This format of immigration had the potential to increase the self-monitoring of family members, who were *jointly* responsible for the outstanding debt of the entire household. Nevertheless, if one agrees with this argument, it would be hard not to apply the same logic to sharecropping as well – and, in this case, we would be back to the previous scenario of non-productivity differentials.

Finally, Section 3.2 showed that excessive monitoring was one of the leading causes for the debacle of the experience with Portuguese contract laborers in 1840-42. This remarkable case was not an isolated one: a plethora of labor complaints during riots included questions on monitoring. This observation obviously weakens the assumption that monitoring costs were non-relevant. If this is true, then the relationship between sharecropping and wage systems would be significantly more complex than the strict lower efficiency of sharecropping proposed in the second scenario. The Marshallian inefficiency of sharecropping would stand against the costly labor enforcement of a wage system. Sharecropping could then be legitimately assumed as more, less, or equally efficient as the wage system. From a theoretical point of view, this would alter the relationship between the *per worker costs* of sharecropping and of the wage systems. Nevertheless, this modification would not alter the qualitative conclusions of the model in the second scenario, which is derived by comparing the PWCs of sharecropping to that of fixed rents.

In short, if the first scenario is indeed the historically most adequate setting to describe the first phase of adoption of contract labor in São Paulo, then the theoretical analysis of the labor-credit interlinkage leads us to the conclusion that landowners were indifferent between sharecropping

¹⁸⁶ I thank Stephan Klasen for discussions about this theoretical argument.

and alternative labor-rental regimes. Consequently, the theoretical reasoning of why the former prevailed in São Paulo in the 1850s requires a complementary historical explanation. This approach is in line with the literature that considers sharecropping as an institution in itself, over and above a simple contract externally enforced¹⁸⁷. As such, this labor-rental arrangement can be understood comprehensively only if complemented by considerations of political, sociological and historical nature¹⁸⁸.

This paper therefore proposes that sharecropping was adopted in the coffee plantations of São Paulo as the result of a long learning process that involved emulations of other historical and international experiences. Important precedents that influenced Brazilian politicians were the well-known and long-lived French *métayage* and its “share correspondent” in the U.S., as discussed by Marshall¹⁸⁹. During the first two decades of the nineteenth century, these mechanisms of land rental and labor allocation fomented political discussions about the organization of rural production in the newly founded Brazilian Empire. Other political references in this period mentioned sharecropping as applied in the Madeira Archipelago¹⁹⁰; experiences with sharecropping in the Iberian Peninsula were likely influential among Brazilian elites. Having studied Law at the University of Coimbra, Senator Vergueiro was probably acquainted with the so-called *contractos de meia* and *contractos de colonia*¹⁹¹. The former was a share contract, usually on a fifty percent basis¹⁹². The latter constituted a type of perennial tenancy¹⁹³. Both prevailed in the Madeira Island since the 1750s. Moreover, potential immigrants were probably not taken aback by this labor arrangement either, as forms of bonded sharecropping were common in the German-speaking world by the nineteenth century¹⁹⁴. Luiz Vergueiro, the head of the 1835 consortium, was most likely acquainted with this juncture in the German States after having studied Law at the University of Göttingen¹⁹⁵.

¹⁸⁷ Bardhan and Srinivasan (1974, p. 48), Bardhan (1980, pp. 87-90) and Quibria and Rashid (1984, pp. 108-9). Koo (1973, p. 579) argues that even the fundamental parameter of rentals “[...] will depend on the historical accident, custom or institutional factors”.

¹⁸⁸ For its links to history, see Koo (1973, pp. 579-80), Stiglitz (1974, pp. 251-2), Bell and Zusman (1976, pp. 578-9), Bardhan (1977, p. 105; 1980, pp. 82-7), Mitra (1982, p. 167) and Otsuka *et al.* (1992, pp. 1976-7, 2003-4).

¹⁸⁹ Marshall ([1894] 2013, p. 535). See also Higgs (1894) and Hoffman (1984).

¹⁹⁰ Buarque de Holanda (1941, p. 19) and Dean (1977, p. 194, footnote 5).

¹⁹¹ Camara (2006). It is tempting to trace a parallel between the title of this contract and the term “sharecropping colony [*colonia de parceria*]” as adopted by Senator Vergueiro. See also footnote 51.

¹⁹² *Meia* can be literally translated as “half”.

¹⁹³ Garrido and Calatayud (2011) discuss how ownership over investments – similar to the Madeira Island’s *contracto de meia* – actually led to land-rental contracts based on fixed rents, rather than sharecropping.

¹⁹⁴ Anderson (2001, pp. 11-3, footnote 8) discusses forms of tied and free sharecropping in eastern Westphalia. Furthermore, part of the report of J. J. von Tschudi reproduced in *Gazeta de Campinas* (07/04/1870, p. 1) mentions the widespread use of sharecropping contracts in large German estates and in Peruvian mines.

¹⁹⁵ Castro (n.d., p. 25). I thank Leonardo Gardenal for this information, which deserves further historical scrutiny. José Vergueiro had also studied in the German States, according to Tschudi ([1866] 1953, p. 134).

The same argument about historical and international emulations applies to the bonding of labor¹⁹⁶. Arrangements to bond labor played a central role in the settling of the U.S., where the market for redemptioners was abundantly supplied by laborers from the German States since the early seventeenth century¹⁹⁷. Like in Brazil later on, credit interlinkages – independent of the labor-rental dimension of the contracts – allowed for the emigration of the poor. Some of these arrangements persisted in the U.S. until the 1820s¹⁹⁸. However, it was in the Caribbean and South America that indentures and other forms of labor tying regained most ground in the nineteenth century, especially with Asian immigrants¹⁹⁹. Brazilian politicians and public commentators that favored the hiring of bonded Chinese *coolies* highlighted these other Latin American experiences in tying the labor of Asians²⁰⁰. The specific immigration of Chinese *coolies* did not take off in Brazil, but it reflected an extreme version of the tying of labor – a strategy that indeed pervaded the entire history of immigration to São Paulo²⁰¹.

5.2. The bonding of labor and the pervasiveness of the credit dimension

5.2.1. The political rationale of the credit-labor interlinkage

If one single feature characterizes the Brazilian immigration policy in the period 1820-1920 it is its strategic focus on poor and credit-constrained households. The consecution of this strategy was independent of labor-rental arrangements, as the credit dimension of the interlinkage was malleable enough to adapt to any of the labor regimes considered in this study.

This pervasiveness of the credit-labor interlinkage resulted from the intersecting interests of the elite of coffee planters and the elaborators of the Brazilian immigration policy, in a symbiosis that grew tighter over time. It also met some objectives of sending countries, in particular of the German States and Switzerland. In spite of the opposition that grew stronger in the second half of the nineteenth century, emigration by the mid-nineteenth century was seen as a measure

¹⁹⁶ Buarque de Holanda (1941), Witter (1974) and, to a lesser extent, Dean (1977) explain the adoption of sharecropping in São Paulo as a mimicking of indentures. However, the distinction between sharecropping and bonded labor is not always clear. This is different from Leff (1972, p. 491), who sees landowners' avoidance of free land tenures as an explicit mechanism to tie labor.

¹⁹⁷ Galenson (1984, footnotes 33, 43, 52) and Grubb (1994, p. 797). See also the summaries of Eltis (1983) and Donoghue (2013). For its diminished importance in the nineteenth century, see Wegge (2002, p. 386).

¹⁹⁸ Engerman and Margo (2010, p. 303). They notice that bonded labor was prohibited in the U.S. only in 1885.

¹⁹⁹ Buarque de Holanda (1941, p. 18), Galenson (1981) and Engerman (1983).

²⁰⁰ Leff (1972, p. 492), Conrad (1975), Lamounier (1986, pp. 131, 135) and Viotti da Costa (1998, p. 187).

²⁰¹ For abuses against Asian indentures and the views of Brazilian politicians, see Yang (1977).

of poverty relief. In the 1850s, *Vergueiro & Co.*'s hiring in Switzerland involved the councils of emigrants' municipalities, which advanced loans to those wishing to emigrate²⁰².

The credit interlinkage fulfilled the farmers' objective of obtaining a stable and secure supply of laborers during the transition from slavery. This contractual instrument also complied with the political objective of attracting immigrants to Brazil. By focusing on households with fewer or no alternative destinations because of their poverty constraints, this policy allowed for an increased number of immigrants to Brazil without promoting reforms to make the country more attractive to non-bonded immigrants. The period considered here was particularly critical in terms of the international competition for labor: between 1847 and 1854, the U.S. received the highest contingency of immigrants as a share of its population²⁰³. Analysts at the time showed great awareness that the credit-labor interlinkage was the most effective policy to attract immigrants to Brazil under the institutions prevailing in the country. As summarized by a contemporaneous commentator, increasing non-bonded immigration to Brazil would demand reforms to "[...] facilitate land acquisition by the immigrant; allow for religious liberty, civil marriage, easy naturalization; equalize [the rights of] foreigners and Brazilians etc. etc."²⁰⁴

Bonding labor with a credit instrument was an undoubtedly costly policy. In a first moment, it involved the provision of public loans to private hirers and, posteriorly, the public subsidization of immigration. Between 1847 and 1878, about 30 million *mil-réis* were disbursed directly through immigration and settlement policies²⁰⁵. However, these policies delivered the expected results, especially in terms of labor supply. Despite high absolute disbursements, the cost-benefit of these immigration policies was low *vis-à-vis* the increase in coffee exports that it permitted and the resulting public revenues²⁰⁶. Moreover, the institutional reforms mentioned above had an extremely high political and social cost for the Brazilian elites, in general, and for the ruling monarchy, in particular. Contemporaneous political analysts filled records with debates on how to increase the influx of immigrants by allowing for freedom of religion; easing access to landownership; and abolishing slavery itself²⁰⁷. The matter of fact, however, is that the Brazilian Empire fell in 1889 right in the aftermath of the abolition of slavery in 1888.

²⁰² Davatz ([1858] 1941, pp. 142-3 and contract in pp. 233-7). See also Correio Paulistano (12/02/1857, pp. 1-2).

²⁰³ Engerman and Margo (2010, p. 303) and Engerman and Sokoloff (2011, pp. 19, 28). Interestingly, in 1865 the Brazilian central government sent a dispatch to its consulates in Prussia and Saxony informing that the costs differentials between immigrating to Brazil against the U.S. would be covered by the Brazilian government (Correio Paulistano, 14.09.1865, p. 2).

²⁰⁴ Gazeta de Campinas (24/04/1870, p. 2).

²⁰⁵ Viotti da Costa (1998, pp. 183, 248). Dean (1977, p. 152) estimates 42 million *mil-réis* until 1904.

²⁰⁶ Paraphrased from the argument by Petrone (2004, p. 346).

²⁰⁷ Viotti da Costa (1998, p. 186). See Abrantes (1846) for reforms related to landownership and Dean (1971, p. 617) and Witzel de Souza (2012, p. 89) for an evaluation of this source.

Moreover, disputes with the Catholic Church – the state religion of the Brazilian Empire – weakened the monarchists since the 1870s. Finally, landownership remained one of the most delicate issues in Brazilian politics and a restrictive law on access to land was passed in 1850, at the time of immigration of bonded laborers²⁰⁸.

Therefore, it was politically rational for the Brazilian elites to incur the costs of immigration associated with the credit interlinkage rather than to promote those institutional reforms. The consideration was much more of political economy than of public finance. While some forms of subsidized immigration took place in the U.S., American political elites had recognized that civil liberties and access to land precluded the need to subsidize immigration²⁰⁹. Brazilian policy-makers mirrored this strategy, taking exactly the opposite direction.

Various high-ranked authorities explicitly recognized this strategy²¹⁰. The president of the province of São Paulo and a Brazilian consul in Geneva shared the opinion that only bonded labor was feasible as an immigration policy while the country did not promote institutional reforms; twenty years separated their analyses²¹¹. Relatedly, the Brazilian General Consul in Hamburg argued in 1858 that Brazil could expect only the immigration of subsidized households, given that only the poor considered the country as an alternative²¹². Similarly, the Brazilian Consul in the Hanseatic Cities had defended in 1856 that the government of São Paulo should guarantee a collateral security to immigrants, a proposition welcomed by the Swiss Consul in Hamburg as well²¹³. Interestingly, the latter suggested that farmers in São Paulo could experiment with various labor-rental arrangements; these included sharecropping as proposed by *Vergueiro & Co.*, fixed remunerations per day worked and a complex arrangement that mixed fixed payments with shares in smallholdings for land acquisition and contract labor²¹⁴. Finally, a future president of the Brazilian Republic, Manuel de Campos Sales, argued in 1870 that policy-makers were failing not only to modernize institutions to attract immigrants, but

²⁰⁸ Dean (1971), Leff (1972, p. 491), Engerman and Sokoloff (2011, p. 32) and Engerman and Margo (2010, pp. 293, 296-8).

²⁰⁹ Engerman and Margo (2010, pp. 297-8, 302).

²¹⁰ Leff (1972, p. 493) and Sánchez-Alonso (2007, p. 399).

²¹¹ Correio Paulistano (20/02/1855, p. 1) and Diário de S. Paulo (04/12/1875, pp. 1-2).

²¹² Correio Paulistano (21/12/1859, pp. 1-2).

²¹³ *Idem* (12/02/1857, pp. 1-2). Notice the irony of the date of this suggestion: December 26 1856, *i.e.* two days after the *Sharecroppers' Riot*, certainly still not known by the European consular authority.

²¹⁴ This proposition is similar to the indenture contract of the *Virginia Co.* in 1620 (Galenson, 1984, p. 4).

were also risking the immigration of bonded laborers due to the international lack of confidence on the Brazilian judiciary to guarantee an impartial enforcement of labor contracts²¹⁵.

5.2.2. *The economic rationale of the credit-labor interlinkage*

The main economic concern of landowners during the transition from slavery was to obtain a supply of labor that was secure – substituting the increasingly riskier international slave markets – and stable – thus restricting fluctuations caused by labor turnover and mobility in non-captive markets²¹⁶. These were crucial preoccupations of landowners accustomed with a perfect continuity in the elastic supply of slaves until that moment²¹⁷. By interlinking labor to credit, the contracts transformed the flow of secure and stable labor into the main control variable of landowners, as long as they had credit instruments at their disposal.

Immigrants' initial debt corresponded to the costs of overseas and in-land transportation. These costs were determined by the size of the households and their age-sex composition, which allowed landowners to calculate roughly the average productive capacity of the immigrant households thus obtained. To this initial indebtedness, a varying annual parcel was added, comprised by advancements made to immigrants during their stay in the farms.

The time required by an average immigrant household to amortize the debt in the 1850s is still susceptible to doubts. Estimates tend to be based on samples with limited coverage and vary between three and nine years, depending on the priors of the researcher about the productivity of sharecroppers²¹⁸. Notwithstanding the imprecision of the estimates, it is safe to assume that the payback period of an average immigrant household was shorter than the average productive life of a slave, estimated to be around fifteen years²¹⁹. Assuming an expected payback period of five years, landowners hiring bonded laborers had to incur in transaction (recruiting) costs

²¹⁵ Gazeta de Campinas (07/04/1870, p. 1). See Acemoglu and Wolitzky (2011, footnote 3, pp. 561, 569-70, 587-8) for a discussion about the judiciary and general institutions as sources of labor coercion.

²¹⁶ Other elites undergoing deep institutional modifications raised similar pleas, including in the post-bellum American South (Reid, 1973, 1975; Kotwal, 1985) and post-abolition West Indies (Engerman, 1983).

²¹⁷ See Otsuka *et al.* (1992, pp. 1973) for the Latin American problem of transitioning bonded labor into a flux of “modern agribusiness plantations based on free wage labor”. Bardhan (1980, pp. 88-9, 92-4) discusses interlinkage as a form of labor tying.

²¹⁸ Viotti da Costa (1998) and Stolcke and Hall (1983, footnote 32). Dean (1977) notices that three years is a low-bound for an average estimate of five years.

²¹⁹ Viotti da Costa (2004, pp. 178-9). Dean (1977, pp. 84-5) reviews estimates on the productive life of slaves in agricultural tasks; estimates varied between 7 and 13 years, depending on the demographics of the slave force.

three times more frequently than with the buying of a slave – a strong motivation to bond labor, especially if seasonality is important, as it is in coffee harvesting²²⁰.

The credit dimension had also the advantage of being very malleable. An additive credit-labor interlinkage as designed in the model of the appendix always leads to the same optimality condition for the credit dimension, irrespective of the labor-rental regimes. This implies that the credit dimension did not restrict landowners in the choice of the labor-rental arrangements. Conversely, changes in the labor-rental dimension of the contracts did not preclude the possibility of a credit interlinkage.

This result is in line with the interpretation that the bonding of labor via credit was a core characteristic of the Brazilian immigration policy between 1820 and 1920.

The Brazilian historiography has paid surprisingly little attention to the theoretical implications of this continuity in the credit-labor interlinkage. This is partially due to a lack of consensus about the objective functions of the plantation owners. One strand of the literature opposes the thesis that rural labor in the 1850s in São Paulo was a type of debt peonage. According to this view, the “[s]tability of labor on the plantation was a welcome by-product” of the credit interlinkage, not its main goal²²¹. Relatedly, landowners in the 1850s would allegedly have developed an economic rationale that went far beyond controls used in a slave-based society²²². Consequently, landowners aimed at maximizing rents; the obtainment of a stable labor supply was only a means towards that end, not an objective *per se*. The other strand of the literature argues that the control over labor was more important than considerations about productivity or specific labor-rental arrangements²²³. According to this view, bonding labor was an objective on its own to guarantee a stable workforce. The prominence of this goal would be observable not only in the plantations, but also in the institutions that determined labor regulations in the country.

This dissent reflects different conceptualizations about the economic rationality of Brazilian rural elites in the nineteenth century. However, these interpretations are contradictory only at face value. They can actually be synthesized by a model in which landowners maximize rents, but have labor and credit as the choice variables, as pursued in the appendix to this paper²²⁴. In

²²⁰ Bardhan (1980, pp. 92-3), Alston (1981, p. 213) and Mukherjee and Ray (1994, pp. 209-10).

²²¹ Stolcke and Hall (1983, p. 170, footnote 40).

²²² *Ibid.* (1983, p. 188).

²²³ Dean (1977) and Viotti da Costa (1998, pp. 137-47). Stolcke and Hall (1983, footnote 115) explicitly criticize Dean’s views.

²²⁴ In line with Lamounier (1986).

this case, the result that the credit dimension subsists with different labor-rental arrangements holds irrespective of how we justify the motivations of the rent maximizers.

6. Concluding remarks

This paper outlined a history of bonded labor in the plantations of São Paulo by the mid-nineteenth century. Building on some new historical evidence and a theoretical model, I evaluated the choice of labor contracts applied to non-captives during the Brazilian transition from slavery.

The paper showed how the 1850s were characterized by an increasing number of farmers employing bonded laborers, especially under sharecropping contracts. This period was preceded by intense debates about alternative sources of labor *vis-à-vis* the imminent risk of the Brazilian ban on the transatlantic slave trade. The 1860s-70s, in turn, witnessed the substitution of sharecropping by other labor-rental arrangements, including fixed rents and remuneration systems closer to market-based salaries. Nevertheless, the new contracts retained the credit dimension of the interlinkage and their clauses continued to be influenced by those of sharecropping. Finally, the credit interlinkage consolidated as a state policy in the 1880s, when the government of São Paulo started subsidizing the migratory costs of households that accepted employment in the plantations.

The long-lasting influence of the sharecropping contracts and the continuity of the immigration policy based on the credit-labor interlinkage support the two propositions made here.

The first proposition is that sharecropping did not prevail during the first phase of the Brazilian transition from slavery because of a rational economic decision taken by landowners. From the 1830s to the 1850s, alternative projects included a vast array of contractual arrangements, such as indentures, a type of *headright system*, land-rentals under fixed rents, fixed payments per piece-rate or time worked etc. Theoretical results and historical evidence suggest that it was neither necessary nor sufficient that sharecropping would prevail as the first labor-rental dimension of non-captive labor in Brazil. It did so mainly because of path dependence and emulations of other international and historical experiences.

The second proposition is that the credit-labor interlinkage was more important to landowners than specific labor-rental arrangements, creating a thread for the Brazilian immigration policy

that endured from the 1820s to the 1920s²²⁵. Bonding immigrant labor with a credit interlinkage was an arrangement not completely alien to slave-based economies²²⁶. Moreover, the interlinkage had a clear political rationale, as it allowed for the immigration of poor and credit-constrained Europeans. This inserted Brazil into the circuit of the Age of Mass Migration without the promotion of institutional reforms that represented a serious political risk to the ruling elites.

These propositions add to the renewed interest in the rationale and historical pervasiveness of sharecropping and bonded labor. The literature on the historical adoption of different labor-rental arrangements has recently thrived in showing that the rationality of various contractual arrangements is a function of a number of other considerations, much beyond pure concerns about allocative efficiency²²⁷. Other motives include the regulation of property rights over investments undertaken by tenants; risk considerations about the depletion of soil and crops; seasonality; and monitoring. The study of sharecropping contracts with bonded Europeans in the coffee economy of São Paulo contributes with a case in which credit-labor interlinkages provide yet another motive, with a clear political underpinning.

The study of bonded labor and sharecropping in Brazilian plantations is far from exhausted and three research lines seem particularly fruitful. First, there is an urge for collecting quantitative data on labor, credit, production and types of contract prevailing in different Brazilian regions. Both micro and macro evidence are required to test for differences in labor productivity under various contracts, as hypothesized. Second, it is necessary to find more contracts to evaluate their clauses. Only comparative microeconomic analyses of contractual mechanisms will allow us to grasp fully the path dependence in the adoption of sharecropping contracts and their influence on posterior labor arrangements. Finally, the paper provides only the tip of the iceberg in terms of newly available digitized sources. New online archives with automatized search engines shelter an immense quantity of factual evidence for the history of immigration and bonded labor in Brazil and its global context. A systematic review of other newspapers, official reports, travelers' compendia and international press bears an enormous potential.

²²⁵ Sánchez-Alonso (2007, pp. 406-7, 410-1) and Ferrie and Hatton (2015, pp. 64-6).

²²⁶ As classically studied by Reid (1975) and motivated by Kotwal (1985).

²²⁷ Carmona and Simpson (1999, 2012), Camara (2006), Garrido and Calatayud (2011) and Garrido (2017).

7. Bibliography

- Abramitzky, R. and Braggion, F. (2006). "Migration and Human Capital: Self-Selection of Indentured Servants to the Americas". *Journal of Economic History*, vol. 66 – No. 4.
- Abrantes, V. (1846). "Memoria sobre meios de promover a colonisação". Berlin: Typographia de Unger Irmãos.
- Acemoglu, D. and Wolitzky, A. (2011). "The Economics of Labor Coercion". *Econometrica*, Vol. 79, No. 2.
- Allen, F. (1982). "On Share Contracts and Screening". *The Bell Journal of Economics*, Vol. 13, No. 2.
- Alston, L. J. (1981). "Tenure Choice in the Southern Agriculture, 1930-1960". *Explorations in Economic History*, vol. 18.
- Alston, L. J., Datta, S. K., and Nugent, J. B. (1984). "Tenancy Choice in a Competitive Framework with Transaction Costs". *Journal of Political Economy*, Vol. 92, No. 6.
- Alston, L. J. and Ferrie, J. P. (1985). "Labor Costs, Paternalism, and Loyalty in Southern Agriculture: A Constraint on the Growth of the Welfare State". *Journal of Economic History*, vol. XLV – No. 1.
- Alston, L. J. and Higgs, R. (1982). "Contractual Mix in Southern Agriculture since the Civil War: Facts, Hypotheses, and Tests". *Journal of Economic History*, vol. XLII – No. 2.
- Anderson, T. (2001). "Proto-Industrialization, Sharecropping and Outmigration in Nineteenth-Century Rural Westphalia". *The Journal of Peasant Studies*, 29: 1.
- Arlettaz, G. (1979). *Emigration et colonization suisses en Amérique (1815-1918)*. Bern: Archives Fédérales Suisses – Etudes et Sources, vol. 5.
- Bardhan, P. K. and Srinivasan, T. N. (1974). "Cropsharing Tenancy in Agriculture: Rejoinder". *The American Economic Review*, Vol. 64, No. 6.
- Bardhan, P. K. (1977). "Variations in Forms of Tenancy in a Peasant Economy". *Journal of Development Economics* 4.
- _____. (1980). "Interlocking Factor Markets and Agrarian Development: A Review of Issues". *Oxford Economic Papers, New Series*, vol. 32 – No. 1.
- Bassanezi, M. S. C. B. (1986). "Família e Força de Trabalho no Colonato. Subsídios para a compreensão da dinâmica demográfica no período cafeeiro". NEPO/UNICAMP, v. 8.
- Bassanezi, M. S. C. B., Scott, A. S. V., Bacellar, C. A. P., Truzzi, O. M. S., and Gouvea, M. (2008). *Repertório de Legislação Brasileira e Paulista Reference à Imigração*. São Paulo: Editora UNESP.
- Basu, K. (1992). "Limited Liability and the Existence of Share Tenancy". *Journal of Development Economics*, Vol. 38.
- _____. (2003). *Analytical Development Economics. The Less Developed Economy Revisited*. Cambridge, Massachusetts / London: The MIT Press.
- Beiguelman, P. (1967). "A destruição do Escravidismo Capitalista". *Revista de História*, Vol. 34, No. 69.
- Bell, C. and Zusman, P. (1976). "A Bargaining Theoretic Approach to Cropsharing Contracs". *The American Economic Review*, vol. 66 – No. 4.
- Bezerra, M. C. S. (2001). *Imigração, educação e religião: um estudo histórico-sociológico do Bairro dos Pires de Limeira, uma comunidade rural de maioria teuto-brasileira*. Campinas: Universidade Estadual de Campinas (Master's Thesis).
- Black, J. D. and Allen, R. H. (1937). "The Growth of Farm Tenancy in the United States". *The Quarterly Journal of Econmics*, Vol. 51, No. 3.
- Braverman, A. and Guasch, J. L. (1984). "Capital Requirements, Screening and Interlinked Sharecropping and Credit Contracts". *Journal of Development Economics*, Vol. 14.
- Braverman, A. and Stiglitz, J. E. (1982). "Sharecropping and the Interlinking of Agrarian Markets". *The American Economic Review*, vol. 72 – No. 4.

- _____. (1986). "Landlords, Tenants and Technological Innovations". *Journal of Development Economics*, Vol. 23.
- Buarque de Holanda, S. (1941). "Prefácio do Tradutor". In Davatz, T. *Memórias de um Colono no Brasil (1850)*. São Paulo: Martins Fontes.
- Byres, T. J. (1983). "Historical Perspectives on Sharecropping". *The Journal of Peasant Studies*, Vol. 10, Nos. 2 and 3. In Byres, T. J. (ed.). *Special Issue on Sharecropping and Sharecroppers*.
- Caballero, J. M. (1983). "Sharecropping as an Efficient System: Further Answers to an Old Puzzle". *The Journal of Peasant Studies*, Vol. 10, Nos. 2 and 3. In Byres, T. J. (ed.). *Special Issue on Sharecropping and Sharecroppers*.
- Calógeras, J. P. ([1933] 1998). *A Política Exterior do Império*. Vol. III: Da Regência à Queda de Rosas. Brasília: Senado Federal – Coleção Biblioteca Básica Brasileira (Fac-similar edition).
- Camara, B. (2006). "The Portuguese Civil Code and the colonia tenancy contract in Madeira (1867-1967)". *Continuity and Change*, vol. 21 – No. 2.
- Carmona, J. and Simpson, J (1999). "The 'Rabassa Morta' in Catalan Viticulture: The Rise and Decline of a Long-Term Sharecropping Contract, 1670s-1920s". *The Journal of Economic History*, vol. 59 – No. 2.
- _____. (2012). "Explaining contract choice: vertical coordination, sharecropping, and wine in Europe, 1850-1950". *The Economic History Review*, vol. 65 – No. 3.
- Carvalho Filho, I., and Colistete, Renato P. (2010). "Education Performance: Was It All Determined 100 Years Ago? Evidence from São Paulo, Brazil". Working Paper N. 24494 (available at http://mpira.ub.uni-muenchen.de/24494/1/MPRA_paper_24494.pdf, accessed on August 10, 2013).
- Castro, M. C. B. P. (n.d.). *Álbum de Família. Souza Queiroz*. São Paulo: Instituto Ana-Rosa (available at <http://anarosa.org.br/livros-e-periodicos>, accessed on January 18, 2018).
- Cheung, S. N. S. (1969). "Transaction Costs, Risk Aversion, and the Choice of Contractual Arrangements". *The Journal of Law & Economics*, Vol. 12, No. 1.
- Conrad, R. (1975). "The Planter Class and the Debate Over Chinese Immigration to Brazil, 1850-1893". *International Migration Review*, Vol. 9, Issue 1.
- Cox, L. F. (1941). "Tenancy in the United States, 1865-1900: A Consideration of the Validity of the Agricultural Ladder Hypothesis". *Agricultural History*, Vol. 18, No. 3.
- Davatz, T. ([1858] 1941). *Memórias de um Colono no Brasil (1850)*. São Paulo: Martins Fontes.
- Dean, W. (1971). "Latifundia and Land Policy in Nineteenth-Century Brazil". *The Hispanic American Historical Review*, vol. 51 – No. 4.
- _____. (1976). "A Pequena Propriedade Dentro do Complexo Cafeeiro: Sitiantes no Município de Rio Claro, 1870-1920". *Revista de História*, No. 106, 2º trimestre.
- _____. (1977). *Rio Claro: Um Sistema Brasileiro de Grande Lavoura, 1820-1920*. Rio de Janeiro: Paz e Terra.
- Domar, E. D. (1970). "The Causes of Slavery or Serfdom: A Hypothesis". *The Journal of Economic History*, Vol. 30, No. 1.
- Donoghue, J. (2013). "Indentured Servitude in the 17th Century English Atlantic: A Brief Summary of the Literature". *Historical Compass*, 11/10.
- Egas, E. (1926). *Galeria dos Presidentes de São Paulo. Período Monárquico 1822-1889*. São Paulo: Secção de obras d'O estado de S. Paulo.
- Eltis, D. (1983). "Free and Coerced Transatlantic Migrations: Some Comparisons". *The American Historical Review*, vol. 88 – No. 2.
- Engerman, S. L. (1983). "Contract Labor, Sugar, and Technology in the Nineteenth Century". *Journal of Economic History*, vol. XLIII – No. 3.
- Engerman, S. L. and Margo, R. A. (2010). "Free Labor and Slave Labor". In Irwin, D. and Sylla, R. (eds.): *Founding Choices: American Economic Policy in the 1790s*. Chicago: University of Chicago Press.

- Engerman, S. L. and Sokoloff, K. L. (2011). "Once Upon a Time in the Americas: Land and Immigration Policies in the New World". In Costa, D. L. and Lamoreaux, N. R. (eds.): *Understanding Long-Run Economic Growth: Geography, Institutions, and the Knowledge Economy*. Chicago: Chicago University Press.
- Eswaran, M. and Kotwal, A. (1985). "A Theory of Contractual Structure in Agriculture". *The American Economic Review*, vol. 75 – No. 3.
- Evans Jr., R. (1970). "Some Notes on Coerced Labor". *The Journal of Economic History*. Vol. 30
- Ferrie, J. P. and Hatton, T. J. (2015). "Chapter 2: Two Centuries of International Migration". In Chiswick, B. and Miller, P. (eds.) *Handbook of the Economic of International Migration*, Vol. 1A. North Holland.
- Freitas, S. M. (2013). *Vida e Obra do Comendador Montenegro. Um lousanense visionário no Brasil*. São Paulo: Polo Printer.
- Galenson, D. W. (1981). "White Servitude and the Growth of Black Slavery in Colonial America". *Journal of Economic History*, vol. XLI – No. 1.
- _____. (1984). "The Rise and Fall of Indentured Servitude in the Americas: An Economic Analysis". *Journal of Economic History*, vol. XLIV – No. 1
- Garrido, S. (2017). "Sharecropping was sometimes efficient: sharecropping with compensation for improvements in European viticulture". *The Economic History Review*, vol. 70 – No. 3.
- Grining, V. (1991). *Imigração Suíça em São Paulo: A História da Colônia Helvetia*. Campinas: Universidade Estadual de Campinas (Master's Thesis).
- Grubb, F. (1985). "The Market for Indentured Immigrants: Evidence on the Efficiency of Forward-Labor Contracting in Philadelphia, 1745-1773". *Journal of Economic History*, Vol. XLV, No. 4.
- _____. (1994). "The Auction of Redemptioner Servants, Philadelphia, 1771-1804: An Economic Analysis". *Journal of Economic History*, vol. XLVIII – No. 3.
- Grubb, F. and Stitt, T. (1994). "The Liverpool Emigrant Servant trade and the Transition to Slave Labor in the Chesapeake, 1697-1707: Market Adjustments to War". *Explorations in Economic History*, Vol. 31.
- Hatton, T. J. and Williamson, J. G. (1992). "International Migration and World Development: A Historical Perspective". NBER Historical Paper No. 41.
- _____. (1994). "What Drove the Mass Migrations from Europe in the Late Nineteenth Century?" *Population and Development Review*, Vol. 20 – No. 3.
- _____. (2004). "International Migration in the Long-run: Positive Selection, Negative Selection and Policy". *NBER Working Paper 10529*.
- _____. (2009). "Emigration in the long run: evidence from global centuries". Vol. 23 (2). *Asian Pacific Economic Literature*, Vol. 23 (2).
- Hatton, T. J. (2011). "Chapter 6: The Cliometrics of International Migration: A Survey". In Greasley, D. and Oxley, L. (eds.) *Economics and History. Surveys in Cliometrics*. Wiley-Blackwell.
- Heavner, R. (1973). "Indentured Servitude: The Philadelphia Market, 1771-1773". *The Journal of Economic History*, Vol. XXXVIII, No. 3
- Heflinger Jr., J. E. (2007). *Ibicaba: O Berço da Imigração Européia de Cunho Particular. (Ibicaba: Die Wiege der Privat Organisierten Europäischen Einwanderung)*. Limeira: Unigráfica.
- _____. (2009). *A Revolta dos Parceiros na Ibicaba (The Rebellion of the Sharecroppers in Ibicaba)*. Limeira, SP: Editora Unigráfica.
- Heinke, E. (1905). "Lose Blätter aus der Geschichte der deutschen Kolonie von São Paulo (1800-1900)". In *Erstes Jahrbuch für die deutschsprechende Kolonie im Staate S. Paulo*. São Paulo: Druck und Verlag von Adolph Uhle.
- Higgs, H. (1894). "'Metayage' in Western France". *The Economic Journal*, vol. 4 – No. 13.
- Higgs, R. (1974). "Patterns of Farm Rental in the Georgia Cotton Belt, 1880-1900". *The Journal of Economic History*. Vol. 34, No. 2.

- Hoffman, P. T. (1984). "The Economic Theory of Sharecropping in Early Modern France". *The Journal of Economic History*, Vol. XLIV, No. 2.
- Holloway, T. H. (1978). "Creating the Reserve Army? The Immigration Program of São Paulo, 1886-1930". *International Migration Review*, vol. 12 – No. 2.
- Ianni, O. (2004). "O Progresso Econômico e o Trabalhador Livre". In Buarque de Holanda, S. and Campos, P. M. (ed.) *História Geral da Civilização Brasileira*. Tomo II, Vol. 5: "O Brasil Monárquico: Reações e transações". Rio de Janeiro: Betrand Brasil (8th edition).
- International Labour Organization (2014). *Prevention and Elimination of Bonded Labour. The Potential and Limits of Microfinance-led Approaches*. Editors: Premchander, S., Prameela, V., and Chidambaranathan, N.
- Karastojanov, A. M. S. (1998). *Vir, Viver e Talvez Morrer em Campinas: Um Estudo sobre a Comunidade Alemã Residente na Zona Urbana Durante o II Império*. Campinas: Universidade Estadual de Campinas (Master's Thesis).
- Klein, H. (1995). "European and Asian Migration to Brazil". In Cohen, R. (Ed.): *The Cambridge Survey of World Migration*. Cambridge: Cambridge University Press.
- Koo, A. Y. C. (1973). "Towards a More General Model of Land Tenancy and Reform". *The Quarterly Journal of Economics*, vol. 87 – No. 4.
- Kotwal, A. (1985). "The Role of Consumption Credit in Agricultural Tenancy". *Journal of Development Economics*, vol. 18.
- Lagerlöf, N. P. (2009). "Slavery and Other Property Rights". *The Review of Economic Studies*. Vol. 76.
- Lamounier, M. L. (1986). *Formas de Transição da Escravidão ao Trabalho Livre: a Lei de Locação de Serviços de 1879*. Campinas: Universidade Estadual de Campinas (Master's Thesis).
- _____. (2000). "Ferrovias, Agricultura de Exportação e Mão-de-obra no Brasil no Século XIX". *História Econômica & História de Empresas*, Vol. 3, No. 1.
- Lee, J. A. and Kaufmann, K. D. (1997). "Agricultural Chutes and Ladders: New Estimates of Sharecroppers and 'True Tenants' in the South, 1900-1920". *Journal of Economic History*, vol. 57 – No. 2.
- Leff, N. H. (1972). "Economic Retardation in Nineteenth-Century Brazil". *The Economic History Review*, Vol. 25, No. 3.
- Levy, M. S. F. (1974). "O Papel da Imigração Internacional na Evolução da População Brasileira (1872 a 1972)". *Revista de Saúde Pública*, vol. 8 (suplemento).
- Lucas, R. E. B. (1979). "Sharing, Monitoring, and Incentives: Marshallian Misallocation Reassessed". *Journal of Political Economy*, vol. 97 – No. 3.
- Marshall, A. ([1894] 2013). *Principles of Economics*. Palgrave Classics in Economics. Hampshire and New York: Palgrave Macmillan, 8th edition.
- Martins, J. S. (1989). "A Imigração Espanhola para o Brasil e a Formação da Força-de-Trabalho na Economia Cafeeira: 1880-1930". *Revista de História*, No. 121.
- Menard, R. R. (1962). "From Servant to Freeholder: Status Mobility and Property Accumulation in Seventeenth-Century Maryland". *The William and Mary Quarterly*, Vol. 30, No. 1.
- Methner, P. H. (1962) "A Comunidade Evangélica Luterana de Campinas". In Grobel, H. (ed.) *Comemoração do 50. Aniversário do Sínodo Evangélico do Brasil Central (Jubiläums-Festschrift)*. São Paulo.
- Mitra, P. K. (1982). "A Theory of Interlinked Rural Transactions". *Journal of Public Economics*, vol. 20.
- Mukherjee, A. and Ray, D. (1994). "Labor tying". *Journal of Development Economics*, vol. 47.
- Newbery, D. M. G. (1977). "Risk Sharing, Sharecropping and Uncertain Labor Markets". *The Review of Economic Studies*, vol. 44 – No. 3.
- Oberacker Jr., C. H. (2004). "A Colonização Baseada no Regime da Pequena Propriedade Agrícola". In Buarque de Holanda, S. and Campos, P. M. (ed.) *História Geral da Civilização Brasileira*.

- Tomo II, Vol. 5: “*O Brasil Monárquico: Reações e transações*”. Rio de Janeiro: Betrand Brasil (8th edition).
- Otsuka, K., Chuma, H. and Hayami, Y. (1992). “Land and Labor Contracts in Agrarian Economies: Theories and Facts”. *Journal of Economic Literature*, vol. 30 – No. 4
- Perret-Gentil, C. (1851). “A Colônia Senador Vergueiro”. Santos: Typographia Imparcial.
- Petrone, T. S. (2004). “Imigração Assalariada”. In Buarque de Holanda, S. and Campos, P. M. (ed.) *História Geral da Civilização Brasileira*. Tomo II, Vol. 5: “*O Brasil Monárquico: Reações e transações*”. Rio de Janeiro: Betrand Brasil (8th edition).
- Quibria, M. G. and Rashid, S. (1984). “The Puzzle of Sharecropping: A Survey of Theories”. *World Development*, vol. 12 – No. 2.
- Reid, J. D. (1973). “Sharecropping as an Understandable Market Response: The Post-Bellum South”. *Journal of Economic History*, vol. 33 – No. 1.
- _____. (1975). “Sharecropping in History and Theory”. *Agricultural History*, vol. 49 – No. 2.
- _____. (1979). “White Land, Black Labor, and Agricultural Stagnation. The Causes and Effects of Sharecropping in the Postbellum South”. *Explorations in Economic History*, Vol. 16.
- Roberts, G. W. and Byrne, J. (1966). “Summary Statistics on Indenture and Associated Migration Affecting the West Indies, 1834-1918”. *Population Studies*, Vol. 20, No. 1
- Rossfeld, R. and Ziegler, B. (eds.) (2003). *Der Traum vom Glück. Schweizer Auswanderung auf brasilianische Kaffeepflanzungen, 1852-1888*. Verlag Hier und Jetzt.
- Sadoulet, E. (1992). “Labor-Service Tenancy Contracts in a Latin American Context”. *The American Economic Review*, vol. 82 – No. 4.
- Sánchez-Alonso, B. S. (2007). “The Other Europeans: Immigration into Latin America and the International Labour Market (1870-1930)”. *Revista de História Económica, Journal of Iberian and Latin American Economic History*. Vol. 25, Issue 3.
- Scheler, C. F. (1905). “Beiträge zur Kenntnis des Staates São Paulo und seiner deutschen Niederlassungen”. In *Erstes Jahrbuch für die deutschsprechende Kolonie im Staate S. Paulo*. São Paulo: Druck und Verlag von Adolph Uhle.
- Shetty, S. (1988). “Limited Liability, Wealth Differences and Tenancy Contracts in Agrarian Economies”. *Journal of Development Economics*, vol. 29.
- Shlomowitz, R. (1984). “‘Bound’ or ‘Free’? Black Labor in Cotton and Sugarcane Farming, 1865-1880”. *The Journal of Southern History*, Vol. 50, No. 4.
- Siriani, S. C. L. (2003). *Uma São Paulo Alemã: Vida Quotidiana dos Imigrantes Germânicos na Região da Capital (1827-1889)*. São Paulo: Arquivo do Estado – Coleção Teses e Monografias, vol. 6.
- _____. (2005). “Os descaminhos da Imigração alemã para São Paulo no século XIX – aspectos políticos”. *Almanack Braziliense*, No. 2
- Sommer, F. (1953). “São Paulo und die Deutschen” – *Instituto Martius-Staden’s Archives*.
- Spillman, W. J. (1919). “The Agricultural Ladder”. *The American Economic Review*, Vol. 9, No. 1. *Supplement, Papers and Proceedings of the Thirty-First Annual Meeting of the American Economic Association*.
- Stiglitz, J. E. (1974). “Incentives and Risk Sharing in Sharecropping”. *The Review of Economic Studies*, vol. 41 – No. 2.
- Stolcke, V., and Hall, M. M. (1983). “The Introduction of Free Labour on São Paulo Coffee Plantations”. *The Journal of Peasant Studies*, vol. 10 – No. 1.
- Talyor, R. H. (1943). “Post-Bellum Southern Rental Contracts”. *Agricultural History*, Vol. 17, No. 2.
- Tschudi, J. J. von. ([1866] 1980). *Viagem às Províncias do Rio de Janeiro e S. Paulo*. São Paulo / Belo Horizonte: EDUSP / Itatiaia (Série Reconquista do Brasil, vol. 14).
- Tungeln, G. H. von (1927). “Some Observations on the So-Called Agricultural Ladder”. *Journal of Farm Economics*, vol. 9 – No. 1.
- Viotti da Costa, E. (1998). *Da Senzala à Colônia*. São Paulo: Fundação Editora da UNESP (4th ed.).

- _____. (2004). “O Escravo na Grande Lavoura”. In Buarque de Holanda, S. and Campos, P. M. (ed.) *História Geral da Civilização Brasileira*. Tomo II, Vol. 5: “O Brasil Monárquico: Reações e transações”. Rio de Janeiro: Bertrand Brasil (8th edition).
- Waldman, T. C. (2009). “Moderno Bandeirante: Paulo Prado entre espaços e tradições”. São Paulo: Universidade de São Paulo (Master’s Thesis).
- Wegge, S. A. (2002). “Occupational Self-selection of European Emigrants: Evidence from Nineteenth-Century Hesse-Cassel”. *European Review of Economic History*, Vol. 6.
- Wehrwein, C. F. (1931). “The ‘Agricultural Ladder’ in a High Tenancy Region”. *The Journal of Land & Public Utility Economics*, Vol. 7, No. 1.
- Witter, J. S. (1971). “Um documento para a história dos preços no Brasil: descrição e avaliação da Fazenda de Ibicaba (1890)”. *Revista de História*, vol. 43 – No. 87.
- _____. (1973). “A contribuição da fazenda Ibicaba para a introdução do braço livre na lavoura brasileira”. In Paula, E. S. (ed.) *Trabalho Livre e Trabalho Escravo*, vol. I – *Anais do VI Simpósio Nacional dos Professores Universitários de História*.
- _____. (1974). “Um estabelecimento agrícola do Estado de São Paulo nos meados do século XIX”. *Revista de História*, vol. 48 – No. 98.
- _____. (1982). *Ibicaba, Uma Experiência Pioneira*. São Paulo: Arquivo do Estado, 2ª Edição.
- Witzel de Souza, B. G. (2012). “Imigração Alemã e Mercado de Trabalho na Cafeicultura Paulista – um Estudo Quantitativo dos Contratos de Parceria”. *História Econômica & História de Empresas*, vol. 15 – No. 2.
- Yang, A. C. Y. (1977). “O Comércio dos ‘Coolie’ (1819-1920)”. *Revista de História*, No. 112, 4º trimestre.

Appendix: *Per worker costs of sharecropping, fixed rents and wage systems*

1.1. Motivation and setting

In this appendix, I formalize the proposition that landowners in São Paulo could have been indifferent among various labor-rental arrangements. I am particularly interested in the first period of employment of bonded labor in the plantations. In this context, the underlying question is whether landowners had any special, theoretically founded economic motivation to adopt sharecropping contracts in the early 1850s, when alternative labor-rental regimes seem to have been feasible in historical terms.

The model builds on variations of a partial equilibrium, in which a single landowner maximizes his/her rents. The landowner chooses among different labor-rental regimes interlinked to a credit dimension to form a specific contract. Laborers, in turn, are immigrants who require a loan to cover immigration costs and demand other credit advances during their stay in the farms. The participation constraint of the laborers subsumes to the acceptance or not of a specific type of contract that includes a labor-rental and a credit dimension. The objective function of the landowner and the participation constraint of laborers vary according to each labor-rental regime, but the problem always subsumes to a linear credit-labor interlinkage¹.

The model presents the conditions for the equality of the *per worker costs* (PWC) of employing sharecroppers, wage laborers, or renters who paid fixed land-rentals to the landowner. Conditional on obtaining laborers – *i.e.* that the loans allow for the immigration of laborers –, the landowner will prefer the labor-rental arrangement with the lowest PWC, *i.e.* the cheapest source of labor conditional on the participation constraint of foreigners. In this partial equilibrium analysis, I assume that the demand of any single landowner does not affect the unitary cost of labor in any of the labor-rental regimes considered, an adequate assumption in the context of a large international pool of poor and credit-constrained potential immigrants.

I compare the PWCs of sharecropping, fixed rents and wage systems in two scenarios. In the first, I assume no productivity differentials among the three labor-rental regimes. The historical evidence presented in the chapter showed that landowners in the late 1840s and 1850s were tentatively experimenting with different labor-rental regimes. In this context, concerns about productivity differentials among contracts were minimal, if existent at all. Therefore, I consider

¹ In line with the basic model presented in Basu (2003, Chapter 14, especially pp. 286-291).

this assumption adequate to illustrate this first phase of adoption of bonded labor in the plantations of São Paulo². In the second scenario, I assume that sharecropping leads to lower labor productivity *vis-à-vis* fixed rents and wage systems. As discussed in the chapter, this assumption is based on the idea that the Marshallian inefficiency of sharecropping prevailed in the coffee plantations and that the self-monitoring of household members would have precluded monitoring costs under wage systems.

The first scenario allows for the possibility of equalizing the PWCs of sharecropping, fixed rents and wage systems. This supports the claim that the adoption of sharecropping in the 1850s was not the result of a pure economic decision of landowners. Other feasible labor-rental arrangements could have led to the same economic outcomes in terms of the supply of labor and its costs. The second scenario shows that the equalization of the PWCs among the three labor-rental arrangements preclude either differences in labor productivity among them or the existence of perfectly competitive wage systems.

Moreover, the model shows that the credit dimension of the interlinkage did not depend on any specific labor-rental arrangement. With an additive credit-labor interlinkage, the same optimality condition is obtained for the credit dimension, irrespective of labor-rentals. This malleability helps to explain the pervasiveness of the credit interlinkage in the Brazilian immigration policy throughout the nineteenth century.

1.2. The model

Define agricultural production, $Y = Y(N^i, \bar{H})$, as a function of units of labor N under labor-rental regime i and a fixed amount of land \bar{H} , following standard properties for an internal solution. The set of labor-rental regimes include sharecropping (sh), fixed rents (f) and wage system (ws). For simplicity, I assume that the labor-rental dimension is always in pure form – *i.e.* I exclude mixed contracts and the coexistence of different labor-rental regimes.

The rents perceived by the landowner are an additively separable function of a labor-rental and a credit dimension:

$$R^i = f(Y) + g(L) = f(Y(N^i, \bar{H})) + g(L)^3$$

² As pointed out in the chapter, one can read the non-differentials in productivity as the outcome of an interlinked contract in which landowners adjust either the credit or the labor dimension to lead to an efficient outcome.

³ I set the price of output as the numeraire throughout.

The landowner maximizes rents, R^i , and has as choice variables the units of labor to be hired in a specific labor-rental regime, N^i , and the amount of loans to be supplied, L . Output shares and interest rates are exogenous parameters determined by custom and the market⁴.

The labor-rental dimension varies according to the labor-rental regime considered.

In pure form, $f(Y) = \alpha Y + F$, where α stands for output share and F for fixed amounts paid to workers (wages) or received as rents. In short:

$$f(Y) = \alpha Y + F: \begin{cases} 0 < \alpha < 1 \text{ and } F = 0, \text{ if } i = sh \\ \alpha = 0 \text{ and } F \leq 0, \text{ if } i = (ws, f) \end{cases}$$

Landowner's maximization of rents is subject to the participation constraint of laborers. By assuming N^i to be perfectly enforceable at no cost to the landowner, this setting gives agency to laborers only in terms of their participation constraint. This implies a binary decision to accept a certain contract and reflects laborers' decision to immigrate based exclusively on the prospects of that specific contract, which combines a labor-rental and a credit dimension.

The assumption that laborers have agency only in terms of their participation constraints ignores a number of labor riots discussed in the thesis. However, these riots and other expressions of dissatisfaction of immigrants with their living and working conditions were the result of the experience accumulated over time with the enforcement of different contracts. At the first phase of the adoption of bonded labor, this assumption does seem to reflect the perceptions of landowners and the choices available to laborers⁵.

Adapting Basu (2003, p. 289), I define laborers as having utility $u = u(w, L)$, where w reflects the opportunity costs of labor (including in the countries of origin) and L captures the utility of emigrating – which, according to the historical discussion, was not possible without the credit dimension, reflected by L in the formal setting. I assume u to be an increasing and concave function in both arguments and rewrite it in terms of the reservation frontier of the laborers⁶:

$$w = \phi(L, u)$$

⁴ Interest rates in 1847 were based on legal interests; output shares were set at the customary $\frac{1}{2}$. On the exogeneity of similar parameters, determined by historical custom, see Koo (1973, p. 579).

⁵ I thank Samuel Garrido for discussing this point.

⁶ $[\partial \phi(L, u) / \partial L] > 0$ holds for the actual immigrants, which corresponds more strictly to $[\partial \phi(L, \tilde{u}) / \partial L] > 0$, according to the notation used below. The idea is that laborers who actually immigrate are willing to do so (explaining the positive partial derivative), but cannot until the poverty constraints are removed by the loans L supplied by the landowner.

Finally, I assume that all agents have perfect information and are risk-neutral. In the model, there is no uncertainty in production nor default on loans⁷.

In the sequence, I compare the three labor-rental regimes to each other and to a benchmark in which slavery prevails and the market for captives is perfectly competitive. In such comparisons, I impose no functional form to $Y(N^i, \bar{H})$ nor to $\phi(L, u)$. Rather, comparisons are made in terms of *per worker costs* of the different labor-rental regimes.

1.3. Partial-equilibria: landowner's rents with different labor-rental regimes

1.3.1. Slave labor

As a benchmark, consider a perfectly competitive market for captive labor. Landowner's rents include only the labor dimension and the problem pinpoints to a usual maximization:

$$\max_{N^{sl}} R^{sl} = Y(N^{sl}, \bar{H}) - cN^{sl}$$

where c reflects the unitary cost of a slave⁸. Given that the model is instantaneous, this parameter incorporates the lifelong costs of the captive from the viewpoint of the landowner.

In this simple case, the unitary cost of a slave equals his/her marginal productivity.

$$\partial R^{sl} / \partial N^{sl} = 0 \Rightarrow c = \partial Y / \partial N^{sl} \text{ (Eq. 1)}$$

1.3.2. Perfectly competitive wage system

Similarly, in a perfectly competitive free labor market, a rent-maximizing landowner who interlinks labor and credit in a contract solves the following problem:

$$\max_{N^{ws}, L} R^{ws} = Y(N^{ws}, \bar{H}) - \phi(L, \tilde{u})N^{ws} + (i - r)LN^{ws}$$

The labor dimension reflects the cost per unit of labor, conditional on the participation constraint⁹. The credit dimension, in turn, reflects the amount of loans, L , and its corresponding opportunity cost, *i.e.* the difference between the actual interest rate i and the return on

⁷ The same argument about laborers' agency applies here to justify these assumptions.

⁸ For historical differentiation, I use the term c to reflect the price of a slave. It corresponds to a disbursement F in the general labor dimension $f(Y)$.

⁹ \tilde{u} indicates that the specific laborer decided to immigrate (differing from u , as above). The conditions for the prevalence of \tilde{u} are binding, *i.e.* they limit the discretionary power of landowners in setting N^i and L .

alternative investments, r . Please notice that I assume that the landowner has enough sources of credit to supply any amount L of loans to the laborers. Part of these loans are used by the laborers to cover the immigration costs and are, therefore, fixed – as the migratory costs are exogenous to any landowner. Nevertheless, laborers demand further loans while in the farm – *e.g.* to cover their consumption of foodstuff bought in the farm’s grocery store. That is the reason for considering L a choice variable of the landowner¹⁰.

The PWC in perfectly competitive markets can be directly defined with the previous expression:

$$R^{ws} = Y(N^{ws}, \bar{H}) - N^{ws}[\phi(L, \tilde{u}) - (i - r)L] = Y(N^{ws}, \bar{H}) - N^{ws}PWC$$

From the FOCs:

$$\partial R^{ws} / \partial N^{ws} = 0 \Rightarrow \partial Y / \partial N^{ws} = \phi(L, \tilde{u}) + (i - r)L = C^{ws} \text{ (Eq. 2)}$$

$$\partial R^{ws} / \partial L = 0 \Rightarrow \partial \phi / \partial L = (i - r) \text{ (Eq. 3)}$$

In a standard result for competitive markets, equation (2) shows that the marginal productivity of labor equals its marginal cost. This corresponds also, by definition, to the PWC of a wage system in a perfectly competitive market. Assuming no productivity differentials with respect to slavery, *i.e.* $(\partial Y / \partial N^{sl} = \partial Y / \partial N^{ws})$, a necessary condition to employ wage laborers is that $C^{ws} = c$. This result is immediate from the setting, in which captive and free labor markets are perfectly competitive. Although theoretically uninteresting *per se*, it shows that systems that belong to historically different categories can lead to identical outcomes. As Eltis (1983, p. 266) argues: “The conviction of the superiority of free labor on the part of the economically advanced nations was not shaken by the fact that sugar, coffee and cotton could all be produced more cheaply by unfree labor”¹¹.

Equation (3) shows that the marginal effect of loans on the reservation frontier of laborers must equal the opportunity cost of landowner’s capital in a perfectly competitive market. Despite standard, this result provides a benchmark for comparisons with other labor-rental regimes.

¹⁰ L can be modeled as a function of a fixed parcel used to cover immigration costs and a varying parcel, reflecting the demand of credit by laborers in the farm. For ease of exposition, I considered only the supply side by the landowner, making L a single choice variable. I thank Holger Strulik for pointing this out.

¹¹ This argument refers only to the partial equilibrium from the point of view of a rent-maximizing landowner. It does not take into account the deleterious effects of slavery for socio-economic development, nor its abhorrent nature in terms of human rights. Dean (1977, p. 184) and Acemoglu and Wolitzky (2011) highlight that slavery can lead to higher productivity and profits, but always generates socially inefficient outcomes.

1.3.3. Sharecropping

Under sharecropping, the landowner makes no disbursement in the labor dimension and receives a fraction α of the produce. The problem is now:

$$\begin{aligned} \max_{N^{sh}, L} R^{sh} &= \alpha Y(N^{sh}, \bar{H}) + (i - r)LN^{sh} \\ s. t. (1 - \alpha)Y(N^{sh}, \bar{H}) &= \phi(L, \tilde{u})N^{sh} \end{aligned}$$

Setting the Lagrangean Z , we obtain the following FOCs:

$$\partial Z / \partial N^{sh} = 0 \Rightarrow \alpha \partial Y / \partial N^{sh} + (i - r)L + \lambda [(1 - \alpha) \partial Y / \partial N^{sh} - \phi] = 0 \quad (Eq. 4)$$

$$\partial Z / \partial L = 0 \Rightarrow (i - r) - \lambda \partial \phi / \partial L = 0 \quad (Eq. 5)$$

To compare different labor-rental regimes without specific functional forms for the production function or the reservation frontier, I use the PWC of each labor-rental regime and set it against the standard result obtained from the wage system in perfectly competitive markets¹². By doing so, I obtain the following PWC of sharecropping:

$$PWC^{sh} = \partial Y / \partial N^{sh} \left[\alpha + \frac{(i - r)(1 - \alpha)}{\partial \phi / \partial L} \right] + \phi \left[1 - \frac{(i - r)}{\partial \phi / \partial L} \right] \quad (Eq. 6a)$$

The expression shows that the PWC of sharecropping is a function of two additive components. The first reflects the labor dimension. Here, the marginal productivity of labor in this labor-rental regime is weighted by the output share, by the opportunity cost of the loans and by the

¹² For this, solve for the Lagrangean multipliers from the FOCs:

$$\frac{\phi(i - r)}{\partial \phi / \partial L} - (i - r)L = \alpha \partial Y / \partial N^{sh} + \left[\frac{(i - r)(1 - \alpha) \partial Y / \partial N^{sh}}{\partial \phi / \partial L} \right] \quad (Eq. 6b)$$

Since PWC is given by definition, we can determine the difference between the PWC in perfectly competitive wage systems and the expression above, *i.e.* call the left-hand side of the previous expression X ; then we have:

$$PWC - X = (.) \Leftrightarrow PWC = (.) + X$$

$$PWC - X = \phi - (i - r)L - \frac{\phi(i - r)}{\partial \phi / \partial L} + (i - r)L \Rightarrow (.) = \phi \left[1 - \frac{(i - r)}{\partial \phi / \partial L} \right]$$

By inserting $(.)$ back into Eq. 6b, we obtain the PWC under sharecropping (*i.e.* Eq. 6a).

impact that the loans have on the reservation frontier. The second reflects the credit dimension, with laborer's reservation frontier weighted by the opportunity cost of the loan.

1.3.4. Fixed rents

To set the problem analogously to sharecropping, I assume that fixed rents (F) are not a choice variable of the landowner, but a parameter determined in the market or by custom¹³.

The maximization problem is now:

$$\begin{aligned} \max_{N^f, L} R^f &= FN^f + (i - r)LN^f \\ \text{s. t. } Y(N^f, \bar{H}) - FN^f &= \phi(L, \tilde{u})N^f \end{aligned}$$

Setting the Lagrangean Z , we obtain the following FOCs:

$$\partial Z / \partial N^f = 0 \Rightarrow F + (i - r)L + \lambda \left[\partial F / \partial N^f - F - \phi \right] = 0 \quad (Eq. 7)$$

$$\partial Z / \partial L = 0 \Rightarrow (i - r) - \lambda \partial \phi / \partial L = 0 \quad (Eq. 8)$$

With the same procedure as for sharecropping, we obtain the following PWC of fixed rents:

$$PWC^f = \partial Y / \partial N^f \left[\frac{(i - r)}{\partial \phi / \partial L} \right] + (F + \phi) \left[1 - \frac{(i - r)}{\partial \phi / \partial L} \right] \quad (Eq. 9)$$

Equations (5) and (8) show that the optimality conditions stemming from the credit dimension of the interlinkage are identical for sharecropping and fixed rents. This result depends on the assumption that rents are a linear additive function of the labor-rental and the credit dimensions. Nevertheless, this equality shows that it was possible to design a contract in which the *optimality condition* of the credit dimension did not depend on specific labor-rental arrangements. Notice, however, that the credit dimension still has different influences on the PWCs of sharecropping and fixed rents. Thus, the argument is not that the labor-rental and the credit dimensions are totally independent of each other, but that the latter could be adapted to the specificities of each labor-rental regime.

¹³ We can also model fixed rents as a function of units of labor. With a word of caution, this is similar to Bonifácio do Amaral's contract in the 1870s. In this case, $F = F(N^f, \bar{H})$ leads to:

$$PWC^{f'} = \partial Y / \partial N^f \left[\frac{(i - r)}{\partial \phi / \partial L} \right] + \left(\partial F / \partial N^f + \phi \right) \left[1 - \frac{(i - r)}{\partial \phi / \partial L} \right]$$

VII

1.4. Comparing PWCs of different labor-rental regimes

Equations (2), (6) and (9) allow us to determine the conditions under which

$$C^{ws} = PWC^{sh} = PWC^f$$

i.e. the conditions that lead to the same PWC of the three labor-rental regimes as perceived by the landowner. For this exercise, I will consider two scenarios. The first assumes that there are no differentials in productivity for the three labor-rental regimes. The second assumes the Marshallian inefficiency of sharecropping *vis-à-vis* fixed rents and wage systems, which are considered equally efficient.

1.4.1. No productivity differentials

Under the assumption of no differentials in productivity, *i.e.* $(\partial Y / \partial N_i = \partial Y / \partial N)$, the equilibrium conditions derived from the PWC of each labor-rental regime lead to the following pairwise comparison between them:

$$PWC^{sh} = PWC^f \Leftrightarrow \partial Y / \partial N = \frac{F}{\alpha} \quad ^{14}$$

$$PWC^{sh} = C^{ws} \Leftrightarrow \partial Y / \partial N = \frac{\phi}{(1 - \alpha)}$$

$$PWC^f = C^{ws} \Leftrightarrow \partial Y / \partial N = F + \phi$$

From these, it is straightforward to show that the condition $\left[\phi = \frac{(1 - \alpha)F}{\alpha} \right]$ satisfies the equality $C^{ws} = PWC^{sh} = PWC^f$.

If there are no productivity differentials among the three labor-rental regimes – factually so or as perceived by the landowner –, it is possible to design a credit-labor interlinkage that equates the *per worker costs* of sharecropping, fixed rents and wage systems. From a theoretical point of view, sharecropping was neither a necessarily superior nor necessarily inferior contract to a landowner who maximized rents in the first period of the transition from slavery in São Paulo.

¹⁴ For the extension in which $F = F(N^f, \bar{H})$, $PWC^{f'} = PWC^{sh} \Leftrightarrow \partial Y / \partial N = \frac{\partial F / \partial N}{\alpha}$

1.4.2. PWCs under the Marshallian inefficiency of sharecropping

Under the assumption that sharecropping suffers from allocative inefficiencies *vis-à-vis* the other two labor regimes, *i.e.* $(\partial Y/\partial N^{sh} < \partial Y/\partial N^f = \partial Y/\partial N^{ws})$, we get the following conditions for the equalization of the PWCs between sharecropping and fixed rents:

$$PWC^{sh} = PWC^f$$

$$\Rightarrow \left[\alpha \frac{\partial Y}{\partial N^{sh}} - F \right] \left[\frac{\partial \phi / \partial L}{(i-r)} - 1 \right] = \left[\frac{\partial Y}{\partial N^f} - \frac{\partial Y}{\partial N^{sh}} \right] > 0$$

For this expression to hold, we need:

i. $\left[\alpha \frac{\partial Y}{\partial N^{sh}} - F \right] > 0 \Rightarrow \frac{\partial Y}{\partial N^{sh}} > \frac{F}{\alpha}$

and

ii. $\left[\frac{\partial \phi / \partial L}{(i-r)} - 1 \right] > 0 \Rightarrow \frac{\partial \phi}{\partial L} > (i-r)$

or

iii. Equivalently, strictly negative inequalities for both expressions.

This means that the equality of the PWCs of sharecropping and fixed rents under productivity differentials precludes the existence of a perfectly functioning wage system, for in that case $\frac{\partial \phi}{\partial L} = (i-r)$ to fulfill optimality condition (3). In other words, we cannot have simultaneously a perfectly functioning wage system, lower productivity in sharecropping and equal PWCs of sharecropping and fixed rents. Analogous results hold for $(PWC^{sh} = C^{ws})$ and $(PWC^f = C^{ws})$.

In conclusion, a landowner who does not foresee (or if there is no) productivity differentials among the three labor-rental regimes can design contractual arrangements that equalize the PWCs of sharecropping, fixed rents and wage system (scenario 1). Conversely, the existence of perfectly competitive wage systems precludes either the equality of the PWCs or differentials in productivity among these three labor-rental regime (scenario 2).