

INFLUENCE OF LEGISLATION/SUBSIDIES TO HELP AGRICULTURE AND/OR AGRICULTURAL MECHANISATION, ON THE MARKET OF AGRICULTURAL MACHINERY

The case of the EU (EUROPEAN UNION)

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The evolution of European agriculture and of its mechanisation depends from a plurality of elements, external and internal to this production system.

Among the external (to agriculture) elements, there are:

- a high annual increase of GDP, that IMF foresees at 5.1% in 2006 (fig. 1).
- The new role of developing countries in the field of production, investment & saving, that is displacing the world economy axle to the new emerging economies (e.g. China, India, Brazil) (fig. 2).
- The evolution of trade exchange (fig. 3).
- The strong demand of raw materials and the tension on their prices.

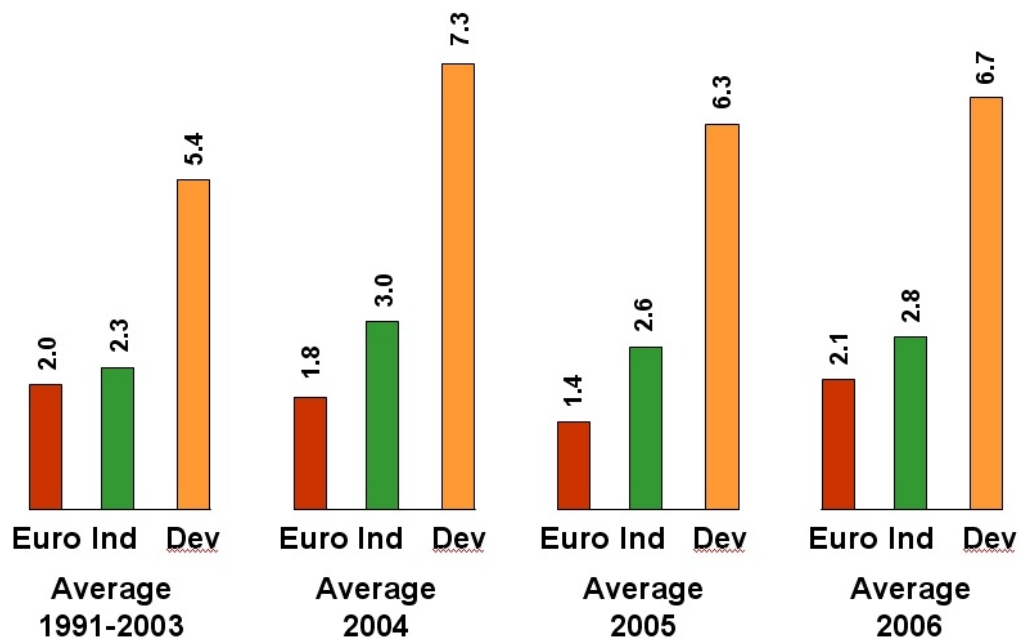


Fig. 1 - World economy: annual increase (%) of GDP
 (Euro = Euro co.; Ind = Industrial co.; Dev = Developing co.)

Source JPMorgan & FMI

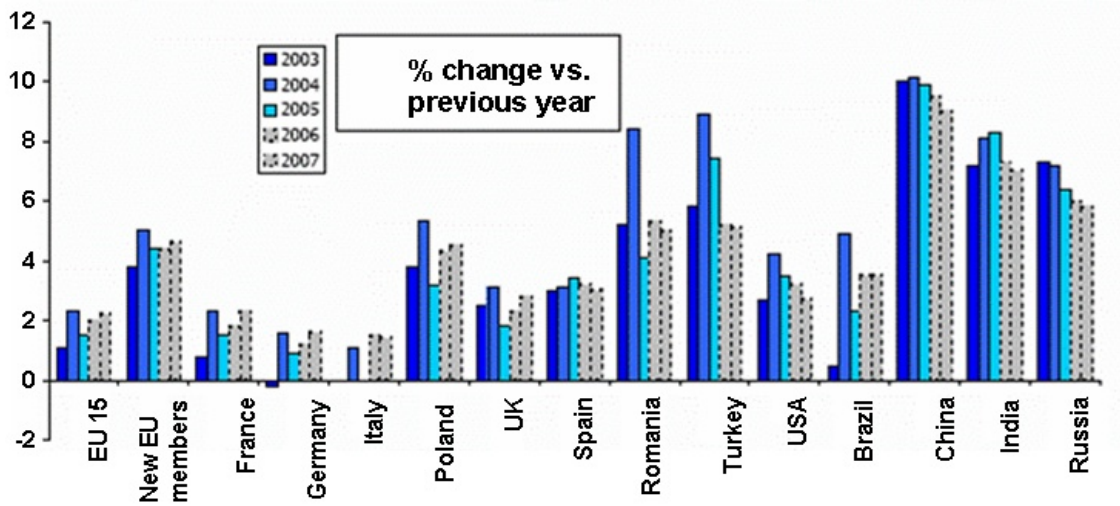


Fig. 2 - Annual trend and forecast of the real GDP

Source Unacoma-Nomisma

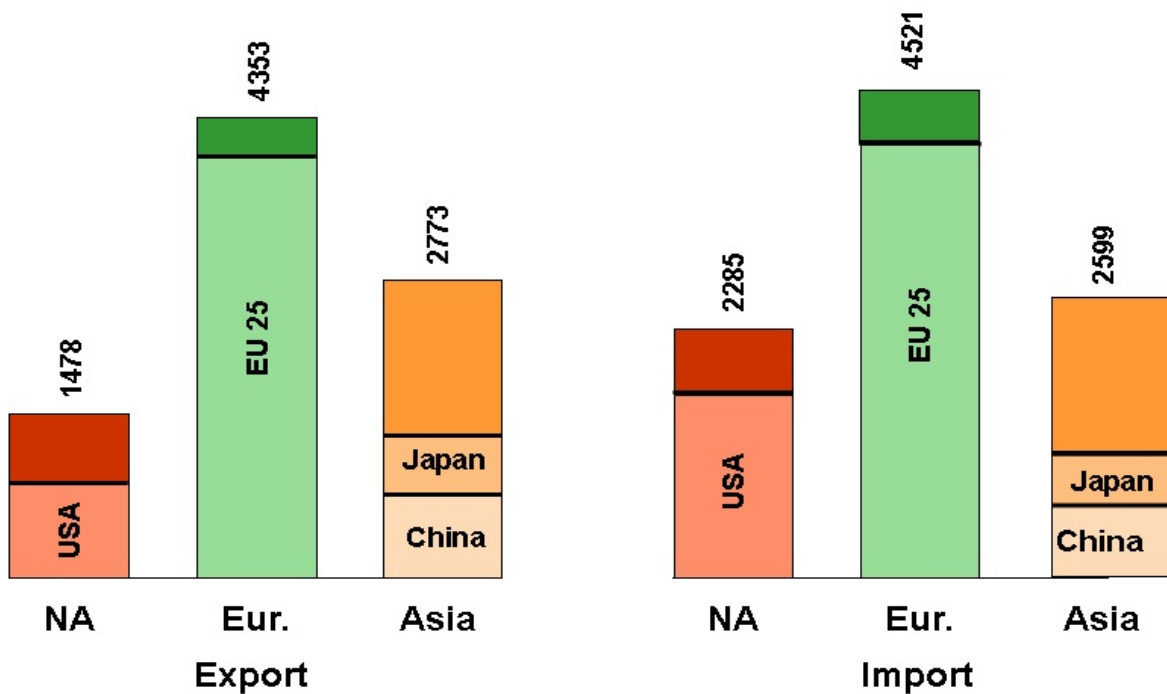


Fig. 3 - World trade (billion US\$)
(NA = North America; Eur. = Europe)

Source WTO

Among the internal (to agriculture) elements, there are:

- a trend to an increasing offer, higher in relation to the demand,
- and a consequent increase of the more sensible product demand (fig. 4)
- a growing demand of food product in the developing countries (fig. 5)
- a progressive liberalisation and increase of agricultural markets, where the EU is the main importer (figg. 6-7)

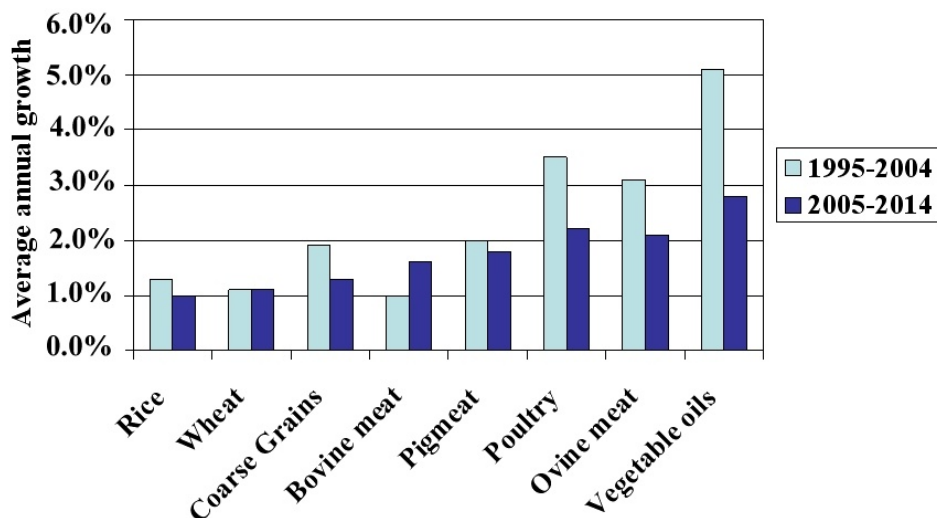


Fig. 4 - World demand is decreasing: products more sensible to the income grow more

Source [Sarris-FAO](#)

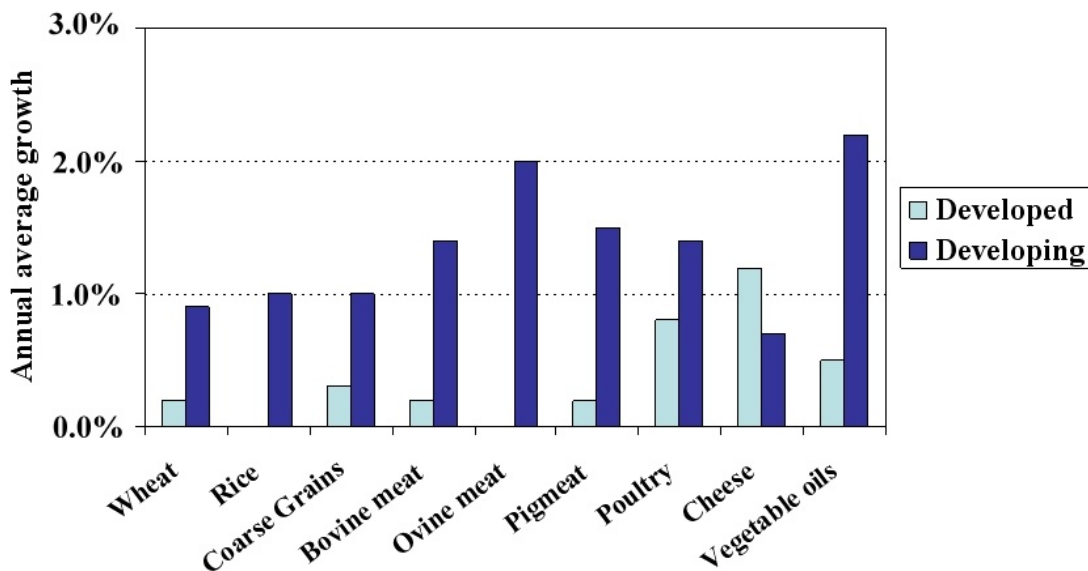


Fig. 5 - The growth of food demand is higher in the developing countries

Source [Sarris-FAO](#)

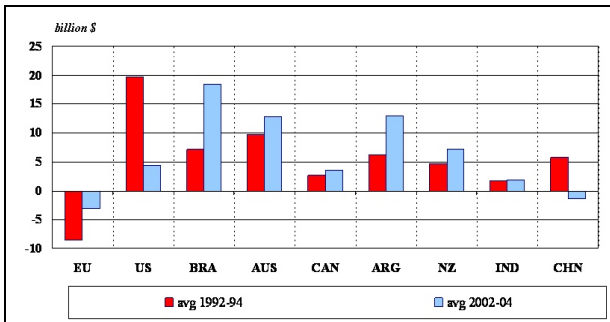


Fig. 6 - Agricultural trade balance of major WTO players

Source Fischer-CEMA

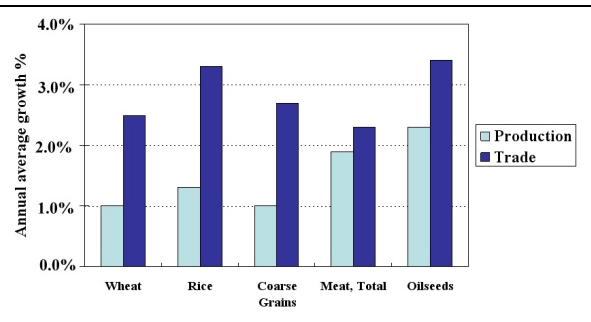


Fig. 7 - In the next years trade will continue to grow more than production

Source Sarris-FAO

Developing countries and the LDC (Least Developed Countries) will depend more and more from food import (fig. 8-9). The evolution of agricultural trade is different for the industrial, developing

and least developed countries (fig. 10), and a limited decrease of international price is expected (fig. 11).

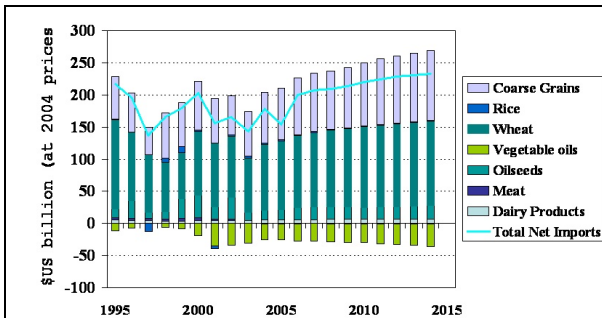


Fig. 8 - Developing countries will depend more and more from food import

Source Sarris-FAO

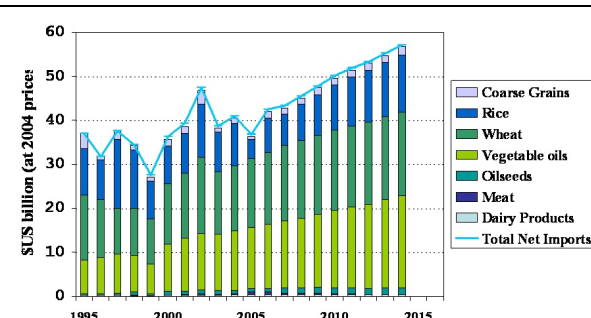


Fig. 9 - Net food import will grow more than 6% yearly in the least developed countries

Source Sarris-FAO

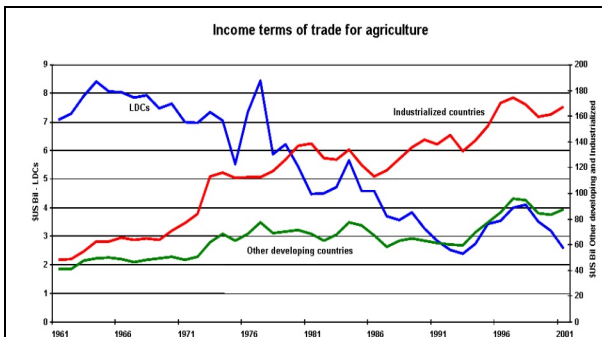


Fig. 10 - The income terms of trade for agriculture have evolved differently for developing and developed countries

Source Sarris-FAO

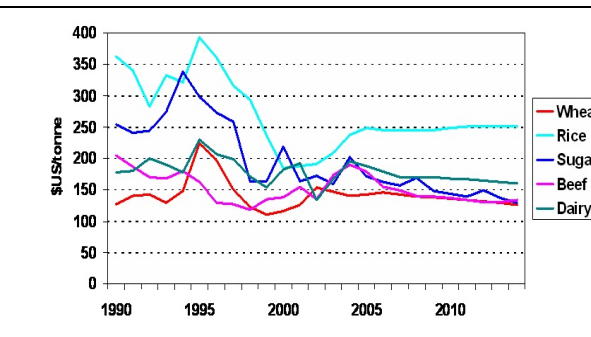


Fig. 11 - A limited decrease of international prices is expected

Source Sarris-FAO

Negotiations of the Doha Agenda aim to lower barriers to trade around the world, with a focus on making a more fair system of trade in connection to industrial countries protectionism, especially regarding the EU CAP (Common Agricultural Policy) (fig.12). This one is

the most significant issue and the hardest to negotiate.

At the same time there is an increased and justified need for better health, and as a consequence a more rigid application of more requiring standards on sanitary and phyto-sanitary measures on agricultural products (fig. 13).

	Price	Production	Consumption	Import	Export
Wheat	(-)	∅	∅	---	-
Coarse Grain	-	--	∅	∅	---
Poultry	---	(+)	+	∅	(--)
Pork	-	∅	∅	∅	(-)
Beef	--	-	∅	+++	--
Butter	--	∅	+	∅	---
Cheese	-	∅	+	+	--
SMP	(-)	(-)	∅	∅	--

→ More than 10 % income loss

Fig. 12 - The DOHA Agenda: the possible impact of the European offer (SMP = skimmed milk powder)

Source [Fischler-CEMA](#)

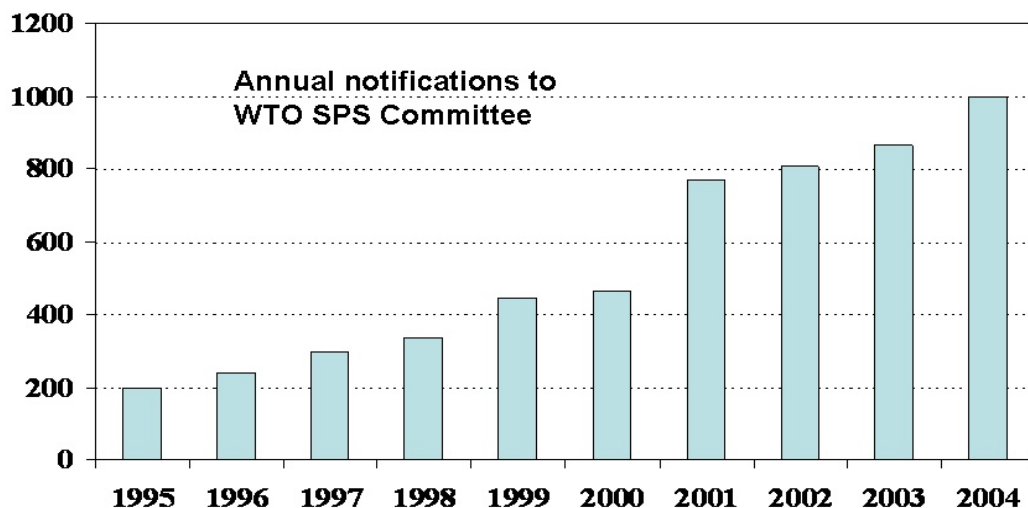
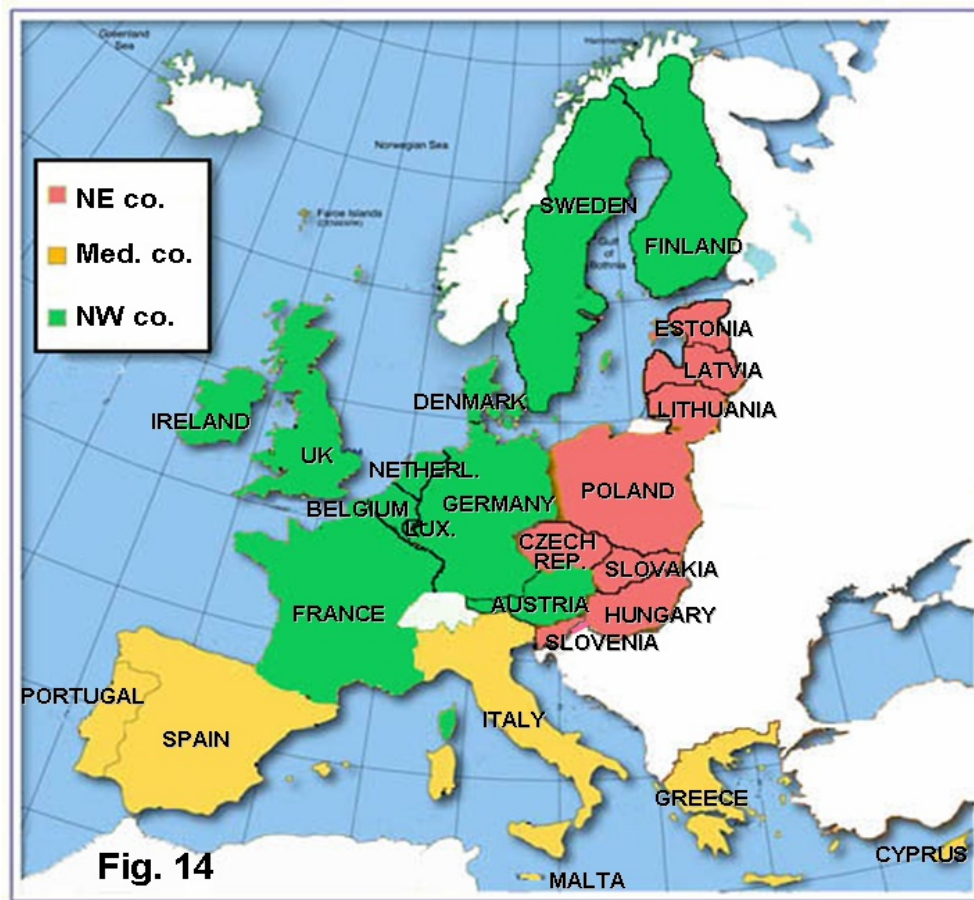


Fig. 13 - Notifications of sanitary and phyto-sanitary measures reflect the growing influence of standards on trade

Source Sarris (WTO)

EU co. have been divided into 3 groups, different for geographic and political reasons (fig. 14):

- Med - Mediterranean co. (6): typical Mediterranean crops and a strong necessity of irrigation in summer
- NW - North West co. (11): continental crops and sufficient rain (France is halfway, but north crops prevail)
- NE - North East co. (8): continental crops and the remainder of former centrally planned economy



The share in world GDP and in agricultural GDP (% and kUS\$) is reported:

- the relative economic importance (%) is NW, Med and NE, both in World GDP and in World agricultural GDP (fig. 15);
- the GDP per capita and the Agricultural GDP per

economically active person in agriculture (kUS\$) follows the same order (fig. 16). It must be pointed out the high GDP per capita of NW countries, due to a rationalised agriculture and to the concentration of subsidies on continental crops.

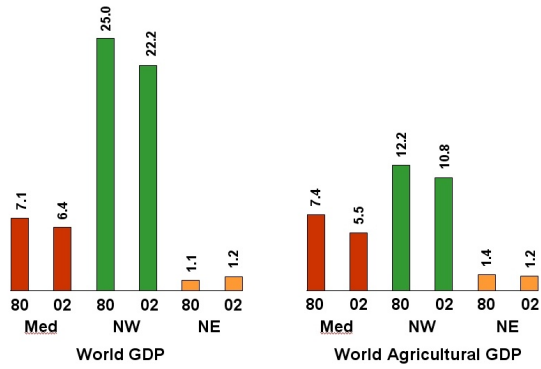


Fig. 15 - Share (%) in World GDP and in World Agricultural GDP
 (80 = 1980; 02 = 2002; Med = Mediterranean co.;
 NW = North West co.; NE = North East co.)

Source FAO

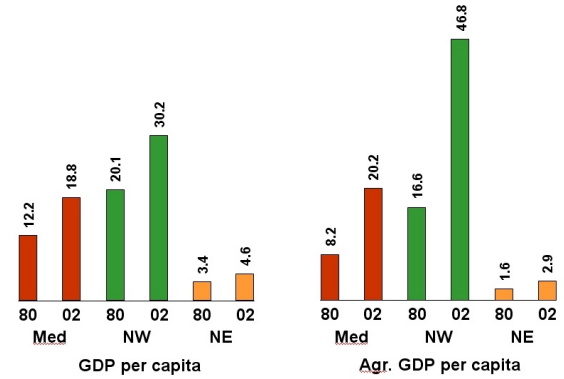


Fig. 16 - GDP per capita and Agricultural GDP per economically active person in agriculture (kUS\$ at constant 1995 prices)
 (80 = 1980; 02 = 2002; Med = Mediterranean co.;
 NW = North West co.; NE = North East co.)

Source FAO

The economically active population in agriculture, both in M people (fig. 16) and as a share (%) of total population (fig. 17), is higher in North East countries (due to the remainder of the centrally planned

economy) in comparison with Mediterranean countries (Mediterranean crops require more manpower and average farm size is less) and with North West countries.

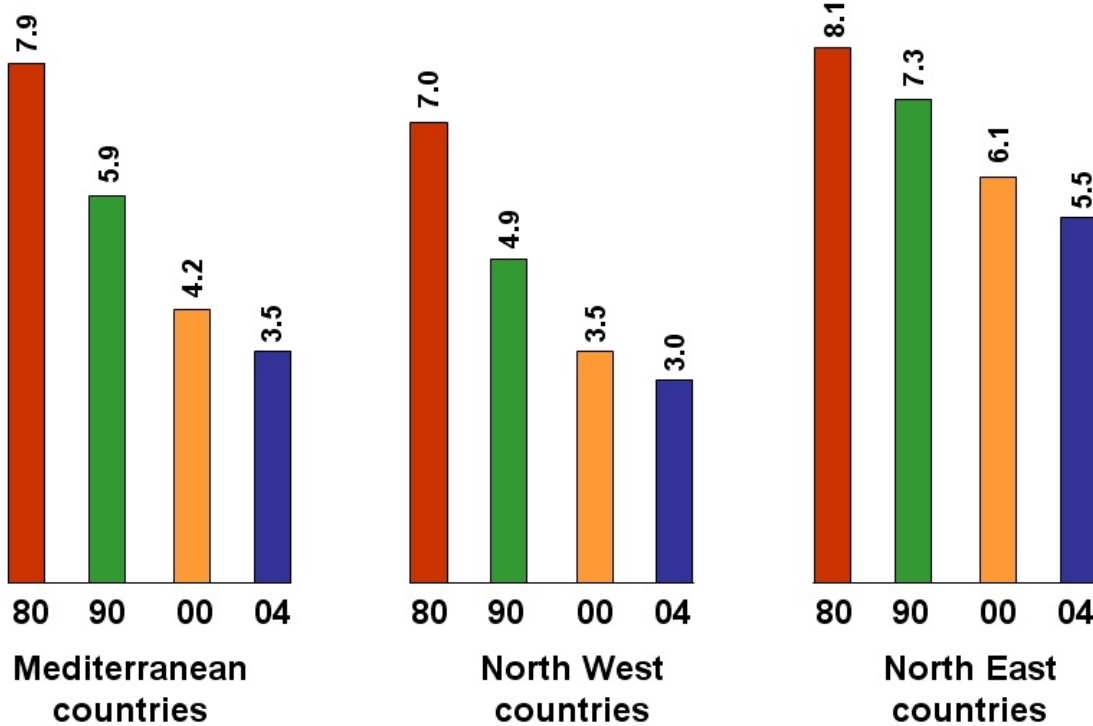


Fig. 17 - Economically active population in agriculture (M)
 (80 = 1980; 90 = 1990; 00 = 2000; 04 = 2004)

Source FAO

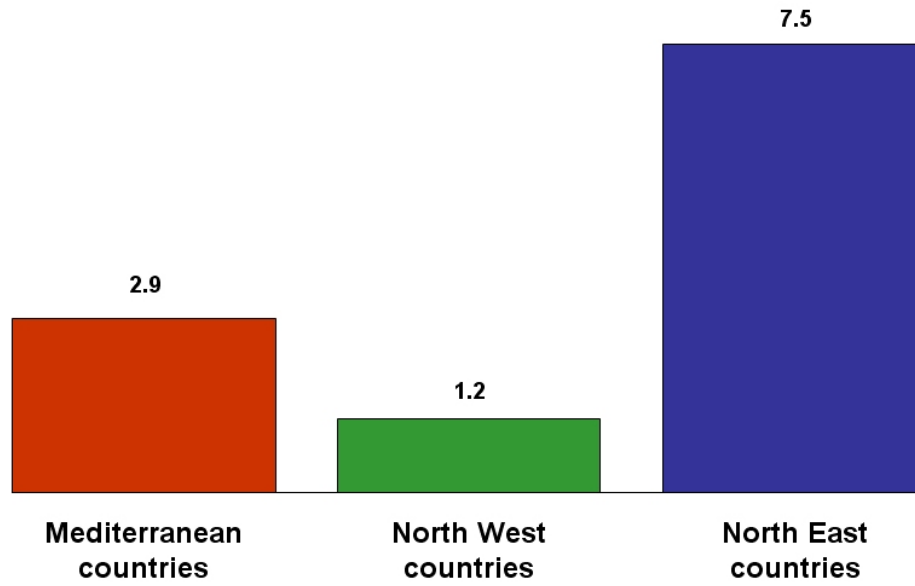


Fig. 18 - Economically active population in agriculture in 2004 (Share in total population)

Source FAO

The world agricultural markets – both for food and non food products – are going to recover, after a decrease (fig. 19). The

surplus production prevent a significant recover of the quotations.

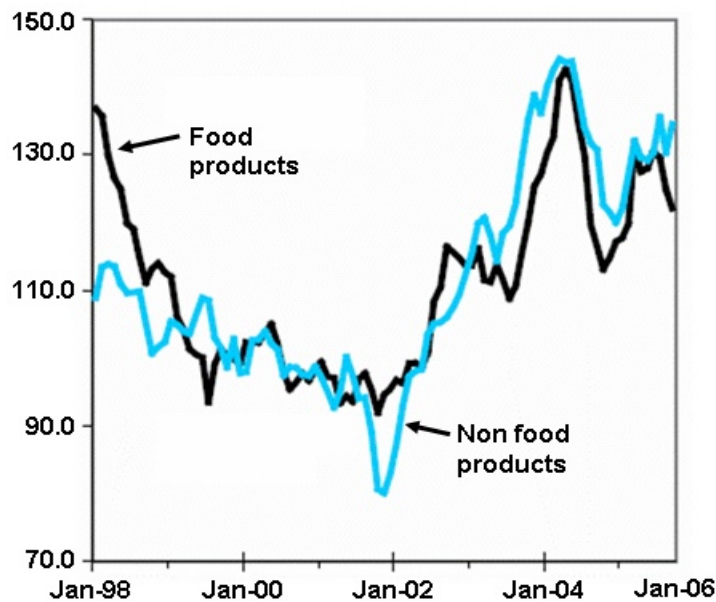


Fig. 19 - Index (2000 = 100) of the world prices (US\$) of agricultural raw materials

Source Unacoma-Prometeia

On the contrary in the EU vegetable product prices are declining (fig. 20/1), together with non energetic farm inputs, while fuels increased significantly (fig 20/2).

An irrigated land farm is a must in Mediterranean countries (figg. 21-22),

where it reaches 32% of total agricultural surface. Its value (9%) in North West countries is mainly due to South France contribution, while in North East countries it is not significant.

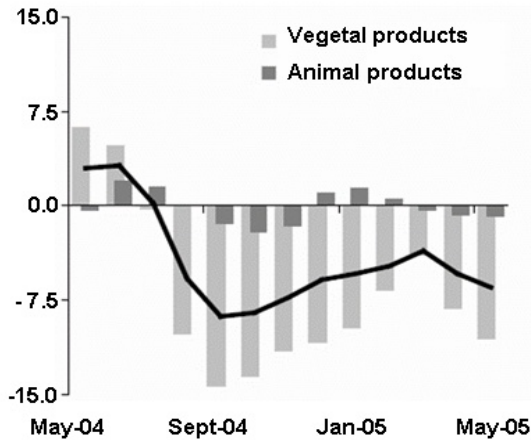


Fig 20/1 - Evolution of agricultural prices at the farm (%) in the EU

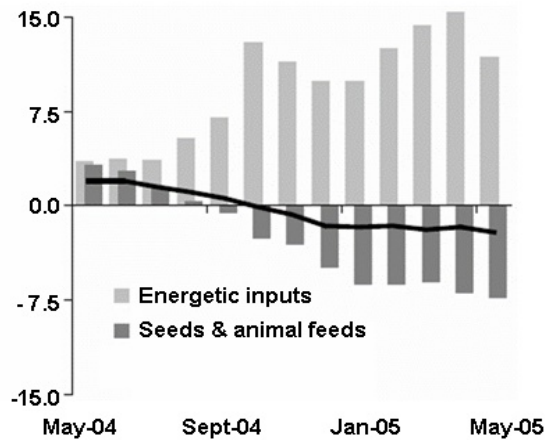


Fig 20/2 - Evolution of agricultural inputs prices (%) in the EU

Source Unacoma-Prometeia

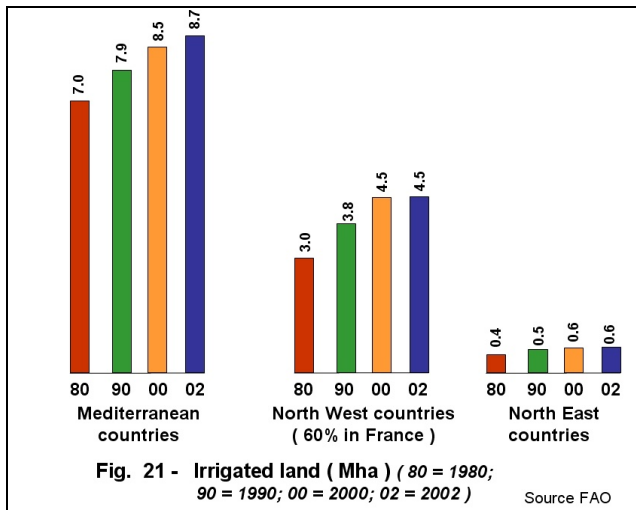


Fig. 21 - Irrigated land (Mha) (80 = 1980; 90 = 1990; 00 = 2000; 02 = 2002)

Source FAO

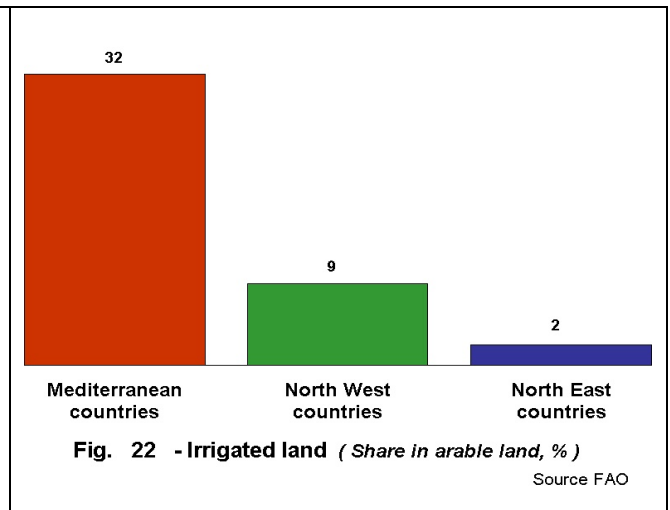


Fig. 22 - Irrigated land (Share in arable land, %)

Source FAO

Another important difference between the groups of countries is the most important capital stock item (fig. 23): it is the land in Mediterranean countries, the livestock in North West co. and the machinery in North East co.

Thanks to subsidies, the cow milk is the highest value commodity in 19 EU countries, followed by pig meat in 3 countries (Belgium, Cyprus and Hungary), olives in 2 (Greece and Spain) and grapes in one (Italy) (fig. 24)

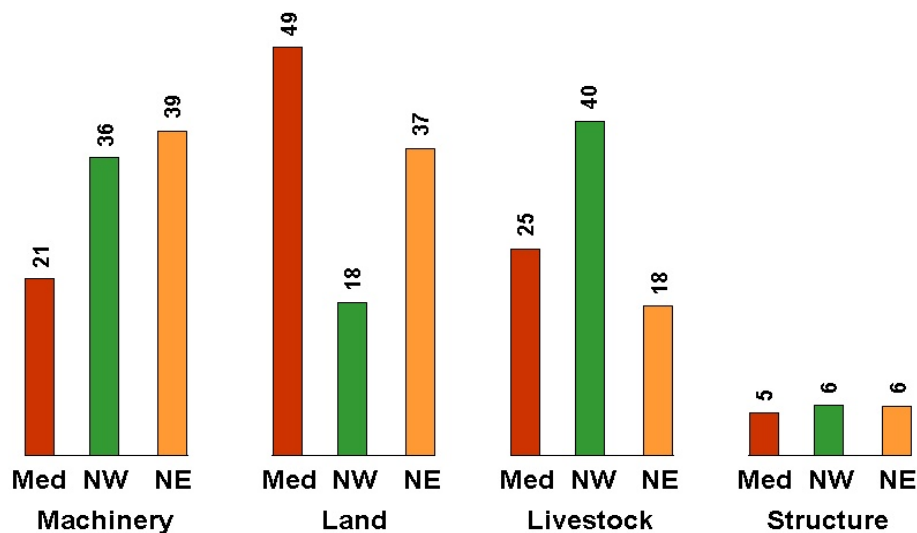


Fig. 23 - Share in capital stock (%) in 2002 for each group of countries (Med = Mediterranean co.; NW & NE = North West co. & North East co.)

Source FAO



Fig. 24 - Highest value commodity in 2003 in the EU
(in the past, from 1980: grapes in Cyprus, Portugal, Spain; potatoes in Poland; cattle meat in Luxembourg; pig meat in Spain)

Source FAO

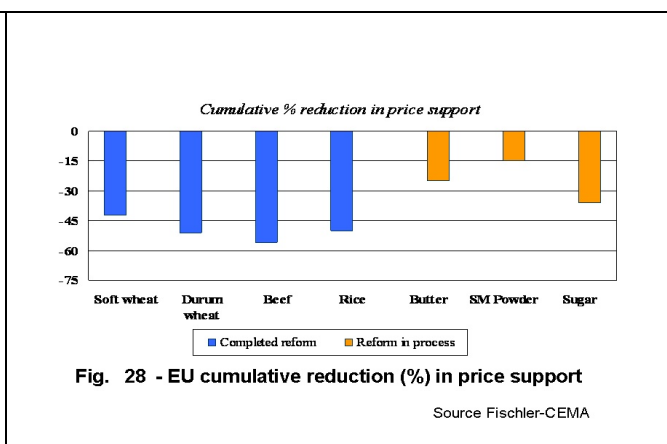
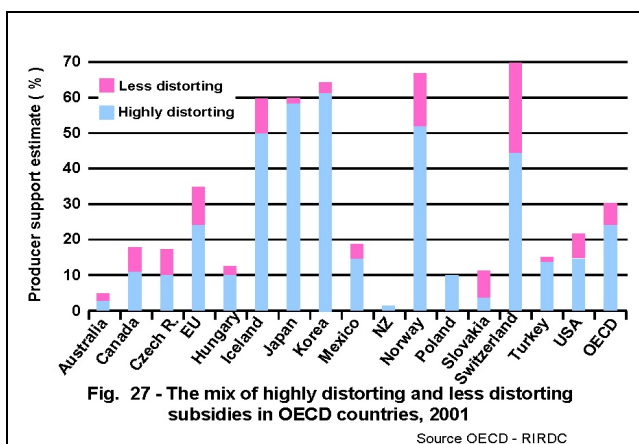
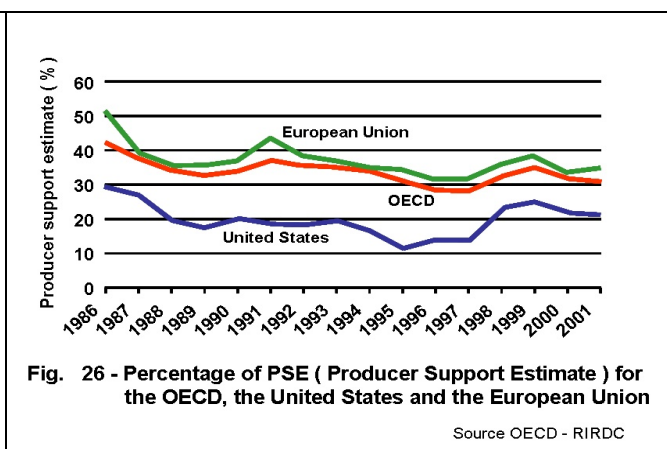
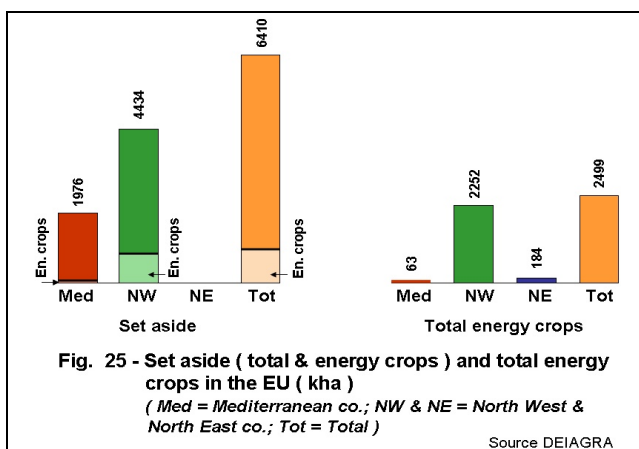
EU price support policy and its reduction, with separation of subsidies from agricultural production to cultivated areas (in 2005 U.S. farmers received 16% of their income from taxpayers, the Swiss 68%, Japanese 56%, EU 32%):

- set-aside and total subsidized energy crops areas, in 10³ ha (fig. 25);
- percentage (fig. 26) of PSE (Producer Support Estimate) for different groups of countries;
- the mix of high distorting (output subsidies, direct input subsidies, price support) and less distorting subsidies in OECD countries (fig. 27);

- the completed and in process cumulative EU price support reductions (%) (fig. 28).

EU agricultural production (fig. 29) has decreased since 1998, after the beginning of the subsidies reform. Main changes come from:

- shortness of food to saturated markets;
- a supply-driven to a demand-driven situation;
- from quantity to quality and from food to public services;
- from work intensive to capital intensive business.



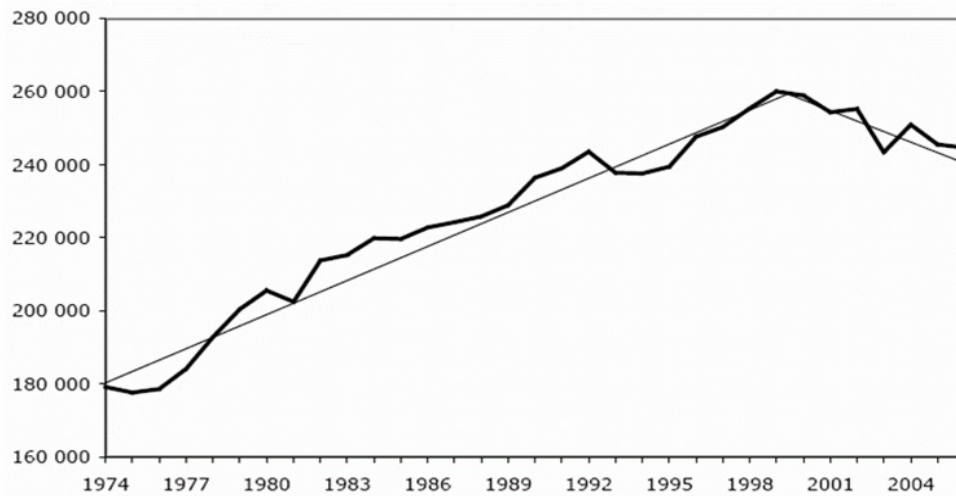


Fig. 29 - EU agricultural production (M Euro at constant prices)

Source Unacoma-Prometeia

A strong contribution to this trend has also been given by:

- the increase of crude oil price (fig. 30);
- the increase of rubber and of some metals prices (figg. 31-33). A certain advantage derives in

import from the high exchange rate (fig. 32) between the Euro and the US\$ (but not for export);

- the high cost of industrial work cost, if compared with the one of developing countries (fig. 34)

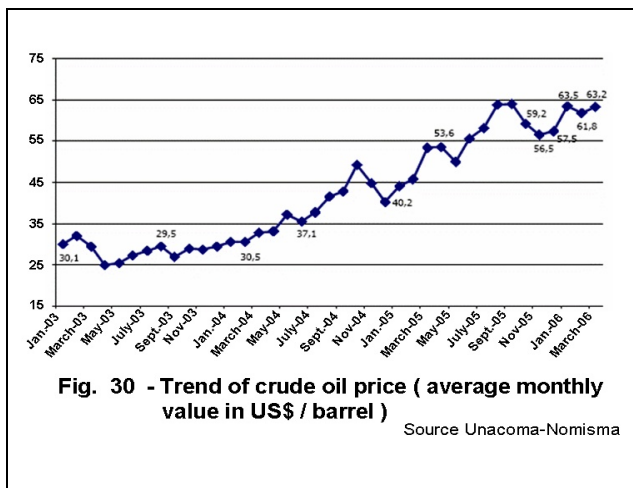


Fig. 30 - Trend of crude oil price (average monthly value in US\$ / barrel)

Source Unacoma-Nomisma

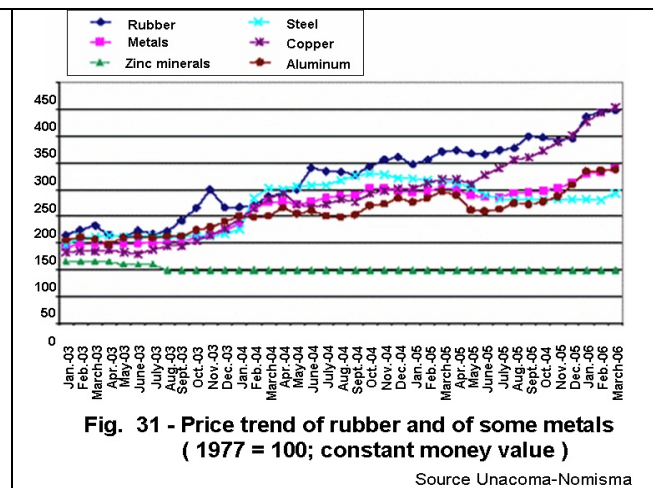
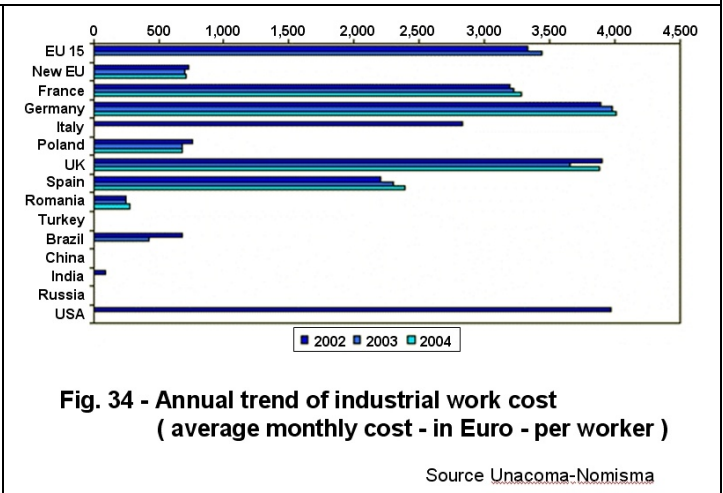
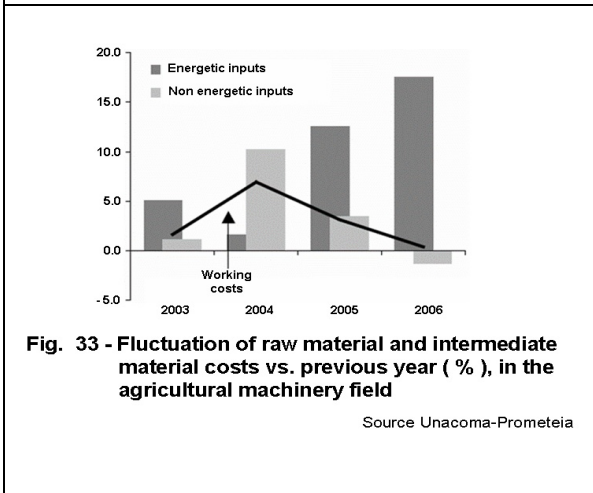
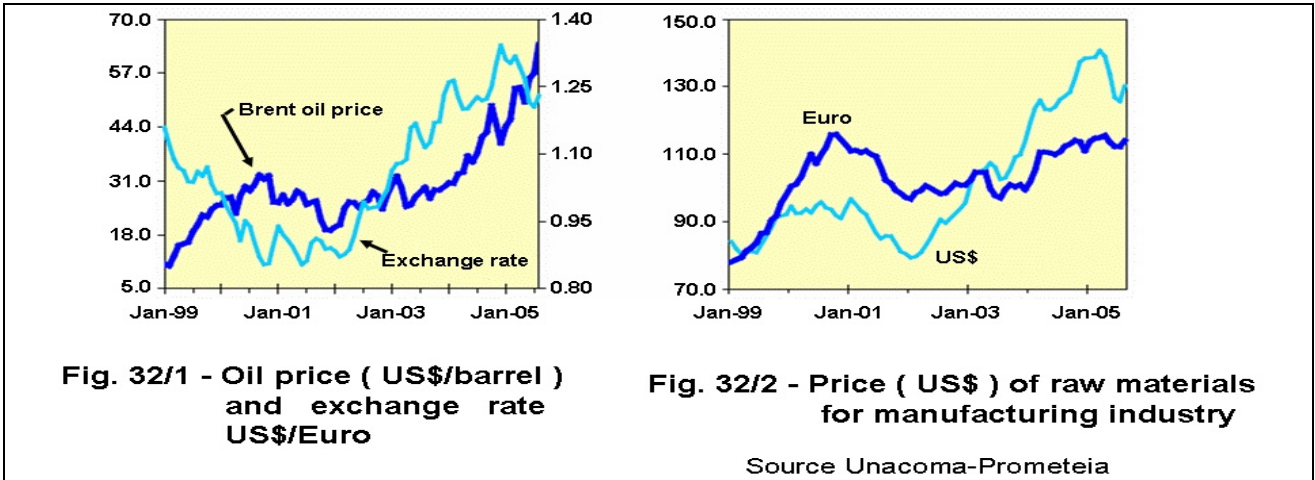


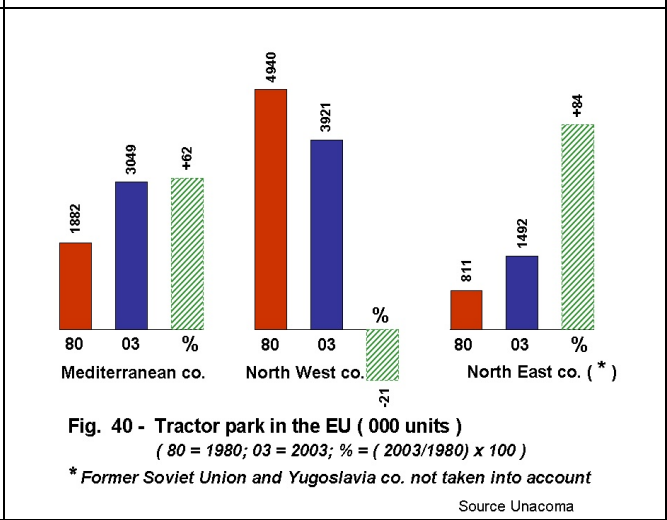
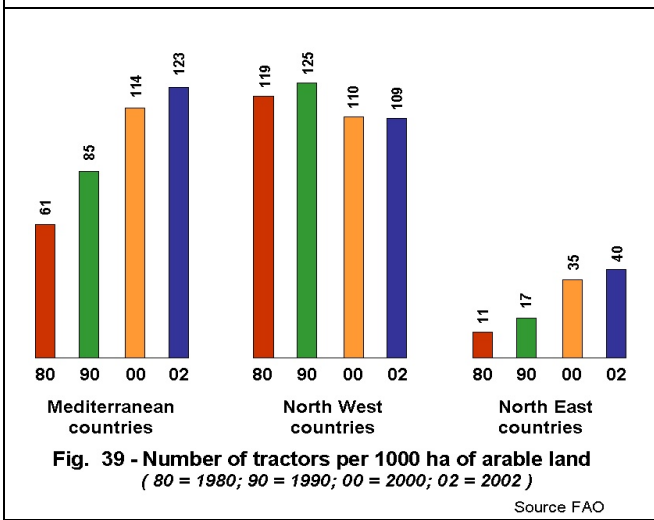
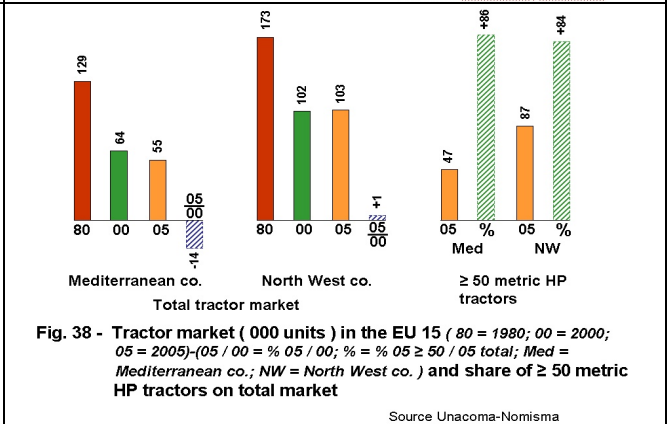
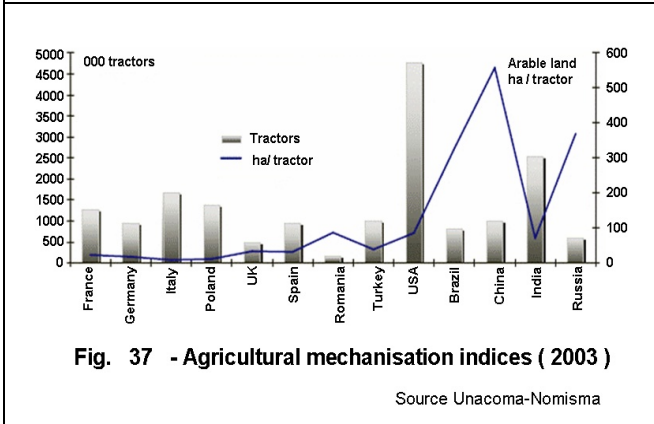
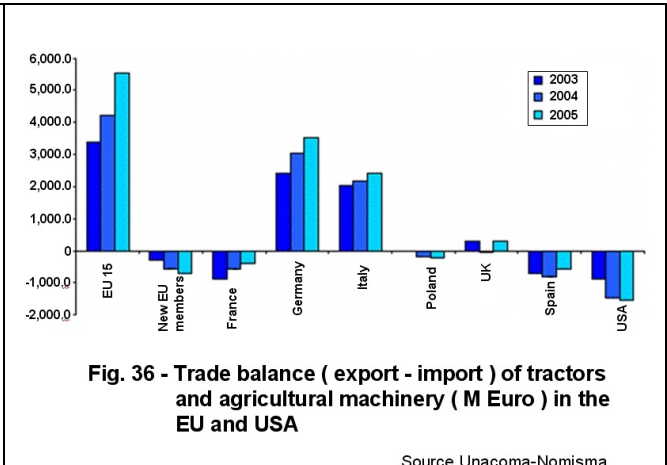
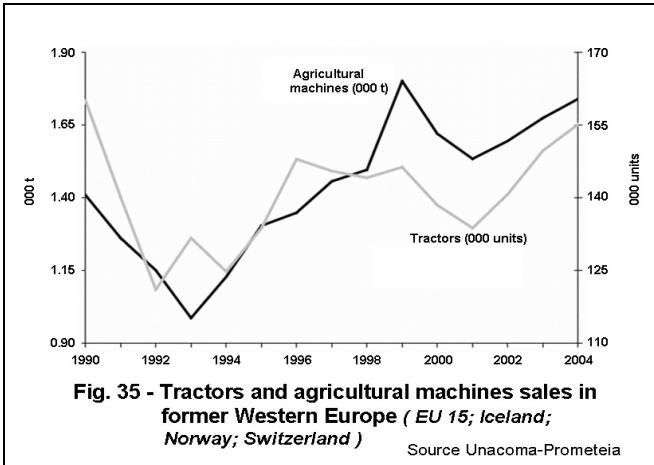
Fig. 31 - Price trend of rubber and of some metals (1977 = 100; constant money value)

Source Unacoma-Nomisma



Tractor market (fig. 35-38) and park (fig. 40), trade balance (export – import) of agricultural tractors and machines (fig. 36) and the indices of agricultural mechanisation (fig. 37-39) are shown

both for the main EU countries (fig. 35-37) and subdivided for Mediterranean, North West and North East countries (fig. 38-39-40)



Agricultural machinery market shows a decreasing trend (fig. 41) for the main EU countries, while the specific number of combines per 1000 ha of arable land (fig. 42) and the combine-harvesters park (fig.

43) confirm the importance of the grain crops for the North West countries if compared with the Mediterranean countries. The North East countries park is rapidly increasing.

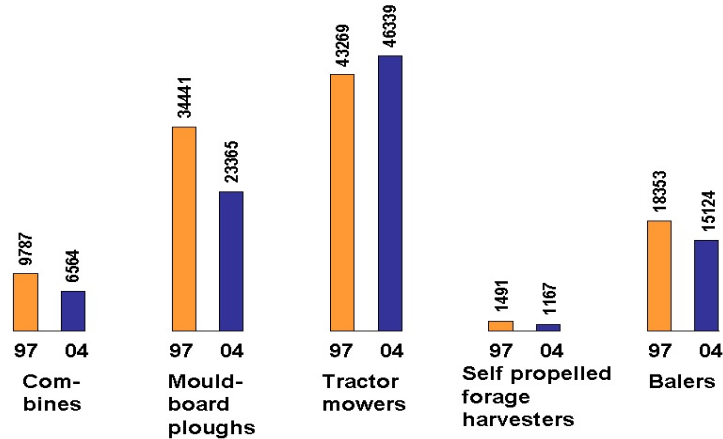


Fig. 41 - Sales (No.) in 1997 and 2004 in 12 EU CEMA countries (A, B, DK, FIN, F, D, GR, I, NL, P, E, UK) (97 = 1997; 04 = 2004)

Source CEMA

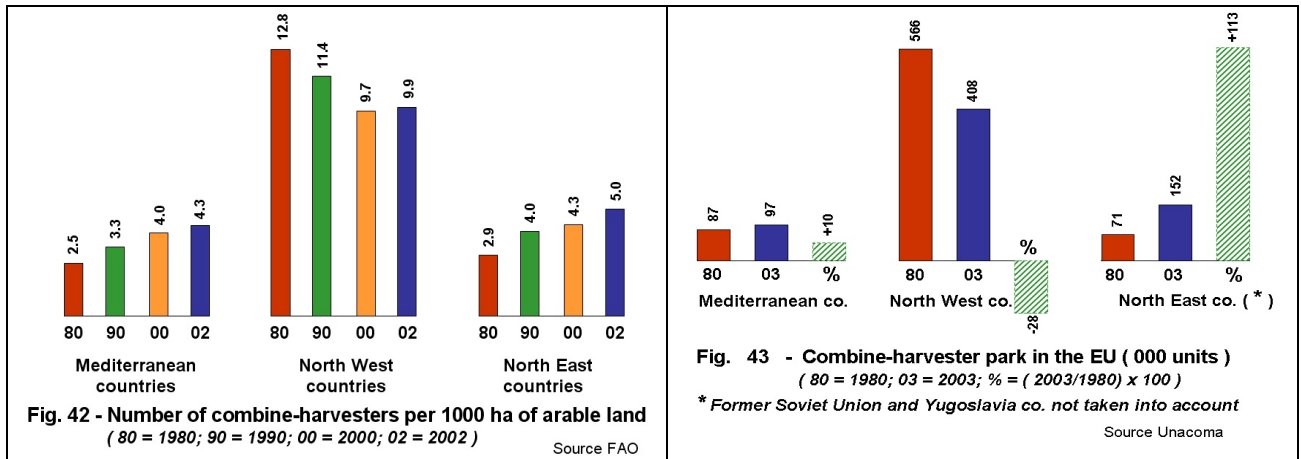


Fig. 42 - Number of combine-harvesters per 1000 ha of arable land (80 = 1980; 90 = 1990; 00 = 2000; 02 = 2002)

Source FAO

Fig. 43 - Combine-harvester park in the EU (000 units) (80 = 1980; 03 = 2003; % = (2003/1980) x 100)

* Former Soviet Union and Yugoslavia co. not taken into account

Source Unacoma

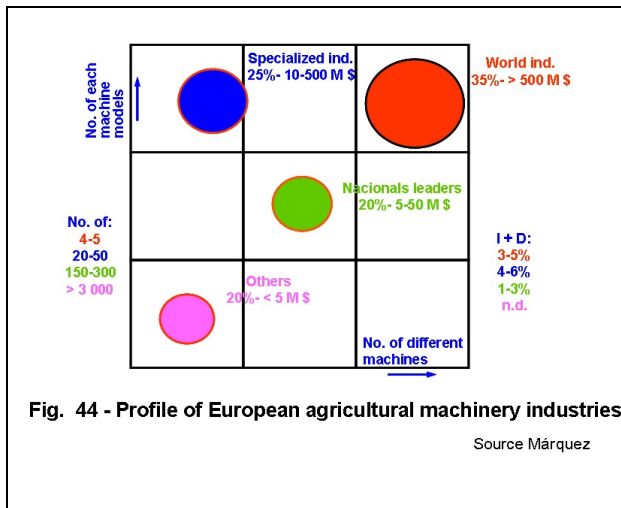


Fig. 44 - Profile of European agricultural machinery industries

Source Márquez

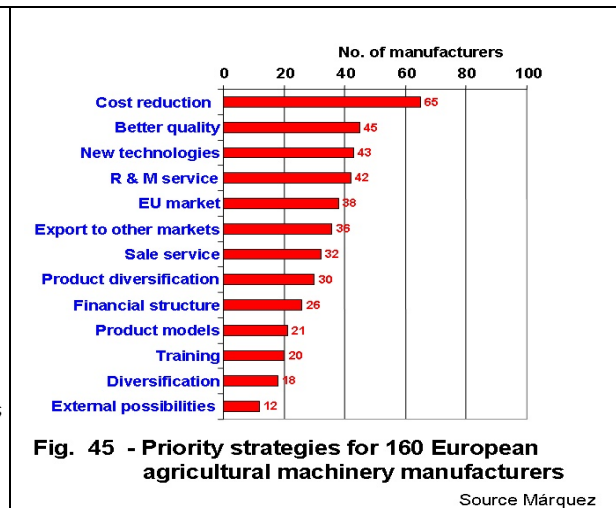


Fig. 45 - Priority strategies for 160 European agricultural machinery manufacturers

Source Márquez

Observations

- Increase of raw material prices (oil, metals) depends on the high rate of development of some developing country (China, India, Brazil).
- This will determine a great pull to energy agriculture, as an alternative to oil use. Biofuels are taking a strategic role in Europe.
- It is advisable that the present set aside and GMO (with the exception of the areas with co-existence problems) policies are modified. These policies are justified with a high degree of subsidies, but with international product prices in Europe, the agriculture will be canceled (e.g.: with the use of GMO the cost of weeding and insect control chemicals decreases from 250 to 60 €/ha).
- Total grain areas will not change, but agricultural production may increase, due to CAP de-coupling, the decrease of environment impact, the amelioration of natural resources, with a difference between the Mediterranean and the North West and North East countries.
- In any case the needs for mechanisation are very deep, in terms of innovation and new machinery, if set aside areas are to be changed into energy crops.
- In this scenario the development of agricultural mechanisation has a strategic function, as it is the process that may influence the work productivity and increase competitiveness, so that at international level a balance is established.
- Investments in machinery might fall in the coming years as unviable, insufficient farms close down and available resources fall. However, this might be true only for the traditional machines.
- The purchase of machinery is expected to become increasingly dependent on real productive necessity since financial resources will be different.
- Mechanisation will be in a position to develop provided the machines produced respond to the requirements imposed by the new approach and incentives are given to process rationalisation, the qualification and environment compatibility.
- Machines will have to have increasingly extensive automation to reduce labour costs.
- Agricultural machinery market will depend on the influence of product prices. At world level demand will grow with high oscillations and the always bigger farms will require a complete service (greatest machinery, more power, etc).
- Machinery will be linked to especialisation, to production concentration and to innovation.
- New equipment will be linked to the new policy, that is displacing soils from agriculture to parks, protected areas, etc., to machinery for non food agriculture and energy crops, to machinery for non agricultural activities, amenity and environment conservation.
- The tractor market is developing following different lines: a more limited power range for specialised uses and high power for the management optimisation of normal agricultural exploitation:
 - less than 40 kW: development of fruit and vegetable tractors and market stabilisation
 - 40-80 kW: prevailing substitution demand, with an increasing trend;

- more than 80 kW: increase of the market and of average power with more electronics use, because of increased mean farm acreage, biggest implement dimensions and development of farm contractors segment.
- Role of mechanisation: information technology in farm mechanisation, precision farming, new technologies for renewables, multiple use of farm machinery for diversified activities.
- Manufacturers: market control; flexibility for a quick response to market demand (advantage of small manufacturers and of the big ones with a de-centralised decision capacity); innovation of products and processes, with cost reduction; information technology, with an anticipated market knowledge; human capacity, etc.
- Consequences: production integration, looking at a scale economy.
- Present EU market for agricultural machinery may be considered quite stable, even slightly increasing (fig. 46-47).
- Shifting EU frontiers South and East and EU promotional policies towards generation turnover, market competition may favour the demand for technical means and counterbalance the ongoing structural re-organisation of agriculture.

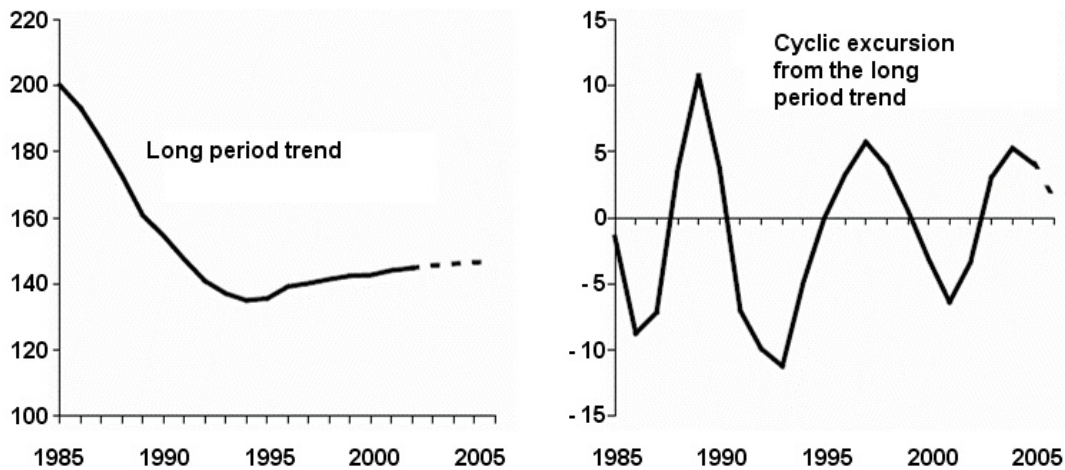


Fig. 46 - Evolution of the long period trend and of its cyclic excursions (000 tractors) in the former Western European market (EU 15; Iceland; Norway; Switzerland)

Source [Unacoma-Prometeia](#)

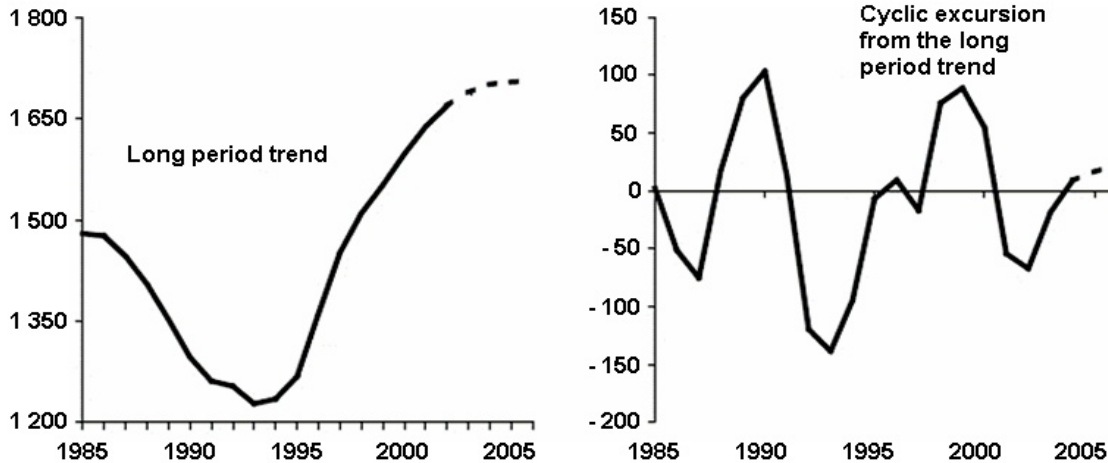


Fig. 47 - Evolution of the long period trend and of its cyclic excursions (000t) in the former Western European market (EU 15; Iceland; Norway; Switzerland)

Source Unacoma-Prometeia

Conclusions

Forecast are difficult and not in the mentality of the authors.

FAO published more than 25 years ago "Agriculture towards 2000" where for each African country a yearly increase of agricultural machinery park was foreseen.

Two scenarios were considered: pessimistic with 5% increase and optimistic with 7%.

Many agricultural machinery parks have in 2006 the same dimension of the ones of 1980.

Final conclusions

After 2013 ???