

Induced market disturbances towards feed, food and other markets

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ELOBIO Final Seminar, Brussels, 25 March 2010



Survey of literature and public databases

Impacts :

- prices of agricultural crops
- market share of agricultural crops towards biofuels,
- trends in production, export & imports of these crops
- land use

First results in October 2008

~ start of the economic crisis, extreme price fluctuations

=> Update in July 2009

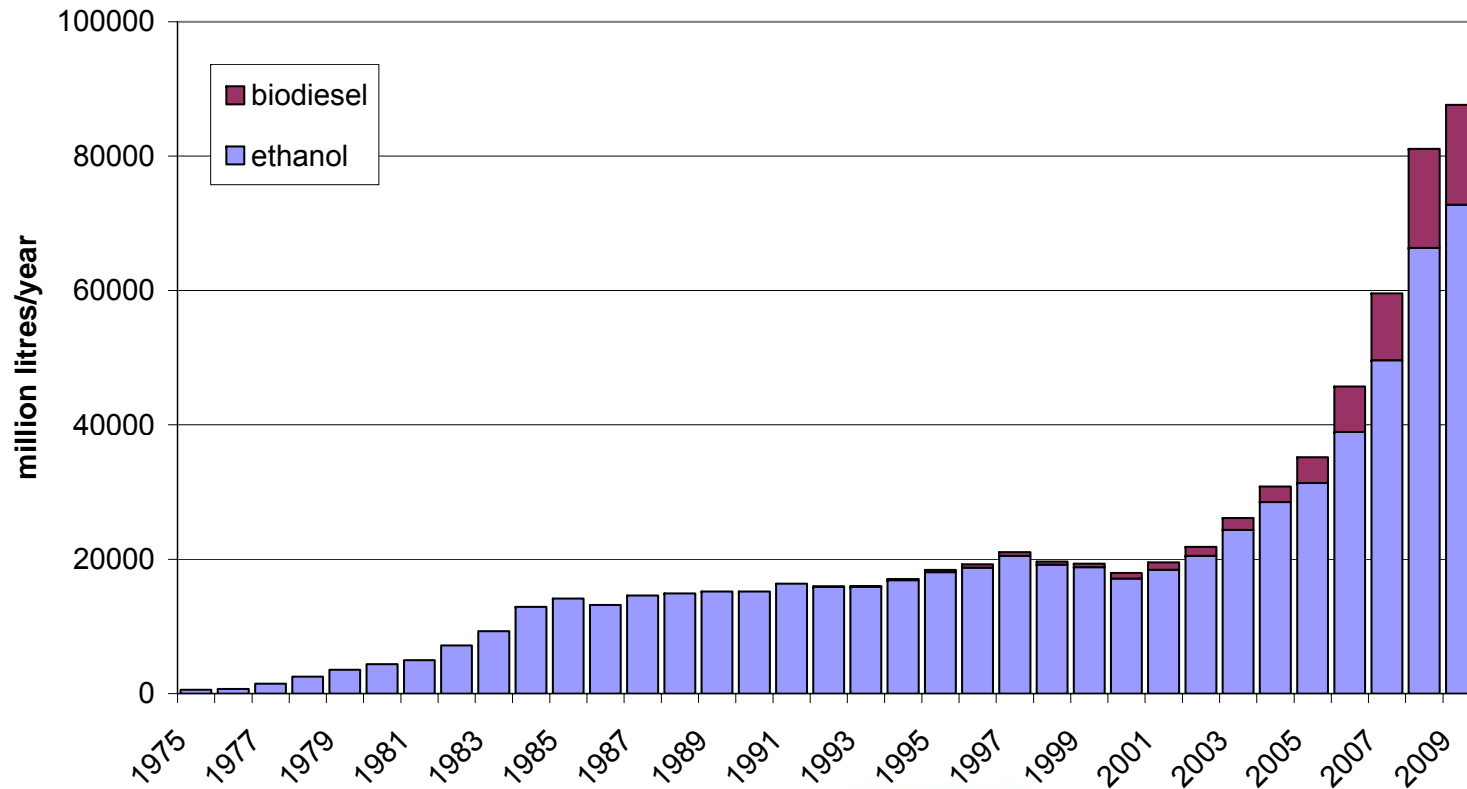
Production up to 2008: focus on local agricultural crops !!

Country	Feedstocks for		2008 production (million litres/yr) – Source: F.O.Licht's	
	Ethanol	Biodiesel	Ethanol	Biodiesel
Brazil	Sugarcane	Soybean, (palm oil, Castor seed)	24 200	1 165
US	Corn	Soybean, (recycled fats and oil)	34 968	2 693
EU	Wheat , other grains, sugar beet , wine alcohol	Rapeseed, (sunflower, soybeans, recycled fats and oil)	2 822	7 998
China	Corn , wheat, (cassava, sweet sorghum)	Used and imported vegetable oils, Jatropha	1 900	153
Canada	Corn, (wheat, straw)	Animal fat, vegetable oils	950	100
India	Molasses, sugarcane	Jatropha, imported palm oil	350	23
Thailand	Molasses, cassava, sugarcane	Palm oil, used vegetable oil	322	466
Indonesia	Sugarcane, cassava	Palm oil, Jatropha	/	398
Malaysia	/	Palm oil	/	227

Agriculture prefers to grow most familiar crops

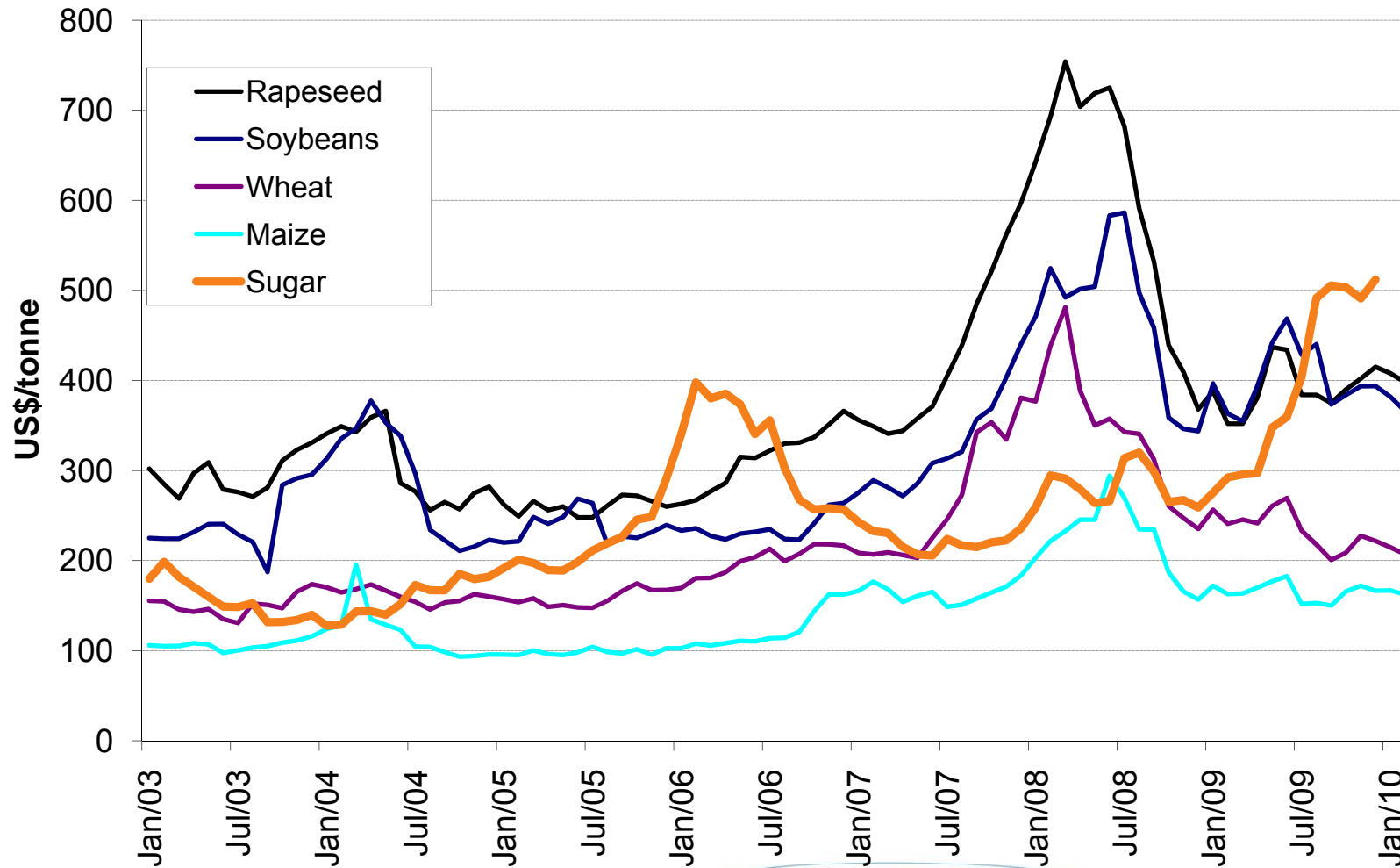
Evolution of world biofuel production

World biofuel production



Source of the data: F.O. Licht's

Evolution commodity prices (US\$/tonne)



Source of the data: www.fao.org/worldfoodsituation/FoodPricesIndex

Long-term food commodity prices



Source: International Monetary Fund - International Financial Statistics

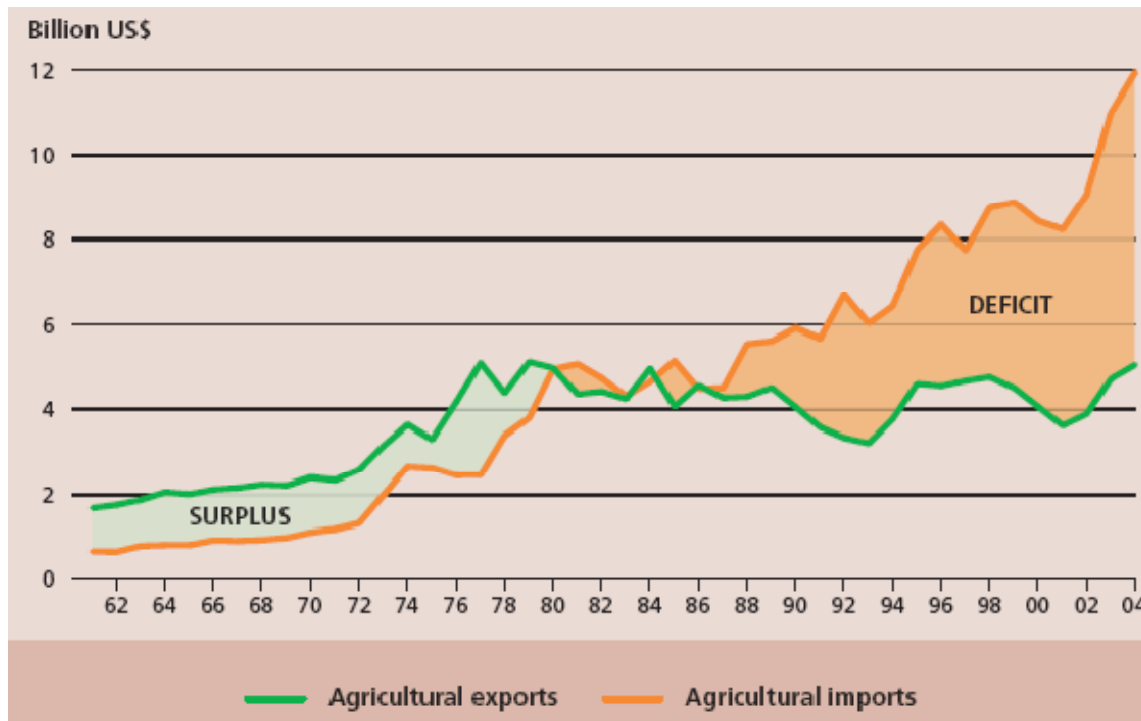
Decreasing trend

Nominal prices => difference in real prices much higher

Effect of higher commodity prices ?



Trade balance of agricultural commodities in the Least Developed Countries (LDC)



Higher prices ?

- Difficult for poorest importing countries
- BUT low prices are detrimental for local agriculture, especially in developing countries
- access to world wide markets !

Source: FAO, 2008

Factors contributing to higher prices in 2007-2008 ?

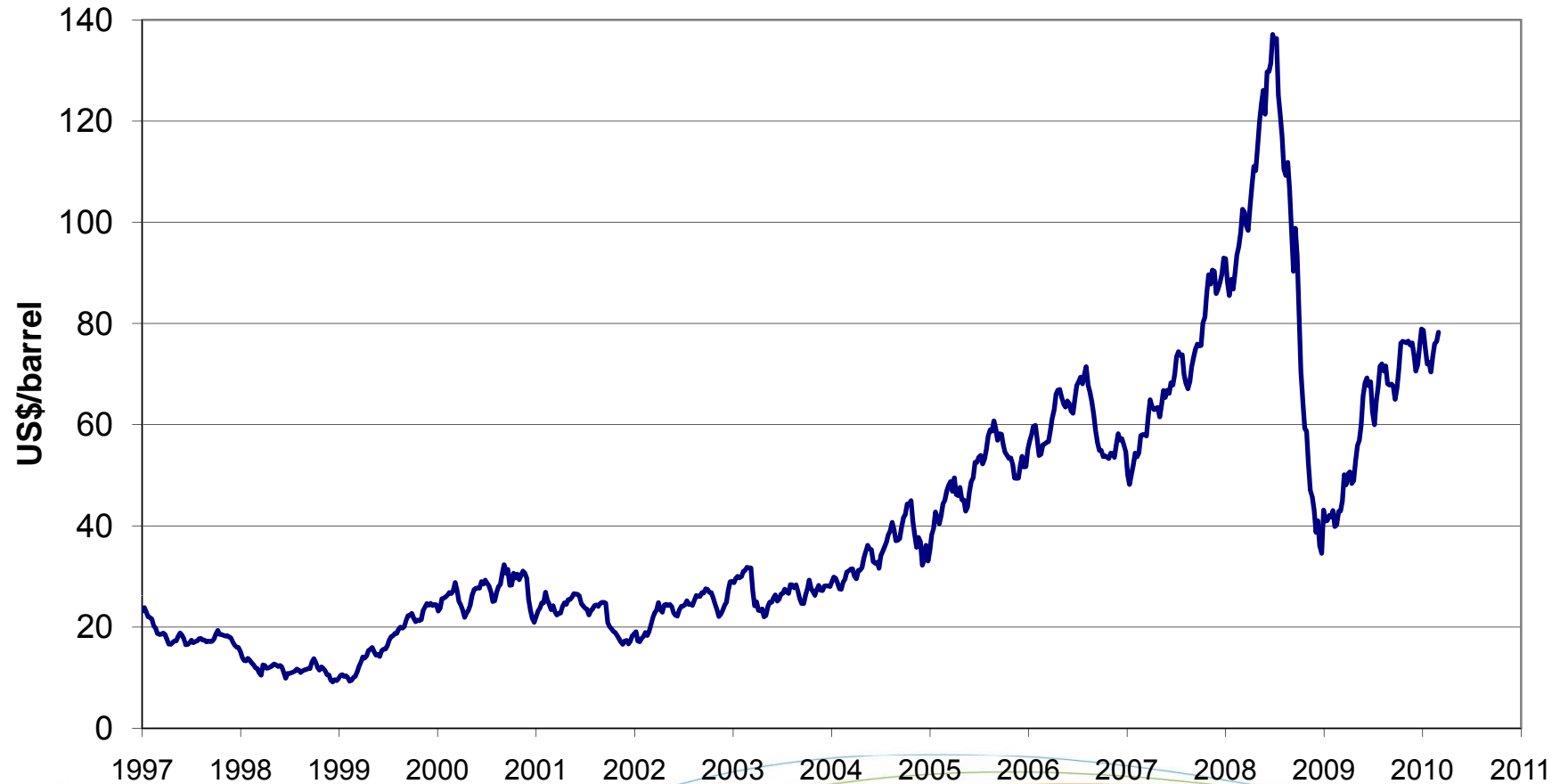


- » Oil prices from 50 to 140 \$/bl
 - ⇒ also higher energy cost in agricultural production and transport

Crude oil prices



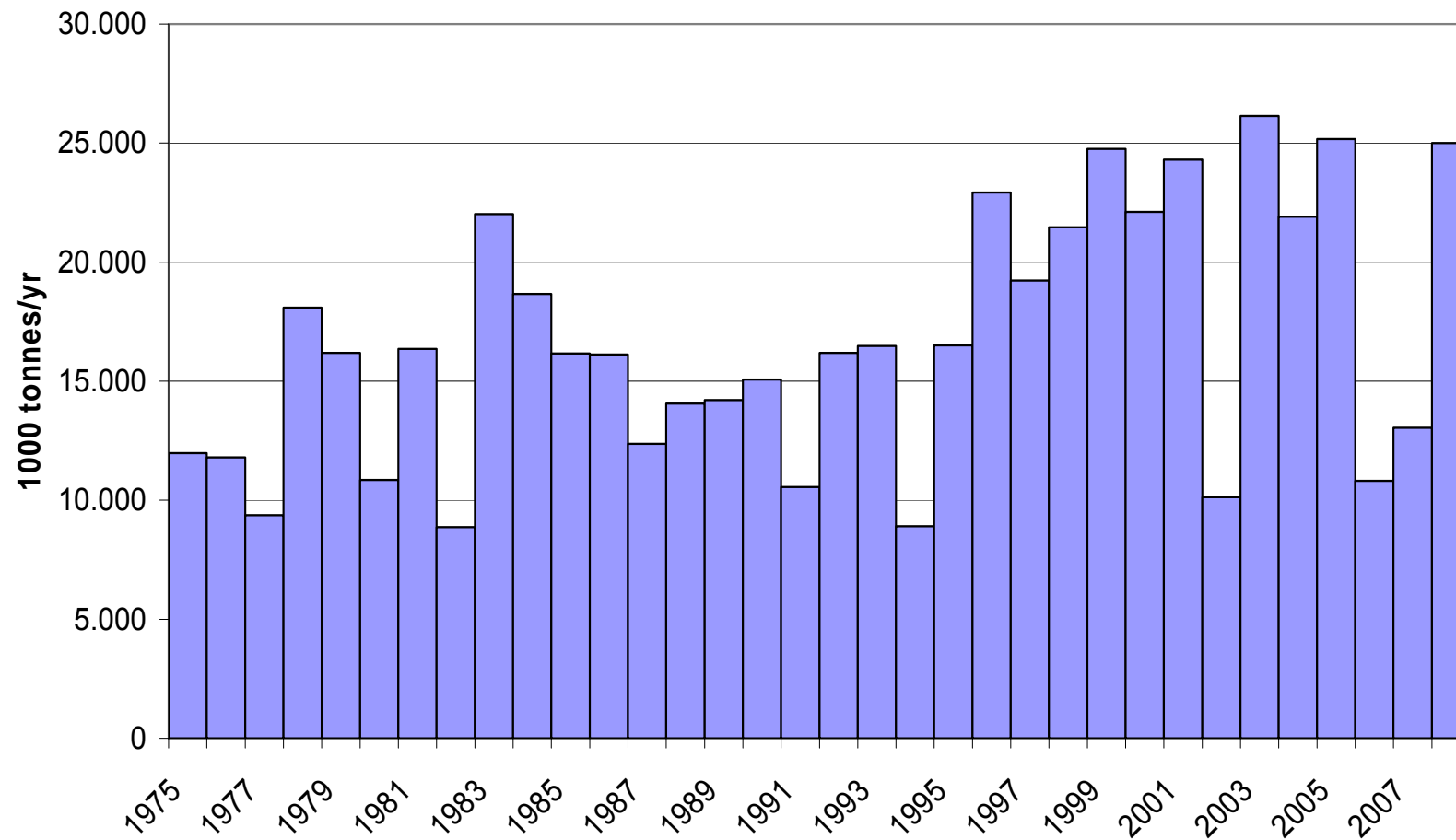
World crude oil prices



Factors contributing to higher prices in 2007-2008 ?

- » Oil prices from 50 to 140 \$/bl
=> also higher energy cost in agricultural production and transport
- » Declining value US\$
- » Speculation → commodities
- » Economic growth in China, India
=> increasing demand for energy and food + diet shift
- » Temporary lower crop yields (mainly for grains)

Yearly wheat production in Australia



Source of the data: www.fas.usda.gov/psdonline

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=> increasing demand for energy and food + diet shift
- » Temporary lower crop yields (mainly for grains)
- » Decrease of stocks => price volatility
- » Export restrictions
- » Growing biofuels demand, creating a link between oil and food prices
=> studies reported specific impact of biofuels between 5 and 75% of total price increase

Through biofuels there is a link between fuel and agricultural markets

BUT feedstock prices and fuel prices have increased much faster than biofuel prices (ethanol price even stable, linked to sugar price)

=> biofuel sector are not price setters

=> Profitability of biofuel production in danger with high feedstock prices

Biofuel feedstocks



Figures 2008 [F.O.Licht's]

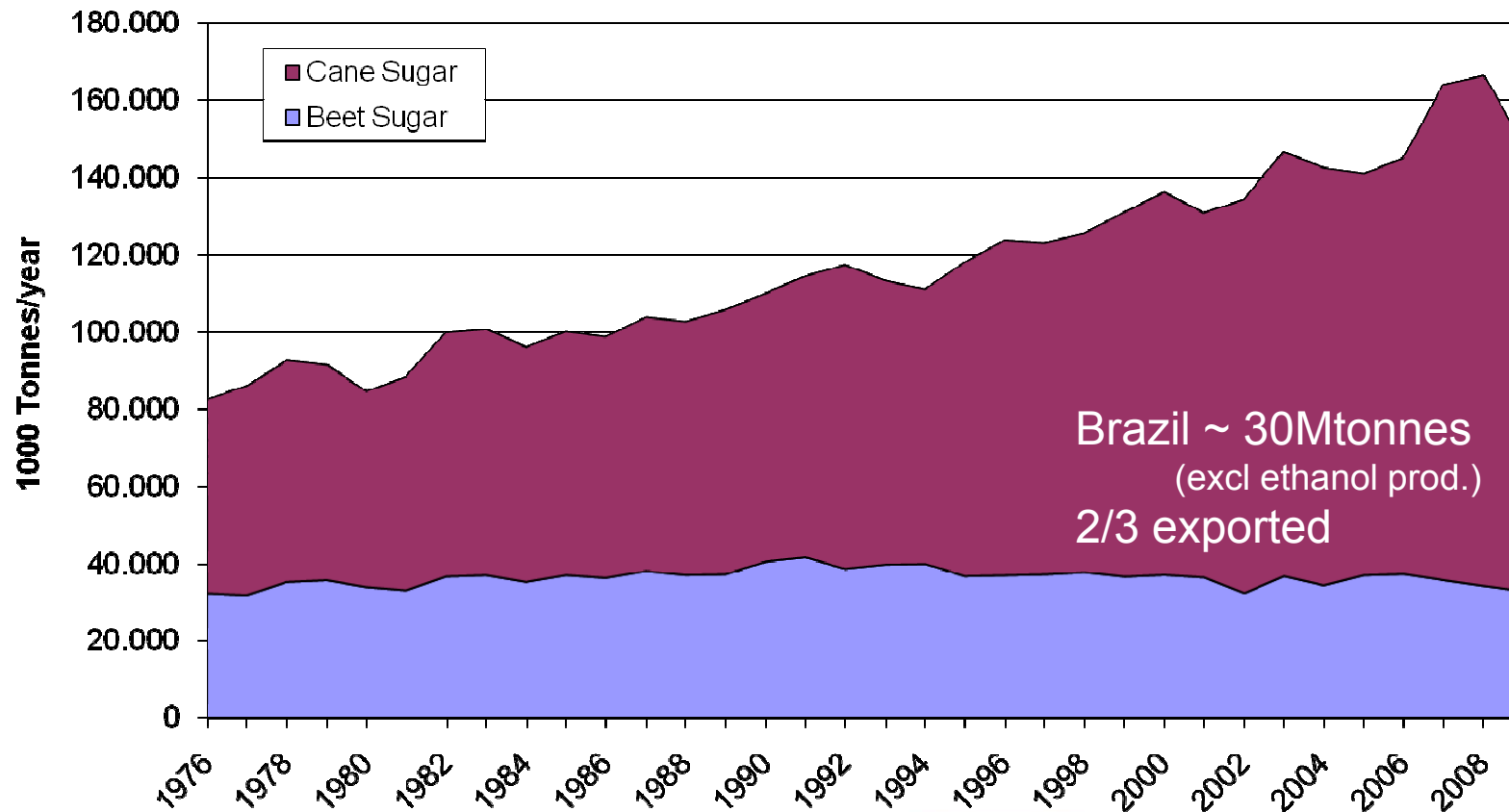
- **Grains:** Worldwide 98 Mtonnes, or **5.6%** of grains (= wheat, barley, corn, ...) used for ethanol
 - 87.4 Mtonnes in US => 28% of corn production
 - 3.9 Mtonnes in EU27 => 2.6% of wheat production
 - 4.3 Mtonnes in China => 1.5% of grain production
- **Sugarcane & sugarbeet:** worldwide 328 Mtonnes used for ethanol
 - 302 Mtonnes in Brazil => 55% of sugarcane production
 - 6.8 Mtonnes in EU27 (sugarbeet)
- **Vegetable oils:** worldwide 11.5 Mtonnes, or **9%** of vegetable oils (rapeseed, soy, palm oil) used for biodiesel
 - 6.7 Mtonnes in EU27 => 65% of veg. oil production (mainly rapeseed)
 - 3.3 Mtonnes in N- & S-America => 12% (mainly soy)
 - 1.2 Mtonnes in Asia: 3% (mainly palm oil)

Major impacts: Sugarcane in Brazil, Corn in US, Rape in EU, (soy in N-&S-Am.)

Indirect effects on other commodities ??

Sugar markets

Global sugar production

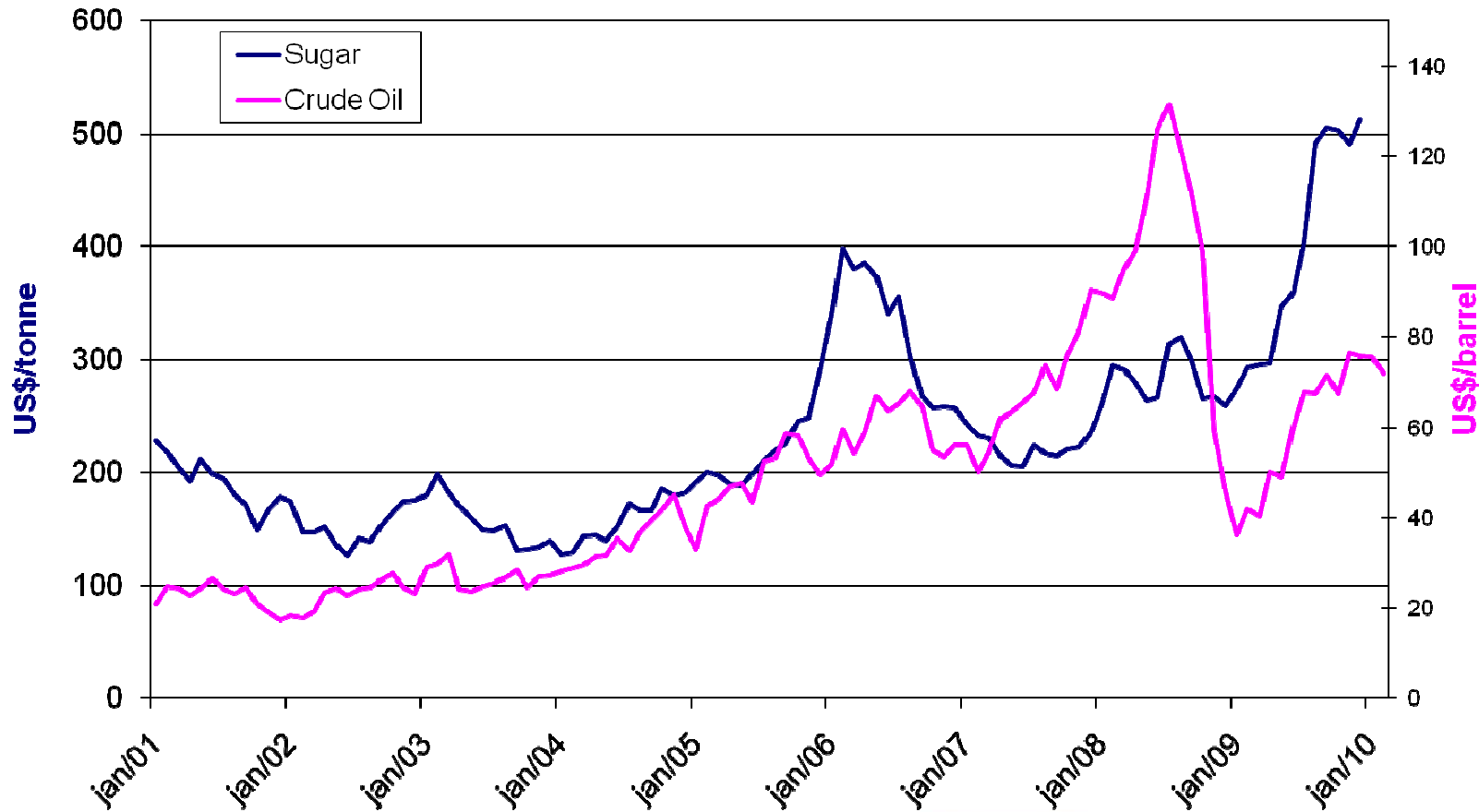


Brazil ~ 30Mtonnes
(excl ethanol prod.)
2/3 exported

Sugar vs crude oil ?



World crude oil prices versus sugar prices

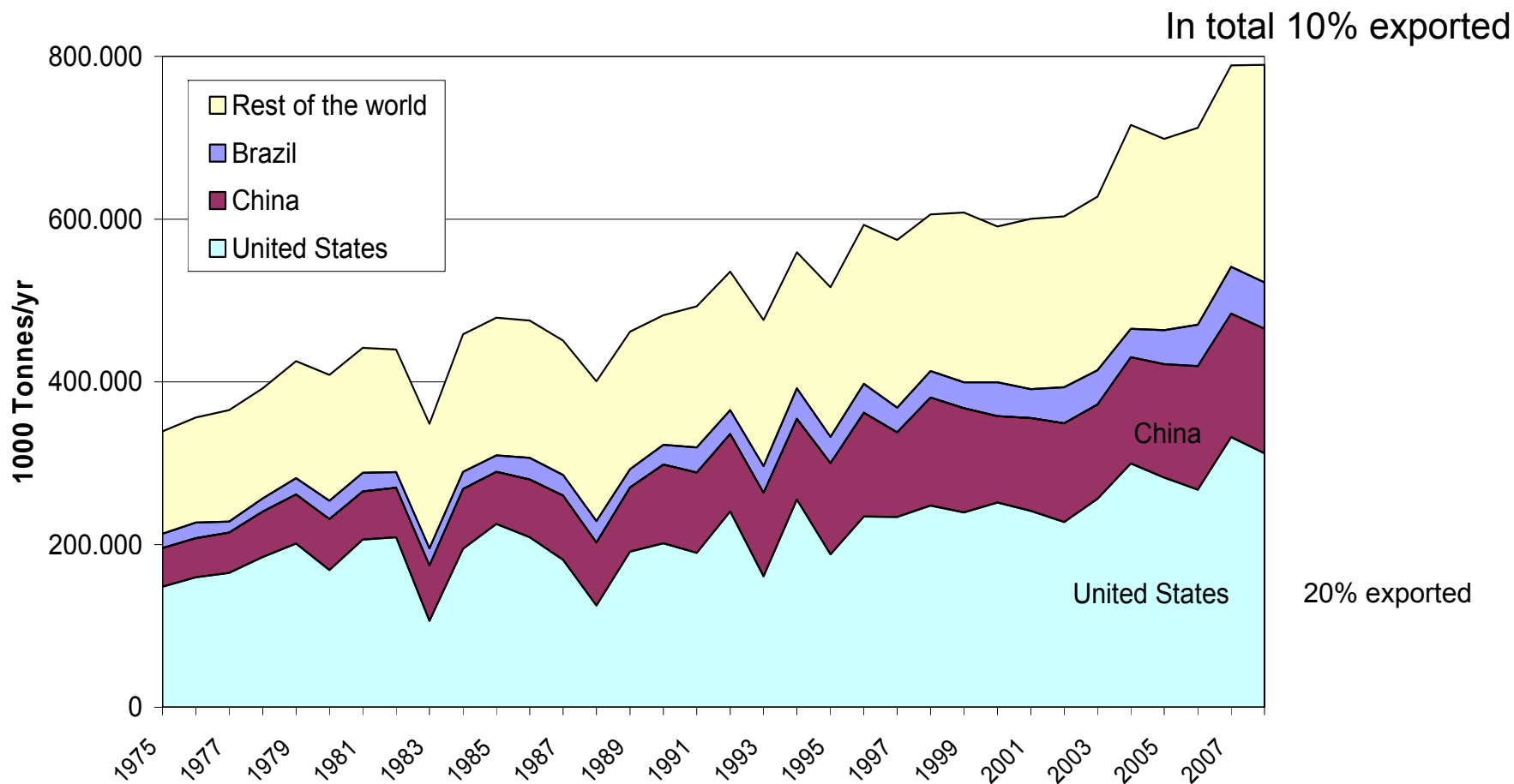


Source of the data: www.fao.org/worldfoodsituation/FoodPricesIndex

Corn markets



Worldwide corn production by country / region



US = 55-60% of global corn export => price setter

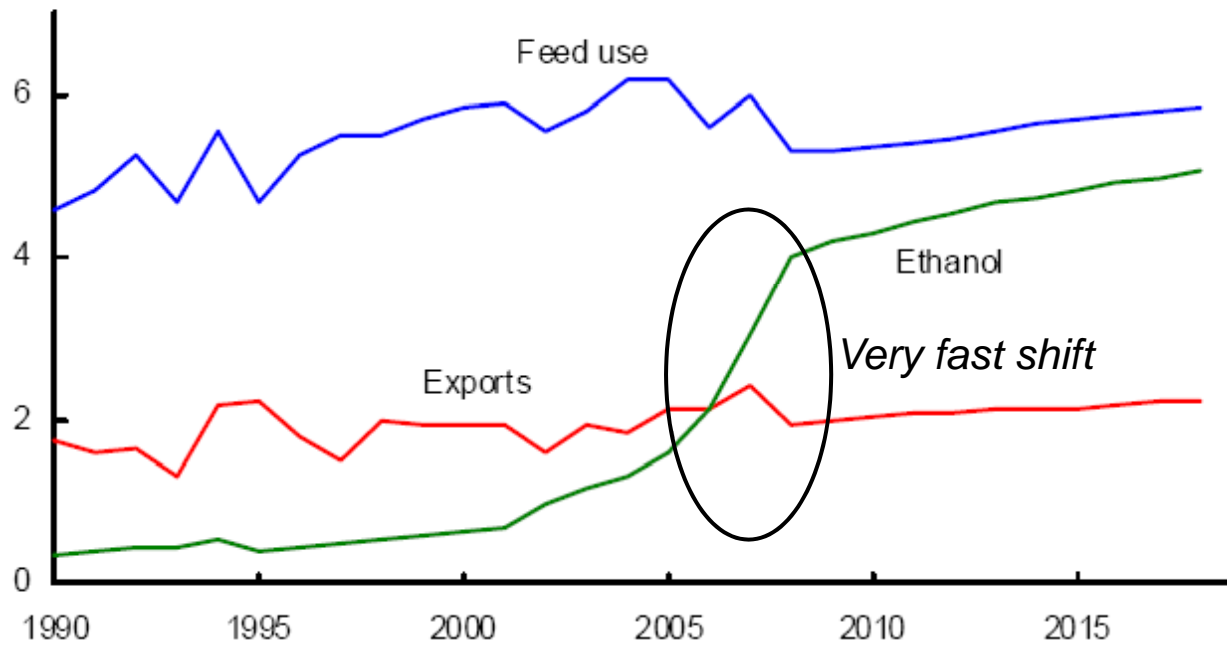


Source of the data: www.fas.usda.gov/psdonline

Corn use in the US

U.S. corn: Feed use, ethanol, and exports

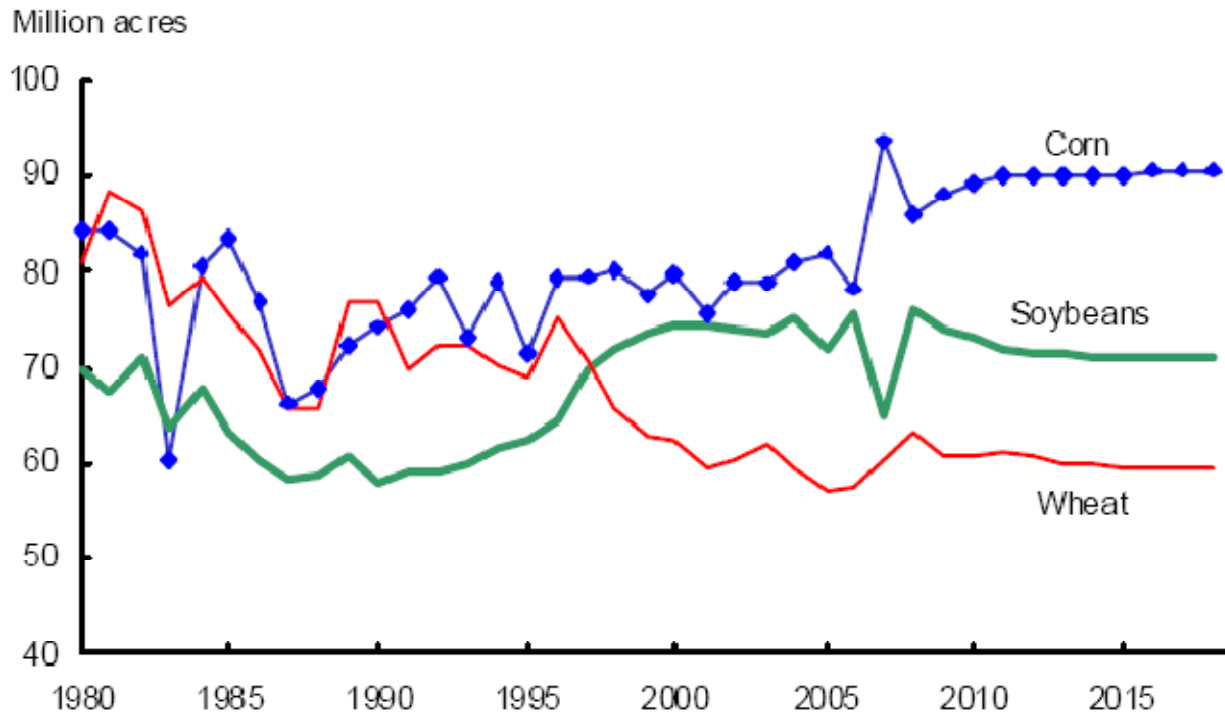
Billion bushels



Comparison of the use of corn for ethanol, feed use, exports and projections towards 2020 [USDA, 2009]

US: Balance corn-wheat-soy

U.S. planted area: Corn, wheat, and soybeans

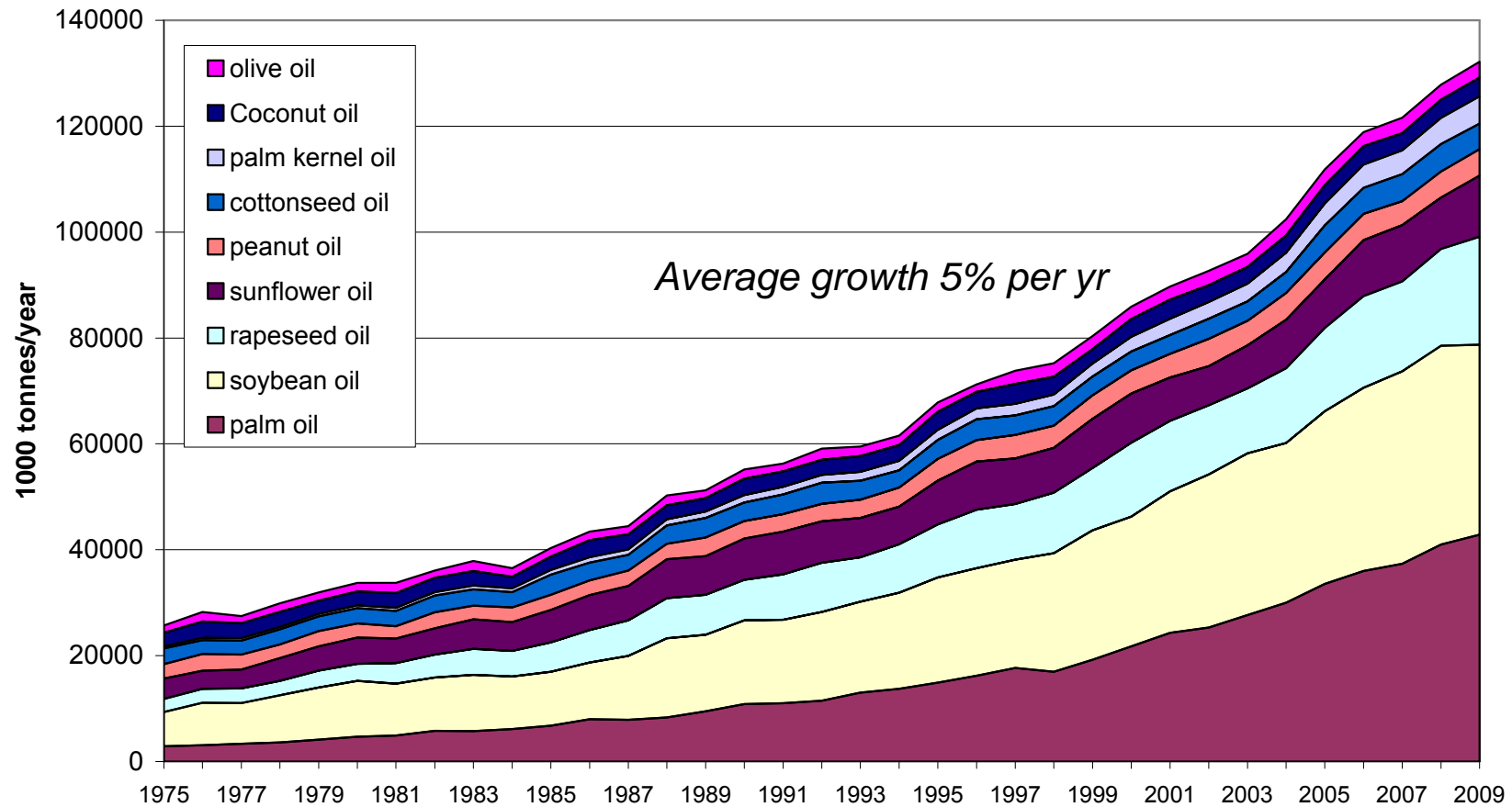


Comparison of the US planted area for corn, wheat and soybeans, and expectations up to 2020 [USDA, 2009]

Vegetable oil



Worldwide vegetable oil production

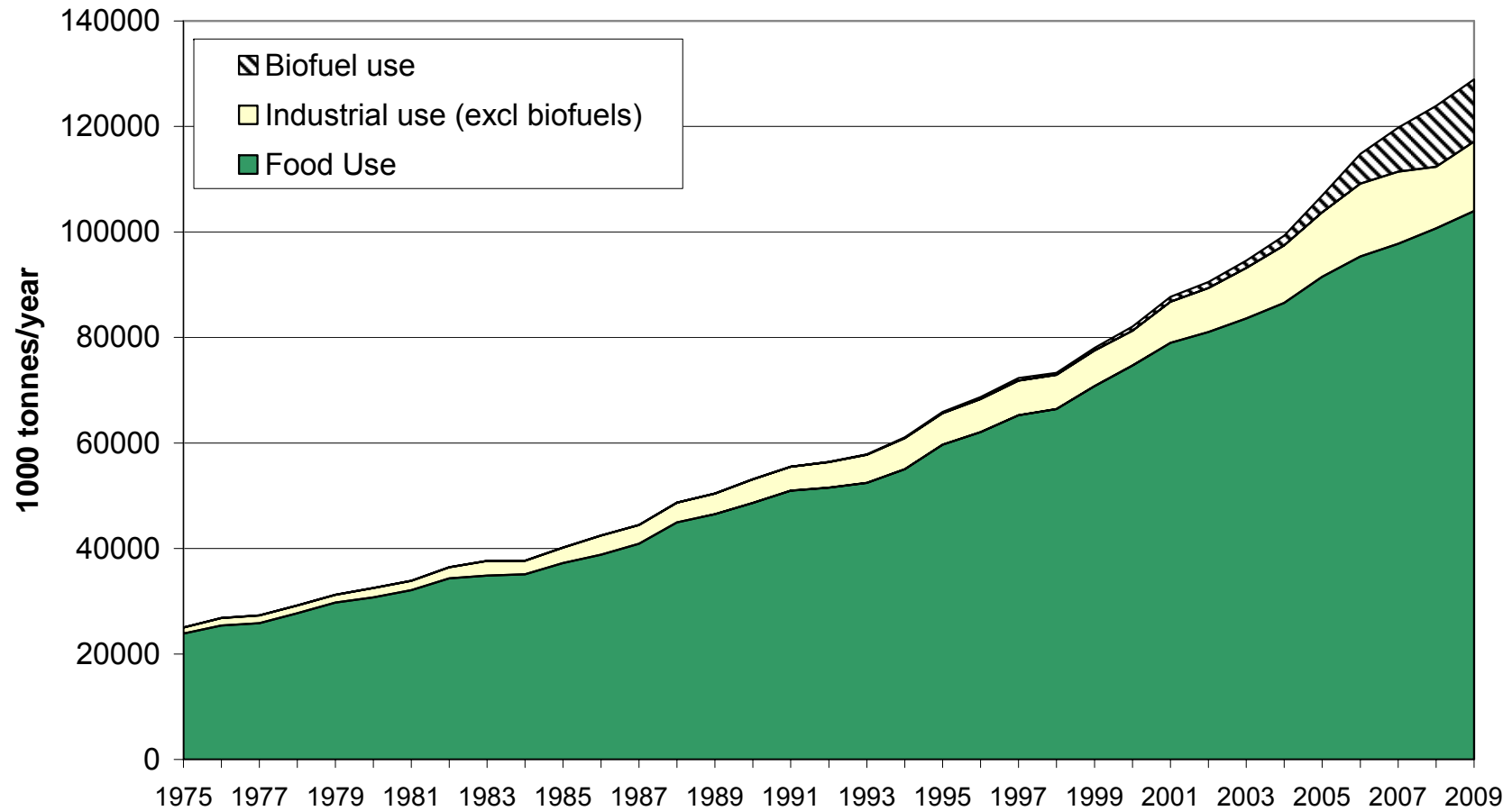


Source of the data: www.fas.usda.gov/psdonline

Vegetable oil use



Vegetable oil use (worldwide)

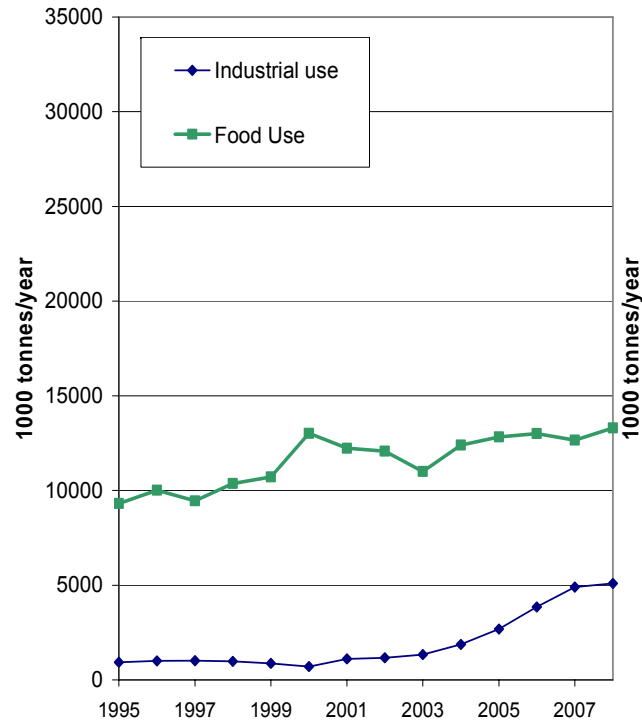


Source of the data: www.fas.usda.gov/psdonline & F.O.Licht's

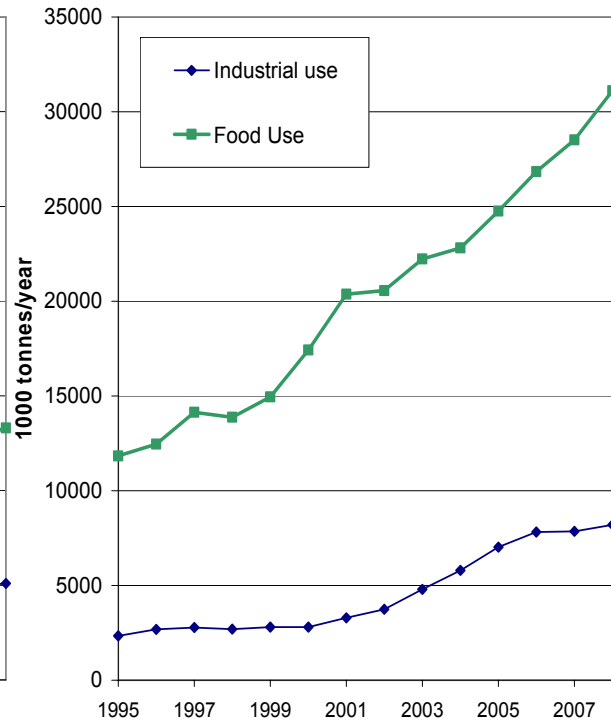
Veg oils



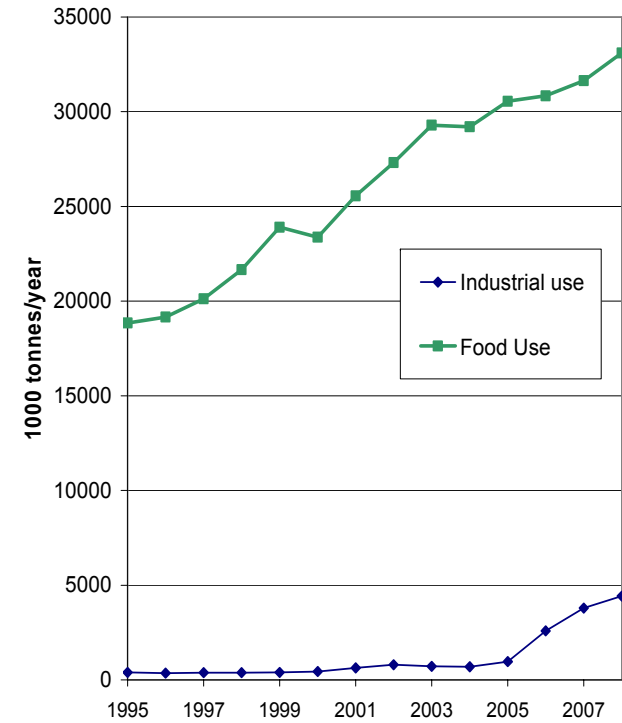
Worldwide use of rapeseed oil



Worldwide use of palm oil



Worldwide use of soybean oil

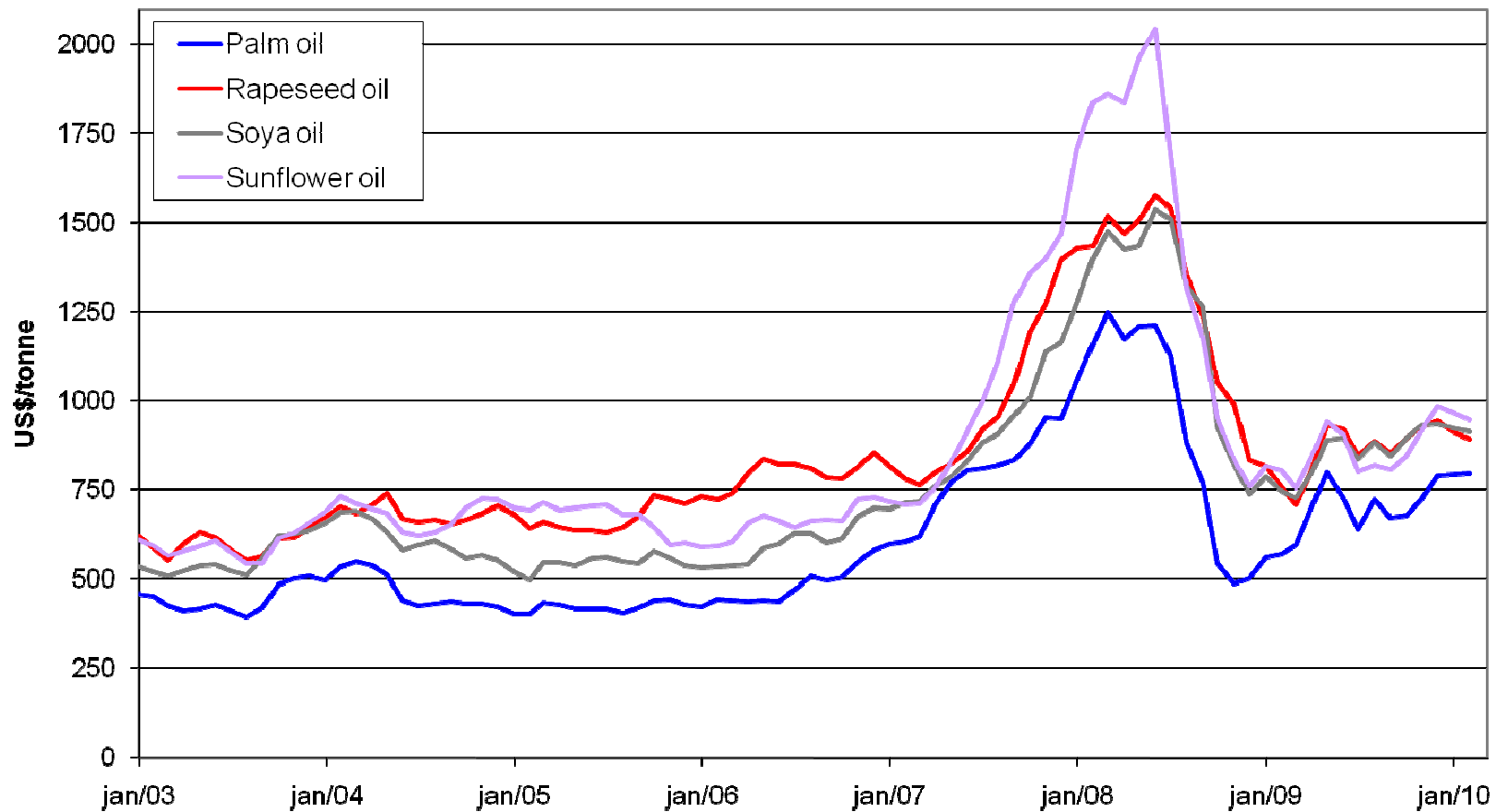


Source of the data: www.fas.usda.gov/psdonline

Vegetable oils



Evolution of vegetable oil prices (US\$/tonne)



Source of the data: www.fao.org/worldfoodsituation/FoodPricesIndex

Global land use

<i>million ha</i>	Agricultural land	<i>a. arable land</i>	<i>b. permanent crops</i>	<i>c. Permanent grassland</i>	Permanent forest	Other land use
World	4918	1421	141	3406	3952	4093
Africa	1146	213	26	907	635	1185
America	1204	365	29	810	1537	1157
Asia	1675	512	66	1098	572	844
Europe	478	280	16	182	1001	729
Oceania	465	52	3	410	206	178

Source of the data: FAOSTAT, 2009

Impact of biofuels on land use

overview of land used for biofuel crops in 2007 [Trostle, 2008]

	Land use for biofuels		Total arable land (excl. grassland)	% of arable land
	million hectares			
	ethanol	biodiesel		
Argentina		0.73	28	2.6%
Brazil	3.0	0.45	59	5.8%
Canada	0.28		46	0.6%
China	0.97		143	0.7%
EU27	0.65	4.3	114	4.4%
United States	6.6	2.3	175	5.1%
TOTAL	11.5	7.78	1421 (world wide)	1.4%

! byproducts
(rapemeal, soymeal, DDGS)

~ 2% biofuels
worldwide

Conclusions



- » Sugar market:
 - » Important role of Brazil
 - » Availability OK, even with concurrent ethanol increase
- » Corn market:
 - » US is main exporter => price setter
 - » Very fast switch to ethanol in past years, link with gasoline prices ?
 - » So far no change in export availability, but indirect effects (e.g. soy) ?
- » Vegetable oil market
 - » Increasing demand in food market (China, India), steady increase in past 30 years
 - » Concerns over rapid expansion of soy in South-America, and palm oil in South-East Asia
 - » Biofuels add to increasing demand, especially from 2005
 - » Balance in Europe is changing
 - => increasing import of veg oils
 - How cope with higher biodiesel demand (increasing targets) ?

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www.biofuel-cities.eu

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