

The elephant in the village – large corporate farms in regions with many small farmers: the Brazilian experience

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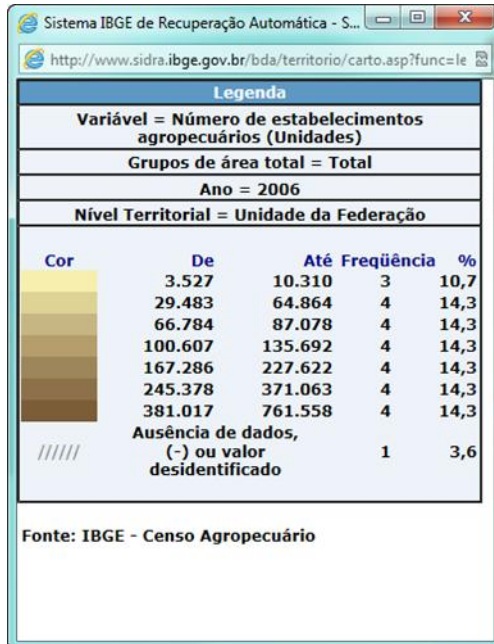
Motivation

- Agricultural development in Brazil has attracted a lot of international attention recently.
- The country is a leading food exporter in markets like soybeans, orange juice, coffee, beef, and poultry.
- The occupation of the Brazilian Centerwest regions (cerrados or savannahs area) is a well known case of success in agricultural production.
- Other aspects of this phenomenon are less well known.

Objective

- In this paper we analyze the occupation of the Brazilian Center-West.
- Focus on the evolution of the process of occupation and the changes in the agrarian structure.
- How the appearance of large modern commercial farms devoted mostly to planted pastures and soybeans plantations affected the existence of small farms and shaped the actual pattern of production in those regions.
- Agricultural frontier concept:
 - traditional frontier of the seventies
 - States of **Mato Grosso + Mato Grosso do Sul**. **Goiás + Tocantins**.

Number of properties <10ha. 2006.



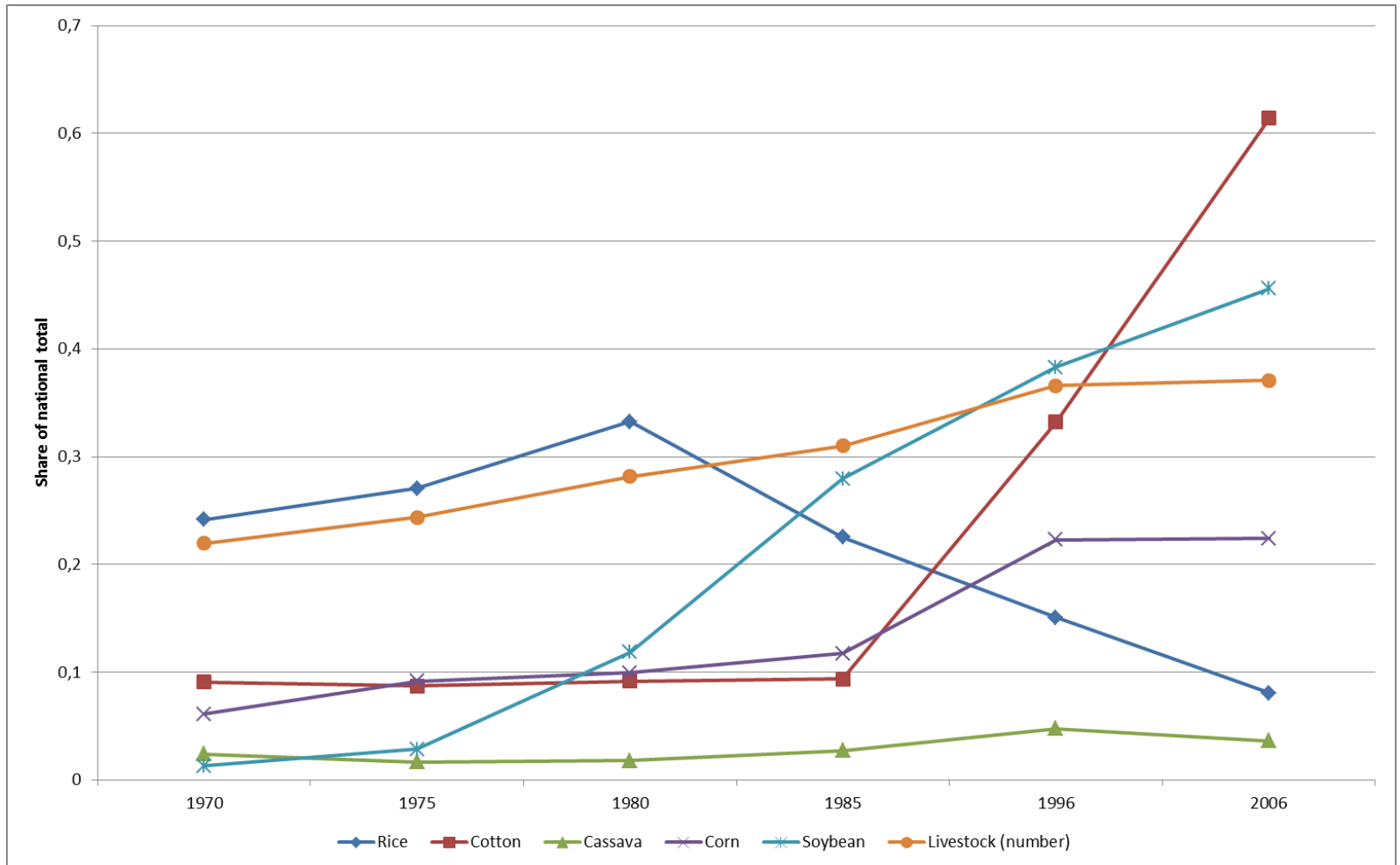
Background

- After world war II: period of “forced” industrialization in Brazil.
 - Balance or payment recurrent crisis: linked to the secular trend of fall in agricultural prices.
 - Fast industrialization period: “fifty years in five”
- Agriculture performed three classical roles:
 - Supply of labor for the growing urban activities;
 - Supply of food at stable prices; and
 - Supply of foreign currency to finance the imports of machinery and intermediates goods needed for capital formation in the urban sector
- Stimulus to the production of tradables: led to the occupation of the cerrados (savannahs) areas of the Center-west Brazil.

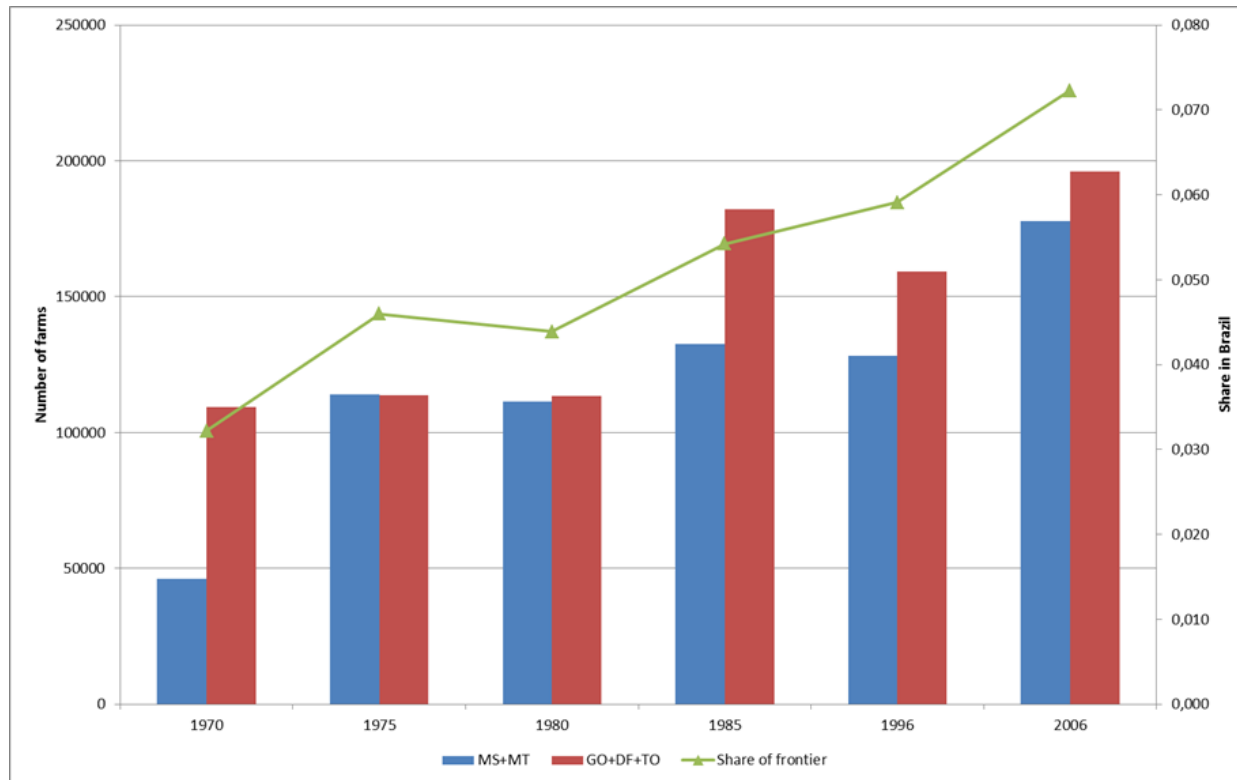
Occupation of the Brazilian Center-west: seventies

- Initially through the transformation of large traditional cattle ranching farms largely based on extensive natural pastures into more modern cattle ranching farms with planted pastures: introduction of the African *Brachiaria* grasses.
- Soybean production starts later.
- Creation of Embrapa in the early seventies: developed seeds and technology for soybeans production (among others) in the cerrados soils conditions:
 - Low fertility
 - High acidity
 - High level of free aluminium.

Share of the main agricultural activities in the Brazilian agricultural frontier in total production in Brazil. 1970 - 2006.



Number of farms in the Brazilian agricultural frontier. and share of frontier in total number of farms in Brazil



- The share of the frontier in total number of farms in Brazil increased steadily in time:
 - The number of farms almost tripled in the period 1970 to 1975. from 46.090 units in 1970 to 113.971 units in 1975.

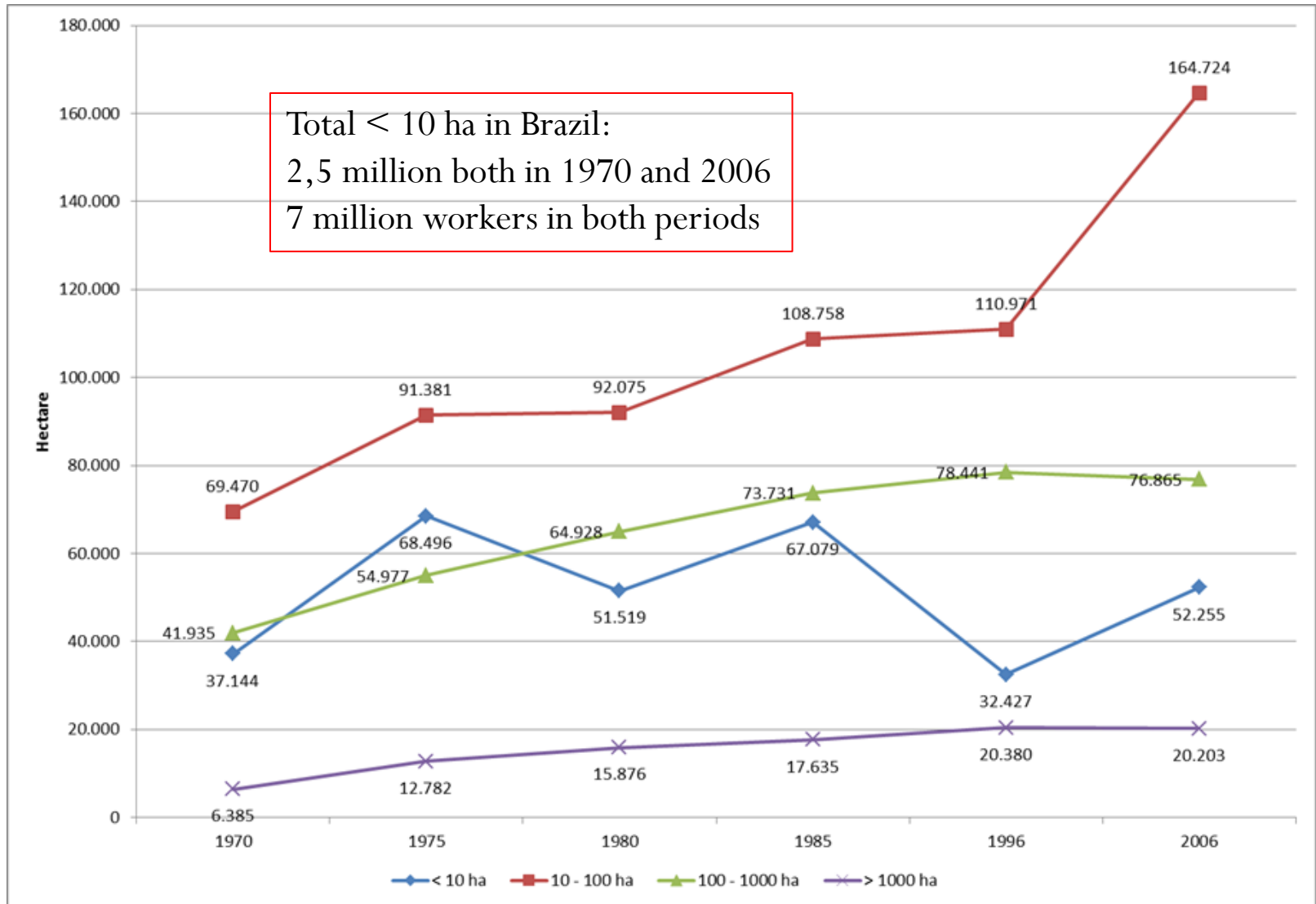
Occupation of the frontier: particular aspects



- **Massive transfer of both physical and human capital to the frontier.**

- Movement from the relatively richer South and Southeast regions of Brazil toward the frontier.
- The price of land for crops in other regions (Rezende, 2003):
 - 4 to 7 times higher in Southeast and South Brazil in the average of years 1977 to 1989, compared to frontier.
- Medium and large producers, pattern of occupation characterized by medium sized and large properties:
 - 55% of the migrants in the Center-west region in the 1970-80 period came from the South and Southeast regions (Cunha and Silveira, 1999).

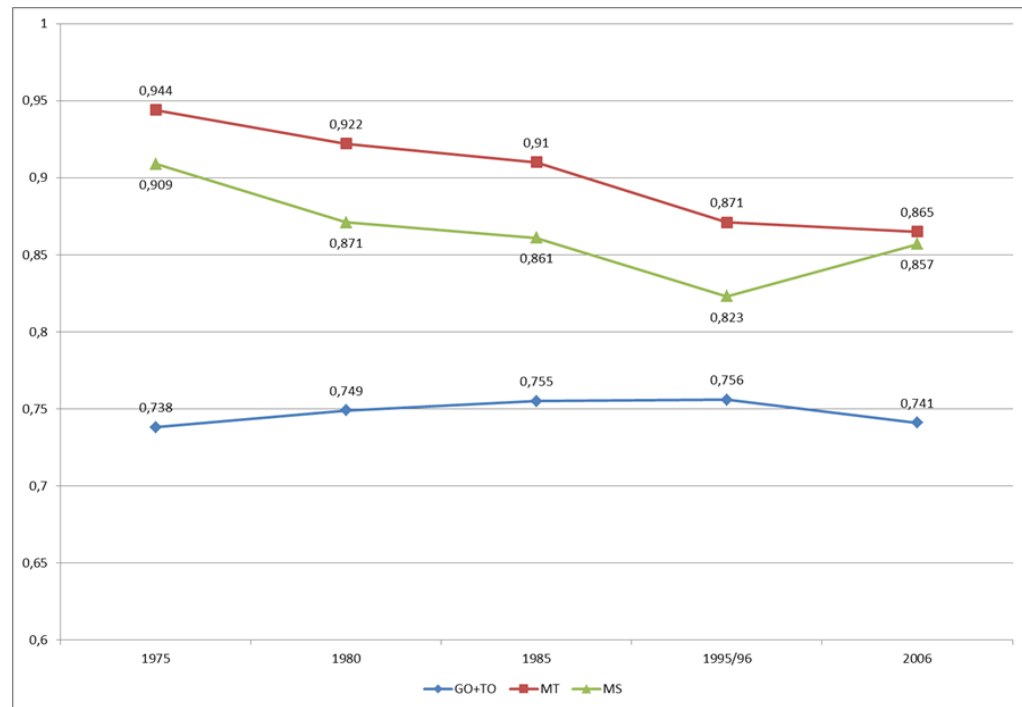
Number of farms in the Brazilian agricultural frontier (Center-west), by area (ha).



Area of farms in the Brazilian frontier (Center-west). by farm size. Millions of hectares.

Area (Million ha)	1970		2006	
	Area (Mha)	Share	Area (Mha)	Share
< 10 ha	0,18	0,00	0,24	0,00
10 - 100 ha	2,91	0,07	6,34	0,06
100 – 1,000 ha	12,49	0,30	24,93	0,24
> 1,000 ha	26,20	0,63	72,28	0,70
Total	41,78	1	103,80	1

- GINI index of the distribution of land ownership in the frontier:
 - increase in the number of large farms, reduction in the average area.
 - Fractioning of the initial huge farms.



Agricultural development in the frontier

- Started with big farms.
- Didn't occur through a slow process of merging of smaller properties or absorption of smaller units into larger ones.
- Happened through a fractioning of the previous enormous farms in other large ones.
- Number of farms < 10ha:
 - 37.144 in 1970
 - 52.255 in 2006
- Resilience of the smaller farms.

Conditionants of the evolution

- Historical: Law of lands (1850)
- Natural conditions: low soil fertility, dry season.
- Policy: particularly the rural credit policy. Main objectives (Araujo and Meyer, 1979):
 - Provide external funds to finance a significant share of the operational costs in agriculture;
 - Stimulate capital formation in agriculture;
 - Speed up the adoption of modern technology; and
 - Improve the economic situation of agricultural producers. mainly medium and small → NEVER HAPPENED.

Rural credit in Brazil in the frontier occupation period

Groups of total area (ha)	Share of farms with rural credit			Share of total rural credit		
	Agricultural Census Year			Agricultural Census Year		
	1970	1975	1980	1970	1975	1980
Less than 10 ha	5.4	4.9	10.4	5.5	3.2	4.9
10 to less than 100 ha	17.6	23.3	32.6	33.1	28.7	31.7
100 to less than 1.000 ha	23.7	31.2	36.4	41.8	44.6	42.0
1.000 to less than 10.000 ha	25.5	40.7	34.9	15.6	19.7	18.1
10.000 ha and more	23.4	34.1	26.5	3.8	3.8	3.3

Year	Year inflation rate	Real interest rates in rural credit	Subsidy/Agricultural GDP (%)
1974	24.25	-7.63	7.59
1975	27.9	-10.09	8.46
1976	41.2	-18.56	12.19
1977	42.7	-19.41	9.26
1978	38.7	-17.09	8.52
1979	53.9	-25.28	14.38
1980	100.2	-33.57	17.49
1981	95.2	-25.14	12.61
1982	99.7	-27.39	15.24
1983	211.0	-48.55	-

Small agriculture evolution

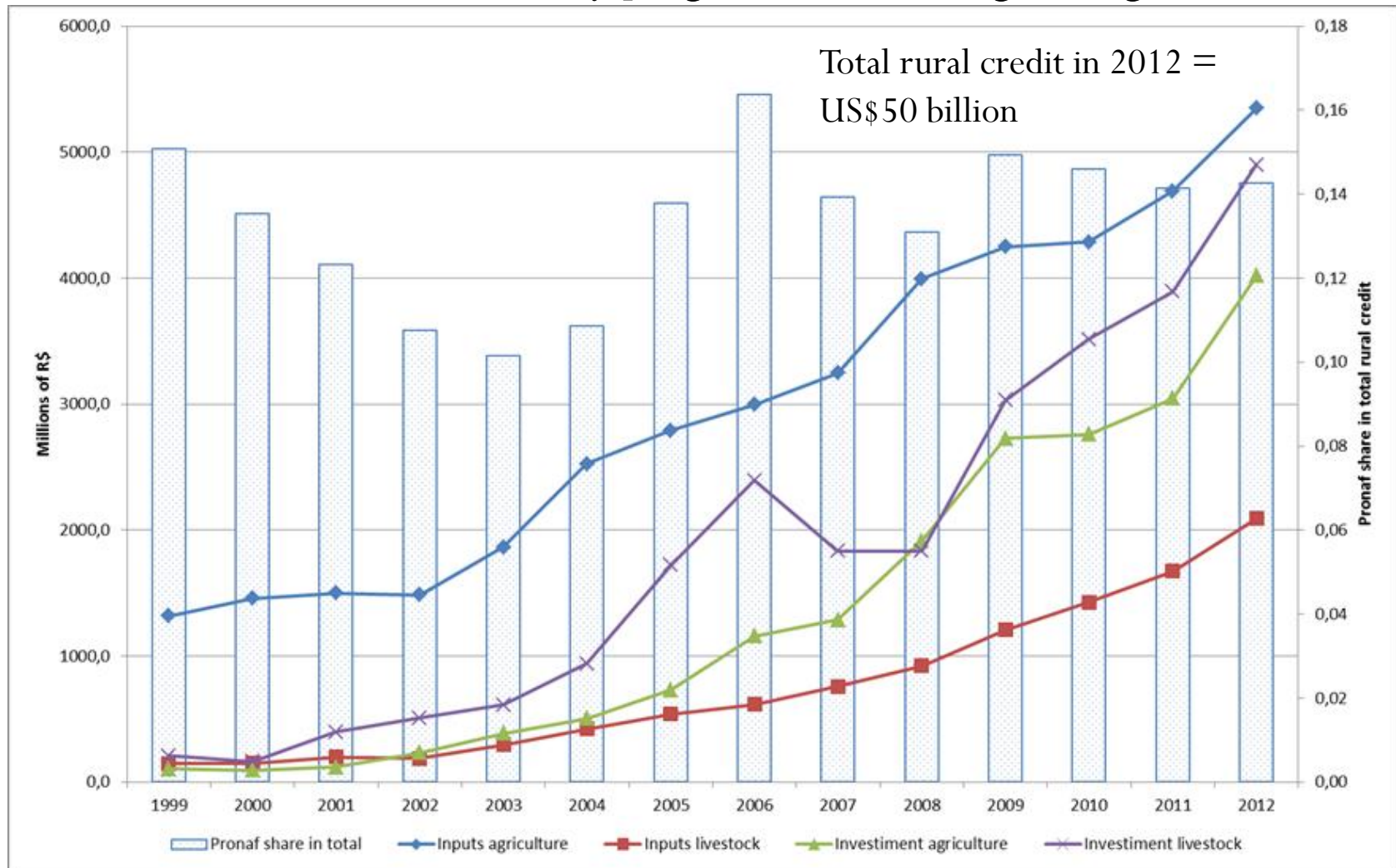
- Unable to incorporate the size economies: optimal scale (minimum cost) soybeans in Centerwest around 4,000 há.
- Followed a pattern of specialization in food (domestic) production.

Table 7. Shares in total values of production of farms in the frontier, by product and farm area. 2006.

	2006										
	Until 10 ha										
	Rice	Sugarcane	Beans	Corn	Soybean	Cassava	Cotton	Livestock	Milk	Peanuts	Total
Region											
Goiás	0,02	0,01	0,00	0,10	0,00	0,04	0,00	0,18	0,64	0,00	1,0
Mato Grosso	0,05	0,03	0,02	0,10	0,00	0,24	0,00	0,18	0,37	0,00	1,0
Mato Grosso do Sul	0,03	0,03	0,03	0,14	0,05	0,33	0,00	0,12	0,27	0,00	1,0
Tocantins	0,19	0,00	0,03	0,12	0,00	0,13	0,00	0,23	0,30	0,00	1,0
	100 to 1000 ha										
	Rice	Sugarcane	Beans	Corn	Soybean	Cassava	Cotton	Livestock	Milk	Peanuts	Total
Region											
Goiás	0,01	0,03	0,01	0,10	0,37	0,00	0,02	0,35	0,14	0,00	1,0
Mato Grosso	0,01	0,09	0,00	0,11	0,38	0,01	0,02	0,35	0,05	0,00	1,0
Mato Grosso do Sul	0,01	0,04	0,00	0,12	0,35	0,00	0,01	0,44	0,03	0,00	1,0
Tocantins	0,06	0,00	0,00	0,04	0,16	0,01	0,00	0,61	0,12	0,00	1,0

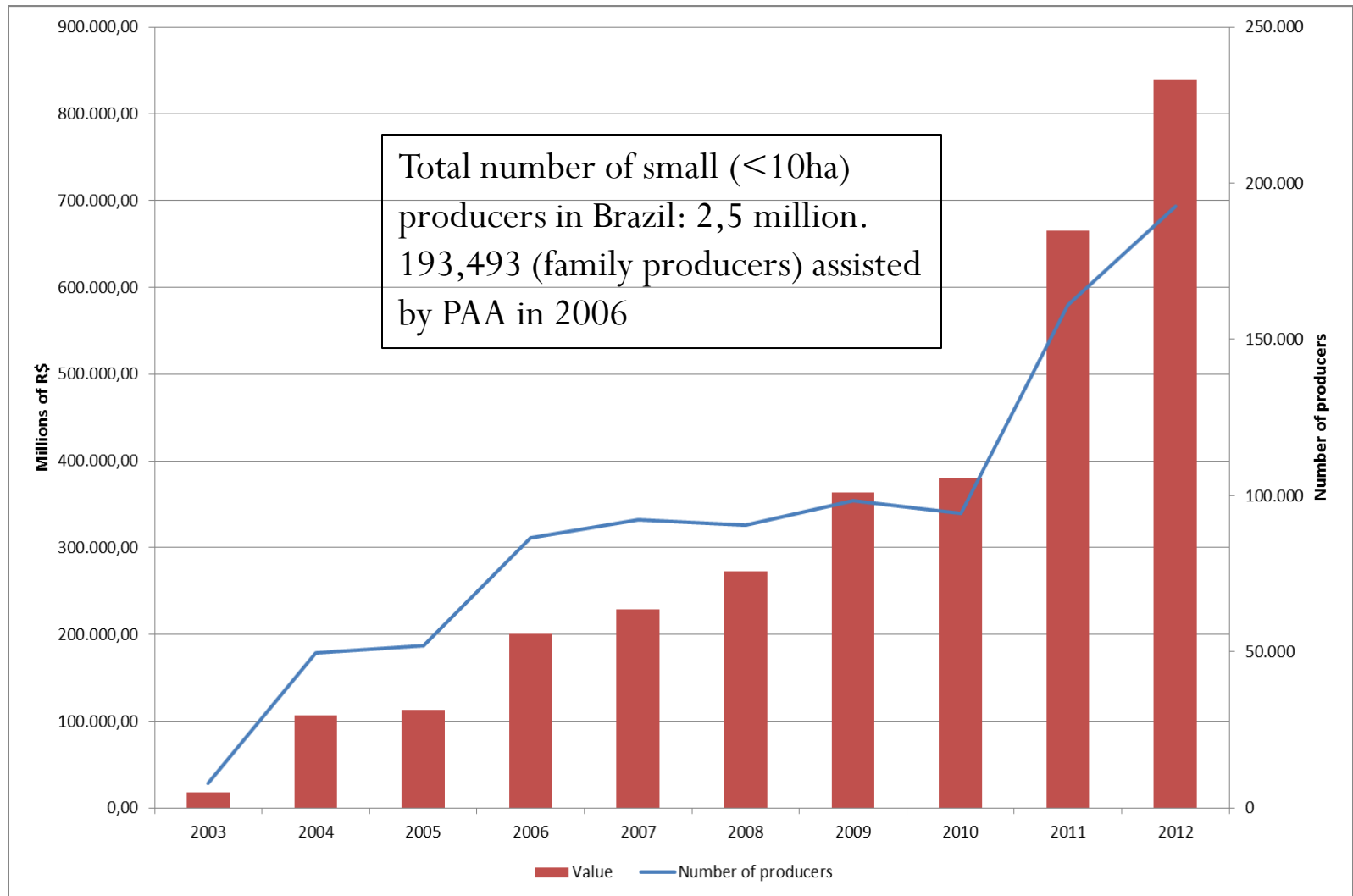
Policy attention to small agriculture

- Started in 1996: Programa Nacional da Agricultura Familiar (PRONAF).
- After 2002: Food Security programs (Zero Hunger Program)



Food acquisition program (PAA)

- Purchase of food from small producers and distribution to households in food insecurity or other social programs, like school meals programs.



What about the future prospects? Great deal of heterogeneity.

- Buainain and Garcia (2013) analyzed farms between 0 and 10 ha:
 - All of those producers would be below the poverty line, according to the official poverty criterion .
 - The authors also point out that...“those producers have structural deficits in basically all variables relevant to explain income levels. Most of them don't have enough land, have low capital endowment, low human capital, low organizational level, and show a significant technological gap....apart of being located in many cases in restricted regional contexts...” (Buainain and Garcia, 2013).
 - Only a small share of those small producers have conditions to survive as agriculture producers, generating enough income from agriculture to live in adequate standards.

Final remarks: the elephant at large in the immense jungle (1)

- The Brazilian experience in the occupation of the cerrados:
 - Comprised a massive transfer of physical capital to the frontiers,
 - Also promoted a transfer of human capital, in the form of the new settlers coming from the relatively more modern agriculture of the Southeast and Southern Brazil.
- Migrants:
 - no barrier related to language or culture
 - This was certainly one of the most important factors to explain the fast increase in agriculture production in the Brazilian cerrados.
 - The extent to which this is a reproducible – or desirable – model of economic and agrarian development in other regions is open to debate.

Final remarks (2)

- The successful experience with the occupation of the Brazilian cerrados attracted a lot of attention: Embrapa in Africa.
- Brazilian experience with policies for small agriculture as a goal of economic development: limited and recent.
- The extent to which the biological and processes innovations – the Embrapa's expertise - are the determinant factors for the success of the small properties is not completely clear.
- Other structural factors have to be carefully taken into account when dealing with the development of small agriculture.

Thank you.

- Email: jbsferre@usp.br
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