

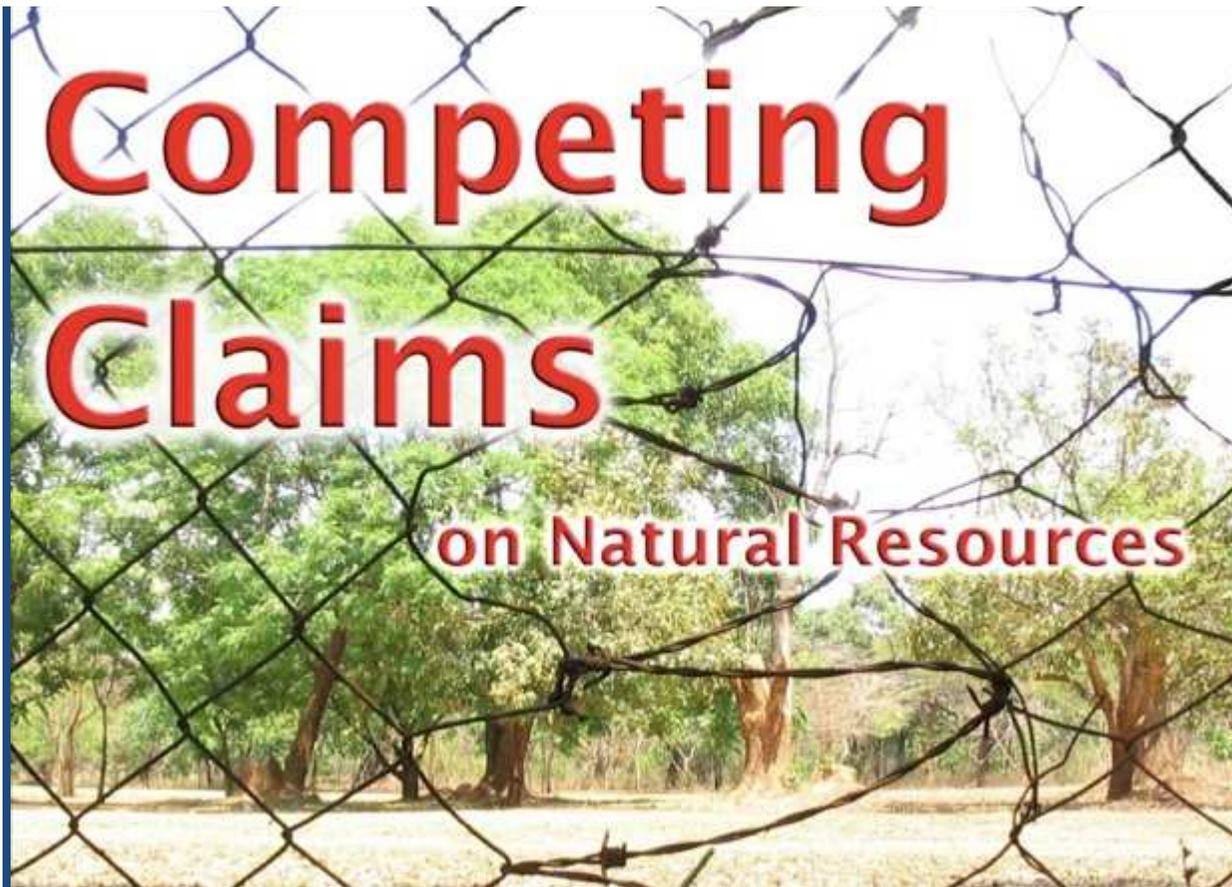


Sugarcane expansion and dairy farmer's responses in Brazil

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1. Introduction:



Brazil: local dynamics, tradeoffs and impacts

São Paulo state: 85% of total sugar and ethanol, expanding area

Landscape and farm systems changing with ethanol industry expansion

Table 1: Sugarcane expansion and milk production, São Paulo state, area, production and number of milking cows (1990-2007)

* Total beef and dairy cattle pastures

	Sugarcane		Milk		
	Area (million ha)	Production (million ton)	Area (million ha) *	Production (million l/year)	Milking cows
1990	1,8	137,8	10,2	1,9	2,1
2007	3,7	327,7	9,1	1,6	1,5
	(5,4)		(7,4)		
	+ 116%	+117%	- 11%	-17%	- 30%



Huge
expansion of
the sugarcane
for biofuels



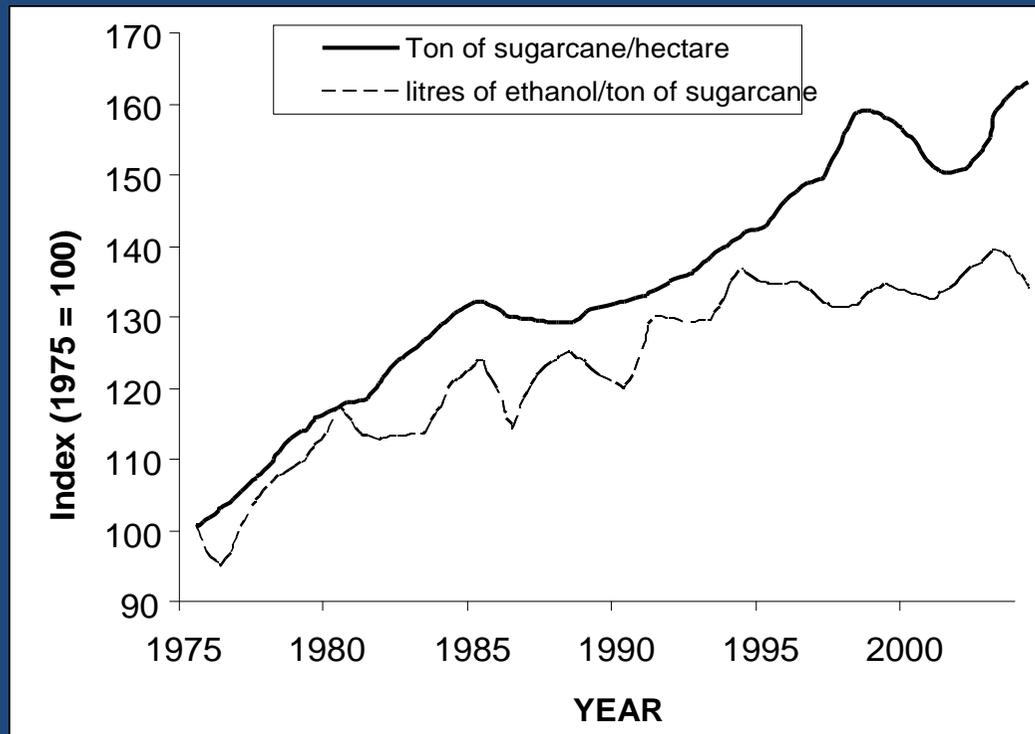
How are dairy farmers affected?

What kind of relationships should they have with the sugarcane industry?

What is the future of family dairy farming in the context of competition for resources?

2. The strength of the sugarcane sector:

- Long-term governmental support; several ups and downs; “Proálcool” programme (1979-1986)
- After 1990: Self regulation and efficiency: blending rules, flex fuel, co-production of energy
- 2005-2007: Just a recent impetus; oil prices blew up and available capital worldwide



➔ High economic efficiency

Figure 1: Sugarcane and ethanol productivity in Brazil, 1975-2004.
Source: Martines-filho et al (2006)

3. Dairy production in Brazil: the opposite model

- ✓ lack of long term policies
- ✓ little to no subsidies
- ✓ higher vulnerability to market forces

- Unclear political scenario
- Inflation: 1.000%/year

Land, pastures and cattle
as capital protection

Milk intervention (prices)

Deregulation, concentration and new technology in the 1990s

Withdrew all the regulations

Broke down all the barriers to external competition (importation)

Massive concentration in dairy industry and retail sector

“Longa Vida”: UHT technology

The milk frontier: the expansionist model of the dairy chain

5th. World biggest milk producer

Steady increasing rates

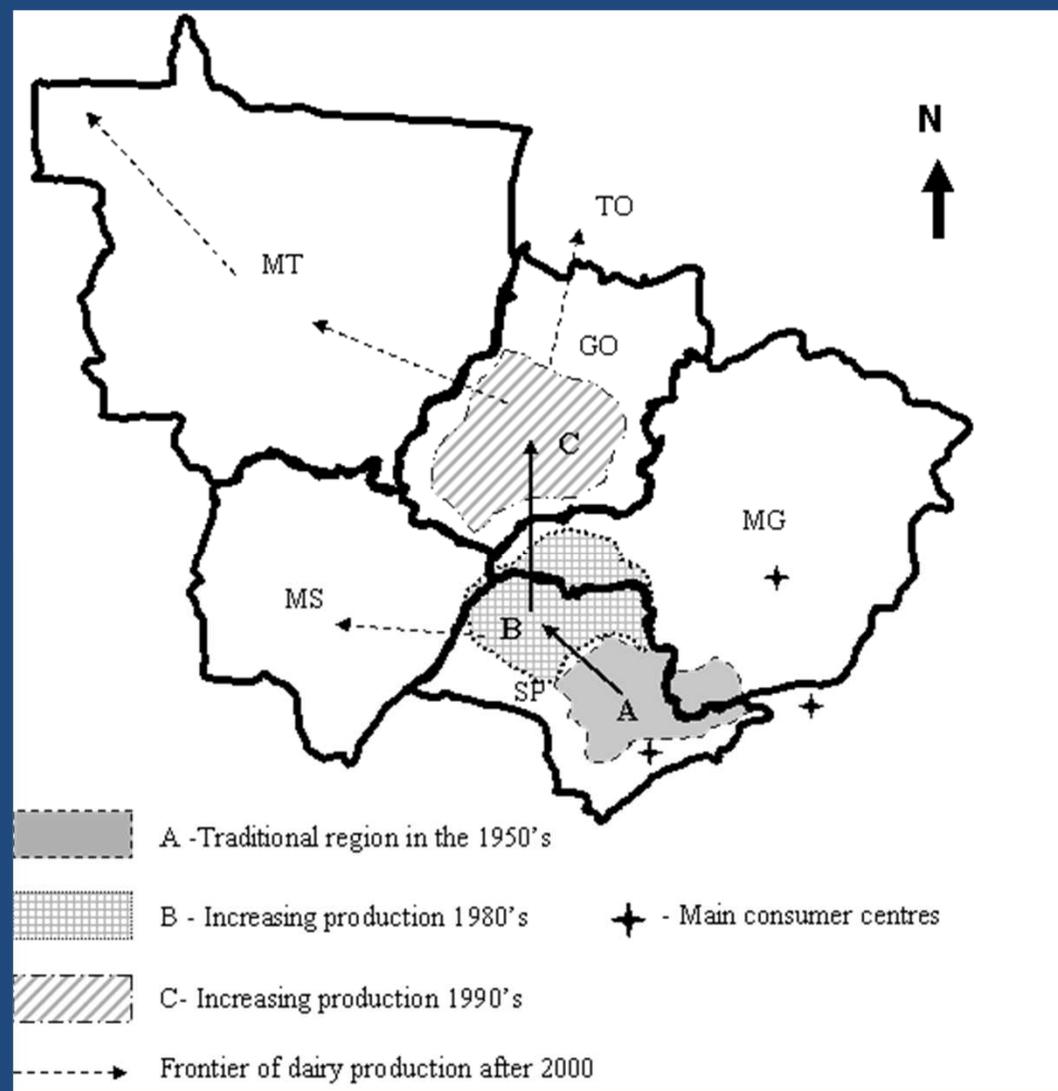
Horizontal expansion

-Ranchers consider milk as a by-product:
monthly revenue

- Low risk, no specific investments, no
contractual obligations

- Despite the distance, lower prices

-Easier and quicker than develop farmers



Low competitiveness as a pulling force for land use changes

-1.200 l/cow/year (2005) 1.000 l/cow/year (1994);

- Herd structure: 23 % milking cows (2005)

- Animal density: 1,2 AU/ha

- Gross income of R\$ 300,00 - 350,00/ha/year (2007)

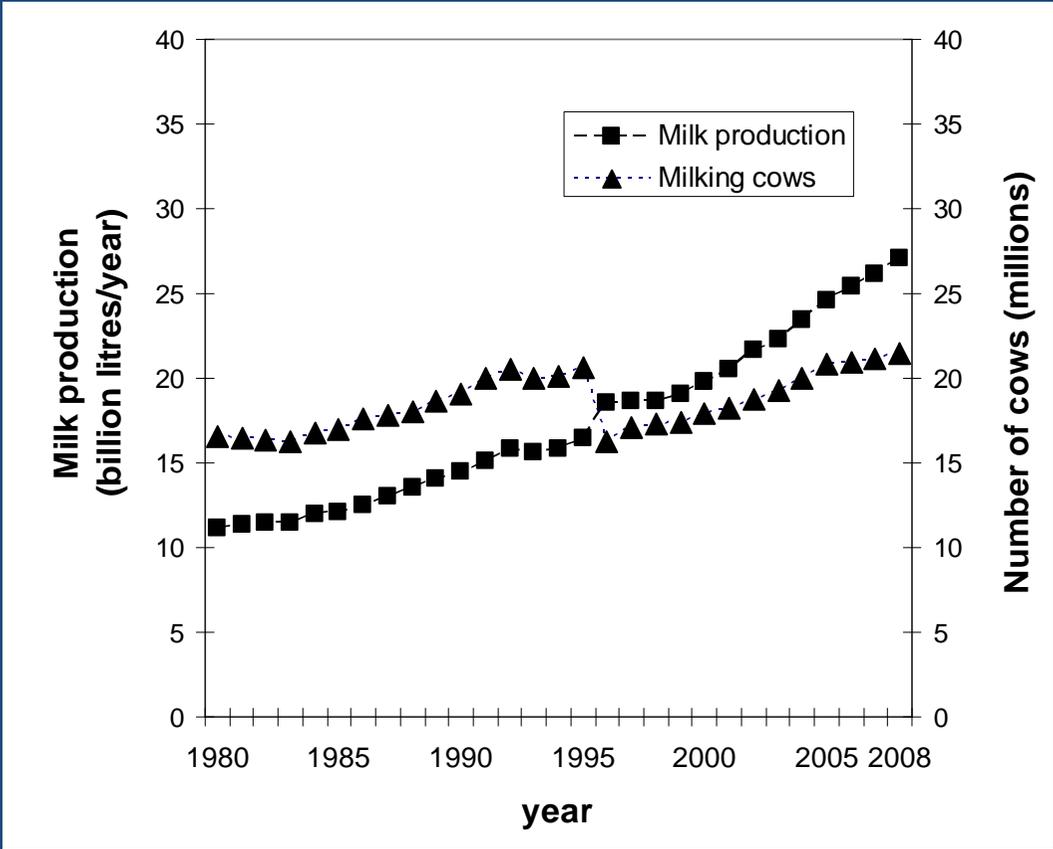


Figure 3: Number of milking cows and milk production in Brazil. Source: EMBRAPA, 2008. Original data, IBGE-PPM.

Figure 6: Bovine herd (beef, mix and dairy cattle) and sugarcane area, SP state, 1987-2007

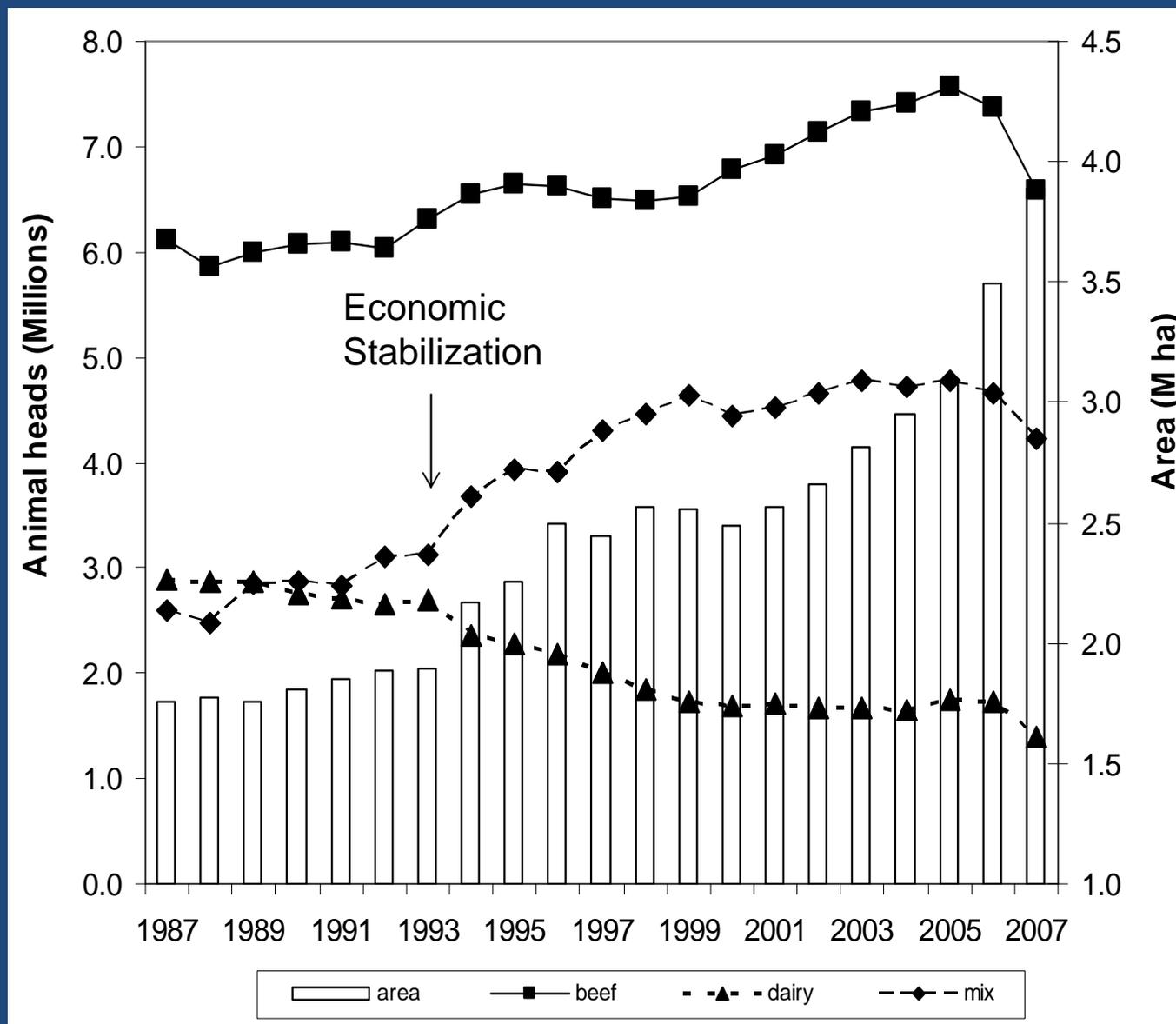
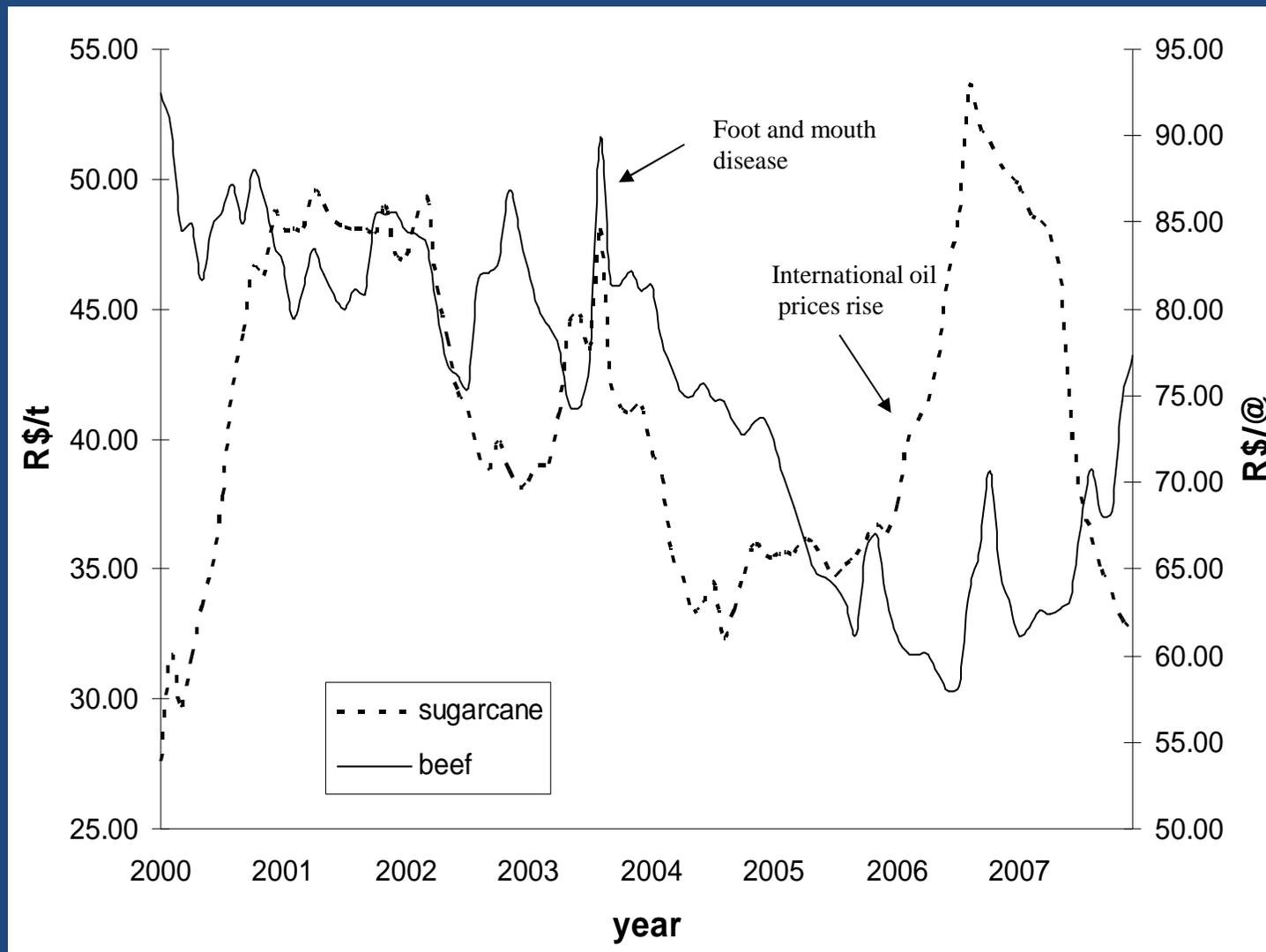


Figure 7: Sugarcane and beef prices (deflated values by IGP-DI, R\$/ton and R\$/@);
@ = 30 kg of live weight



Conclusions (1):

Historical analysis:

Not only from the long-term governmental policies but also from the internal dynamics of the dairy and beef chains.

Drivers:

- the ever expanding milk frontier
- technological innovations (UHT)
- Prices variations in milk and beef
- Concentration process of industries and retail sector



Dairy farming in São Paulo state became less competitive regardless the biofuel economy

The recent demand for biofuels, has a relative small role in the overall type, rate and direction of land use changes for this particular case.

Biofuels expansion: would it mean the same for every farmer?

Production/farm (litre/day)	from 5 to 1,350	Average: 158 l/day SD= 186.8
Total area (hectare)	from 1.6 to 1,305	Average: 88,7 ha SD= 145.1
Landowners' main occupation	74.4% were farmers 24.6% other activity *	31.6 % of farmers are retired
Educational level	29.6% university level 14.0% high school 9.3% fundamental 46.8 % basic/no education	2/3 of those who had university level are absentee

Table 2: Complementary data of the COONAI dataset: average production; area, main occupation and educational level. N= 438.

* 18% works in services (lawyers, doctors, and dentists), 6.7% in commerce and 0.8% in the industry.
Source: COONAI, unpublished data.

The biggest challenge: labour availability

1. Intense, non-stop job
2. Labour laws
3. Small scale
4. Increasing wages and cheaper milk
 - 1991: 202 litres/month
 - 2012: 850 litres/month

Minimum wage: + 133%

Milk at farm gate: - 33%

Retired:

- Advanced life cycle
- Absence of sons/daughters

Absentee:

- Low qualification
- Administrative problems
- dependency

Family:

- Size of the family
- Intensity of the production system

Entrepreneurs:

- Large scale, several employees
- Professional support



Franca:

300 thousand inhab., high rates of population growth, 500 industries of shoes and food industry (coffee, dairy, sugarcane and beef)



São José do Rio Preto:

420 thousand inhabitants, agro-industries, furniture, health and educational centre.

The dynamic urban economy affecting labour availability: the competition for resources goes beyond the limits of the rural space.

The economic environment and farmers' strategies

The sugarcane industry :

- Very efficient and able to make good offers
- Long term contracts and monthly payments
- Higher values than beef or dairy extensively

If it is so attractive, why not every farmer rent their land to sugarcane?

1. Capital accumulation and resilience

- Milk to create some income from the herd (asset)
- Liquidity (climatic events, bankruptcy, health expenses, marry a son)

2. Flexible strategies

- Avoid investments and loans
- Second milk, concentrates and less milk to calves

3. Technology introduction

- Reduce labour, exhibitionist behaviour and supervision of the employee
- Reach very high productivity in small areas

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4. Dairy as a diversification option

- Hilly topography
- Provide a monthly revenue while wait the best selling moment (grains, coffee)

Sugarcane as a diversification option



Less operation than annual crops

Logistic

Less sensible to droughts and diseases

Provide capital to investments in other activity

Less risk of bankrupt than local farmers

Reduce the labour load

Conclusions (2):

At farm level: **labour availability, household resilience and technology introduction** are the key factors for farmers' decisions

Profit maximization is not the farmers' main goal but **risks perceptions and labour organization**

Is it a threat or opportunity?



Leasing land respond to farmers' needs: labour alleviation, safety and monthly payment.
Wealthier farmers (large areas, size of the operation)

Quitting farming and living from the rent: a 'one way street'.
Very small farm sizes (< 10 ha): quitting farming is no option

Sugarcane can support the conditions for intensification of family dairy farming

As a form of diversification: extra income, increases the resilience and lowering risks and uncertainties

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Technology Transfer Methodology

3.700 small holders farmers
550 extension service technicians
24 states
136 different partnerships

Nutrition: intensive pasture management
sugarcane + urea (dry period)
oat and ryegrass over seed tropical grass
local by-products as concentrates

Management:

Herd structure
Improvement on ambience (night grazing,
shade)

Reproduction: unproductive animals dismiss
regular control

Health: parasites control; brucellosis and tuberculosis
exams

Genetic : gradual herd improvement

Technical indexes and economic controls



Obrigado! Thank you!



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