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From the appropriation of public lands to the dynamics of deforestation: the formation of the land market in the Amazon (1970 - 2017)

Da apropriação de terras públicas à dinâmica de desmatamento: a formação do mercado de terras na Amazônia (1970-2017)

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Abstract

Based on a periodization that considers the prevailing institutional framework for the rural area of the Amazon (1970-1985, the military dictatorship; 1985-2006, redemocratization; and 2006-2017, emphasis on the environment), with data from the Agricultural Censuses, this article presents the dimensions and structural compositions of the land stocks appropriated by rural establishments, in order to discuss the features of the agents that demarcate the land issue and the land market in the region. By emphasizing the production of unforested lands as being the very reason for the land market, with the deforestation process as its foundation, the article highlights the countercyclical manner in which this market has reacted in relation to the economy of agricultural products, having, until 2005, formed high stocks of deforested land, and liquidating them with speculative gains over the following years. Lastly, it demonstrates the impact of this process on the inequality of the structure of land ownership across the region and Brazil.

Keywords: brazilian amazonia, agrarian development, land market.

JEL Codes O13, O17, O33, O44, Q15.

Resumo

A partir de uma periodização baseada na institucionalidade prevalecente para o rural da Amazônia (1970-1985, vigência da Ditadura Militar; 1985-2006, redemocratização; e 2006-2017, ênfase ambiental) o artigo apresenta com dados dos Censos Agropecuários as dimensões e composições estruturais do acervo de terras dos estabelecimentos rurais para, em seguida, discutir os traços dos agentes que demarcam a questão da terra e os elementos constitutivos do mercado de terras na região. Ressaltando a produção de terras-sem-mata como a razão de última instância do mercado de terras, e o processo de desmatamento como seu fundamento, destaca que este mercado reage de forma contracíclica em relação à economia de produtos agropecuários, tendo formado elevados estoques de terras desmatadas até 2005, liquidando-os com ganhos especulativos nos anos seguintes. Por fim, demonstra o impacto desse processo na desigualdade da estrutura fundiária da região e do Brasil.

Palavras-Chaves: amazônia brasileira, desenvolvimento agrário, mercado de terras.

Códigos JEL: O13, O17, O33, O44, Q15.

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1 Introduction

Chapter 15 in the 2021 Report by the Science Panel for the Amazon, based on the state-of-the-art of scientific production in the region, indicates the decisive role of the land market and its appropriation mechanisms of public resources in deforestation, and in accentuating economic and social inequalities across the region (Costa et alii, 2021). This article presents the first results of an investigation that has subjected this statement to scrutiny from both an historical and structural perspective.

Together with work and money, land composes the triad of fictitious commodities of market societies addressed by Polanyi (1994). For him, a critical issue associated with this is that land is nothing but another name for nature, the substratum of life, with an autonomous constitution, precedent and transcendent to the human art of production and exchange. To subordinate it to the self-regulated market is to submit the first instance of existence to the automatism of the formal economy. Thus, the constitution of land as a fluent part of the world of goods has required its own institutional constructions, historically and socially determined, riddled with tensions, and marked by tragedies (Polanyi, 1994). Below we examine the case of the Amazon.

The Amazon constitutes singularity within the singularity of Brazil. In contrast to the old European world, the new world of the Americas, integrated into the expansion of mercantilism and European industrial capitalism, was able to rely on successive contributions of new lands for agricultural colonization, particularly in Brazil. Thus, with no significant obstacles, this peculiarity conditioned both the development of colonization, as a mercantile enterprise, and the formation of land markets. In the Amazon, however, it was not exactly agriculture that shaped post-Columbian history: the extractivism of collecting the biome resources, with subsidiary forms of agriculture, composed fundamental productive arrangements of the colonial economy, and then of the rubber economy, until the beginning of the twentieth century plus a set of new configurations for the contemporary economy (Costa, 2019).

These mercantile economies, as a *long duration* (Braudel, 1987) reality with exceptional events, to a large extent, kept the land and native biome of the region inseparable. The need to maintain this condition has over time gained new meanings, with the perception

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acquired by modern science throughout recent decades of the transcending roles of the biome regarding the reproductive conditions of life on different scales, from the local to the global (Costa et alii, 2022). Awareness of this should have prevented Brazil's land market from being projected onto the Amazon. However, quite the contrary occurred.

What we observe is the resourcefulness, increasingly unabashed, of treating the land as a commodity that, as such, has to adjust itself to processes of primitive accumulation guided by the avidity of its masters, there being indifferently used either with the biome or stripped from it.

This unseemly indifference constitutes a paradox that needs to be discerned, by approaching its main operator, the land market. The economic literature on the agrarian dynamics of the Amazon places the emergence of the land market there in a particular moment of the “agricultural frontier”, in movement: that during which *property rights* were clarified (formalized). In terms of Young (2018, p. 6 and 12), “First, take the situation where property rights are defined, neither before nor after land clearing (...). This can be associated with traditional slash-and-burn subsistence cultivation. (...) The establishment of a land market at the frontier introduces a new agent in the model: the 'late' settler, who comes only after property rights are reasonably well defined (that is, after the 'early' settlers had already occupied the land)”.

Young's interpretation practically constitutes the application of a model established in the sociological and economic literature for Brazilian agrarian development, activated in the explanation of the "agricultural frontier" in São Paulo and Minas Gerais in the 1920s and 1930s, in Paraná, until the 1960s, and in the Midwest, in the non-Amazonian portions from Goiás (GO) to Mato Grosso, until the 1970s (Katzman, 1977; Goodman, 1981). In these areas, small family production, which creates land by working on it, for Martins (1975) the "land of work", legitimizes possession, which in some cases, after decades may suffer alienation, to big farmers who either raise cattle or have plantations (generally mid-sized owners from other areas who sold their lands in their places of origin, and sought their fortune on the frontier). Under the dominion of this latter, land becomes "business land" (another of Martins' categories when addressing this issue), the whole aim of the land market. In turn, once again dispossessed, the squatter moves on “to tame”, through deforestation, new areas.

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The Amazonian phase of development on the “agricultural frontier”, with the exception of the state of Rondônia, completely negates this pattern. Here, as of the 1960s, the big farmers began to arrive at the same time, or even earlier, as the small peasants. Even more importantly: in addition to the farmers – isolated, individual agents of the surrounding society –, industrial, banking, and commercial companies began activities on the frontier, in many cases, often from the most dynamic sectors of national development, along with powerful groups of landowning families from the older regions of the country (Costa, 2012a).

It is within this context that the land market currently functioning in the Amazon is instituted, and it is under its ethos that the attributes of merchandise are inoculated into the land. As Marx (1978) indicated, to become a commodity, a thing, through its socialization, develops the necessary attributes. First, the condition of being owned by someone. The privatization of public forest lands in the Amazon is the founding act of the production of land as (or the transformation of land into) a commodity. This process continues when a second condition is established, that of not being a use-value for its owner, except as an exchangeable thing. It advances when the producer acquires power to alienate it and is finally completed when the producer is faced with someone who, with the language of the market, recognizes a use-value of the object disposed of by its subject to alienation - pays for it and uses it or, again, sells it. If the only use-value recognized by the market is unforested land, land production will have a deforestation phase.

The specificity of land as a commodity, highlighted by Polanyi, results from the fact that, unlike a commodity in general, whose condition of being a possession derives from the condition of the producer assumed by the possessor, who is thus able to alienate it through the natural right of property, and may even do so through equivalence guaranteed by the labor theory of value, land was not produced by the possessor. Therefore, in relation to land, the condition of possessor is a purely institutional definition, fictitious, since it results from an exercise of power. Socially built on this exceptional condition, always historically demarcated, land markets are specific "economic fields" (Bourdieu, 1994), characterized by agents (reasons and dispositions) in webs of characteristic relationships, managing specific capitals through own field rules (institutions) and accumulation logics. A new phase in the investigation we have inaugurated is guided by this perspective.

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Thus, the privatization that underlies the land market dealt with here is constituted in processes that enable subjects for the production and sale of land in a specific field of social forces, which includes, of course, formally correct appropriation processes by legal titles or material use within legally established limits; alongside, however, there are processes of falsification of land titles with different probabilities of contestation, or material uses with different right expectation: dissimulated land titles with contestation probabilities tending to zero have the same enabling power of land as a commodity than true titles, being expected that their prices safeguard equivalence; in turn, titles with higher probabilities of contestation also enable their holders to sell the respective lands, however, being expected that their prices inversely reflect the risk.

Agricultural censuses cover the universe of rural establishments. Presumably they contain necessarily the cases referring to all these situations. Thus, such surveys constitute fundamental data bases to analyze the historical processes of privatization of public lands in all its modalities, in the macro perspective that this article proposes. In the agricultural censuses, information can be found on the volume of land appropriated by each establishment, its characteristics as *res extensa* (its distribution in strata of area), as well as the uses that are made of it. In turn, the declared form of appropriation, corresponding to the presumed reality, do not allow distinguishing between legal and illegal situations. However, as will be seen below, differentiations of these conditions are possible with these databases by statistical inferences, at high aggregation levels.

Based on land data from the agricultural censuses of the states in the Legal Amazon, from 1970 to 2017, a periodization was undertaken defined by the features of the prevailing institutionality for the rural area of the region (Section 2). Following this, the structural compositions of the strata size of the establishments are observed and the traits are inferred of the agents that, subjacent to these structures, determine the issue of land.

For the state of Pará, data from the Land Registry Books from the Instituto de Terras do Pará (ITERPA) enable the land tenure structure of 1910 to be observed, and to compare it with the results of the agricultural censuses in the same state from 1920 to 1960. By confronting the evolution of this period (1910-1960) with that of the following period (1970-2017) significant changes in the patterns of privatization are revealed. In turn, the course of

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the most recent period sheds some light onto the process of instituting land as a commodity – its volumes, moments, and immediate determinants (Sections 3 to 5).

In Section 6, the constitutive elements of the land market resulting from the evolution described in the previous sections is presented, demonstrating how privatization gives rise to the production of land-without-forest, a stage in the creation of land as a commodity. An overview of the evolution of the constituents of the land market provides a description of the supply, demand, and prices.

2 The privatization process: a periodization

Historically, the appropriation of land in the Amazon has been closely related with extractivism, varying significantly depending on the economic circumstances of this activity. A comparison of the data relating to the records of possessions up to 1910 in Pará, with those of the agricultural censuses that followed, enables these movements to be assessed. In 1910, the climax year of the rubber economy under the aegis of the large mercantile *seringais* (Costa, 2019), land holdings in the state of Pará totaled 15.3 million hectares, spread over 14,200 establishments. Of these, 2,600 (18.3%) contained 13.8 million hectares (87.3%) of possessions with an area of over 1,000 ha. Of these large establishments, 1.9 thousand (73%), controlling 10.8 million hectares (78.2%), constituted the mercantile *seringais*, the large rubber forest (for this and the figures that followed, see Table 1).

The crisis in the rubber economy, which began in 1912, led, over the following five decades, to the disappearance of the large establishments linked to rubber in Pará. Indeed, in 1960 there were no more than 600 establishments from the highest strata in the entire state, with a total area of 2.4 million hectares – numbers that approximate those related to large establishments dedicated to activities other than rubber in 1910: by deduction, those dedicated, since the colonial period, to livestock in the regions of Marajó and Baixo Amazonas, and to agriculture in Acará and Baixo Tocantins. On the other hand, while the number of establishments from the mid-sized strata, of between 100 and 1,000 ha, remained relatively stable during this period, the number of the smaller establishments, of up to 100 ha, increased 11-fold and in area 6.5-fold. Therefore, over the fifty years following the rubber price crisis, in Pará, there were concomitant processes of demobilization and land deconcentration, in which the stock of privatized land decreased to 1/3 (the remaining 2/3 were returned, in

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practice, to the public patrimony) and the number of establishments increased 6-fold when compared to 1910. There is historical evidence that many of the large appropriations that used to be rubber plantations were converted, without the mediation of the land market, into peasant settlements (Costa, 2019). This is likely to have been the trend for the entire Amazon region.

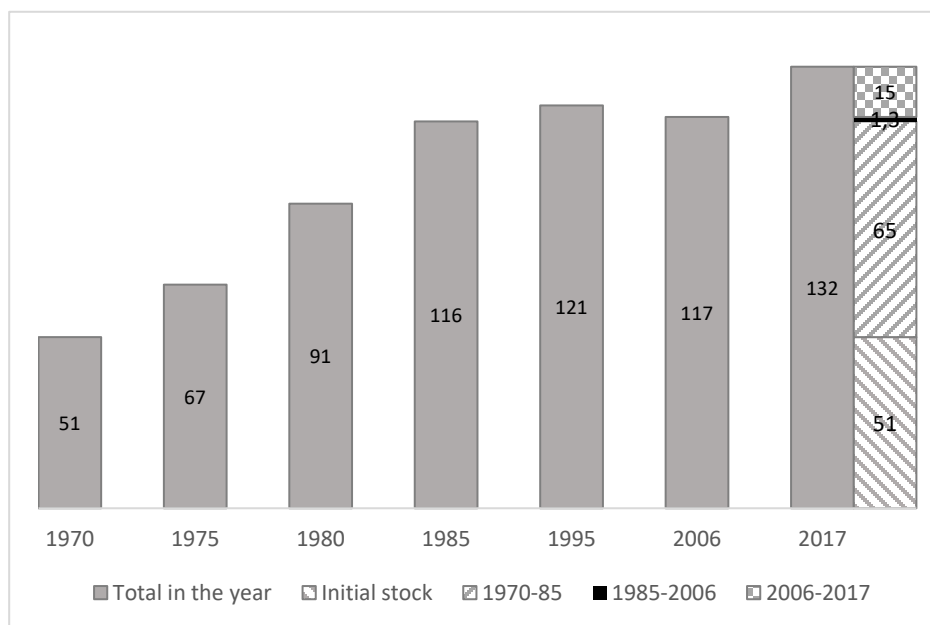
Table 1: Number (in thousands) and area (in millions of hectares) of the rural establishments in the state of Pará, 1910 to 1960

	1910		1920		1940		1950		1960	
	No.	Ha	No.	Ha	No.	Ha	No.	Ha	No.	Ha
0-100	6.8	0.2	19.8	0.6	50.2	1.0	54.9	1.1	73.8	1.3
100-000	4.7	1.6	5.5	1.8	6.2	1.8	4.3	1.1	5.8	1.5
>1000	2.6	13.8	1.8	7.5	1.6	7.3	0.7	4.4	0.6	2.4
Rubber	1.9	10.8								
Agriculture and livestock	0.7	3.0								
Total	14.2	15.6	26.9	9.8	57.9	10.1	59.9	6.6	80.2	5.3

Source: For 1910, the land tenure registration books, Instituto de Terras do Pará (ITERPA); for 1920 to 1960, IBGE (Brazilian Institute of Geography and Statistic), Agricultural Census.

In the following decades, radically reversed trends may be observed. Between the 1970 and 2017 agricultural censuses, the land resources declared by the owners of rural establishments in the nine states of the Legal Amazon leapt from 51 to 132 million hectares (Figure 1) – in Pará, from 10.8 to 28.4 million.

Figure 1 – Land stock of establishments in the Legal Amazon during the years of the agricultural censuses and aggregated by period in the last year (millions of ha)



Source: IBGE, Agricultural Censuses 1970, 1975, 1980, 1985, 1995, 2006, 2017.

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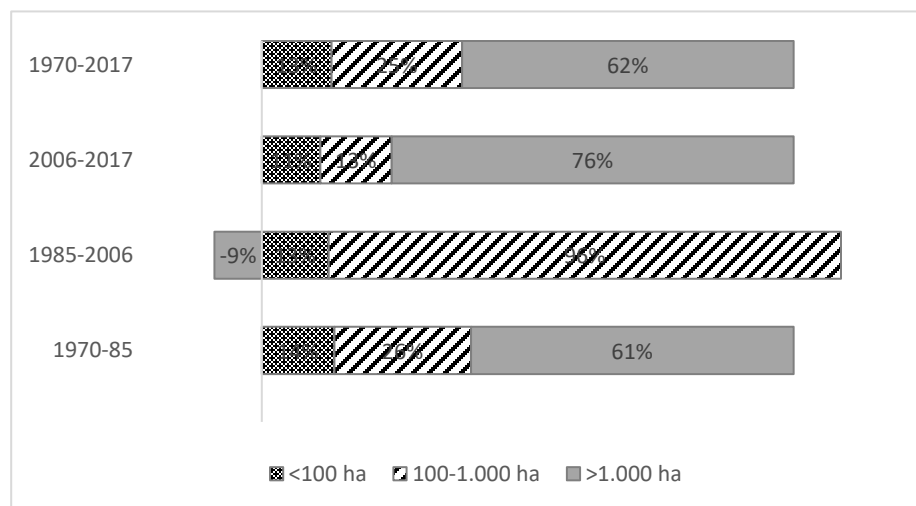
The path that led to such a remarkable change was neither linear nor were the results of the oscillations experienced monotonous.

In the sections that follow, three periods are discussed: the short period from 1970 to 1985, during which, under the canopy of the 1964 military dictatorship institutions, 64.7 million hectares were converted from public areas into private patrimony; the two decades from 1985 to 2006, during which, under the conditioning of the New Republic, the private land patrimony grew by just 1.3 million hectares, and, lastly, from 2006 to 2017, the decade in which private land possession grew once again in large volumes: 15.1 million hectares. At each of these moments, institutional particularities are presented and the positions of the different actors underlying land statistics are discussed.

3 1970-1985: The Big-Bang and the giant landholdings

The short period between 1970 and 1985 witnessed an "original explosion", the “big bang” of land, which until 2017, resulted in the privatization of no less than 80% of the total 81 million hectares of land and public forest resources in the Amazon that came under private control until 2017(Figure 1). This fencing off movement was dominated by takeovers on large parcels of land: 62% of the total was appropriated by establishments of the highest stratum, areas over 1,000 ha (Figure 2).

Figure 2 – Composition by strata of the variations of the total land holdings during the relevant periods of recent history in the Legal Amazon



Source: IBGE, Agricultural Censuses 1970, 1975, 1980, 1985, 1995, 2006, 2017.

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The hegemony of large establishments in the appropriation of land in the big bang of land was due to the institutions and policies mobilized by the military dictatorship established in 1964. The fiscal incentives policy constituted the strategic core of what was termed "Operação Amazônia": the Fund for Financing the Amazon -FINAM (Decree-Law No. 1,376, of 12.12.1974), fueled by tax waivers on profits of companies outside the region, under the management of the Superintendency for the Development of the Amazon (SUDAM) and its financial operator, the Amazon Development Bank (BASA), guaranteed investment resources for companies in the Amazon, supported by the National Integration Plan (PIN) and the Program for the Distribution of Land and Stimulation of Agroindustry in the North and Northeast (PROTERRA).

The extraordinary impact on the land structure resulting from the application of FINAM was due to the linkage between the extension of land equity of companies claiming incentives and the volume of incentivized resources that could be provided by the federal policies coordinated by SUDAM. Both for companies headquartered in other regions that proposed to create agricultural branches in the Amazon based on tax waivers on their own industrial, commercial or banking profits, and for those which, as autonomous enterprises, sought funding from FINAM, the greater the land equity that could constitute the 25% of a company's own capital resources required by Decree-Law No. 1,376, the greater the volume of incentives. These, in turn, were directly proportional to the size of the applicant companies. Even before Operação Amazônia, provisions by the government of Pará had led to facilitating the appropriation of large areas by entrepreneurs from outside the region, which motivated companies to seek tax incentives (Fernandes, 1999; Silva, 2019). On the other hand, devices such as the National Integration Plan (PIN) and the Land Redistribution Program (PROTERRA), and the strategic venality, or the effective technical incapacity of the bodies responsible for public land heritage, ensured that the required lands were appropriated.

This ensured that, within the regional context, land concentration and capital concentration were fed back into one another, in a process of centralization that added to urban portions of capital – industrial, commercial, and banking – proportional extension and value of land ownership.

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In the mid-1980s, demonstrations of the effects of concentration and centralization were complete: in a sample study of 211 projects, of which 138 had data on the book value of the land, among the 584 approved by SUDAM, it was found that: 92% of the companies' own resources corresponded to the book value of the land; the average size of the properties of the largest projects, generally associated with companies that were listed as one of the 500 largest companies in the country, was 88.5 thousand ha; of medium and smaller projects, where there were enterprises belonging to large traditional landowning families from the rest of the country, between 30.0 and 10.2 thousand hectares; in a total of a subsample of 99 projects with necessary information, the extension of the land holdings reached 2.0 million hectares (Costa, 2012a, p. 60 and 69). By expanding this result to all the approved projects, the area directly associated with tax incentives reached around 11.5 million hectares.

At the same time, a broader movement crossed the region favoring large appropriations, stimulated by incentives from local governments, such as those from the states of Acre and Maranhão, and by the relative abundance of subsidized credit for agriculture and livestock - or long-term investment options, such as those of the Rubber Production Program (PROBO), or through crop financing options. Thus, between 1980 and 1985, while agricultural credit drastically reduced for small and mid-sized establishments, there was an increase of 74.3% for the largest establishments, those of more than 5,000 hectares (Costa, 2012a, p. 134).

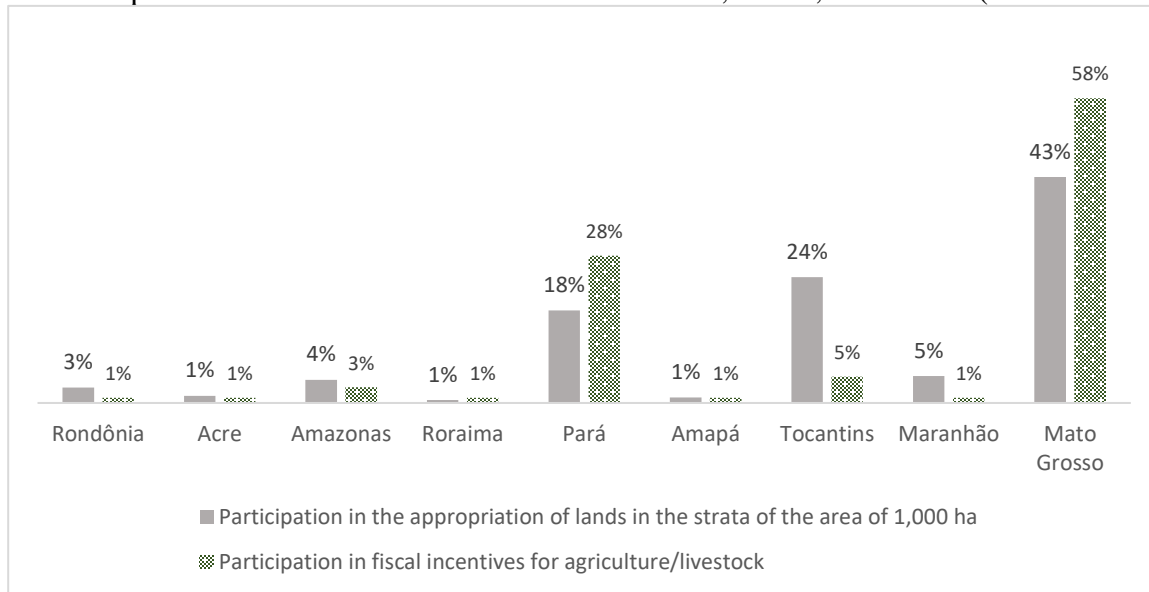
In this context, an agitated land market was formed on large land plots, onto which companies moved, who produced and negotiated land so as to run projects. One of these, the Companhia da Mata Geral, with a balance sheet published in the Official State Journal of Pará on November 6, 1986, reported a net profit of 44.4% in 1985 from the sale of three of its smaller properties for US\$ 363 thousand dollars; the same document reported leftovers of stock from five other farms, valued at US\$ 5 million current dollars.

In 1985, the states that were the major beneficiaries of tax incentives were also those that held the greatest proportions of land in establishments larger than 1,000 hectares. The states of Mato Grosso, Pará and Tocantins (TO) absorbed 91% of the tax incentives for agriculture and 85% of the land on plots larger than 1,000 hectares (Figure 3).

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The productive base of the landholding projects encouraged by SUDAM was fundamentally experimental. Hence, the intensive livestock that was intended, failed. In 1985, the projected average carrying capacity of 1.4 heads of cattle per hectare was not implemented and was replaced by an average of 0.65 head/ha. A total of 44.8% of the companies obtained no operating income and 42.9% suffered a loss. In other words, therefore, 87.7% of all companies that should have been operating normally that year presented extremely unsatisfactory results. In this situation it was found that 88.6% of all companies were those approved until 1970, 81.6% approved between 1970 and 1975, 91% between 1975 and 1980 and 100% between 1980 and 1984. In 1985, just 12.4% of mature companies presented profits. The average profit rate of companies that earned revenues was -39.78% (Costa, 2012, pp. 65-66). An assessment made by the Instituto de Pesquisa Econômica Aplicada (IPEA), bound to the federal government, arrived at similar results (IPEA-COMIF, 1986).

Figure 3 – The proportion of states in the Legal Amazon on tax incentives for agriculture and in the privatization of land for establishments over 1,000 ha, 1970-1985 (% of the total)



Source: IBGE, Agricultural Censuses 1970, 1975, 1980, 1985, 1995, 2006, 2017. Costa, 2012.

4 1985-2006: the expansion of large and mid-sized farms

This period is marked by fundamental institutional events. In the very first moments of the New Republic, in 1985, a National Plan for Agrarian Reform (PNRA) was proposed with the aim, in the last instance, of reversing the agrarian big bang unleashed in the Amazon,

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and contained two measures: to guarantee the expropriation of unproductive latifundia and establish the "agricultural frontier" regions as priority areas, particularly the region known as Bico do Papagaio, encompassing the northern section of the state of Goiás, today the state of Tocantins, and the south of Pará. In reaction to this, intense landowner movements in these regions were orchestrated which, led by the Ruralist Democratic Union (UDR), managed, over successive versions, to recharacterize the PNRA to the point of making it innocuous for these sectors and places (Fernandes, 1999). From this moment, the UDR led alliances between different representations of large landowners in Brazil in the Frente Ampla da Agropecuária Brasileira (Brazilian Front for Agriculture and Livestock), which managed to reach the National Constituent Assembly with an agrarian counter-reform as its main agenda. Ultimately, it received guarantees that the large landed property established across the country and in the Amazon would remain untouched. Nevertheless, the 1988 Constitution guaranteed rights to the indigenous and traditional populations and landless peasants, who achieved important land actions in the Amazon: the demarcation of indigenous lands, the formation of reserves, and actions of agrarian reform that guaranteed ancestral appropriation for peasants, etc. (Costa and Fernandes, 2016).

For all these reasons, the period between 1985 and 2006 is characterized by a lull in the land privatization process, since the total of appropriations only grew by 1 million hectares (Figure 1), 1.2% of the total until 2017. This period is also characterized by a movement in land recomposition in which, while the importance of establishments in the largest stratum reduced, the mid-sized establishments, of between 100 and 1,000ha., expanded and dominated, by 96%, the variation of the period (Figure 2).

Strictly speaking, this was a broad movement across the region, in which a substantial part of the large landholding companies gestated in the previous phase, now suffering a crisis, broke up into farms (cof. Costa, 2012, p. 144). While the former were associated with the failure of the strategy to occupy the region with intensive livestock farming, exploited on a large scale by agents from the center of both the national and world economies, with strong government support, the growth of farms, in turn, represented the affirmation of an alternative route based on extensive livestock, exploited on a large scale (but smaller than the large business estates of the previous period). This also occurred on a medium scale by local or "localized" agents (incorporated into the localities). This was made possible with the support

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of the Constitutional Fund of the North (FNO), from the beginning of the 1990s, the development of technological knowledge provided by the Brazilian Agricultural Research Corporation (EMBRAPA) and governmental technical assistance by the Sistema de Assistência Técnica e Extensão Rural (ATER) (Costa, 2012b, pp. 54 and 225-26; Costa, 2012c).

In representational terms, during this period, on the other hand, farmers began to take on a large institutional role, organizing and modernizing their representations, such as the Pará Agriculture Federation (FAEPA), and assumed the leadership of the municipal governments of their areas of operation (Fernandes, 1999).

5 2006-2017: a renewed movement of concentrated privatization

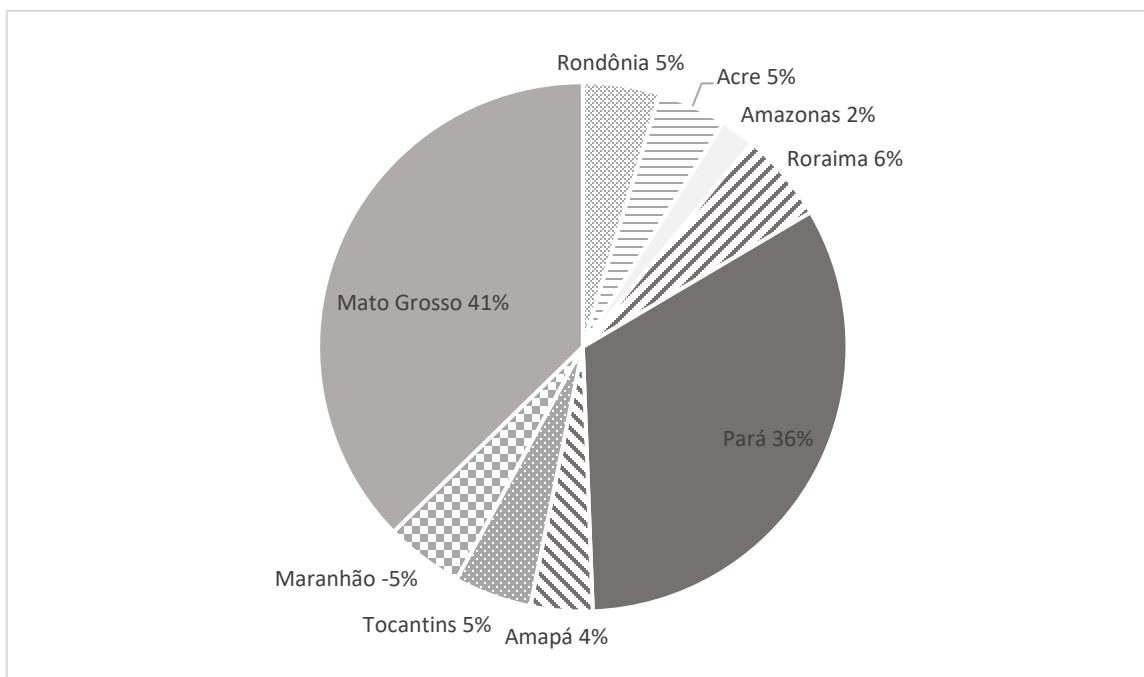
Between 2006 and 2017, important changes took place in the institutional framework of federal action in the Amazon, characterized, until 2015, by an emphasis on the environmental issue and pushing into the background the land issues related to large appropriations, still present in the previous period. A synthesis of this orientation was the Action Plan for the Prevention and Control of Deforestation (PPCDAM) in the Legal Amazon, based on measures of command and control, on the formation of forest reserves, credit restrictions and the monitoring and inspection of environmental violations (IPEA, GIZ, ECLAC, 2011). At no level were the relationships addressed between distortions in the land ownership structure and deforestation. The one instrument that emerged from the provisions of that time and that addressed land, the Rural Environmental Registry (CAR), was not an instrument of land control, which would act on the fundamentals of landed property and tackle the underlying mechanisms appropriating public lands. Instead, it was a controversial instrument of environmental governance (Cazula, 2021).

Hence, large volumes of new areas of land were once again privatized: 15 million hectares, equivalent to 20% of the total increase until 2017. In territorial terms, the appropriation of new lands was concentrated in the states of Mato Grosso (41%) and Pará (36%), which together represented 77% of the total. The remainder was divided between the

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states of Roraima (6%), Acre, Tocantins and Rondônia (5% each), Amapá (4%) and Amazonas (2%); in Maranhão there was a reduction in the total (-5%) (Figure 4).

Figure 4 – The distribution of new privatized land per state in the Legal Amazon between 2006 and 2017 (% of the total)



IBGE, Agricultural Censuses 1970, 1975, 1980, 1985, 1995, 2006, 2017.

A first characteristic of the movement concerns the leadership of the largest establishments, as in the first phase: 9.5 million ha, 63% of the total increase, were appropriated by establishments larger than 2,500 ha, whose average size, in 2017, was 7.5 thousand ha, 5.2% higher than the 7.1 thousand ha verified in the previous census. It should also be noted that in 2017, approximately half of the area of this stratum consisted of establishments that were larger than 10,000 ha (Table 2).

As in the period of the big bang of land, now too, the appropriations of new lands on such high individual scales, paradoxically were undertaken in an institutional context that formally established clear limits on the size of land appropriated from public lands. Through Federal Law 8666 issued in 1993, for example, the limit was 2,500 ha, not so different from the 3,000 ha that prevailed during the military dictatorship. This was made possible by the repeated use of illicit processes, commonly called "grilagem" (land grabbing), for the

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appropriation of public lands (Treccani et alii, 2023; Benatti, 2003; Brasil, 2002; Araújo, 2001; Treccani, 2001; Fernandes, 1999).

Unlike the big-bang period, however, this new movement of fencing off extensive areas of land and biome had taken place since 2008, in a context strongly coordinated by large national and global value chains for soybeans and cattle, with a prominent presence of agents of financial capital (Gayoso da Costa, 2015 and 2012; Castro, 2006; Flexor and Leite, 2017; Herrera, 2016). Furthermore, livestock production was now based on the accumulation of technical knowledge that made it competitive in important markets - however, it still remains extensive, and extraordinarily demanding in terms of land. In the case of soybeans, the technological capabilities developed for the *Cerrado*, adapted for the Amazonian context, have also proved to be competitive (Costa, 2021). Of course, the duration of these successes is not known – what is clear, however, is the conformational power of institutional and productive realities that both trajectories have demonstrated.

The land privatization movement that characterizes this phase is opportune in order to briefly discuss the subjects behind the statistics, i.e., the agents in the strata area.

Land grabs of over 2,500 ha in Table 2 are associated in the region with a particular type of enterprise, herein called *business latifundia*, elsewhere, identifiable with the SUDAM latifundia companies, during the big-bang phase, and with corporate agribusiness present in this last phase. Rural establishments in the Amazon constitute a portfolio item mobilized in occasional local operations by agents of cosmopolitan or metropolitan capitalism. Guided by the marginal efficiency of capital (Keynes, 1970), the establishments referred to herein correspond both to fractions of productive capital, with predatory techniques or not, and to mere extensions of unproductive land. As fractions of capital in the world economy, the criteria for alternating these sources of valorization obey strictly financial rationality, through which, buying, or selling, land anywhere, developing productive activities on it or not, are acts that cannot be essentially distinguished from operations on the stock exchange, or from alternating between different territorially non-specific, industrial, agricultural, commercial, or banking operational possibilities.

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Table 2: The privatization of lands between 2006 and 2017

	Number of Establishments (u)		Area of Establishment (ha)	
	2017	2006	2017	2006
Total	892,322	784,648	132,374,686	117,258,043
Up to 100 ha	735,863	636,456	16,798,034	15,135,227
100 to 1,000 ha	135,371	129,265	34,667,069	32,638,415
1,000 to 2,500 ha	12,908	11,658	19,916,899	17,951,833
>2,500 ha	8,180	7,269	60,992,684	51,532,568
2,500 to 10,000	6,862		31,113,801	-
> 10,000	1,318		29,878,883	
	Absolute variation (u)	% of variation	Absolute variation (u)	% of variation
Total	107,674	100%	15,116,643	100%
<100 ha	99,407	92%	1,662,807	11%
100 to 1,000 ha	6,106	6%	2,028,654	13%
1,000 to 2,500 ha	1,250	1%	1,965,066	13%
>2,500 ha	911	1%	9,460,116	63%
	Average size in 2017		Average size in 2006	Variation in average size
Total	148		149	-0.7%
<100 ha	23		24	-4.0%
100 to 1,000 ha	256		252	1.4%
1,000 to 2,500 ha	1,543		1,540	0.2%
>2,500 ha	7,456		7,089	5.2%

Source: IBGE, Agricultural Censuses 2006, 2017; Costa, 2012.

In turn, the farms, associated with strata of an area between 100 and 2,500 (ha), are long-term operations of local agents that, like the business latifundia, are guided by the marginal efficiency of capital. Farmers, however, unlike the business latifundia, have rural property as an item in a locally rooted portfolio, one among other sources of current income, which eventually includes earnings from well-paid locally exercised liberal professions, local trade, multiple incomes associated to land and gains derived from local political power. Therefore, this employer agent of the local economic and social formation, regardless of whether it is a family with a past tradition or with a reputation under construction, characterizes the availability and formation of specific symbolic capitals of distinction and local power, which interact virtuously with the land and other forms of capital, physical assets that make up their portfolio of assets.

During the period under consideration, the construction or improvement of the roads that opened the region to the rest of the country brought with it flows of family farmers, or peasants, in colonization processes promoted by the government, such as that surrounding the Trans-Amazonian, in Pará, and the BR 364 highway, in Rondônia (Schmink, Wood, 1992; Hébette, Marin, 1979), or through companies, as in Mato Grosso (Ribeiro, 2013), or even

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spontaneously, as in the Southeast of Pará, or in the South of Maranhão, around the Belém-Brasília (Velho, 1972),

These peasants were associated with the stratum of an area of less than 100 ha. This is an agent whose production unit is centered on the family as its decisive parameter: either as defining reproductive needs, which establish, by criteria of reproductive efficiency (Costa, 2012b), the extent and intensity of the use of available work and capacities, or as a determinant in the process of land appropriation on the frontier lands. Thus, the establishment, or the peasant land, results from possession based on the capacity, also internal to the family, of effective control and use of the seized land: a fundamental of what Almeida (1990) called the “appropriation of land through work”, which produces what Martins (1975) understands to be the “land of work”.

This would be the typical frontier agent who, in continuous movement, prepares the land for the market in the conceptions criticized in the introduction. The empirical evidence presented herein reiterates the criticism: processes of incorporating land into the market by transforming “working land” into “business land” certainly occur and have local importance (Gayoso da Costa, 2012), but as a process among others. One that, considering its relative participation in all the phases discussed herein, a percentage of 13% of the total privatized land would be able to explain the smaller part of the land movement promoted by the land market in the Amazon.

6 The land market: constituents and panoramas

Public lands and forests - *res publica*, vacant -, privatized, immediately become land-with-forest, nature that has an owner, therefore alienable, a commodity in stock. The land market, in principle, is carried out by the totality of the establishments reached by the agricultural censuses: all the producers and sellers of land are contained there, as well as the buyers.

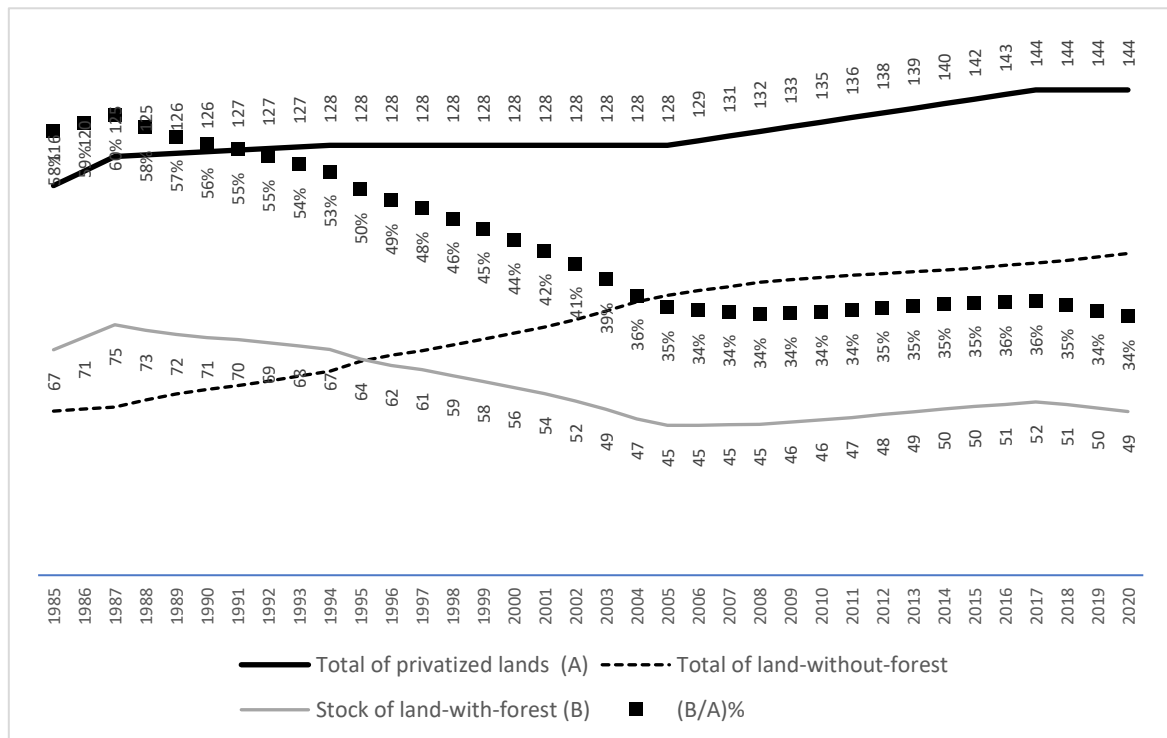
The stock of land-with-forests on the land market is, therefore, the result of a movement of inputs (of lands-with-forests) and outputs (of lands-without-forests) aggregated, portrayed in Figure 5 for the Legal Amazon. Outflows occurred at a much higher rate than inflows between 1985 and 2001, causing the proportion of land-with-forest to fall from 59% at the beginning of the period to 34% by the end. This proportion remained until 2020, despite

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the incorporation of new lands at positive rates. This is a relevant issue, because it concerns the evolution of "real forest reserves" which, as a variable determined by the land market, is unaware of the limits formally established as "legal forest reserves": 80% for the areas of the Amazon biome, 35% in the Cerrado areas (Figure 5).

Land-with-forests, as commodities, gain a price on the land market for the attribute (use-value) with which they are recognized: that of being raw material in the production of land-without-forests. The use-value of the forest as a basis for gathering extractivism is not recognized here, nor is its role as a climate regulator and provider of other environmental services.

Figure 5 – Evolution of the land market components in the Legal Amazon and the proportion among them (R\$ 1,000/ha and %)



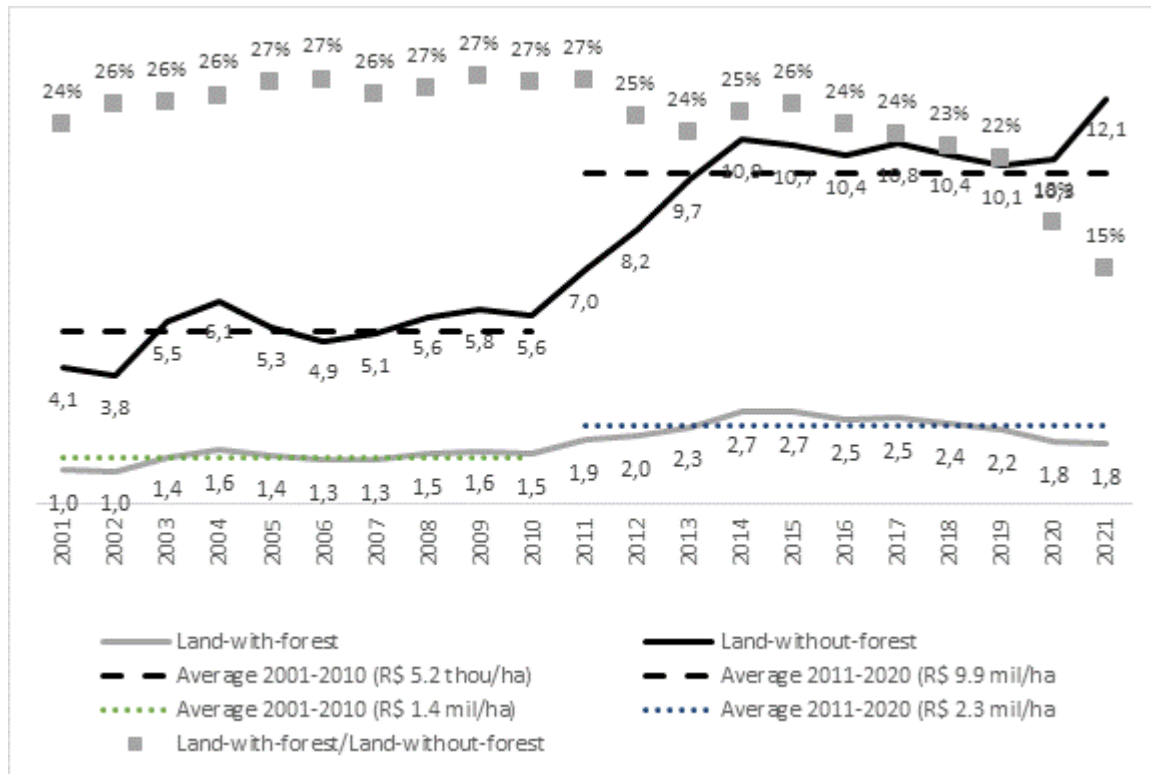
Source: IBGE, Agricultural Census 1985 to 2017; PAM, PEVS; PPM. Own elaboration with the results of Figure 7.

The price of land-with-forest is determined by the institutional conditions under which it is produced. As an initial cost in the production of land-without-forest, the prices of land-with-forest are fractions of the prices of land-without-forest, determinants of the attitude of the producer of the latter: the smaller the fraction, the greater the producer’s motivation, the more impulsive the “animal spirit” (Keynes, op, cit.) that determines the production and supply of

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unforested lands. Oscillating around 25% most of the time, the proportion has fallen dramatically in recent years, reaching 15% in 2021 (Figure 6).

Figure 6 – The evolution of the average prices of land with and without forest in the Legal Amazon and the proportion among them (R\$ 1,000/ha e %)



Source: iFNP; IHS Markit.

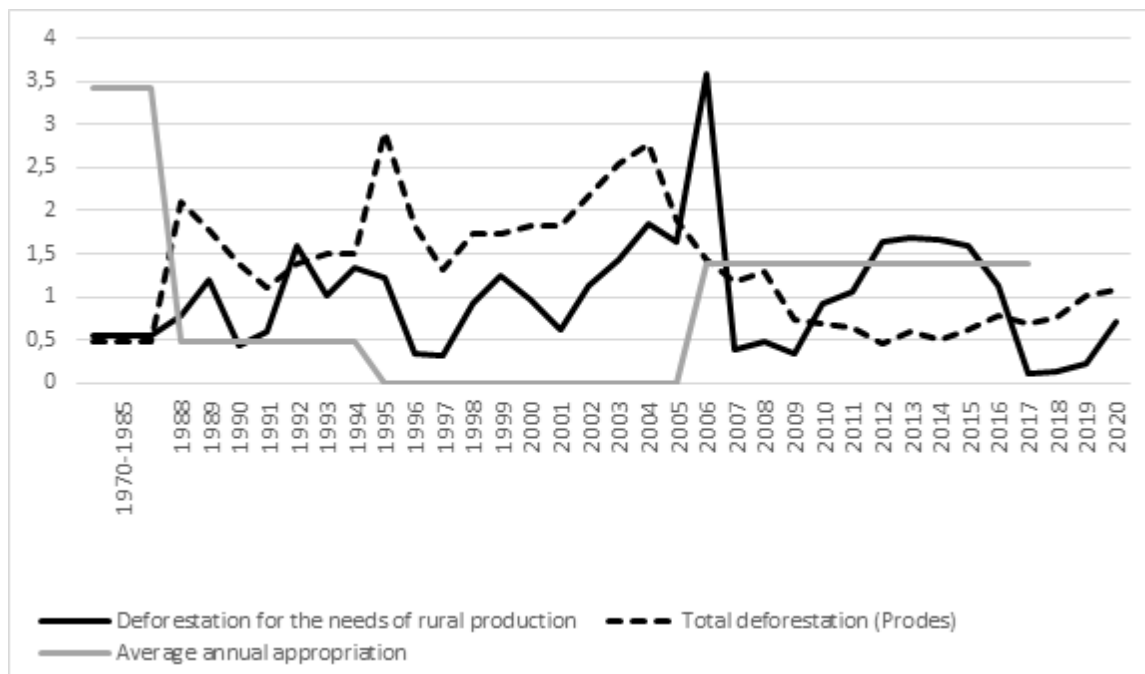
In principle, any owner of land-with-forest may act as a producer of land-without-forest. However, there are those who specialize in this, because they have large areas, and because they manage to acquire knowledge and specific capital (power relations) for large-scale operations, thereby crucially lowering the price of land-with-forest. In large proportions, land producers must be found among the agents with characteristics of business latifundia, mentioned above.

The supply of land-without-forest in a given year is, of course, equivalent to the deforestation of land-with-forest in that year. The physical values are verified by the Amazon Deforestation Calculation Program, of the National Institute for Space Research (PRODES-INPE), by satellite image measurements conducted in the Legal Amazon since 1985 (Figure 5).

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The demand for unforested land, in turn, has two components. One is related to the needs of agricultural production, defined by the product markets and the technologies adopted to obtain them, while the other is determined by the "speculation motive" of the land producers (part of their specificity, their *habitus*, according to Boudieu as hitherto mentioned) or their clients. Using a previously developed model (Costa, 2016), the evolution of the first component each year is estimated, from 1970 to 2020 (Figure 7).

Figure 7 – Annual increase in total privatized lands, in the production-supply of land-without-forest (deforestation by Prodes) and in the requirement of these lands by the economy, 1985-2020 (millions ha)

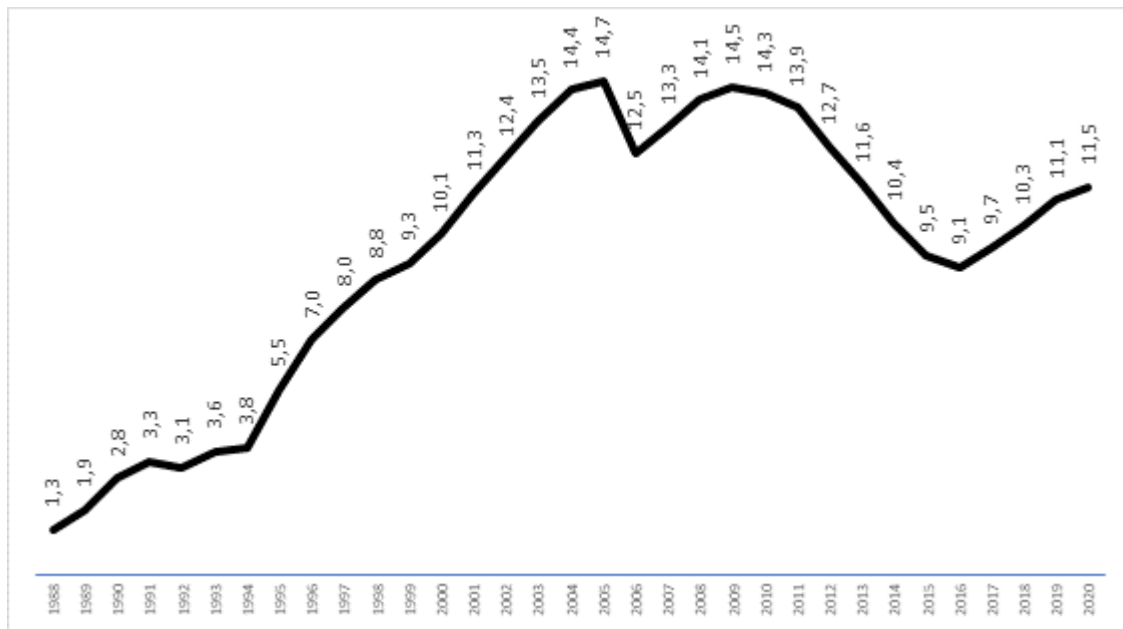


Source: IBGE, Agricultural Censuses 1985 a 2017; PAM, PEVS; PPM. Own elaboration based on Costa, 2016.

Subtracting the demand component determined by the needs of the economy from the total supply of unforested lands, the formation of stocks may be observed from the second half of the 1990s, when the markets for the main products of the agrarian economy in the region were in phases of low growth or recession, with lower annual requirements for new land, reaching 14.7 million hectares in 2005. Of these, 2 million would be used in 2006 and another 5 million between 2006 and 2017, to meet the requirements of the expansion of agricultural production in a context of significant reduction in the supply of land-without-forest (Figure 8).

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Figure 8 – Land-without-forest stocks (speculative component of demand), 1985-2020 (million ha)



Source: Own elaboration based on the results of Figure 7.

The fact that nearly a decade of expansion in the region's agrarian economy resulted in a continued reduction in deforestation was widely celebrated as a success of the command-and-control policies then in place (see Section 5). However, such a feat would not have taken place had it not been for the liquidation by the land market of 7 million hectares of unforested land stocks.

Considering all the movements, the amounts involved in this operation are substantial: first, 7 million hectares of land-with-forest with an average price of R\$ 2.2 thousand/ha were transformed into land-without-forest sold or accounted for at the average price of R\$ 5.2 thousand/ha (see Figure 6). These were then sold at an average price of R\$ 9.9 thousand/ha (all values updated to 2021 prices). The first movement generated R\$ 26.6 billion, the second R\$ 32.9 billion: a total of R\$ 59.5 billion over 20 years.

The autonomy of the land market is reaffirmed with force after 2017: the countercyclical movements in the formation of land-without-forest stocks are confirmed - once again, i.e., the needs of the economy fall, the supply of land increase, thereby generating inventories: the speculative component of demand (Figures 6 and 8). Understanding the

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reasons and consequences of this is the objective of the next stages of the investigation, with a first exercise previously presented in Costa (2022).

5 Land market and land concentration

The discussed dynamics are expressed in the way in which the structure of land ownership in the Legal Amazon has evolved. A summary, regarding the degree of concentration, is offered by reading the evolution of the Gini Index (GI), which brings additional elements to understanding the evolution of the land market that has been constituted and consolidated in the region.

The GI is a measure of divergence between the relative distributions of two variables used as an indicator of concentration (of land, income, etc.). The GI of the land tenure structure discussed herein expresses the divergence between the relative distributions of the variables “number of establishments” and “area appropriated [by them]”, considering three area strata: 0 to 100 ha, 100 to 1,000 ha, and above 1,000 ha. While absolute inequality (the concentration of ownership in a situation where a single stratum, with, say, 1% of producers owning all the land) would be expressed in a GI very close to 1; a totally equitable distribution (if each stratum held the same proportion of available land as the proportion of its members in total producers) would result in a GI=0. In its canonical formula (Sandroni, 1994):

$$G = 1 - \sum_{i=1}^n (A_i + A_{i-1})(N_i - N_{i-1}) \quad (1)$$

The GI is calculated by subtracting from the maximum inequality/divergence value (i.e., 1), the “convergence residuals” (CR) for each of the three strata areas (i) between the accumulated relative distribution of the area (A) and the cumulative relative distribution of the number of establishments (N). It follows from equation 1 that the CR are smaller, raising the GI, in the strata with fewer properties and a greater proportion of area (if the latter grows and, even more, if the proportion of frequency falls), the opposite being true for the strata with a greater number of establishments and a smaller proportion of area. In turn, the CR increase, reducing the GI, in the inversed situations to these. Figure 7 shows the GI values for each year of the agricultural censuses, composed of the CR values of the area strata considered, so that the sum of each column is equal to 1 (according to equation 1). Thus, it is possible to consider

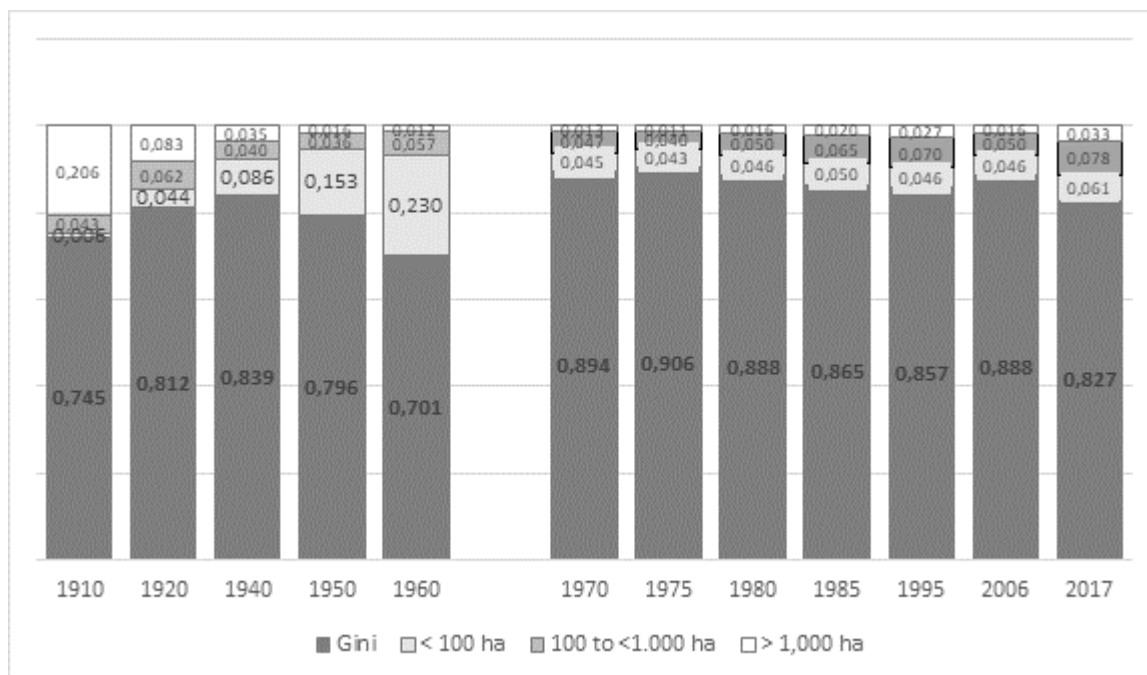
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the movements that determined the GI variations that occurred both within and between each stratum.

From Pará (whose GI is calculated using the data in Table 1), it is possible to assume that the GI of the Legal Amazon changed from a strong deconcentration between 1940 and 1960 (the GI drops from 0,839 to 0,701 mainly due to the retraction of the largest stratum and expansion of the smallest) to the very high level of 0,894 in 1970 - the starting point of the big bang period -, reflecting the characteristics of the abovementioned land privatization process. The GI still increased to 0,906 in 1975, due to the movements that occurred in the two largest strata, and the CR decreased, indicating the prevalence of appropriations of large and growing plots of land. From there, a slow, continuous drop in the GI may be observed, reaching 0,827 in 2017 (Figure 9).

This trend is basically explained by the almost continuous growth of the CR of the strata with a greater area: that of establishments above 1,000 ha increased from 0,011 in 1980 to 0,027 in 1995 and 0,033 in 2017; in turn, establishments between 100 and 1,000 ha increased from 0,040 to 0,070 and to 0,078 in the same years.

Figure 9 – Evolution of the GI of the land appropriation structure and the CR of the different strata areas (1970-2017)



Source: IBGE, Agricultural Censuses 1970, 1975, 1980, 1985, 1995, 2006, 2017.

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This explains that the movement in the sales of land-without-forest by land-producing establishments in the larger stratum (the business latifundia) has accelerated since 1975, so that the number of establishments in this stratum (which includes land producers and their largest customers) grew faster (distribution from 0.83% in 1975 to 1.15% in 1980, 1.38% in 1995, 2.17% in 2006 and 2.36 % in 2017) than the volume of the respective area, which dropped from 64.5% to 63.7%, to 62.8%, to 59.2% and 61.2% in the same years. This occurred because, for example, land producing establishments of 20 or 10 thousand ha were transformed, in a proportion of 1 to 4, or, respectively, from 1 to 5, in establishments of 5 or 2 thousand ha; or because establishments of 5,000 ha of this stratum were transformed, in a proportion of 1 to 10, into establishments of 500 ha of the immediately preceding stratum (farms), which housed establishments of between 100 and 1,000 ha. Indeed, this last stratum saw its relative share in the number of establishments increase in the same years mentioned, from 8.4% to 10.4%, to 14.4% and 15.2%; while the participation in the area grew, albeit at a slower pace, from 23,9% to 24.4%, to 25.9% and 26.2% in the same years.

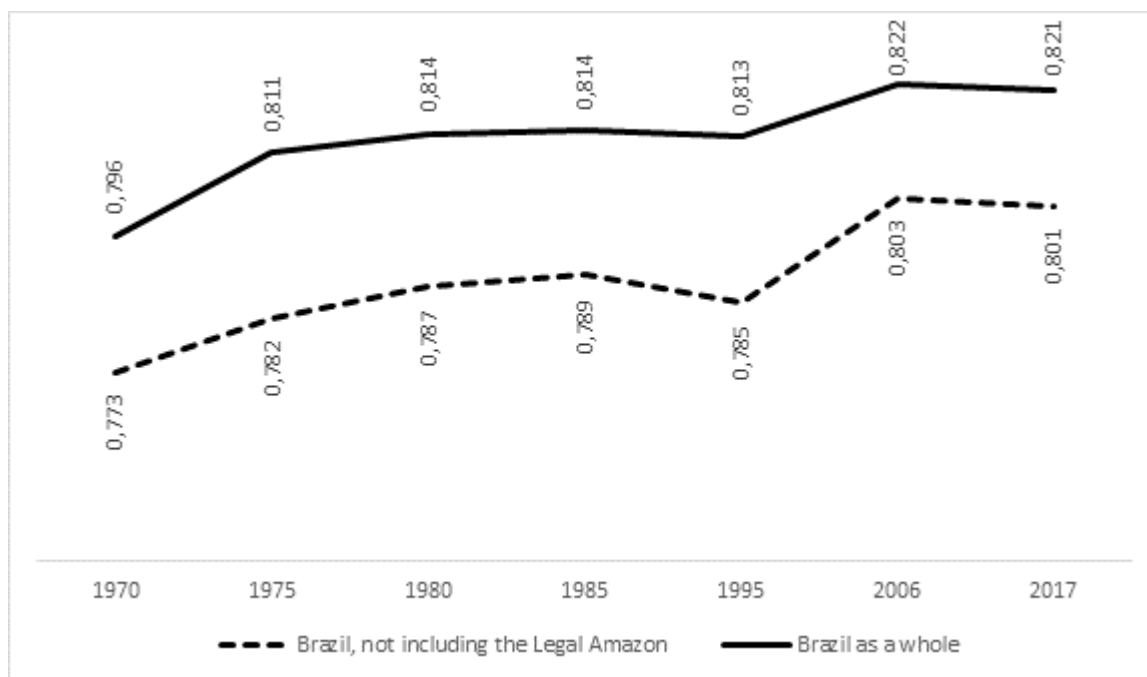
Lastly, it should be noted that the participation of the CRs in the stratum of up to 100 ha has increased due to a reduction in the relative participation in the number of establishments from 90% in 1970 to 85% in 1985, 81% in 1995 and 72% in 2006, while the relative share in the area has remained around 25%.

8 Expanded projection of land concentration in Brazil

In comparison with the rest of the country, the GI grew, through its own fundamentals, from 0.773 in 1970 to a staggering 0.801 in 2017 (Figure 10), which is beyond the scope of this article. As observed, the processes reported for the Amazon have constituted a land structure with an even higher degree of concentration, reaching 0.827 in 2017. When integrating the Amazon with the rest of Brazil, the GI attains 0.821. Thus, in the Amazon, one of the most striking distortions of Brazilian capitalism is confirmed (Figure 10).

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Figure 10. Evolution of land GI for Brazil, not including the Legal Amazon, and Brazil as a whole (1970-2017)



Source: IBGE, Agricultural Censuses 1970, 1975, 1980, 1985, 1995, 2006, 2017.

9 Final remarks

Unlike other regions, in which the land market is responsible for the movement of a relatively constant amount of land, in the Amazon this market includes land production processes. The production of new lands is constituted by two moments and operations: that of the “great transformation” of nature from the condition of “original (public) forests” to that of (private) land-with-forest, and that of transforming the latter into land-without-forest (Costa, 2009, 2010, 2011).

The formation of the land market in the region following the privatization process of public lands in its critical moments has been presented, indicating the institutional foundations of each period. A moment of explosion sponsored by the authoritarian institutions of the military dictatorship led to the formation of a gigantic collection of land distributed in a manner correlated with the extraordinary inequality of wealth established throughout the country. In the following moment, under a new democratic institutionality, it was possible to contain, although not reverse, the structure of land ownership that was increasingly

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consolidated as the foundation of the regional land market under two conditions: as the basis for transforming land-with-forests into land-without-forest, and as a basis to produce goods that demand land-without-forest. Thus, in addition to these structures, new productive, institutional capacities were established, so that, in a subsequent phase, a vigorous expansion of privatization took place, now together with the strength of large commodity chains and the financial capital that accompanies them. The production movements of land-without-forest (and the environmental destruction that it represents) have now reached alarming levels.

From what we have gathered here, the land market in the Amazon works relatively autonomously in relation to the economy of agricultural products, producing land-without-forest in countercyclical movements to business. As a result, deforestation, as a technology for the production of land-without-forest, seems to be explained, first, and on the scale in which it has occurred in the period studied, by the criteria of the land market: by the specific gain from the privatization of land and its transformation into a commodity, under conditions that imply speculative behavior in the medium and long term – given that it is possible to indicate returns associated with these movements – or not. A further implication that may be considered is that the prices of land-without-forests in this market are systematically lower than they would be if the production of land followed the needs of the economy. It is possible to assume, therefore, that it is through these prices that extraordinarily demanding land activities are made possible, such as the extensive livestock farming, which is developed in the region. These possibilities will be explored in the next steps of the investigation.

It has also been verified that the production of land-without-forest has continuously reduced the proportion of land-with-forest over the total land in the aggregate of establishments, indicating something that also needs to be the object of our attention: that the real forest reserves, under market determination, tend to distance themselves increasingly from legal forest reserves, transforming them into a chimera.

All in all, the article has underscored the need for the land market in the Amazon to be placed at the center of environmental concerns, transforming it into a prominent object of policies for the preservation of its most distinctive asset – the Amazon biome.

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