

Biofuels and the Price of Food

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Outline

- 1. The global setting: The end of the Agricultural Treadmill**
- 2. The impact of biofuels**
- 3. Conclusions: The need for innovation and productivity growth**

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1. The end of the Agricultural Treadmill

- The Agricultural Treadmill: 1870 - 2000.
- World agriculture: Ever more food for ever more humans at ever declining prices.
- 2000: Megatrend reversal in international markets.
- Prices have tended to increase.
- This will continue, as global demand growth is outpacing supply.

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1. The end of the Treadmill

- Continued rapid growth in global food demand (more than 100 % between 2000 and 2050).
 - Continued rapid population growth;
 - Per capita income growth in developing and newly industrializing countries.

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1. The end of the Treadmill

- Limited growth in global food supply:
 - Limited cropping acreage (+ 7 % between 2000 and 2020);
 - Production growth predominately through productivity growth;
 - Declining annual productivity growth (1960-1989: 4 %; presently \approx 1%; **EU: 0.6%**);

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1. The end of the Treadmill

- Water is becoming ever scarcer and more expensive;
- Increasing energy price;
- Climate change;
- Growing non-food crop production (bioenergy, cotton, rubber, flowers and ornamental plants, etc.);
- Economic consequence:
 - Increasing price of food 2003/5 – 2015/17:
+50-100 percent.

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1. The end of the Treadmill: Global warming

- Rising food prices increase the incentives for deforestation.
- Deforestation is a major cause of global warming.
- Climate effect of deforestation and conversion of pasture into crop land: 18 per cent.
- This is more than the climate effect of global manufacturing and more than the climate effect of global transportation.

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2. The impact of biofuels

- Global cropping acreage for biofuel production: 3 percent.
- Impact of biofuels on international agricultural commodity prices since 2000: +10 percent.
- Actual price increase (**upper bound**): More than 100 percent.

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2. The impact of biofuels

- However, this estimate neglects:
 - Expansion of biofuel acreage in US and EU in part on set-aside land.
 - Byproducts of biofuel production:
e.g. protein feed.
- Realistic impact of biofuels on prices since 2000: 5 percent.
- Contribution of the EU: Less than 1 percent.

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3. Conclusion

- With innovative and highly productive agriculture the EU and the world can afford more of everything:
 - More food,
 - more feed,
 - more biofuel,
 - more natural habitats,
 - more biodiversity, and
 - more climate protection.

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