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THE BRAZIL PERSPECTIVE

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Sugar prices in a volatile market: The role of biofuels in the medium-term demand trends

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The context today:

- In 2005, 385 M t sugar cane were processed at 310 sugar mills (41 new are being built), yielding 27 M t sugar and 107 M bep of ethanol.
- Brazil is the world's largest producer of sugar cane (33.9%), sugar (18.5%) and ethanol (36.4%). It is also the largest exporter of sugar and ethanol.
- Ethanol use represents over 40 % of the fuel for light vehicles (total fleet: 22 M vehicles).
- Flex-fuel cars correspond to 70% of the sales of new units (end of 2005).

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Brazil -- a buffer producer

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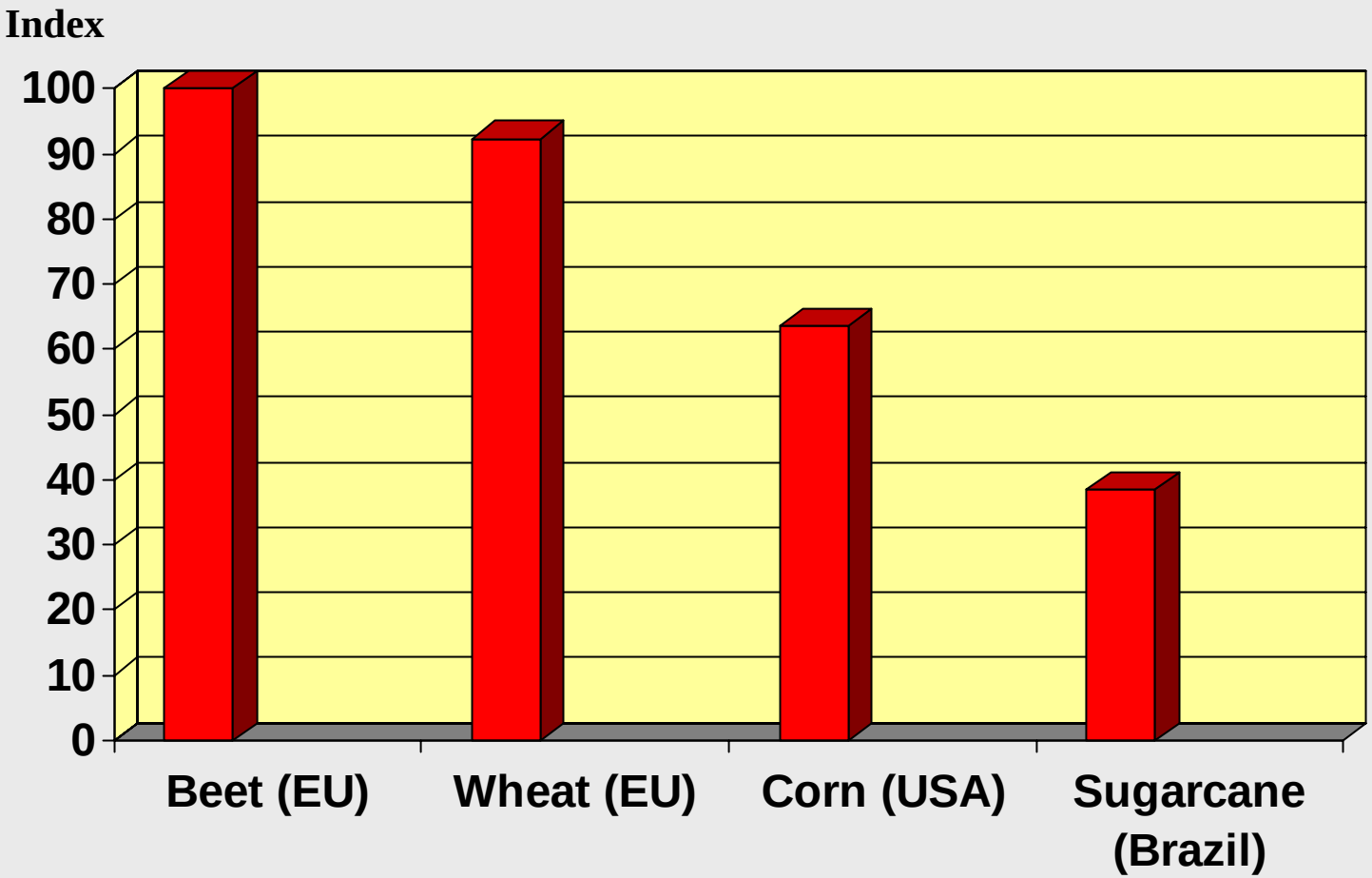
- Assets

1. **Lowest-cost producer**
2. **Highest crop output growth in the last ten years**
3. **Biggest energy output / input**
4. **Strong local market**
5. **Seasoned traders**
6. **Most mills are cash rich**

- Liabilities

1. **Distance to main markets**
2. **Unstable local tax structure**
3. **Ethanol stock plan denied by Competition Board (Cade)**
4. **Money is expensive**

Brazil is the Lowest-Cost Producer of Sugar and Ethanol



Source:UNICA, F.O.Lichts

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Technology, 1975-2000

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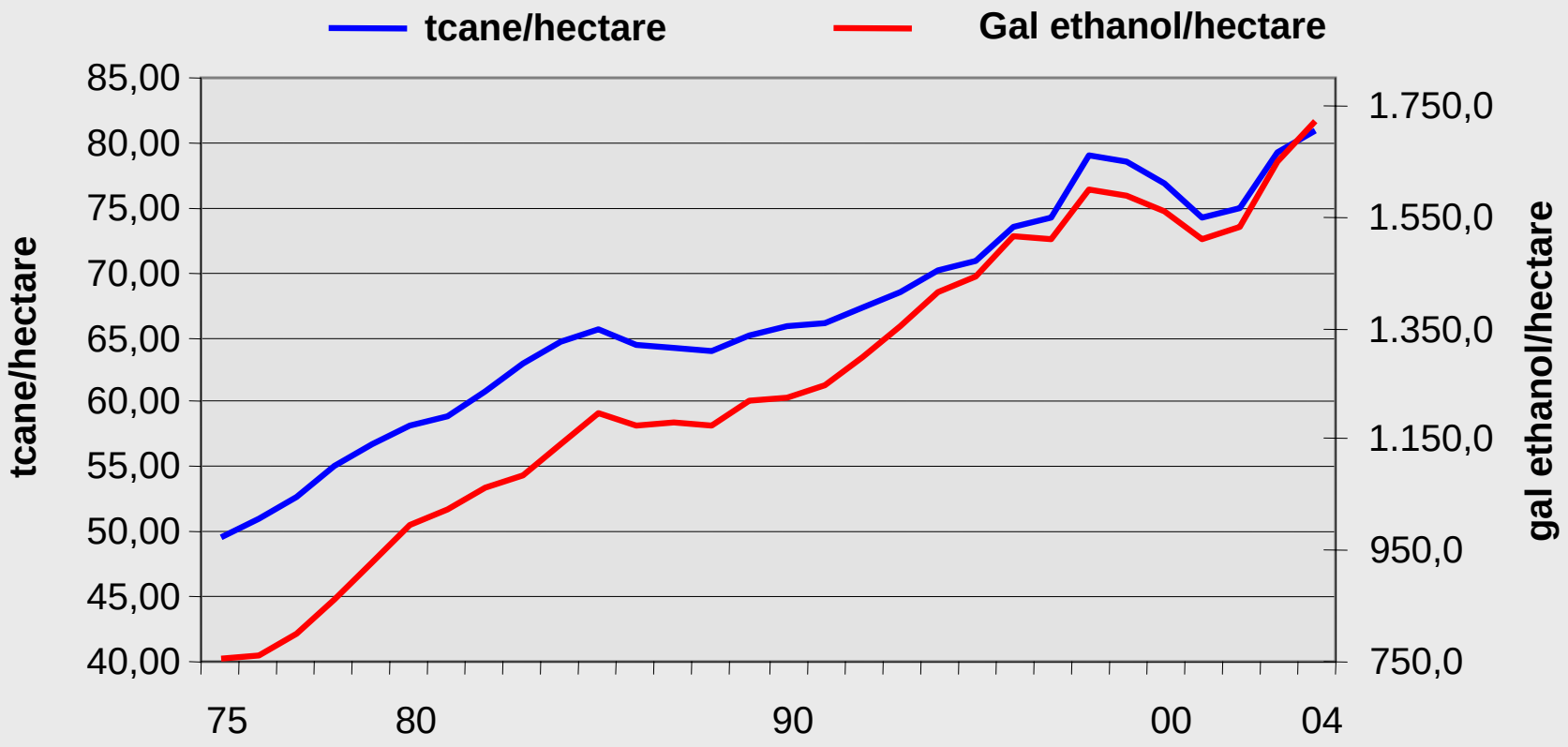
- **Some results in São Paulo:**
  - **+ 33% sugarcane/ha**
  - **+ 8% in the sugar content**
  - **+ 14% conversion: (sugars in cane) to (ethanol)**
  - **+ 130% fermentation productivity, m^3 ethanol / (m^3 reactor.day)**

- **Brazilian Center South averages in 2003/4 crop:**

  Sugarcane productivity: 84.3 t / ha
  Sugar content: 14.6 percent
  Industrial conversion: 86%

Productivity Gains

Center-South Region



Source: UNICA

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The next step

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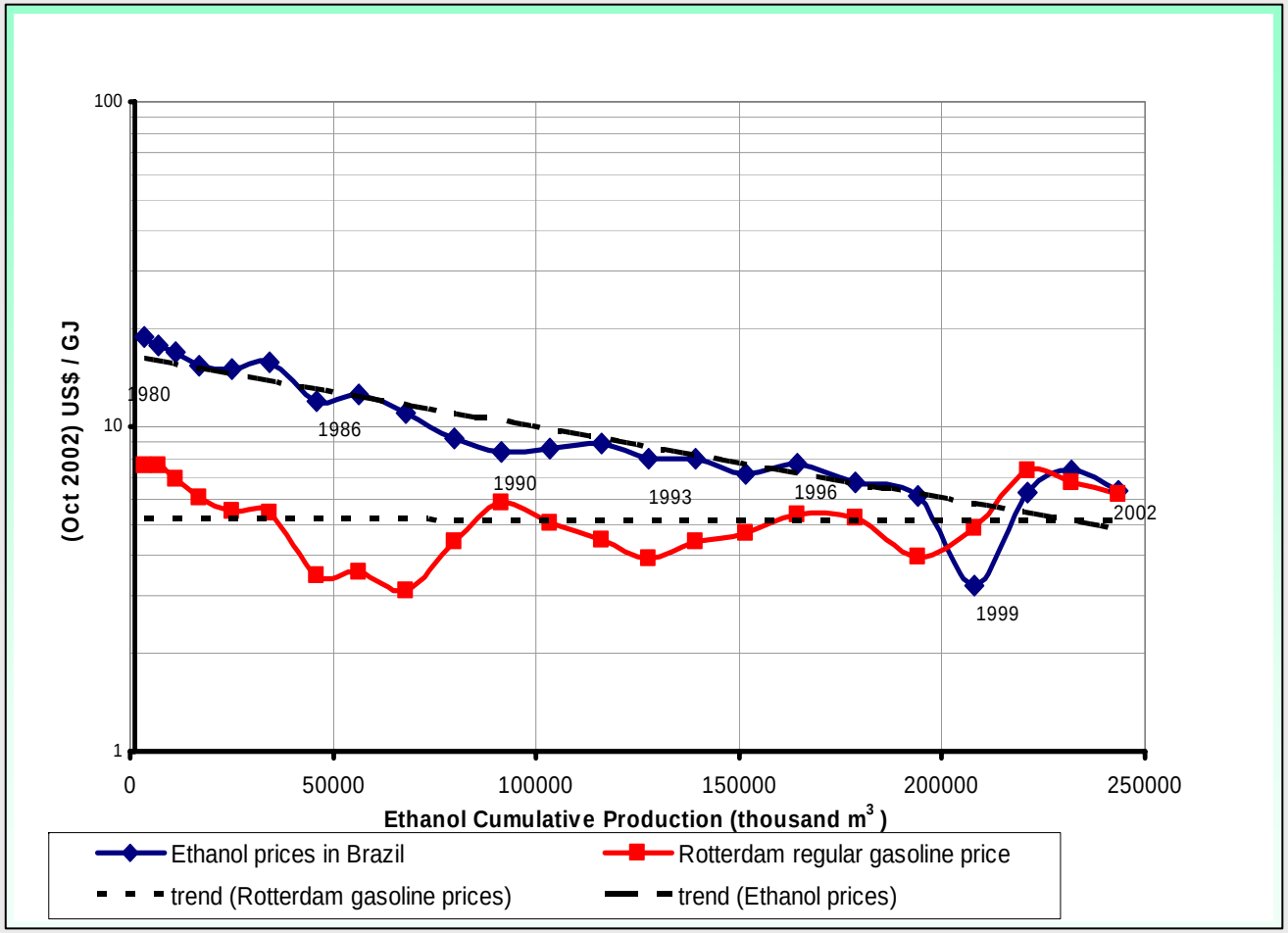
It is expected that in the next 10 – 20 years a much more efficient use of the sugar cane biomass will increase significantly the range of products and their value.

Energy (both power and liquid fuels) will become the most important fraction of the sales.

Some technologies in advanced development stage (worldwide) are key for this transformation: the hydrolisis of biomass (bagasse and trash), as well as many different fermentation technologies; and the biomass gasification, leading to power or fuel synthesis.

Sugarcane appears an ideal feedstock for future "bio-refineries", for its relatively low cost, large availability and an interesting mix of 1/3 sucrose & 2/3 pre-processed ligno-cellulosic material.

Learning curve



Source: Goldemberg, J., et alii, 2004

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