

# International bioenergy market: assessing institutional structures

## Research Workshop BIOEN

Paulo Furquim de Azevedo (Coord)

Sao Paulo School of Economics - FGV



Workshop BIOEN de Pesquisa  
06 e 07 de Novembro de 2012 - FAPESP - São Paulo

# Summary

- **Two projects**
  - AISE - The Sweet and bitter sides of the sugarcane. An integrated sustainability assessment for the Brazilian ethanol context (Coordinator: Prof. Tadeu Malheiros)
  - International Bioenergy Market and Policy Implications (Coordinator: Prof. Paulo Furquim de Azevedo)
- **Results and Policy Implications**

# 1<sup>st</sup> Project

## Research questions:

- **Phase 1 (2009 – 2012)**

What kind of Sustainability Assessment (SA) approach is most suitable for Brazilian ethanol?

- **Phase 2 (2013 – 2016)**

How to lever sustainability in the ethanol decision making network governance?

# Main Results

- Application of the Sustainability Assessment methodology on case studies in Brotas-SP, and strategic appraisal of some initiatives of São Paulo State related to sustainability assessment.
- Normative implications:
  - Sequence of steps to implement SA: 1) one have first to adapt current sustainability instruments (e.g. environmental licensee); 2) Incorporate sustainability assessment on public and private routines.

# 2<sup>nd</sup> Project

## Research Questions

*What kind of international market for biofuel do we need?*

*Have?*

*Likely to have?*

Goal: Public policies for sustainable bioenergy

# Research Team

## **Coordinator:**

- Prof. Paulo Furquim de Azevedo (FGV-EESP)

## **Researchers:**

- Pery Francisco Assis Shikida (UNIOESTE e PósDoc na FGV)
- Mário Antônio Margarido (Instituto de Economia Agrícola e PósDoc na FGV).
- Bruno Benzaquen Perosa (PhD Economics FGV-EESP)
- Felipe Cauê Serigati (PhD candidate Economics FGV-EESP)
- Arthur Solowiejczyk (RA FGV-EESP)
- Roberto Rodrigues (FGV-EESP)
- Roberto Perosa (FGV-EESP)

## Four years ago...

- Outstanding production growth rates
- Excellent perspectives for the dissemination of production and international mandates
- Increasing perceived relevance of international markets
- Investments booming (U.S. and foreign capital in Brazil)

## Now...

- “The worst crisis in the sugarcane industry ever”
- Biofuels are still a domestic commodity
- A general perception that public policies are needed

# Two fronts

- **International market**
  - How integrated are ethanol markets? (Serigati, Azevedo and Margarido, 2012) (Serigati, Azevedo, 2012)
  - How will the international ethanol market evolve? (Perosa and Azevedo, 2012)
- **Domestic public policy**
  - What public policy do we need? (Solowiejczyk, Azevedo and Margarido, 2012) (Sousa et al. 2011) (Guimarães et al, 2012)

# What international market do we need?

- Biofuels (mainly ethanol) are still a domestic commodity. Why? Production was induced mainly by national energy security concerns.
- International demand for biofuels is driven by environmental concerns. As such the international market demands not only the energy content but also sustainable attributes (credence good).
- Trading mechanisms that credibly transmit information about sustainability are needed

# International ethanol market

- Is there an international ethanol market able to coordinate production and consumption behavior?
  - U.S. and Brazilian ethanol markets *are not* co-integrated (if we control for oil prices)
  - Costs of exchange, estimated by means of co-integration with threshold, are above 54%
- Results are consistent with qualitative evidence
  - Ethanol is mainly a domestic commodity, and the market institutions for multilateral transactions are not yet in place
- **Implication:** ILUC models and other policy papers rely on a inadequate assumption

# International market: is there a path?

- Not yet an established private certification standard
- Which standards are likely to prevail?
  - Lower verification costs (e.g. raw material specific)
  - Rely on the prevailing public regulation (lower compliance and verification costs)
  - Legitimated by socioenvironmental interest groups (e.g. NGOs)
- Network externalities will probably cause the prevalence of one standard

# Policy implications

- Public regulation drives the development of private certification standards, as it has an effect on compliance and verification costs.
- NGOs may influence the adoption of private certification (less or more stringent) by means of the public regulation
- Stricter environmental regulation decrease certification costs and hence foster the international biofuel market

## In the domestic front

- Foreign Direct Investments raise from 0% in 2000 to an estimated 40% in 2015
- Drastic decline in investments after 2008 (credit crisis)
- Supply shock due to climate hazards
- Consequence: shortage and claim for more intervention

# What policy do we need?

- Increase mandates, subsidies to new plants?
- What are the facts:
  - Ethanol mills allows for (limited) arbitrage in the supply side
  - Flex fuel technology allows for almost perfect arbitrage by consumers
- A rare case where free market is the best regulation (adaptation to shocks)
- Demand for price regulation decreased after flex fuel introduction

# Implication for the domestic policy

- Less (not more) intervention
  - Flexible gasoline prices
  - Lower mandates (allow for more efficient arbitrage by consumers, and lower price volatility)
  - Pigouvian taxes (internalize environmental benefits)

**Thanks for you attention**

## **Contacts**

**BIOEN**

**Paulo.azevedo@fgv.br**

# Why the change in the market mood?

- Traditional explanations (food prices; ILUC; climate change)
- Additional explanation:
  - Ethanol has been mainly a domestic commodity, driven by energy security concerns.
  - Pro-ethanol pressure group cares about energy security (in U.S. and Brazil)
  - The natural gas industry boom, in the U.S., and the pre-salt oil, in Brazil, slackened the support for the bioenergy alternative
- Claim: obstacles are circumstantial, but may give moment to wrong policies
- Current policy discussion is colored by rent protection (subsidies, larger mandates) rather than efficiency