
Biofuels, Sustainability and Efficiency – A case for freer trade

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Biofuels

- A technology that allows to substitute oil with another source that is renewable and more homogeneously distributed, even if scarce
 - Take away the end-period
 - Geopolitics of oil
 - Cap the price and allow TFP to (perhaps) reverse the trend in energy costs
- Of course, the numbers have to add up
 - Cost and energy content of production, transportation and processing; opportunity cost of land use
 - Some of the problems stay...not the end of the road

International energy trade

- Its much larger than it looks, and shall become even more so
 - It goes beyond the exchange of oil and other materials that act as energy sources
 - It also includes the competitive edge that energy costs (and, to some extent, other energy features) gives to producers in certain key industries in energy-abundant places
 - It also affects the specialization patterns
 - And terms of trade

Impact on energy costs

- As world energy (especially for transport) is overly-dependent on oil, and reserves are limited, there is a long-term trend in price
- This trend in prices has accelerated in the last few years
 - Obvious scarcities, more noticeable in a growing world economy
 - Demand from China (along with other raw materials, grains, vegetable oils and metals – China is poor in all)
 - Volatility caused

Impact of the change in prices

- Costa Rican terms of trade have deteriorated by 27% since 2002
 - Growth under those conditions is difficult
- Ranking in energy costs among nations shifts quickly and severely
- The possibility of biofuels, along with other alternatives, turns some nations from energy scarce to energy abundant
- Countries (like China and Mesoamerica) that are scarce in both oil and other raw materials (including biofuel) may have terms of trade worsen even more, ironically

Energy sources in Mesoamerica

PAÍS / REGIÓN	HIDROELECTRICA	GEOTERMICA	TERMICA	OTRA
BELICE	45.0%	0.0%	55.0%	n.d.
COSTA RICA	82.9%	13.0%	2.5%	1.6%
EL SALVADOR	49.1%	15.1%	35.8%	n.d.
GUATEMALA	52.6%	0.0%	47.4%	n.d.
HONDURAS	61.9%	0.0%	38.1%	n.d.
NICARAGUA	19.1%	4.7%	76.2%	n.d.
PANAMA	70.9%	0.0%	29.1%	n.d.
MEXICO	37.1%	0.5%	47.7%	14.7%
Campeche	0.0%	0.0%	100.0%	0.0%
Chiapas	100.0%	0.0%	0.0%	0.0%
Guerrero	30.6%	0.0%	69.4%	0.0%
Oaxaca	99.7%	0.0%	0.0%	0.3%
Puebla	71.1%	28.9%	0.0%	0.0%
Quintana Roo	0.0%	0.0%	100.0%	0.0%
Tabasco	0.0%	0.0%	0.0%	0.0%
Veracruz	1.0%	0.0%	63.0%	36.1%
Yucatán	0.0%	0.0%	100.0%	0.0%

a/ Se refiere a la energía eléctrica generada por el sector público. Para los demás países incluye el sector privado.
Fuente: elaborado con datos de CEPAL, INEGI y BEL

Present and future costs in Mesoamerican energy

<i>Tecnología</i>	<i>Costo actual (US\$)</i>	<i>Costo futuro previsto (US\$)</i>
Térmica	5 – 10 ¢/kWh	8 - 15 ¢/kWh
Biomasa moderna:		
- Electricidad	3 - 12 ¢/kWh	4 - 10 ¢/kWh
- Calor	1 - 6 ¢/kWh	1 - 5 ¢/kWh
- Etanol	8 - 25 \$/GJ	6 - 10 \$/GJ
Electricidad Eólica	4 - 8 ¢/kWh	3 - 10 ¢/kWh
Electricidad Solar PV	25 - 160 ¢/kWh	5 o 6 - 25 ¢/kWh
Electricidad Solar térmica	12 - 34 ¢/kWh	4 - 20 ¢/kWh
Hidro-electricidad	2 - 10 ¢/kWh	2 - 10 ¢/kWh
Energía Geotérmica:		
- Electricidad	2 - 10 ¢/kWh	1 o 2 - 10 ¢/kWh
- Calor	0.5- 5 ¢/kWh	0.5- 5 ¢/kWh

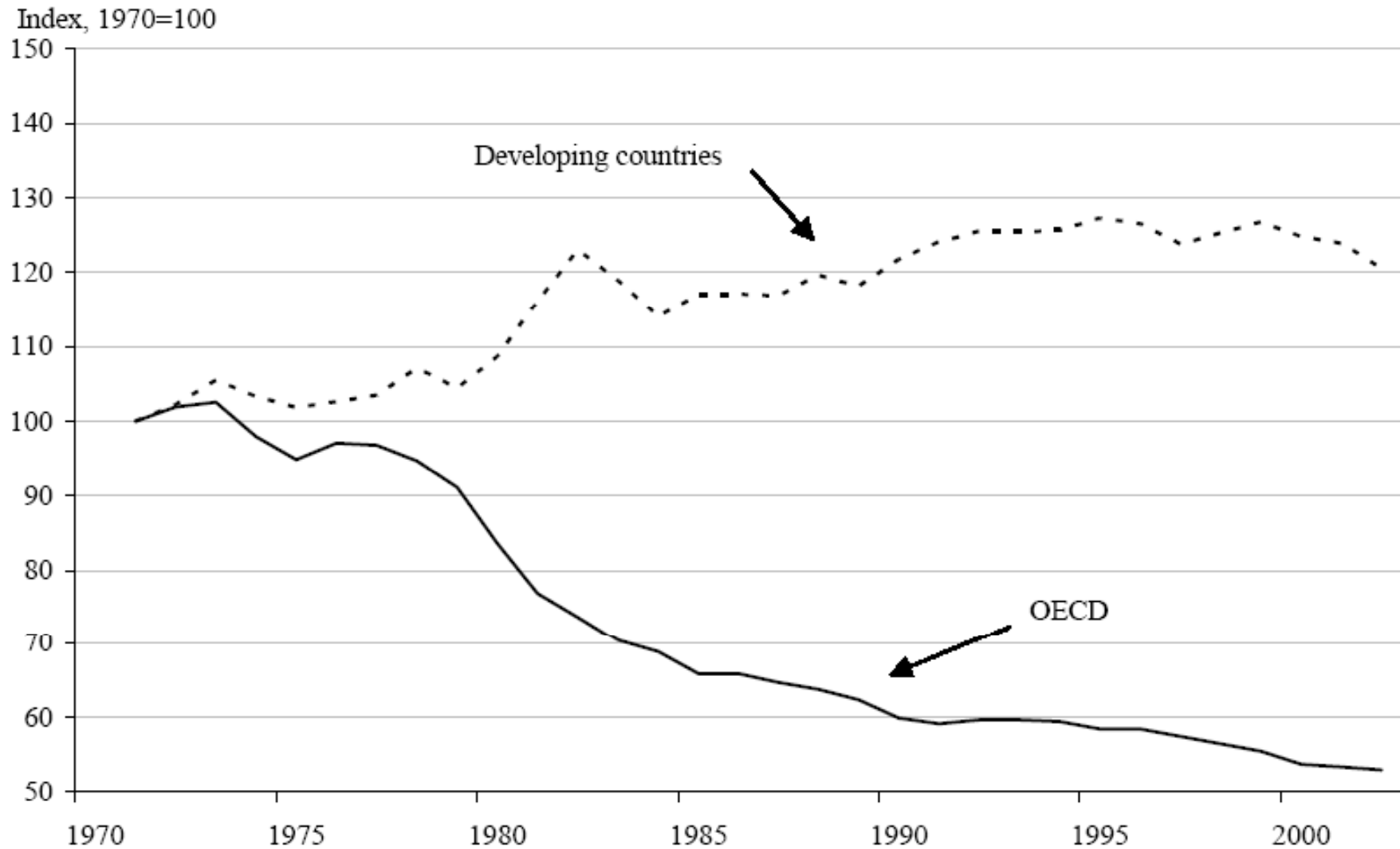
Fuente: UNDP, UNEP, y WEC (2004)

Certainly makes a difference environmentally

- But does not relieve the basic concern
- Usage vs production environmental impact

Emissions for an equivalent energy content – 2005 technology						
Carbon	Oil	Natural gas	Nuclear	Aeolic	Hydro	Biomass
1114	690-870	460-1230	39	7-74	2-410	46

It biases technological development: energy content of production in rich and poor countries



*Se refiere al uso primario de petróleo por unidad de PIB
Fuente: OECD Economic Outlook Database e IEA

Comparative advantage and energy

- As an item increases its share in the production costs of different goods, it often becomes the driver for specialization
 - As energy becomes more expensive, and the energy-cost difference becomes a more notable contrast among countries, energy becomes the reason why certain things are produced in certain places
 - Some traditional manufacturing leaders have a serious competitive disadvantage in this respect
 - So does China

We already see some of this: energy content (per US\$) in Brazilian exports and imports

	Energy content in exports			Energy content in imports		
	1985	1990	1995	1985	1990	1995
Agriculture	49	32	39	10	15	34
Mining	36	53	61	3	2	4
Foodstuffs	74	70	110	1	6	14
Textiles	5	6	8	0	1	10
Paper	18	32	79	4	10	39
Non-metal minerals	5	7	13	1	2	2
Ferrous metals	142	207	262	10	25	43
Non-ferrous	7	29	30	6	10	26
Chemicals	19	22	52	35	58	216
Other	131	128	150	49	102	234

Trade and biofuels

- Raw materials that can be sources of biofuels, and the capability to produce them, are not homogeneously distributed among nations
 - Corn, sorghum and other grains; sugar;
- It may be economical to substitute oil for biofuels at the lower cost for producing the latter in some countries, but not at the higher cost in others
- Trade is what allows all countries to consider a comparable cost base for biofuel feasibility
- Anything that makes the raw material artificially expensive prevents the emergence of biofuels

Trade policy and biofuels

- Oil is already very tradeable, with relatively small distorting barriers to trade
 - Often oil is heavily taxed, but in a manner that affects usage, not sourcing
 - This is efficient
- Biofuels are not necessarily that easily tradeable
 - Notice the market value of the ethanol concessions in recent FTAs
 - The rule of origin
- The materials from which biofuels today emerge are the least tradeable legal objects in the world
- Barriers to trade in agricultural goods endanger the opportunity of biofuels as an environmental alternative
 - Bad timing to be a mercantilist

Trade and biofuels

- While the opportunity of becoming competitive in energy-intensive goods thanks to energy advantages remains there for some nations and some items...
 - China's problem in heavy industry long-term
 - Location, renewable sources and raw cost
- ...fact is, for many uses (including transportation and, largely, electricity generation), indirect trade should not be enough

What to ask from policy to give biofuels a fair shot

- FREE TRADE ON THE BIOFUELS THEMSELVES
- To induce the production of usable (for biofuels) raw materials to take place wherever it has the lowest (opportunity and financial) cost
- To allow those raw materials to be available at their real cost in the key energy markets
- To subsidize the production of biofuels
 - Directly (rather than indirectly through a subsidy to something else)
 - Only in proportion to the size of the externalities (positive and negative) at play

This is not achieved today

- BIOFUELS ARE THEMSELVES OBJECT OF BARRIERS
- Trade barriers and subsidies induce away production of the key materials from the places that do them better, and into places that do them at a higher cost
- Trade barriers make those materials more expensive than need be in the key developed markets – financial feasibility challenged
- Important indirect subsidies (for production of grain in some places, at the expense of producing elsewhere) rather than direct subsidies to the environmental and other externalities – incentives are skewed

A renewed case for agricultural trade liberalization and reform

- Currently, many countries impose barriers to entry, and other distortions, regarding their agriculture
 - Inducing a higher local cost of ag raw materials, displacing producers in other countries, etc.
- Notable is the EU's CAP, and (a lesser sin, but still there) tariff barriers and subsidies in the US Farm Bill
- This costs their consumers, and ag producers worldwide. Many of the hungry in the world suffer trade barriers making food expensive
 - Without proper policy, they will suffer biofuels making food *even more* expensive

Ag trade liberalization

Potenciales beneficios sectoriales derivados de la liberalización plena del comercio global de mercancías, 2015 (US\$ miles de millones del 2001)		
Grupo de países	Reforma completa (escenario estático)	Reforma completa (escenario dinámico)
Ingreso alto	201.6	261.1
En desarrollo	85.7	200.1
Ingreso medio	69.5	145.1
Ingreso bajo	16.2	55.0
Mundo	287.3	461.2

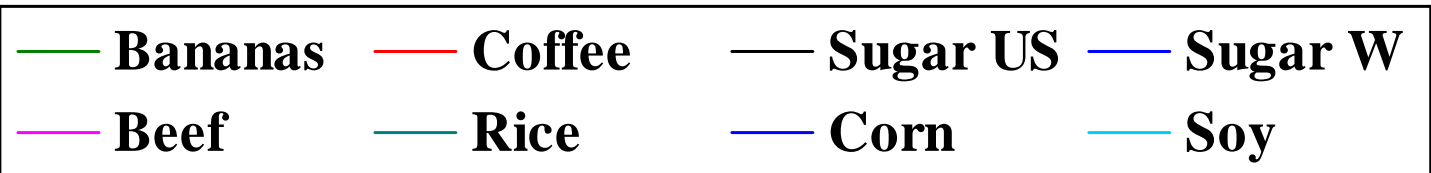
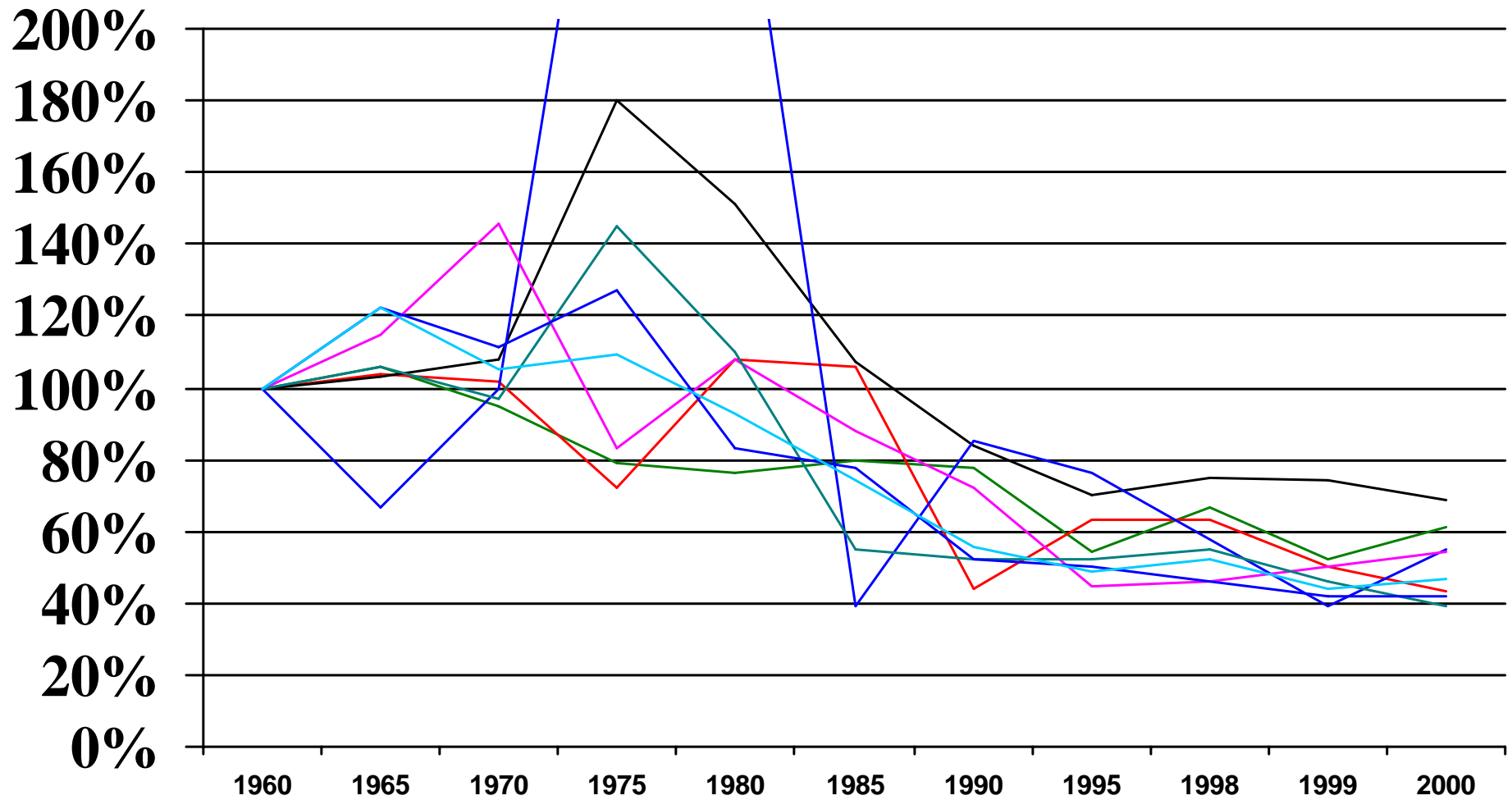
Fuente: Anderson, Martin y van der Mensbrughhe (2006)

- The gains to the world, as producers and consumers, from comprehensive, WTO-wide ag reform are immense
- Without a good deal in agriculture, it is impossible to conceive an overall agreement in the current WTO round on the other topics
 - Gains in the trillions, without counting the biofuel angle

Link with biofuels

- The opportunity to make such a comprehensive trade liberalization is there
 - We are in the middle of a WTO round, but playing with fire – may be the last if we fail
 - Chinese demand is causing record ag prices... reform has never been easier
 - Non-Chinese demand for biofuels is pushing prices even more
 - The strategic issues at play here

Long-term trends in ag prices before China



Fuente: Banco Mundial

Raw material prices in China's time

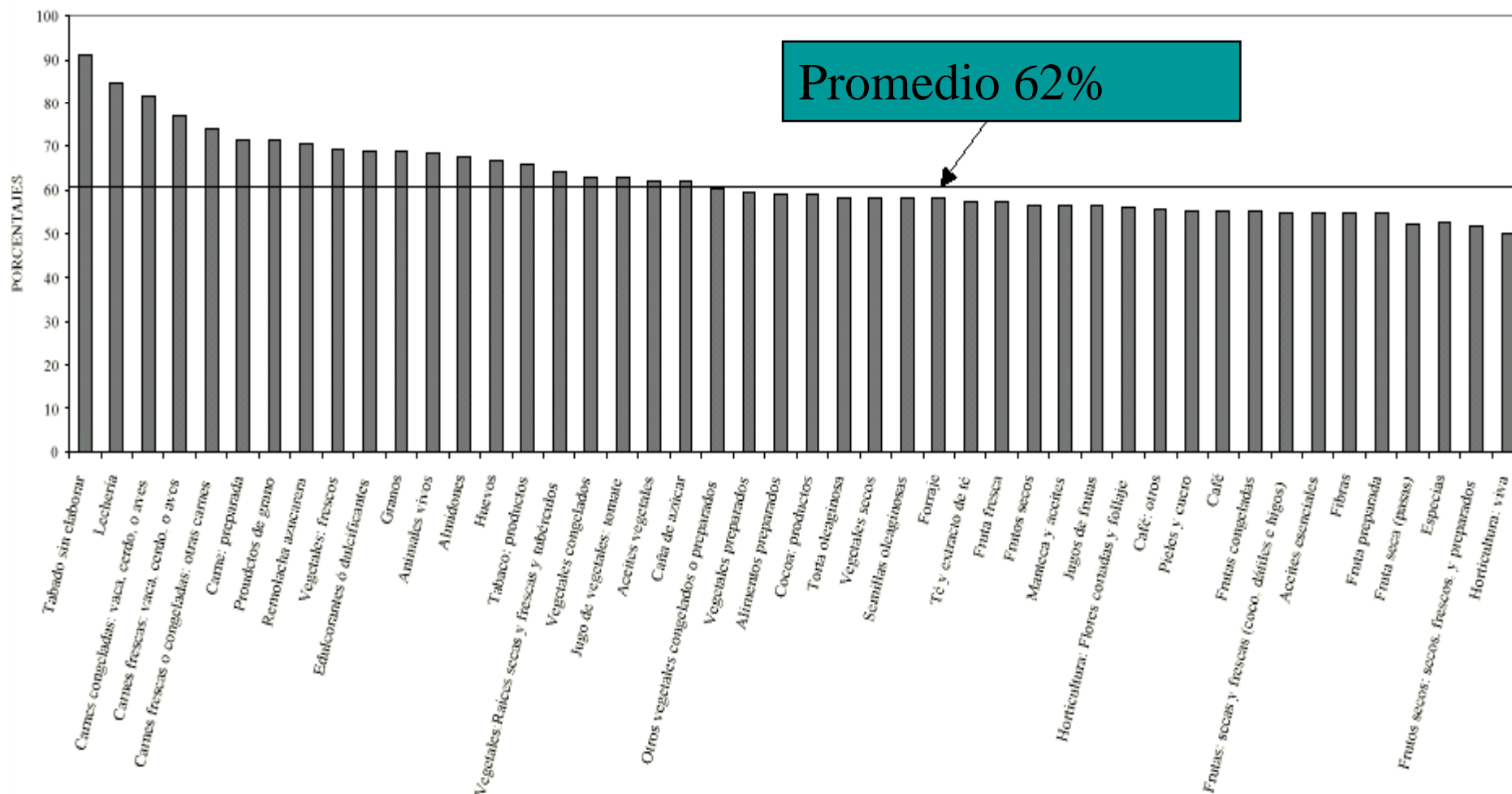
	Var. % interanual				2006
	2003	2004	2005	al 18/7/06	
A. Index en US\$					
All	17,8%	-0,1%	17,5%	32,1%	36,0%
Foodstuffs	12,0%	-7,6%	11,8%	7,2%	19,5%
Manufacturing inputs	26,7%	10,1%	24,0%	61,4%	53,8%
Non-food ag	21,3%	-12,1%	15,4%	15,3%	2,6%
Metals	30,5%	24,7%	27,9%	85,0%	77,9%
B. In other currencies					
Euros	-2,1%	-8,3%	32,9%	26,8%	31,2%
Yenes	4,4%	-3,5%	32,3%	37,2%	41,7%
C. Oil					
	31,5%	59,6%	37,4%	28,5%	-4,8%

Fuente: The Economist (26 de octubre de 2006).

Ag trade liberalization

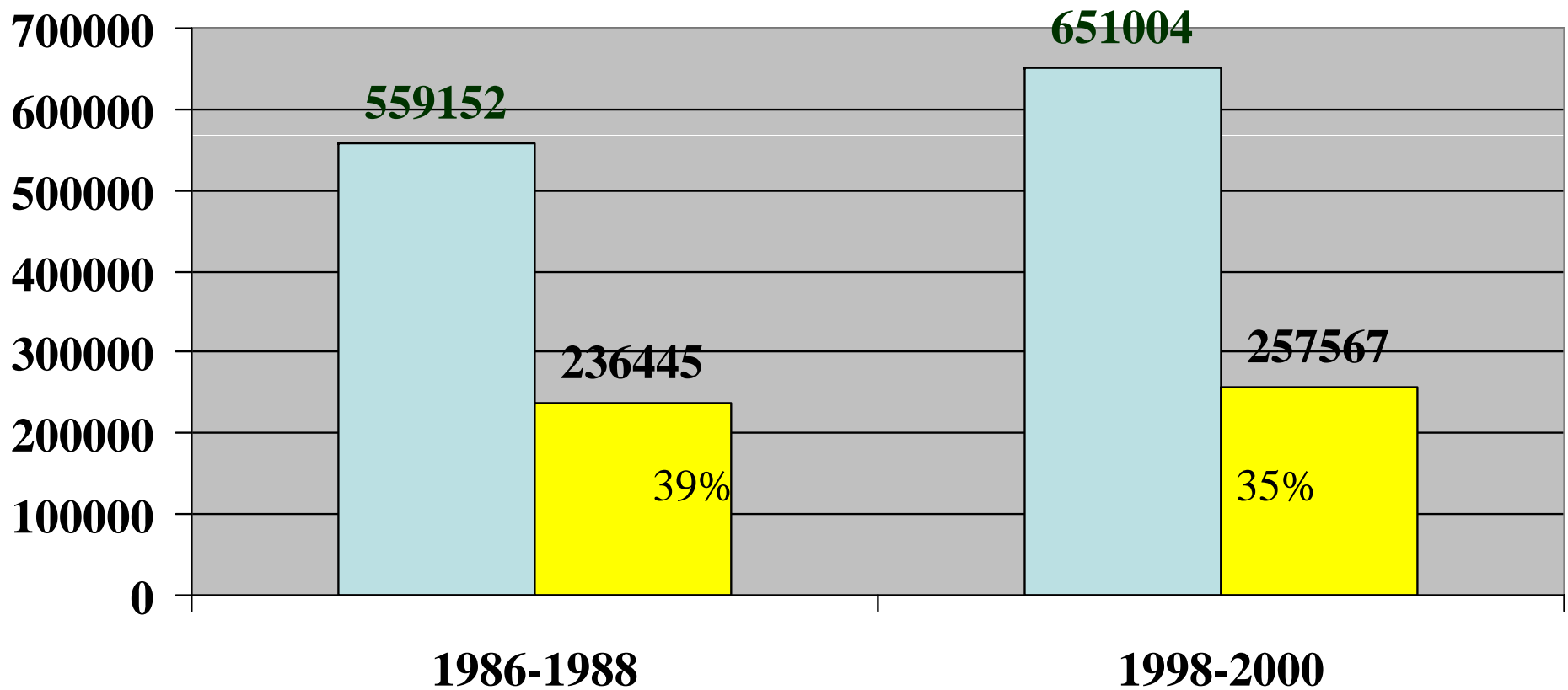
- Biofuels will become a stronger economic reality, not only for environmental but also for competitiveness reasons, if prices do their job and resources are allocated well
- Tariffs in biofuels, in the raw materials that are contained in them, and in agricultural alternatives in general, can kill this chance
- Allocating subsidies to agricultural production, hoping for an indirect eventual benefit in biofuel cost, is inferior to the option of subsidizing the fuel substitution directly
 - Without reducing rest-of-the-world grain output

Bound tariffs in agriculture – allowed today



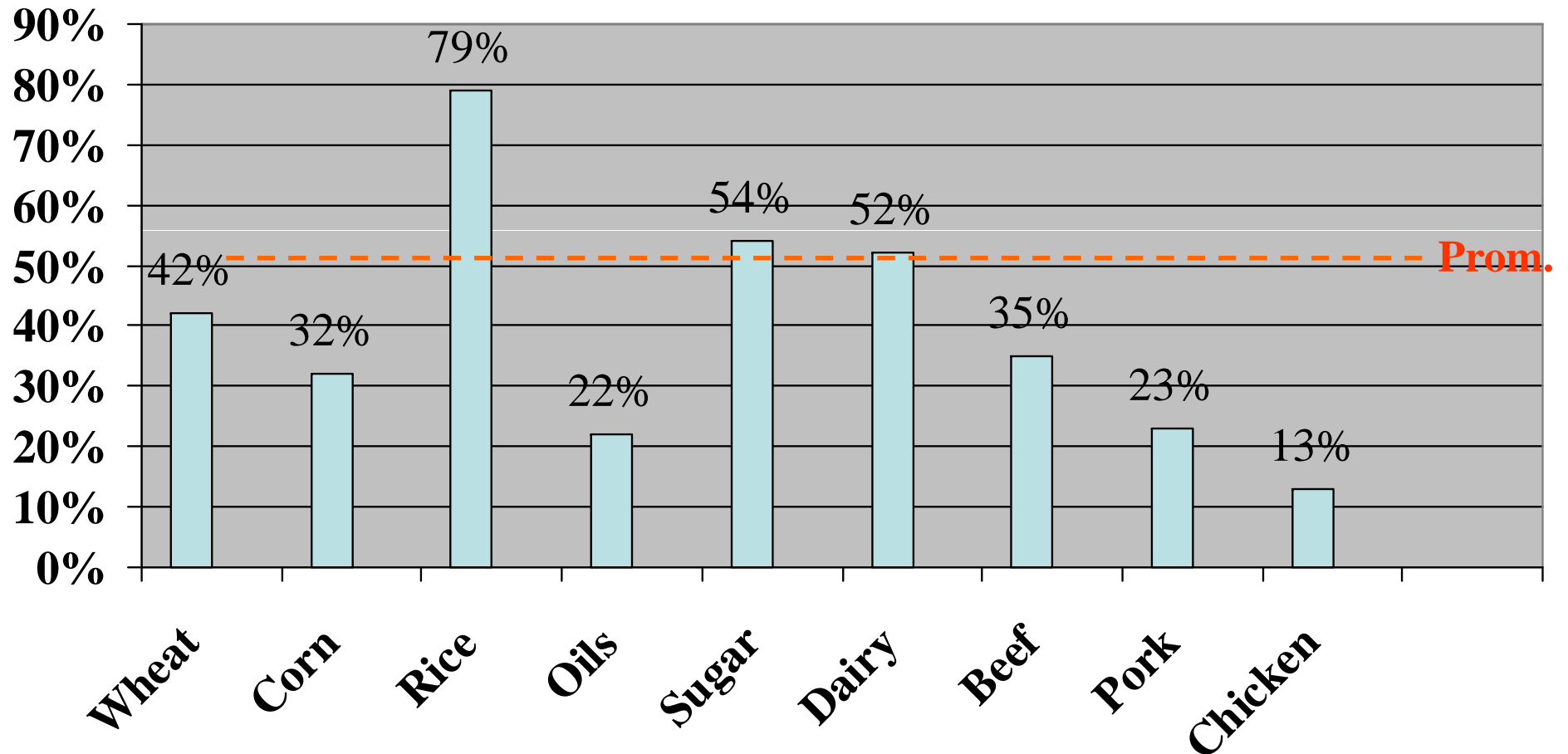
Fuente: CEPAL, 2001

Distortive farm aid allowed today; US+EU total and relative to output



■ Valor producción ■ PSE

Distortive farm aid in developed countries as % of output, for key products



Fuente: OECD

Ag trade liberalization

- Very few things have this potential of improving everybody's life, and the sustainability of our development
- Further FTAs, and a successful Doha Round that takes environmental and other fuel concerns into account, is instrumental, and should include:
 - Major phaseout in ag tariffs, with a cap on rate progressiveness
 - Dramatic reduction of distorting subsidies
 - Phase-out in biofuels themselves
 - An alternative subsidy scheme