

Of *Latifundia* and *Coronéis*: Agrarian Structure and Educational Inequalities in Brazil

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Abstract

The present paper explores the relationship between agrarian structure and human capital formation between and within Brazil's federal units. It is argued that whether states' agriculture is plantation-style, based on cheap coerced labor, or organized around family farming matters for the formulation of educational policies. According to the main claim, landlords were not interested in paying higher taxes to educate the masses and curtailed schooling expansion in order to keep a cheap workforce and maintain their monopoly over the decision-making process. Describing several episodes in Brazil's history of public instruction, the article stresses the distributional conflicts over education as well as rural aristocracy's resistance towards broadly-targeted, citizenship-enhancing educational policies. The descriptive evidence is complemented by statistical analyses employing historical as well as more recent data. It is shown that states characterized by a more egalitarian land distribution that are not under the dominance of powerful landlords exhibit better educational coverage and enhanced instruction quality. Also, they spend more on schooling.

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1. Introduction

Few claims seem to be as uncontested within the development debate as the importance of schooling for the prosperity of nations. The new growth theory emphasizes the role of human capital in increasing economic output. Also, recent studies suggest that investments in education are among the most effective tools for pulling individuals out of the poverty trap or reducing social inequalities within countries. Furthermore, it has been argued that educated citizens are politically more engaged and better prepared to hold politicians accountable for their actions.

If human capital is so important for explaining economic growth, inequality, poverty and political accountability, what are the factors driving the production of educational policies, the accumulation of human capital and the distributional conflicts over different schooling levels? Surprisingly, this question has only received scant attention from the development literature. Following Gary Becker's (1964) seminal work, economists frequently refer to the costs and returns from schooling when explaining different levels of human capital. Political scientists emphasize the role of electoral competition for the provision of broadly-targeted educational policies. Within the field of Political Economy, scholars stress the political power distribution and the predominance of private interests over public purposes in the formulation and implementation of educational policies. Much of this existing literature, however, can be criticized for largely ignoring distributional conflicts over different educational levels and arguing in a rather static and ahistorical fashion.

Recently, a growing body of literature has focused on structural factors when analyzing educational outcomes. Among these factors, modernization and globalization are frequently cited. One important element, however, has been neglected: nations' agrarian production system. Whether countries' agriculture is characterized by large plantations based on cheap hired labor or rather organized around family farming may have left long-lasting footprints on their educational systems. Although some macro-comparative studies have analyzed this issue in one or another way (Lindert, 2004a; Erickson and Vollrath, 2004; Galor et al., 2009; Wegenast, 2009), the causal mechanisms linking agrarian production systems to human capital formation have been largely omitted. In a first attempt to address this shortcoming, this paper probes more deeply into the relationship between agrarian structure and education,

trying to capture large landowners' attitudes towards mass schooling. For this purpose, it will concentrate on Brazil's landowning elites, providing both qualitative and quantitative evidence for the proposed claim.

The analysis reaffirms that agriculture shaped regional development processes by having long-lasting effects on educational policies. It is claimed that regions exhibiting a plantation-style agrarian structure tend to neglect broadly targeted educational policies, spending disproportionately more on elites' higher education. The results of both descriptive as well as inferential statistical analyses point out that federal units with high degrees of land inequality and an agrarian economy historically based on the cultivation of crops grown on large plantations show lower schooling coverage, an inferior instruction quality and spend less on education. In contrast, states exhibiting a history of smaller family-owned farms were among the first to develop an encompassing school system featuring better educational indicators.

Different causal mechanisms may explain the proposed relationship. The paper's main argument suggests that Brazil's politically influential agrarian elite had no interest in the promotion of schooling. Most likely, big landowners were reluctant to subsidize education of the masses by paying higher taxes. Not only would expanded education cost more through taxes, but education could lead rural workers to seek better-paid jobs in the developing urban sector, threatening the supply of a cheap labor force. In addition, keeping the biggest share of the population illiterate would guarantee landlords' monopoly over the decision making process, given the existence of suffrage laws based on literacy. Furthermore, it would hamper individuals' capacity for political mobilization and articulation. Finally, school visits would keep the young population from working on landowners' fields.

The paper proceeds in the following way: the next section briefly reviews the existing literature, pointing to the paper's proposed theoretical as well as empirical contribution and elaborating on the case selection criteria. Subsequently, the possible mechanisms lying behind the relationship between agrarian structure and educational outcomes will be elucidated. Section four summarizes Brazil's history of education and describes landlords' instruments of political domination. It will be shown that traditional special interests always dominated the formulation of human capital in the country. States' different agrarian structures are described subsequently. A descriptive analysis of 19th century schooling data within and across single states is presented in the following part. Section seven summarizes the results of cross-

sectional regression analyses on a range of educational indicators for the 21st century. The final section concludes by highlighting the main findings and pointing to areas of future research.

2. Literature Review, Empirical Contribution and Case Selection

Different authors have analyzed how landownership structures might exert a persistent influence on the politics of societies. Barrington Moore was among the first scholars to consider agrarian class relations as a predictor of political transformation processes. Studying regime transitions, Moore (1966) explained European democratic breakdowns with the existence of large landholdings and the survival of a powerful class of landowners into the period of modernization. Subsequently, other scholars linked patterns of land inequality to change or resilience of political regimes. Stressing the social control patterns of regions characterized by high rural inequality, Rueschemeyer et al. (1992), for example, argue that small- and medium-scale agriculture is conducive to democratization, whereas countries with large landholdings are inimical to democratic transition.

More recently, Acemoglu and Robinson (2000, 2006a) and Boix (2003) emphasized the role of redistribution when assessing the impact of land inequality on regime outcomes. In their work, landlords – as owners of immobile asset – face greater threats of taxation and expropriation if democratization were to occur. Thus, they try to impede the opening up of the political system. Acemoglu and Robinson (2006b) convincingly demonstrate that elites are more likely to block development whenever political stakes are high (e.g., because of land rents enjoyed by the landed aristocracy). Boix (2003: 40) goes as far as stating that “[T]he absence of landlordism constitutes a necessary precondition for the triumph of democracy”.

Closely related to the papers cited above is the influential work of Stanley Engerman and Kenneth Sokoloff (1997; 2005) linking initial factor endowments to different paths of development within the Americas. Stressing the role of geography for the development of nations, the authors link geographic conditions to particular paths of colonization, which, according to them, translated into different institutional arrangements. Their main claim is that Latin America’s land endowments encouraged the production of commodities featuring

economies of scale and the employment of slave labor – so called cash crops. This initial inequality led to the development of institutional structures that advantaged members of elite classes, conferring them with more political influence and better access to economic opportunities. These institutions perpetuated the high levels of inequality and contributed to the persistence of poor development over the long run.

Despite the role attributed to land inequality for nations' development process, the effect of agrarian structures on the distinct patterns of human capital accumulation remains under-explored in the literature. Among the few studies connecting educational outcomes with agrarian structures, three cross-national analyses and two recent case studies can be pointed out. Lindert (2004a; 2004b) considers various factors explaining student enrolment in primary school between 1881 and 1937. By using the share of men who voted as proxy for landed interest power, the author employs cross-sectional regression analysis and concludes that much of the blame for delaying the expansion of primary education resided in powerful landed elites “opposed to schooling the masses at tax payer expenses” (2004b, p.33). Studying education across the New World from 1800-1925, Mariscal and Sokoloff (2000) find that differences in land inequality explain differences in public provision of schooling, arguing that land disparities create collective action problems within the political units responsible for education funding. Wegenast (2009) uses countries' export composition to proxy for the agrarian structure and concludes that the export of cash crops have led countries to underinvest in secondary schooling and partly explains the educational differences found between Asia and Latin America.

In a case study of Indian districts, Banerjee and Iyer (2005) demonstrate that areas in which property rights were historically given to landlords received significantly lower investments in health and education. Although very insightful and methodologically innovative, the paper does not further explore the reasons for the lack of educational spending within Indian districts typically dominated by landlords.¹ Galor et al. (2009) find a negative effect of land inequality on education expenditure using cross-sectional data on the United States from the beginning of the 20th century. The authors claim that capitalists benefited from the accumulation of human capital by the masses, while landlords were “the prime hurdle for industrial development and social mobility” (Ibid, p. 38).

¹ The authors limit themselves in observing that “the key to what happened may lie in the relative inability of the landlord districts to claim their fair share of public investment” (Banerjee and Iyer, 2005, p. 1191).

As evident, empirical documentation of the relationship between agrarian structure and education is limited. Furthermore, no previous study seems to be able to distinguish which mechanisms are at work. Most of the scholars settle for providing assumptions that may explain the statistical correlation. So far, authors have for example failed to look into landlords' attitudes towards educational expansion with greater detail.

With its economy based primarily on agricultural products for several centuries and its inherent variation of agrarian structures, the Brazilian states provide a rich setting for further assessing the relationship between agriculture and education. Despite the historical importance of agriculture for the Brazilian economy, the impact of structural variables such as the agrarian production system on the country's schooling performance remains unexplored. To the best of my knowledge, Naritomi et al. (2007) offer the first attempt to associate episodes of Brazilian agrarian production with institutional quality and provision of public goods. The authors show that municipalities affected by the rent-seeking cycles of the colonial period ("sugar-cane cycle" and "gold cycle") feature worse institutions and less broadly-targeted public policies.

In line with the last paper, I try to address the gap within the current development literature by asking whether the agrarian production system has a lasting impact on educational policies. Answering this question within a single country context is particularly useful for different reasons. Foremost, it reduces the complexity of having to deal with different institutional arrangements (e.g., legal system, competitiveness of electoral system or colonial power), which is a typical drawback of cross-country approaches. Apart from constant institutions as well as constant historical variables within its national territory, Brazil is a country that shares a single colonizer and a single language and we have detailed history about how agrarian structure and schooling might have co-evolved. Thus, potential problems arising from omitted variable bias or endogeneity are minimized. Also, the applied research design counteracts the shortcoming of making generalizations from aggregate national data that mask significant variation within states.

Finally, why Brazil was selected to test the proposed hypotheses at a sub-national level must be addressed. Since the early 19th century, responsibility for funding primary and secondary schooling falls mainly to the states and municipalities, with educational indicators varying substantially across the federal units. Also, agrarian products dominated the Brazilian

production and export structure throughout history. Up to the late 60s, Brazil was mainly an agrarian country. Concerning the states' landownership patterns, there is enough variation to possibly justify differences within observable educational outcomes. In states such as Espírito Santo, Santa Catarina or Paraná, for example, factor endowments and the settlement process led to an agrarian structure based on smaller properties. In contrast, provinces hosting the sugarcane or coffee cycle such as Pernambuco, Bahia, Rio de Janeiro, Minas Gerais and Sao Paulo share a common history of land disparities and powerful agrarian interests. A final practical reason concerns the availability of historical as well as more recent state-level data. Brazil is probably one of the few developing countries that kept record of its educational figures during the 19th century and reports reliable data for the past decades.

3. The Arguments

In the eyes of a sharecropper living in Mississippi in the year 1936, the "landlord is landlord, de politician is landlord, de judge is landlord, de shurf is landlord, ever'body is landlord, en we ain' got nothing" (Shulman, 1994, p.16). As outlined in the last section, large landowners are believed to have historically exerted considerable political influence over the policy-making process, blocking large transformation processes such as democratization. Max Weber, for example, blamed east Prussian Junkers for much of Prussia's political ills (Weber, 1917).

Following this line of reasoning, the present paper focuses on rural class relations and attributes the lack of schooling opportunities to the special interests of a politically influential landowning elite. It assumes that landlords have high incentives to influence public policy.² The variation in levels of political power, resulting from different agrarian structures, may predict educational outcomes.

Different political economy arguments are presented in order to explain landed elites' resistance towards mass education. Considering that schooling expansion is a costly undertaking requiring public money and that human capital is not necessarily complementary to plantation work, landlords had no interest in financing the education of the masses through

² Frieden (1991), for example, argues that sectors like agriculture, in which assets are specific and cannot be easily transferred for other uses, have the most to gain from influencing governments.

higher taxation. Lindert (2004b, p. 33), for example, argues that where “political voice was restricted to those holding substantial property, poor children got little help from the taxpayers.” Another economic reason for keeping the population uneducated was landlords’ dependence on the constant supply of cheap labor. Educated workers could emigrate to the emerging urban sector, leading to a shortage of labor and an increase in salaries (see Galor et al., 2009). In addition, school visits would keep the young population from working on landowners’ fields.

Politically, landlords tried to maintain their monopoly over the decision-making process by restricting the population’s access to schooling. In Brazil, for example, suffrage laws were conditioned on literacy until 1988. Given that 70% of the total population over 9 years of age was illiterate in 1920 (see Engerman and Sokoloff, 2001, Table 4), restricting the franchise and keeping workers uneducated was certainly an effective tool to avoid political competition. Furthermore, it is known from political sociology that education is conducive to political mobilization and participation (see Downs, 1957 or Brady et al., 1995).³ Thus, by blocking the expansion of the schooling system, the agrarian elite constrained workers’ ability to overcome their collective action problem, hindering them to mobilize for better working conditions and more political empowerment.

Apart from the opposition coming from the landowning class, it can be expected that family-type agriculture based on smaller plots is conducive to the accumulation of human capital due to other reasons of an individual, socio-economic nature. Since land is frequently used as a collateral asset to gain capital market access, rural property owners can better afford to send their children to school.⁴ Owning land titles increases the likelihood of agriculture investments as well. Compared to landless hired laborers or tenants, land owners are more likely to invest in their property, e.g., by buying modern technology such as tractors or fertilizers, as shown by Galiani and Scharrotsky (2006). Furthermore, these last two authors demonstrate that land titling effects fertility and reduces a household’s size. Fewer children make post-basic education more affordable for their parents.⁵

³ Employing a probability sample of 1484 rural Senegalese citizens, Kuenzi (2006) examines the effect of formal and informal education on political participation. Among other interesting results, the author finds a positive and statistically significant effect of formal education on voting and community participation. Using a data set for 69 village communities in two north Indian States, Krishna (2002) concludes that both more educated and informed people are politically more active.

⁴ For studies analyzing the relationship between land inequality and credit market access see Galor and Zeira (1993) or Field and Torero (2006).

⁵ For studies on fertility and child’s schooling see Barro and Becker (1989) or Dessy (2000).

Finally, empirical evidence shows that investments in new agricultural technologies are greater in areas with a high share of landed relative to landless households (see Foster and Rosenzweig, 1996; 2004 or Banerjee and Iyer, 2005). The earlier and more intense introduction of new technology increases parents' incentives to send their children to post-basic schools, given that modern agriculture requires qualified skills. Some findings show that technological change and the corresponding rise in yields made education more valuable and led to an increased demand for schooling. Foster and Rosenzweig (2004), for example, demonstrate that expected future agricultural technology increases the number of schools as well as enrolment in landed households.

It is important to note that this article concentrates on the political economy argument, rather than analyzing the individual socio-economic motivations of people living under distinct agrarian structures to invest in education. Thus, it will mostly stress the role of big landowners in the formulation of educational policies. The next section summarizes the Brazilian history of education, presenting descriptive evidence of how the country's schooling system was shaped by the interests of special groups such as the traditional rural aristocracy. Its main purpose is to shed light on the causal mechanisms that may lie behind the statistical associations to be presented in the upcoming empirical analysis

4. A Common History of Landlords and Education (or the Lack Thereof)

In order to understand the formation of society and the modern state in Brazil, one inevitably has to consider the role played by the country's rural oligarchy. Describing the distribution of power within Brazil, Chilcote (1990: 10) notes that the "ruling class has traditionally been composed of a small group of families whose power stems from the ownership of property." Carvalho (2001, p. 56) points out that within the boundaries of farms and villages, landlords' laws ruled. Rural workers and their families were not citizens of the Brazilian state, but landlords' vassals. National and state politicians relied on these powerful landowners, who herded the rural masses to the elections and overtook state's duties.

Most important for the paper's argumentation, the economic activity performed by these influent landowners was highly contingent on the supply of a cheap labor force, as plantation work was very labor-intensive. Landlords' concern in maintaining the supply of a cheap workforce and the monopoly over the rural properties was eminent and traceable by different courses of action. One of these measures consisted in blocking the access to land for the peasant population. This was achieved with the help of the government, who stipulated land prices that were unaffordable for the rural poor.⁶ The use of violence in order to dislodge invaders or rural occupants without land titling was also very common (see Guimaraes, 1968, pp. 91-92). Furthermore, the establishment of semi-feudal forms of tenancy was increasingly employed to retain the traditional coercion power over labor. Other means to preserve cheap labor included, for example, the establishment of debt peonage, in which the rural population was forced to buy at landlord's grocery stores and ended up totally indebted.

As documented by Hagopian (1996), the powerful class of landholders persisted despite substantial modernization in Brazil. According to the author, in states such as Minas Gerais the relations by which large landowners exchanged political support for extensive state patronage became even tighter after industrialization. At the end of the 60s, half of the whole rural territory was in the hands of plantation owners, who accounted for over 50% of the total foreign exchange.

Brazil's educational backwardness can be directly linked to the country's landed elites mentioned above. In the country's 500 years of history, serious attempts to implement a sound educational system were not made before the second half of the 20th century. As noted by Havighurst and Moreira (1965), the Jesuit colleges were almost the only centers of intellectual culture in Brazil during the colonial era. The main beneficiaries were sons of the rural aristocracy, owners of sugar plantations and sugar mills. With the expulsion of the Jesuits in 1759 and the destruction of their educational institutions, Marques de Pombal tried to establish an educational system designed to reach a more substantial part of the population. According to Havighurst and Moreira (1965, p. 58), the miscarriage of Pombal's plan was caused "by his failure to foresee the cultural, economic, and political forces which opposed his endeavor to give a new and wider meaning to education".

⁶ This doctrine of the "sufficiently high price" was already evident in a consultation of the Imperial Section from the 8th of August, 1842. Bernardo de Vasconcelos and José Cesário de Miranda Ribeiro proposed that the acquisition of land titling should be made more costly, as the profusion of land would cause a scarcity of free laborers for the plantations (see Lima, 1935, p. 78).

After Brazil's independence from Portugal, primary as well as secondary education fell into the hands of the provincial legislative assemblies. The decentralization of primary and secondary schooling can be seen as the central state's attempt to free itself from almost all educational responsibilities. During the 19th century, some local newspapers pled for the expansion of public instruction to benefit as many students from the lower classes as possible. The necessity for making such resolute statements indicates that the defense of schooling as a strategy of incorporating the poor population into cultural and political life was not consensual among the dominant groups. An article from 06/14/1842 of the newspaper *O Universal*, for example, addressed the question of whether it was dangerous to educate the lower classes of society. The newspaper advocated the benefits of educating the poor affirming that "ignorance is the company of anarchy and demagogy". Furthermore, the editor claimed that instruction would only strengthen people's comprehension over the "inviolability of properties – an important pillar of the Brazilian society" (see Faria Filho, 1999, p. 120, translated by the author). The article clearly addresses the traditional landed elites' fear over educational expansion.

Another example of landlords' repudiation of mass schooling is an initiative by the emperor D. Pedro I in the year 1823, which illustrates the unequal importance that basic public instruction had vis-à-vis university education. While a project of educating Brazil's youth (*Tratado de Educacao para a Mocidade Brasileira*) was never approved by the Constituent Assembly dominated by conservative representatives of the traditional agrarian sector, the creation of two universities in the cities of Sao Paulo and Olinda was promptly decided and with unanimity (Saviani, 1987, p.41). A few months later, landlords would send their children to the law faculties of both universities that prepared them for public life. It was the only schooling project approved by the Assembly, which is emblematic of the government's resistance against broadly-targeted public instruction.

The situation of Brazil's schooling system did not improve with the end of the monarchy. The so called Old Republic (1889-1930) is believed to have largely represented the interests of the agrarian elite.⁷ Both the Executive and Legislative bodies were used to maintain the power of

⁷ This period of Brazilian history is known as República das Oligarquias (Republic of the Oligarchies). During this period, all presidents came from two major political parties: Partido Republicano Paulista (PRP) and Partido Republicano Mineiro (PRM). Both parties represented the interests of the agrarian elite, especially the coffee producers from Sao Paulo and Minas Gerais.

states' oligarchies and promote federal decentralization. This oligarchy was directly linked to the agricultural export economy and the *latifundia* structure (see Saviani, 1987, p. 37). The constitution abolished free and compulsory education, reversing education legislation and maintaining this situation for more than four decades. In addition, it conditioned the right to vote on literacy criteria. In this manner, privileges from the slavery period and patriarchal forms of access to economic and social resources were maintained. The law *Lei Maior* from 1891 declined the establishment of a national organization for education, pushing for even greater decentralization of the educational system. Reproducing the prevailing social order, the Brazilian educational system was clearly dualistic. On the one hand, sparse primary education for the poor was tied to vocational training. On the other, secondary schools served as preparation for higher education of the upper classes.

During the First Republic, the rural oligarchy was increasingly concerned with the constitution of an incipient proletariat emerging from the country's urban and industrial development. Landlords repressed all attempts of workers' mobilization and fought the propagation of anarchical ideas. An efficient instrument to exclude the population from political life was the suffrage law based on literacy introduced by the Republican Constitution of 1891, accompanied by a complete lack of schools. Only 6% of the population was eligible to vote at the beginning of the 20th century and a big portion of these voters were manipulated by the landowners (Love, 1975, p. 63). During this period, political power and education were closely intertwined. Governors of the provinces appointed school inspectors who were chosen by the so called *colonels* to control the pedagogic activities of teachers.⁸ This way, workers' contestation or manifestations of discontent were easily suppressed.

At last, the first major educational reform known as *Lei Rocha Vaz* or *Reforma Joao Alves* from the year 1925 obliged the union to partially subsidize primary teachers' salary in rural schools. As mentioned in an account of the national Ministry for Education, however, the apparent shortage of federal resources, the elites' fear of the massive incorporation of new voters and the defense of states' autonomy left this dimension of the reform completely ineffective (see MEC, 2000). Even the proposal of re-introducing free and compulsory primary schooling, discussed during the constitutional revision of 1925/1926, could not be approved.

⁸ Brazilian landowners were (and often still are) considered as being colonels ("coronéis").

The world economic crisis of 1929 brought about a steep decline in Brazil's coffee exports and massive capital flight. Industrial development, based mainly on the country's big internal market, was beginning to emerge as capital was being gradually transferred from the agricultural to the industrial sector. The discontent of an emerging middle class, the exodus from rural areas and the formation of an urban workforce led to the contestation of the prevailing landed oligarchy and to the abolition of the Old Republic. Nevertheless, it is important to note that despite losing part of their political supremacy with the decline of agricultural exports and rising industrialization, big landowners retained substantial political power until the present days – as will be shown later on.

Under the Second Republic, rising social movements, increasing industrialization, the growing demand for a specialized labor force and the gradual reduction of governments' subsidies for agricultural production generated a broader consensus over the necessity for educational spending. A series of decrees issued by minister Francisco Campos intended to foster secondary education. In 1934, the Second Republican Constitution established, for the first time, that education is everyone's right and falls under the responsibility of the family and the public powers (article 148).

The intent to institutionalize public, free, compulsory and gender-equal education by the reformers around minister Campos (the so called "pioneers of the new education") resulted in a heavy ideological clash between traditional sectors of the society (mainly the church and the coffee, cattle and sugar oligarchies) and a renovating movement (representing the interests of a growing middle class, composed mainly of intellectuals, bureaucrats, merchants, industrial workers and military officers). With the implementation of public and free education, traditional forces were not only afraid of a private school drain, but also worried about losing their privileges as a consequence of the school enrollment of broad social classes. Chapter II of the 1934 Constitution can be seen as a victory of the renovating movement over the old elites. As evident in the next paragraph, however, this victory only lasted for three years.

A backlash of this positive development happened with the enacting of the 1937 constitution and the beginning of the so called *Estado Novo*, which can be seen as a product of elites' fears concerning the growing request for more social democratization and the exclusionary nature of the modernization process. According to Romanelli (1978, p. 153), the political context under the *Estado Novo* forced the previous ideological dispute over the educational question

to enter a particular state of “hibernation”. The Constitution of 1937 put considerably less emphasis on education than the previous one, stressing the liberty of the individual initiative and exempting the State from providing universal education (see article 129). Social stratification and the country’s cultural heritage heavily influenced the choice of educational type to be followed. In the composition of the new schooling system, the interests of the prevailing patriarchal rural elite – with its archaic educational ideas – prevailed (see Romanelli, 1978, p. 56).

An explicit distinction was made between the intellectual work directed to the elites and the manual labor, stressing the importance of professional teaching for the less privileged classes. The new economic model, based on the intensification of technological import, called for the training and qualification of a new workforce. Schooling, however, was regarded as a mere channel to fulfill this demand for specialized labor. Other important functions such as the formation of a broadly educated citizenship or the development of applied research activities were neglected. Educational supply was characterized by inelasticity, selectivity and marginalization, failing to satisfy the potential demand for schooling. Clearly, the so called “liberal democrats” played a very marginal role in the formulation of educational policies under the *Estado Novo*.

With the end of the *Estado Novo* in 1946, a new constitution of liberal and democratic character returned to the principle of “education as everyone’s right” developed in the first half of the 1930s and expanded federal competencies to legislate over national education. As happened prior to 1937, intense ideological debates over educational goals such as whether schooling should be universal, compulsory, public, free or decentralized were fought between conservatives and liberal democratic forces (the so called “pioneers”). After 13 years of intense discussions, the law 4.024 (*Lei das Diretrizes*) finally passed congress in 1961; the culmination of possibly the most fertile period of Brazil’s educational history. Among other achievements, a ministry of education (*Ministério da Educacao e Cultura – MEC*), a national plan for education (*Plano Nacional de Educacao*) and a national program for alphabetization (*Plano Nacional de Alfabetizacao*) were established.

Although Law 4.024 was an important attempt to unify the country’s educational system characterized by the already outlined dualism, the reform was not far-reaching and was perceived as unprogressive, reactionary, inefficient and a mere anachronism by many

intellectuals (see Fernandes, 1966, p. 347 or Lima, 1974a, p. 65). In the end, the alliance between rural conservatives and the antidemocratic forces within the modern sector, managed to curtail profound reforms, defeating the more ambitious intentions of the liberal democrats (see Romanelli, 1978, p. 190). Values of the old social order were perpetuated through the selective and discriminatory secondary and higher educational system, designated to prepare the elite for liberal professions.

The mere fact that the *Lei de Diretrizes* needed 13 years to be finally approved indicates how controversially the educational question was treated. Saviani (1985:157) concludes that “the role of the National Congress was to deform the coherence of the original project elaborated by a commission of educators” (translated by the author). Also referring to Law 4.024, Fernandes (1966: 353) puts forward that “the senators yielded to the real owners of power, in an undeniable demonstration that the whole Congress is still enslaved by the particularistic interests of the dominating traditional class” (translated by the author). Furthermore, he affirms that it was a “backward educational system, coherent with the old Brazilian manorial, seigniorial regime” (Ibid: 24). This is confirmed by Lima (1974b, p. 101), who describes Brazil’s schooling system as a “colonial anachronism”.

A military coup in 1964 destroyed the hopes of further reforming the Brazilian educational system with the pretext of being “communistic and subversive”. Until its end, the military regime used the countries’ weakly established educational system as a vehicle of ideological dominance or, in the words of Sarti (1979, p. 122), as a mechanism of political and social control. In the eyes of many different scholars, the Brazilian schooling system promoted by the state had the intention to propagate the dominant ideology and guarantee the reproduction of the social structure (see, e.g., Beisiegel, 1974, pp. 178-179 or Manfredi, 1978, pp. 158-159).

After the re-democratization, a substantial improvement of educational indicators can be noted. Especially in the last 15 years, illiteracy dropped considerably and primary as well as secondary schooling coverage reached satisfactory levels. Nevertheless, the countries’ educational system still lacks quality, falling behind many other developing countries. A second major problem is Brazil’s disproportional educational spending. According to OECD figures released in September 2007, Brazil exhibits the biggest difference in spending on

primary and secondary school students relative to spending on university students among the 34 analyzed countries.⁹

By briefly summarizing Brazil's history of education, this section demonstrated that the country's schooling system often reflected the interests of the ruling classes, especially the rural aristocracy. The described political influence of the agrarian elite can be seen as a co-product of their economic power. The subsequent section briefly describes the historical roots of the unequal land ownership patterns, stressing the differences of the agrarian structure across Brazilian states.

5. Brazil's Agrarian Structure: Five Centuries of Land Concentration

The highly unequal Brazilian land distribution with the predominance of large estates has its origin in the colonial period. As the Brazilian Historian Caio Prado Jr. wrote, the "latifundium, slavery and the export trade remained for more than three hundred years the principle institutions of Brazilian society" (as cited in Dean, 1971, p.607). And, despite evidence of the superior economic viability of smaller estates observable in other regions such as Western Europe, the country's land tenure system remained concentrated. According to Guimaraes (1968: 201), the Brazilian plantation system reached modern times with sufficient power to maintain control over the agrarian economy.

In a first attempt to populate the recently discovered country, Portugal's King Joao III divided Brazil into 15 territories called *Capitanias Hereditárias* (Hereditary Captaincies) – areas granted to Portuguese grantees (captains) with hereditary succession. Seeking to extract profit out of sugarcane plantations, a second settlement attempt was initiated in the 17th century, fostering the so called "sugarcane cycle".¹⁰ In another land-concentrating effort, the crown offered royal grants in the form of large tracts of land (*sesmarias*) to anyone able to pay 300-400 milreis (375 to 500 US\$ in the year 1800) to cover the formalities. Granted

⁹ OECD's report "Education at a Glance 2007" is available at: http://www.oecd.org/document/30/0,3343,en_2649_201185_39251550_1_1_1_1,00.html (02/17/08).

¹⁰ The sugarcane cycle was Brazil's first organized economic activity and lasted from the 16th to the 18th century. Sugar mills were installed along the North- and Southeast coast, with the states of Bahia and Pernambuco being the major producers. The cultivation was done on very large estates and based on African slave labor. With the emergence of the sugar-beet and the cultivation know-how gained by the Dutch, Brazilian sugar production lost its importance in the 18th century.

unsystematically and corruptly, the *sesmarias* contributed to the formation of an aristocratic class of *latifundia* owners enjoying complete property rights over their holdings.

As underlined by Assuncao (2006, p.3), such land-using conditions endured throughout Brazilian history and were yet reaffirmed by the constitution of 1988. A good example is the law *Lei de Terras* from 1850, representing the explicit wish of the politically powerful class to consolidate the *latifundia* system. According to Guimaraes (1968, p.134), the law had three major purposes: impede the acquisition of land through means other than purchase, increase the prize of land and hamper its access, as well as to use the sale of land as a way to attract colonists. This Land Law also legalized all existing squatters and revalidated all *sesmarias*, setting the patterns for modern landholding.¹¹

The abolition of slavery did not alter the land tenure system and Brazil entered the 20th century with a very unequal land distribution, characterized by the coexistence of *latifundios* and so called *minifundios* (very small plots of land incapable of ensuring an adequate living). Table I below shows the land concentration measured by the Gini index as of 1950 and the percentage of the total area corresponding to the 50% smallest plots up to the median in the year 1967.¹² The Northern states with a very low population density such as Pará, Acre, Amazonas, Rondonia, Maranhao or Amapá exhibit the highest land inequalities. Except for Maranhao, these are all frontier states in which the geography is vastly characterized by the Amazon Forest. With gini indices ranging from 0.76 to 0.85, historically important states with a past of plantation-style, export-oriented agricultural production still exhibited a concentrated land ownership structure in 1950. The historical sugarcane plantations from Pernambuco, Paraíba and Alagoas, the cocoa and sugarcane cultivations in Bahia¹³, the coffee production in Sao Paulo, Minas Gerais and Rio de Janeiro¹⁴ or the cattle-breeding and mineral extraction in Mato Grosso and Minas Gerais left footprints on the states' land tenure conditions.

¹¹ Comparing Brazilian 19th century land legislation with the US American one, it can be said that while the former blocked rural workers' access to land, the US *Homestead Act* of 1862 stipulated the free distribution of plots up to 160 acres per family.

¹² The data on the land ginis was taken from the report of the 1995-1996 *Censo Agropecuário* from the *Instituto Brasileiro de Geografia e Estatística (IBGE)*. Data on the area corresponding to the 50% smallest plots comes from Hoffmann (1998).

¹³ A lucrative enterprise in the South of Bahia from the late 18th century until the New York stock market crash in 1929, the cultivation of cocoa turned into a symbol of colonels' wealth and power. Even after abolition of slavery, semi-feudalist working conditions remained.

¹⁴ The so called "coffee cycle" took place from 1800 to 1930 and was the great motor of Brazil's economy from the second half of the 19th century. Around 1838, coffee accounted for over 50% of the countries' total exports (see Guimaraes, 1968, p. 80). Like other cash crops, the cultivation of the so called black gold was very labor intensive and barons were dependent on the supply of slaves or cheap hired labor. According to Guimaraes (1968, p. 85), the coffee cycle led to an intensification of land concentration in the respective states.

Four states are frequently referred to as having a different agrarian land structure: Santa Catarina, Espírito Santo, Paraná and – to a lesser extent – Rio Grande do Sul. Plots between 25 and 30 hectares were no exception within these states, guaranteeing families' subsistence and small surpluses (see *IBGE*, 1946, p. 58). Within these states, the *latifundia* system was never that widespread and as powerful as in the coffee or sugar plantation zones.¹⁵ In 1960, the percentage of plots smaller than 100 hectares corresponding to the states' total area in Espírito Santo, Santa Catarina and Paraná were, respectively, 54.7%; 52.4% and 46.3%. These numbers were significantly lower in federal units showing a *latifundia* tradition such as Pernambuco (35.2%), Bahia (33.6%), Alagoas (32.2%) or Rio de Janeiro (30.4%) (see Guimaraes, 1968, p. 221).

In the state of Santa Catarina, the concession of the already mentioned *sesmarias* during the 17th and 18th century was granted to the destitute population rather than to nobles or wealthy persons, as in most other provinces (Fiori, 1991, p. 27). Because of this, according to Cabral (1968: 192), Santa Catarina never experienced the “colonial society that prevailed in other areas, the wealthy and powerful sugar barons, the masters and slaves. The *latifundia* system never established itself, while the small property regime spread rapidly contributing to the emergence of free labor” (translated by the author). Furthermore, with the Land Law of 1850, the Portuguese Crown had given nearly a third of the province of Santa Catarina, and large areas of Rio Grande do Sul and Paraná to colonization companies. Secure land titles and reasonable properties were guaranteed to mainly German, Italian and Polish immigrants. As a consequence, the agrarian structure of these states was formed mostly around smaller family properties (see Hoffmann, 1980). These European settlers were attracted in order to address the labor shortage and to stimulate the cultivation of crops such as maize or wheat, vital for the domestic market and neglected by the large plantations.

In Espírito Santo, especially the arrival of immigrants from other states – attracted by moderate land prices resulting from the states' land selling policy at the end of the 19th century – promoted the proliferation of smaller family farms. In the year 1920, the average size of rural properties in the state was 42 hectares in the Vale do Rio Doce and 77.1 in the Vale do Itapemirim, representing low numbers compared to the rest of Brazil (see Almada,

¹⁵ It is important to note that the successful settlement of European immigrants was only possible in rural areas not directly affected by the economic and political power of landlords. As put forward by Guimaraes (1968, p. 131), the Northeast and the state of Minas Gerais did not exhibit one case of successful European settlement.

1993, p. 31).¹⁶ Although Espírito Santo received an important number of European colonizers, immigration did not play the same important role as in Brazil's Southern states. As outlined by Almada (1993, p. 25), European immigrants in the Vale do Rio Doce and Vale do Itapemirim constituted, respectively, 7.3 and 5.3% of the total population in the year 1920. More important was the settlement of immigrants arriving from adjacent states.

As evident in Table I, two other states figure among the most equal ones: Roraima and Ceará. Roraima's low gini index is a direct consequent of the states' equally distributed very large plots. Its median area of total properties in 1967 was 772 hectares (see Hoffmann, 1998, p.7). Thus, the state's apparently equal land distribution is simply a shortcoming of the Gini index. When additional land concentration measures are taken into account, Ceará also fares worse than the Southern states or Espírito Santo. An indication of this is the relatively modest total area of the 50% smallest rural properties shown in Table I. Overall, several other land distribution indicators summarized by Hoffmann (1998) for later periods show that the inter-state concentration patterns presented here remained largely unaltered throughout the last decades.

[Table I here]

Another federal unit that deserves a special mention is Sergipe. Located in the Northeast next to Bahia, sugarcane was an important commodity for the state's economy. Nevertheless, large parts of the province's dry land were used for the cultivation of cotton. In the years 1867 and 1868, the commodity accounted for 49.8% of total exports (Nunes, 2006, p. 20). As stated by Bruno (1966, p. 83), the cultivation of cotton did not require big investments and was affordable for any small farmer. Being a more "democratic" crop, it is comprehensible that Sergipe had a family farm share of 23% in 1950, whereas the mean for the whole country added up to a mere 6% (Barraclough, 1973, p.122). Nunes (2006, p. 21) points out that the *latifundia* system that divided the society into landlords and slaves in other Northeastern provinces never played a significant role in Sergipe. Even the sugar plantations were of modest size compared to the ones in Bahia or Pernambuco. The slave population was small, foreign immigrants were almost not present and the economy was based on free laborers.

¹⁶ The national average of rural properties in the same year was 270 hectares (see Guimaraes, 1968, p. 209).

Having analyzed the colonial roots of Brazil's land inequalities and outlined the regional differences within states' agrarian structure, the next section shows that federal units that were not under the control of a politically dominant rural oligarchy were more concerned with educating their population. Making use of historical data, it draws a picture of the different educational performances across Brazil's provinces in the 19th century. Furthermore, it briefly describes the formulation of educational policies and the schooling indicators within the states of Santa Catarina and Espírito Santo.

6. Agrarian Structure and Schooling in 19th century Brazil

Profiting from the *Brazilian Government Document Digitization Project* undertaken by the *Center of Research Libraries*,¹⁷ it will be analyzed whether the provinces organized – for the most part – around family farming such as the Southern states, Espírito Santo and, to a minor extent, Sergipe exhibit better educational indicators as has been previously hypothesized. Table II below presents primary educational spending figures for the few provinces for which data was available around the year 1870.¹⁸ Educational expenses are expressed in the former currency (*milréis*)¹⁹ and were divided by provinces' total population as of 1872.²⁰ Looking at the spending figures, it is striking how economically important provinces such as Bahia (a major producer of cocoa) or Minas Gerais (a major cattle-breeder and coffee producer) neglected primary education compared to Santa Catarina, which spent considerably more. The frontier province of Amazonas seems to have emphasized educational policies the most. The relatively higher spending figure, however, is a product of its extreme low population density.

[Table II here]

¹⁷ Among other interesting information, the project gathers provincial presidential reports issued annually during the Imperial period. Subject access to selected quantitative information is provided through links from the Subject Guide to Statistics in the Presidential Reports of the Brazilian Provinces, 1830-1889 compiled by Ann Hartness (<http://brazil.crl.edu/bsd/bsd/hartness/index.html>).

¹⁸ Educational spending data was gathered for each single province by accessing the various items catalogued under the category "educational expenditures" available at <http://brazil.crl.edu/bsd/bsd/hartness/educexp.html>.

¹⁹ Around 1910, one *milréis* was rated at 54 cents of US\$ and six mills.

²⁰ Data comes from *IPEA* and can be retrieved from <http://www.ipeadata.gov.br/ipeaweb.dll/ipeadata?113967296>.

Table III lists the average primary school students' registrations in the years 1865, 1869, 1875 and 1885 (divided by the total population in 1872 and 1890).²¹ As evident, the four provinces exhibiting the most equal land distribution are among the regions with the highest primary school matriculations. Sergipe exhibits the second highest level of primary students, followed by Rio Grande do Sul, Santa Catarina, Espírito Santo and Paraná.²² Once more, the high figures for frontier states exhibiting an extremely low population density such as Pará, Mato Grosso and Amazonas have to be interpreted with care. Given their geography, which is dominated by the rain forest, the population of Brazil's three biggest states was concentrated in capital cities such as Belém, Cuiabá or Manaus. It is to be expected that the surveyed population do not include residents outside these major urban areas, distorting the results. Schools outside these few major settlement areas were extremely rare.

[Table III here]

Descriptive evidence of provinces' effort to expand and ameliorate public schooling confirms the picture shown by the historical statistics. With the so called *Ato Adicional* of 1824, provinces were allowed to make their own legislation over primary and secondary public instruction. Compared to most of the other Brazilian states, Santa Catarina showed an early preoccupation with extending and consolidating the schooling system. Already in the year 1874, schooling was declared compulsory within the boundaries of the state. Rather than representing a mere legal determination, Ulhôa Cintra, the provincial president at that time, was concerned with truly enforcing compulsory education (see Fiori, 1991, p. 53). Recognizing that public instruction was still characterized by deficient schooling inspection, unprepared teachers and bad instruction quality, the provincial Assembly of Santa Catarina approved an educational reform in the year 1881. Among other measures, the reform introduced selection processes for the awarding of teaching chairs, lifelong tenure, secularization of schooling, mixed schools and redefined the inspection activities.

²¹ Data on primary school students' registration was gathered for each province by accessing the various items catalogued under the category "primary education, public" available at <http://brazil.crl.edu/bsd/bsd/hartness/predpub.html>.

²² The concentration on primary education is due to the fact that, in 19th century Brazil, secondary schooling was attended almost exclusively by the children of the upper middle and higher classes. Thus, figures on primary school registration are more suitable for identifying provinces' effort to educate the masses.

In 1911, the governor Vidal Ramos introduced additional ambitious educational reforms that profoundly altered the state's public instruction system. The efficient reorganization of public schooling promoted by Ramos was admired by other states (see Fiori, 1991, p. 83). Orestes Guimaraes, the following governor, undertook horse journeys of several days' duration to personally inspect schools in rural areas. New teaching and learning concepts – rejecting servile memorization of learning matter – were propagated and there was a strong concern with schooling quality, which led to an increase in teachers' knowledge requirements and improved statistical coverage (Fiori, 1991, p. 96). Writing on the state's schooling system, the federal deputy Lebon Regis affirmed that teaching supervision in Santa Catarina is “a reality like in no other state” (Regis, 1917, p.18, translated by the author).

Like Santa Catarina, the state of Espírito Santo also exhibits an agrarian structure in which smaller family farms always played a fundamental role. However, as previously highlighted, this state was primarily populated by internal immigrants rather than European settlers. By analyzing the state's educational performance, it is possible to verify if the positive schooling development in the south can be attributed exclusively to European immigration. Table III reveals that Espírito Santo exhibited similar primary school registration numbers for the period 1865-1885 to the southern states. Furthermore, literacy numbers for the years 1940 and 1950 reveal that municipalities organized around family farming showed a lower percentage of illiteracy among the population within this state. Thus, municipalities exhibiting a high amount of smaller farms such as Santa Tereza, Santa Leopoldina or Cachoeiro had literacy numbers of respectively 43.63%, 49.71%, and 44.22%. These figures were significantly lower in municipalities dominated by large rural properties such as Alegre (34.70%), Mimoso do Sul (30.38%) or Muqui (36.82%). The state's average literacy for the same year was 39.75% (see *IBGE*, 1953, p. 6). Thus, it seems unlikely that the superior educational performance of southern states is solely an expression of European immigrants' push for more education.

The descriptive statistics reported above, although corroborating the main argument of this paper, can only serve as first preliminary evidence. Given the scarcity of historical data, more sophisticated statistical tools cannot be applied. The next section makes use of more recent data, asking whether the association between agrarian structure and educational outcomes holds for modern times.

7. Cross-sectional Analysis

For the cross-sectional regression analyses presented in this part, a variety of educational indicators have been chosen. As a starting point, two output measures reflecting states' secondary schooling coverage have been selected for the year 2000: the share of the population above the age of nine having completed eight years of study and the share of the population between 15 and 17 years of age attending secondary education.²³ The latter indicator may give us a particularly good idea of how encompassing each state's secondary school system is. In contrast to the historical analysis, this part concentrates on public secondary schooling, given that cross-state differences are much larger for this educational level in present times.

To proxy for states' agrarian structure, the land Gini index for the year 1995 was used. Data comes from the 1995/1996 *Censo Agropecuário* from the *IBGE*, which unfortunately is the last agrarian census that has been carried out in the country.²⁴ As already noted, the Gini index does not always reflect states' agrarian structure in a valid manner (e.g., when states' land ownership structure consists of very large, equally distributed plots). In fact, the measure does not necessarily reflect landholdings' size. Therefore, the percentage over the total area corresponding to the rural plots smaller than the median (the 50% smallest plots) taken from Hoffmann (1998, p. 9) was also employed.

Several control variables frequently found in the literature have been included. Unless otherwise noted, all of them represent the year 2000. The percentage of children between five and nine years of age was considered in order to account for possible demographic differences across states. Those federal units with a relatively high share of young people are expected to devote more resources on basic schooling and have more students enrolled at these educational levels. Since the performance of educational systems is found to be worse in rural areas, the total share of the rural population in each state was taken.²⁵ To measure the impact of economic modernization on educational indicators, states' per capita income in 2000 was included in all models.²⁶ Richer units are expected to show a more highly developed secondary school system. In order to take account of recent findings showing a positive

²³ Data comes from the *IBGE* demographic census of the year 2000 and is available at <http://www.ibge.gov.br/home> or <http://www.ipeadata.gov.br>.

²⁴ This data may also be retrieved from the websites listed in the previous footnote.

²⁵ Data for both variables was taken from the *IBGE* demographic census.

²⁶ Data was estimated by *IPEA*: <http://www.ipeadata.gov.br>.

correlation between electoral competition and educational spending and coverage (e.g. Hecock, 2006), the level of political competitiveness within each state was considered as well. The variable was measured by the number of effective parties in states' legislative assembly following the operationalization proposed by Laakso and Teegapera (1979).²⁷ Finally, regional dummies for Brazil's north and northeast were included to account for possible structural instability. Both regions clearly lag behind in most of the country's economic and social indicators and, as previously shown, also exhibit the highest land inequalities.

Tables IV and V below show the results of simple OLS-regressions using robust standard errors for the share of the population above the age of nine having completed eight years of study and the share of the population between 15 and 17 years of age attending secondary education. In order to normalise the distribution of the years of study variable, the negative reciprocal was taken. After the transformation, a skewness-kurtosis test certified that the sample at hand came from a normally-distributed population. In addition, Cook and Weisberg tests for heteroscedasticity indicate that the null hypothesis of constant error variance cannot be rejected – which applies for all the regression results reported in this paper.

As evident in Table IV below, land inequality significantly decreases the share of people who have accomplished eight years of study within the population. This finding is robust to the introduction of regional dummies, although the coefficient's statistical significance drops to the 10% level (model 2). Except for the variable accounting for the northeastern states, all control variables remain insignificant. As predicted, the northeast seems to constitute a unique sample. The results are similar when the percentage of the total area corresponding to the 50% smallest plots is used as an alternative operationalization of the agrarian structure (model 3). The more the total rural area is constituted by smaller plots, the higher the percentage of the population having completed eight years of study. Under this model specification, the variable measuring the rural population's share also turns out to be significant, decreasing the dependent variable. Note also that some control variables' coefficients switch signs in model 3 due to their high standard errors. A reduction of the number of observations from 27 (model 2) to 25 (model 3) is due to information lacking on the share of the 50% smallest plots for the states of Mato Grosso do Sul and Tocantins.

²⁷ Following the seminal works of Duverger (1954) and Sartori (1976), the effective number of parties has turned into one of the most often used aggregate quantities to describe partisan configurations or electoral competition. In this paper, alternative operationalizations of electoral competition such as the indices of competitiveness developed by Santos (1997) for Brazil were also applied but did not change the results substantially. The utilized data can be retrieved at <http://www.ucam.edu.br/leex/>.

[Table V]

Taking the share of the population between 15 and 17 years of age attending secondary education as the dependent variable, results are nearly identical (Table V). Apart from the regional dummies, only land ginis and the share of the 50% smallest plots seem to have a significant impact on the secondary schooling system. Although showing the expected sign, electoral competition once more has no impact on educational coverage. This finding is in line with recent work done on Mexican municipalities by Cleary (2007, p.283), who concludes that “electoral competition has no effect on municipal government performance”. In model 2, the demographic variable measuring the share of the population between five and nine years of age also turns out to be significant at the 10% level, decreasing secondary school attendance. It can be expected that states showing a very young population (under ten years of age) tend to show higher primary school visits.

[Table V here]

An important caveat of educational indicators that measure attendance or attainment is that they do not account for schooling quality. A state, for example, may have nearly 100% percent of its children attending the elementary school. Effectively, however, only a small minority of them might be able to read and write. Thus, it is indispensable to assess states’ effort to deliver high quality educational policies. In 2005, Brazil’s Ministry of Education (*MEC*) together with the *Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (INEP)* developed an index of school quality for each state. The *IDEB* index combines information on students’ performance on standardized exams (*Prova Brasil* or *Seab*) with information on students’ school performance (average approval rate).²⁸ The index ranges from 0 to 10, with higher values indicating better quality. The next analysis assesses whether the secondary students of states exhibiting higher land inequalities fare worse than their classmates in more egalitarian federal units.

[Table VI here]

²⁸ The IDEB index can be downloaded at <http://ideb.inep.gov.br/Site/>.

Table VI above reveals that the secondary schooling system of states showing concentrated land ownership patterns indeed suffers from an inferior teaching quality. Even after the introduction of the regional dummies (model 2), the main variable measuring states' agrarian structure remains negative and highly significant. Furthermore, it seems that richer states also exhibit better-prepared secondary students. This assertion, however, does not hold for model 3. All other coefficients remain identical when the alternative operationalization (share of the 50% smallest plots) is employed. Note that the percentage of the population between five and nine years of age was excluded from the analysis as there are no theoretical grounds to believe that states' demography has an impact on schooling quality.

As pointed out by the descriptive historical analyses of the previous sections, big landowners favored the development of higher public education vis-à-vis broadly targeted schooling. In order to statistically test this claim, a ratio of the share of population between 20 and 24 years of age attending universities divided by the share of population between 15 and 17 attending secondary schools was employed as a dependent variable. Table VII shows that states with a more egalitarian land distribution have relatively more students attending secondary schools than universities. Richer states exhibit a higher share of university students in relation to secondary pupils. Furthermore, the younger the states' population, the more emphasis seems to be put on secondary education compared to higher schooling. The same results are achieved using the share of the population having completed 15 years of study divided by the share of those having enjoyed 8 years of schooling as a dependent variable.

[Table VII]

Up to this point, only output variables have been employed to describe each state's educational system. Many authors argue in favor of the superiority of these indicators relative to incidence-based measures. Government spending levels, for example, can be distorted by patterns of "hidden" rents.²⁹ Nevertheless, this paper will make use of educational spending figures in order to explicitly test the political economy mechanism formulated in section 3. Assuming that the rural elite has no interest in the promotion of broadly-targeted educational policies, it can be expected that governments under the influence of this elite will refrain from

²⁹ Baum and Lake (2003, p.336) correctly state that "a politically corrupt state that is capturing larger rents and distributing them to its supporters through inflated or unnecessary expenditures, for instance, may appear to be spending more on education than a politically efficient regime, but the level of actual services delivered to citizens will be much lower in the first than in the second case".

investing in the school system. The next analysis uses states' overall educational expenditures divided by their total population between the years 2003 and 2005 as a dependent variable. The data is reported by *IPEA* and is expressed in *Reais* (thousand).³⁰ To transform the variable into a normally distributed one, the negative reciprocal root was taken.

Rather than proxy agrarian elites' influence by considering its economic power reflected in the distribution of land in each state, a more direct measure of landlords' political articulation capacity will be employed. The so called *bancada ruralista* is a good indicator of big landowners' political power nowadays. This powerful rural interest group gathers federal deputies and senators from different political parties that defend the interests of large landowners within the National Congress. During the legislature of 2003-2007, the *bancada ruralista* consisted of 111 federal deputies (from a total of 513 seats), as calculated by the *Departamento Intersindical de Assessoria parlamentar (Diap)*. These deputies are extremely successful in maintaining the current land distribution patterns and agricultural work relations. In the Chamber of Deputies, for example, this interest group constantly blocks the constitutional amendment *PEC 438/2001*, which would confiscate properties employing slave work.

For each new legislature, the *Diap* publishes the names of federal deputies and senators pertaining to this interest group, examining whether congressmen embraced the causes of the rural interest group in the plenary sessions, the commissions or in interviews. Most of the representatives openly state their membership in their curricula posted on the chamber of deputies' website. The total number of federal deputies and senators belonging to the *bancada ruralista* in each state during the legislature 2003-2007 will be used to measure landlords' political power.³¹ Apart from the control variables included in the former models³², two more were added: the federal educational transfers to the states in the period 2003-2005 (reported by *IPEA*) and a dummy variable reflecting the partisanship of the major state legislative party in the year 2004.³³ According to conventional wisdom, left parties are expected to spend more on social policies.

³⁰ Data can be downloaded from www.ipeadata.gov.br.

³¹ This data is available at *Diap*'s website: www.diap.gov.br.

³² The variable measuring the effective number of parties was taken for the year 2002, per capita income and the share of the population between 10 and 19 years of age for the year 2000.

³³ This data was kindly provided by George Avelino.

As shown in Table VIII, the more members belong to the described interest group within each state, the less is spent on education. The coefficient for the variable *bancada* is negative and significant at the 5% level. Three control variables reached statistical significance. In accordance with the literature, left parties seem to spend more on schooling. Also, the more educational transfers the federal government makes to the single states, the higher their total expenditures on education. Finally, demographically younger states (with a higher share of its population between 10 and 19 years of age) disburse more on the schooling system. Once more, northeastern states lag behind, spending less on education than the other states.

[Table VIII here]

Concerning the robustness of the results, several checks were performed. First, the robustness of including and excluding one or more control variables in the preferred specification was verified, applying a technique recently developed by Barslund (2007). The author provides a *STATA* module to perform robustness checks of alternative specifications.³⁴ The command estimates a set of regressions where the dependent variable is regressed on core variables – which are included in all regressions – and all possible combinations of other (non-core) variables. An analysis of predictors’ variance inflation factor (VIF) confirmed that the results are not driven by multicollinearity.³⁵ In addition, two varieties of robust regressions that resist the pull of outliers - giving them better-than-OLS efficiency in case of non-normal, outlier-prone error distributions - were applied.³⁶ Also, dropping one state at a time did not alter the results substantially. The tests indicate that all models presented in this section are robust to alternative specifications and are not driven by single outliers.

8. Conclusions

Given the general academic consent over the importance of education for countries’ development, it is surprising how little attention the social sciences have paid to the effect of structural variables such as landownership patterns on the formation of human capital. Trying

³⁴ The ado-file for the command “checkrob” can be downloaded at <http://fmwww.bc.edu/repec/bocode/c/checkrob.ado>.

³⁵ Chatterjee et al. (2000) suggest the following guideline for the presence of multicollinearity: The largest VIF is greater than 10 or the mean VIF is larger than 1.

³⁶ The two robust regression performed are quantile regression and another technique that rests upon iteratively reweighted least square (IRLS) procedures. They were estimated by the *STATA* commands “*rreg*” and “*qreg*”.

to address this shortcoming within the literature, this paper explored the impact of different agrarian structures on the schooling system of the Brazilian states.

The article has concentrated on the political economy argument suggesting that landlords had no interest in schooling expansion out of the fear of higher taxes as well as the loss of a cheap, coerced labor force and their monopoly over the decision-making process. By describing several episodes of Brazil's history of education, the paper provided positive evidence for the proposed causal mechanism. In this manner, it tried to remediate a frequently found shortcoming of quantitative, macro-comparative studies that limit themselves to showing significant correlations without truly addressing and testing particular channels. Brazil proved particularly useful for this purpose, given that it has a tradition of plantation-style agriculture and, simultaneously, exhibits some states with a rural economy organized around smaller family farms. Moreover, the country's primary and secondary education lies largely in the hands of the single states.

The overview of Brazil's history of education revealed the importance of politically powerful groups such as landlords in the formulation of educational policies. It showed, especially, that traditional forces represented by the rural aristocracy tried to maintain the elitist character of the educational system, depriving the masses from citizenship-enhancing schooling while favoring the development of higher education. Long-winded and mostly unsuccessful attempts to reform the educational system illustrated this point. Through this course of action, the rural elite maintained their strong political power and the agrarian structure characterized by high land inequality and coercive working relations for a long time.

Descriptive analysis of historical data suggested that economically important provinces whose agriculture was based on plantations employing slave or cheap hired labor lagged behind in respect to students' registration numbers. Cross-sectional regression analyses pointed out that this picture still holds for present times. States showing higher land equality systematically outperform less egalitarian units concerning school coverage and quality. This is especially true for the secondary school system. Finally, states with a high number of congressmen belonging to the interest group *bancada ruralista* invest less in education. Thus, supportive evidence was provided to demonstrate big landlords' aversion to governmental schooling expenditures.

Much room remains for future research. Upcoming studies should concentrate on disentangling and testing the single channels through which the agrarian structure impacts countries' educational policies. This would surely improve our understanding of the formulation of public policies and, above all, would be particularly relevant for many developing countries still highly dependent on agricultural production. Another interesting line of research to be explored is the possible interconnectedness between the rural and industrial elites and its impact on human capital formation.

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TABLES

Table I

States	Landgini1950	Area of 50% smallest plots 1967
Distrito Federal	.	3,3
Goiás	.	4,7
Espírito Santo	0,529	14,1
Roraima	0,614	13,9
Santa Catarina	0,669	9,4
Paraná	0,73	9,2
Ceará	0,747	4,7
Rio Grande do Sul	0,757	7,8
Minas Gerais	0,759	4,6
São Paulo	0,77	5,5
Rio de Janeiro	0,79	3,7
Bahia	0,799	4,4
Piauí	0,8	4,1
Paraíba	0,808	4,3
Rio Grande do Norte	0,808	4,2
Sergipe	0,813	3,9
Pernambuco	0,834	3,8
Mato Grosso	0,844	1,1
Alagoas	0,845	4,5
Pará	0,888	2,5
Acre	0,907	0,3
Amazonas	0,923	1,9
Rondonia	0,928	0,4
Maranhão	0,932	3,1
Amapá	0,935	1,6

Table II

Provinces	Primary Education Spending per Population (1870)
Minas Gerais	0,1133
Bahia	0,1880
Ceará	0,2216
Rio Grande do Norte	0,2394
Alagoas	0,3249
Pernambuco	0,4406
Santa Catarina	0,5206
Amazonas	0,9651

Table III

Provinces	Number of primary school students' registration divided by total population (1865-1885)
Paraíba	0,0083
Bahia	0,0092
Minas Gerais	0,0092
Rio Janeiro and Court	0,0097
Goiás	0,0097
Ceará	0,0103
São Paulo	0,0123
Maranhão	0,0126
Pernambuco	0,0130
Rio Grande do Norte	0,0133
Amazonas	0,0141
Alagoas	0,0146
Mato Grosso	0,0147
Paraná	0,0162
Espírito Santo	0,0165
Santa Catarina	0,0172
Rio Grande do Sul	0,0198
Sergipe	0,0254
Pará	0,0260

Table IV**Dependent Variable:** share of population with 8 years of study

Variables	Model 1	Model 2	Model 3
Landgini	-0.231 (0.068) ^{***}	-0.093 (0.053) [*]	
Share of plots smaller than the median (50% smallest)			0.003 (0.001) ^{***}
Rural Population	-0.001 (0.0005) ^{**}	-0.0005 (0.0005)	-0.001 (0.0004) ^{***}
Population_5_9_years	0.007 (0.004)	0.002 (0.004)	-0.0002 (0.003)
Per Capita Income	0.00016 (0.0001)	0.0001 (0.0001)	0.0001 (0.00004)
Effective Number of Parties	0.002 (0.002)	0.0006 (0.002)	-0.0003 (0.002)
North		-0.011 (0.012)	0.007 (0.010)
Northeast		-0.040 (0.013) ^{***}	-0.035 (0.011) ^{***}
Constant	-0.048 (0.097)	-0.086 (0.065)	-0.124 (0.044) ^{**}
Number of Obs.	27	27	25
R ²	0.783	0.840	0.900
Prob>F	0.0000	0.0000	0.0000

Note: OLS regressions using robust standard errors. Standard errors in parentheses.

***significant for p<0,001; **p<0,01; *p<0,05; *p<0,1

Table V

Dependent Variable: share of population between 15 and 17 years of age attending secondary education

Variables	Model 2	Model 3
Landgini	-8.060 (3.300)**	
Share of plots smaller than the median (50% smallest)		0.145 (0.079)*
Rural Population	0.021 (0.040)	-0.008 (0.048)
Population_5_9_years	-0.371 (0.305)	-0.588 (0.300)*
Per Capita Income	0.005 (0.005)	0.003 (0.004)
Effective Number of Parties	0.049 (0.098)	0.020 (0.124)
North	-1.872 (0.897)*	-1.059 (1.089)
Northeast	-2.491 (0.707)***	-3.060 (0.871)***
Constant	15.522 (4.173)***	13.524 (4.532)**
Number of Obs.	27	25
R ²	0.866	0.854
Prob>F	0.0000	0.0000

Note: OLS regressions using robust standard errors. Standard errors in parentheses.

***significant for $p < 0,001$; ** $p < 0,01$; * $p < 0,05$; $p < 0,1$

Table VI**Dependent Variable: Quality of secondary education**

Variables	Model 1	Model 2	Model 3
Landgini	-2.954 (0.678)****	-3.443 (0.909)***	
Share of plots smaller than the median (50% smallest)			0.045 (0.024)*
Rural Population	0.007 (0.007)	0.011 (0.009)	0.007 (0.014)
Per Capita Income	0.001 (0.00017)*	0.001 (0.0006)*	0.001 (0.0009)
Effective Number of Parties	0.022 (0.024)	0.035 (0.029)	0.037 (0.030)
North		-0.222 (0.210)	-0.202 (0.270)
Northeast		-0.028 (0.160)	-0.158 (0.247)
Constant	4.605 (0.733)****	4.888 (0.797)****	1.917 (0.498)***
Number of Obs.	27	27	25
R ²	0.557	0.610	0.549
Prob>F	0.0001	0.0005	0.0009

Note: OLS regressions using robust standard errors. Standard errors in parentheses.

****significant for $p < 0,001$; *** $p < 0,01$; ** $p < 0,05$; * $p < 0,1$

Table VII

Dependent Variable: share of population between 20 and 24 years of age attending universities divided by the share of population between 15 and 17 attending secondary schools

Variables	Model 1
Share of plots smaller than the median (50% smallest)	-0.008 (0.004)*
Population between 5 and 9 years	-0.027 (0.015)*
Rural Population	7.59e ⁻⁰⁶ (0.003)
Per Capita Income	0.001 (0.0002)***
Effective Number of Parties	-0.013 (0.008)
North	0.023 (0.062)
Northeast	0.080 (0.053)
Constant	0.579 (0.228)**
Number of Obs.	25
R ²	0.717
Prob>F	0.0001

Note: OLS regressions using robust standard errors. Standard errors in parentheses.

***significant for $p < 0,001$; ** $p < 0,01$; * $p < 0,05$; * $p < 0,1$

Table VIII

Dependent Variable: total educational expenditure divided by population

Variables	Model 1
Bancada ruralista	-0.024 (0.011) ^{**}
Population between 10 and 19 years	0.119 (0.065) [*]
Left	0.499 (0.126) ^{***}
Center	0.219 (0.125)
Federal government transfers	0.015 (0.004) ^{***}
Per Capita Income	0.001 (0.001)
Effective Number of Parties	-0.022 (0.037)
North	-0.135 (0.187)
Northeast	-0.758 (0.259) ^{**}
Constant	-4.677 (01.645) ^{**}
Number of Obs.	25
R ²	0.829
Prob>F	0.0000

Note: OLS regressions using robust standard errors. Standard errors in parentheses.

***significant for $p < 0,001$; ** $p < 0,01$; ** $p < 0,05$; * $p < 0,1$