

Portuguese Colonial Land Grants in Brazil: Long-term Effects on Inequality and Economic Development

Vinicius Okada da Silva

AMRL

Motivation

- ▶ Inequality, in both land and income, is high in Brazil.
 - ▶ **“Brazil has one of the highest levels of inequality of land distribution in the world.** Inadequate access to land by the poor and insecure land tenure are factors behind rural poverty violence, human rights abuses, and exploitation of rural workers in conditions of servitude” (USAID, 2016)
 - ▶ **“An estimated 1% of the population owns 45% of all land in Brazil.** Nearly five million families are landless.” (USAID, 2016)
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- ▶ However, it is nothing new with land inequality already high in 1920 and 1960s agricultural censuses ([Alston et al., 2010](#); [Wigton-Jones, 2020](#)).

Research Question

- ▶ How much of it can be traced to colonial institutions?
 - ▶ Goal of this research would analyze the effects of colonial Portuguese land grants (*sesmarias*) on long-term inequality in Brazil.
 - ▶ Exploit **plausibly exogenous** variation on where the *sesmarias* could be granted during early colonization because of a treaty between Portugal and Spain (RDD).
 - ▶ Exploit **variation of soil quality** for different types of production across colonial Brazil (IV).
 - ▶ Still looking for more institutional details on other possible sources of exogenous variation that could help me get a better identification.
- ▶ Early studies argued it led to the development of the “**economic aristocracy of the colonial society**” and the “**principal cause of [plantations]**” in Brazil (Lima, 2002, p. 36; Costa Porto, 1979, p. 48).
- ▶ “Today the system of ownership and use of land is a **continuation of the colonial system, with the sesmaria becoming [plantations]**” (Andrade, 1980, p. 18).

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History/Background

Early Colonization

- ▶ Land grants were given from 1530-1822, and often favored the Portuguese aristocracy (Diégues Júnior, 1959, p. 16; Lobb, 1976)
- ▶ Goal was to establish Portuguese presence in Brazil at a low cost for the Crown.
- ▶ Technically, the only legal way to obtain lands in colonial Brazil.
 - ▶ Every land that was not donated as a *sesmaria* was theoretically part of the public domain
 - ▶ Since the King owned the land, he could choose to distribute it to whomever he chose.
- ▶ Once the request was granted, it came with requirements such as developing the land.
 - ▶ A good parallel to the U.S. would be the Homestead Act of 1862.

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Request Process

- ▶ Petitioner submits a letter for an unoccupied land detailing their qualifications (captain, governor, etc.)
- ▶ Governor reads it, and if accepted returns back a letter with the requirements for the petitioner to satisfy.
- ▶ Five years to develop the land
- ▶ If successful, upon an inspection, land was transferred to the *sesmeiro*.
- ▶ Able to sell, pass down as inheritance, etc.
- ▶ **Currently, in the data, most of the requests were granted.**

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Possible Channels

- ▶ Land inequality \Rightarrow only those with sufficient financial conditions were granted *sesmarias*, and were often granted vast plots of land.
- ▶ Income inequality \Rightarrow land was associated with wealth, fewer people with land lead to wealth accumulation by the few.
- ▶ Demographic Differences \Rightarrow *Sesmarias* often required African slaves, which could skew the demographics of a location.
- ▶ Political dominance \Rightarrow Dominance by aristocrats often hampered efforts for local reform and investment.¹

¹ "If the land was concentrated by a few owners, the *latifundio* is created and it limits the number of settlers and the possibility of them entering the social class of *senhores de engenho* or farmers (Bandeccchi, 1963, p. 40)

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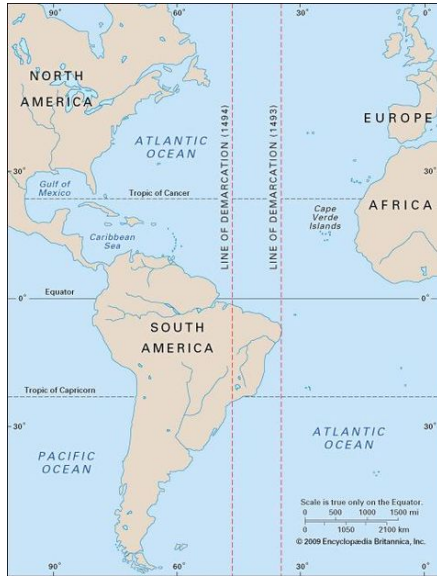
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Data

- ▶ Information of *sesmarias* from the [Sesmarias of the Luso-Brazilian Empire Database](#) (Currently in progress) [Doc. Example](#) [Data](#).
- ▶ Brazilian Censuses (1872-2010)
 - ▶ Possibility of exploring other demographic data from other sources (eg. [Counting Colonial Populations](#))
- ▶ Brazilian Agricultural Censuses (First one in 1920).
- ▶ LandSat data to measure the current land usage (begins in 1985).
- ▶ Brazilian election results from 1889-1937 [History of Political Institutions](#) (To be released).
- ▶ FAO GAEZ dataset for crop suitability.

Treaty of Tordesillas (1494) and the Treaty of Madrid (1750)



Identification Strategy I

Fuzzy RDD Design

- Estimate a Fuzzy RDD in which the probability a municipality has a *sesmaria* is a function of whether it is located to the Portuguese side of the Treaty of Tordesillas (follows [Laudares et al., 2022](#) (WP)).

First Stage:

$$Sesmarias_{m,s} = \delta \cdot TT_{m,s} + f(D_{m,s}) + \mu_s + X_{m,s} + \epsilon_{m,s}$$

Second Stage:

$$Y_{m,s} = \beta \cdot \widehat{Sesmarias}_{m,s} + f(D_{m,s}) + \mu_s + X_{m,s} + \epsilon_{m,s}$$

Identification Strategy II

Instrumental Variable

- ▶ Exploit exogenous land quality for certain types of requests, following [Wigton-Jones, 2020](#) (JEG).
- ▶ Exclusion restriction requires that the suitability for a certain crop only affects outcomes in the future through the land grants.

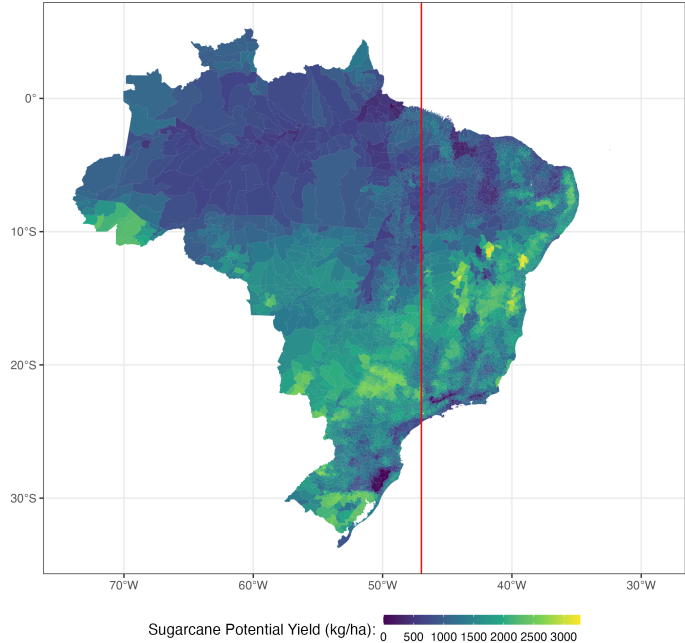
First Stage:

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Second Stage:

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Yield Variation - Sugarcane



Work to be Done

- ▶ Transcription of Manuscripts and information extraction are being done in Brazil.
 - ▶ My state of **Para (and Minas Gerais)** has all the transcriptions \Rightarrow only needed to extract the information.
 - ▶ Machine Learning techniques to extract the information [Currently what I am working on]
- ▶ Georeferencing would be most of the work required.
 - ▶ Look for a professional that works with Brazilian historical data.
- ▶ Descriptive statistics from the current observations:

Obs. State




Year Dist.

Size Dist.



References I

-  Acemoglu, D, S Johnson, and J A Robinson (2001). "The colonial origins of comparative development: An empirical investigation". In: *Am. Econ. Rev.*
-  Alston, Lee J, Gary D Libecap, and Bernardo Mueller (May 2010). *Titles, conflict, and land use*. Economics, Cognition, and Society. Ann Arbor, MI: University of Michigan Press.
-  Andrade, Manuel Correia de Oliveira (1980). *Latifúndio e reforma agrária no Brasil*. por. Coleção História e sociedade. São Paulo: Livraria Duas Cidades.
-  Bandecchi, Brasil (1963). *Origem do latifúndio no Brasil*. por. Coleção Universidade do povo, 11. São Paulo: Editôra Fulgor.
-  Banerjee, Abhijit and Lakshmi Iyer (Sept. 2005). "History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India". In: *Am. Econ. Rev.* 95.4, pp. 1190–1213.
-  Costa Porto, José da (1979). *O sistema sesmarial no Brasil*. pt-BR. Editora Universidade de Brasília.
-  Diégues Júnior, Manuel (1959). *População e propriedade da terra no Brasil*. por. Washington: União Pan-Americana.

References II

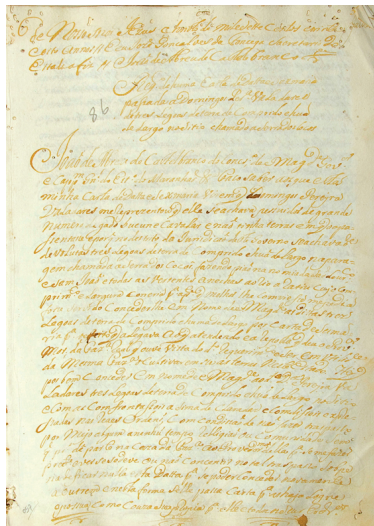
-  Laudares, Humberto and Felipe Valencia Caicedo (2022). *Tordesillas, slavery and the origins of Brazilian inequality*. https://conference.nber.org/conf_papers/f164242.pdf. Accessed: 2022-10-3.
-  Lima, Ruy Cirne (2002). *Pequena história territorial do Brasil: sesmarias e terras devolutas*. pt-BR. Editora UFG.
-  Lobb, C Gary (1976). "The Sesmaria in Rio Grande do Sul: A Successful Frontier Institution, 1737-1823". In: *Yearbook of the Association of Pacific Coast Geographers* 38, pp. 49–63.
-  Lowes, Sara and Eduardo Montero (Oct. 2020). *Concessions, Violence, and Indirect Rule: Evidence from the Congo Free State*. Tech. rep. w27893. Cambridge, MA: National Bureau of Economic Research.
-  Musacchio, Aldo, André Martíñez Fritscher, and Martina Viarengo (Sept. 2014). "Colonial Institutions, Trade Shocks, and the Diffusion of Elementary Education in Brazil, 1889–1930". In: *J. Econ. Hist.* 74.3, pp. 730–766.

References III

-  Naritomi, Joana, Rodrigo R Soares, and Juliano J Assunção (May 2012). “Institutional Development and Colonial Heritage within Brazil”. *en. In: J. Econ. Hist.* 72.2, pp. 393–422.
-  Sokoloff, Kenneth L and Stanley L Engerman (Sept. 2000). “Institutions, Factor Endowments, and Paths of Development in the New World”. *In: J. Econ. Perspect.* 14.3, pp. 217–232.
-  USAID (2016). *USAID COUNTRY PROFILE: PROPERTY RIGHTS AND RESOURCE GOVERNANCE - Brazil*. Tech. rep. USAID.
-  Wigton-Jones, Evan (Dec. 2020). “Legacies of inequality: the case of Brazil”. *In: J. Econ. Growth* 25.4, pp. 455–501.

Example of Document

Back



PA 0001
Carta de concessão a Domingos Pereira Valadares - 19/06/1738

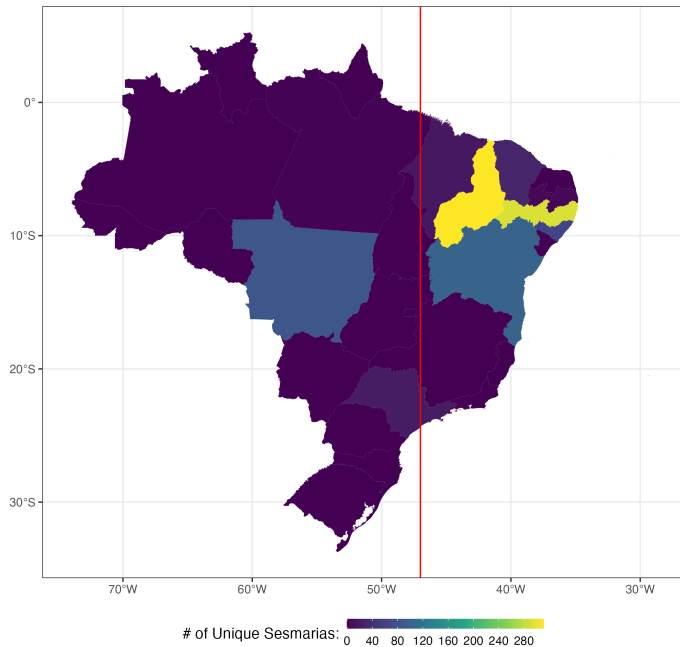
Registro de uma carta de data e sesmaria passada a Domingos Pereira Valadares de 3 léguas de terra de comprimento e uma de largura, no sítio chamado a Serra dos Cocos.

João de Abreu Castelo Branco, do Conselho de Sua Majestade, governador e capitão-general do estado do Maranhão, etc. Faço saber, aos que esta minha carta de data e sesmaria virem, que Domingos Pereira Valadares me representou que ele se achava possuidor de grande número de gado vacum e cavalor, e não tinha terras em que apascentasse, e porque no distrito da jurisdição deste governo se achavam devolutas 3 léguas de terra de comprido e uma de largo, na paragem chamada a Serra dos Cocos, fazendo pila no nomeada São Lourenço e São João, e todas as vertientes anexas ao Rio Araticú, cujo comprimento e largura correria para a parte que melhor lhe conviesse, me pediu fosse servido conceder-lhe, em nome de Sua Majestade, as ditas 3 léguas de terra de comprido e uma de largo, por carta de sesmaria, para efeito que alegava; ao que atendendo, e a resposta que deu o provedor-mor da Fazenda Real, que houve vista do dito requerimento, e ser em utilidade da mesma Fazenda o cultivarem-se as terras neste estado. Hei, por bem, conceder, em nome de Sua Majestade, ao dito Domingos Pereira Valadares, 3 léguas de terra de comprido e uma de largo, no sítio e com as confrontações acima declaradas e condições expressadas nas Reais Ordens, com condição de não fazer trespasse, por meio algum, em nenhum tempo, religião ou comunidade, sem que primeiro dê parte na Casa da Fazenda ao provedor-mor dela, para se me fazer presente e ver se se deve ou não consentir no tal trespasse, sob pena de ficar nula esta data para se poder conceder novamente a outrem. E, nesta forma, se lhe passa carta para as suas hajas, loge e possua como coisa sua própria, para ele e todos os seus herdeiros, ascendentes e descendentes, sem pensão, nem tributo algum mais que o dizimo a Deus, Nosso Senhor, dos frutos que nelas tiver, a qual concessão lhe faço não prejudicando a terceiro nem a Sua Majestade, se no dito sítio quiser mandar fundar alguma vila, reservando os paus Reais que nelas houver para embarcações, com declaração que mandará confirmar esta data por Sua Majestade dentro de 3 anos primeiros seguintes, e cultivará as ditas terras de maneira que dê fruto, e dará caminhos públicos e particulares onde forem necessários para pontes, fontes, portos e pedreiras; e se demarcará, ao tempo da posse, por rumo de corda e braças craveiras, como é estilo e o dito senhor ordena. E, outrossim, não sucederão nelas religiões ou pessoas eclesásticas por nenhum título; e, acontecendo, possuí-las será com o encargo de pagar delas dizimos a Deus como se fossem possuídas por seculares; e, faltando a qualquer destas cláusulas, se houver por devolutas e se dário a quem das denunciarem. Pelo que mando ao provedor-mor da Fazenda Real, e mais ministros e pessoas a que tocar, que, na forma referida, deixem ter e possuir ao dito Domingos Pereira Valadares as ditas terras, para ele e todos os seus herdeiros, ascendentes e descendentes, como coisa sua própria. Cumpram e guardem esta carta de data e sesmaria tão inteiramente como nela se contém, a qual lhe mandei passar por mim assinada e selada com o sinete de minhas armas, que se registrará onde tocar e se passou por duas vias. Dada na cidade de São Luís do Maranhão, aos 19 dias do mês de junho do ano do nascimento de Nosso Senhor Jesus Cristo de 1738. E eu, José Gonçalves da Fonseca, secretário do estado, a fiz // João de Abreu Castelo Branco//.

Information extracted from the letters:

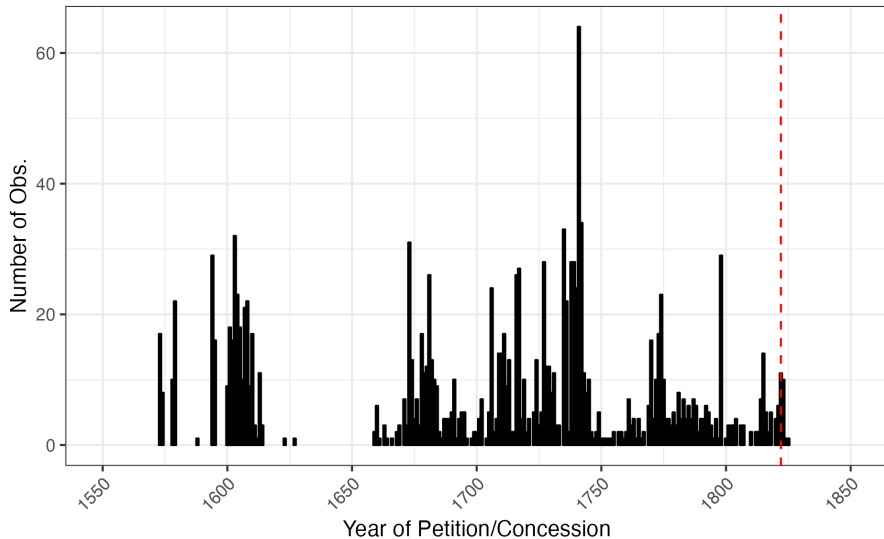
- ▶ Location.
- ▶ Year of Concession (In 1697 they were limited to 3 hectares).
- ▶ Type of Settler to whom it was granted.
- ▶ What purpose was the land requested (cattle, sugar plantation/factory, etc.).
- ▶ Who granted the request.

Current Data Collection by State [Back](#)



Basic Descriptive Statistics [Back](#)

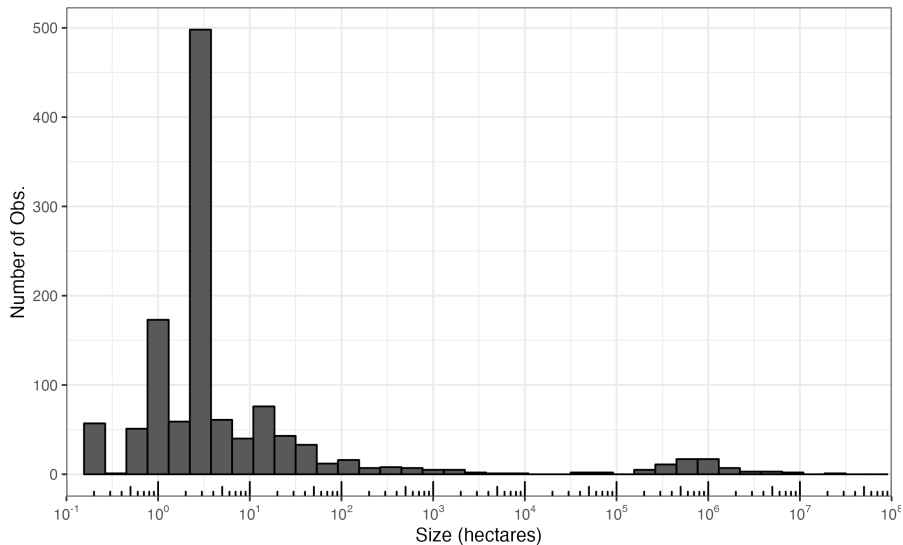
Year Dist.



Basic Descriptive Statistics (1 hec = 2.5 Football Fields)

[Back](#)

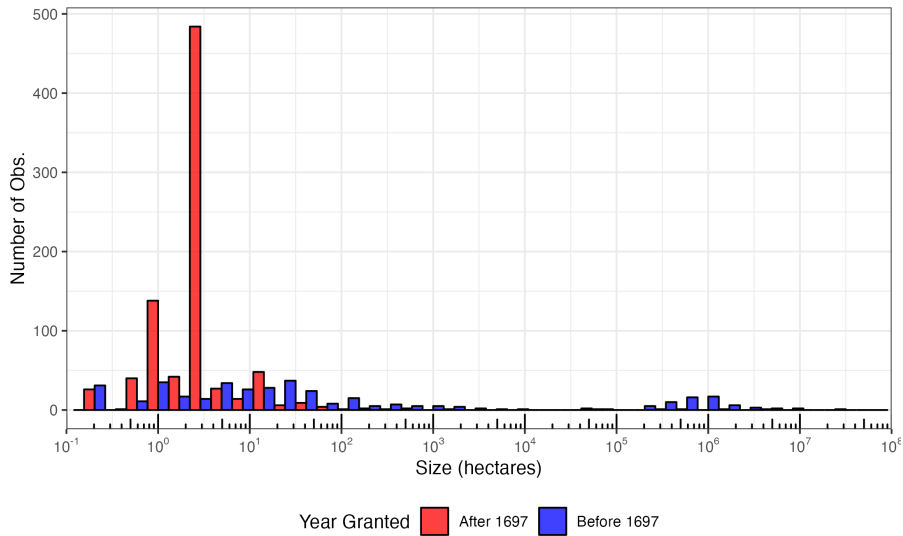
Size Dist.



Basic Descriptive Statistics (1 hec = 2.5 Football Fields)

[Back](#)

Size Dist.



Literature Review

- ▶ Role of colonization and land tenure in present outcomes:
 - ▶ Institutional Origins: [Acemoglu et al., 2001](#) (AER), [Sokoloff et al., 2000](#) (JEP).
 - ▶ Brazil: [Naritomi et al., 2012](#) (JEH), [Musacchio et al., 2014](#) (JEH), [Wigton-Jones, 2020](#) (JEG), [Laudares et al., 2022](#) (WP).
 - ▶ India: [Banerjee et al., 2005](#) (AER).
 - ▶ Africa: [Lowes et al., 2020](#) (WP).