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AGRICULTURAL COMMODITY MARKETS OUTLOOK 2009-2018

**A comparative analysis
of projections published¹ by**

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Food and Agriculture Organisation (FAO)**

Food and Agricultural Policy Research Institute (FAPRI)

US Department for Agriculture (USDA)

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This working document does not necessarily represent the official views of the European Commission.

¹ Sources:

FAPRI 2009 US and World Agricultural Outlook, published in March 2009
<http://www.fapri.iastate.edu/outlook/2009/>

OECD-FAO Agricultural Outlook 2009-2018, Highlights published in June 2009,
www.agri-outlook.org

USDA Agricultural Projections to 2018, published in February 2009
<http://www.ers.usda.gov/publications/oce091/>

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EXECUTIVE SUMMARY

This year once again, the Directorate General for Agriculture and Rural Development has published a comparative analysis of projections for agricultural commodity markets. What a difference a year makes! Last year the focus of the Outlook reports was high prices. A year later the main theme of DG AGRI's report is the depth of economic recession and uncertainty about the speed of recovery. Each of the Outlooks uses different commodity and geographic aggregates and relies on different macro-economic assumptions and data. Nevertheless there are common themes. Both FAPRI and OECD-FAO note that the strong supply response to the last two years of high prices together with the economic downturn have brought commodity prices down well below their 2007/08 peaks. The continued crisis is likely to put a damper on commodity prices for the near future.

However the medium term projections are still upbeat, with prices expected to remain well above pre-2007 peaks. On average OECD-FAO projects that nominal prices for all sectors will be 15-60% above the levels of the decade before the 2007-08 peaks. FAPRI also expects prices to remain strong over the projection period, though they are less bullish than OECD-FAO about dairy prices. Agriculture is expected to cope better than other sectors with the economic crisis due to the relatively low income elasticity for food, at least in developed countries. However, the question of food security in developing countries remains a concern.

Although not immune to the current economic malaise, developing countries are projected to remain the main source of growth in world demand and trade once economic growth resumes. FAPRI expects the biggest increase in grain and oilseeds demand to be in Asia, Africa and the Middle East, driven by population growth, the expansion of livestock production and increased demand for biofuel feedstocks. Increasing incomes are also accompanied by diversification of diet and higher consumption of animal based proteins both as dairy and meat, in Asia, Africa and the Middle East. OECD-FAO agrees and is projecting oilmeal use in developing countries in 2018 to be up almost 60%, butter and poultry about 50%, vegetable oil and whole milk powder about 40% and sugar some 33% above average consumption in 2006-08. This compares with lacklustre growth in consumption in OECD countries for most of these products, except for vegetable oils where growth still exceeds that of developing countries.

Except for wheat and coarse grains, production is also increasingly shifting away from developed countries to emerging and middle income developing countries. Both organisations project 25% growth in oilseeds production over the coming decade. FAPRI predicts that over 40% of this growth will come from expansion of soybean area in South America. OECD-FAO projects production increases of around 50% for vegetable oils and over 40% for oilmeals in developing countries. FAPRI expects growth in world sugar production to come from the major cane producing countries, while OECD-FAO projects sugar production in OECD countries to contract by 2%. Trade also reflects the growing shift in production to developing countries. According to OECD-FAO, these countries account for around 90% of vegetable oil and sugar exports. Only exports of oilmeals are expected to grow faster in OECD countries (albeit from a lower base). Coarse grains even contract in OECD countries (which have 69% of exports) by around 2%.

The Outlooks also agree to a large extent on the prospects for the dairy and meat sectors. Developing countries are expected to show the fastest export growth for these products according to OECD-FAO. Growth in dairy production and exports are projected 4 - 5 times higher than in OECD countries. FAPRI projects that almost half of the growth in milk production will take place in Asia, mainly in China and India (which also accounts for 90% of growth in butter) and roughly one third in the Americas, primarily in the US and Brazil. FAPRI points to Brazil, Argentina and Ukraine as increasingly important players in international dairy markets.

For meats non-OECD production is expected to grow twice as fast as in the OECD countries, especially poultry with a 50% increase projected, mainly in China, Brazil and India. Both Outlooks agree that traditional exporters such as Australia, Canada, EU, US, Brazil and Argentina will remain key players in international meat markets in the coming decade. Indeed Brazil is forecast to account for 64% of the increase in total world meat exports between 2009 and 2018.

Given the uncertainty surrounding the extent and speed of economic recovery, the baseline results described above should be interpreted with caution. Because the macro-economic assumptions used in the OECD-FAO and FAPRI baselines have been overtaken by the rapid evolution of the current economic and financial crisis, DG AGRI has conducted its own sensitivity analysis using the same model as OECD-FAO but taking into account the macroeconomic projections of June 2009 (with lower GDP growth and a higher oil price).

In the short-term (until 2011) the effect of the crisis is bearish on all products compared to the baseline due to lower GDP growth. Nevertheless, in most cases prices still remain above the historical average for 1997-2006. In the medium-term all prices are expected to rise in line with the anticipated economic recovery, supported by higher oil prices. Because crop prices have a significantly higher sensitivity to oil price changes than livestock products, crop prices are projected to show a greater increase. All nominal prices are projected to remain above their historical levels of 1997-2006.

While the Outlook price projections are based on annual averages, the reality of course is that prices fluctuate daily. The price spikes of 2007-2008 have drawn attention to the issue of price volatility. DG AGRI's report also includes an analysis of historical price volatility for wheat, maize and soybeans on the CBOT (for the last 30 years) and milling wheat and rapeseed on MATIF (since 1998). Daily settlement prices in commodity exchanges have been used. The analysis concludes that in the commodity markets observed, volatility has increased. It appears that trend lines for volatility and prices have moved together and that periods of high prices overlap with increased volatility. An inverse relationship was observed between stocks and prices and volatility peaks seem to coexist with decreased stocks. As to the link with oil price volatility, since May 2006 price volatility in maize and oil price volatility show similar paths.

In the medium term, both FAPRI and OECD-FAO project stabilisation of stocks which hints at decreasing levels of price volatility on a yearly basis. However, yearly price changes projected in the baselines are a poor indication of potential volatility since commodities undergo price adjustments daily. In addition, the projections assume normal weather conditions and relatively steady economic recovery.

1. INTRODUCTION

This year once again, the Directorate General for Agriculture and Rural Development has published a comparative analysis of projections for agricultural commodity markets.² The main theme of last year's report was high prices. With ample harvests and the general economic slowdown prices of agricultural commodities decreased across the board from their peaks. This year the theme has shifted to the economic crisis. This report as well as the projections it compares were prepared in a rapidly changing macroeconomic environment affected by economic slowdown. Market turbulence that originated in advanced economies spread and slowed down economic growth in all parts of the world. The unifying theme of the baselines discussed in this report is the depth of economic recession and uncertainty about the speed of recovery. The projections were prepared at different times with different macroeconomic assumptions, many of which are outdated at the time of writing, making comparisons and interpretation a rather challenging exercise. The current report offers more systematic analysis of commodity outlooks for main food and non-food commodities in individual commodity chapters.

The comparison draws on projections by FAPRI (finalised in January 2009, released in March 2009), OECD-FAO (finalised in March 2009, released in May 2009), and to a lesser extent USDA (finalised in December 2008, released in February 2009). Each of those projections uses different commodity and geographic aggregates and relies on different macro-economic assumptions and data. Projections are established on the basis of existing agricultural and trade policies. No impact assessment of a possible agreement in the Doha Development Agenda is provided. The new US Farm Bill and the changes adopted in the context of the Health Check of the EU Common Agricultural Policy are included in the projections.

The commodity chapters are followed by a discussion of sensitivity analysis prepared by the OECD-FAO on the basis of different macroeconomic growth and crude oil prices, and complemented by an in-house simulation³ using comprehensive macroeconomic projections of /June2009 taken from IHS Global Insight. In response to notions that price volatility has increased together with or following price increases, the report also includes a short discussion of historic volatility.

By comparing projections for developments on the commodity markets made by different institutes in a systematic manner and running a simulation with the latest macroeconomic forecast, the publication adds value as a source of comparative analysis of various baselines. However, absolute numbers obtained by respective models should be compared with caution especially in the environment of higher

² MAPs and other outlook comparisons are available at http://ec.europa.eu/agriculture/analysis/tradepol/index_en.htm

³ Using the model developed by OECD and used for the OECD-FAO outlook projections (AGLINK)

than usual uncertainty about economic prospects. Above all, preference should be given to examining trends.

2. SELECTED MACRO-ECONOMIC FACTORS

The choice of values of macroeconomic parameters in the latest round of baselines in an environment of economic uncertainty has proved to be the most scrutinised element of the projections.

Assuming normal weather conditions, application of current policies and no further outbreaks of plant or animal diseases, the principal drivers in the models rely on macroeconomic factors, such as population and economic growth affecting demand growth, exchange rates impacting trade flows and last but not least, oil prices influencing both supply and demand. Deterministic baselines use single-valued parameters although some provide stochastic projections (e.g., FAPRI in the US baseline) or scenario analysis (e.g, OECD-FAO).

While outlooks in the past differed in absolute magnitudes of the macroeconomic parameters, they agreed on their general direction and, compared to this year, the differences were relatively minor. The choice of macroeconomic values is largely influenced by the production schedules of different baselines taking into account the likelihood of different macroeconomic scenarios, especially concerning factors likely to adjust in the short run. Historically oil prices were the most prone to changes in the short run. However, the economic crisis of 2008 and uncertainty about economic prospects and speed of the recovery have resulted in dramatic revisions of macroeconomic growth prospects by many international organisations and information providers. The depth of the recession and the speed at which it spread to developing economies turned out to be unexpected, considering that in autumn 2008 many developing countries were thought to be immune to the economic malaise.

USDA projections were finalised in December 2008, FAPRI in January 2009 and OECD-FAO in April 2009. The assumptions made about macroeconomic factors reflect the information available at the time projections were prepared and optimism about the economic recovery. Consequently, different baselines differ in their level of optimism as to how quickly confidence in the financial sector is restored and economic growth resumed. The baselines also differ in their sources of data. The FAPRI baseline relies on data provided by IHS Global Insight from January 2009, OECD-FAO mostly on data from in-house sources and international organisations (timing described below), and the USDA on in-house sources compiled in October 2008.

There has been relatively little discussion on population growth and even exchange rates, although these factors significantly impact the baseline results. However, the question of consistency between energy prices and GDP growth has been posed frequently this year. The economic slowdown is normally accompanied by weaker energy prices as demand for energy decreases. Although baselines are rather theoretical exercises reflecting a number of assumptions, those obtained by combining optimistic growth rates with relatively low energy prices might be questioned as unrealistic.

2.1. Demography

Demographic developments are often spurred by and at the same time contribute to the macro-economic environment. They play an important role in supply and demand developments and tend to be one of the main drivers of the demand side of the agricultural commodity projections. Although the rate of population growth assumed in the baseline is lower than in the 1980s (when it was around 1.7% on average), it still plays an important role in driving demand. Different baselines show similar trends. Population growth in various geographic regions differs significantly, with the highest increases projected in Africa and the lowest in Europe. Some countries, such as Russia and Japan are projected to continue their negative population growth rates due to an aging population while others experience declining rates of population growth due to the AIDS epidemic.

FAPRI's population projections taken from the US Bureau of the Census International Data Base assume a growth rate of 1.2% between 2009 and 2012, and 1.1% from 2013 to 2018. The average is driven by Africa (where the population growth rate decreases from 2.2% in 2009 – 2013 to 2.1% afterwards) and the Middle East where it decreases from 1.7% to 1.5%.

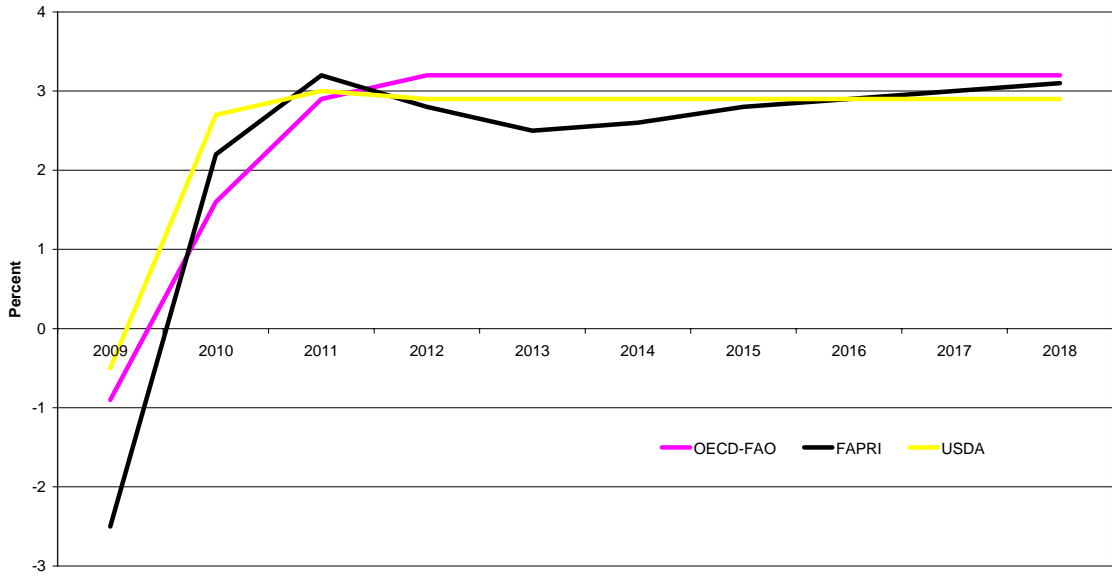
The OECD-FAO projection assumes a slowly declining rate of population growth from approximately 1.2% in 2009 to around 1% at the end of the projection period. In general the rate of growth is higher in the non-OECD countries than in the OECD countries, and the share of developing countries in the world population increases.

Agricultural commodity projection models incorporate aggregate increases in population. Finer changes between rural and urban population as well as age distribution that consequently influence markets are taken into account by altering per capita consumption patterns. Increasing population, urban migration and changing age distribution impact both supply and demand for agricultural commodities. Urbanisation tends to be accompanied by reduced supply of labour in rural areas, reduced area around urban settlements available for agricultural production and consequently higher demands on infrastructure delivering food to the cities, and last but not least, changing dietary patterns. The population in developing countries is dominated by a younger population cohort with large food consumption.

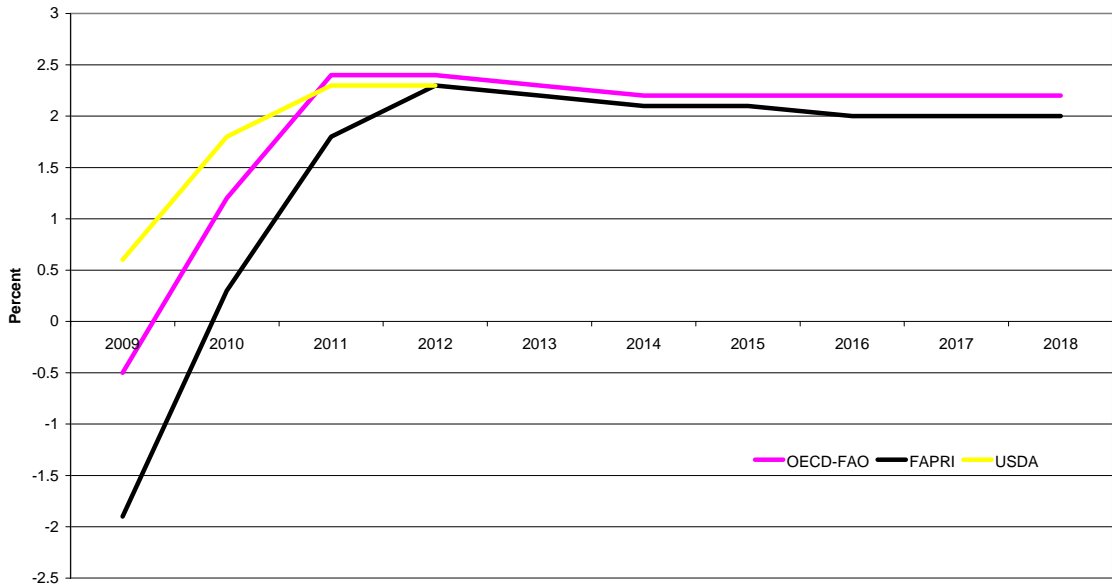
2.2. GDP

GDP growth values and the depth of the recession in 2009 differ across the baselines. Economic slowdown affected both developing and developed countries, although emerging and developing countries are still projected to enjoy higher growth rates than developed countries. The actual level of growth in emerging and developing countries depends on the level of integration into the world economy. Graphs 3.1 – 3.3 illustrate growth rates for the United States, EU, and China used in various projections. While rather divergent in 2009, prospects tend to merge at the end of the projection period.

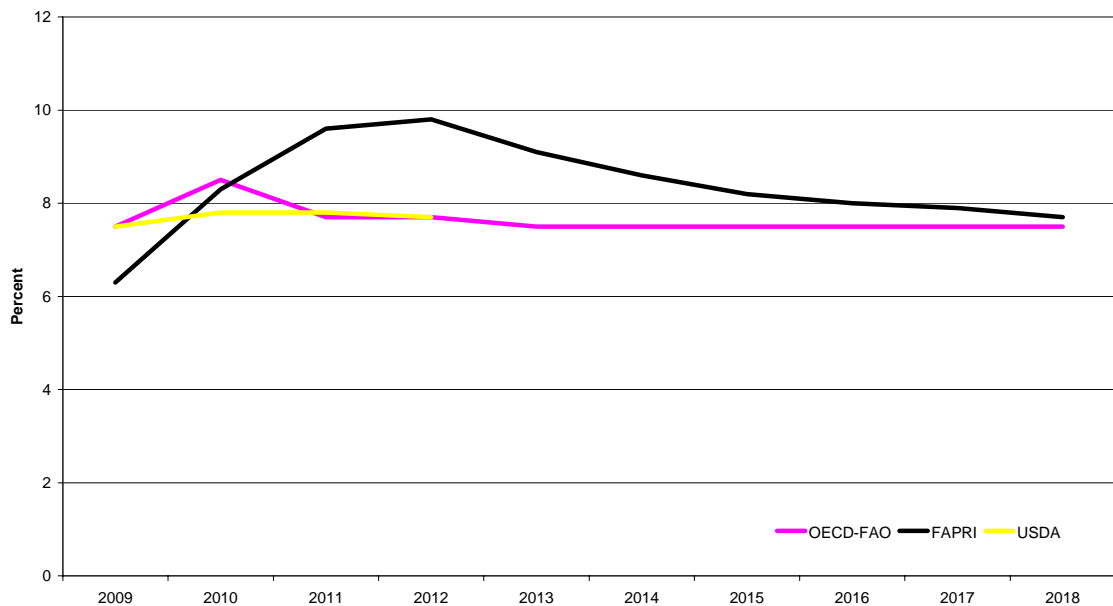
Graph 2.1 United States: GDP Growth



Graph 2.2 EU: GDP Growth



Graph 2.3 China: GDP Growth



FAPRI's macroeconomic projections taken from IHS Global Insight (January 2009) assume an average world annual rate of real GDP growth of negative 0.7%, followed by a significant recovery for 2010, with long-term real GDP growth of 3.5% reached by 2011. In the US already weak growth of 1.16% in 2008 was followed by a slowdown of negative 2.5%, with spillovers into Canada (negative 1.5%) and Mexico (negative 2.3%). Some parts of the world are still showing signs of positive economic growth in 2009 driven by strong domestic demand, such as Latin America (1.2%). The average rate of growth in Asia in 2009 is assumed to be 1.2%. Growth in China is expected to decline to 6.3% in 2009, recover to 9.8% in 2012, and gradually decrease to 7.7% at the end of the projection period. India's growth follows a similar pattern: decline to 4.9% in 2009, recovery to 8.2% in 2012, and a gradual decrease to 6.6% in 2018. Both EU 15 and EU 12 are affected by the slowdown: the EU 15 in 2009 contracts by 1.9% while the EU 12 grows by 0.6%. Africa remains a bright spot sustaining a GDP growth of 4.8%. Traditionally oil-exporting countries were driving GDP growth. However, due to weaker crude oil prices Middle East countries are assumed to experience growth of 3.8% which is relatively low compared to the historical record.

The OECD-FAO baseline incorporates a serious economic slowdown but reflects a less profound recession than that foreseen in late March 2009. The OECD-FAO baseline uses the OECD's and World Bank's medium term economic projections from December 2008. These projections foresaw the deterioration of the global economy particularly in 2009, with a turnaround projected for 2010. As the economic environment was rapidly changing, additional scenarios with different economic growth were prepared. Those are discussed in Chapter 11 (Sensitivity analysis).

USDA assumed the global economy would slow to 1.7% growth in 2009 while the US economy declines by 0.5%. The slowdown would be followed by a transition back to steady economic growth. The global economy is assumed to rebound to a 3.4% average growth rate for 2010 – 2018. The US economy is projected to grow in 2010 at 2.5%, followed by average rates near 3% over the remainder of the projection period.

2.3. Exchange rate

Undervalued or overvalued currencies affect the competitiveness of imports and exports of a particular country. Currency appreciation implies reduction in competitiveness. The US dollar still plays a central role on the financial and commodity markets.

According to **FAPRI** the US dollar gains significantly in 2009 but resumes its real depreciation over the rest of the decade against the currencies of Australia, the EU, Japan, New Zealand and Argentina. The Chinese yuan significantly appreciates against the US dollar. The Russian rouble depreciates after 2009, as do most African currencies.

Finally, **OECD-FAO** assumes relatively stable exchange rates, with the Euro-USD exchange rate around 0.7 over the projection period. The Chinese yuan is subject to the most dramatic changes, appreciating from 7.5 CNY/USD (average 2006 – 08) to 6.2 CNY/USD in 2018.

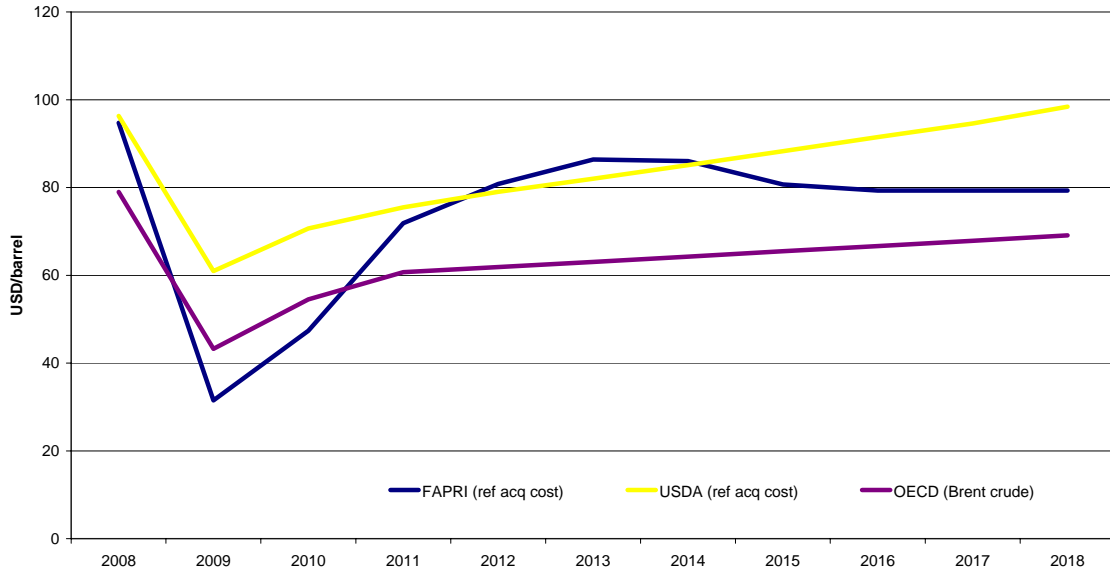
USDA assumes the US dollar will strengthen moderately over 2010 – 18, but it remains on a low level relative to the early 2000s, facilitating gains in US agricultural exports.

2.4. Oil prices

Decreasing energy prices can be among the first indications of an economic slowdown as, all other things equal, decreasing production reduces energy demand and reduces prices. Agricultural commodity and energy prices are more intertwined now than before due to more processing and transport, as well as the emergence of the biofuels industry. It should be noted that **FAPRI** and **USDA** use refiner acquisition cost of crude oil, while **OECD** uses Brent crude oil price which is lower than refiner acquisition cost. Graph 2.4 provides an overview of crude oil prices used in the baselines.

FAPRI uses crude oil prices from Global Insight (January 2009) which projected a rapid decrease in 2009. The **OECD-FAO** baseline relies on a short-term projection for 2009 and 2010 from the US Energy Information Administration of the Department of Energy from January 2009 which reflected the lower crude oil spot market prices and showed strengthening of crude oil prices associated with the projected economic recovery in 2010. From 2011 oil prices from the **OECD** economic outlook are used. **USDA** assumes crude oil prices will rebound in 2009 and average about \$60 per barrel. Prices are then assumed to increase over the remainder of the projection period as economic activity picks up. By the end of the projection period, the refiner acquisition cost for crude oil is assumed to be near 100USD/barrel. Given the latest oil market developments, prices used for 2009 seem to be rather low.

Graph 2.4 Crude oil prices



2.5. Policy environment

All baselines incorporate the 2008 US Farm Bill and changes adopted in the framework of the "Health Check" of the Common Agricultural Policy.

3. CEREALS (EXCLUDING RICE)

World **wheat** production stayed below world consumption for most of the last decade, thus reducing stocks to vulnerable levels and contributing significantly to record prices of early 2008. That year, however, wheat production finally responded to market signals and, helped by favourable weather in most producing regions, posted a record harvest of 680 million tonnes. It is set to diminish slightly in 2009/10 and then continue the upward trend through yield increases to over 715 million tonnes in 2018/19. Demand continues to be driven mostly by population growth in Asia, Africa, and Middle East, and, to a lesser extent, by higher use for ethanol production. Wheat trade grows together with demand, reaching 118 million tonnes in 2018/19. Wheat prices in 2009/10 are projected to continue the downward trend of the previous season, before levelling off (in real terms) throughout the rest of the projection period.

For **maize**, the acceleration of world consumption observed since 2003 is mainly driven by increasing maize imports in developing countries – mainly China and Mexico – and more recently by growing use of maize for ethanol in the US. The subsequent price rise led to a strong supply response in the US, China, Brazil and Argentina. Maize area and yields are expected to increase further, adding over 100 million tonnes of production to reach 910 million tonnes in 2018/19. Most of the projected demand growth should take place in food/industrial use, driven by sustained demand from ethanol producers. However, once the US maize ethanol mandate has been reached in 2015, demand growth is set to slow down and come from the feed sector. Over the next 10 years, maize net trade is projected to increase, reaching 92 million tonnes in 2018/19 because of demand growth in major importing regions such as Asia and Latin America. Maize prices are expected to remain high (about +50% over the projection period, compared to the average of the decade before).

World **barley** acreage is relatively stable with production increasing slower than for other grains. Most of the growth in barley use comes from non-feed sectors. Ukraine joins EU and Australia as one of the key traders in world barley market, although its exports decline later in the projection period with higher internal demand. Saudi Arabia maintains its position as the leading barley importer with a share of around 40% of world imports. China, which mainly imports malting varieties, should double its share and overtake Japan.

World **sorghum** area also changes very little over the projection period. Production increases slightly due to yield improvements, while demand growth comes only from food and other uses. World net trade decreases to less than 5 million tonnes and stays there throughout the outlook period. The United States continues to dominate the sorghum export market with a share of 80%, while Mexico and Japan are the leading importers. Barley and sorghum prices in general follow maize price as they are substitutable feed grains and are often tapped into when markets are tight.

3.1. Wheat

Summary of recent developments

World wheat production stayed below world consumption for most of the last decade, thus reducing stocks to vulnerable levels and contributing significantly to record prices of early 2008. That year, however, wheat production finally responded to market signals and, helped by favourable weather in most producing regions, posted a record harvest of 680 million tonnes.

The latest estimations for 2009/10 put world wheat production at 652 million tonnes (IGC) to 656 million tonnes (USDA), which would be the second biggest harvest after a record of 2008/09. If these estimations prove to be true, the harvest of 2009/10 would be below FAPRI's projection of 672 million tonnes, but in line with a more recent outlook of OECD-FAO of 653 million tonnes.

Outlook for world wheat market

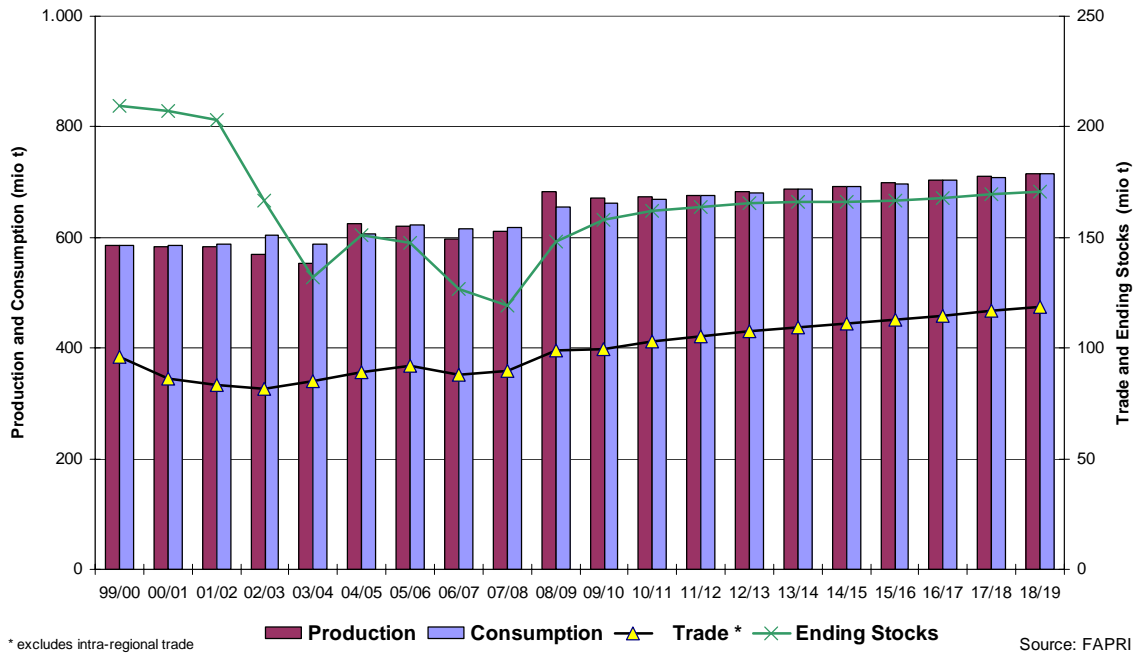
The following table compares projections carried out by leading forecasting institutes. Figures are indicated as indexes, the average for the past decade being the benchmark (100) for comparing averages over the projection period.

Table 3.1.1 Comparison of Outlook for world wheat market
(Index for averages over past and next decade)

	Production	Consumption	Exports
99/00 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	117	115	125
USDA	115	113	116
OECD-FAO	116	113	115

All projections agree on the future development of world wheat market, with average production, consumption and trade figures for the outlook period being around 15% higher than in the previous period, with the exception of higher trade activity seen by FAPRI (+25%).

Graph 3.1.1 World wheat balance sheet



After a record area, yield and harvest of over 680 million tonnes in 2008/09, global wheat production is set to diminish by 10 (FAPRI) to 20 (OECD-FAO) million tonnes in 2009/10 - which would still be the second biggest harvest in history.

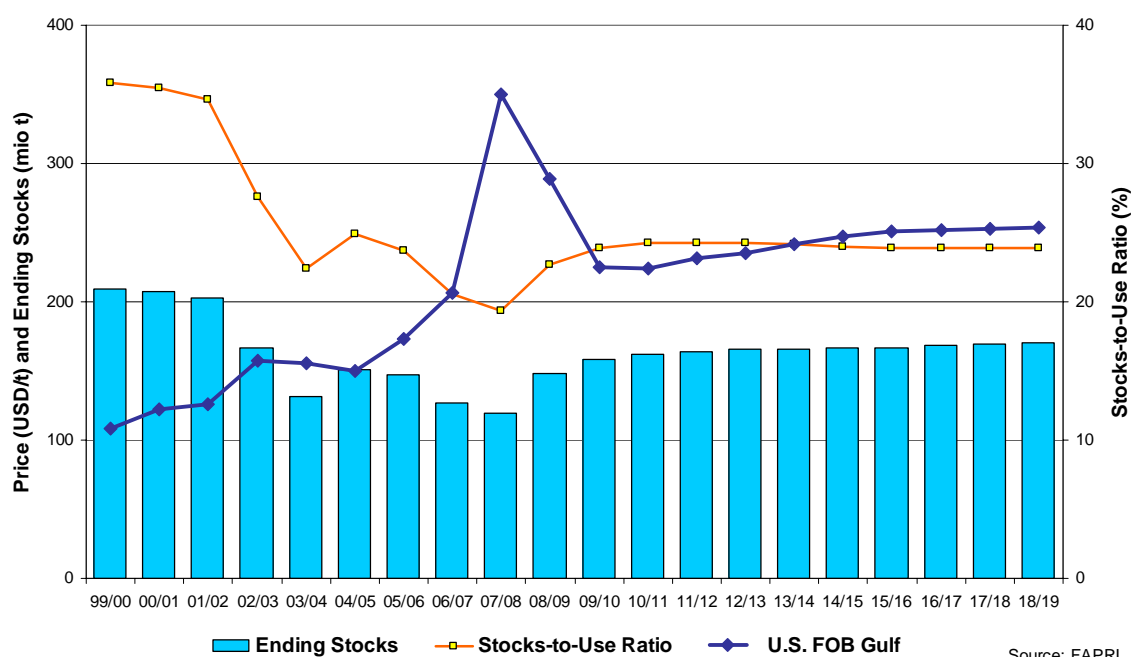
Wheat **area** is projected by FAPRI to increase by 1.2 million hectares in 2009/10 to reach 225.2 million hectares as sharp decrease of US wheat acreage (-1.9 million ha) is more than outweighed by increases in Argentina (+1.0 million ha) and Iran (+1.0 million ha). Later in the period, world wheat area is projected to remain stable at around 223 million hectares. OECD-FAO projects lower acreage for 2009/10 (hence lower production estimate), but higher for the second half of the projection.

Wheat **yields** in 2009/10 should decrease slightly from their record highs. In the medium term FAPRI forecasts them to follow long-term growth trend of about +0.8% per annum. Thanks to this trend, world wheat **production** is projected to increase to over 715 million tonnes in 2018/19. OECD-FAO outlook on wheat yields and production is very similar on average, although slightly more bearish in the beginning and more bullish in the end of the projection period.

FAPRI forecasts wheat **consumption** to grow 0.9% annually, reaching 714 million tonnes in 2018/19, as world population growth increases demand for food purposes and more wheat is used for the production of ethanol. Food and other (including for bio-fuels) use should reach 592 million tonnes (versus feed use 123 million tonnes), with the main source of the demand increase coming from Asian, African, and Middle Eastern countries. OECD-FAO is again more pessimistic for the beginning of the projection period (for 2009/10 in particular), but consumption growth resumes with economic recovery and reaches 719 million tonnes in 2018/19.

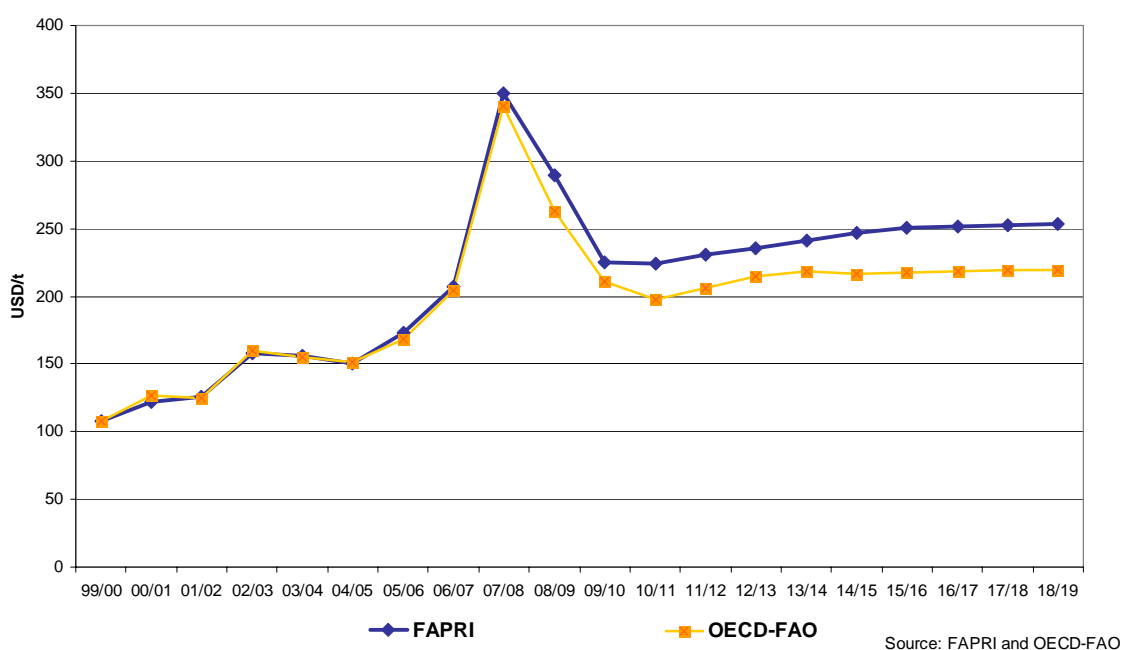
The stocks-to-use ratio decreased below 20% in 2007/08, but recovered to 23% in 2008/09. From 2009/10 onwards, they are expected to remain stable at 24%, as consumption grows in line with stock build-up.

Graph 3.1.2 Wheat stock-to-use and prices



The US FOB price of No.2 HRW wheat dropped significantly in 2008/09 from record levels of early 2008, but was still well above long-term averages. OECD-FAO and FAPRI outlooks agree on the future wheat price trends. However, if OECD-FAO models continuous price decrease to 200 USD/t by 2010/11 with a slight pick-up in the medium term, FAPRI projections are in general 10% to 15% higher.

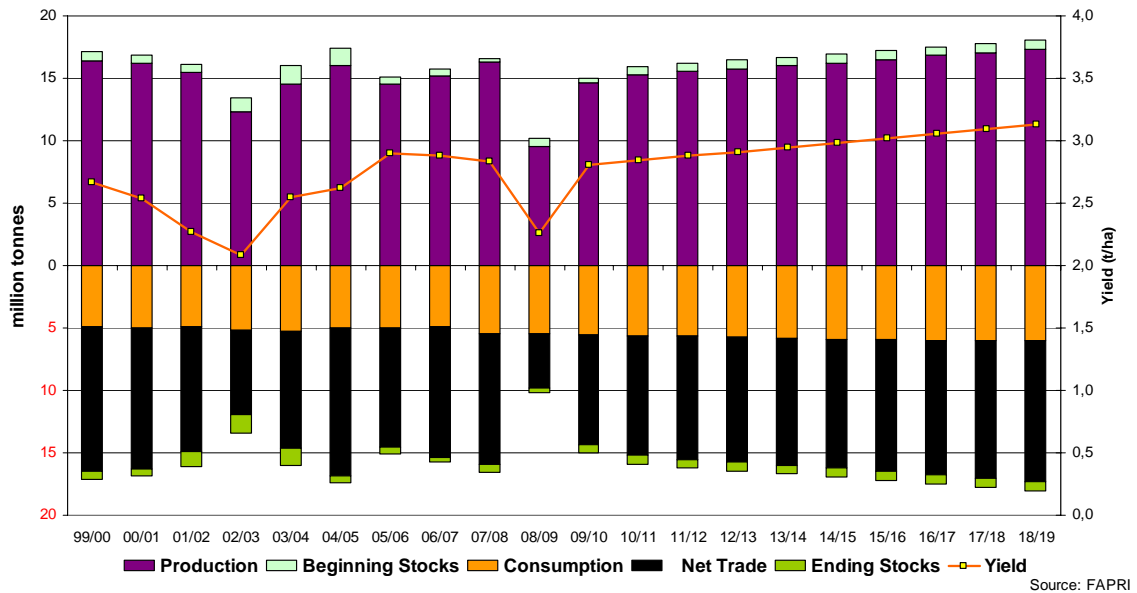
Graph 3.1.3 Comparison of wheat price projections (No.2 HRW FOB Gulf)



Main producers and users

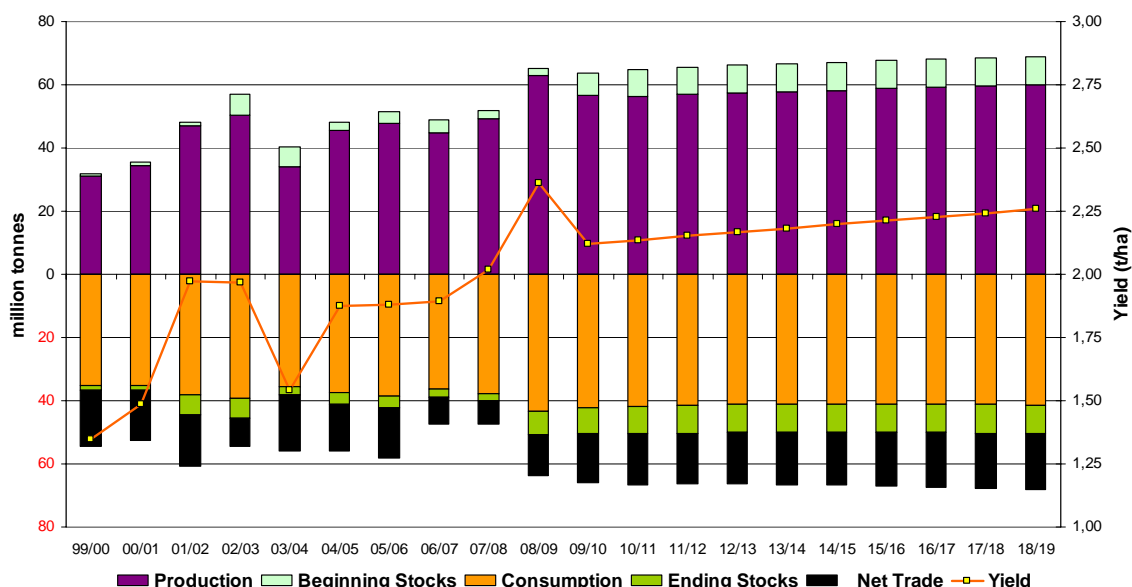
Argentina suffered severe drought during the campaign of 2008/09, which resulted in the lowest wheat harvest since the early 1990s. As a consequence, country's exportable surplus fell to just 40% of the average of the last decade. In the mid term, however, Argentina should continue increasing wheat production by about 2% per annum, both through yield improvements and area expansion.

Graph 3.1.4 Argentine wheat balance sheet



Argentina's crop problems were more than compensated by bumper harvest in other countries, most notably in the Black Sea area. Russia had a record wheat harvest of 63 million tonnes in 2008/09, thanks to significant increase in average yield. FAPRI assumes that Russian wheat yields will be much higher compared to historical levels, maintaining wheat production close to 60 million tonnes in the next 10 years. OECD-FAO estimations, however, are 10-15% lower as it assumes lower area and less yield growth.

Graph 3.1.5 Russian wheat balance sheet



Outlook for trade

World wheat trade (sum of net exporters) increased to almost 100 million tonnes in 2008/09 because of record supplies. FAPRI expects trade to grow twice faster than production, rising to 118.6 million tonnes by 2018/19.

Table 3.1.2 Key wheat traders

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 99/00 07/08	Current 08/09	Projected 09/10 18/19	Past 99/00 07/08	Current 08/09	Projected 09/10 18/19	Past 99/00 07/08	Projected 09/10 18/19
Net Exporters	87.884	98.992	109.857	100	113	125	100%	100%
United States	25.830	24.222	26.078	100	94	101	29%	24%
Canada	15.763	18.700	15.956	100	119	101	18%	15%
Russia	5.542	14.600	16.567	100	263	299	6%	15%
European Union	8.128	13.000	12.242	100	160	151	9%	11%
Australia	13.713	12.925	16.700	100	94	122	16%	15%
Ukraine	2.627	8.900	8.156	100	339	310	3%	7%
Argentina	10.160	4.295	10.244	100	42	101	12%	9%
China	83	1.970	1.089	100	2377	1314	0%	1%
India	888	50	306	100	6	34	1%	0%
Net Importers	87.884	98.992	109.857	100	113	125	100%	100%
Egypt	7.038	7.790	9.377	100	111	133	8%	9%
Brazil	6.252	5.800	6.270	100	93	100	7%	6%
Algeria	5.169	5.585	6.370	100	108	123	6%	6%
Japan	5.301	5.075	5.388	100	96	102	6%	5%
Iran	2.592	4.450	1.628	100	172	63	3%	1%
South Korea	3.487	4.020	4.551	100	115	131	4%	4%
Morocco	2.725	3.900	5.685	100	143	209	3%	5%
Mexico	2.682	2.550	3.395	100	95	127	3%	3%
Tunisia	1.333	1.400	2.132	100	105	160	2%	2%

Source: FAPRI

Net exporters

FAPRI forecasts that the traditional top-5 exporters (USA, Canada, EU, Australia and Argentina), joined by two emerging exporters from the Black Sea region will account for most of the world's net exports over the next decade. US should maintain its status as world's biggest exporter of wheat with average net exports of

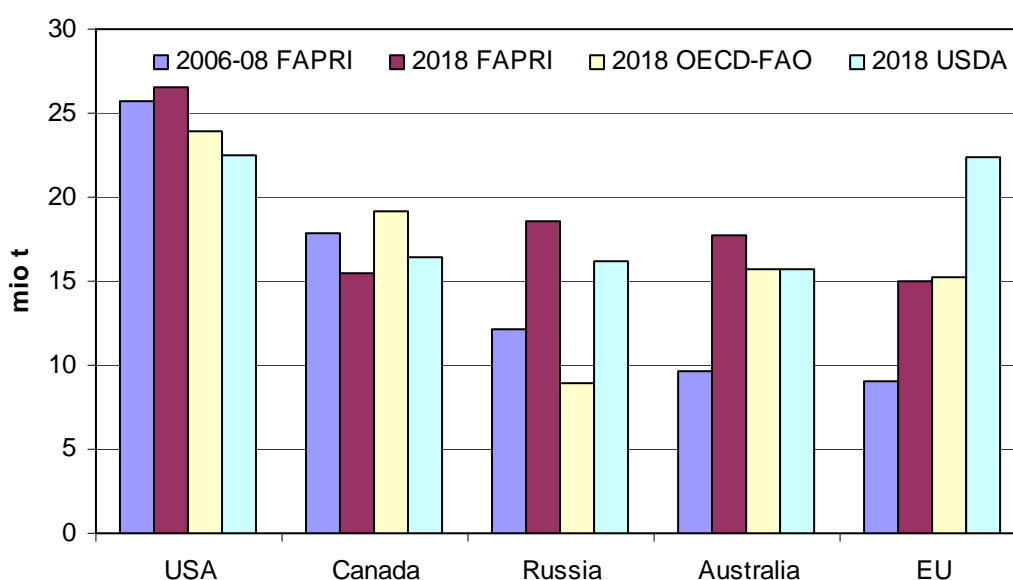
26 million tonnes over the next decade, while Canada, Australia and Russia should all be close to net exports of 16-17 million tonnes.

OECD-FAO projects much smaller exportable surplus for Russia by 2018/19 (see graph below) as it assumes faster development of domestic beef and pork industries and, as a consequence, higher demand for feed wheat.

USDA's projections for the main exporters are in general less bullish. However, there is a notable exception. USDA is more pessimistic about EU reaching wheat ethanol production targets, leading to much higher net exports (22 million tonnes for 2018/19) compared to other institutes (15 million tonnes for 2018/19).

India and China should remain small net exporters over the next ten years as Indian wheat production growth is expected to cover increasing demand, while China's production should be stable at 110 million tonnes (i.e. just above stable domestic use).

Graph 3.1.6 Wheat net exporters

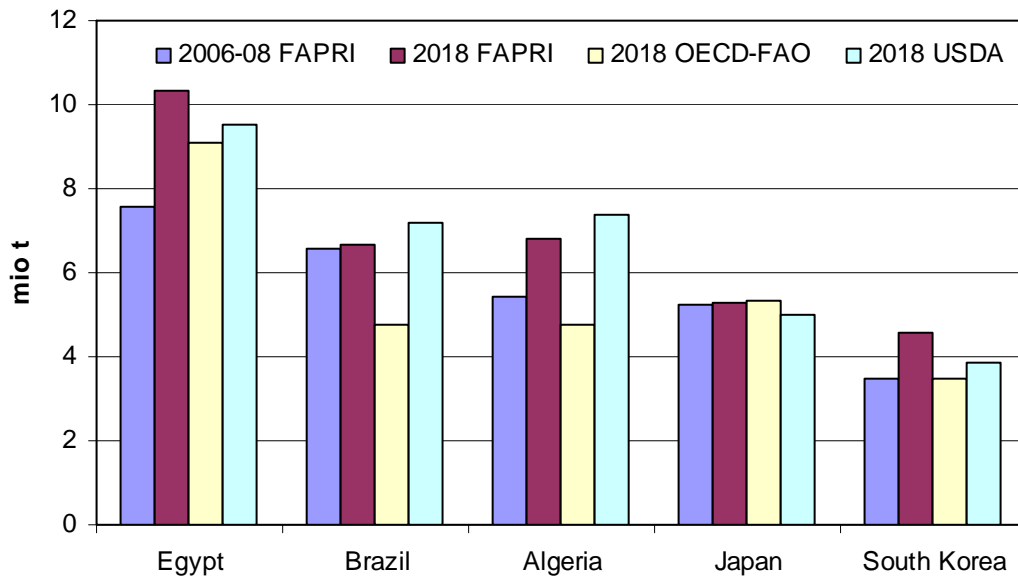


Net importers

According to FAPRI, about 70% of growth in net wheat imports in the next decade will come from Africa and the Middle East. Egyptian net imports of wheat are expected to rise by 22% to 10.3 million tonnes in 2018/19 in line with the increase in food use. Algerian and Moroccan net imports should increase to 6.8 and 6.1 million tonnes, respectively.

Brazil's wheat net imports are to reach 6.6 million tonnes by 2018/19, up from 5.8 million tonnes in 2008/09. Mexican wheat net imports should increase by over 1 million tonnes over the next decade to 3.9 million tonnes. Net imports of other Latin American countries should also increase by 1.7 million tonnes to 11.2 million tonnes.

Graph 3.1.7 Wheat net importers



3.2. Maize

Summary of recent developments

Prices of grains, having experienced dramatic surge and decline off their peak levels of 2008, remained rather stable in the first half of 2009. Maize price (US No.2, Yellow, U.S. Gulf) was increasing from August 2007 and reached the maximum of 294 USD/t in June 2008, following the floods in the Midwest of the United States (Corn Belt). Since then maize price dropped significantly and was traded at around 165-175 USD/t in the first half of 2009. The latest USDA data showed that US farmers planted more corn than expected, despite unfavourable weather conditions. Crop condition also appeared to be higher than average, increasing a possibility of a bumper harvest and driving prices downwards.

Outlook for world maize market

The following table compares projections carried out by leading forecasting institutes. Figures are indicated as indexes, the average for the past decade being the benchmark (100) for comparing averages over the projection period. As OECD-FAO does not provide specific outlook for maize, average figures for all coarse grains are used instead as a benchmark.

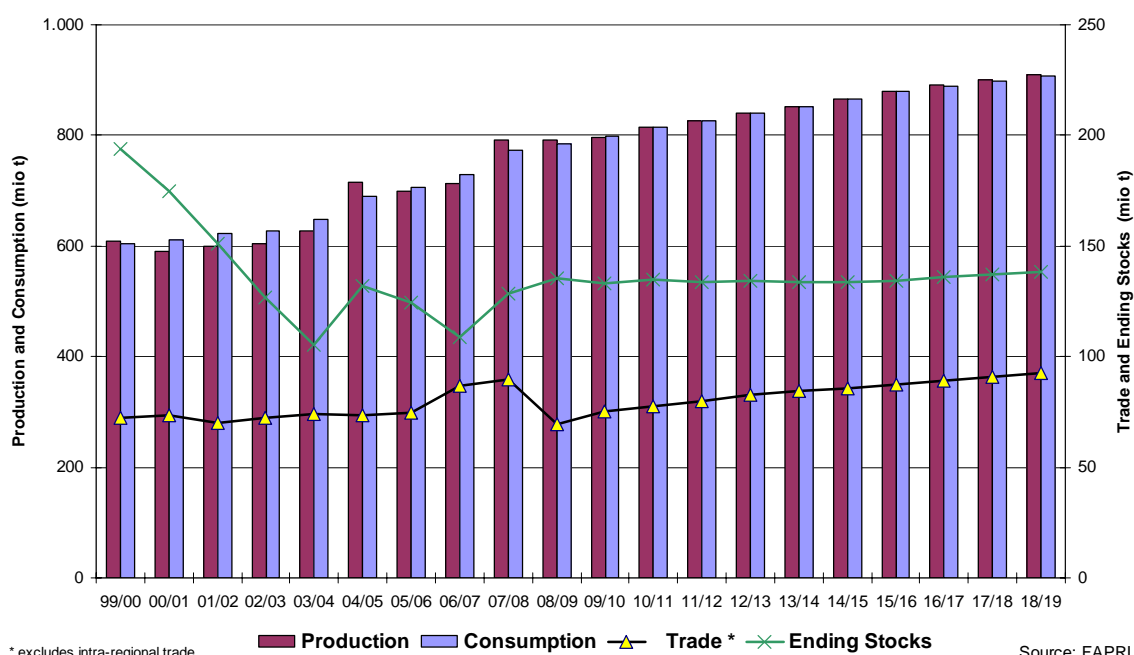
Table 3.2.1 Comparison of Outlook for world maize markets
(Index for averages over past and next decade)

	Production	Consumption	Exports
98/99 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	130	128	111
USDA	132	131	118
OECD-FAO (Coarse grains)	126	126	106

After a record increase in 2007/08 to over 160 million hectares, world maize area decreased by 2% in 2008/09 (mainly in the US), but, due to better yields, production was unchanged at 791 million tonnes. According to FAPRI, yield growth, coupled with area increases in the US and China, should push world maize production to over 900 million tonnes by the end of the projection period.

Maize consumption in 2008/09 increased to 784 million tonnes, but grew at the slowest rate in 5 years of 1.5%. The slowdown was mainly caused by lower domestic use in the US, where higher demand for ethanol production was more than offset by lower feed use. World maize consumption should further increase to 800 million tonnes in 2009/10, mainly because of growing food and industrial use, and should top 900 million tonnes in 2018/19. Most of the projected increase (55%) should take place in the food/industrial use, driven by sustained demand from ethanol producers. However, once US maize ethanol mandate has been reached in 2015, demand growth is set to slow down and come from the feed sector.

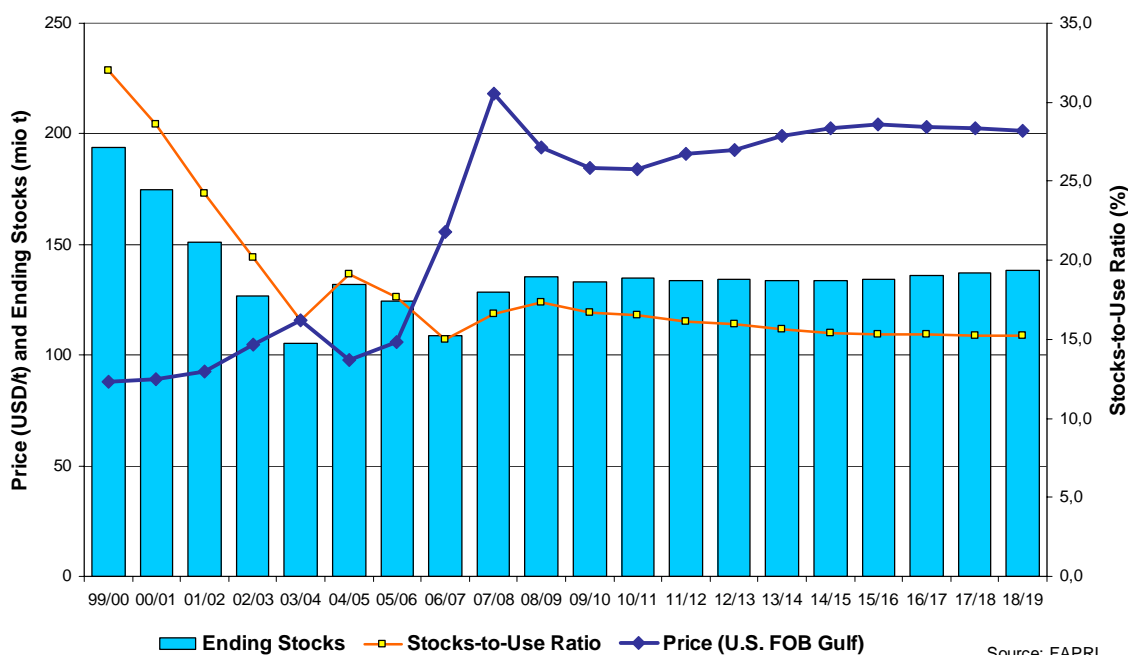
Graph 3.2.1 World maize balance sheet



World maize stocks-to-use ratio increased for the second year in a row in 2008/09 (albeit from very low levels) as feed demand switched to ample wheat supplies. In

future, according to FAPRI, ending stocks will grow at a similar rate as consumption, meaning stocks-to-use ratio will remain at low level throughout the projection period.

Graph 3.2.2 Maize stock-to-use and prices

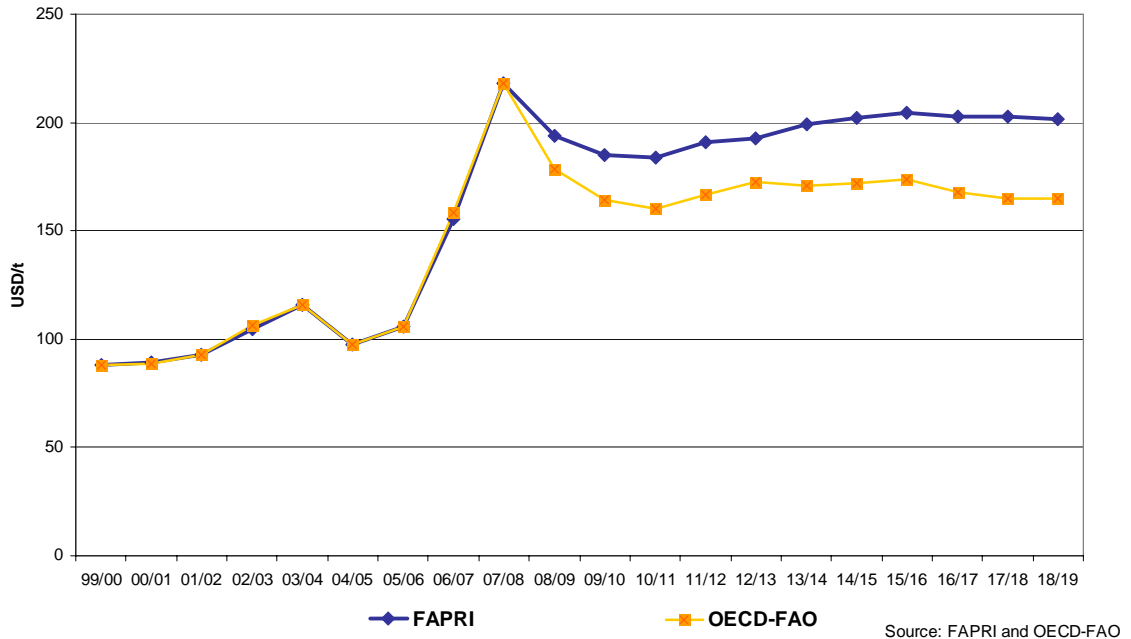


Source: FAPRI

The price of maize (FOB U.S. Gulf) was, together with oil, at its peak when the season of 2008/09 started. It then followed the general trend and decreased sharply in the second half of 2008 but since then remained stable and still well above historical levels. According to FAPRI, prices should slightly decrease in 2009/10 as production increases and demand is hampered by recession.

Over the medium term, the price of maize is expected to pick up until 200 USD/t, but remain stable, as demand for more ethanol in the US dries up after 2015. This represents an increment of 85% compared to the average for the past decade. OECD-FAO, which assumes deeper and longer recession, projects steeper downward price trend to 160 USD/t in 2010/11 and no significant rebound in the second part of the projection period.

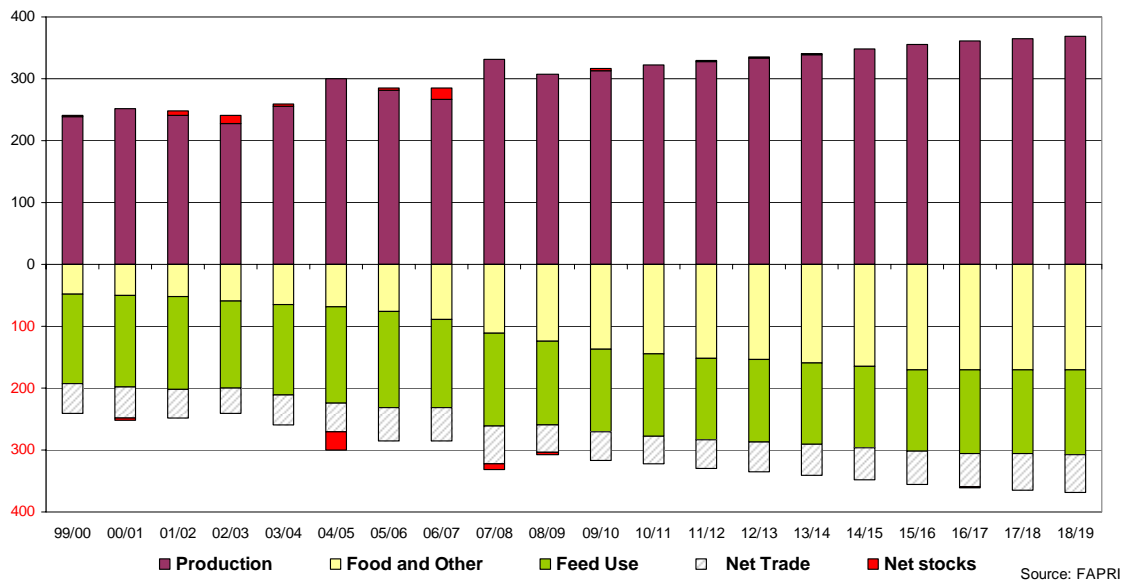
Graph 3.2.3 Comparison of maize price projections (FOB Gulf)



Main producers and users

The US is the biggest player in the world maize market in terms of area (about 20% of world total), production (40%), consumption (33%) and net exports (65%). According to FAPRI, the US should continue to dominate world maize market during the projection period.

Graph 3.2.4 US maize balance sheet



The US maize area in 2008/09 was 10% smaller than record 35 million hectares one year before, but should increase again in 2009/10. FAPRI projects that US maize area will continue to expand until maize ethanol production reaches its peak in

2015. After that any growth in (feed) demand should be covered by yield increase. Also, due to fast expansion of the ethanol sector, food/industrial use of maize should overtake that of feed in 2009/10 (137 vs. 134 million tonnes), with the gap reaching over 30 million tonnes 2018/19.

Outlook for trade

Table 3.2.2 Key maize traders

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	98/99 07/08	08/09	09/10 18/19	98/99 07/08	08/09	09/10 18/19	98/99 07/08	09/10 18/19
Net Exporters	76.299	69.601	84.563	100	91	111	100%	100%
United States	49.875	44.071	51.145	100	88	103	65%	60%
Argentina	12.081	9.000	14.899	100	74	123	16%	18%
Brazil	3.750	9.000	8.319	100	240	222	5%	10%
Ukraine	1.171	3.475	4.869	100	297	416	2%	6%
South Africa	686	2.300	2.954	100	335	431	1%	3%
China	7.267	400	-1.557	100	6	-21	10%	-2%
Australia	18	5	-27	100	28	-150	0%	0%
Net Importers	76.299	69.601	84.563	100	91	111	100%	100%
Japan	16.546	16.500	17.212	100	100	104	22%	20%
Mexico	6.276	7.900	10.303	100	126	164	8%	12%
South Korea	8.755	7.200	7.079	100	82	81	11%	8%
Egypt	4.682	4.000	5.849	100	85	125	6%	7%
Taiwan	4.646	4.000	3.582	100	86	77	6%	4%
Malaysia	2.363	2.490	2.579	100	105	109	3%	3%
Algeria	1.795	2.100	2.080	100	117	116	2%	2%
Canada	2.236	1.100	457	100	49	20	3%	1%
Israel	1.114	1.000	1.238	100	90	111	1%	1%
Vietnam	280	500	1.256	100	179	449	0%	1%
European Union	4.032	0	2.797	100	0	69	5%	3%

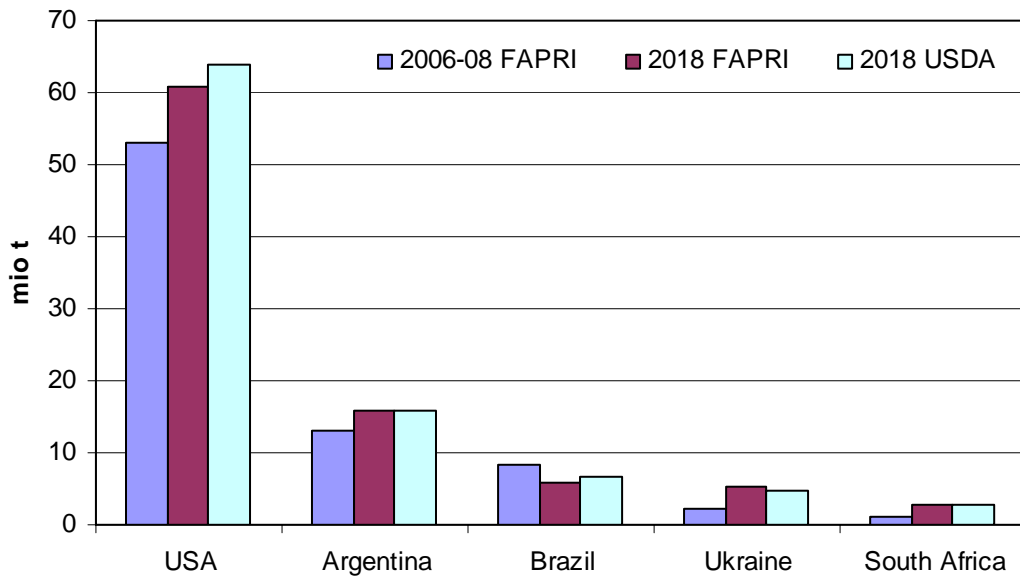
Source: FAPRI

Net exporters

In 2008/09, maize net trade was decreasing in line with the decline in supply and feed demand. The US and Argentina were losing export market shares, while Brazil, Ukraine and Russia gained. In 2009/10, maize net trade should increase, mainly driven by rebound in Argentinean exports. Over the next 10 years, maize net trade is projected to grow steadily at 2-3% p.a. as demand grows in major importing regions. According to FAPRI, the US continues to hold its dominant share in world maize trade with net exports increasing to over 60 million tonnes by the end of the projection. USDA is even more bullish, especially in the first half of the projection.

According to FAPRI, Argentina and Brazil should each be able to increase their production by about 10 million tonnes over the next 10 years. Growth in area and yields will raise Argentine net exports of maize by 6.8 million tonnes to 15.8 million tonnes in 2018/19. Brazil's export share should decrease because domestic consumption grows faster than production. Ukraine should gain some weight on the maize market, challenging Brazil as world's third biggest exporter.

Graph 3.2.5 Maize net exporters



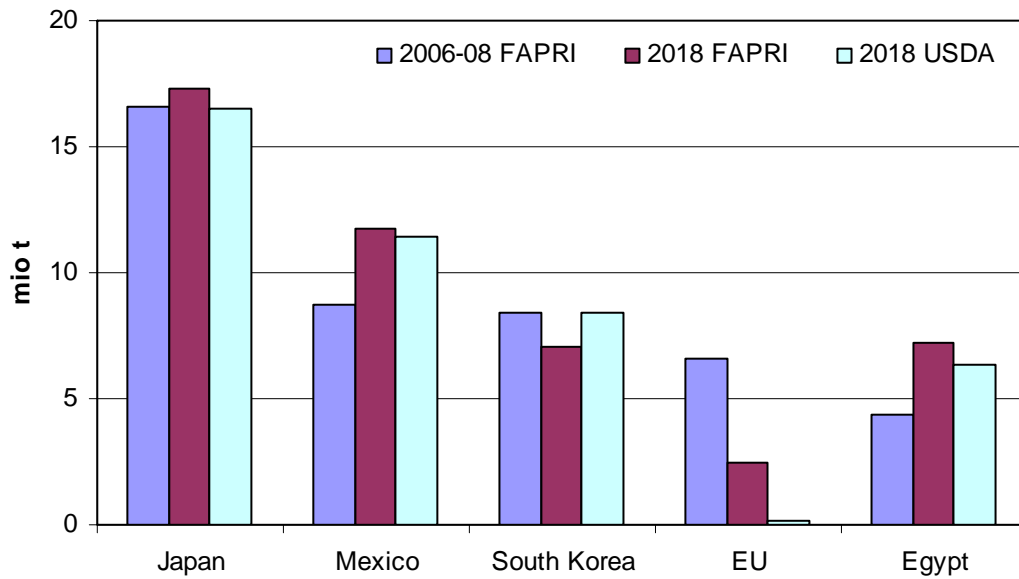
Net importers

The largest demand increase for maize comes from developing countries because of growth in their livestock industry and therefore in feed demand. Asian net imports increase by 8.5 million tonnes over the next decade, African - by 5.7 million tonnes (of which 3.2 million tonnes in Egypt). Among Latin American countries, Mexico maintains its role as a major importer, with net imports reaching 11.7 million tonnes (+3.8 million tonnes) in 2018/19.

China should become a net importer of maize in 2010/11, with net imports reaching 2.3 million tonnes in 2018/19. Growth in the livestock sector there increases feed use by 27.4 million tonnes over the next decade. Food and industrial use increases by 5.5 million tonnes over the projection period. Production growth meets only part of this growing demand, as the increase in maize area is limited.

According to FAPRI, the EU will remain a net importer of maize, although net imports should decline from about 3 million tonnes in the beginning of the projection period to less than 2.5 million tonnes in 2018/19.

Graph 3.2.6 Maize net importers



3.3. Barley

Summary of recent developments

Barley is the second most important coarse grain traded internationally, although far behind maize: the traded volume of barley is 1/5th of the traded volume of maize. Barley prices in general follow maize prices as they are substitutable as feed grains and are often tapped on in the environment of tight markets. Malting and feed barley producers normally enjoy different margins with malting barley drawing a price premium on the market. After feed barley prices increased significantly in 2007/08, they fell more than for other cereals in 2008/09 due to the combination of record production and competition from ample supplies of feed wheat. Latest figures point to a lower production in 2009/10, but supply should remain stable due to higher carry-in stocks. Demand should be strong as barley is priced competitively, thus leading to reduced stocks by the end of the season.

Outlook for world barley markets

The following table compares projections carried out by leading forecasting institutes. Figures are indicated as indexes, the average for the past decade being the benchmark (100) for comparing averages over the projection period. As OECD-FAO does not provide specific outlook for maize, average figures for all coarse grains are used instead as a benchmark.

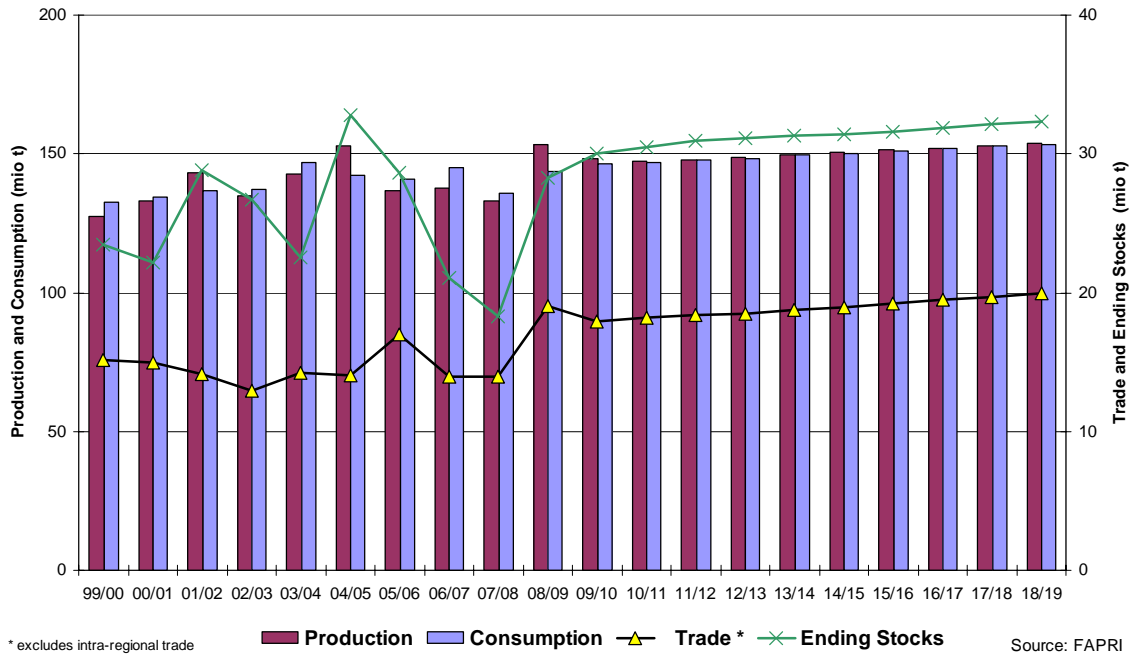
Table 3.3.1 Comparison of Outlook for world barley markets
(Index for averages over past and next decade)

	Production	Consumption	Exports
98/99 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	109	108	131
USDA	107	106	126
OECD-FAO	126	126	106
(Coarse grains)			

World total barley consumption, despite missing demand drivers like ethanol production for maize, should grow in utilizing cost advantages as a feed substitute for other cereals. FAPRI projects an average annual increase of 1 million tonnes in consumption from 144 million metric tonnes in 2008/09 to 154 million metric tonnes at the end of the projection period. USDA projections are more moderate, with an increase in total consumption to just 151 million metric tonnes. Despite increasing competitiveness of barley as a feed grain, more than half of growth in demand should come from non-feed uses, which currently consume about 1/3rd of total barley production. The average feed barley consumption over the next decade should be by only 3% higher than in the past period, whereas for food use average demand should increase by as much as 18% (FAPRI projections). The USDA projection foresees nearly identical rates of growth in feed and non-feed use, although feed use growth is concentrated in the second part of the decade.

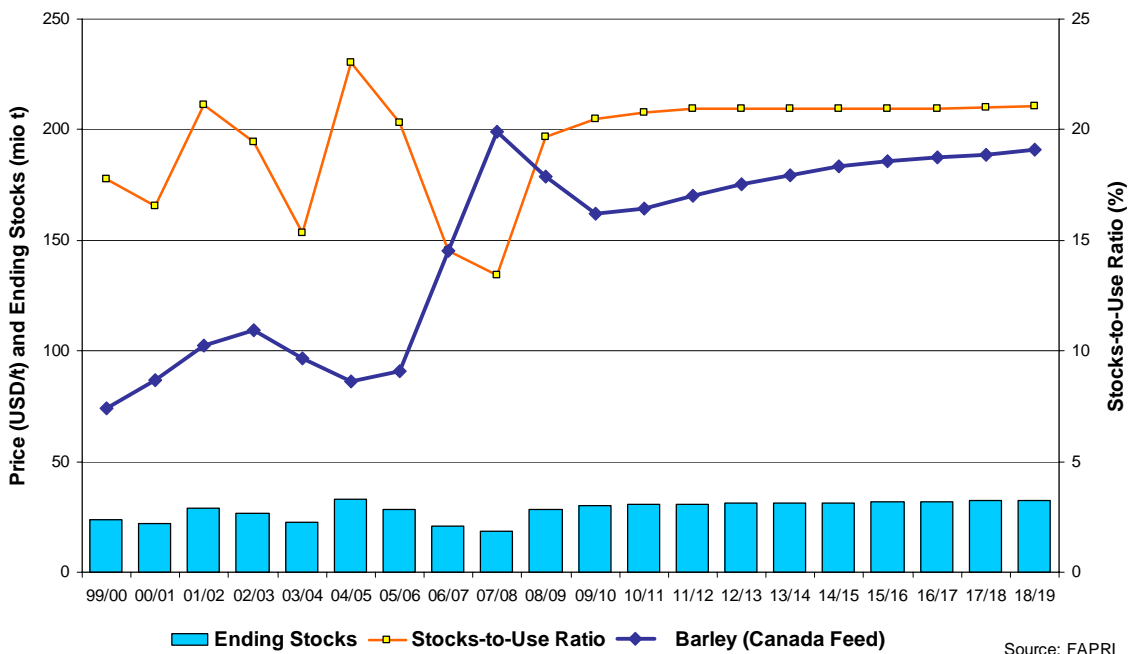
FAPRI projects world barley production to be below record level of 2008/09 up until the end of the projection period, but still slightly above expected use. USDA projections are a bit more conservative, but production should still top (slower) consumption growth. World barley acreage is stable fluctuating around 56-57 million hectares, with production slightly increasing due to yield improvements. Yields vary greatly across countries (ranging from around 1 metric ton per hectare in some of the African countries to over 4 metric tonnes in some countries of northern hemisphere), depending on agronomic and climatic conditions projections.

Graph 3.3.1 World barley balance sheet



Due to different aggregation (individual commodities vs. coarse grain complex) used across institutes, price projections are not directly comparable. However, both FAPRI and OECD-FAO project prices of coarse grains remaining on historically high levels. Barley prices decreased significantly (albeit from record levels) towards the end of 2008/09 and should continue this trend in 2009/10 as, despite lower production, higher carry-in stocks should calm buyers. Malting barley commands a price premium over feed barley but projections do not account for quality differences.

3.3.2 Barley: projected world prices and stocks



Main producers and users

Barley production in the world is dominated by the EU (share of 42% on average in the next decade), with total EU production showing a slight upward trend as yield gain outweighs reductions in area. Russia, Canada and Ukraine follow with world production shares of 13%, 8% and 7% respectively.

USDA projects that the malting barley premium is expected to influence planting decisions in Canada and Australia with malting barley's share of total barley area increasing during the projection period. US barley area follows a declining trend due to competition from other crops. Some decline is expected in Canada, as area shifts to rapeseed satisfying demand for biodiesel feedstocks.

Outlook for trade

Table 3.3.2 Key traders

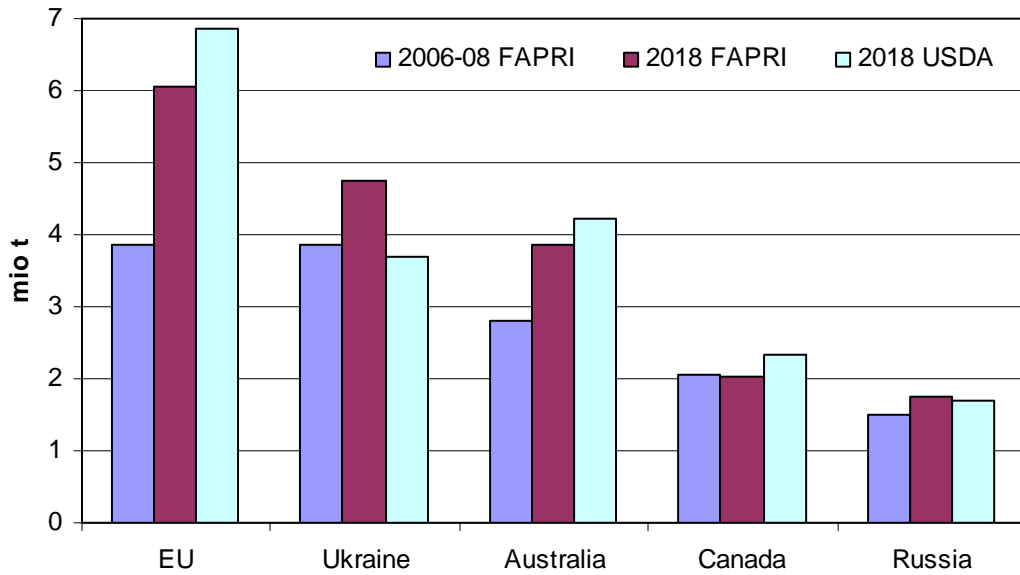
AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 98/99 07/08	Current 08/09	Projected 09/10 18/19	Past 98/99 07/08	Current 08/09	Projected 09/10 18/19	Past 98/99 07/08	Projected 09/10 18/19
Net Exporters	14.472	18.985	18.900	100	131	131	100%	100%
Ukraine	2.565	5.475	4.896	100	213	191	18%	26%
European Union	4.249	4.800	5.290	100	113	124	29%	28%
Australia	3.834	3.000	3.619	100	78	94	26%	19%
Russia	1.237	2.300	1.754	100	186	142	9%	9%
Canada	1.563	2.000	1.963	100	128	126	11%	10%
Argentina	302	950	911	100	315	302	2%	5%
Other CIS †	372	460	468	100	124	126	3%	2%
Net Importers	14.472	18.985	18.900	100	131	131	100%	100%
Saudi Arabia	6.344	7.300	7.636	100	115	120	44%	40%
Other Middle East	1.729	4.285	2.808	100	248	162	12%	15%
Other Africa	1.140	1.910	2.311	100	168	203	8%	12%
Japan	1.431	1.400	1.536	100	98	107	10%	8%
China	1.790	1.275	1.781	100	71	99	12%	9%
Other Latin America	342	355	457	100	104	134	2%	2%
Algeria	224	350	232	100	156	103	2%	1%
Israel	344	300	287	100	87	83	2%	2%
Brazil	185	250	283	100	135	153	1%	1%
United States	-225	218	30	100	-97	-13	-2%	0%
Mexico	85	125	135	100	147	159	1%	1%

Source: FAPRI

Net exporters

Historically, global barley exports have originated primarily from the EU, Australia, and Canada. In 2008/09, however, Ukraine turns to be the largest exporter with record net exports of 5.5 million tonnes (or half of production), whereas the EU comes second (FAPRI). Ukraine is projected to retain a quarter of trade among leading net exporters, although after 2011/12 its barley exports decline as domestic feed demand grows. EU, world's biggest exporter, should steadily increase net exports and top 6 million tonnes in 2018/19. USDA is even more bullish for EU, projecting net exports close to 7 million tonnes. However, it does not project any significant growth in Ukraine's exports. As Australia recovers from shortages caused by weather conditions, its net exports should reach about 4 million tonnes in 2018/19. Reduced barley production, due to area shifts, to rapeseed should limit growth of Canada's barley exports.

3.3.3 Barley net exporters

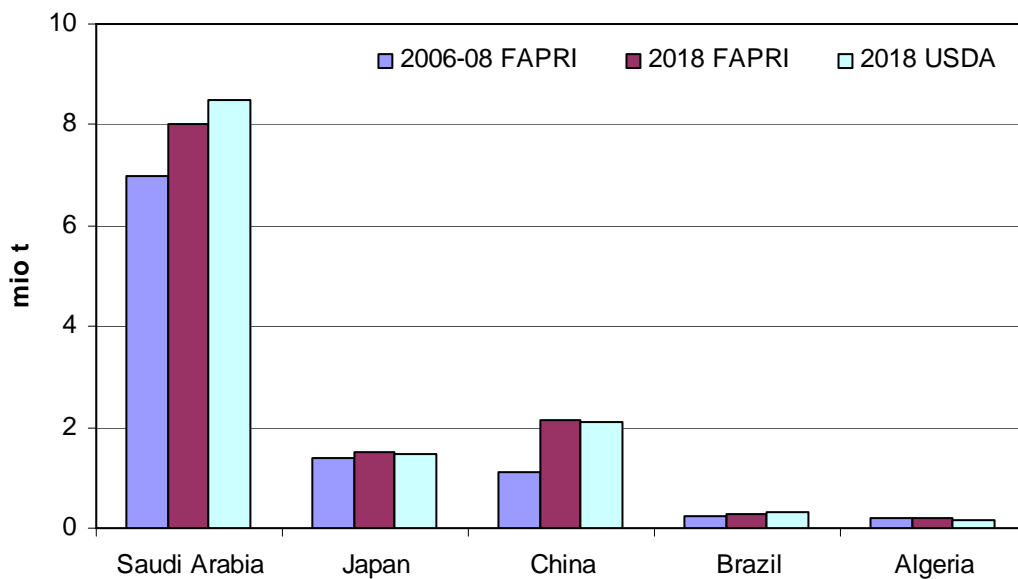


Net importers

Saudi Arabia maintains its position as the lead barley importer used primarily as feed for camels, goats, and sheep. Its share in the world barley imports is around 40%.

China imports mostly malting varieties for beer production. Its imports should double in the next 10 years and overtake Japan, which should continue to import about 1.5 million tonnes per annum.

3.3.4 Barley net importers



3.4. Sorghum

Summary of recent developments

Sorghum world trade volume in 2008/09 represented only 5.5% of the trade volume of maize (and is projected to stay at around 6% throughout the projection period). However, it remains the third most important internationally traded coarse grain. Sorghum prices in general follow maize prices as they are substitutable as feed grains and are often tapped on in the environment of tight markets. As such, sorghum prices followed rally and retreat of the last two years and are projected to fall slightly further in 2009/10. Still, prices are expected to remain high by historical standards. U.S. exports of sorghum decreased sharply in 2008/09 after a record season of 2007/08 cutting total world exports by half and bringing it back to historical trend.

Outlook for world sorghum markets

The following table compares projections carried out by leading forecasting institutes. Figures are indicated as indexes, the average for the past decade being the benchmark (100) for comparing averages over the projection period. As OECD-FAO does not provide specific outlook for sorghum, average figures for all coarse grains are used instead as a benchmark.

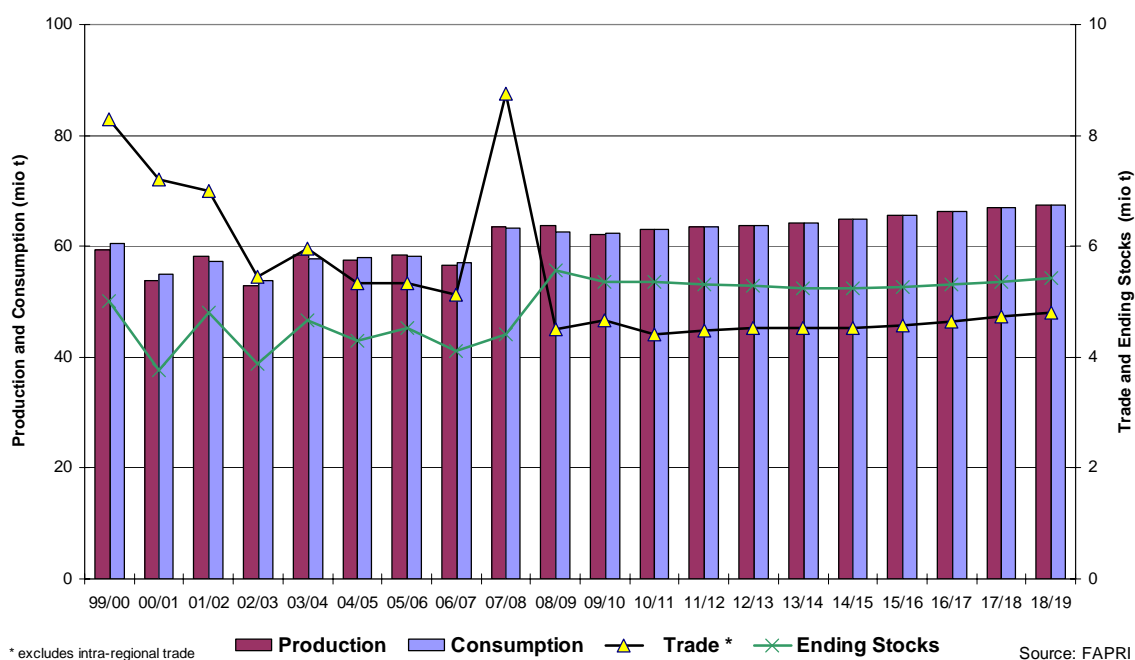
Table 3.4.1 Comparison of Outlook for world sorghum markets
(Index for averages over past and next decade)

	Production	Consumption	Exports
98/99 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	112	112	71
USDA	108	107	89
OECD-FAO	126	126	106
(Coarse grains)			

World consumption of sorghum, according to FAPRI, is projected to increase over the projection period by 5 million tonnes to 67.5 million tonnes. However, the increase is more significant when looked at through the lenses of comparing projected decade with the past decade. Average absolute consumption in the past decade was 57.8 million tonnes, while average absolute consumption in the upcoming decade is projected to reach 64.8 million tonnes. The increase is due to growing utilisation of sorghum for food and other use (driven by strong population growth) while feed utilisation has a decreasing tendency assuming normal production of other feed grains. World feed use of sorghum is projected to decrease further in the coming years from as much as 32 million tonnes in 1999/2000 to around 26 million tonnes during the projection period. Food and other use, on the other hand, after increasing steadily from 28 million tonnes in 1999/2000 to 35 million tonnes in 2008/09, should follow its upward trend until 41 million tonnes in 2018/19.

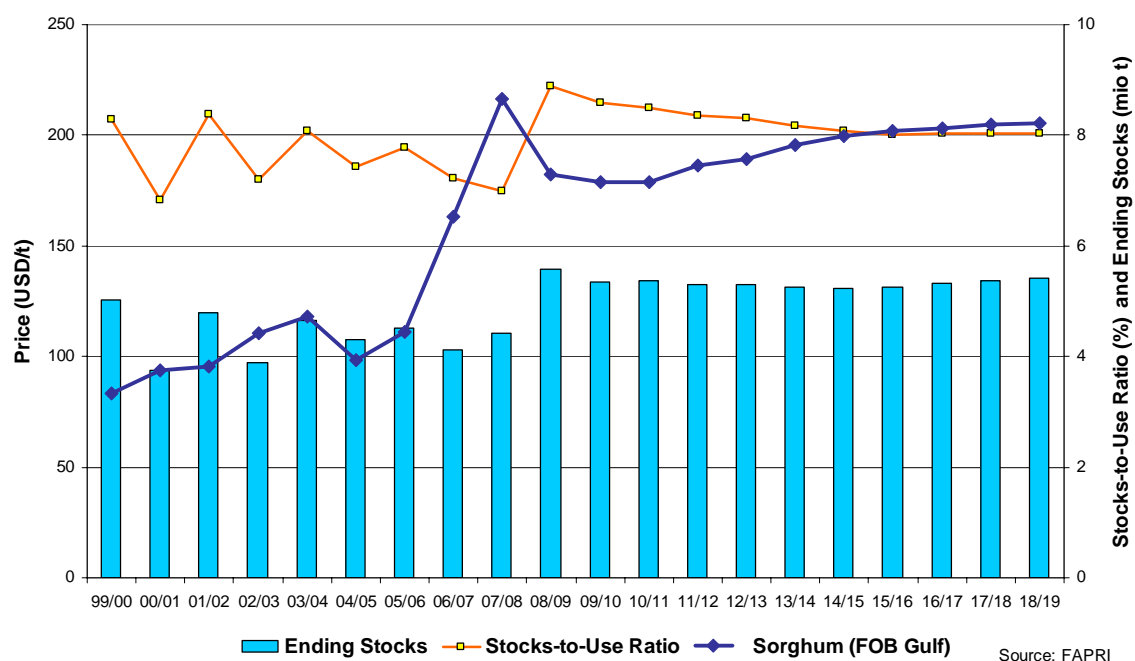
Sorghum area exhibits very little variation during the projection period. Production increases slightly due to yield improvements.

Graph 3.4.1 World sorghum balance sheet



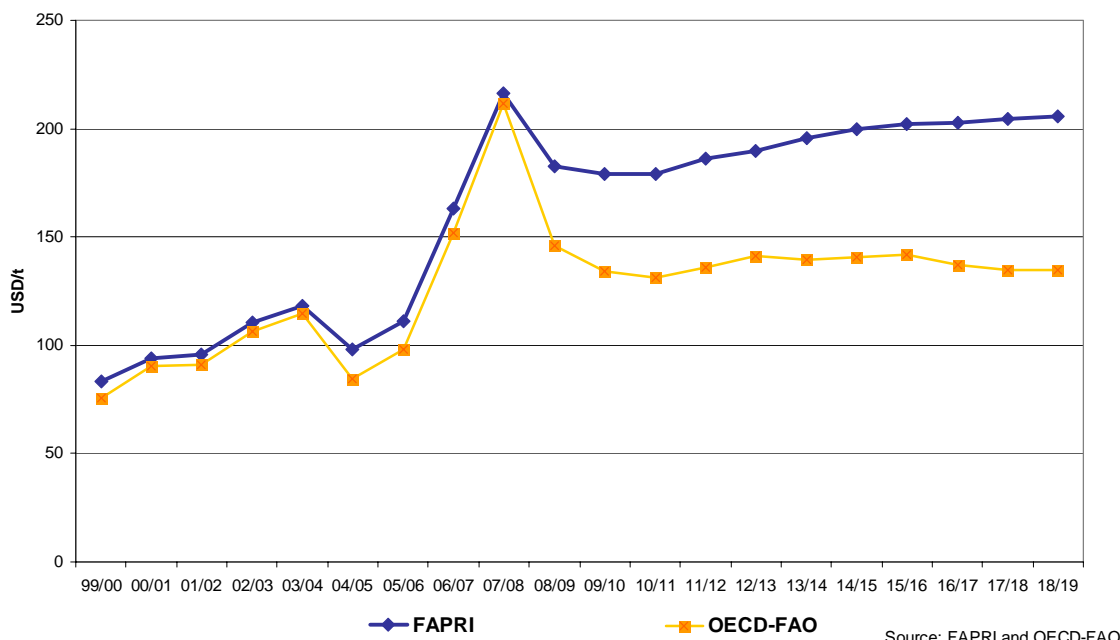
Due to different aggregation (individual commodities vs. coarse grain complex) used across institutes preparing projections price projections are not directly comparable. However, both FAPRI and the OECD project prices of coarse grains remaining on historically high levels.

Graph 3.4.2 Sorghum: projected world prices and stocks



FAPRI suggests that world sorghum price stays at its 2008/09 level of about 180 USD/t for another two years, before starting an upward trend. OECD-FAO expects much weaker prices of 130-140 USD/t throughout the projection period.

Graph 3.4.3 Projected world prices



Main producers and users

In 2008/09, the United States supplied 1/5th of the total world production of 64 million tonnes. However, this share is projected to gradually decrease to 16% due to competition for acreage from more profitable crops. Nigeria should instead emerge as the largest sorghum producer, with its share on world production increasing from 17% in 2008/09 to 19% at the end of the projection period. India and Mexico are keeping their shares stable at approximately 12% and 9%, respectively.

As it tends to be the case with other grains as well, sorghum consumption is mainly driven by population growth, especially in the countries where it is consumed as a staple. While per capita consumption in many developed countries is marginal (for example around 0.24 kg in Australia, 1 kg in Mexico) to average (around 5 kg per capita in India and Argentina) and often decreasing, per capita consumption in Nigeria is over 70 kg/year.

Although total sorghum use is roughly evenly split between feed and food use, it differs quite significantly among major consumers. In Mexico, almost 99% of sorghum is used for feed purposes, whereas in Nigeria (the biggest consumer) the same share goes to non-feed uses. The general trend is for food use to grow, but there are exceptions. In India, for example, 82% of sorghum in 2008/09 was destined for food use, but this share is projected to decrease to 80% at the end of the projection period. This development is in line with the assumption of increasing incomes decreasing the intake of grains for food.

Outlook for trade

World sorghum trade in 2008/09 decreased by almost half from an exceptional year before, passing under 5 million tonnes. It is expected to stay at around 4.5 million tonnes throughout most of the projection period, with a slight increase towards its end.

Table 3.4.2 Key traders

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 98/99 07/08	Current 08/09	Projected 09/10 18/19	Past 98/99 07/08	Current 08/09	Projected 09/10 18/19	Past 98/99 07/08	Projected 09/10 18/19
Net Exporters	6.496	4.502	4.592	100	69	71	100%	100%
United States	5.433	3.302	3.854	100	61	71	84%	84%
Argentina	593	800	373	100	135	63	9%	8%
Australia	383	300	207	100	78	54	6%	5%
Nigeria	50	50	50	100	100	100	1%	1%
India	13	25	78	100	199	619	0%	2%
South Africa	24	25	29	100	106	125	0%	1%
Net Importers	6.496	4.502	4.592	100	69	71	100%	100%
Mexico	3.358	2.000	2.081	100	60	62	52%	45%
Japan	1.565	1.350	1.426	100	86	91	24%	31%
Rest of World	1.352	825	717	100	61	53	21%	16%
Residual	134	227	227	100	169	169	2%	5%
Israel	85	100	141	100	117	165	1%	3%

Source: FAPRI

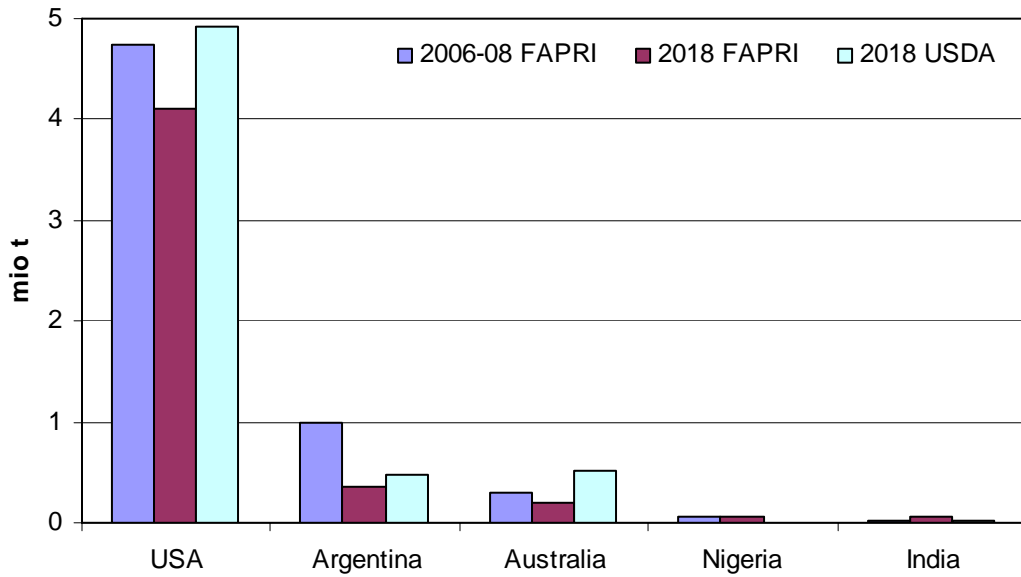
Net exporters

The United States is the largest exporter of sorghum, accounting for about 80% of world trade during the projection period. Its main export destinations include Mexico, Japan and the EU (since 2006).

The world's second largest exporter is Argentina, supplying mostly EU, Japan and Chile. Due to strong competition from oilseeds and maize, Argentinean exports stagnate before declining. According to USDA, Australia should overtake Argentina late in the projection period with net exports of 0.5 million tonnes as its production picks up with area and yield increase. FAPRI, on the other hand, does not project such growth, leading to decline in Australian net exports to 0.2 million tonnes.

Brazil has entered world sorghum trade market a few years ago and its export volume is projected to rise. In the Central-West region of Brazil, sorghum is increasingly planted during the dry season between crops of soybeans or cotton.

Graph 3.4.4 Sorghum net exporters

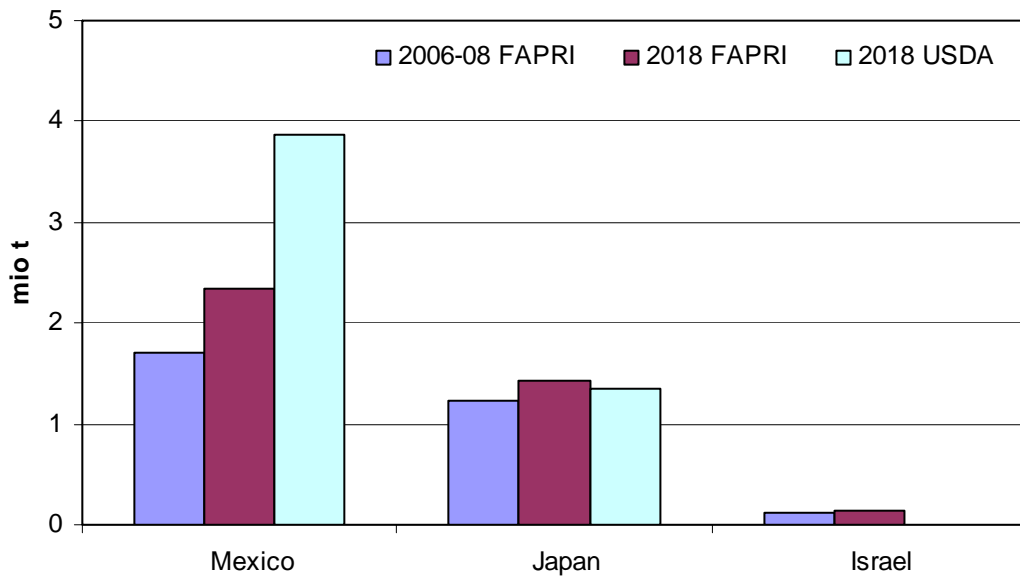


Net importers

Mexico and Japan are the leading sorghum importers, although their imports decreased in the last decade. Mexico's imports of sorghum are expected to increase, although USDA outlook is much more bullish on than FAPRI's. In any case, they both agree that Mexico will account for more than half of world's imports in the latter part of the projection, up from current share of 44%.

Japan's net imports, despite the downward trend of the last decade, should stabilize at 1.4 million tonnes throughout the next 10 years, but its share in the world should decrease to 20% as trade volumes grow.

Graph 3.4.5 Sorghum net importers



4. RICE

In recent years, world rice production has exceeded consumption. However, international prices soared in 2007/08 mostly as a result of a series of government interventions in the major exporting countries aimed at lowering domestic prices by export restrictions and stock controls. Soaring prices prompted a strong expansion in world rice cultivation in 2008/09.

Both Outlooks project that world rice consumption will increase steadily over the baseline (by 1% annually) faster than production growth (+0.8% annually). FAPRI projects that consumption will outgrow production from 2012/13, while OECD-FAO expects it to happen later from 2016/2017. Increase in consumption is driven by world population growth, as average per capita consumption continues to decline slightly, particularly in Asian countries, due to income growth and resulting diet diversification, urbanization and aging populations. World rice production grows slowly due to increase in yields (0.8% annual average), as world rice area declines marginally, according to both Outlooks.

Both Outlooks expect the rice trade to grow considerably (annually by 2.1% - FAPRI and 2.2% - OECD-FAO), as domestic production in the main importing countries (especially in Sub-Saharan and Middle-East countries) is not able to meet growing consumption. At the same time, declining per capita consumption and increased yields in the main exporting countries (Thailand, Vietnam) provide increased exportable surpluses.

Rice export prices (Thai 100% Grade B) are to remain high this season but then to weaken considerably in 2009/10 and 2010/11 as more exportable supplies become available. From 2011/12, the export prices will start increasing again, driven by strong consumption and trade, to reach 526 USD/t (FAPRI) and 412 USD/t (OECD-FAO) by 2018/19. Average rice prices over the baseline will be between 50-60 % higher compared to the average of the past decade.

As the high prices of 2008 demonstrate, government interventions are likely, as OECD-FAO stresses, to be an overriding factor in shaping international rice trade and prices.

Summary of recent developments

In 2008 international rice markets were characterised by high prices (the most dramatic price hike among all crops) due to export restrictions and stock controls employed by some of the major exporters (India, Egypt, Pakistan, China, and Thailand). Uncoordinated government interventions, aimed at controlling rising domestic prices, finally resulted in increased international rice prices and volatility. This pushed some of the main rice importing countries to relax their import restrictions and to buy higher volumes than in the past.

High international prices combined with strengthened government support prompted a strong increase in rice planting in 2008/2009 compared to the previous

years. Prices weakened significantly between June and December 2008 (from 870 USD/t to around 580 USD/t), although they remained high compared to historical levels. In the first part of 2009, prices fluctuated around 600 USD/t, first firming up but then declining on good new harvest prospects in the main producing countries.

Outlook for world rice markets

All projections indicate that world rice production, consumption and especially trade will be higher over the baseline period compared to the last decade (see table 4.1).

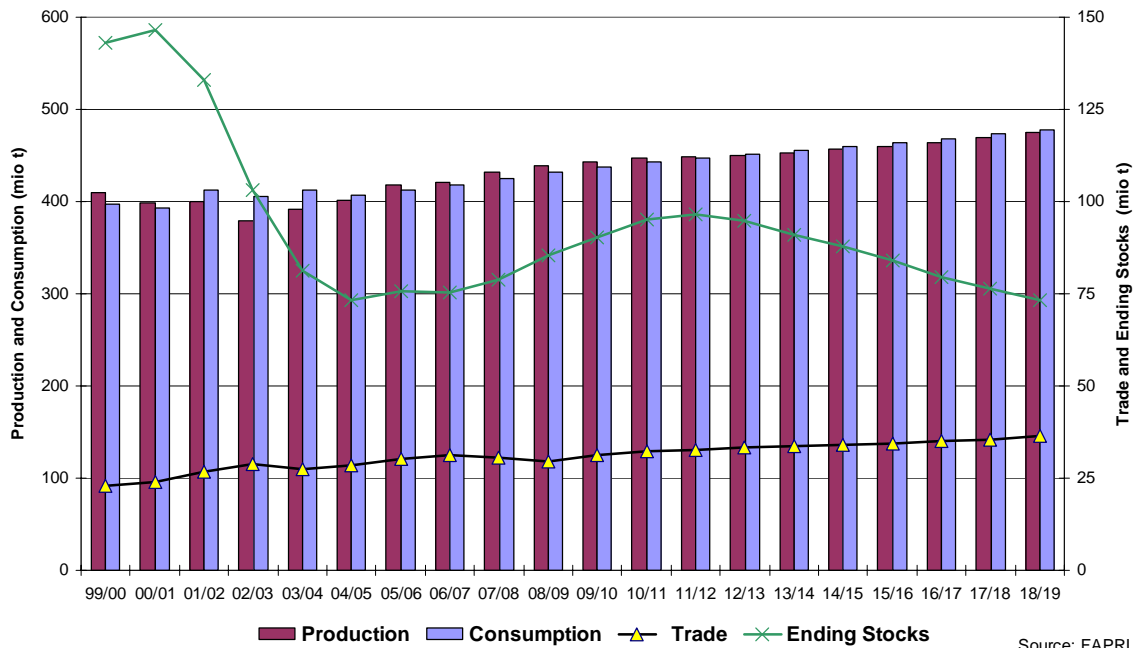
FAPRI forecasts average **production** over the next decade to be higher by 13%, compared to the average of the past decade. This would be minimally higher than the growth in **consumption** over the same period (12%). However, average production starts from a lower base than consumption. In this context, average world demand over the baseline would still be slightly higher than production, 458 million tonnes against 457 million tonnes. Annual world consumption is expected to outpace production in 2012/13 and continue this trend till the end of the baseline.

Table 4.1 Comparison of Outlook for world rice markets
(Index for averages over past and next decade)

	Production	Consumption	Exports
99/00 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	113	112	121
USDA	112	110	124
OECD-FAO	115	113	128

OECD-FAO projections are similar to those of FAPRI, though slightly more bullish. Average world rice production and consumption over the baseline period are to be higher by 15% and 13% respectively compared to the averages of the past decade. OECD-FAO also expects the average world demand to be higher than production (475.2 million tonnes compared to 474.8 million tonnes). However, it would happen only from 2015/16 onwards that annual consumption is higher than production.

Graph 4.1 World rice market

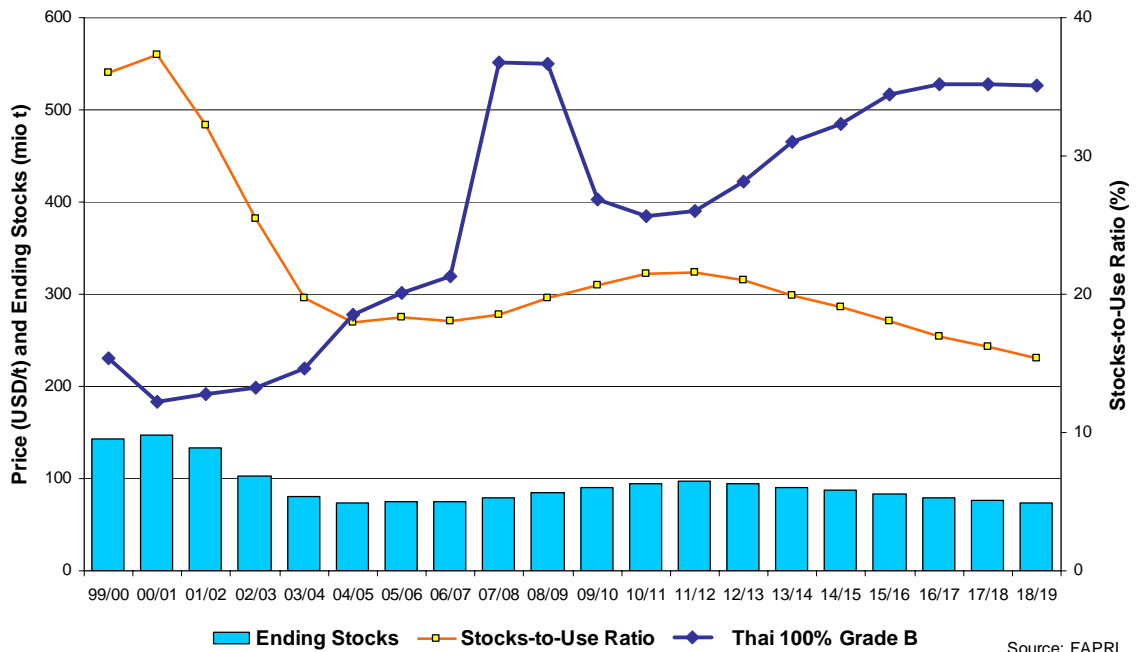


According to FAPRI, while total global rice consumption increases steadily over the baseline (at 1% annually, driven by population growth) average **per capita consumption** continues to decline slightly. This applies in particular to Asian countries, where rice constitutes a primary staple and where income growth and resulting diet diversification, urbanization and aging populations lower per capita rice consumption over the outlook period by 1kg (FAPRI) or as much as 2 kg (OECD-FAO). In addition, while per capita consumption declines in Asian countries, it rises slowly in other parts of the world, especially in Sub-Saharan Africa.

Both FAPRI and OECD-FAO project that production growth over the baseline will result from increased productivity. World rice **area** is set to decline marginally, while **yields** are expected to grow by 0.8% per year (FAPRI).

As a result of the excess of production over demand in the past, world **stocks** have significantly decreased since 2000, as illustrated in graph 4.2. They fell below 20% of uses in 2003/04. According to FAPRI, stocks will start decreasing again from 2013/14 along with consumption outgrowing production, and fell down to 15.3% of uses by 2018/19.

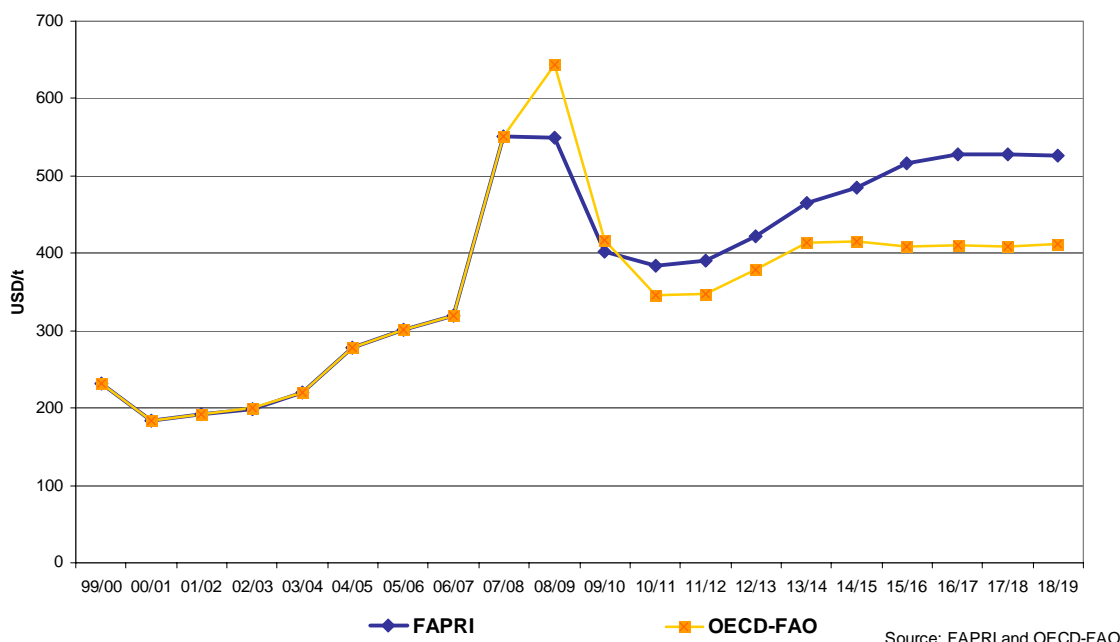
Graph 4.2 Prices and stocks on world rice market



FAPRI expects rice export **prices** (Thai 100% Grade B) to remain high this season (till the end of July 2009) at the level of 550 USD/t but then to weaken considerably in 2009/10 and 2010/11 as more exportable supplies become available. From 2011/12, the export prices should start increasing again, driven by strong consumption and trade, to reach 526 USD/t by 2018/19. According to these forecasts, average rice prices over the baseline should be 69% higher compared to the average of the past decade.

OECD-FAO projects a similar trend in rice export price developments, although of different magnitude. It expects export prices to finish higher this season and then drop more dramatically. The price recovery would be less strong than in the FAPRI baseline (412 USD/t in 2018/2019). Average prices would still be 44% higher over the projection period than in the past decade.

Graph 4.3 Comparison of world rice price projections



Main producers and users

When considering the top-10 rice producers and consumers, eight countries are located in Asia and account for more than 80% of world supply and demand. China and India already represent more than 50%. Brazil and the US complete the top-10 producers list, each with a share of 2%. The same countries are leading producers and users.

China is the world largest producer and user of rice, accounting for one third of supply and use. According to OECD-FAO, Chinese rice production stays at a higher level (1.7% on average) than consumption through the whole baseline period. Both production and consumption decrease minimally by 0.2% and 0.1% annually respectively to 128 million tonnes and 126.6 million tonnes in 2018/19. Thus, Chinese exports increase by 7.3% annually over the baseline.

By contrast, FAPRI forecasts Chinese rice consumption to outgrow production in 2012/13 and continue along this trend until 2018/19. Production is expected to decline by an average 0.5% annually over the whole projection period (to 128.2 million tonnes at the end of it). Consumption after growing till mid-baseline, is forecasted to decline onwards, as a result of economic growth and diet diversification, to 130.5 million tonnes in 2018/19 (this means practically no change over the whole baseline period). As a result, ending stocks also decline over the baseline by 31%, thus causing Chinese exports to drop by 39%.

In line with these developments for rice production and consumption, but also due to competition with other uses, the area under rice is expected to be reduced by 8% compared to 2008.

India ranks second, currently accounting for 22% of world production and 21% of consumption. Indian rice production increases over the baseline by 0.9% annually

and amounts to 107.7 million tonnes in 2018/19. Indian consumption, which remains below the production level through the whole baseline period, grows stronger (+1.2% annually), thus causing Indian exports to decline over the outlook period.

FAPRI projects Indian production and consumption to grow at the same rate (+1.3% annually) over the baseline, which allows Indian exports to continue increasing steadily.

Outlook for trade

FAPRI projects that global rice trade should grow by 23.7% over the baseline (+2.1% annually), reaching 36.3 million tonnes in 2018/19, which is nearly 16% higher than the record set in 2006. Despite this growth, rice remains thinly traded in the international markets relative to other grains, with the share of total trade to total consumption at 7.6% in 2018. OECD-FAO projections are slightly more optimistic with 24.4% increase over the baseline (+2.2% annually) in global trade to 37.9 million tonnes in 2018/19.

The following table indicates figures for the world's key rice traders. They were selected on the basis of the FAPRI averages for the decade 1999/2000-2007/08.

Table 4.2 Key rice traders

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	99/00 07/08	08/09	09/10 18/19	99/00 07/08	08/09	09/10 18/19	99/00 07/08	09/10 18/19
Net Exporters	24.770	26.882	31.065	100	109	125	100%	100%
Thailand	8.131	9.555	11.145	100	118	137	33%	36%
Vietnam	3.923	4.936	5.850	100	126	149	16%	19%
Pakistan	2.481	4.155	4.264	100	168	172	10%	14%
India	4.077	2.444	4.137	100	60	101	16%	13%
United States	2.738	2.658	2.354	100	97	86	11%	8%
Uruguay	709	850	1.074	100	120	152	3%	3%
Egypt	727	791	851	100	109	117	3%	3%
Argentina	344	546	714	100	159	207	1%	2%
China	1.135	956	656	100	84	58	5%	2%
Myanmar (Burma)	334	213	215	100	64	64	1%	1%
Net Importers	24.770	26.882	31.065	100	109	125	100%	100%
Philippines	1.521	2.416	2.756	100	159	181	6%	9%
Bangladesh	783	1.306	2.379	100	167	304	3%	8%
Nigeria	1.527	1.601	1.838	100	105	120	6%	6%
Iran	1.017	1.567	1.646	100	154	162	4%	5%
Saudi Arabia	1.078	995	1.459	100	92	135	4%	5%
Iraq	961	1.125	1.333	100	117	139	4%	4%
Ivory Coast	742	762	1.237	100	103	167	3%	4%
Indonesia	1.488	708	1.214	100	48	82	6%	4%
European Union-27	1.023	963	1.047	100	94	102	4%	3%
South Africa	696	856	1.005	100	123	144	3%	3%
Malaysia	658	876	836	100	133	127	3%	3%
Brazil	536	190	824	100	35	154	2%	3%

Source: FAPRI

Net exporters

According to FAPRI, the top 5 net exporters (with above 1 million tonnes of net exports in 2008/09) will keep their overwhelming (almost 90%) share in world net exports over the baseline.

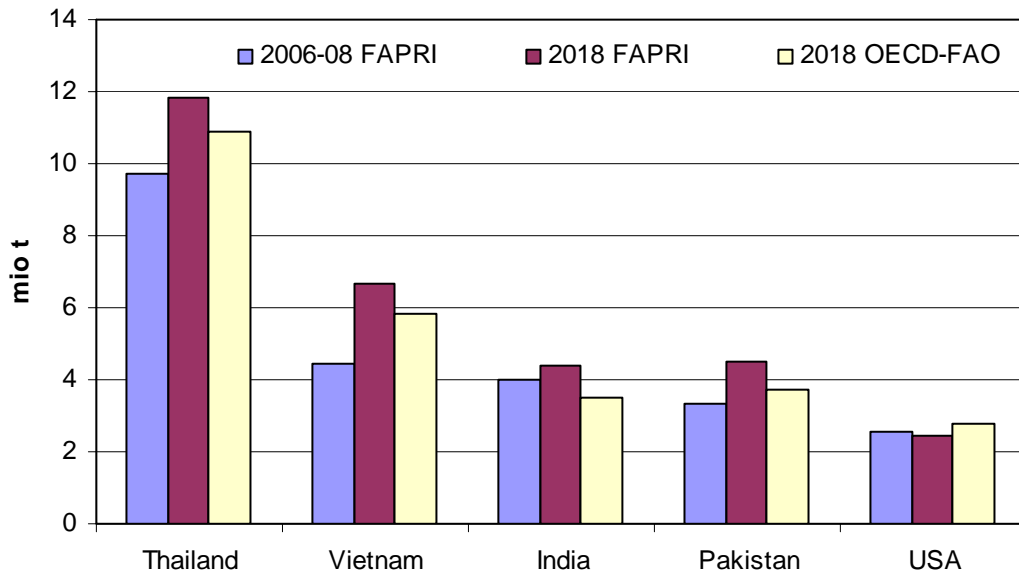
Both Outlooks agree that the top 2 net exporters Thailand and Vietnam will increase their exports steadily over the baseline, by 2.2% and 3% respectively (FAPRI) and 2.6% and 2.4% according to OECD-FAO. They experience declines in rice per capita consumption, which allows yield-based growth in production to outpace domestic consumption. These two countries' combined growth in net exports should constitute 60% of world net exports increase over the baseline, according to FAPRI. Also Pakistan, the Outlooks agree, will increase its net exports (FAPRI: +8.3%, OECD-FAO: +6% over the baseline) as growth in production exceeds domestic consumption.

The projections differ considerably as regards India's net exports future performance. OECD-FAO projects India's exports to decline by almost 2% annually over the baseline to 3.5 million tonnes in 2018/19 (as growth in consumption outpaces that of production by 0.3% over the baseline). FAPRI, for reasons similar to Thailand and Vietnam (decreasing per capita consumption with yield-based growth in production), projects that India net exports would grow by 6% annually to 4.4 million tonnes at the end of the baseline.

FAPRI is also more bearish about US future net exports, which it expects to drop by 0.8% annually over the baseline, as growth in domestic rice consumption outpaces that of production. OECD-FAO, while also forecasting domestic consumption to grow faster than production, projects US net exports to fluctuate narrowly over the baseline but still increase by 1% overall.

Also as regards the future of Chinese net exports, OECD-FAO and FAPRI differ on the pattern of the developments. FAPRI expects that despite the projected substantial contraction in rice area (roughly 8% over the baseline), China remains a rice net exporter as yields improve slightly and per capita consumption declines, although its net exports decline at 4.8% annually. On the contrary, OECD-FAO projects that Chinese exports should increase by 7.3% annually over the baseline, as production would be consistently higher than consumption.

Graph 4.4 Rice net exporters



Net importers

Trade is less concentrated on the import side, with the top-5 importers only accounting for 30% of world trade. Imports are spread over a large number of countries, mainly in Asia but also in Africa, South America and Europe.

Some differences exist between FAPRI and OECD-FAO projections as for the main rice net importers. FAPRI expects Philippines, despite its rice self-efficiency program, to remain the world's leading net importer over the baseline with its imports growing by 2.3% annually to reach roughly 3 million tonnes in 2018/19. OECD-FAO expects more modest growth in Philippines imports of 0.7% over the same period (helped considerably by a 12% growth from 2008 to 2009) reaching 2.1 million tonnes in 2018/19. Despite declining per capita consumption, strong population growth in Bangladesh and Indonesia prompts total rice consumption to expand in these countries, which is reflected in imports more than doubling over the baseline (7.2% and 7.9% annual increase). Despite increasing rice yields, Brazilian imports are expected to expand over the baseline, as growth in consumption exceeds production.

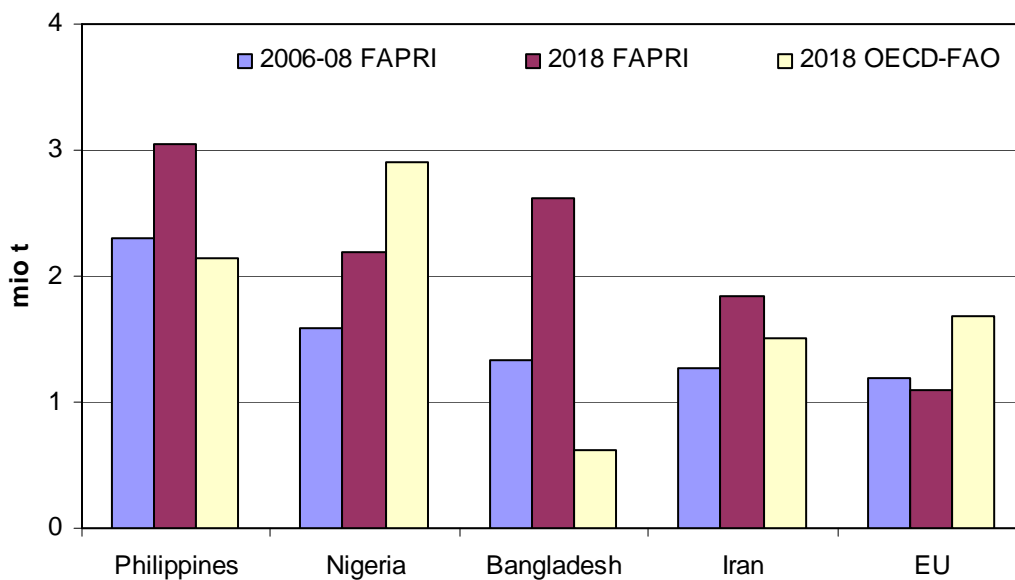
Both FAPRI and OECD-FAO expect Nigeria to grow its imports considerably, as its consumption continues to outstrip production. However, while FAPRI forecasts the increase to be of 3.2% annually and to reach 2.2 million tonnes in 2018, according to OECD-FAO the growth will be roughly of 5% per year and as the result Nigeria should overcome the Philippines as the leading world rice importer already from 2012/13 onwards.

OECD-FAO projections on Bangladesh and Brazil imports are substantially more bearish than FAPRI. After growing till 2010/11 in case of Bangladesh and till 2012/13 for Brazil, net imports of these two countries should start falling strongly onwards (declines of 5.1% for Bangladesh and 9.2% for Brazil between 2009/10 and 2018/19).

Both Outlooks also associate CAP reforms in the EU with slow growth (+0.4% FAPRI) or minimal decrease (-0.8%) in production and an increase in rice imports (+1.4% FAPRI, +3% OECD-FAO).

Rice imports in Iran and Saudi Arabia are expected to continue to expand, according to both Outlooks, since water availability remains a constraint for rice production in the region.

Graph 4.5 Rice net importers



5. OILSEEDS AND PRODUCTS

This chapter discusses soybeans, rapeseed and sunflower seeds. Oilseeds producers responded to increased prices of late 2007 and early 2008 by increased plantings. In 2008/09 soybeans were planted on approximately 98 million hectares (an increase of 7 million hectares compared to 2007/08). However, Argentine soybean production in 2009 suffered from drought which is (so far) the most important supply restricting factor contributing to upward pressure on soybean prices in 2009. Rapeseed is grown on approximately 30 million hectares and sunflower on 24 million hectares.

The growth in the oilseeds sectors is tightly linked to increased demand for biodiesel feedstocks, population driven increased demand for vegetable oil, and demand for oilmeals in livestock feed rations. However, the economic slowdown of autumn 2008 and spring 2009 tested the resilience of growth in the sector and drove prices down. The biggest demand side effect continues to come from China, accentuated by its decreasing trend in production.

All outlooks project growth in production, consumption and export of raw material as well as derived products. Trade patterns of raw material are influenced by the development of crushing capacity and efforts to capture potential value added in processing often in countries with limited capacity to expand oilseed production. Production in the oilseed complex is projected to increase in 2009/10 with supply and use being in closer balance, although stocks stabilise above their historical levels. Stocks are also projected to remain stable in the medium term under the assumption of normal weather conditions and steady demand. Although prices decreased from their peaks of 2007 – 08, they are not expected to return to their historical levels for the remainder of the decade.

5.1. Oilseeds

Summary of recent developments

The prices of oilseeds and derived products increased across the board in 2007/08 because of strong global demand for vegetable oils and declining stocks of raw commodity, peaking in summer 2008 (soybeans). A drop in the prices followed, to rebound in spring 2009. Nevertheless, expansion of production only occurs in countries which have policies in place that enable farmers to respond to higher world prices.

Oilseeds, just as other commodities, responded to elevated prices of late 2007 and early 2008 by increased plantings. In 2008/09 soybeans were planted on approximately 98 million hectares (an increase of 7 million hectares compared to 2007/08). Most of the increase came from increased plantings in the United States (circa 30 million hectares in 2008/09 compared to 26 million in 2007/08). Brazil plantings remained roughly the same at around 21 million hectares, while Argentine's increased slightly from 17 to 18 million hectares. China's and India's plantings enlarged as well but on average were around 9 million hectares. However,

Argentine soybean production in 2009 suffered from drought conditions which (so far) became the most important supply restricting driver in 2009 contributing to upward pressure on soybean prices. Rapeseed is grown on approximately 30 million hectares in total of which Canada, China, EU, and India each have about 6 million although plantings within countries have changed slightly on year-to-year basis. Sunflower is planted on total of 24 million hectares of which approximately 6 million in the CIS, and 4 million in each EU and Ukraine.

The growth in oilseeds sectors is tightly linked to increased demand for biodiesel feedstocks, population driven increased demand for vegetable oil, and demand for oilmeals in livestock feed rations. However, the economic slowdown of autumn 2008 and spring 2009 tested the resilience of the growth in the sector and drove prices down, at least until unfavourable weather conditions affecting a major exporting country contributed to upwards pressure on prices. Although crops such as wheat and rice are less vulnerable to economic slowdown, oilseeds are in a rather specific position. Vegetable oil, albeit considered to be a staple, is more income elastic. Dairy and meat exhibit higher income elasticity, and reductions in the herd sizes are transposed into reduced demand for feed.

The biggest demand side effect continues to come from China strengthened by decreasing trend in local production. Policies favouring oilseed imports and domestic crush in China further reinforce the pressure for raw material.

Outlook for world oilseed markets

The following tables compare projections carried out by leading forecasting institutes. Figures are indicated as indexes, the average for the past decade being the benchmark (100) for comparing averages over the projection period. The OECD-FAO baseline does not provide projections for individual oilseeds. Derived products are discussed later in the chapter.

Table 5.1 Comparison of Outlook for world oilseed markets
(Index for averages over past and next decade)

Soybeans	Production	Consumption	Exports
99/00 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	135	139	145
USDA	134	136	137
OECD-FAO (Oilseeds)	140	140	144

Rapeseed	Production	Consumption	Exports
99/00 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	145	147	180
USDA	146	146	180
OECD-FAO (Oilseeds)	140	140	144

Sunflower Seed	Production	Consumption	Exports
99/00 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	132	134	128
USDA	135	136	149
OECD-FAO (Oilseeds)	140	140	144

All outlooks project strong growth in production, consumption and export of raw material. Exports, especially in case of rapeseed, are projected to grow even faster than production and consumption. The trade patterns of raw material are influenced by developments of crushing capacity and efforts to capture potential value added in processing which often occurs in countries with limited capacity to expand oilseed production.

Oilseed production in 2007/08 marketing year decreased due to area shifts to grains with the most visible shift of soybean acreage to maize. Production recovery projected for 2008/09 materialised as producers responded to higher prices. Despite current supply challenges in Argentina caused by unfavourable weather conditions, slowing demand for oilseeds accompanying economic slowdown is likely to support recovery of stocks. Production in the oilseed complex is projected to increase in 2009/10 with supply and use being in closer balance, although stocks stabilise above their historical levels. Stabilisation of oilseed stocks is also projected in the medium term under the assumption of normal weather conditions and stable demand.

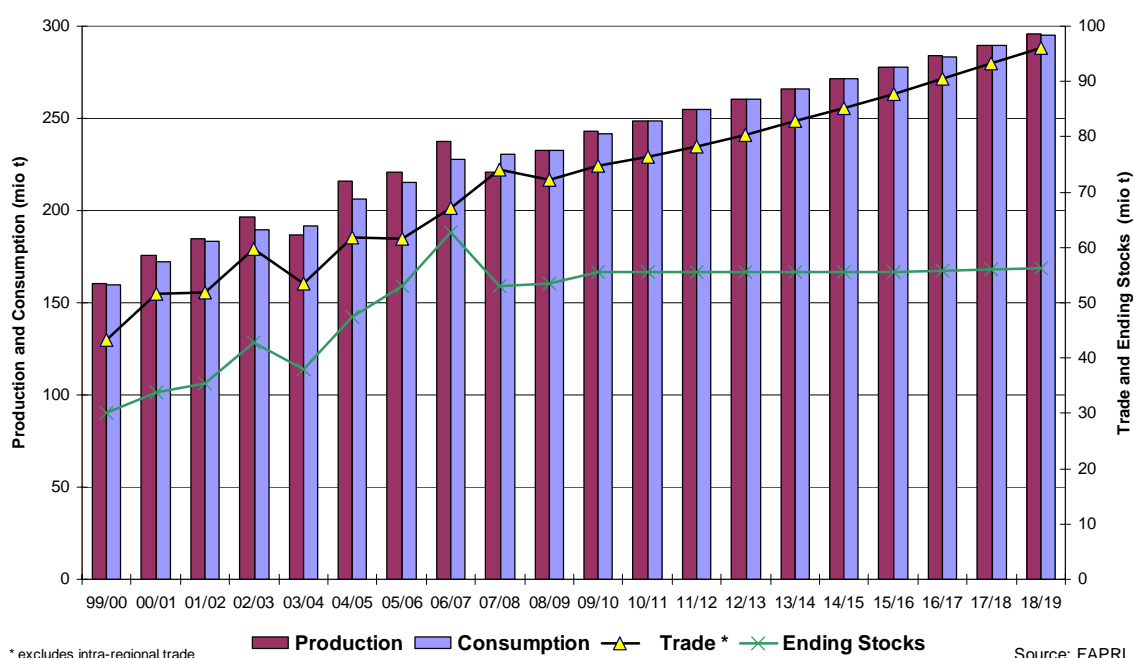
All baselines project prices of oilseeds to remain on historically high levels. World prices of oilseeds retreat from the historic highs of 2007/08 because of weaker demand although due to different aggregation (individual commodities vs. oilseed complex) price projections are not directly comparable.

FAPRI projects – keeping in mind normal weather conditions – that **soybeans price** will decrease over the 2009/10 planting season because of strong supply and lower meal values driven by weak demand from the livestock sector. However, a

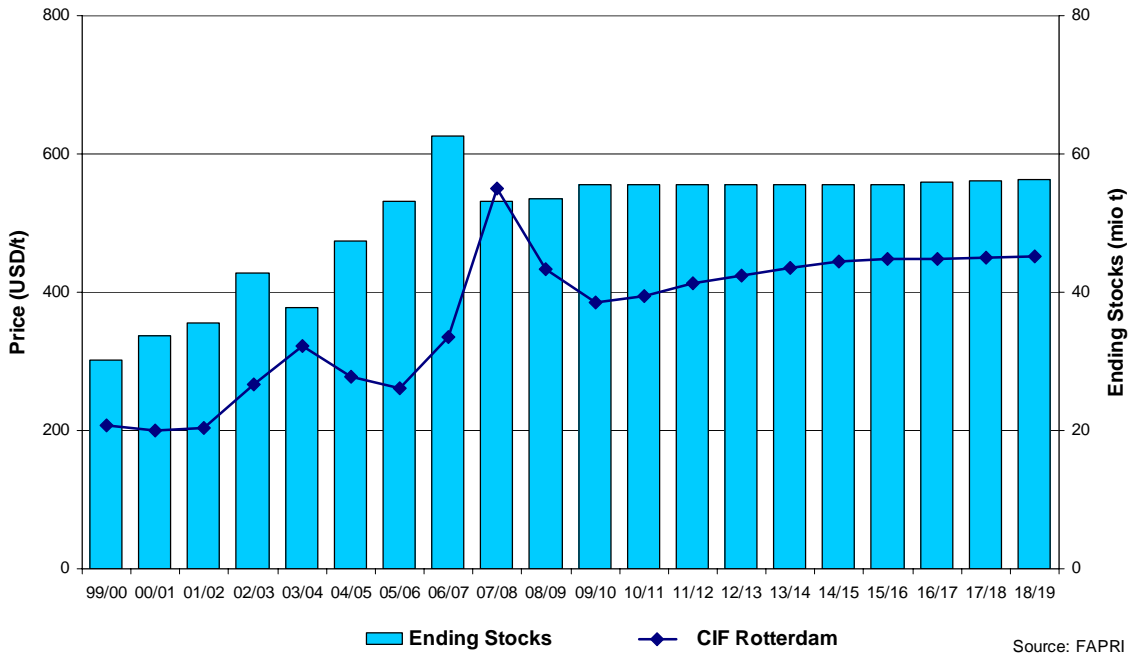
slowdown of area expansion in South America and United States coupled with strengthening soybean meal accompanying the economic recovery stabilize the soybean price for the remainder of the projection period. As it is the case for many other commodities, soybean price is not expected to return to its historical levels for the remainder of the decade despite area expansions and yield improvements and are negatively correlated with the carryover. In absolute terms, soybean price would steadily increase from the low of 385 USD/tonne in 2009/10 to 541 USD/tonne at the end of the projection period.

The **rapeseed and sunflower prices** are expected to decrease next season due large carryover and weaker demand but remain strong over the rest of the outlook period, averaging around 470 USD/tonne for rapeseed and 497 USD/tonne for sunflower.

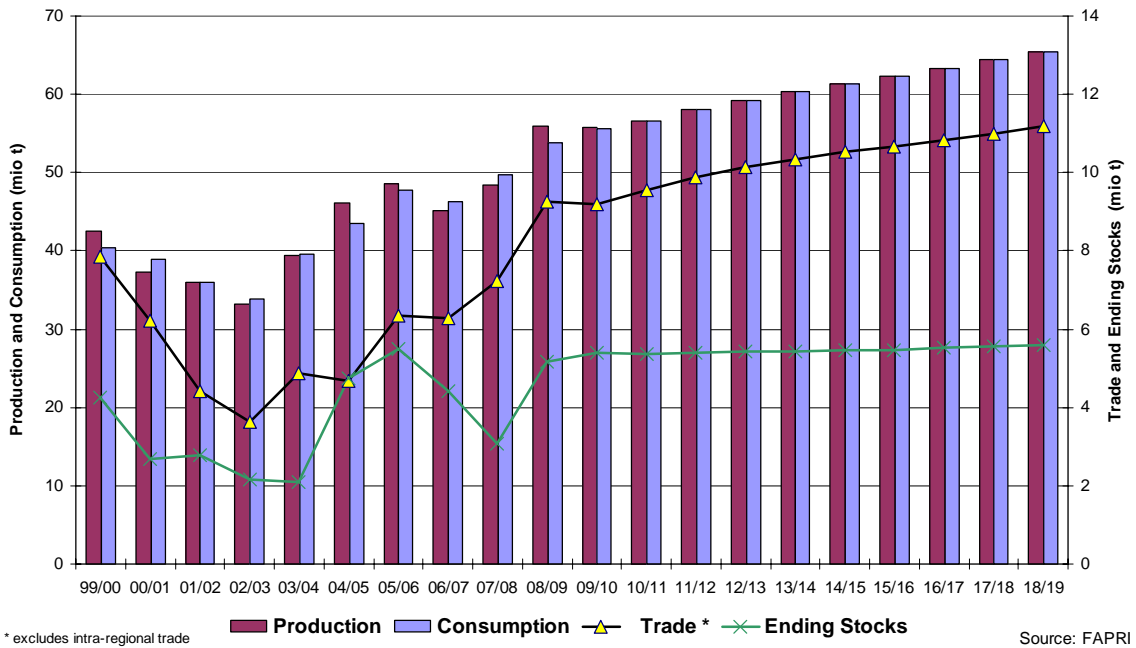
Graph 5.1 World soybeans balance sheet



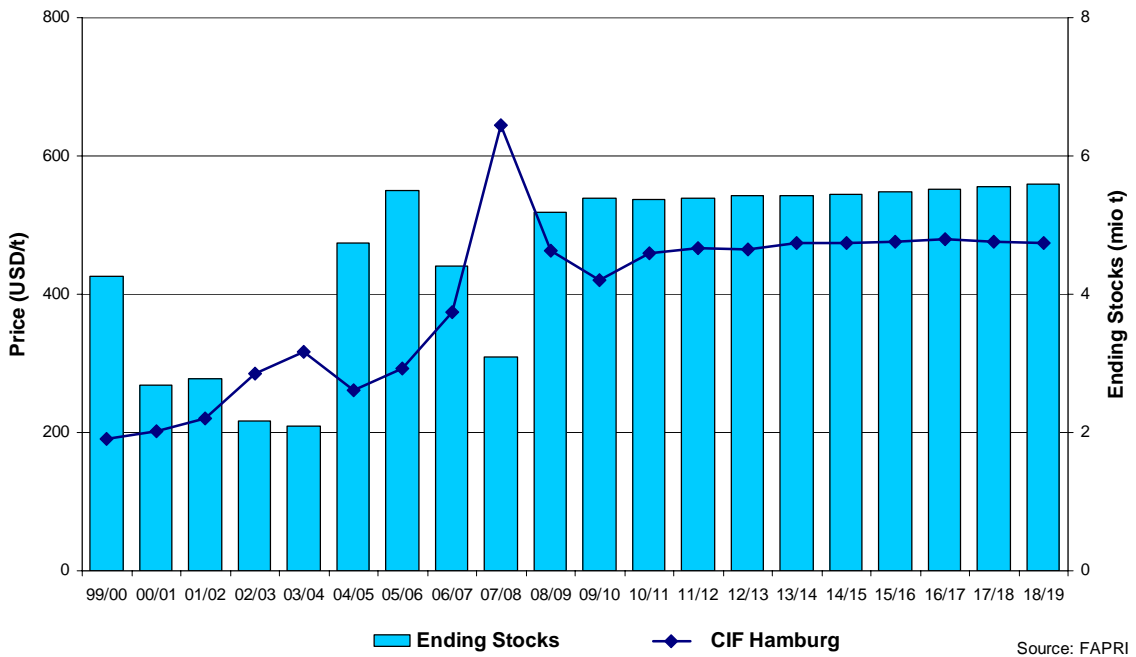
Graph 5.2 Projected world prices and stocks: soybeans



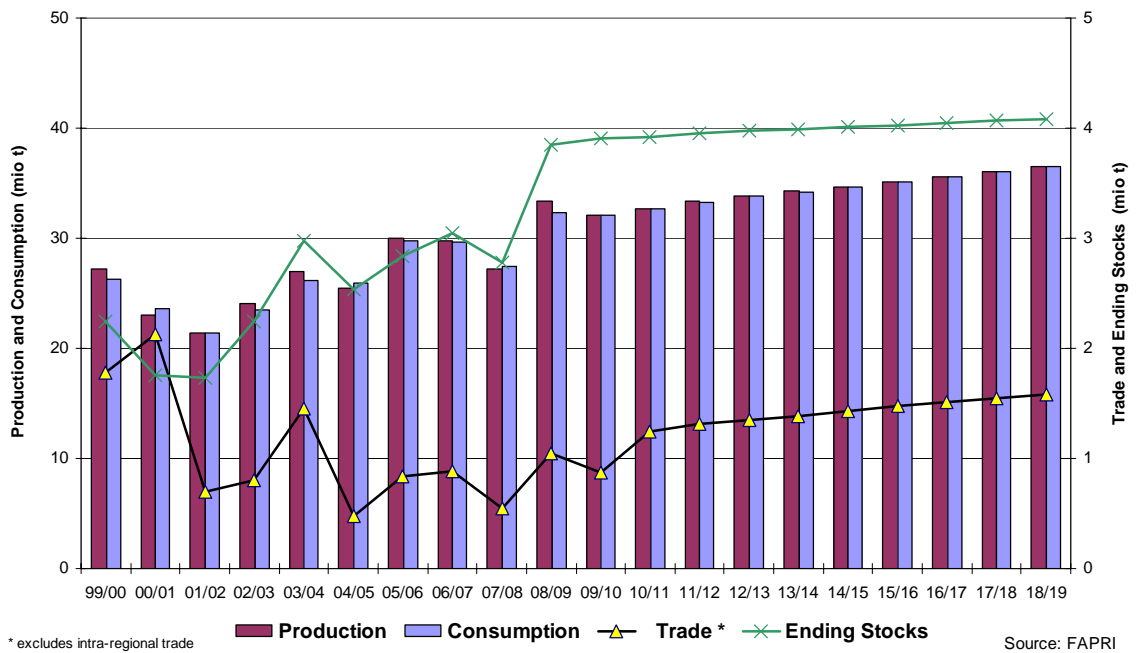
Graph 5.3 World rapeseed balance sheet



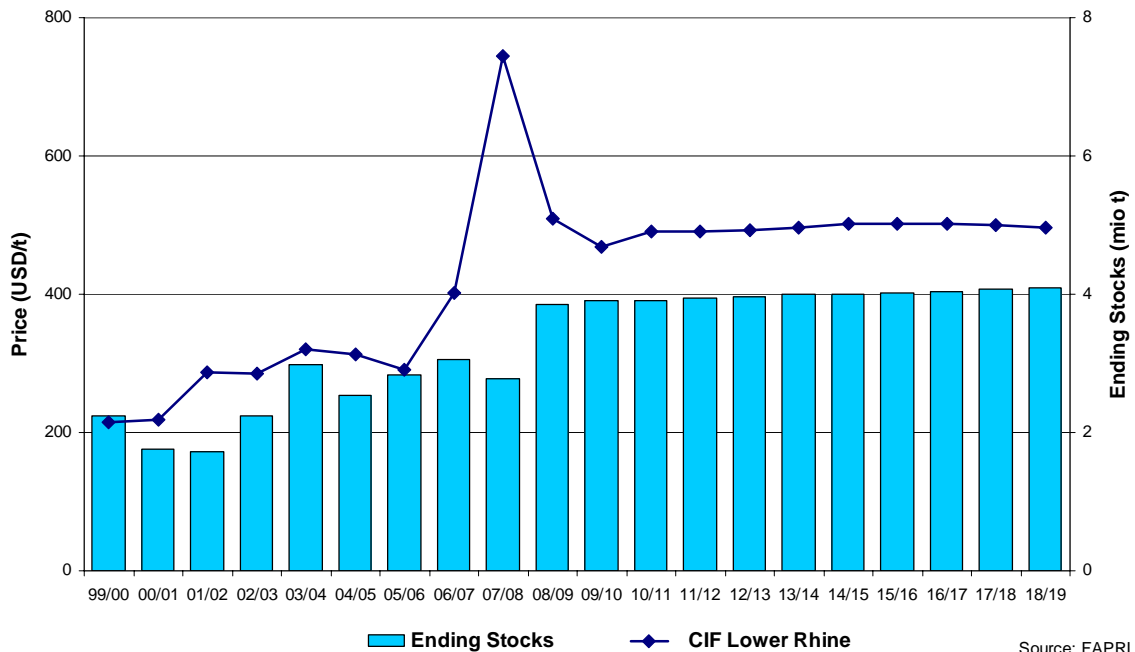
Graph 5.4 Projected world prices and stocks: rapeseed



Graph 5.5 World sunflower balance sheet



Graph 5.6 Projected world prices and stocks: sunflower



Source: FAPRI

Main producers and users

Although production declined in South America, due to weaker competition from maize in 2008/09 the US **soybean** production increased by 11% despite US yields being lower. With assumed return to normal trend yields and some area increases world production increases by 27% between 2008/09 and 2018/19. Most of the gains in production come from the gains in yields. World area is projected to increase from 98 million hectares to 111 million hectares in 2018/19 (FAPRI). Large increases (albeit at a rate lower than the rate of expansion in the past) are expected in Argentina (average annual increase 1.4%), Brazil (2.3%) and to a lesser extent India (1.5%) and Paraguay (3.9% but starting from a low base). Future expansion of soybean production in Argentina could be constrained by slower transformation of pasture land to cropland. World production reaches 295 million metric tonnes in 2018/19. Higher prices for vegetable oils across the board are bringing previously uncultivated land in Brazil, Indonesia and Malaysia into soybean and palm oil production. Even with area harvested in the United States stagnating around 30 – 31 million hectares, US remains the world's leading producer supplying 32 % of world's total production in 2018/19. Brazil stays close second with 28%, and Argentina third with 21%. Most of the soybean production is crushed for oil. The share of crush on the world level is projected to remain around 86 – 88%. Chinese production, on the other hand, continues to decline as a result of falling real domestic prices and expanding urban uses while economic growth increases domestic consumption, keeping China the world's biggest importer.

Area planted to **rapeseed** shows signs of expansion although at rates lower than in the past, increasing from 30 million hectares in 2008/09 (production of 56 million tonnes) to 32.4 million hectares in 2018/19 (65.4 million tonnes). Increase comes mostly from area growth in Australia, Canada, the CIS and Ukraine. The EU remains a strong producer, holding 36% of the market. Driven by weaker

competition from coarse grains, area increase in the EU continues to 7.3 million ha by 2018/19 which combined with yield improvements, increases production up to 23.7 million tonnes. Rapeseed crush continues its strong growth responding to demands for oil for biodiesel. China holds 21% production share over the next decade. Canada, a traditional export-oriented rapeseed producer, is expected to increase its harvested area to 6.9 million hectares from the current 6.49 million hectares.

Due to soaring harvested area in the EU, Ukraine and other CIS, the world **sunflower production** increased by 33% in 2008/09 despite a dramatic decrease of 22% in Argentina caused by area competition from other crops and adverse weather conditions. The area in Ukraine and other CIS increased by 18.5% in 2008/09 following weaker competition from coarse grains. Ukraine and other CIS maintain their position as the largest sunflower producer, producing 43% of world production over the next decade. Argentina maintains its position as the second leading producer in the world, contributing 5.4 million metric tonnes by 2018/19, following a recovery from adverse weather events and weakened competition from other crops. With differentiated tax scheme and ample crushing capacity, Argentina crushes more than 95% of its production domestically by an export-oriented crushing industry.

Sunflower area in the EU recovered by 8% to 3.7 million hectares in 2008/09 due to weaker competition from coarse grains. Larger area coupled with generous yields resulting from favourable weather increased the production by 46%. During the next decade the harvested area is projected to decrease from current high, and average around 3.4 million hectares. Likewise, yields of 2008/09 are unlikely to be sustained, leading to total production of 6.4 million tonnes at the end of the projection period. Nevertheless, domestic consumption growth outpaces production expansion, generating an increase in demand for imports. Similar to other oilseeds, approximately 90% of world sunflower production is crushed for oil.

Outlook for trade

Table 5.2 Key traders

Soybeans AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 99/00 07/08	Current 08/09	Projected 09/10 18/19	Past 99/00 07/08	Current 08/09	Projected 09/10 18/19	Past 99/00 07/08	Projected 09/10 18/19
Net Exporters	58.248	72.236	84.539	100	124	145	100%	100%
United States	27.912	29.701	31.740	100	106	114	48%	38%
Brazil	19.013	25.200	32.227	100	133	170	33%	38%
Argentina	7.226	11.865	12.934	100	164	179	12%	15%
Paraguay	3.008	3.985	6.209	100	132	206	5%	7%
Canada	592	1.480	1.425	100	250	241	1%	2%
Net Importers	58.248	72.236	84.539	100	124	145	100%	100%
China	21.086	35.550	46.581	100	169	221	36%	55%
European Union	15.625	14.120	13.758	100	90	88	27%	16%
Japan	4.537	4.000	3.696	100	88	81	8%	4%
Mexico	3.973	3.585	3.569	100	90	90	7%	4%
Taiwan	2.358	2.350	2.463	100	100	104	4%	3%
South Korea	1.356	1.260	1.289	100	93	95	2%	2%

Source: FAPRI

Rapeseed	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 99/00 07/08	Current 08/09	Projected 09/10 18/19	Past 99/00 07/08	Current 08/09	Projected 09/10 18/19	Past 99/00 07/08	Projected 09/10 18/19
AVG from to								
Net Exporters	5.727	9.249	10.330	100	162	180	100%	100%
Canada	4.003	5.700	5.894	100	142	147	70%	57%
Ukraine	209	2.247	2.956	100	1073	1411	4%	29%
Australia	975	745	815	100	76	84	17%	8%
Net Importers	5.727	9.249	10.330	100	162	180	100%	100%
Japan	2.202	2.350	2.538	100	107	115	38%	25%
European Union	-305	1.450	1.556	100	-475	-510	-5%	15%
China	1.115	1.049	1.478	100	94	133	19%	14%
United States	154	493	398	100	319	258	3%	4%
India	9	96	96	100	1067	1067	0%	1%

Source: FAPRI

Sunflower Seed	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 99/00 07/08	Current 08/09	Projected 09/10 18/19	Past 99/00 07/08	Current 08/09	Projected 09/10 18/19	Past 99/00 07/08	Projected 09/10 18/19
AVG from to								
Net Exporters	1.067	1.045	1.370	100	98	128	100%	100%
Ukraine	382	445	560	100	117	147	36%	41%
United States	114	119	99	100	105	87	11%	7%
China	74	113	140	100	152	189	7%	10%
Argentina	113	75	150	100	66	132	11%	11%
Net Importers	1.067	1.045	1.370	100	98	128	100%	100%
Rest of World	354	428	836	100	121	236	33%	61%
Residual	157	367	367	100	234	234	15%	27%
European Union	501	250	167	100	50	33	47%	12%

Source: FAPRI

Global trade in oilseeds has risen rapidly since the early 1990s, and outgrew trade in wheat and also total coarse grains. World trade in soybeans, rapeseed, and sunflower seed grows by 32%, 21%, and 52% (starting from a low base), respectively, over the next decade. Across the oilseed complex exports are dominated by a few countries but importers are diverse although China and the EU continue playing an important role.

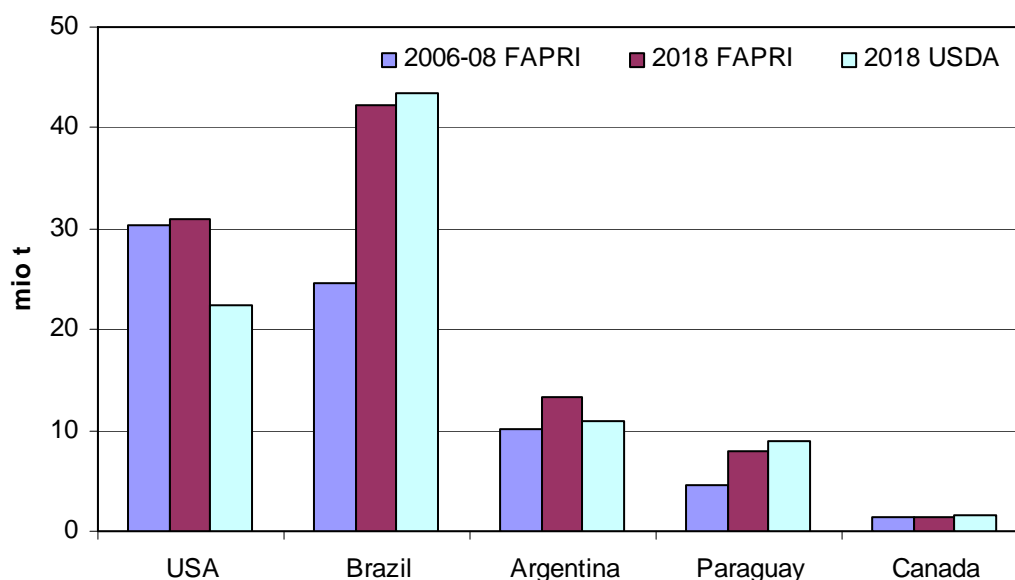
Economic slowdown affected trade although it is not possible to say how much of the decrease is due to falling demand and how much due to limited availability of trade financing. A partial recovery and further expansions are expected, although its pace depends on the speed of economic recovery. Nevertheless, continuing demand for vegetable oil and protein meal, particularly in China and other Asian countries, is expected to maintain trade in soybeans and derived products well above that of wheat and coarse grains throughout the next decade.

Net exporters

Brazil and the U.S. dominate soybean exports. Although world **soybean** exports declined in 2008/09, they are projected to increase from 72 million tonnes in 2008/09 to 96 million tonnes in 2018/19. This 32% increase is due to higher projected exports from Brazil (increase by 67%) and Paraguay (doubling of exports to 8 million tonnes, albeit from a small base). US remains the world's biggest producer although in absolute terms its exports remain stabilized at around 30 million tonnes as more soybeans are processed domestically and competition from South America limits US export growth. In relative terms, the share of US on total exports decreases from 42% to 32% at the end of the projection period. Brazilian share increases from 35% to 44% and Brazil is projected to become the largest exporter. With Paraguay's exports doubling over the projection period, its share of net exports is projected to grow to 8%. Argentina's export tax structure

favours exports of soybean products and biodiesel rather than soybeans. In the past Argentina was importing some soybeans from other South American countries to keep its crushing facilities running at near full capacity. However, recent policy developments effectively banning imports of soybeans imply increased sourcing of soybeans from Argentina and thus questioning Argentine deliveries of soybeans to the international market.

Graph 5.7 Soybean net exporters



Net exports of **rapeseed** increase to 11.2 million metric tonnes over the baseline, with Canada positioned as the dominant net exporter. Canada's rapeseed and derived products are generally export oriented. It remains the leading net exporter, although its market share declines from 62% to 57%. By 2018/19, Canada's rapeseed net exports reach 6.4 million metric tonnes while its domestic crush grows by 36%. Ukraine's exports also increase from current 2.2 million tonnes to 3.2 million tonnes although when expressed in world net exports, Ukraine's share increases from 24% to 28%. Because of a lack of crushing facilities in Ukraine, more than 83% of the annual production enters the world market by 2018/19 as a raw commodity. Other two big exporters of rapeseed are Australia and other CIS: exports from both increase over the projection period, although remain relatively small in absolute terms.

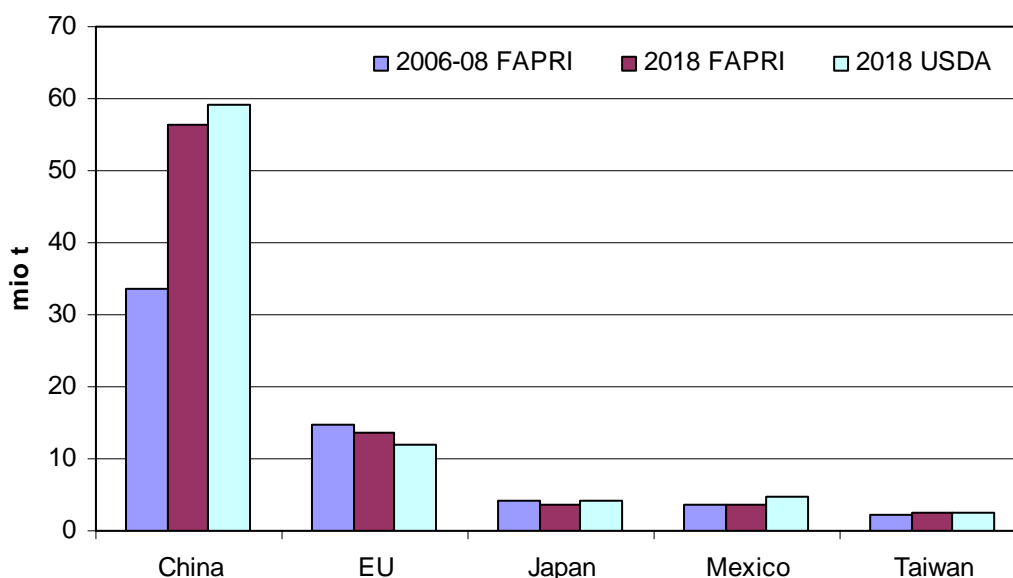
Sunflower seed trade volume is small compared to soybeans and rapeseed. Total net exports over the projection period increase 50%, but remain under 1.6 million tonnes. This small market is dominated by Ukraine and other CIS. By 2018/19, together they account for almost 77% of world net exports sunflower seeds, with Ukraine supplying 44%. China and Argentina maintain a steady share on total net exports of about 10% while US share is decreasing.

Net importers

Owing to its stagnant production partially due to land-use competition from other crops, policies favouring domestic crush, growing demand for protein and fats coupled with stockpiling tendencies, China remains the world's leading **soybean** importer with net imports reaching 56 million tonnes in 2018/19 (absorbing 59% of

total imports over the next ten years). Whether rumours of China importing less in 2009/10 partly because of the government releasing some of its large reserves are founded is to be seen. Although the EU remains the second largest importer of soybeans, its net imports follow a decreasing trend due to increasing use of grain and rapeseed meal feeding and rising imports of soybean meal. In absolute terms, imports decrease from 14 million tonnes in 2008/09 to 13.6 million in 2018/19, absorbing 14% of total world net imports at the end of the projection period.

Graph 5.8 Soybean net importers



Japan maintains its position as a leading net importer of **rapeseed** but its share decreases slightly over the projection period. Chinese rapeseed net imports more than double during the projection period, surpassing the EU as the second largest importer, increasing from 1 million tonnes in 2008/09 to 2.2 million tonnes in 2018/19, increasing its share of total net imports from 11 to 19%. The EU imports larger quantities of rapeseed over the projection period but the level of imports in 2018/19 resembles those in 2008/09. The EU is the largest net importer of **sunflower** seed, although its share decreases from 24% in 2008/09 to 11% at the end of the projection period.

5.2. Vegetable oils

Summary of recent developments

The demand for vegetable oil is driven by industrial use for the production of biodiesel and by population and income growth primarily in developing countries. It somewhat weakened with the economic slowdown. In 2007 – 2008 vegetable oil prices' ups and downs were among the most spectacular: in January 2007 soybean oil was selling for 700 USD/tonne. Within 18 months prices more than doubled, reaching 1537 USD/tonne in June 2008 and declined again to 727 USD/tonne in March 2009. Following supply challenges in Argentina and tight supply situation on palm oil market, soybean oil prices increased again – although not as dramatically

as last year – reaching 893 USD/tonne in May 2009. Owing to relative substitutability, vegetable oil prices have a tendency to move close to each other.

Outlook for world vegetable oil markets

The following tables compare projections carried out by leading forecasting institutes. Figures are indicated as indexes, the average for the past decade being the benchmark (100) for comparing averages over the projection period. FAPRI, OECD-FAO and USDA project strong growth in production, consumption and export of vegetable oils, although magnitudes of their projected growth reflect the optimism of their macroeconomic assumptions.

Table 5.3 Comparison of Outlook for world vegetable oil markets
(Index for averages over past and next decade)

Soybean Oil	Production	Consumption	Exports
99/00 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	142	143	132
USDA	147	147	139
OECD-FAO (Vegetable oils)	158	160	165

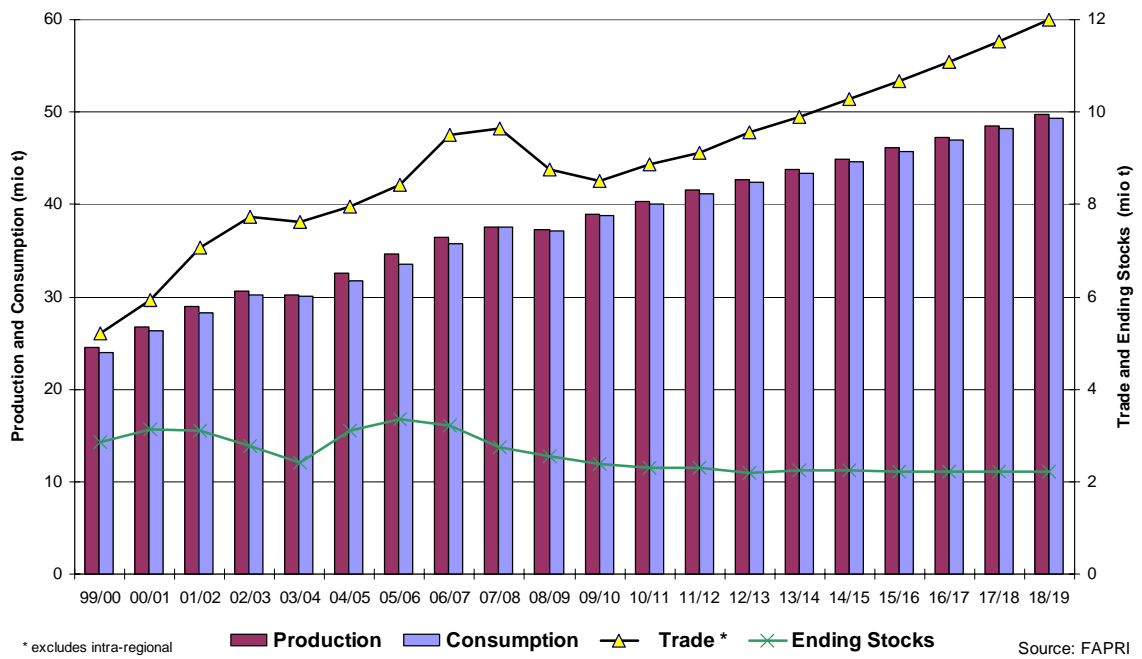
Rapeseed Oil	Production	Consumption	Exports
99/00 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	150	149	187
USDA	149	149	271
OECD-FAO (Vegetable oils)	158	160	165

Sunflower Oil	Production	Consumption	Exports
99/00 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	135	137	175
USDA	139	138	166
OECD-FAO (Vegetable oils)	158	160	165

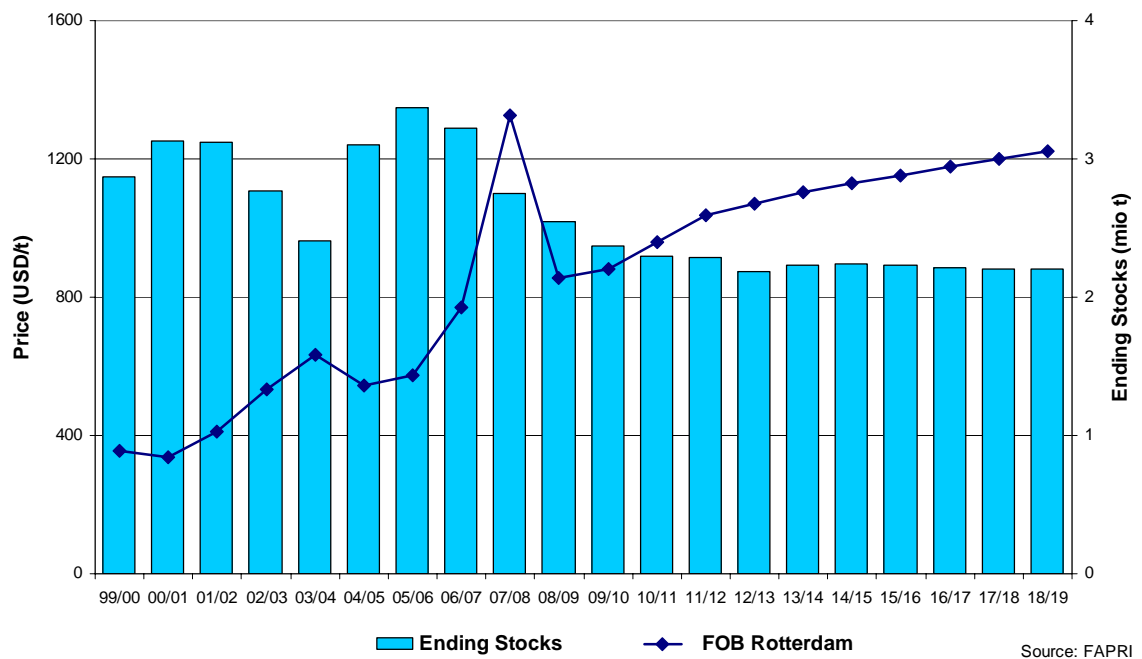
In general per capita consumption of vegetable oils in developing countries is increasing as incomes go up, while consumption in developed countries is stable or is even decreasing due to health concerns. The choice of cooking oil depends on geographical location: the U.S. and Latin American countries tend to use soybean oil. Palm oil prevails in Southeast Asia and rapeseed oil in the EU.

World prices of vegetable oil retreated from the historic highs of 2007/08 because of weaker demand and strong carryover. However, FAPRI projects that driven by strong demand for food and industrial uses, the soybean oil price starts to recover in 2009/10, before the turnaround of other products in the complex. Prices of rapeseed and sunflower oils follow similar patterns. Stocks of soybean and rapeseed oils are projected to stabilise at levels below the levels of the last decade while stocks of sunflower oil over the next decade are projected to increase levels.

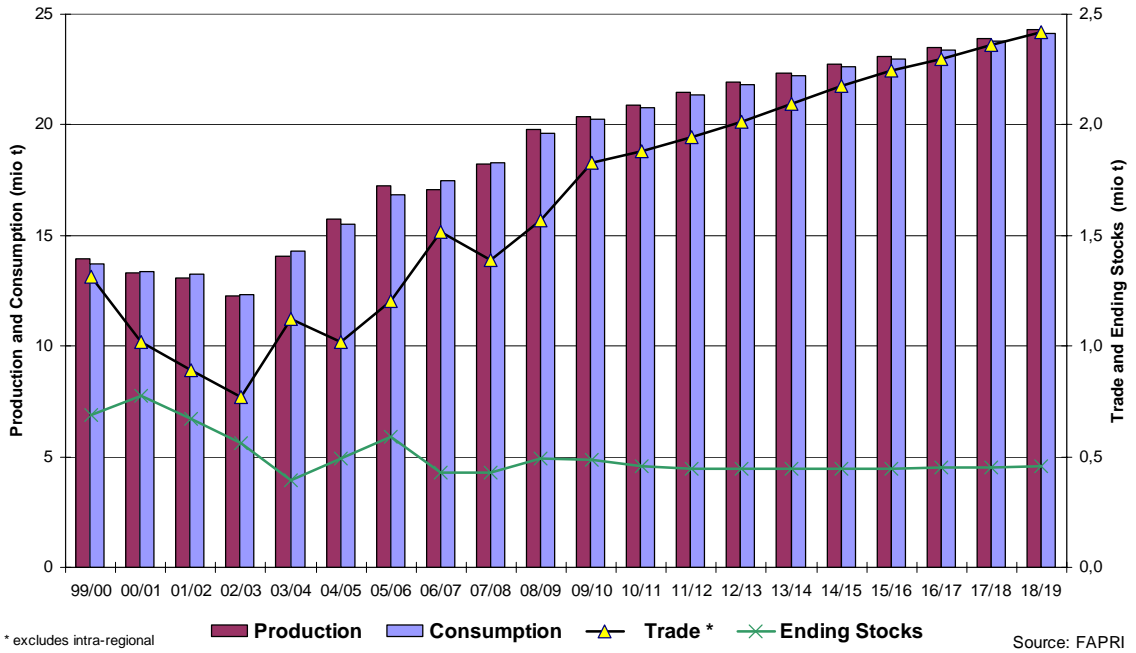
Graph 5.9 World soybean oil balance sheet



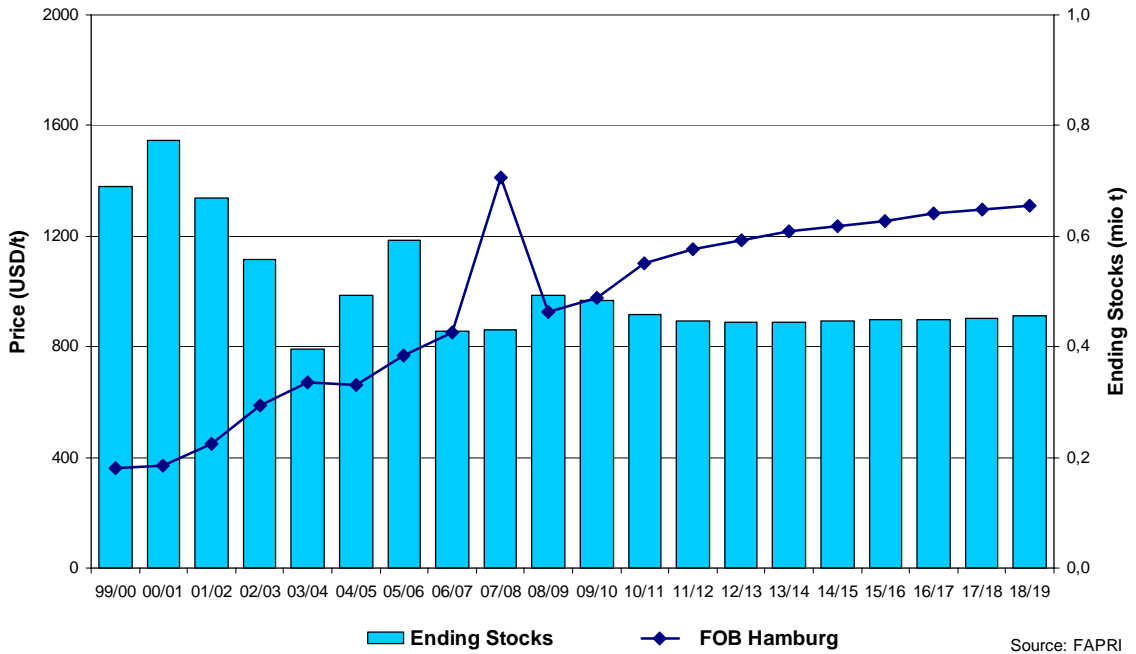
Graph 5.10 Projected world prices and stocks: soybean oil



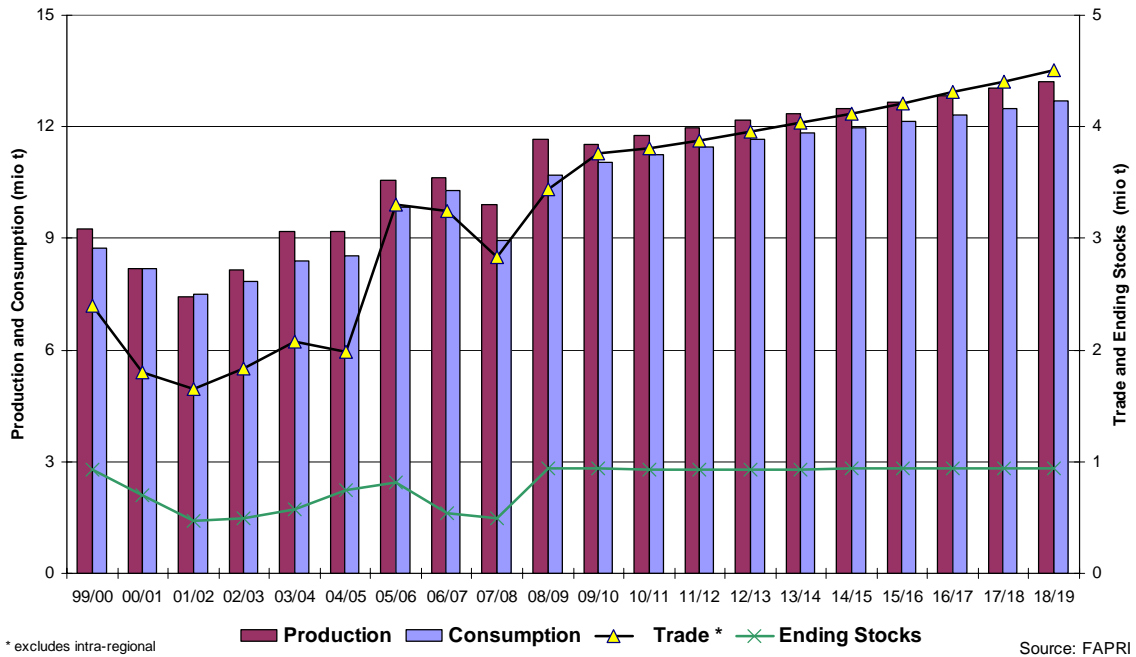
Graph 5.11 World rapeseed oil balance sheet



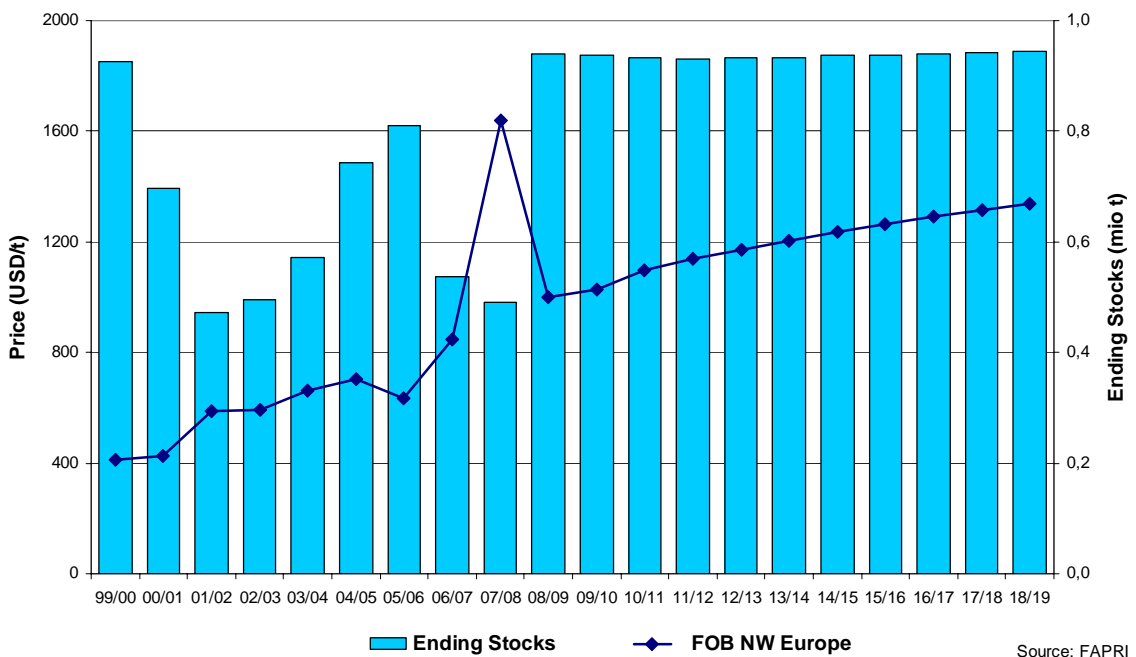
Graph 5.12 Projected world prices and stocks: rapeseed oil



Graph 5.13 World sunflower oil balance sheet



Graph 5.14 Projected world prices and stocks: sunflower oil



Main producers and users

Main producers of vegetable oils are usually oilseeds producing countries, unless domestic policies favour imports of raw materials in efforts to capture value added (such as China) or where domestic crushing capacity is not sufficient (such as Ukraine). Although China favours imports of raw product and domestic crush, it also remains an important soybean oil importer. Due to its population and income growth, China became the largest soybean oil consumer in 2006/07 and continues to

increase its share to 33% in 2018/19. Because of their biodiesel mandates, Argentina and Brazil are expected to increase soybean oil industrial use by 51% and 74%, respectively, over the projection period.

Outlook for trade

Table 5.4 Key traders

Soybean Oil AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	99/00 07/08	08/09	09/10 18/19	99/00 07/08	08/09	09/10 18/19	99/00 07/08	09/10 18/19
Net Exporters	7.677	8.762	10.146	100	114	132	100%	100%
Argentina	4.422	5.650	6.525	100	128	148	58%	64%
Brazil	2.079	2.090	2.237	100	101	108	27%	22%
United States	758	771	1.112	100	102	147	10%	11%
Paraguay	183	251	272	100	137	149	2%	3%
Net Importers	7.677	8.762	10.146	100	114	132	100%	100%
China	1.542	2.300	3.116	100	149	202	20%	31%
India	1.287	640	792	100	50	62	17%	8%
European Union	-245	370	802	100	-151	-328	-3%	8%
South Korea	212	305	376	100	144	178	3%	4%
Mexico	137	225	249	100	164	182	2%	2%
Canada	45	57	65	100	126	144	1%	1%
Taiwan	29	52	56	100	179	195	0%	1%
Japan	27	45	100	100	168	372	0%	1%

Source: FAPRI

Rapeseed Oil AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	99/00 07/08	08/09	09/10 18/19	99/00 07/08	08/09	09/10 18/19	99/00 07/08	09/10 18/19
Net Exporters	1.138	1.568	2.127	100	138	187	100%	100%
Canada	849	1.410	1.842	100	166	217	75%	87%
Ukraine	9	60	114	100	667	1264	1%	5%
Australia	30	42	49	100	142	166	3%	2%
Net Importers	1.138	1.568	2.127	100	138	187	100%	100%
United States	469	1.013	1.019	100	216	217	41%	48%
China	179	320	94	100	178	53	16%	4%
European Union	-60	60	799	100	-100	-1334	-5%	38%
Japan	26	20	31	100	76	119	2%	1%

Source: FAPRI

Sunflower Oil AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	99/00 07/08	08/09	09/10 18/19	99/00 07/08	08/09	09/10 18/19	99/00 07/08	09/10 18/19
Net Exporters	2.346	3.440	4.099	100	147	175	100%	100%
Ukraine	964	1.580	1.824	100	164	189	41%	44%
Argentina	1.139	1.385	1.516	100	122	133	49%	37%
United States	107	25	52	100	23	48	5%	1%
Net Importers	2.346	3.440	4.099	100	147	175	100%	100%
European Union	571	1.255	1.563	100	220	274	24%	38%
China	22	15	82	100	69	380	1%	2%

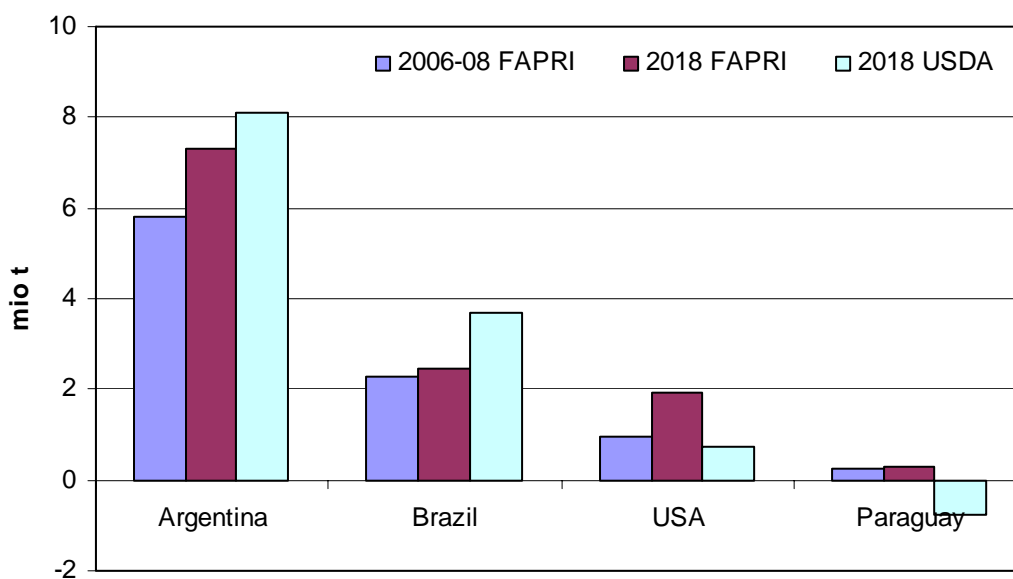
Source: FAPRI

Despite the current slowdown, world trade of vegetable oil complex is projected to remain strong over the next decade. World trade in soybean, rapeseed and sunflower oils grows by 36%, 54%, and 31%, respectively, over the next decade. Just as it is the case with the rest of the oilseed complex, exports of vegetable oil are dominated by a few countries, but importers are diverse. Precise flows depend on the crushing capacity available and combination of domestic policies encouraging domestic crush.

Net exporters

Despite the domestic biodiesel mandate, Argentina still dominates world soybean oil exports, supplying over 60% of the world market in over the projection period. Brazil and the U.S. together account for 36% of world soybean oil net exports by 2018/19. The major exporter of rapeseed oil is Canada, supplying between 85 – 90% of the market over the next decade. Sunflower oil market is dominated by Ukraine and Argentina. Over the projection period the share of Ukraine decreases from 48 to 41% but it remains the biggest exporter. Likewise, Argentinean share decreases slightly from 40 to 36%.

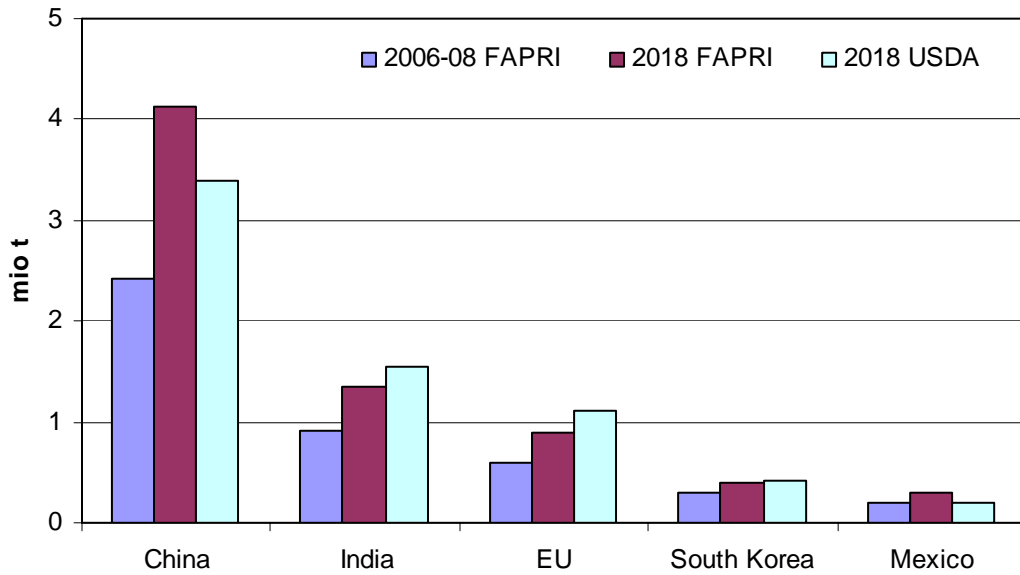
Graph 5.15 Soybean oil net exporters



Net importers

China and India strengthen their position as leading soybean oil importers, with India being distant second. China's share on net soybean oil trade grows steadily from 26% in 2008/09 to 34% in 2018/19. Although India's imports in the past decade exceeded those of China, in 2008/09 it had a share of only 7.3% of total net imports. In 2009/10 it is projected to decrease further to less than 4% (less than that of South Korea), followed by a gradual recovery to 11% in 2018/19. Although a net exporter for most of the past decade, the EU maintains its position as a net importer of rapeseed oil throughout the baseline period. EU imports are projected to increase from low levels of 60 thousand tonnes in 2008/09 to 1 million tonnes in 2018/19. US imports of rapeseed oil vary over the baseline period but remain close to or over 1 million tonnes. In contrast to the industrial use in EU and US, China's rapeseed oil consumption is primarily used for food. The EU also remains the leading sunflower oil net importer, accounting for 37 – 40% of world net trade.

Graph 5.16 Soybean oil net importers



5.3. Oilmeals

Summary of recent developments

Following weakening demand for meats and dairy accompanying economic slowdown, demand for oilmeals (oilcakes) decreased. Meal prices lost a good share of their value compared to the last year (17% in case of soybean meal).

Outlook for world oilmeal markets

The following tables compare projections carried out by leading forecasting institutes. Figures are indicated as indexes, the average for the past decade being the benchmark (100) for comparing averages over the projection period.

Table 5.5 Comparison of Outlook for world oilmeal markets
(Index for averages over past and next decade)

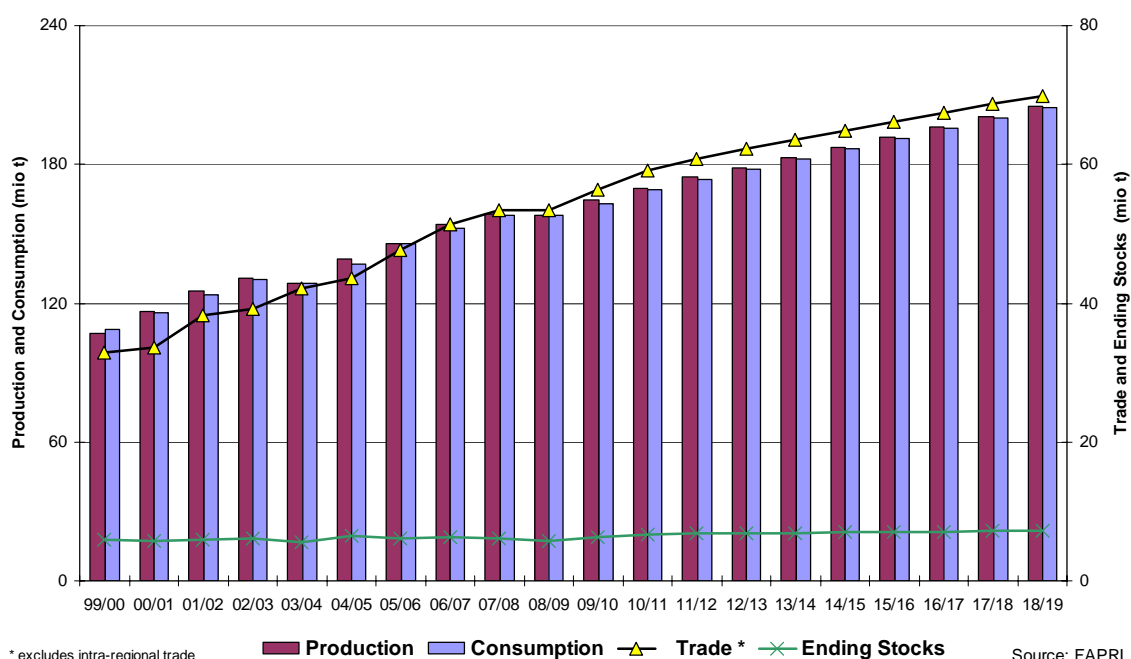
Soybean Meal	Production	Consumption	Exports
99/00 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	138	138	150
USDA	144	144	149
OECD-FAO	141	140	149
(Oilseed meals)			

Rapeseed Meal	Production	Consumption	Exports
99/00 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	147	146	164
USDA	145	145	212
OECD-FAO (Oilseed meals)	141	140	149

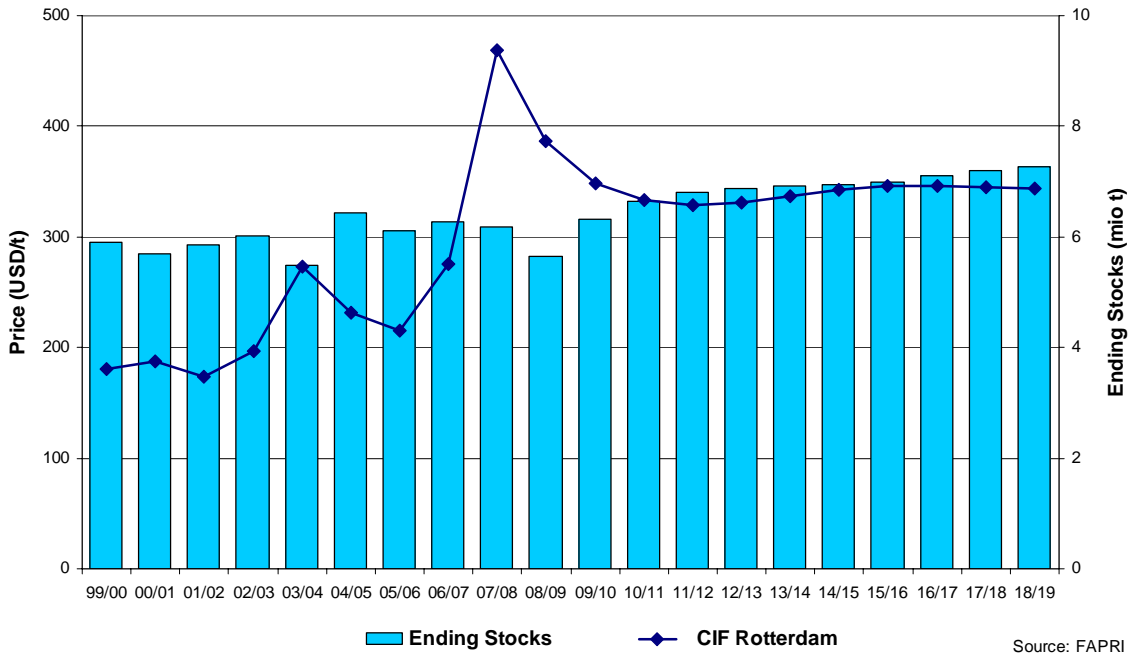
Sunflower Meal	Production	Consumption	Exports
99/00 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	131	130	138
USDA	134	134	147
OECD-FAO (Oilseed meals)	141	140	149

Prices are expected to decline further through the middle of outlook as production outpaces demand from the livestock sector worldwide. With progressing recovery in the second part of the outlook demand strengthens. China remains a bright spot on the consumption side: due to strongly expanding livestock sector, Chinese consumption of soybean meal increases from 32 million tonnes in 2008/09 to almost 50 million tonnes in 2018/19 at an annual rate of growth of 4.2%.

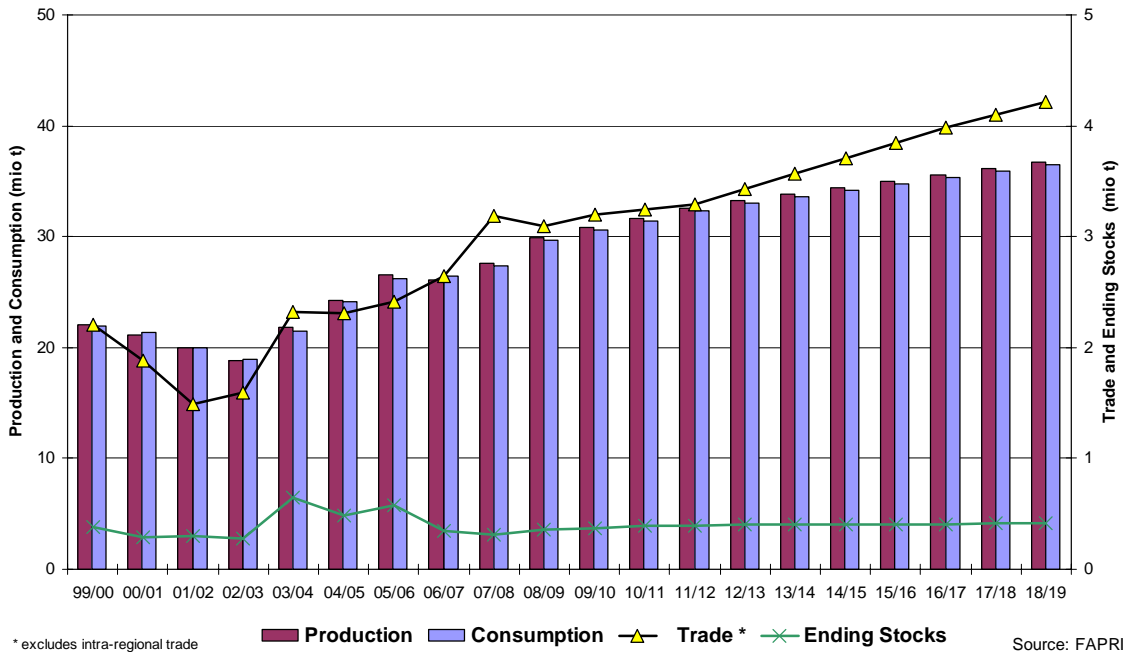
Graph 5.17 World soybean meal balance sheet



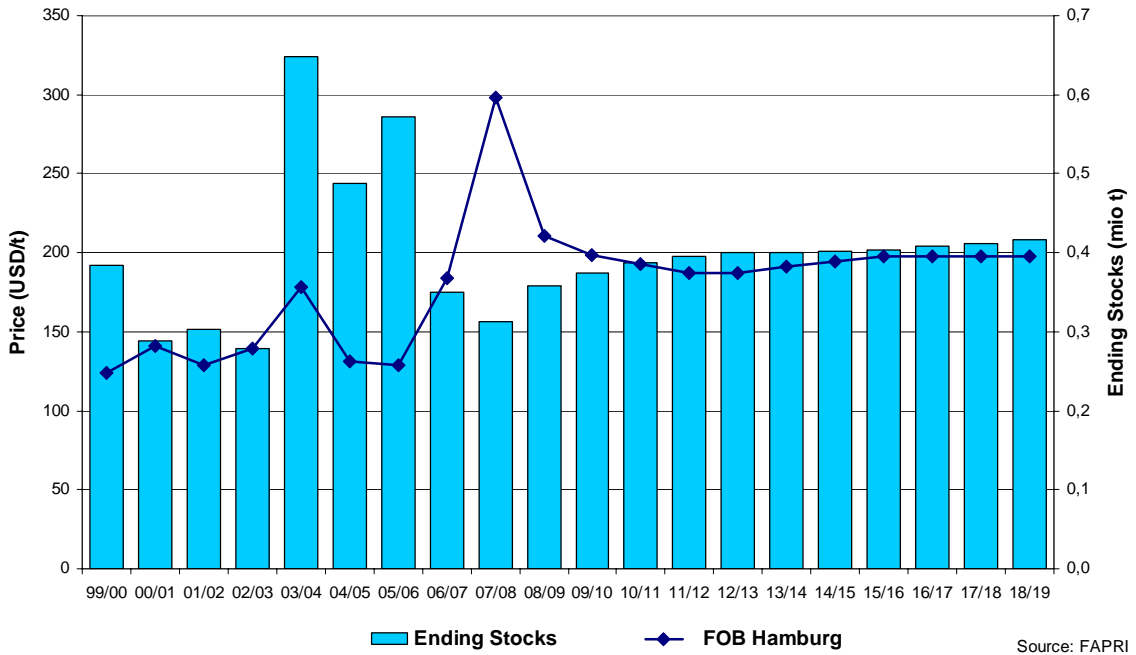
Graph 5.18 Projected world prices and stocks: soybean meal



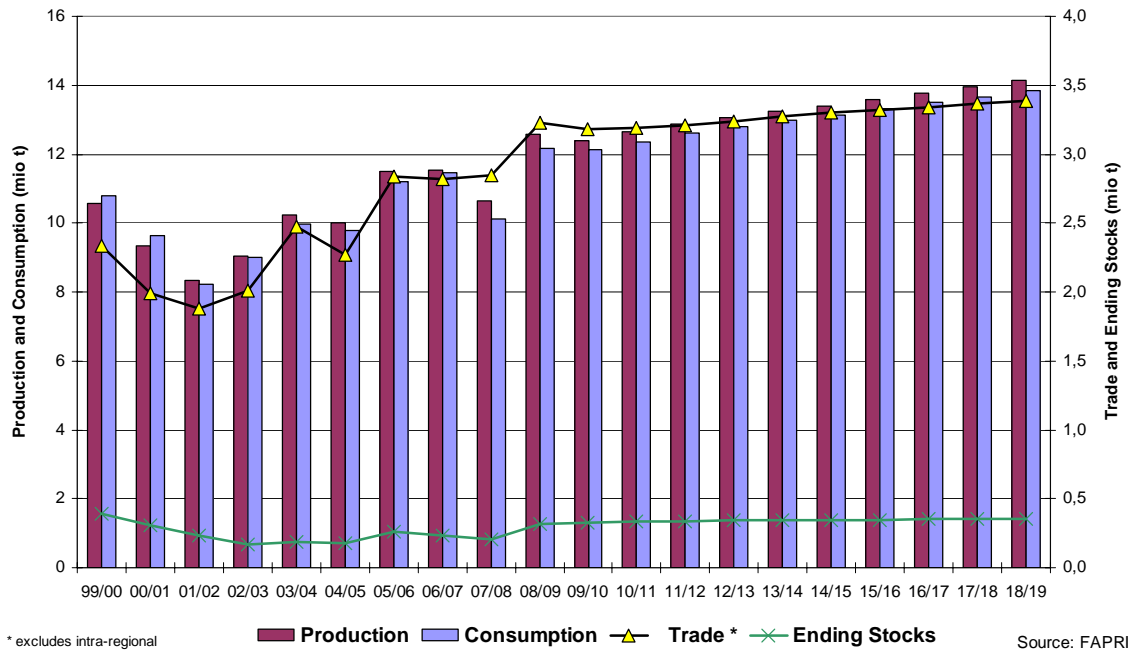
Graph 5.19 World rapeseed meal balance sheet



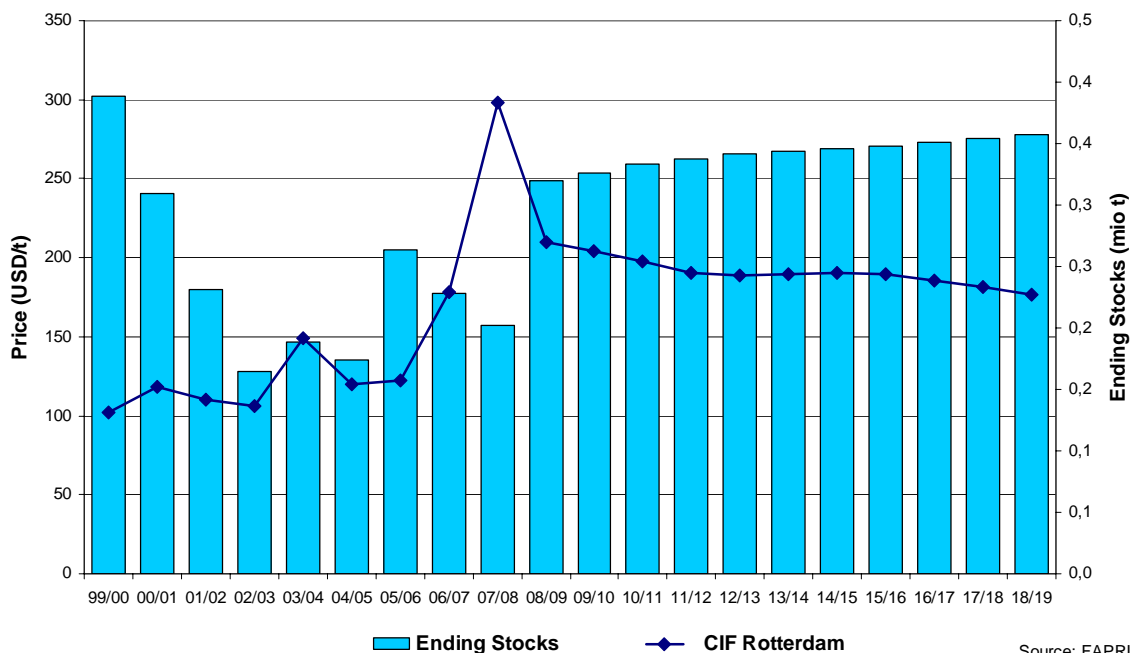
Graph 5.20 Projected world prices and stocks: rapeseed meal



Graph 5.21 World sunflower meal balance sheet



Graph 5.22 Projected world prices and stocks: sunflower meal



Source: FAPRI

Main producers and users

In the US oilmeal use is constrained by increasing availability of low cost dried distiller's grains, a by-product of ethanol production which is expected to displace almost 8% of future meal consumption in 2018 (OECD). China is expected to surpass the EU as the main user of oilmeals.

Outlook for trade

Table 5.6 Key traders

Soybean Meal AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 99/00 07/08	Current 08/09	Projected 09/10 18/19	Past 99/00 07/08	Current 08/09	Projected 09/10 18/19	Past 99/00 07/08	Projected 09/10 18/19
Net Exporters	42.472	53.360	63.888	100	126	150	100%	100%
Argentina	19.841	27.368	33.235	100	138	168	47%	52%
Brazil	12.322	12.245	13.374	100	99	109	29%	21%
United States	6.645	7.470	9.658	100	112	145	16%	15%
India	2.827	4.798	5.875	100	170	208	7%	9%
Paraguay	823	1.079	1.341	100	131	163	2%	2%
China	381	400	405	100	105	106	1%	1%
Net Importers	42.472	53.360	63.888	100	126	150	100%	100%
European Union	20.614	22.450	25.166	100	109	122	49%	39%
South Korea	1.522	1.850	2.230	100	122	146	4%	3%
Japan	1.256	1.760	2.245	100	140	179	3%	4%
Mexico	962	1.591	1.871	100	165	194	2%	3%
Canada	1.063	1.360	1.783	100	128	168	3%	3%

Source: FAPRI

Rapeseed Meal	in 1000 tonnes			Change vs past			Shares in world trade	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	AVG from 99/00 07/08	08/09	09/10 18/19	99/00 07/08	08/09	09/10 18/19	99/00 07/08	09/10 18/19
Net Exporters	2.225	3.092	3.658	100	139	164	100%	100%
Canada	1.294	1.997	2.497	100	154	193	58%	68%
India	598	800	768	100	134	128	27%	21%
European Union	-76	120	12	100	-158	-16	-3%	0%
Ukraine	15	60	134	100	403	903	1%	4%
Net Importers	2.225	3.092	3.658	100	139	164	100%	100%
United States	1.248	1.912	1.956	100	153	157	56%	53%
China	-158	100	52	100	-63	-33	-7%	1%
Japan	36	33	-48	100	92	-132	2%	-1%

Source: FAPRI

Sunflower Meal	in 1000 tonnes			Change vs past			Shares in world trade	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	AVG from 99/00 07/08	08/09	09/10 18/19	99/00 07/08	08/09	09/10 18/19	99/00 07/08	09/10 18/19
Net Exporters	2.384	3.226	3.281	100	135	138	100%	100%
Ukraine	936	1.620	1.559	100	173	166	39%	48%
Argentina	1.142	1.200	1.281	100	105	112	48%	39%
United States	-3	14	14	100	-504	-504	0%	0%
Net Importers	2.384	3.226	3.281	100	135	138	100%	100%
European Union	1.612	1.602	1.652	100	99	103	68%	50%
China	6	5	5	100	90	90	0%	0%

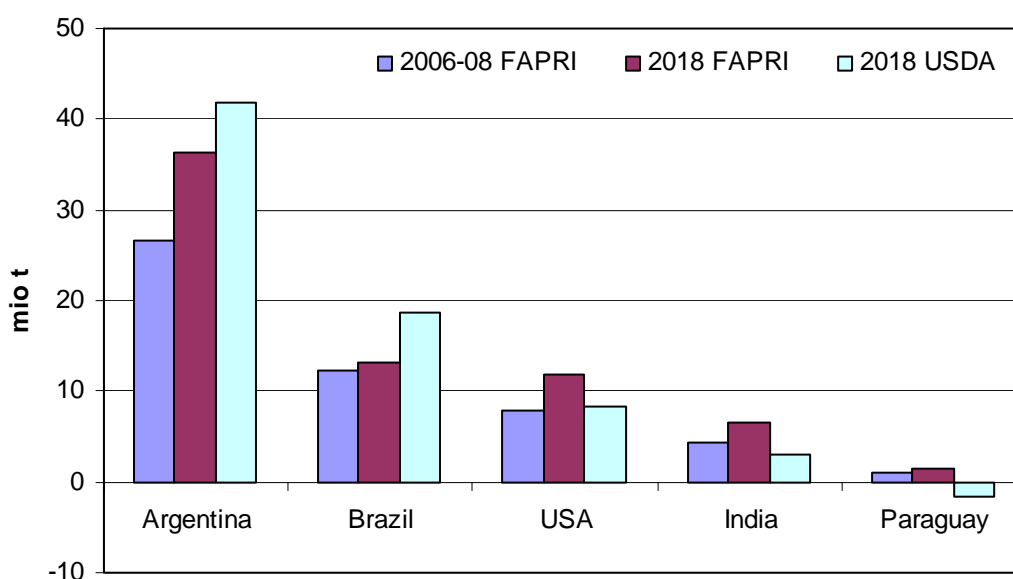
Source: FAPRI

The volume of net trade in the oil meal market increases for all types.

Net exporters

Due to its differential export tax and low domestic demand, Argentina remains the leading soybean meal exporter, exporting 36 million tonnes in 2018/19 and capturing 52% of the market. In relative terms, Argentina exports 98% of its production of soybean meal. Like for soybeans and soybean oil, US faces strengthening competition from Argentina and Brazil and increasing use for the growing US livestock sector, resulting in relatively small gains in US soybean meal exports. India, an emerging exporter of oilmeals, strengthens its exporting position.

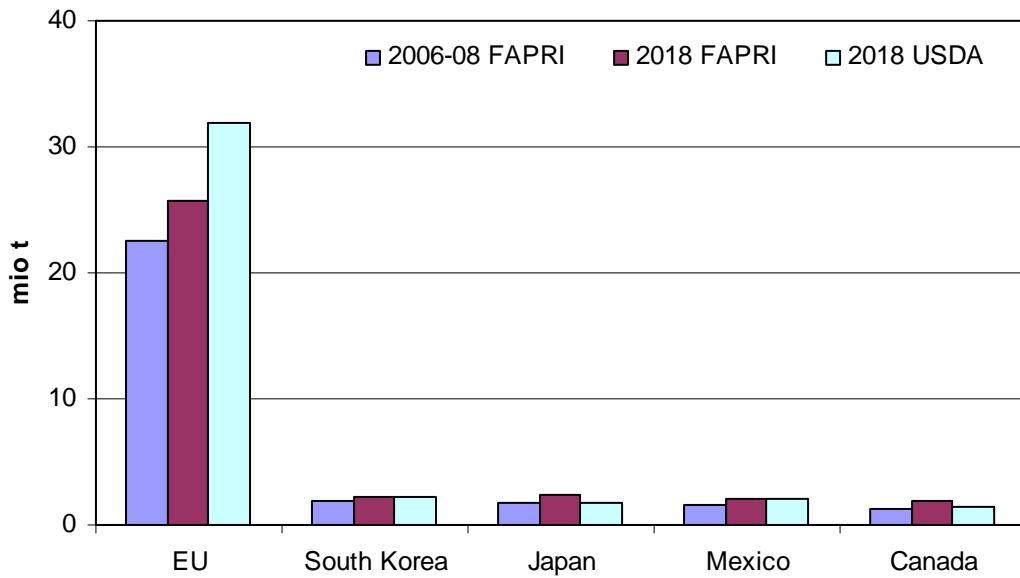
Graph 5.23 Soybean meal net exporters



Net importers

The EU remains the top net importer of soybean meal, accounting for 37% of world net imports. The EU also remains the leading sunflower meal importer, accounting for 49% of world trade. China's imports of sunflower oil grow, albeit from a small base.

Graph 5.24 Soybean meal net exporters



6. SUGAR

After three years of surplus, the world sugar market currently displays a deficit, due to shortfalls in production in the main suppliers. FAPRI expects that production and consumption will be balanced over the medium term. According to OECD-FAO however, considering the cyclical pattern of production against growing consumption, shortfalls could occur again by 2014-15. However production would exceed consumption at the end of the projection period. Both organisations project that production would increase by 25% over the outlook period, compared to the past decade. The corresponding increment in consumption would be somewhat higher (+27 to 28%). Overall, the stock-to-use rate is set to decline further, hence prices are projected to increase (on average + 35% over the projection period compared to the last decade).

Major changes occur on the import side of the world market. Projections confirm that the EU is becoming the leading net importer, as a result of domestic reform and enhanced preferential imports. India has also turned into a net importer, and is projected to remain in that position. Imports are also set to increase in the US, as a result of changes in domestic and trade regimes. The export side is more and more dominated by Brazil, expected to achieve 2/3 of world sugar exports by 2018.

Summary of recent developments

Sugar prices reached a peak in May 2006, earlier than other agricultural commodities, as world sugar production fell short of consumption. They then declined up to the end of 2007, and since then have gone up and down, reflecting the cyclical pattern of production. In recent years production outpaced consumption. However, since early 2009 the world switched again to a deficit, hence sugar prices are resuming growth.

Outlook for world meat markets

The following table summarises the comparison of projections for the main elements of the balance sheet.

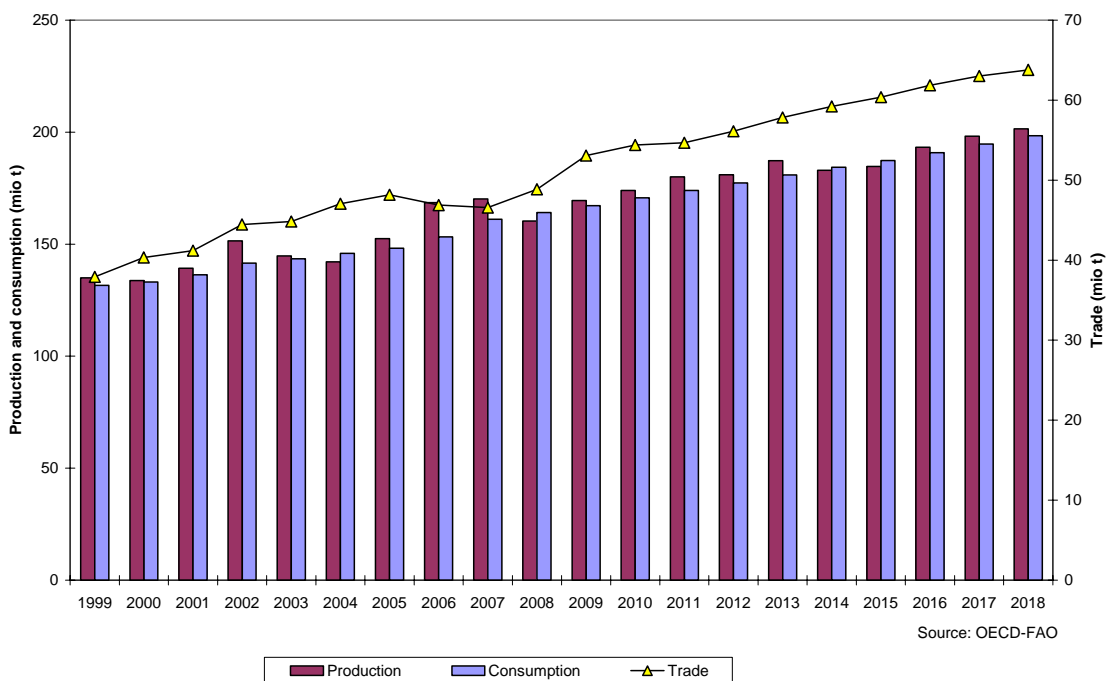
Table 6.1 Comparison of Outlook for world sugar markets
(Index for averages over past and next decade)

	Production	Consumption	Exports
98/99 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	124	128	133
OECD-FAO	125	127	131

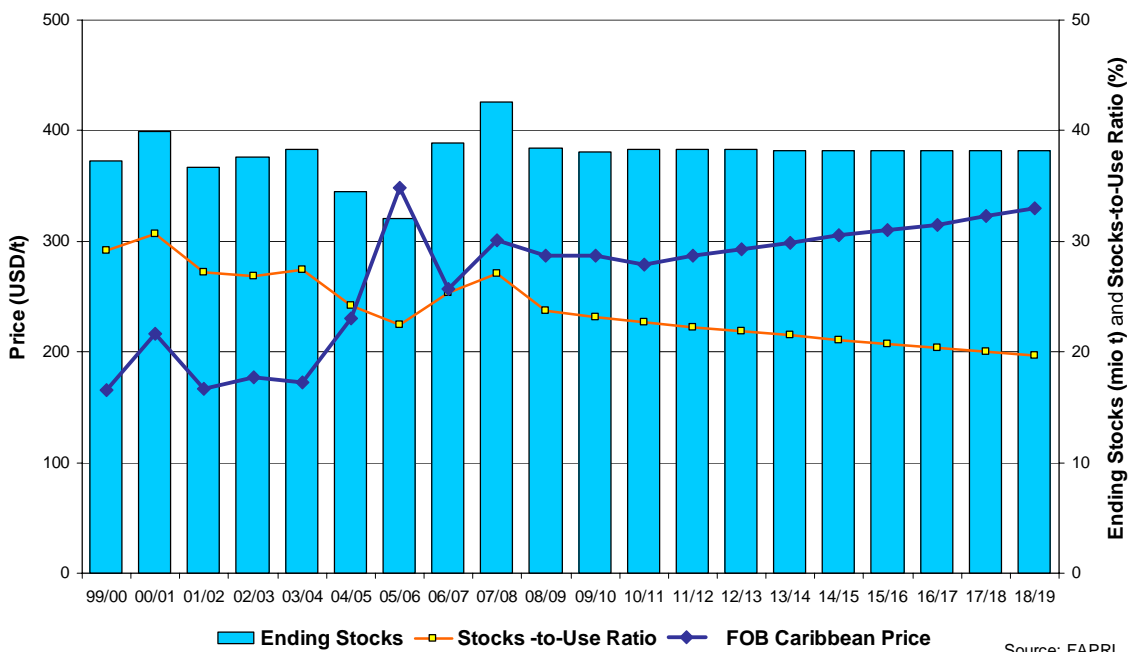
Both OECD-FAO and FAPRI see consumption increasing faster than production, compared to the average levels for last decade. The economic crisis can be expected to have some short term impact on per capita consumption. However, over the medium term the high demand growth in developing countries will dominate. After the current deficit, FAPRI estimates that production and consumption will remain in

balance to reach 194 million tonnes⁴ by 2018. OECD-FAO expects production to recover, however it would remain on a cyclical path. By 2014-15 it risks again being lower than consumption. By 2018 production would finally be slightly higher than consumption (202 versus 198 million tonnes). Both organisations confirm that trade increases faster than production.

Graph 6.1 World production and consumption of sugar (raw eq)



Graph 6.2 Stock to use and prices

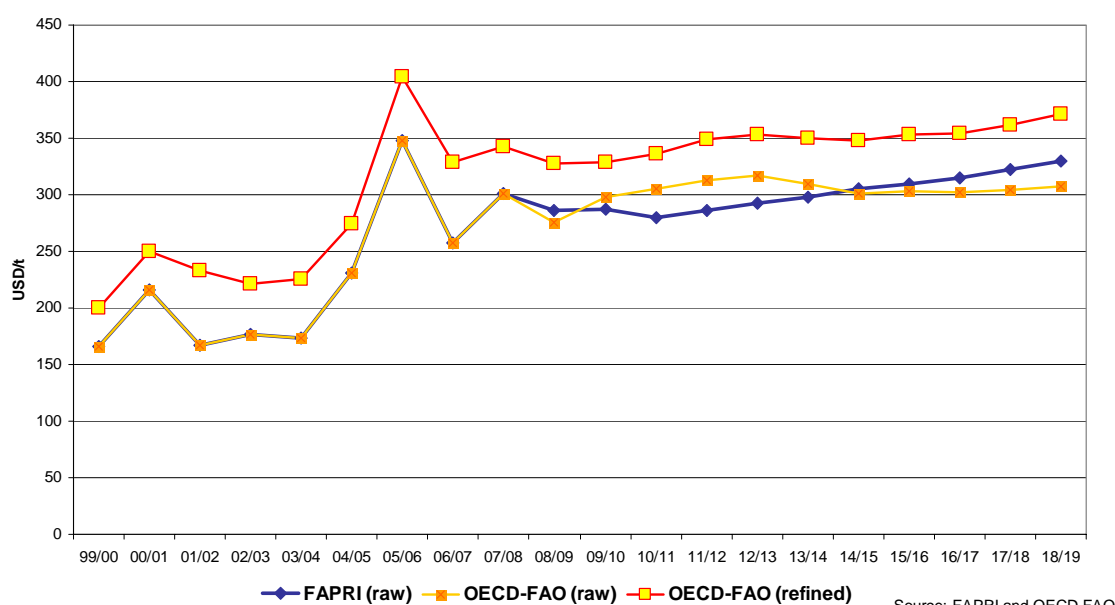


⁴ All figures quoted in the sugar chapter are for raw sugar equivalent (except otherwise specified).

Stocks are used to cover the current deficit. The stock to use rate is set to decline further and prices are projected to increase. However, the export price would not reach again the record achieved in 2005/06 (when the reference export price for raw sugar came close to 350 USD/tonne⁵). Still, according to FAPRI, the export price would remain 34% higher over the projection period than over the past decade (which incorporates the 2005/06 record) and could come close to 330 USD/t in 2018/19.

Although the projected price increase over the next decade is of the same order of magnitude (+35%), the pattern displayed by OECD-FAO is less continuous than that of FAPRI. This echoes the cyclical path of production. OECD-FAO expects that the reference prices for raw sugar will increase up to 2012/13 and then decline to 300 USD/tonne due to growing supply of raw sugar. By contrast, the price for white sugar⁶ should keep rising, as increasing refining costs would keep supply of white sugar tight.

Graph 6.3 Comparison of price projections



Main producers and users

The same countries form the world top-5 producers and consumers (Brazil, EU, India, China, USA – based on average OECD-FAO figures for production over the last decade). Brazil is an exporter, while the other key players all are net importers. The EU and India have recently turned into net importers.

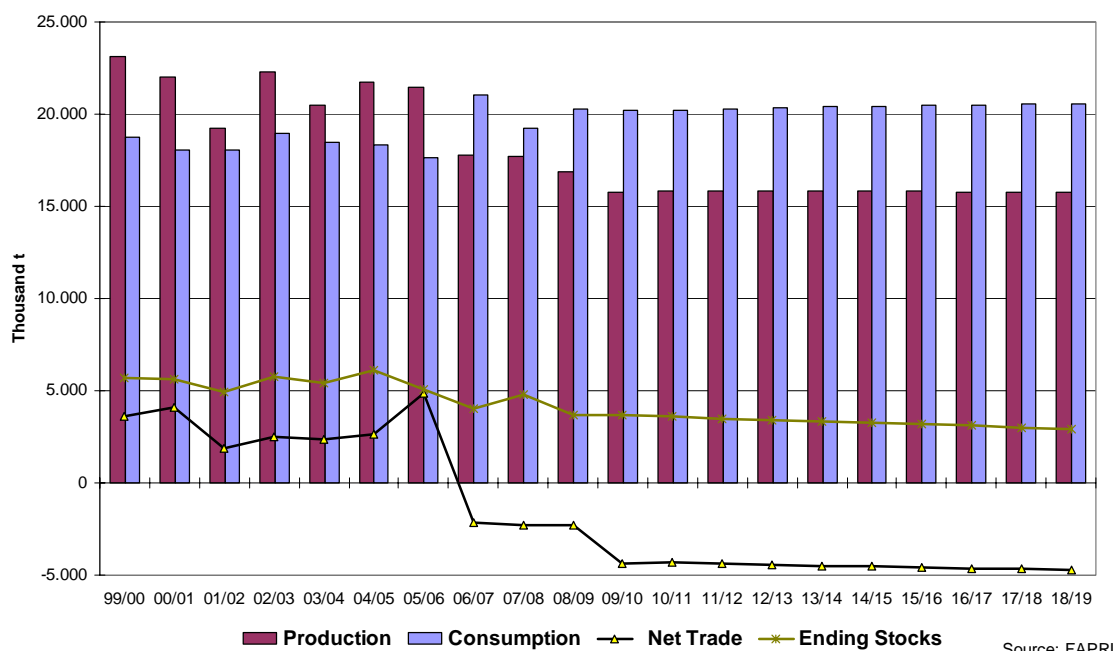
The EU already switched from a leading net exporter to a net importer in 2006/07, as a result of a sharp drop in production. Both OECD-FAO and FAPRI expect production to further decline and to stabilise slightly below (OECD-FAO) or above

⁵ Reference price for raw sugar: New York Contract No 11, various origins, FOB Caribbean

⁶ Reference price for white sugar: London Ex-Contract N° 5, FOB Europe

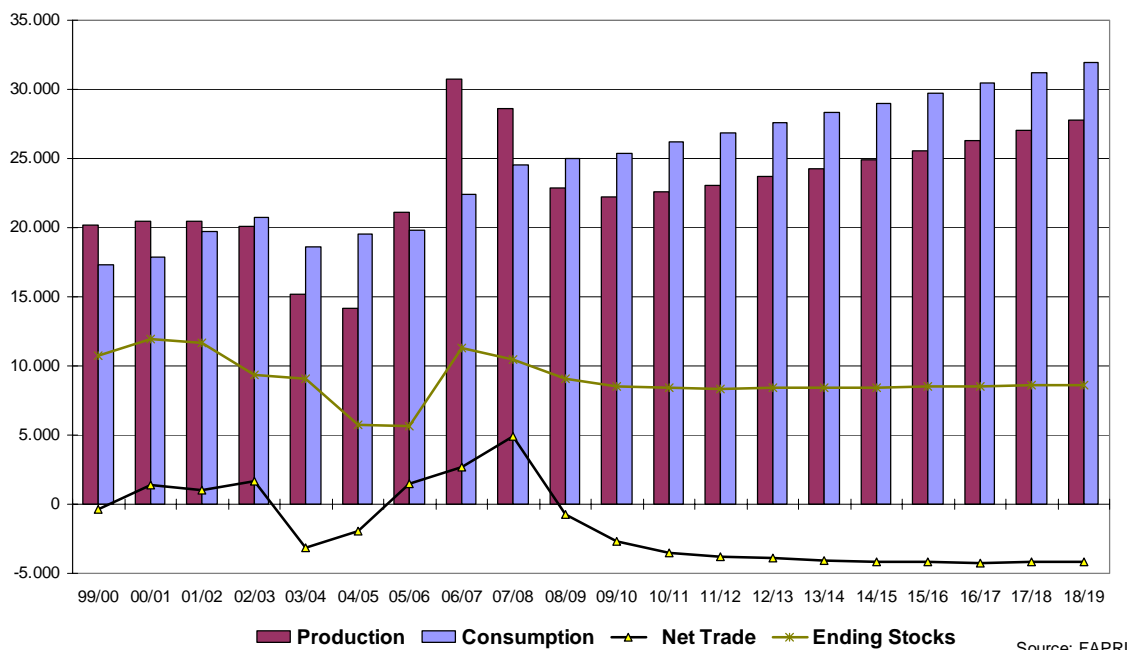
(FAPRI) 15 million tonnes from 2010 onwards, at 2/3 of the historical level. This is the result of the reform of the EU sugar regime, especially the cut in support prices (-36% over 4 years starting in 2006/07) and the restructuring scheme. In addition, the EU further improved access to its market for preferential partners, especially Least Developed Countries and African Pacific and Caribbean countries. As a combined effect of the reform of its sugar regime and enhanced preferential access, the EU becomes the leading world sugar importer.

Graph 6.4 Developments in production, consumption and trade: EU



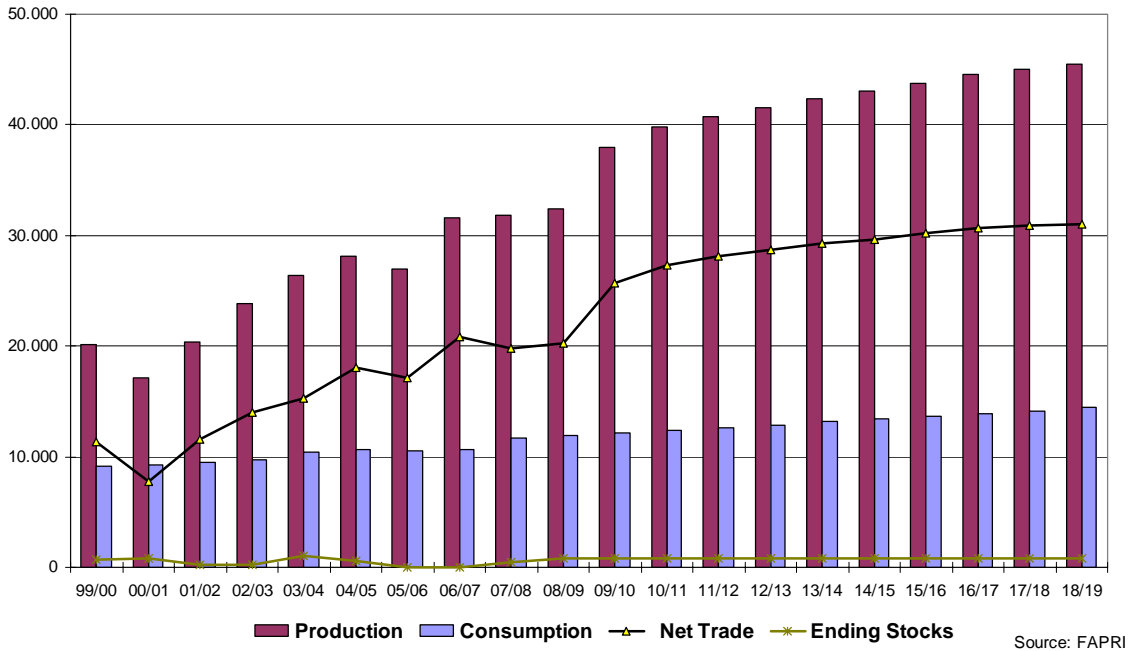
As shown in graph 6.5, Indian sugar production and consumption followed a cyclical path with booms and busts. After the 2006-07 booms, Indian production currently reaches a through, while consumption keeps increasing. As a result, India becomes again a net importer. FAPRI expects production to resume growth to reach 27 million tonnes by 2018. OECD-FAO projects a more cyclical path that would nevertheless peak with an unprecedented record of 32 million tonnes by 2018. FAPRI is less optimistic, as it does not see production going beyond 30 million tonnes. However, this would not be sufficient to cover a steadily growing consumption. Hence India should remain a net importer over the projection period.

Graph 6.5 Developments in production, consumption and trade: India



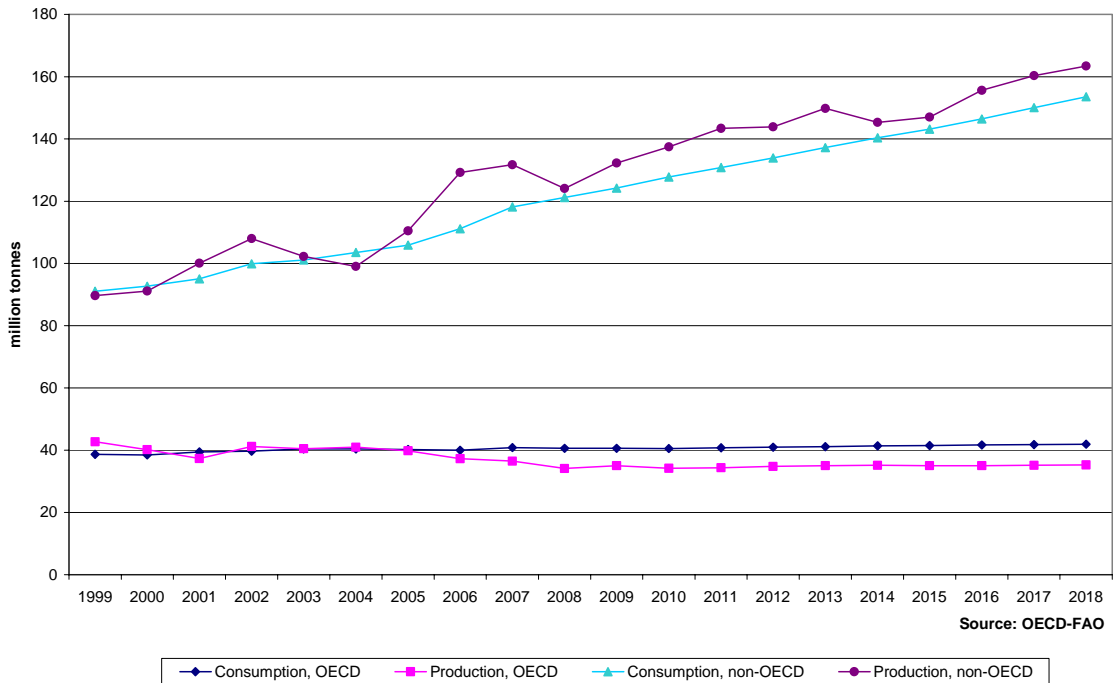
As regards Brazil, OECD-FAO assumes that the share of cane used for sugar will decline from 50% in 2005-07 to 40% in 2018. Therefore, ethanol would become the dominant outlet. Nevertheless, sugar production would keep increasing mainly through a further expansion in areas. According to OECD-FAO, the area under sugar cane should exceed 10 million ha by 2014/15 to come close to 12 million in 2018/19, a 55% increase compared to current area. For FAPRI, the 10 million hectares record would be achieved two years later, by 2016/17. Both organisations agree that Brazilian sugar production should go beyond 45 million tonnes and exports beyond 30 million tonnes at the end of the projection period. This represents an average 60% (OCDE-FAO) to 70% (FAPRI) increment in production over the projection period compared to the average for the last decade and a quasi-doubling of exports (+90%).

Graph 6.6 Developments in production, consumption and trade: Brazil



Graph 6.7 clearly shows that non-OECD countries dominate sugar production and consumption, and that the growth takes place in these countries.

Graph 6.7 Production and consumption in OCDE versus non OECD zone



Outlook for trade

Table 6.2 indicates figures for the leading traders, selected on the basis of the FAPRI averages for 1998-2007.

Table 6.2 Key traders

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 98/99 07/08	Current 08/09	Projected 09/10 18/19	Past 98/99 07/08	Current 08/09	Projected 09/10 18/19	Past 98/99 07/08	Projected 09/10 18/19
Net Exporters	33.154	33.956	44.103	100	102	133	100%	100%
Brazil	15.061	20.250	29.147	100	134	194	45%	66%
Thailand	4.089	5.100	6.288	100	125	154	12%	14%
Australia	3.920	3.891	4.052	100	99	103	12%	9%
Guatemala	1.334	1.590	1.848	100	119	138	4%	4%
South Africa	1.029	800	670	100	78	65	3%	2%
Cuba	1.680	660	705	100	39	42	5%	2%
Colombia	962	540	367	100	56	38	3%	1%
Mexico	116	425	410	100	368	355	0%	1%
Argentina	310	340	322	100	110	104	1%	1%
Philippines	112	320	162	100	286	145	0%	0%
Net Importers	33.154	33.956	44.103	100	102	133	100%	100%
Russia	3.840	2.900	2.676	100	76	70	12%	6%
European Union	-1.944	2.299	4.520	100	-118	-232	-6%	10%
Indonesia	1.815	2.200	2.765	100	121	152	5%	6%
United States	1.670	2.143	1.976	100	128	118	5%	4%
Canada	1.261	1.400	1.551	100	111	123	4%	4%
Algeria	1.119	1.365	1.519	100	122	136	3%	3%
Japan	1.417	1.340	1.178	100	95	83	4%	3%
Malaysia	1.109	1.235	1.567	100	111	141	3%	4%
South Korea	1.278	1.230	1.399	100	96	109	4%	3%
Egypt	850	1.040	1.308	100	122	154	3%	3%
India	-841	700	3.886	100	-83	-462	-3%	9%
Iran	940	663	1.366	100	71	145	3%	3%
Pakistan	439	625	1.124	100	142	256	1%	3%
Morocco	599	612	785	100	102	131	2%	2%
China	912	599	923	100	66	101	3%	2%
Venezuela	243	400	402	100	165	166	1%	1%
Ukraine	250	300	705	100	120	282	1%	2%

Source: FAPRI

Net exporters

Significant changes occurred within the Top-5, with key exporters turning to net importers (EU, India) or losing shares (Cuba). Based on averages for 2006-2008, the current Top-5 sugar exporters are Brazil, Thailand, Australia, Guatemala and South Africa. These countries accounted for 80% of sugar trade over the last decade.

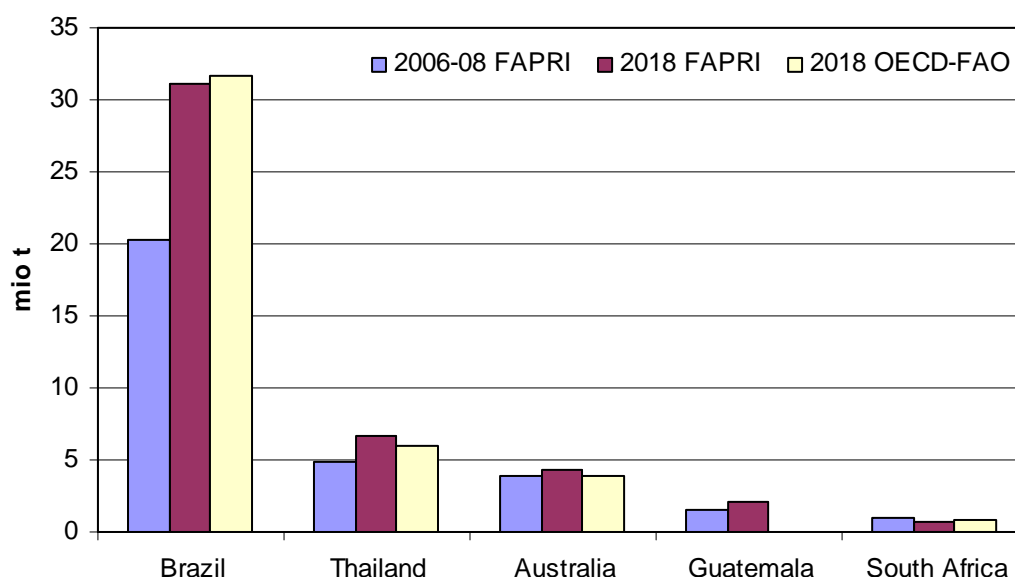
Brazil remains the undisputed leading exporter. According to FAPRI, Brazil would achieve 2/3 of world sugar exports by 2018. Together with OECD-FAO, they project that Brazil will be able to export more than 30 million tonnes by 2018.

Thailand overtook Australia and became the second biggest sugar exporter in 2006. It is projected to remain in that position (with a share of 14% by 2018 whereas that of Australia would fall below 10%).

Since 2004/05, South Africa entered into the top-5 at the expense of Cuba. FAPRI projects that South Africa's exports would remain below 700 thousands tonnes in 2018, while those of Cuba would increase beyond 800 thousands tonnes.

There are no major differences in projections between FAPRI and OECD-FAO for the main exporters (Guatemala is not covered by the OECD model).

Graph 6.8 Sugar net exporters



Net importers

Trade is less concentrated on the import side, as the top-5 traders only accounted for 1/3 of imports over the previous decade. As for exports, there are significant changes.

The EU becomes the leading importer, absorbing 10% of world imports. FAPRI forecasts another sharp deterioration in the EU trade balance for next year. From 2010/11 onwards, imports would remain around 4.5 million tonnes. By contrast, OECD-FAO projects a gradual but continuous increase in imports, up to more than 5 millions tonnes by 2018.

OECD-FAO and FAPRI agree that India would remain a net importer. FAPRI projects that imports would grow up to 4 million tonnes by 2018. By contrast, OECD-FAO sees declining imports, limited to 1 million tonnes in 2018, as production would reach again record levels.

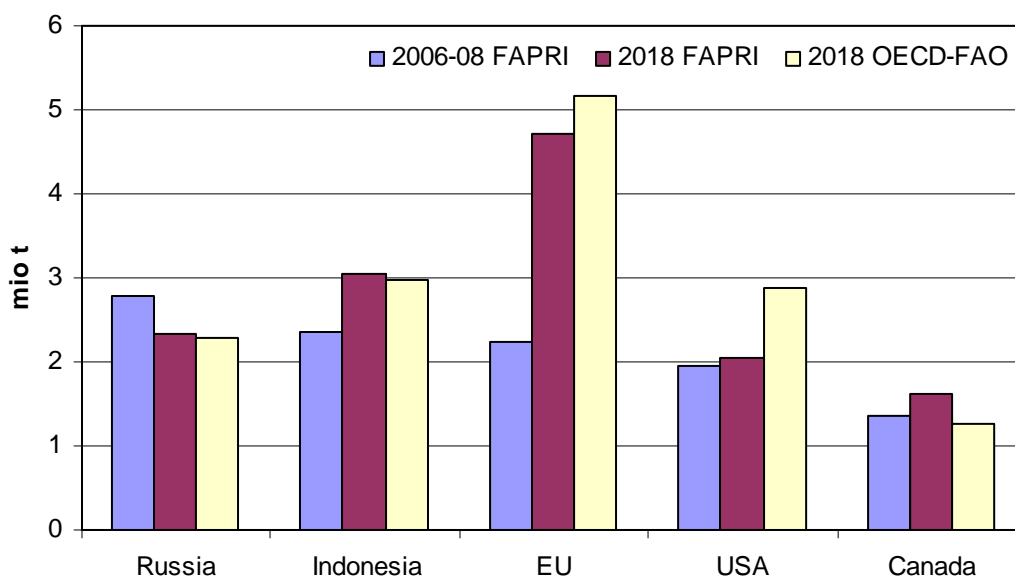
Indonesia ranks third in 2018 with 3 million tonnes. The steep rise in imports reflects that of demand, driven by population and income growth.

According to OECD-FAO, US imports would come close to 3 million tonnes. As a result, the US would outpace Russia as the fourth biggest importer. OECD-FAO takes into account the full integration of the sweetener sector under the NAFTA agreement and the changes introduced by the 2008 US Farm Bill. The latter "will result in higher US market prices that are expected to encourage increased sugar imports from Mexico", according to OECD-FAO. They further consider that higher imports would trigger the use of the new sugar to ethanol programme introduced

under the 2008 Farm Bill. FAPRI is much more conservative on US imports, as they are kept close to their current level. FAPRI considers that it is not very likely that surplus sugar would be diverted to ethanol production.

Both organisations agree that Russian imports are likely to decline to 2 million tonnes, as production is projected to increase and consumption to stabilise.

Graph 6.9 Sugar net importers



7. COTTON

Both FAPRI and USDA project that world consumption and production will drop in the 2008/09 marketing year due to the impact of the global economic downturn on demand. As global demand is expected to resume growth already in 2010, consumption and production increase steadily over the baseline. USDA is in general more bullish in its projections as it expects world production and consumption to decrease more modestly over the short term (by roughly -6% and -3% respectively, compared to -9 and -7% according to FAPRI) and then grow more strongly towards the end of the baseline (+28% and +22% respectively, against +25% and +21% in FAPRI's forecasts).

Production growth is mostly driven by enhanced yields, which increase at a rate that is more than double the growth in area harvested. Slower increase in acreage is attributed partly to growing competition from grains and oilseeds for biofuels production that bring more favorable returns.

Prices move in line with demand falling sharply in 2008/09 from the record levels of the previous year by roughly 16%. From 2010/11, as demand picks up, prices (CIF Far East) grow steadily to reach 1 712 USD/t in 2018/19 (FAPRI), which is a 27% increase from 2009/10 to 2018/19. Overall, average prices over the baseline period are expected to be between 25 % (OECD-FAO) and 28% (FAPRI) higher than the average of the past decade.

After a decline in the first year largely due to a drop in Chinese use, both Outlooks expect world trade, to grow more vigorously than overall production and consumption over the baseline, with FAPRI being more bullish projecting a 54% increase in cotton trade compared to USDA (+32%). China is expected by both FAPRI and USDA to further strengthen its position as the world's leading cotton importer, with its share of world cotton imports reaching 50% at the end of the baseline. However, the pace of import growth will be slower than in the past decade, which saw record growth.

The US is expected to remain the world's main exporter with its cotton sales marginally decreasing (FAPRI) or growing strongly to account for one-third of overall world trade at the end of the baseline (USDA). India becomes the second biggest exporter, but USDA, contrary to FAPRI which expects strong growth in exports, is projecting a slight decline in exports and strongly increasing imports over the baseline as India develops its domestic textile production.

Summary of recent developments

In 2007/2008, world cotton acreage shrank by 1.5 million ha mostly due to competition from grains and oilseeds, which saw their prices increasing substantially. As a result cotton production decreased slightly (to 26.2 million tonnes), more than consumption though (26.7 million tonnes), drawing down stocks further and pushing prices up to 1 610 USD/t (CIF Far East) – the highest level on record.

The decline in areas under cotton has masked diverging moves in the main producing countries: increase in India, stability in China, decline in the US where high grain and oilseed prices provided some competition for area.

The continuous increase in Chinese consumption combined with lower domestic output resulted in further increasing imports, which, given China's important share of world imports, boosted trade. The phasing out of the multi-fibre agreement in 2005 also explains the acceleration of trade.

Outlook for world cotton markets

Cotton is not covered by the OECD-FAO outlook (apart from price index that has been used for the purpose of this report) hence the comparison is limited to FAPRI and USDA.

The two Outlooks' projections for world cotton production, consumption and exports over the past and future decade expect world production and consumption to increase in similar proportions and world exports to grow stronger than the other two fundamentals when compared to the past.

Table 7.1 Comparison of Outlook for world cotton markets
(Index for averages over past and next decade)

	Production	Consumption	Exports
98/99 to 07/08	100	100	100
09/10 to 18/19			
FAPRI	121	120	128
USDA	130	131	139

USDA is more upbeat in its projections though. It expects that average **production** over the baseline will be 30% higher than in the past decade reaching 31.5 million tonnes in 2018/19, while FAPRI projects an increase of 21% up to 29.8 million tonnes at the end of the baseline. On the **consumption** side, USDA expects it to be higher over the baseline than in the past decade by 31%, which leads to 31.3 million tonnes at the end of the projection period. FAPRI forecasts that average consumption over the next decade should be 20% higher than in the past and reach 30 million tonnes in 2018/19.

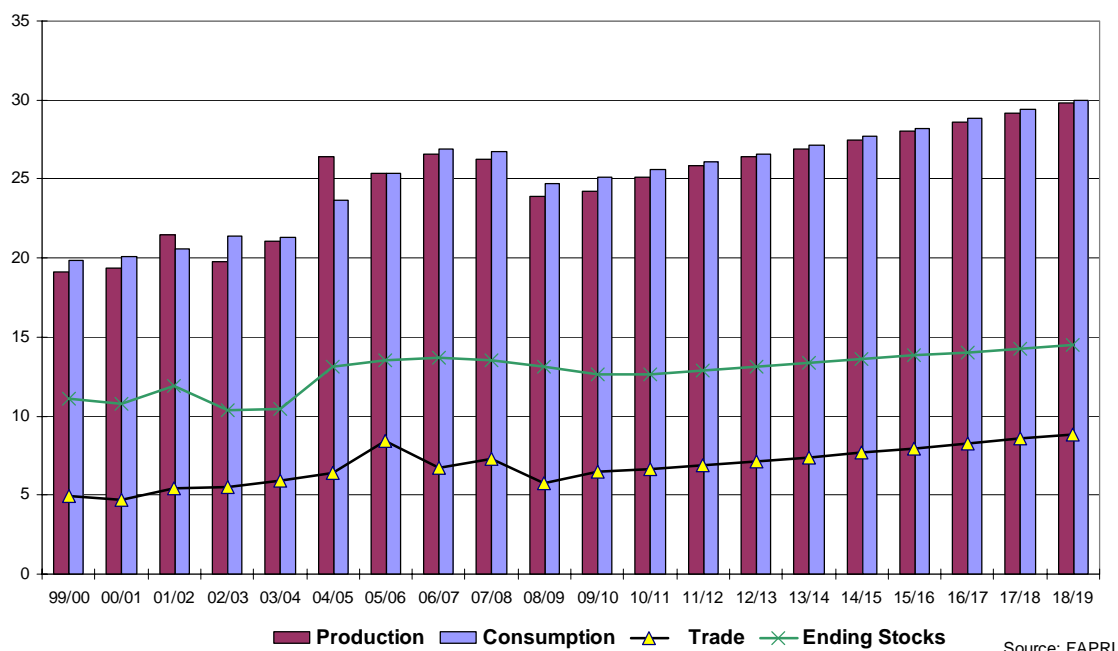
Over the baseline, in the short term, FAPRI projects both world production and use to decrease by 2.3 and nearly 2 million tonnes respectively in 2008/09, as the global economic slowdown impacts on demand. In the long term, both production and demand are expected to grow by 25% and 21% respectively. USDA outlook agrees with this trend, however it projects more modest changes in the short term as production and consumption drop by 1.5 and 0.74 million tonnes respectively in the first year of the outlook period and then they increase by 28% and 22% respectively till the end of the baseline.

Production growth is mostly driven by enhanced yields that increase by 17% over the baseline compared to a smaller 7% expansion of area harvested according to FAPRI (no USDA data on yields).

Both FAPRI and USDA project that **trade** should grow substantially faster than overall production and consumption. Compared to the past ten years, average trade

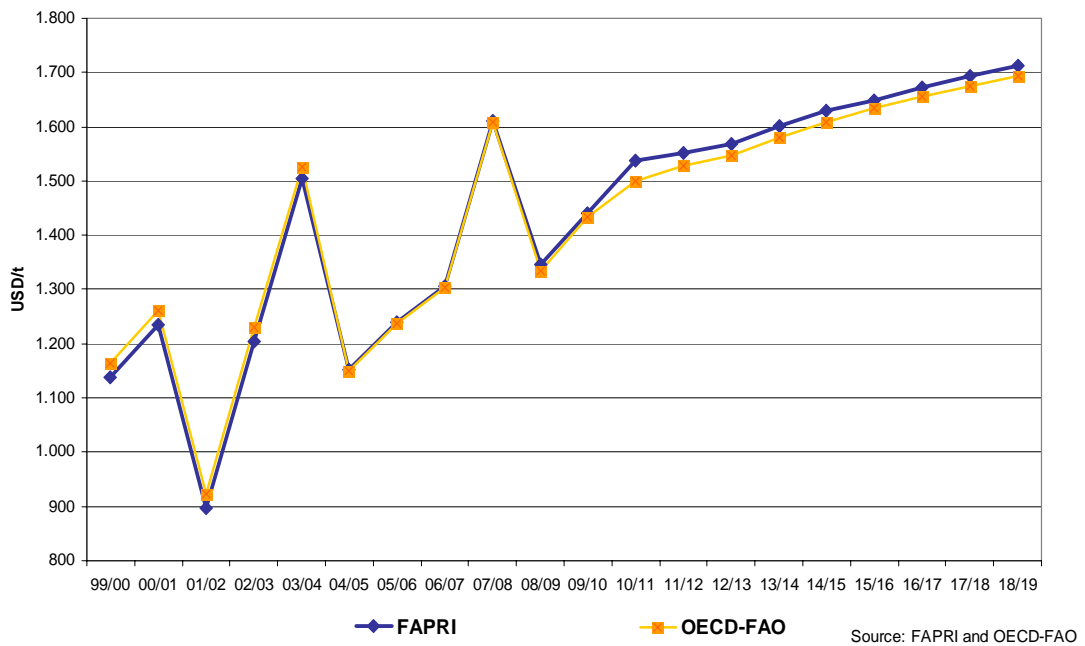
over the projection period should be almost 30% (FAPRI) or 40% (USDA) higher than the average of the past decade.

Graph 7.1 World cotton market



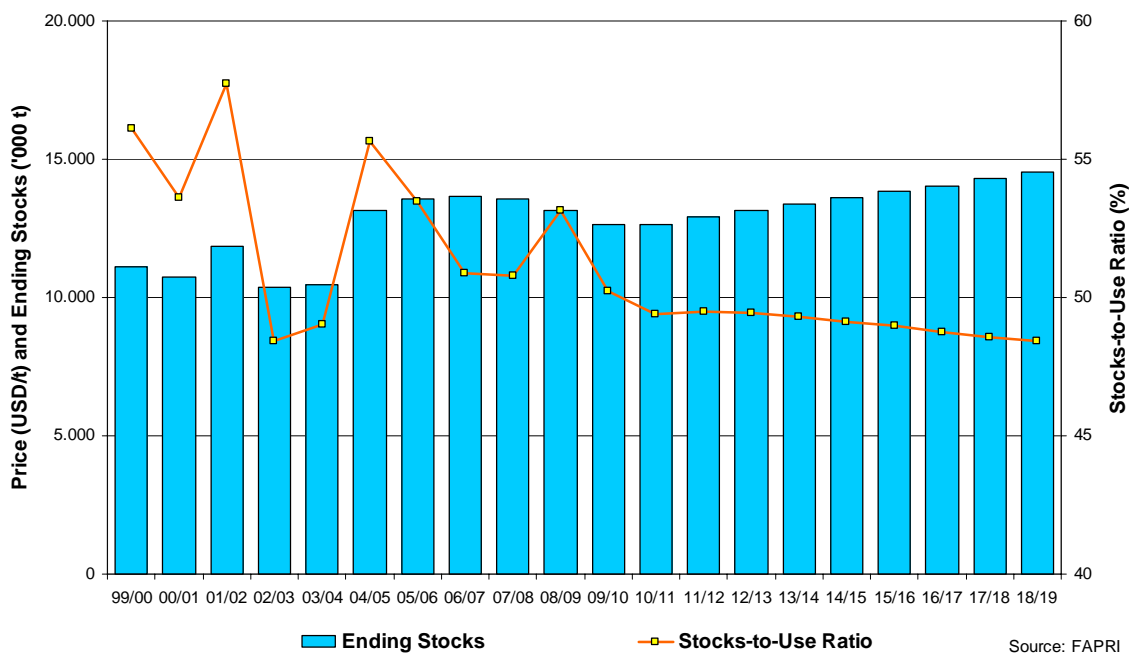
Prices (CIF Far East) move in line with demand and fall sharply in 2008/09 from the record levels of the previous year, by 16% to 1 345 USD/t (FAPRI) or 17% to 1 333 USD/t (OECD-FAO). From 2010 onwards, as demand picks up, prices grow steadily to reach 1 712 USD/t (FAPRI) or 1 694 USD/t (OECD-FAO) in 2018/19. Overall, average prices over the baseline period are expected to be from 28% (FAPRI) to 25 % (OECD-FAO) higher than the average of the past decade.

Graph 7.2 Projected world cotton prices (CIF Far East, USD/t)



World **stocks** fall modestly in the near term, according to both FAPRI and USDA, as world production and demand both decrease but then start increasing and continue along this trend to reach 14.5 million tonnes (FAPRI) or 14 million tonnes (USDA) at the end of the projection period. Nevertheless, the stock-to-use ratio declines as demand grows.

Graph 7.3 Prices and stocks on world cotton market



Main producers and users

China is the main player, accounting for nearly 30% of cotton production and for more than 40% of uses. Cotton uses started outpacing domestic supply in the early 2000s and since then, China has remained a net importer. Changes in trade policy (accession to WTO and end of the multifibre agreement) further boosted consumption already increasing along the strong economic growth. After this year's drop, both FAPRI and USDA expect uses to continue increasing already from 2009/10 till the end of the projected period, however at a slightly lower pace than in the mid-2000s.

According to FAPRI, global economic downturn's impact on Chinese consumption brings a drop - the first one in the last decade - of 8% this year (2008/09). From 2009/10, as the world economy recovers, Chinese cotton demand returns to growth again and increases by 34% over the baseline to reach 13.8 million tonnes in 2018/19. The impact on production will be prolonged as it falls this year and also in 2009/10, then it picks up and increases by 14% till the end of the baseline period (reaching 8.8 million tonnes in 2018/19). This is the result of improved yields since the acreage remains relatively stable. With consumption growth increasingly outpacing production, Chinese cotton imports almost double (+180%) over the projection period reaching 4.5 million tonnes in 2018/19, slightly over half of world's imports.

USDA, similarly, expects 2008/09 production and consumption to fall from the previous year's levels, however to a much smaller extent (-1.4% and -1.2% respectively), and that then both start increasing from 2009/10 onwards. USDA is more bullish as regards Chinese production growth (+21% up to 9.6 million tonnes in 2018/19) than the use (+19% to reach 13.2 million tonnes at the end of the baseline). As the result, it projects a 40% growth in imports over the baseline up to 3.2 million tonnes in 2018/19. However, this would be 4.5 times lower than the growth projected by FAPRI and also lower than the increase in Chinese imports in the past decade, when these grew six folds.

While using more than 13.8 million tonnes of cotton by 2018-19, China would process nearly half of world cotton (46% according to FAPRI).

US production has fluctuated between 3 and 5 million tonnes over the past decade, reflecting the variability in areas. Since 2005, cotton acreage and production have sharply contracted, mainly due to intense competition from grains and oilseeds and volatile input costs. Both FAPRI and USDA agree that production will be increasing with view towards exports markets, while domestic use will be further shrinking over the baseline period, amid global competition in the textile sector.

The two Outlooks differ, however, on the magnitude of the above trends in US production and consumption, which in consequence translates into opposite projections for US cotton exports. FAPRI expects US production, after a 32% decrease in production this marketing year, to increase by 12% over the baseline and reach almost 3.2 million tonnes in 2018/19. The mill use, which dropped less than production (-8%) would decrease by a quarter to 0.69 million tonnes at the end of the projection period. As a consequence, exports will be increasingly important factor in balancing the US market, but reduced acreage will keep them below

2.5 million tonnes during the projection period (overall 3.2% drop over the baseline period).

USDA projections are more bullish. US cotton production, after a 27% drop in 2008/09 from the previous year, is to grow strongly (+70%) over the baseline reaching 4.9 million tonnes in 2018/19, mostly due to a nearly 50% increase in acreage. Consumption, after dropping by 16% in 2008/09, declines by a moderate 9% to 0.85 million tonnes at the end of the baseline. This also translates into substantial differences for export projections (see part on trade).

The Indian cotton sector has boomed in recent years. Production doubled between 2002 and 2004 (mostly due to greatly improved yields resulting from the adoption of the Bt cotton), and India became a net exporter in 2004/05. Between 2005 and 2007 both production and exports continued growing strongly. The country has become the world's second important player after China accounting for 20% of world production and 16% of uses. Both Outlooks differ substantially on the future of India cotton sector though. While both expect cotton production and consumption to increase over the baseline, the size of these changes and their implications for exports are different.

FAPRI forecasts that Indian cotton production and consumption contracts in 2008/09 (roughly -6% both) compared to the levels of the previous year as the result of the global economic conditions and higher competition from other crops. From 2009/10 onwards, Indian production should increase by 41% over the baseline reaching 7 million tonnes in 2018/19, due to both increased acreage (10.3 m ha) and yields (680 kg/ha), and Indian use should grow along by 31% over the projected period (to 4.9 million tonnes).

USDA projections are again more bearish than FAPRI. Although it does not expect a drop neither in production nor consumption in 2008/09, it expects production to grow more moderately (by 16% to 6.3 million tonnes in 2018/19) than consumption (34 % to 5.2 at the end of the baseline). This directly impacts Indian exports.

Outlook for trade

Table 7.3 indicates figures for world's top cotton traders. They were selected on the basis of FAPRI averages for the decade 1998/99- 2007/08.

Table 7.3 Key traders

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	98/99 07/08	08/09	09/10 18/19	98/99 07/08	08/09	09/10 18/19	98/99 07/08	09/10 18/19
Net Exporters	6.154	5.751	7.596	100	93	123	100%	100%
United States	2.624	2.576	2.303	100	98	88	43%	30%
Uzbekistan	854	783	965	100	92	113	14%	13%
India	164	758	1.703	100	463	1041	3%	22%
Africa	1.001	621	829	100	62	83	16%	11%
Brazil	116	469	781	100	405	673	2%	10%
Other CIS	289	250	327	100	86	113	5%	4%
Australia	563	216	546	100	38	97	9%	7%
Net Importers	6.154	5.751	7.596	100	93	123	100%	100%
China	1.377	1.586	3.293	100	115	239	22%	43%
Other Asia	1.081	1.331	1.539	100	123	142	18%	20%
Pakistan	270	518	639	100	192	237	4%	8%
Turkey	576	477	495	100	83	86	9%	7%
Indonesia	489	453	485	100	93	99	8%	6%
Mexico	365	246	170	100	67	47	6%	2%
Russia	330	236	173	100	71	52	5%	2%
Taiwan	262	192	174	100	73	66	4%	2%
South Korea	282	186	142	100	66	51	5%	2%
Other Latin America	140	178	186	100	128	133	2%	2%
Japan	192	109	85	100	57	44	3%	1%
European Union	413	101	86	100	25	21	7%	1%

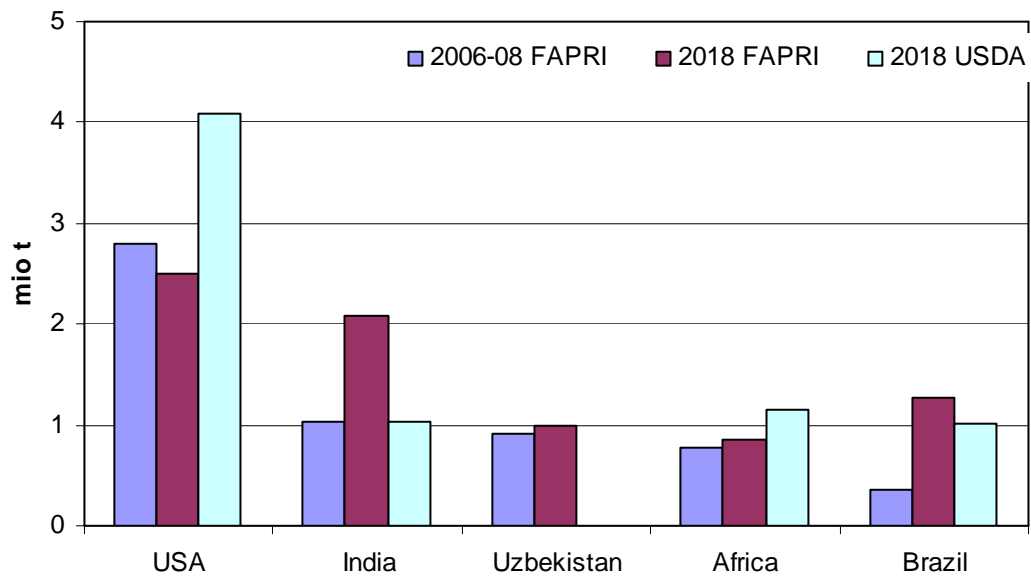
Source: FAPRI

Net exporters

The United States remain as the world's leading cotton exporter throughout the projection, according to both Outlooks. FAPRI expects the reduced US cotton acreage and resulting slow growth in production to cause US exports to decrease minimally over the baseline (-3.2%). The US would still remain the world's biggest cotton exporter with almost 2.5 million tonnes exported in 2018/19, although its average share of world trade would drop significantly from 43% to 30%.

USDA's bullish projections for cotton production and decreasing domestic use translate into a strong growth in US exports of 35% over the baseline, which are expected to reach 4 million tonnes in 2018/19 and account for one-third of overall world trade. However, the US share of world exports is still well below the 40% average achieved for the first half of this decade.

Graph 7.4 Cotton net exporters



In graph 7.4, the top 5 traders were selected on the basis of projections for 2018. New main players emerge: India and Brazil.

Both FAPRI (with 1.9 million tonnes by 2018) and USDA (1.7 million tonnes) see India as the second most important net exporter after the US. Contrary to projections for US exports, FAPRI is more bullish in the case of India, as it expects a growth of 175% over the baseline, compared to USDA's projections of a decline in exports of 5.5% and a 62% increase in imports as India increases its domestic textile production.

Brazil cotton exports increase strongly over the baseline (by 172%) reaching almost 1.3 million tonnes in 2018/19 and making Brazil, a net importer up to 2002, the third single exporting country (outpacing Uzbekistan already in 2016/17). USDA's projections for Brazil's exports are less bullish as it expects them to grow by 100% and reach 1 million tonnes at the end of the baseline.

Although cotton exports from Uzbekistan are likely to increase by roughly a quarter over the baseline, according to FAPRI (USDA does not provide forecasts for Uzbekistan as a single producer), these will be still well below the increases of the main competitors (Brazil, India) and consequently Uzbekistan's share in world exports is expected to decline (from 14% over the last decade to 13% over the baseline). USDA notes that policies in the Central Asian countries of the Community of Independent States favour export of textile products rather than of raw cotton. Therefore, cotton production and exports are expected to grow only slowly in these countries.

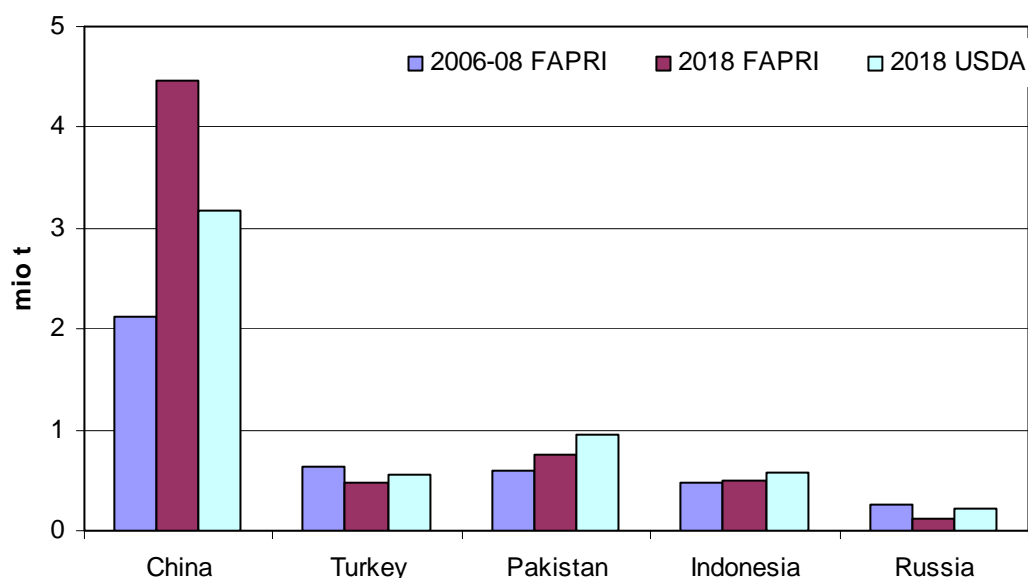
African exports are projected to increase, achieving together 0.85 (FAPRI) to 1.15 (USDA) million tonnes by 2018, a 37% rise over the projected period. USDA considers that the progress in production and exports are "in large part due to economic reforms". It further specifies that "continued increases in output are expected as these economies develop and Bt cotton is adopted".

The share of Australia in world exports, in spite of a strong growth over the baseline, is projected to drop from 9% in the past decade to 7% in the next one, as production has to cope with repeated droughts.

Net importers

World cotton imports fall in almost all major importing countries in 2008/09 compared to the record levels of last year, mainly due to the global economic slowdown.

Graph 7.5 Cotton net importers



Both Outlooks agree that China will substantially strengthen its position of world's leading cotton importer; however Chinese imports are expected to increase at a slower rate than in the past decade of record growths. FAPRI projects that China's domestic consumption growth, which increasingly outpaces production, leads to doubling imports over the projection period so that they reach 4.5 million tonnes in 2018/19. China's share in world cotton imports will thus increase from 27% in 2008/09 to slightly over 50% at the end of the baseline.

USDA, which is more bullish as regards Chinese production growth than consumption, consequently expects a growth in imports of 40% over the baseline up to 3.2 million tonnes in 2018/19. This is a 4.5 times smaller rate of growth than FAPRI projections and than an increase in imports of the past decade, when these grew six folds.

Pakistan has become a major importer in recent years and is projected to be the world's second largest importing country during the next decade, according to both Outlooks. FAPRI expect Pakistan to import 0.75 million tonnes in 2018/19 (albeit still short of the record imports of 0.79 million tonnes in 2007/08), while USDA projects a much more modest increase leading to 0.51 million tonnes at the end of the baseline

While FAPRI expects a decline in Turkish imports down to 0.48 million tonnes, USDA projects that, after two years of decline (2008/09 and 2009/10), imports rise

slowly over the baseline (to 0.6 million tonnes in 2018/19). This is, however, not enough to prevent Turkish share of world cotton trade from falling slightly. Both Outlooks agree that the declining role of Turkey in world's cotton imports is due to sharper competition since the phasing out of the multifibre agreement.

Both Outlooks project that Indonesian imports increase slightly over the baseline to reach between 0.5 million tonnes (FAPRI) and 0.58 million tonnes (USDA).

FAPRI expects that EU cotton imports after reaching their peak in 2011/12 will be declining to 0.56 million tonnes at the end of the baseline, in line with decreasing imports of the other developed countries.

According to USDA, EU imports decrease already from 2010/11, as a result of lower use due to the delocalisation of the textile industry to lower wage countries, and reach 0.24 million tonnes in 2018/19; while exports expand and outgrow imports already in 2012/13 reaching 0.3 million tonnes at the end of the baseline.

8. MEATS

Highlights

In the coming decade, the meat sector as a whole is forecast to continue its long-term rising trend driven by world population growth and economic development, particularly in developing countries. The annual growth rate of the meat sector during the projection period (1.9%), which is expected to be just somewhat lower than in the previous decade (+2.1%), would lead meat consumption and production to reach 328 million tonnes in 2018. The growth for the poultry sector (+2.3% per year) is firmer than for pork and sheep (+1.8%) and beef (+1.3%), so that by 2018 poultry is expected to have the highest consumption of all meats worldwide for the first time ever.

In the short term, world trade for all meats is likely to be negatively affected by the current global recession, although the evolution for the various meat categories is different, depending on the individual sectors. As a whole, traded volumes are projected to drop in 2009, and are not likely to fully recover before 2012. In the longer-term, the meat trade is expected to overcome the current crisis and to continue its growing trend, rising by 2.4% per year over the whole period 2009-2018. Brazil is forecast to account for 64% of the increase in world meat exports between 2009 and 2018.

All in all, taking into account the differences in terms of assumptions, methodology and coverage of products, OECD-FAO, FAPRI and USDA all agree to a large extent on the prospects regarding the development of meat production, consumption, and trade over the next 10 years.

Finally, price prospects indicate a moderate growth of meat prices over the period 2009-2018. Nominal world meat prices at the horizon 2018 are forecast to be between 15% and 40% higher than the average of the period 1999-2007. However, some divergences emerge between the different outlooks, particularly in the short term: while OECD-FAO projects a decline in prices due to the impact of the global downturn on demand, FAPRI does not seem to expect any major impact in this respect.

Developments in the last years (1999-2008)

Between 1999 and 2007, world meats market experienced a steady growth in all meat categories, driven by increasing consumption, due to world population dynamics and increasing per capita income in developing countries, particularly in China.

At global level, total meat production and consumption increased from 225 million tonnes in 1999 to 266 million tonnes in 2007, corresponding to an increase of 2.1% on an annual basis. The only notable exception to the general trend was registered in 2007 for pig meat, for which global production and consumption declined due to a considerable production shortfall in the Chinese market, following a disrupting

outbreak of Porcine Reproductive and Respiratory Syndrome (PRRS), commonly known as "blue ear" disease. In general terms, the growth in demand in a given country was often accompanied by a corresponding increase in the domestic production; therefore, traded meats represented a small share of the global market. However, the rising export vocation of some key players, in particular Brazil, also played a major role in the evolution of the world meats market over the last decade.

The most dynamic sector in the last decade was poultry, for which world consumption and production increased by 3.9% per year, compared to a rate of only 1% to 2% for the other types of meat. Poultry consumption not only boomed in developing countries, but was also the only type of meat showing a significant positive trend in developed countries. As a consequence, the world share of poultry on the total meat sector increased from 29% in 1999 to 34% in 2007, whereas it declined for pork (from 40% to 37%) and for beef (26% to 24%) and remained substantially stable for sheep meat (5%).

In the first half of 2008, the world meats market was severely affected by a significant increase in production costs as a consequence of the price hike that characterised commodities markets. In particular, the escalation of energy and feed costs linked to high oil and grains prices, combined with the only limited increase in meat prices, led to a significant compression of producers' margins.

Although in the last quarter of the year commodities prices fell back to lower levels, the outburst of the global financial and economic crisis negatively impacted meat demand, and thus meat prices, worldwide. Despite this gloomy situation, global meat consumption and production registered a record level (272 million tonnes) in 2008, mainly because of the partial recovery of the world's largest pork market after the epidemics of the previous year and due to the good performance of the poultry sector, which has probably taken advantage from an increasing consumers' preference for less expensive protein sources.

As to meat global trade, 2008 was characterised by mixed results. For beef, there was a decrease in world trade: this result is largely explained by the weakness of Brazilian exports, in particular because of a ban in the EU market, due to the lack of conformity of Brazilian beef with EU rules on animal health and traceability. On the contrary, 2008 represented a record year for poultry (10.5 million tonnes) and pork (6.8 million tonnes): for poultry, this represented the continuation of the positive trend of the previous years (enhanced also by the decline in beef), while, for pork, this was the result of exceptional export opportunities to China, following the shortfall in its domestic production in 2007.

Outlook for world meat markets

According to the OECD-FAO Agricultural outlook for 2009-2018, the meat sector as a whole is expected to quickly overcome the current economic recession and to continue its long-term rising trend determined by the global demographic and economic development. The annual growth rate during the projection period (1.9%) is expected to be slightly lower than in the previous decade, the projected consumption and production reaching 328 million tonnes in 2018.

World meat consumption over the projection period is expected to increase at the highest pace for poultry (+2.3% per year), followed by pork and sheep (both +1.8%) and finally by beef (+1.3%). At the horizon 2018, poultry is expected to become for

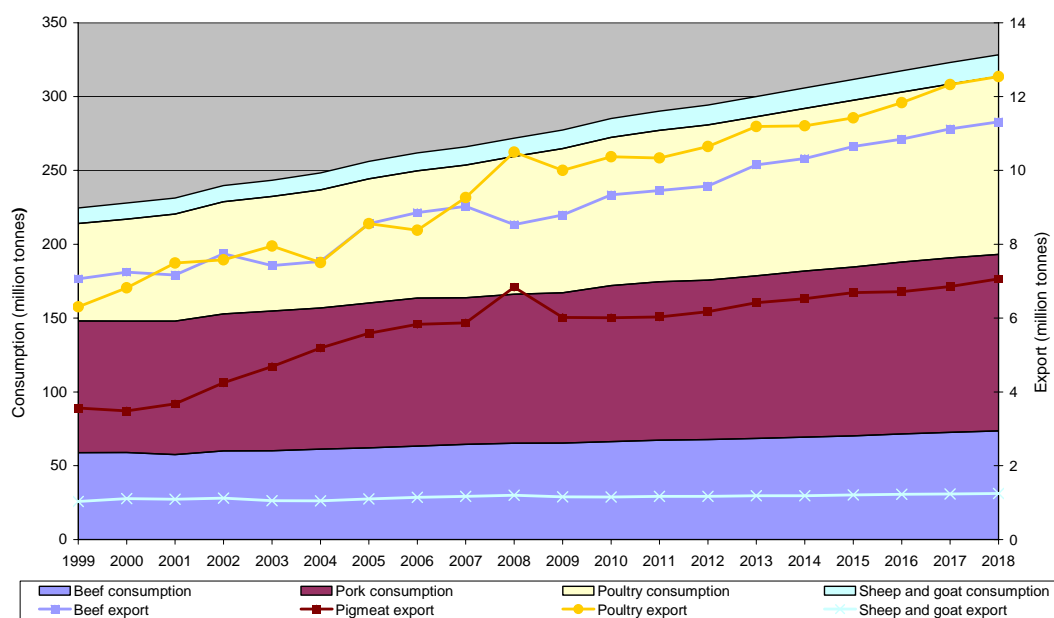
the first time the most consumed type of meat globally, with a share of 37%, thus overtaking pork (36%).

The expansion of world meats trade is likely to be affected by the current global recession, to the extent that world trade is not expected to reach again the volume of 2008 before 2012. Traded volumes are expected to drop considerably in 2009. On the one hand, this decline partly represents a settling after the record levels of 2008; on the other hand, it is mainly due to the effects of the credit crunch on trade operators, particularly in developing countries, as well as a result of policies put in place by some importing countries (e.g. China and Russia), eager to reduce their dependency on meat imports by boosting domestic production to the detriment of imported product. The only type of meat expected to show a slightly positive trade development in 2009 is beef.

The case of Brazil is emblematic: its poultry exports are forecast to come to a sudden stop after years of growth, whereas beef is supposed to recover after the negative performance of 2008, mainly because of the resumption of its exports to the EU market.

In any event, despite the difficulties linked to the current crisis, meat exports are expected to fully recover during the second part of the projection period. Over the whole period 2009-2018, exports are expected to increase by 2.4%, the absolute level reaching more than 32 million tonnes of meat by 2018. Brazil is forecast to account for 64% of the increase in world meat exports between 2009 and 2018. At the end of the projected period, traded volumes are expected to represent roughly 10% of global meat market, with a maximum of 15% for beef and a minimum of 6% for pork.

Graph 8.0.1: World meat balance sheet by meat category



Source: OECD - FAO outlook 2009

As to the projections of FAPRI and USDA, they are less comprehensive than the OECD-FAO, since the formers do not cover the entirety of the meat sector (information about sheep and goat meat is missing and, in the poultry sector, turkey is poorly represented in FAPRI). Furthermore, FAPRI does not publish results for world meat consumption, production and trade, but simply consider a limited

number of major players. However, by summing up figures for the major countries and commodities considered by FAPRI, one can obtain a proxy for the global meat sector. In such a way, the corresponding projections of OECD-FAO, FAPRI and USDA can be compared, although only in terms of trends, rather than in absolute values. Nevertheless, the different analytical approach and degree of coverage achieved by the three organisations, makes it very difficult to fully compare the results and to find a precise justification for divergences in projections.

The following table compares projections carried out by the three forecasting institutes, comparing the 10 years average over the projection period (2009-2018) to the reference period (1999-2007). Figures are indicated as indexes, 100 being the average for the past decade.

Table 8.0.1 Comparison of outlook for world meats market

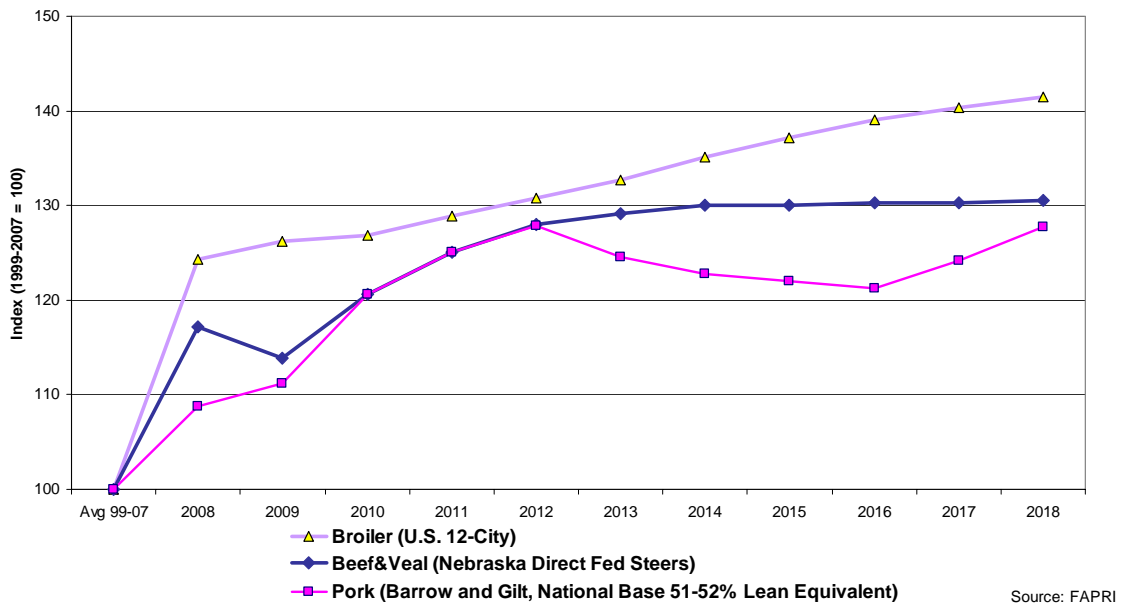
	Production & Consumption	Trade (exports)
<i>1999 to 2007</i>	<i>100</i>	<i>100</i>
2009 to 2018		
OECD-FAO	124	136
FAPRI	122	149
USDA	121	134

Despite the differences in terms of assumptions, methodology and coverage, OECD-FAO, FAPRI and USDA agree to a large extent on the prospects regarding the development of production, consumption and trade: they all expect a growth of around 20% for the meats sector as a whole and a stronger increase for the global trade flows. However, FAPRI is more bullish for the trade evolution (growth of 49%) than OECD-FAO (+36%) and USDA (+34%), although this difference could be simply due to the partial country coverage of FAPRI, and in particular to its trade approach, based on country net-trade, rather than on a separate consideration of exports and imports.

As to meat prices (measured with reference to the USA market), FAPRI projections indicate a substantial growth over the projection period: at the horizon of 2018, beef and pork prices are forecasted to rise, in nominal terms, respectively by 31% and 28% compared to the average of the period 1999-2007, while for broiler the increase is even more significant (+41%), due to the strong poultry demand in the next decade.

The comparison between price projections of FAPRI and OECD-FAO is analysed in the specific meat sections.

Graph 8.0.2 Projected meat prices, USA



8.1. Beef

Developments in the last years (1999-2008)

Between 1999 and 2007, the world beef market experienced a moderate growth, resulting from an initial drop in consumption, particularly in the EU, due to the consumers' scare following the outbreak of BSE, and the subsequent slight recovery in the last years of the considered period. At the global level, total beef consumption and production rose from about 59 million tonnes in 1999 to 65 million tonnes in 2007, corresponding to an annual increase of only 1.1%.

In developed countries, beef consumption stagnated (+0.4% per annum in the USA and no increase at all in the EU), whereas a decent growth was registered in developing countries (+2.4% in China, +1.9% in Brazil, +1.5% in Argentina, but no growth in Russia).

On the production side, among the major players, the most remarkable growth of beef production was recorded by Brazil (+4.9% per year), followed at distance by China (+2.5%), Mexico (+2.2%), Argentina (+2.1%) and Australia (+1.1%). On the contrary, beef production declined both in the USA (-0.4%) and in the EU (-0.8%), the latter turning to a significant beef net importer during the considered period

The world trade of beef meat steadily grew during the considered period, total exports increasing from 7.1 million tonnes in 1999 to 9.0 million in 2007, i.e. an annual increase of 3.1%. In particular Brazil expanded its export volumes considerably (more than +20% per year), taking also advantage of the decline of beef production in the EU and the USA. Thus, Brazil became within a few years indisputably the world main beef exporter.

However, 2008 was a negative year in terms of global trade of bovine meat, with total exports going down by 5.5% compared to 2007 and thus coming back to the level of

2005. This drop, which is the first since 2003, can be almost entirely attributed to the difficulties of Brazil, whose beef exports plummeted by 25% in just one year. Besides the global economic recession, which started exerting its negative effects on world meat consumption, and primarily beef, in the last quarter of 2008, Brazil had to face, as of February 2008, a ban on unprocessed beef into the EU for all production unable to prove identification and traceability, as well as a ban in Russia, because of alleged foot-and-mouth disease problems in some Brazilian regions.

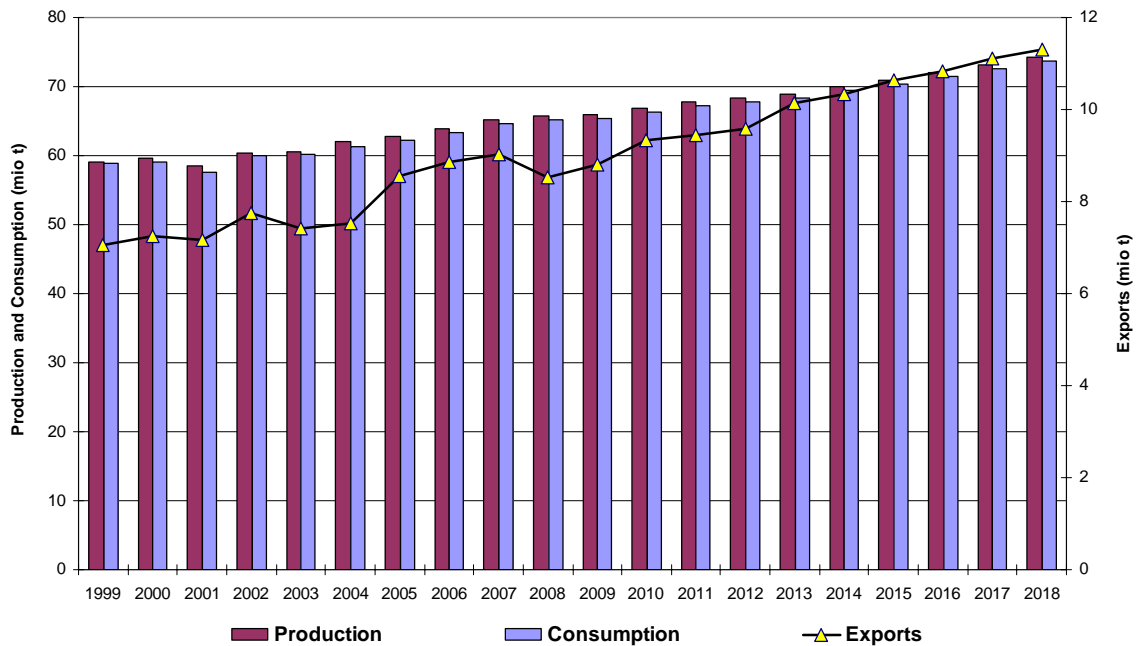
Outlook for world beef market

According to the OECD-FAO Agricultural outlook for 2009-2018, the beef sector is expected to continue its moderate growth in the medium term, despite stagnating consumption in 2009 because of the global recession. The projected consumption and production is expected to increase from 65 million tonnes in 2009 to 74 million in 2018. The annual growing rate during the projection period (1.3%) is forecast to be even somewhat higher than in the previous decade.

The increase in world beef consumption is expected to be driven, as in the recent past, by emerging countries, notably China (+2.6% per year), Brazil (+2.0%) and, albeit at a lower absolute level, by Mexico (+2.4%). On the production side, Brazil and China are supposed again to be most dynamic players (+2.9 and +2.6% respectively). Among the developed countries, the USA are expected to reverse the declining trend of the last decade, while the EU is projected to continue its negative development in beef production.

In spite of the current economic downturn, as of 2009 the world trade of beef is likely to recover, at least partially, from the decline registered in 2008. In the medium term, beef trade is projected to continue its growing trend, with total exports expected to reach 11.3 million tonnes in 2018. This corresponds to an annual increase of 2.8%, just slightly lower than in the past decade. Brazil is likely to fully recover from the recent difficulties and consolidate its position of leading exporting country to the detriment of its major competitors, notably Australia, Canada and Argentina, the growth in the latter country being also hindered by the restrictive policy measures on export and by the tough competition for land, notably with oilseeds crops. In any event, the spectacular development of Brazilian exports during the period 1999-2007 is destined to slow down to somewhat more ordinary, although still very significant, growth rates (+5.8% per year). As to the EU, the recent trend is forecast to persist, so that the Community is destined to become increasingly a beef net importer.

Graph 8.1.1 World beef balance sheet



Source: OECD – FAO outlook 2009

Table 8.1.1 Comparison of outlooks for world beef market

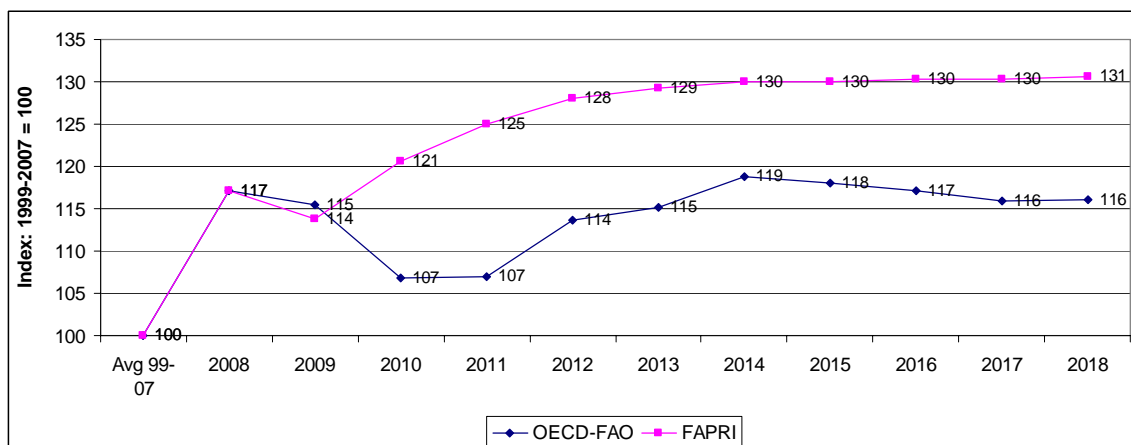
	Production	Consumption	Exports
1999 to 2007	100	100	100
2009 to 2018			
FAPRI	114	112	139
USDA	112	112	125
OECD-FAO	114	114	129

In summary, the prospects of OECD-FAO, FAPRI and USDA regarding the development of beef production, consumption and trade are quite coherent: they all expect a growth of around 10% - 15% for the beef sector and a stronger increase for the global trade flows. However, FAPRI is again more optimistic on the evolution of trade (about +40%) than OECD-FAO (+30%) and USDA (+25%). The different methodology used by FAPRI, based on country net-trade rather than on a separate consideration of exports and imports, is probably the main cause of the slightly different results.

As to beef price projections, OECD-FAO and FAPRI seem to have divergent views. For the first organisation, beef prices in 2009 are forecast to decline compared to 2008, and to fall further in 2010 and 2011, due to the weak global demand. From 2012 onwards, beef price would recover, but, at the horizon 2018, they would be, in nominal terms, only 16% higher than the average of the period 1999-2007 and lower than the level of 2008.

On the contrary, FAPRI does not expect beef price to be severely affected by the economic crisis and, after a minor decline in 2009, it is projected to grow steadily and to stabilise in the second part of the projection period. In 2018, FAPRI expects beef prices to be 31% higher than in the reference period.

Graph 8.1.2 Projected world beef prices



Main producers and consumers

The following table illustrates FAPRI projections on beef production and consumption for the major world players, comparing the 10 years' average of the projection period (2009-2018) to the reference period (1999-2007). Figures are indicated as indexes, 100 being the average for the past decade. The evolution of countries' production or consumption share is also represented.

Table 8.1.2 FAPRI outlook for beef producers and consumers

	in 1000 tonnes			Change vs past			World share		
	AVG from to	Past	Current	Projected	Past	Current	Projected	Past	Projected
		1999 2007	2008	2009 2018	1999 2007	2008	2009 2018	1999 2007	2009 2018
Producers									
U.S.	11 861	12 093	12 016	100	102	101	23%	21%	
Brazil	7 689	9 205	10 424	100	120	136	15%	18%	
European Union	8 337	8 220	8 047	100	99	97	16%	14%	
China - Mainland	5 456	6 260	7 467	100	115	137	11%	13%	
Argentina	2 954	3 200	3 344	100	108	113	6%	6%	
India	2 017	2 655	2 945	100	132	146	4%	5%	
Mexico	2 023	2 253	2 424	100	111	120	4%	4%	
Australia	2 077	2 100	2 271	100	101	109	4%	4%	
Other CIS	1 395	1 650	1 750	100	118	125	3%	3%	
Russia	1 647	1 330	1 253	100	81	76	3%	2%	
Canada	1 324	1 270	1 335	100	96	101	3%	2%	
Consumers									
U.S.	12 497	12 380	12 412	100	99	99	25%	21%	
European Union	8 484	8 520	8 545	100	100	101	17%	15%	
Brazilian	6 469	7 313	7 899	100	113	122	13%	14%	
China - Mainland	5 405	6 210	7 595	100	115	141	11%	13%	
Argentina	2 517	2 805	2 857	100	111	114	5%	5%	
Mexico	2 396	2 651	2 845	100	111	119	5%	5%	
Russia	2 406	2 328	2 310	100	97	96	5%	4%	
India	1 536	1 845	2 013	100	120	131	3%	3%	
Other CIS	1 385	1 611	1 742	100	116	126	3%	3%	
Japan	1 313	1 187	1 309	100	90	100	3%	2%	
Canada	1 024	1 070	1 116	100	104	109	2%	2%	
Australia	734	730	756	100	99	103	1%	1%	
South Africa	662	692	751	100	104	113	1%	1%	
South Korea	538	560	652	100	104	121	1%	1%	
Egypt	648	555	677	100	86	105	1%	1%	
Ukraine	540	480	504	100	89	93	1%	1%	

Source: FAPRI

According to FAPRI, beef consumption is substantially stable in developed countries, and in particular in the USA and the EU, who are the two largest

historical markets. On the other hand, beef consumption in emerging countries is destined to grow substantially. In particular in Brazil and China, the third and the fourth biggest markets, beef consumption is, on average over the projection period, respectively 22% and 41% higher than in the reference period. The higher Chinese consumption is mainly satisfied by an expansion of its domestic production, whereas the growing Brazilian production (+36%) is expected to fill large part of the increasing demand on other markets and replace the declining EU production.

Outlook for trade

The following table illustrates FAPRI projections of beef trade for the main countries, comparing the 10 years average of the projection period (2009-2018) to the reference period (1999-2007).

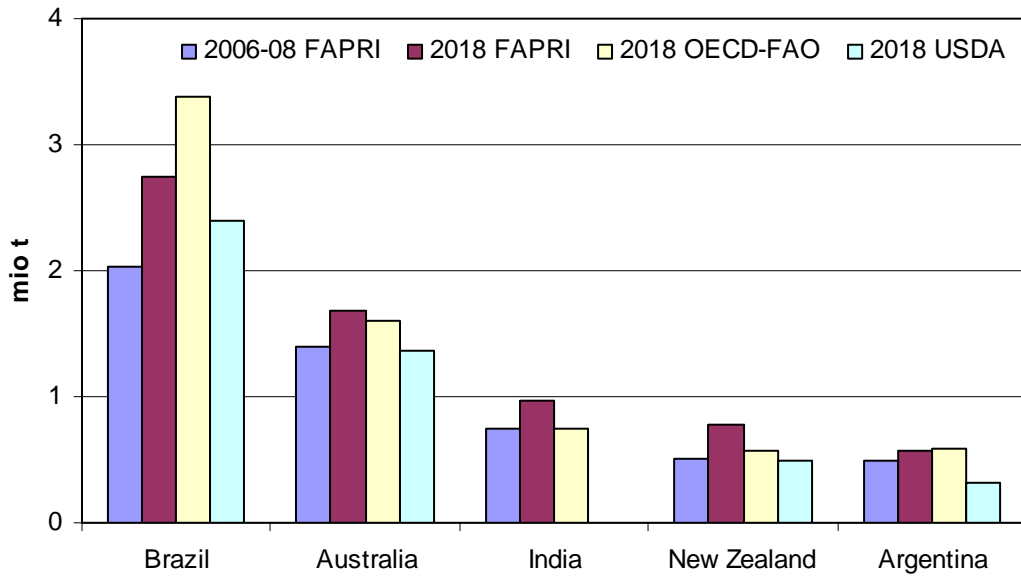
Table 8.1.3 FAPRI outlook for beef net exporters and net importers

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 1999 2007	Current 2008	Projected 2009 2018	Past 1999 2007	Current 2008	Projected 2009 2018	Past 1999 2007	Projected 2009 2018
Net Exporters								
Brazil	1 221	1 892	2 526	100	155	207	27%	40%
Australia	1 339	1 379	1 516	100	103	113	29%	24%
India	481	810	932	100	168	194	11%	15%
New Zealand	501	503	670	100	100	134	11%	11%
Argentina	441	395	488	100	90	111	10%	8%
Canada	297	205	219	100	69	74	6%	3%
China - Mainland	51	50	-128	100	98	-253	1%	-2%
Ukraine	107	0	-150	100	0	-141	2%	-2%
Net Importers								
Russia	758	998	1 057	100	132	139	17%	17%
Japan	803	675	811	100	84	101	18%	13%
Mexico	373	398	421	100	107	113	8%	7%
South Korea	313	320	344	100	102	110	7%	5%
European Union	89	300	498	100	336	558	2%	8%
United States	648	275	398	100	42	61	14%	6%
Egypt	209	225	280	100	108	134	5%	4%
Philippines	129	173	202	100	134	156	3%	3%
China - Hong Kong	81	100	113	100	123	140	2%	2%
Taiwan	93	100	115	100	108	124	2%	2%

Source: FAPRI

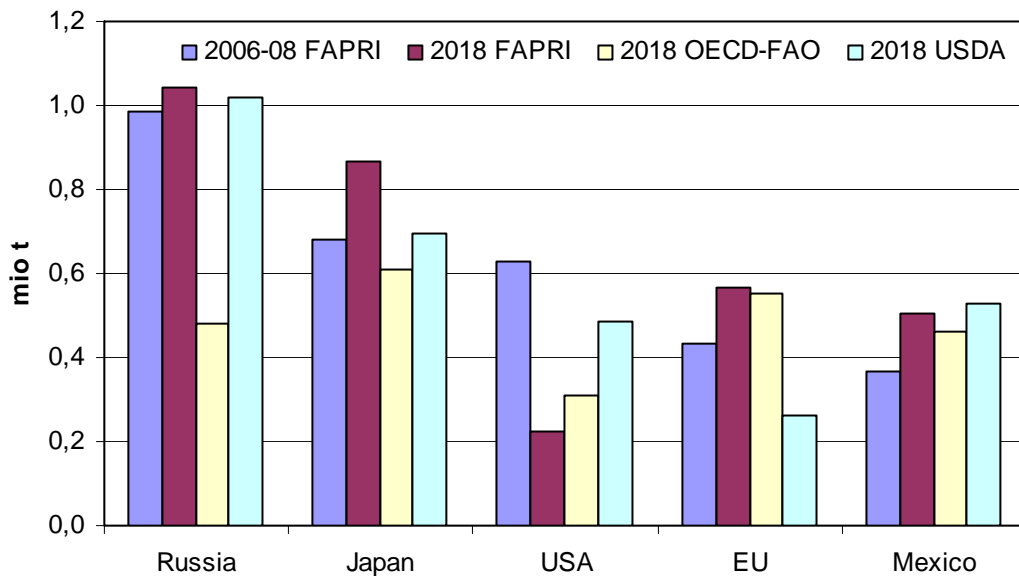
With an expected increase of 107% in its beef net exports over the projection period versus the average of the past decade, Brazil is forecast to further consolidate its leadership in the future decade, when it would account for 40% of the world exports. India (+94%) and New Zealand (+34%) are also likely to be quite dynamic in terms of development of net exports, whereas Australia is likely to lose market share, in spite of an increase of 13%.

Graph 8.1.3 Beef net exporters



On the other hand, Russian beef net imports are expected to continue their growth (+39%) to attain 1.1 million tonnes on average in the period 2009-2018. As to the EU, the trend of the recent years is forecast to persist, so that the Community will become increasingly a beef net importer.

Graph 8.1.4 Beef net importers



When comparing the trade projections of the OECD-FAO, FAPRI and USDA for 2018, it appears that the most significant divergence between the three organisations concerns the forecast evolution of beef net imports in Russia. While for the OECD-FAO they would plummet to less than 0.5 million tonnes, FAPRI and USDA expect them to remain at the level of 2006-08, and even to slightly increase. Also, OECD-FAO is more confident than the other two organisations as concerns the increase in Brazilian net exports.

Whatever the case may be, it is difficult to give a precise justification for divergences in trade projections, since they are highly sensitive to slight differences in the corresponding projections on production and consumption.

8.2. Pig meat

Developments in the last years (1999-2008)

Between 1999 and 2007, the world pig meat market experienced a substantial growth. At global level, total pig meat consumption and production increased from about 89 million tonnes in 1999 to 99 million tonnes in 2007, corresponding to an annual increase of 1.3%. However, exactly the year 2007 was characterised by the outbreak of Porcine Reproductive and Respiratory Syndrome (PRRS) in the world's largest pork market, which resulted in a massive disruption in the Chinese production, leading to a decline in production at world level too.

This PRRS shock had serious impacts in China, where the shortfall in local production (-10% compared to the previous year) was initially absorbed by an equivalent reduction in domestic consumption (without significant changes in imports), and a remarkable increase in domestic prices. Nevertheless, Chinese pork consumption still increased by almost 1% per year over the period 1999-2007.

Apart from the particular case of China, pork consumption increased at a considerable annual rate in some important markets of emerging countries, such as Russia (+3.7%), Brazil (+4.6%) and Mexico (+5.2%), whereas almost no increase at all was registered in the EU, the US and Japan, respectively the second, third and fourth largest pork consumption market over the last decade.

On the production side, the EU pork sector maintained its size roughly unchanged, while in the USA a moderate production increase was registered (+1.4% on annual basis). Finally, Brazil and Canada, albeit at a smaller scale, expanded their pork production at a more significant rate (+7.0% and 2.6% respectively).

The world trade of pig meat grew steadily during the considered period, with total exports increasing from 3.6 million tonnes in 1999 to 5.9 million in 2007, i.e. an annual rate of 6.4%. Within the considered period, in particular pork exports of the USA (+11.6% per year) and Canada (+8.5%) improved significantly, so that these two countries now contend the role of top world exporter to the EU, whose exports, on the contrary, declined by 1.3%. The growth rate of Brazilian pork exports was even more significant (+30%), but their absolute level in 2007 was still quite low compared the EU, the USA and Canada. Finally, also China registered, despite the crisis of 2007, a positive development for its pork exports (+12%) over the last years, although their absolute level remains insignificant with respect to the size of the Chinese pork sector.

Against this background, 2008 was a record year for the global trade of pig meat, with total exports booming (+17% compared to 2007). This stunning increase depends on different factors: the sudden large increase of Chinese imports, destined to stabilise the market after the production shortfall of 2007; the good development of markets like Japan, Mexico, South Korea and Ukraine; the difficulties experienced by the beef trade in 2008 (see paragraph 8.1). The countries that benefited most from the export boom of 2008 were the EU (+30% compared to 2007) and even more the USA (+50%), taking also into account the difficulties of the Canadian pork sector, which did not manage to take advantage of this market opportunity.

Outlook for world pork market

According to the OECD-FAO Agricultural outlook for 2009-2018, the pig meat sector will continue its long-term growth, with the projected consumption and production increasing from 102 million tonnes in 2009 to 120 million in 2018. The annual growing rate during the projection period (1.8%) is expected to be even somewhat higher than in the previous decade.

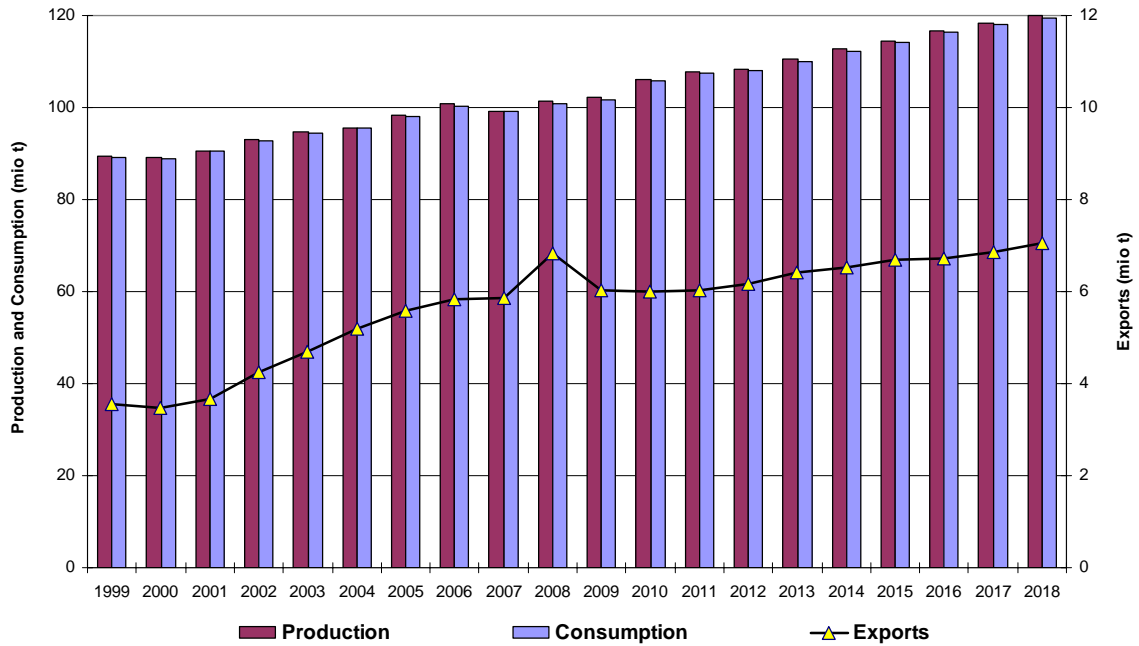
The increase in world pork consumption and production over the projection period is again expected to be mainly led by China and other important emerging markets such as Brazil and Russia; however, the sector is supposed to grow, although at a lower pace, also in the EU and in the USA.

In 2009, world pork trade is expected to return to a more habitual level after the record registered 2008. The recovery of Chinese production will probably put an end to the exceptional export opportunities on the world's largest pork market. Besides, the effect of the economic crisis, the recovery of beef exports, as well as the trade restrictions adopted by some countries to counter the scare linked to the outbreak of the swine flu H1N1, will further hamper the development of trade in 2009.

Nevertheless, world trade of pig meat is likely to expand at a moderate rate (+1.8% per year) between 2009 and 2018. Total exports are thus projected to reach 7.1 million tonnes by 2018, which is a slightly higher level than the record year 2008.

The countries expected to improve the most their position of pork exporters during the projection period are the USA, followed by Brazil; on the contrary, Canada's exports are likely to stagnate and EU exports are even set to decline. On the import side, most main players are expected to increase their pork trade flows from third countries. Russia, which aims at reaching self-sufficiency in the meats sector, represents the big exception in this trend: since domestic production is expected to outpace consumption, imports would decline by 20% per year during the whole projection period.

Graph 8.2.1 World pork balance sheet



Source: OECD – FAO outlook 2009

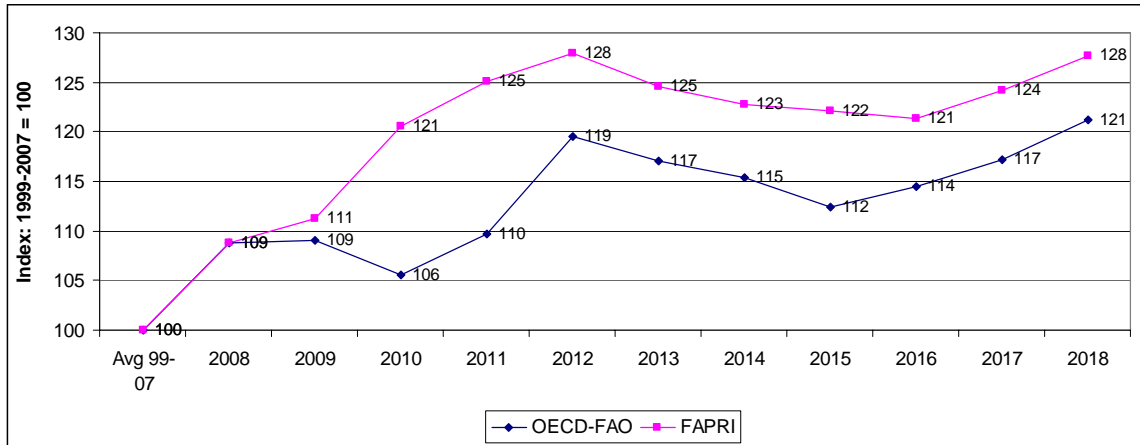
Table 8.2.1 Comparison of outlook for world pork market

	Production	Consumption	Exports
1999 to 2007	100	100	100
2009 to 2018			
FAPRI	118	118	155
USDA	115	115	137
OECD-FAO	118	118	138

For the pork sector, the prospects of OECD-FAO, FAPRI and USDA regarding the development of production, consumption and trade are quite similar: they all expect a growth of around 15% - 20% for the pork sector and a stronger increase in the global trade flows. However, FAPRI projects a stronger trade development (+55%) than OECD-FAO (+38%) and USDA (+37%).

As in the case of beef, it turns out that the main reason for FAPRI's higher results on trade depend on the net-trade approach followed by this organisation.

Graph 8.2.2 Projected world pork prices



As to pork price prospects, OECD-FAO and FAPRI seem to be broadly in line on the mid-term development, but show substantial differences in the short term, probably due to different views on the severity of the economic crisis and its impact on the demand. As in the case of beef, FAPRI is more affirmative and foresees a significant price increase in 2009 and 2010, whereas OECD-FAO indicates a price drop. From 2010 onwards, the price curves of the two projection institutes move in parallel, but the initial gap remains until the end of the period. At the horizon of 2018, FAPRI forecasts that pork prices will be 26% higher in nominal terms compared to the average of the period 1999-2006, whereas the corresponding estimate of OECD-FAO is 21%.

Main producers and users

Table 8.2.2 FAPRI outlook for pork producers and consumers

AVG from to	in 1000 tonnes			Change vs past			World share	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	1999 2007	2008	2009 2018	1999 2007	2008	2009 2018	1999 2007	2009 2018
Producers								
China - Mainland	42 466	44 593	52 654	100	105	124	47%	50%
European Union	21 736	22 300	22 400	100	103	103	24%	21%
U.S.	9 139	10 604	11 016	100	116	121	10%	10%
Brazil	2 481	3 055	3 777	100	123	152	3%	4%
Russia	1 674	2 040	2 369	100	122	142	2%	2%
Vietnam	1 334	1 850	1 927	100	139	144	1%	2%
Canada	1 814	1 845	2 010	100	102	111	2%	2%
Japan	1 256	1 245	1 307	100	99	104	1%	1%
Philippine	1 118	1 190	1 335	100	106	119	1%	1%
Mexico	1 098	1 142	1 318	100	104	120	1%	1%
South Korea	1 057	1 045	1 129	100	99	107	1%	1%
Taiwan	906	910	974	100	100	107	1%	1%
Consumers								
China - Mainland	42 289	44 875	52 952	100	106	125	47%	50%
European Union	20 559	20 924	21 244	100	102	103	23%	20%
U.S.	8 671	8 762	9 115	100	101	105	10%	9%
Russia	2 337	2 979	3 168	100	127	136	3%	3%
Japan	2 354	2 498	2 512	100	106	107	3%	2%
Brazil	1 976	2 380	2 741	100	120	139	2%	3%
Vietnam	1 324	1 889	2 053	100	143	155	1%	2%
Mexico	1 397	1 597	1 741	100	114	125	2%	2%
South Korea	1 252	1 499	1 671	100	120	133	1%	2%
Philippine	1 146	1 244	1 482	100	109	129	1%	1%
Canada	1 035	982	1 038	100	95	100	1%	1%
Taiwan	946	929	1 005	100	98	106	1%	1%
Ukraine	628	743	730	100	118	116	1%	1%
Thailand	495	700	777	100	142	157	1%	1%
Other CIS	581	681	736	100	117	127	1%	1%
Indonesia	529	582	628	100	110	119	1%	1%
China - Hong Kong	400	490	508	100	122	127	0%	0%

Source: FAPRI

The projected increase in world consumption of pork meat is mainly fuelled by the growth of its largest player: FAPRI outlook indicates for China an increase of more than 10 million tonnes (+25%) on average between the reference period 1999-2007 and the projection period 2009-2018, the additional demand being supplied by an almost equivalent expansion of domestic production. Nevertheless, the per capita pork meat consumption in China (42 kg per year in 2018) is expected to remain lower than in the EU (44 kg). Apart from China, the pig meat market is supposed to grow also in all other main countries, although for the other two big players of the pork sector (the EU and the US) in particular, the growth in consumption between the two periods is much less significant (+3% in the EU and +5% in the USA). Finally, considerable rates of consumption growth are expected especially in Brazil (+39%), Russia (+36%) and some Asian countries such as Vietnam (+55%), South Korea (+33%), the Philippines (+31%) and Thailand (+57%).

Outlook for trade

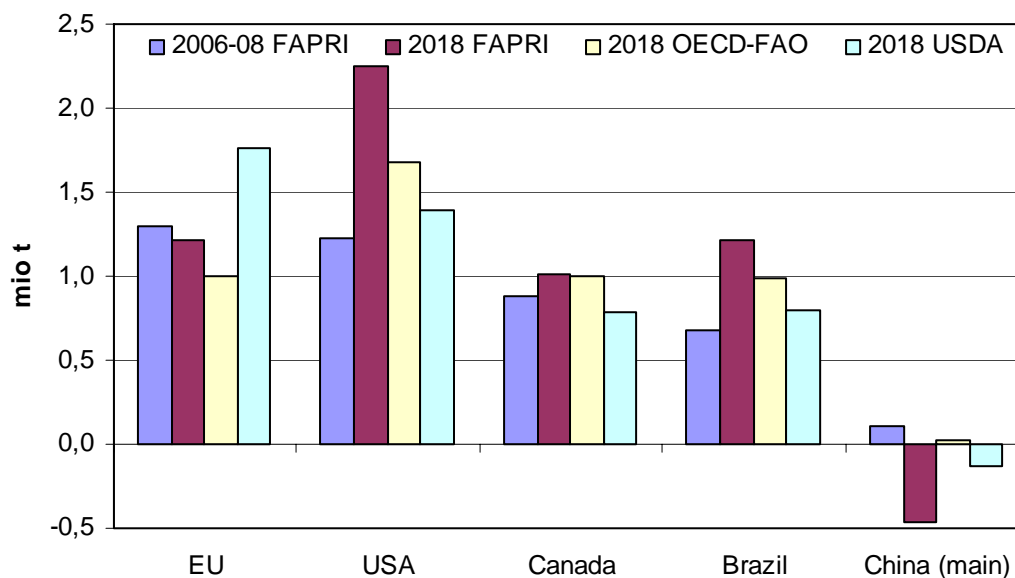
Table 8.2.3 FAPRI outlook for pork net exporters and net importers

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 1999 to 2007	Current 2008	Projected 2009 to 2018	Past 1999 to 2007	Current 2008	Projected 2009 to 2018	Past 1999 to 2007	Projected 2009 to 2018
Net Exporters								
United States	472	1 794	1 896	100	380	402	14%	37%
European Union	1 176	1 475	1 156	100	125	98	36%	23%
Canada	776	860	972	100	111	125	24%	19%
Brazil	506	675	1 036	100	133	205	15%	20%
Net Importers								
Japan	1 109	1 248	1 203	100	113	108	34%	24%
Russia	663	939	798	100	142	120	20%	16%
Mexico	299	455	424	100	152	142	9%	8%
South Korea	214	444	543	100	207	254	7%	11%
China - Hong Kong	250	367	387	100	147	155	8%	8%
China - Mainland	-177	282	299	100	-159	-169	-5%	6%
Ukraine	24	140	137	100	573	560	1%	3%

Source: FAPRI

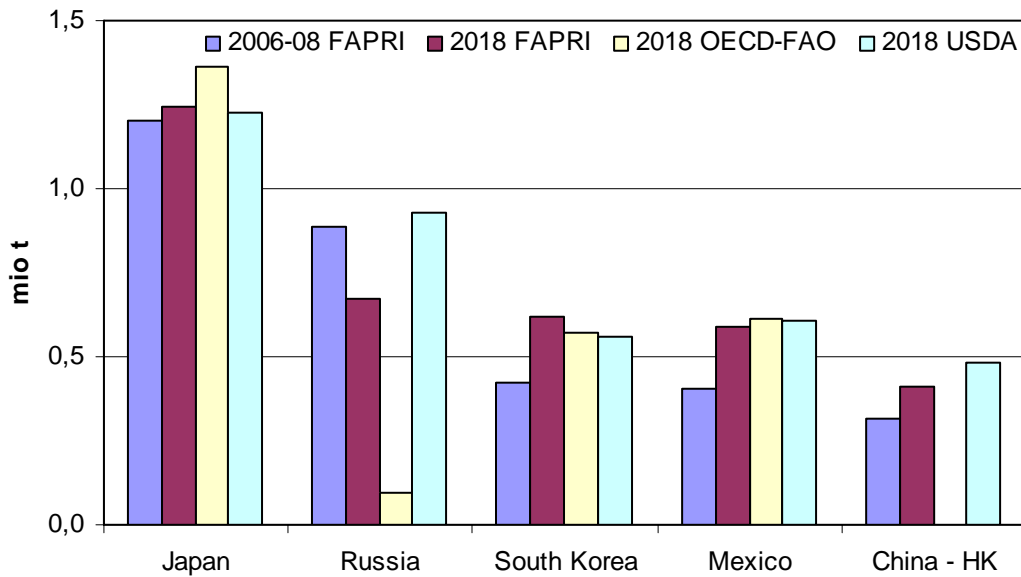
According to FAPRI, the USA, and to a lesser extent Brazil, are expected to increase their world share of pork exports over the projection period to the detriment of Canada and the EU. In particular the USA are expected to overtake the EU as world leader in pork net exports.

Graph 8.2.3 Pork net exporters



The OECD-FAO and the USDA essentially agree with FAPRI on the export projections, albeit the latter is more optimistic concerning the growth of the USA and Brazilian export. Furthermore, the USDA is the only organisation that forecasts an increase, rather than a decline, in EU pork exports by 2018 compared to the average of 2006-08.

Graph 8.2.4 Pork importers



Regarding the projections on net imports, there seems to be a broad agreement among the three organisations. As in the case of beef, the main question mark appears to lie in the behaviour of the Russian market: while the USDA and FAPRI foresee a substantial stability, or at most a slight decline, in Russian pork imports by 2018, the OECD-FAO projects a considerable decline, which would imply for Russia a position of substantial self-sufficiency in the pork sector.

8.3. Poultry

Developments in the last years (1999-2008)

Poultry was the most dynamic meat sector during the last decade, where it displayed the largest growth of world consumption and production of all meat categories. At global level, total poultry consumption and production increased from 66 million tonnes in 1999 to 90 million tonnes in 2007, corresponding to an annual increase of 3.9%. These results were attained despite recurrent consumers' scares and regional trade restrictions linked to the spread of various diseases, such as the avian influenza, which has been representing a major threat for the global poultry sector in the recent past.

In general, poultry consumption not only boomed in developing countries, but was also the only type of meat to show a significant positive trend in developed countries such as the USA and the EU. Still, among the most important poultry consumers, the highest annual growth rates of poultry consumption during the reference period were registered in emerging countries like India (+12.7%), Russia (+6.8%), Mexico (+6.2%), and Brazil (+5.5%).

On the production side, the most remarkable growth rate among the main poultry producing countries was attained by Brazil (+8.4% per year), whereas for the other three world leaders (USA, China and the EU) the pace of the growth was more

modest. The substantial gap between the growing rate of Brazilian poultry production during the recent past and the corresponding increase in domestic consumption is an indicator of the considerable development of the export capacity of this country.

The world trade of poultry meat grew substantially during the selected period, global exports increasing from 6.3 million tonnes in 1999 to 9.3 million in 2007, i.e. an annual increase of 4.9%. Trade data confirm Brazil's extraordinary increase in exports, which were able to capture the opportunities of the growing world demand. With an annual export growth of 19.5% per year over the past decade, Brazil has lastingly overtaken, since 2004, the USA as the world leading poultry exporting country. On the imports side, the strongest import growth was registered in the EU and in Mexico, where imports grew by more than 10% per year during the reference period.

As for pork, and contrary to beef, 2008 was a record year for world trade of poultry meat. However, unlike the pork sector, where the result of 2008 can be considered the result of exceptional market conditions (see paragraph 8.2), for poultry this represents the continuation of an established positive trend over years. The sudden standstill of beef trade in 2008 due to sector-specific problems (see paragraph 8.1), as well as the first negative impacts of the global economic crisis on world consumers' purchasing power, leading to a shift towards the consumption of less expensive poultry meat, might have also contributed to the enhancement of poultry trade, though.

Outlook for world poultry markets

According to the OECD-FAO Agricultural outlook for 2009-2018, the poultry sector is expected to slow down somewhat the pace of its expansion, but the annual growing rate during the projection period is still foreseen at 2.3%. Therefore, the projected consumption and production would increase from 98 million tonnes in 2009 to 120 million in 2017.

Poultry consumption is expected rise nearly everywhere in the world, as usual growing faster in developing countries, albeit at a lower pace than in the past decade. On the production side, Brazilian growth, although firm (+4.0% per year), is projected to cool down considerably compared to the recent past, so that China and the USA should maintain their position as world leading poultry producing countries at the horizon 2018.

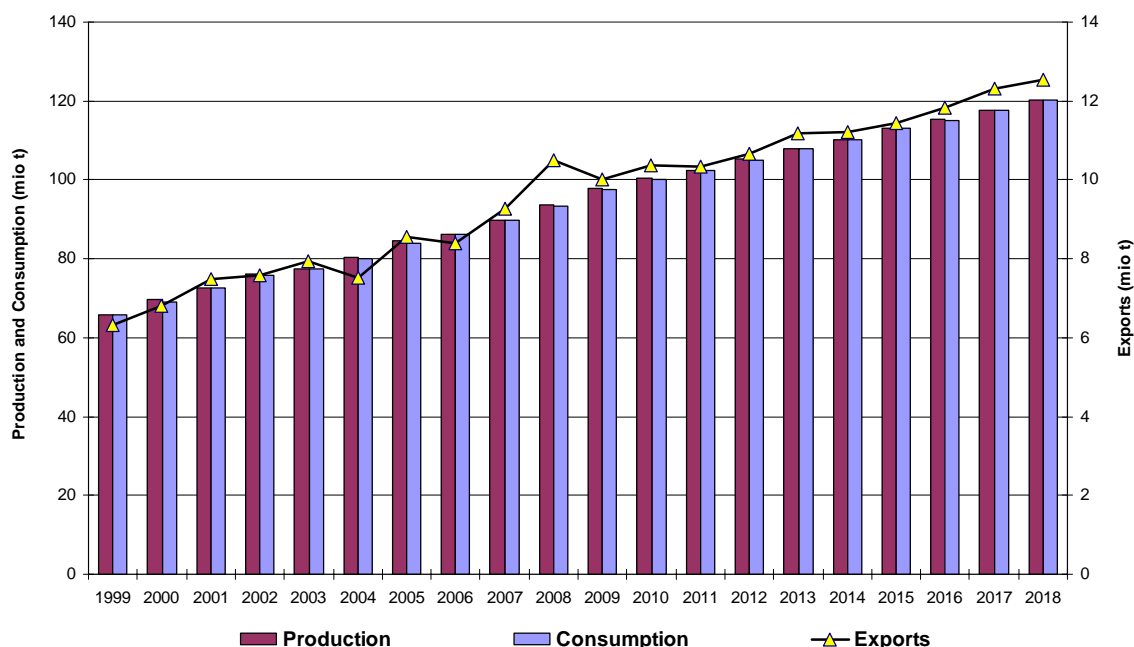
In 2009, global poultry trade is expected to slightly decline from the record level of 2008, as a side effect of the expected recovery of global beef trade, which will offset the long-term growing trend of poultry trade. However, world poultry exports will likely resume again in 2010, and in 2011 their volume is projected to be even higher than in 2008.

Over the projection period, Brazil should consolidate, despite a slowdown of the export growth rate (+5.8% per year), its position as world main exporter of poultry meat vis-à-vis the USA.

On the import side, most main players are expected to increase their poultry imports, with the notable exception of Russia and Japan, whose imports shrink at a rate of about 1.5% per year during the projection period. On the other hand, the EU is

expected to turn into a poultry net importer, although the balance of the traded volumes is likely to be only slightly negative.

Graph 8.3.1 World poultry balance sheet



Source: OECD – FAO outlook 2009

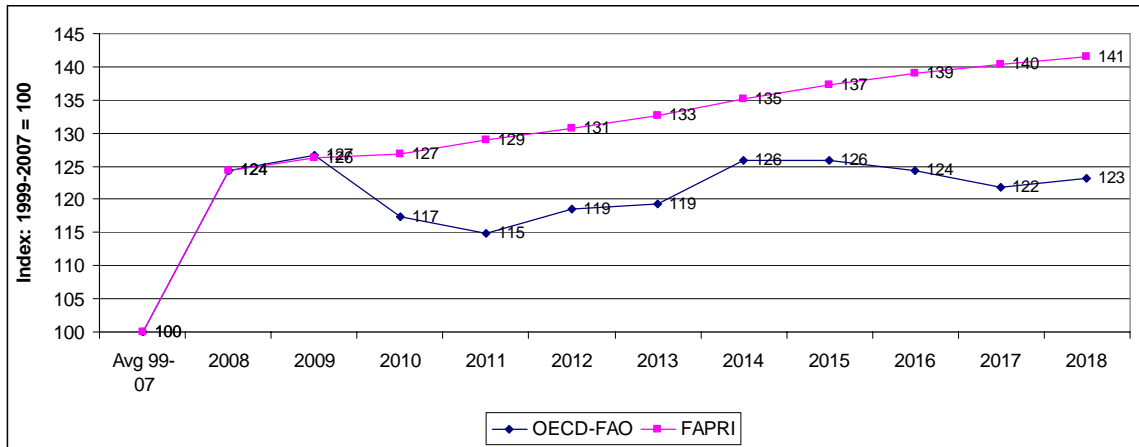
Table 8.3.1 Comparison of Outlook for world poultry market

	Production	Consumption	Exports
1999 to 2007	100	100	100
2009 to 2018			
FAPRI	135	134	154
USDA	138	138	141
OECD-FAO	140	140	144

For the poultry sector, the prospects of OECD-FAO, FAPRI and USDA regarding the development of production, consumption and trade are quite similar: they all expect a growth for the sector of around 35%-40% and a stronger increase for the relevant global trade flows. However, FAPRI is more optimistic concerning the trade development (+54%) than USDA (+41%) and OECD-FAO (+44%).

Apart from the usual caveat regarding the different approach followed by FAPRI, based on net trade (rather than on the separate consideration of exports and imports), in the case of poultry, the comparison of the different outlooks might be also biased by the fact that FAPRI data on poultry, contrary to OECD-FAO and USDA, are limited to broiler, i.e. do not consider turkey.

Graph 8.3.2 Projected world broiler prices



OECD-FAO and FAPRI rather disagree on the evolution of prices: while FAPRI foresees a continuous price growth during the projection period, the OECD-FAO projections indicate a decline in 2010 and 2011, accompanied by modest recovery afterwards. At the horizon 2018, FAPRI expects broiler prices to be 41% higher than the average of the period 1999-2006, whereas for the OECD-FAO the increase amounts to only 23%.

Main producers and users

Table 8.3.2 FAPRI outlook for broiler producers and consumers

AVG from to	in 1000 tonnes			Change vs past			World share	
	Past 1999	Current 2008	Projected 2009	Past 1999	Current 2008	Projected 2009	Past 1999	Projected 2009
	2007	2008	2018	2007	2008	2018	2007	2018
Producers								
U.S.	14 853	16 556	17 555	100	111	118	27%	24%
China - Mainland	9 828	12 650	14 673	100	129	149	18%	20%
Brazil	7 843	10 895	12 104	100	139	154	14%	16%
European Union	8 037	8 400	8 669	100	105	108	15%	12%
Mexico	2 266	2 775	2 969	100	122	131	4%	4%
India	1 538	2 490	2 985	100	162	194	3%	4%
Russia	700	1 550	1 920	100	221	274	1%	3%
Argentina	937	1 425	1 698	100	152	181	2%	2%
Japan	1 138	1 260	1 248	100	111	110	2%	2%
Thailand	1 099	1 140	1 337	100	104	122	2%	2%
South Africa	815	1 070	1 200	100	131	147	1%	2%
Canada	935	1 030	1 134	100	110	121	2%	2%
Consumers								
U.S.	12 551	13 497	14 493	100	108	115	23%	20%
China - Mainland	9 861	12 825	15 072	100	130	153	18%	20%
European Union	7 762	8 450	8 711	100	109	112	14%	12%
Brazil	5 966	7 565	8 326	100	127	140	11%	11%
Mexico	2 573	3 188	3 512	100	124	136	5%	5%
Russia	1 815	2 780	3 079	100	153	170	3%	4%
India	1 538	2 490	2 985	100	162	194	3%	4%
Japan	1 829	1 932	1 957	100	106	107	3%	3%
Argentina	906	1 315	1 537	100	145	170	2%	2%
South Africa	949	1 267	1 424	100	134	150	2%	2%
Saudi Arabia	882	1 044	1 178	100	118	134	2%	2%
Canada	938	1 014	1 109	100	108	118	2%	1%

Source: FAPRI

Broiler consumption in the projection period is expected to be significantly higher than in the reference period in China (almost +53% compared to the average 1999-2007), which is destined to become the first broiler consuming market, and to a slightly lesser extent Brazil (+40%), whereas in the USA and EU it is forecast to grow quite modestly (+15% and +12% respectively), due to a general stabilisation of the per-capita meat consumption in developed countries. Particularly large increases in consumption are expected to be registered also in Russia (+70%) and in India (+94%), although the volumes at stake are much lower.

On the supply side, the USA are supposed to preserve their position as world's major broiler producer, but China and Brazil show a more dynamic production development compared to the previous decade (+49% and +54% respectively). At a lower scale, the most remarkable production growth is expected to occur in Russia (+174%) and in India (+94%), where this increase is destined to nourish the rising domestic consumption.

Outlook for trade

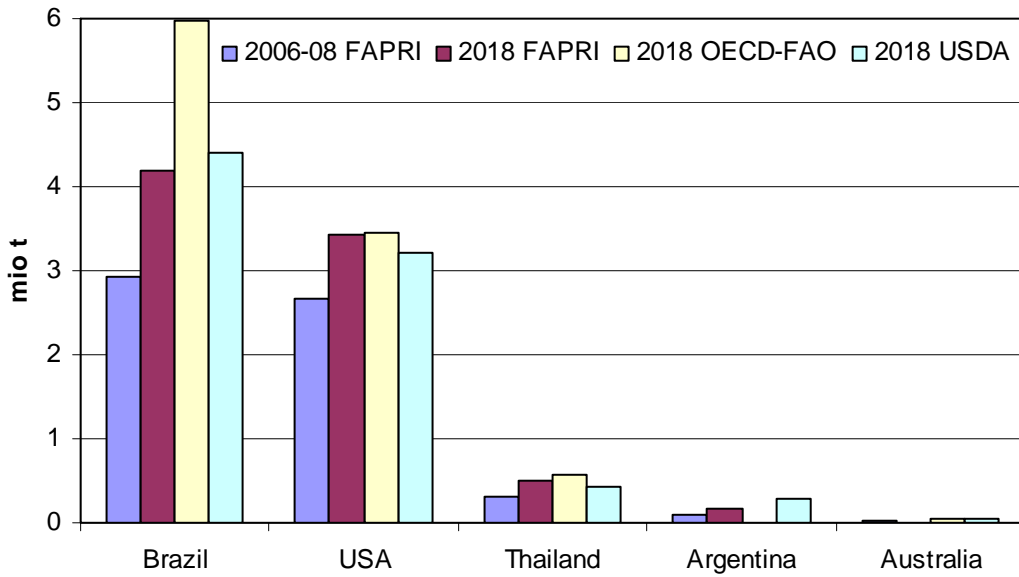
Table 8.3.3 FAPRI outlook for broiler net exporters and net importers

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 1999-2007	Current 2008	Projected 2009-2018	Past 1999-2007	Current 2008	Projected 2009-2018	Past 1999-2007	Projected 2009-2018
Net Exporters								
Brazil	1 876	3 330	3 778	100	177	201	39%	50%
United States	2 301	3 018	3 062	100	131	133	47%	41%
Thailand	318	350	443	100	110	139	7%	6%
Argentina	31	110	161	100	356	520	1%	2%
Australia	17	25	-3	100	144	-17	0%	0%
Net Importers								
Russia	1 119	1 233	1 159	100	110	104	23%	15%
Japan	695	675	709	100	97	102	14%	9%
Saudi Arabia	403	480	539	100	119	134	8%	7%
Mexico	307	413	543	100	134	177	6%	7%
China - Hong Kong	208	240	255	100	116	123	4%	3%
Ukraine	112	215	151	100	192	135	2%	2%
Other CIS †	130	208	195	100	159	149	3%	3%
South Africa	133	197	225	100	148	169	3%	3%
China - Mainland	33	175	399	100	534	1218	1%	5%
Taiwan	39	86	113	100	220	289	1%	2%
South Korea	65	64	143	100	98	220	1%	2%
European Union	-275	50	43	100	-18	-15	-6%	1%
Philippines	20	40	78	100	199	387	0%	1%

Source: FAPRI

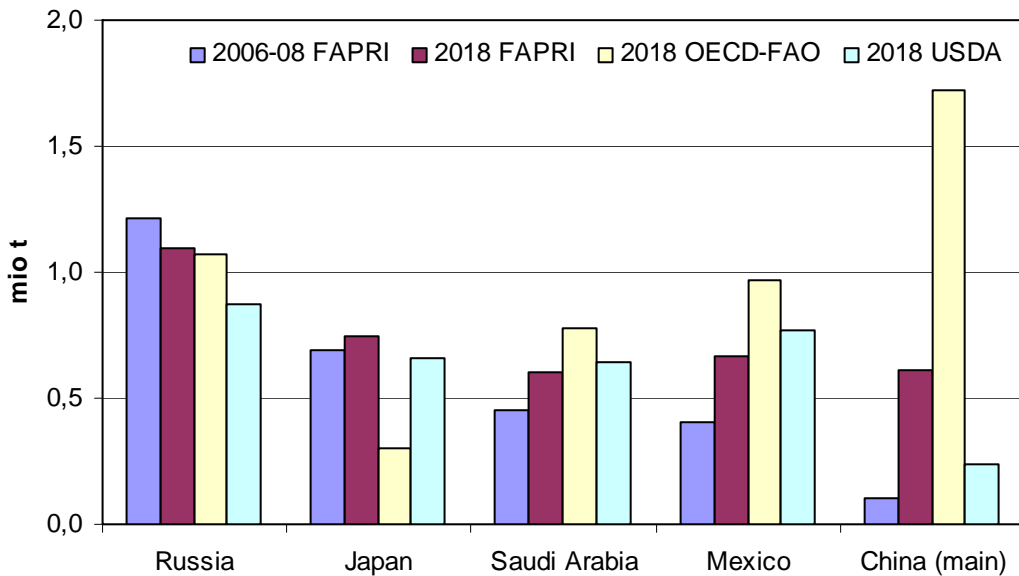
FAPRI projections hint to a sharp growth in Brazilian net exports of broiler, which are expected to roughly double on average between 1999-2007 and 2009-2018 (from 1.9 million to 3.8 million tonnes per year). Brazil would then account for about 50% of the world trade, thus clearly overtaking the USA as world export leader, although USA broiler exports also increase by one third between the reference period and the next decade.

Graph 8.3.3 Broiler net exporters



The USDA broadly agrees with FAPRI broiler export projections concerning the main players at the horizon 2018. On the other hand, OECD-FAO expects a much stronger increase in Brazilian exports.

Graph 8.3.4 Broiler net importers



Looking at broiler imports, the projection of FAPRI and USDA are generally reasonably close. Conversely, the OECD-FAO is much more bullish than FAPRI and USDA concerning the evolution of Chinese broiler imports, but more prudent for Japan.

Contrary to beef and pork, the three projections seem to broadly agree on the evolution of Russian imports by 2018, for which they forecast a moderate decline compared to the reference period.

9. DAIRY PRODUCTS

Over the next decade, world milk production is projected to increase by roughly 19% with most of the growth generated by gains in productivity per cow. Almost half of the growth takes place in Asia, mainly in China and India, and roughly one third in the Americas, primarily in the US and Brazil.

Higher milk production translates into increases in dairy production. FAPRI projects that world butter production shows the highest growth rate of all dairy products (+29.3%) over the baseline, mainly due to a strong expansion in India, which accounts for over 90% of the total growth. World WMP production follows with 21.2% growth (rising in most countries apart from the EU), cheese production increasing by 18.2% (with the US and the EU accounting for more than half of this growth), and SMP production rising by 16.1%, with the greatest gains occurring again in India, which comprises roughly 30% of the growth. OECD-FAO projections are similar for world butter (28% increase over the baseline) and cheese production (+18.9%) but differ as regards production of milk powders, with SMP expected to increase more modestly (+10.6%) and WMP more vigorously (+24.5%) than FAPRI projections.

Due to the worldwide economic downturn, trade in dairy products declines over the next couple of years, although it expands substantially in the long run fuelled by the global economic recovery and population growth. FAPRI projections are significantly more bullish as regards growth in world butter and SMP trade with increases of 34.5% and 31.5% respectively over the baseline, in comparison with 6% and 4% increases in world butter and SMP exports over the same period as projected by OECD-FAO. The situation is reversed in the case of cheese and WMP trade as OECD-FAO forecasts are more upbeat, although the differences between the Outlooks are smaller than for butter and SMP. World cheese and WMP net trade are to grow by 31% and 39% respectively, while FAPRI projections are for the growth of 23% and 25% over the same period.

New Zealand and Australia remain the world's largest butter exporters with sales rising over the baseline. EU net exports languish, according to FAPRI, or drop significantly so that EU becomes a net importer from 2017, OECD-FAO projects. Both Outlooks forecast a decline in EU cheese exports over the baseline period due to strong domestic demand so that the EU cedes its position as the top net exporter to New Zealand. Argentina and Ukraine become increasingly important players in international cheese markets, according to FAPRI, although OECD-FAO projects that the latter's exports decline to the extent that it becomes a net-importer in 2018. According to both Outlooks, SMP exports in the next decade will continue to be dominated by 4 major players: New Zealand, the US, Australia and the EU. The first three are expected to increase their net exports. However there is a difference of opinion on EU SMP exports, with FAPRI projecting growth while OECD-FAO expects a decline over the baseline. There is also a slight increase in SMP exports from other countries, including Argentina and Brazil. In the case of the top WMP net exporters, OECD-FAO and FAPRI agree in their projections that while EU net exports decrease, Australia, New Zealand, and Argentina expand their sales. Across all dairy products, most import growth will come from Asia, as well as Russia and Arabic countries.

After reaching record levels in mid-2007, international dairy products prices declined through 2008 to about half of their value of the previous year by early 2009. Over the short term, given the adverse impact of the global economic crisis on world's demand and the continuing increase in supplies in many countries, world dairy prices are projected to fall further in the first two years of the baseline period.

In the longer run economic and population growth supports higher dairy demand, which, along with high feed costs, pushes dairy prices up. Over the baseline, prices are expected to stay above their average 1999-2006 levels, although producers will face average prices substantially lower than the peaks of 2007-08.

OECD-FAO projections for prices are more bullish than FAPRI's for all dairy products with average values over the baseline roughly 200 USD/t higher (the biggest difference is in butter prices of 300 USD/t). Average prices over the baseline are projected at 23% (FAPRI) or 35% (OECD-FAO) higher than average prices over 1999-2006.

Summary of recent developments

In 2007 international dairy prices reached unprecedented levels. It was due to strong global demand, especially in developing countries, high feed costs and limited supplies from major exporters. From the second half of 2008, these factors have reversed almost completely. The global economic downturn has had an adverse impact on world demand for dairy products, in particular in developing countries with high income elasticity for food, and supplies from the major players have been abundant. World prices declined by half to two-thirds of their value before bottoming out in February 2009, but then started firming up in the second quarter of the year. However, there is still a lot of uncertainty on international dairy markets that prevents prices from moving up confidently, especially as the global economic situation and the resulting limited availability of credit, mostly affecting importers from developing countries, weighs down on the demand side.

Outlook for world milk and dairy markets

Over the next decade, according to FAPRI⁷ total milk production should increase by 18.8% (OECD-FAO projects +19.5%) with most of the growth generated by improvements in yields per cow. Almost half of the production will come from Asia, primarily China and India. The Americas will be the second largest region by growth in production (roughly one-third) with Brazil and the US as the main producers. Among the OECD countries, New Zealand will remain the country with the strongest growth in milk production in percentage terms over the projected

⁷ As regards FAPRI projections, it should be kept in mind that FAPRI does not publish results for world consumption, production and trade, but simply considers a limited number of major players. By summing up figures for the countries and commodities considered by FAPRI, one obtains a proxy for the global values. In such a way, the corresponding projections of OECD-FAO and FAPRI can be compared, although more in terms of trends, rather than in absolute values. Moreover, the different analytical approach and degree of coverage achieved by the two organisations, makes it sometimes difficult to find a precise justification for differences in results.

period. On the other pole, OECD-FAO's figures locate Japan as the only country on record with decreasing milk production.

As regards dairy products, according to FAPRI's forecasts for the baseline, butter production for the modelled countries would increase by 29.3%, mainly due to a strong growth in India. Similarly, OECD-FAO projects 28% increase in world butter output. Production of cheese is expected to grow from 18.2% (FAPRI) to 18.9% (OECD-FAO), mainly due to increases in the US and EU output. World WMP and SMP production is projected to grow by 21.2% (increasing in most countries apart from the EU) and 16.1% (with the greatest gains occurring again in India) respectively, according to FAPRI. OECD-FAO's forecast differs as regards the production of milk powders, with SMP output expected to increase more modestly (+10.6%) and WMP more vigorously (+24.5%).

Growth in world consumption over the baseline stays in a very close range of an increase in production in the case of butter and cheese, and outpaces growth in production of milk powders, according to both Outlooks. OECD-FAO and FAPRI projections are similar for world consumption of butter (+28% and +29% respectively), cheese (+19.8% and +18.5%) and SMP (18.8% and 18.3%) and diverging for WMP with the former expecting 28% and the latter almost 25% increase over the baseline.

In the environment of weak global demand and competitive prices, stocks of dairy product have been on the increase over the last months. FAPRI forecasts that after an increase in stocks of all the dairy products, especially milk powders, from 2008 to 2009, the stocks will stagnate (WMP) or decrease (butter, SMP), and increase only for cheese by 5% till the end of the baseline.

After reaching unprecedented levels in mid-2007, international dairy prices declined from mid-2008 losing about half of their value of the previous year by early 2009. As the global economic slowdown continues to have an adverse impact on world dairy demand and supplies keep growing in many countries, both FAPRI and OECD-FAO project world dairy prices to further decrease in the first two years of the baseline period and reach their bottom values in 2010 (with the only exception of WMP prices, which according to OECD-FAO's outlook bottom out in 2009). The former's projections are more bearish in this regard as it expects prices to fall by 8% on average between 2009 and 2010, while OECD-FAO projects 2% drop on average over the same period.

In the longer run economic and population growth support higher dairy demand, which, along with high feed costs and rising energy and vegetable oil prices as OECD-FAO stresses in its outlook, pushes dairy prices up. From the bottom levels of 2010 till the end of the baseline period, prices are to increase by 41% for butter (FAPRI projects 20% increase), 37% for WMP (both Outlooks), 34% for SMP (FAPRI: +39%) and 28% for cheese (FAPRI: +31%). In absolute values, OECD-FAO projections are more bullish across all dairy products with average prices over the baseline roughly 200 USD/t higher than FAPRI (the biggest difference is in butter prices of 300 USD/t).

Overall, average world dairy prices over the baseline are expected to stay above their average 1999-2006 levels by 23% (FAPRI) or 35% (OECD-FAO), although

producers will face average prices substantially lower than the ones received in 2007-08.

9.1. Butter

Summary of recent developments

Since the unprecedented price hikes in international dairy markets in 2007, the picture has changed dramatically with prices falling by half. This was due to increased world production – as producers responded to earlier high price - and weaker demand resulting from the global economic crisis. International butter prices after reaching their record-breaking level of 4 150 USD/t in November 2007, stayed high (around 4 000 USD/t) till July 2008, but then crashed down by 54% to reach 1 850 USD/t in February 2009. Since then prices have been adjusting up and down around the bottom level of February and firmed slightly to reach 1 900 USD/t in May.

Outlook for world butter markets

World butter consumption and production are expected to continue growing over the baseline. According to OECD-FAO, global production will increase by 28% over the baseline, from 9.7 million tonnes in 2008 to about 12.4 million tonnes in 2018. This corresponds to an annual growth rate of 2.5% for the projected period. The world consumption is to increase by the same rate. OECD-FAO expects the consumption to be higher than production every year until the end of the baseline period - in 2018 – when it should amount to 74.000 t of production deficit. FAPRI forecasts for world production and consumption (which are estimated by combining consumption and production figures for the modelled countries) are slightly more bullish than OECD-FAO with a growth in production of 29.3% and in consumption of 29.1% over the baseline (2.6% annual growths on both sides). In addition, and contrary to OECD-FAO projections, FAPRI figures for the baseline period show higher world production than consumption (on average 2.3% higher).

Table 9.1.1 below compares projections of the two Outlooks for world butter markets taking into account the average values of the past decade (1999-2007) as the starting point for comparison with the average projection for the next decade – the baseline period. Figures are indicated as indexes, 100 being the average for the past decade.

Table 9.1.1 Comparison of Outlook for world butter markets
(Index for averages over past and next decade)

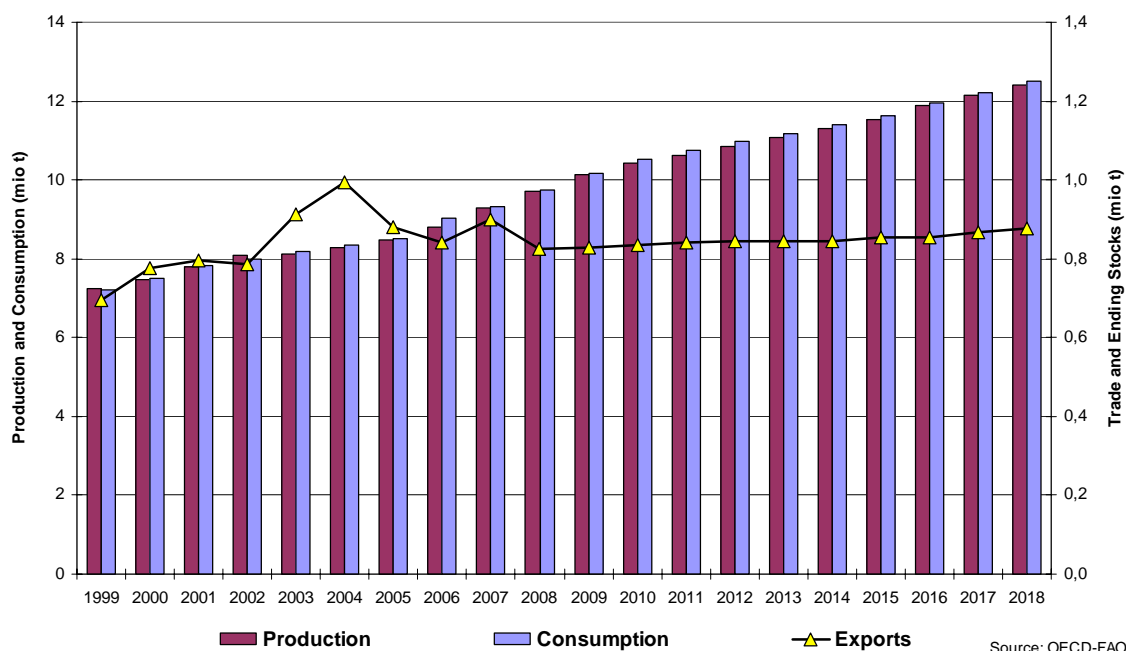
	Production	Consumption	Exports
1999 to 2007	100	100	100
2009 to 2018			
FAPRI	140	143	104
OECD-FAO	138	138	101

When comparing the averages of the past and next decade, growth of consumption during the baseline period is expected to be higher (FAPRI) or equal (OECD-FAO) when weighing against the increase in production. FAPRI projections, which

however cover only the main players in world's dairy market, seem more bullish as they suggest stronger expansion (+40% and +43%) than OECD-FAO (+38%).

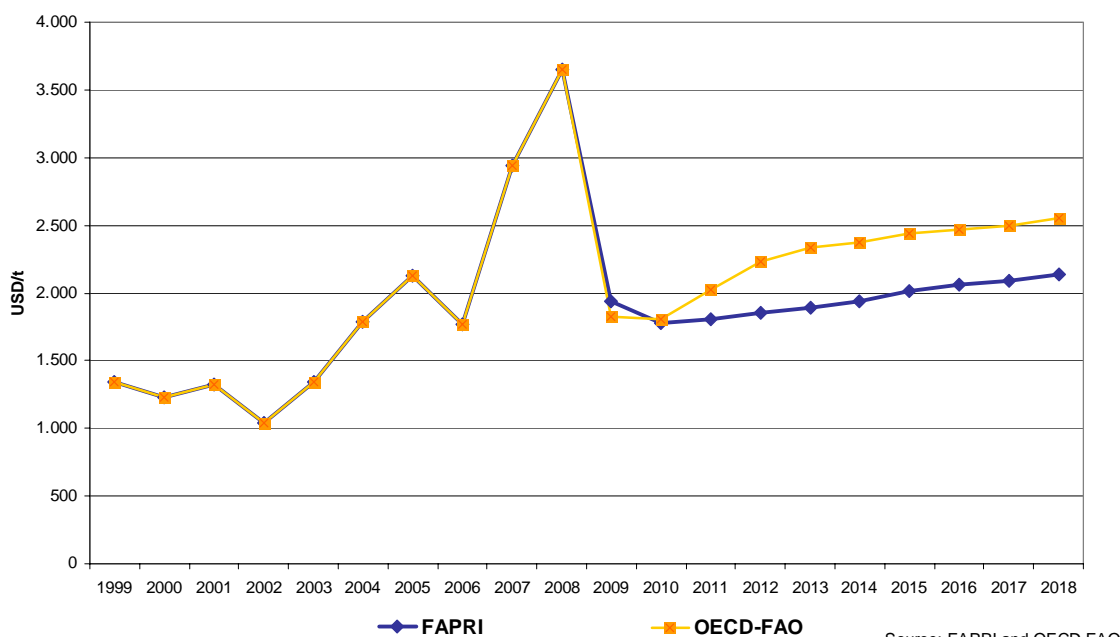
According to both Outlooks, India will be the main driver behind the increases in world production and consumption, accounting for at least 3/4 of the growth due to the rapidly growing domestic demand (increasing populations and incomes), which should be met by domestic production.

Graph 9.1.1 World butter balance sheet



As in the previous year, OECD-FAO is more bullish about the future butter price trends than FAPRI. The former expects international butter prices to increase by 39% over the baseline (the highest increase in prices among all the dairy products) with a steep growth of prices already from 2010. FAPRI forecasts a further fall in prices also in 2010 (down to 1 780 USD/t) and then a slower recovery year-by-year to reach 2 135 USD/t in 2018 (10% higher than in 2009) According to both forecasts, world butter prices would stay well above the levels seen in the past decade.

Graph 9.1.2 Projected world butter prices (FOB Oceania, USD/t)



Source: FAPRI and OECD-FAO

Main producers and users

According to both FAPRI and OECD-FAO, India will be the main driver behind the increases in butter consumption and production. Growing population numbers and increasing standards of living will prompt India's demand for butter to grow from 3.8 million tonnes in 2008 to 5.97 million tonnes (OECD-FAO) or 5.7 million tonnes (FAPRI) in 2018. This increasingly growing demand should be entirely met by local producers, whose output will grow by 58.5 % between 2008 and 2018 (to 5.7 million tonnes in 2018), according to FAPRI. OECD-FAO expects a slightly lower production increase of 56% to match the consumption at the end of the baseline period.

EU butter production, according to both FAPRI and OECD-FAO is expected to decrease over the baseline but the EU would still be the second largest global butter producer in 2018. FAPRI predictions are less bearish with a decline in production from 2.06 million tonnes in 2008 to 1.95 million tonnes in 2018 (-5.5%), as domestic demand contracts 1 percentage point faster over the same period. OECD-FAO expects a stronger decrease in EU production to less than 1.93 million tonnes in 2018 (-10.7% over the baseline). Consumption is projected to fall at a lower rate so that it outgrows production in the last year of the baseline period.

Table 9.1.2 Key butter producers and consumers

AVG from to	in 1000 tonnes			Change vs past			World share	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	1999 2007	2008	2009 2018	1999 2007	2008	2009 2018	1999 2007	2009 2018
Top Producers	6.725	7.983	9.412	100	119	140	100%	100%
India	2.458	3.611	4.931	100	147	201	37%	52%
European Union	2.097	2.060	1.976	100	98	94	31%	21%
United States	602	744	725	100	124	120	9%	8%
New Zealand	383	399	434	100	104	113	6%	5%
Russia	277	305	329	100	110	119	4%	4%
Mexico	86	130	153	100	151	179	1%	2%
Australia	147	112	160	100	76	109	2%	2%
China	89	97	114	100	110	129	1%	1%
Ukraine	127	89	106	100	70	83	2%	1%
Brazil	75	84	111	100	112	149	1%	1%
Top Consumers	6.416	7.797	9.197	100	122	143	100%	100%
India	2.460	3.605	4.913	100	147	200	38%	53%
European Union	1.934	2.004	1.915	100	104	99	30%	21%
United States	602	676	689	100	112	114	9%	7%
Russia	390	438	472	100	112	121	6%	5%
Mexico	129	188	215	100	146	167	2%	2%
China	116	133	166	100	114	142	2%	2%
Canada	85	85	83	100	100	98	1%	1%
Japan	88	85	87	100	97	99	1%	1%
Ukraine	105	82	83	100	78	79	2%	1%
Brazil	78	81	88	100	103	112	1%	1%

Source: FAPRI

The US would remain as the third major player with their production growing by 7.2% over the baseline. US production grows at the same annual rate as consumption of 1.1% over the baseline and reaches 790 000 tonnes in 2018, according to OECD-FAO. New Zealand's butter production is expected to grow strongly (+38%) to reach 484 000 tonnes at the end of the baseline.

FAPRI forecasts more modest changes for the two countries. US butter production drops significantly in 2009 and then slowly increases over the baseline period to 742 000 in 2018, while consumption grows steadily by 3.7% over the whole baseline period (the average US consumption is 5% smaller than production during the outlook period). New Zealand butter production should grow steadily (+11%) and reaches 445 000 tonnes by the end of baseline, whereas Australia's downward trend in production over the last 10 years, should be reversed in 2009 (production of 128 000 tonnes) and reach 181 000 tonnes by 2018 (FAPRI).

Russia, a leading importer in the world butter market, gradually increases its butter imports as well as its domestic production. Because the growth in consumption outpaces the growth in production, FAPRI forecasts, Russian butter imports increase throughout the baseline.

Contrary to FAPRI, OECD-FAO projects that an increase in Russia butter production outpaces the rate of growth of consumption (+3.8% compared to +1.7%). The diminishing deficit of production will still need to be covered by imports but to an extent that falls steadily over the baseline.

Driven by economic growth and westernized diets, consumption grows steadily in Asia, especially in China, according to both Outlooks.

Outlook for trade

Driven by strong international butter prices, world butter trade grows by 34.5% over the baseline, which is roughly 5% higher than growth in production over the same period and also the highest growth rate in trade among all the dairy products, according to FAPRI. However, when comparing the averages of the past decade (1999-2007) with the next (the baseline) as illustrated in table 9.1.1, then world butter trade performance over the baseline is less impressive, as it is higher only by 4% compared to the past (and much lower than the same indicator for world production, which is 40% higher).

OECD-FAO projections for world butter trade are significantly more bearish than FAPRI. World butter exports are to grow by 6% over the baseline, which would be lower than the growth in world butter production over the baseline (+28%). When comparing the averages of the past and next decade, the OECD-FAO forecasts are similar to FAPRI, as the trade over the baseline is roughly only 1% and production 38% higher compared to the past.

Table 9.1.3 Key butter traders

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past 1999 2007	Current 2008	Projected 2009 2018	Past 1999 2007	Current 2008	Projected 2009 2018	Past 1999 2007	Projected 2009 2018
Net Exporters	668	577	695	100	86	104	100%	100%
New Zealand	365	374	410	100	102	112	55%	59%
United States	-7	84	36	100	-1291	-555	-1%	5%
Australia	89	42	88	100	47	99	13%	13%
European Union	164	37	62	100	23	38	25%	9%
Uruguay	12	11	17	100	89	138	2%	2%
Ukraine	23	7	23	100	31	101	3%	3%
India	-2	6	18	100	-304	-922	0%	3%
Colombia	1	6	3	100	441	228	0%	0%
Argentina	4	4	12	100	94	300	1%	2%
Brazil	-3	3	24	100	-90	-719	0%	3%
Net Importers	668	577	695	100	86	104	100%	100%
Russia	110	130	142	100	118	129	16%	20%
Mexico	43	58	62	100	135	144	6%	9%
Egypt	45	53	62	100	118	138	7%	9%
Saudi Arabia	25	36	52	100	145	208	4%	7%
China	28	36	51	100	128	185	4%	7%
Thailand	6	15	18	100	235	296	1%	3%
Japan	5	14	13	100	280	270	1%	2%
Algeria	13	12	14	100	92	108	2%	2%
Indonesia	12	11	17	100	96	143	2%	2%
Malaysia	10	10	14	100	109	147	1%	2%
Philippines	10	10	13	100	99	125	2%	2%

Source: FAPRI

Net exporters

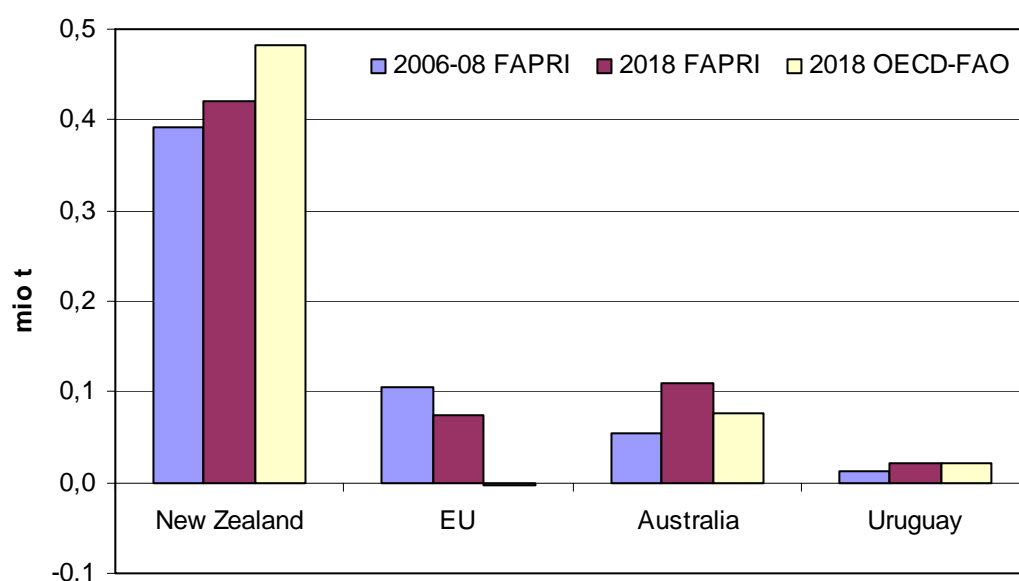
FAPRI projects that the top three net exporters of the past decade: New Zealand, Australia and the EU continue occupying the top 3 positions over the baseline decade. New Zealand is to remain the world's largest butter exporter with its exports expected to increase by 12% and to reach 410 000 on average over the baseline. As a result, New Zealand's share in global butter trade will increase by 4 percentage points to reach 59% on average over the baseline. Australia's net exports, after years of constant decrease that found the bottom in 2008 (42 000 tonnes) are forecasted to start growing again and reach 88 000 tonnes on average over the baseline. Australia is expected to take the EU's current position of the

second net exporter over the baseline. OECD-FAO forecasts are more optimistic in the case of New Zealand's exports (27% increase compared to the past decade) and more modest as regards Australia (74 000 tonnes of exports on average over the baseline).

The two Outlooks forecast the EU net exports to decline in the next decade compared to the past years but they differ considerably as regards the size of these developments. FAPRI forecasts that the EU net exports will be 62% lower than in the past decade, however they are to double over the baseline and reach 74 000 tonnes in 2018. OECD-FAO has more bearish forecasts for the EU as with its exports decreasing over the baseline and imports remaining stable (import quota from New Zealand) the EU becomes a net importer of butter from 2017.

The US became a net exporter of butter in 2007 and, thanks to exceptional exports gained on the back of the strong international demand and high international prices, reached the position of the world's second largest exporter in 2008. FAPRI forecasts that the US will keep its status of an important net exporter with its sales dropping by 70% from 2008 to 2009 but then growing steadily by 63% to reach 41 000 tonnes of exports at the end of the baseline. OECD-FAO outlook projects that the US net exports, after dropping by almost 90% from 2008 to 2009, will continue along the downward trend and the US will return to be a net importer from 2017 onwards.

Graph 9.1.3 Butter net exporters



India, due to a strong growth in butter production fuelled by domestic demand and strong world prices, will increase butter exports as well. FAPRI projects that butter exports reach a record in 2014 (with 27 000 tonnes exported) and then decrease as more production is absorbed by domestic markets. OECD-FAO figures counter this forecast by showing that India continues as a net importer of butter over the baseline period.

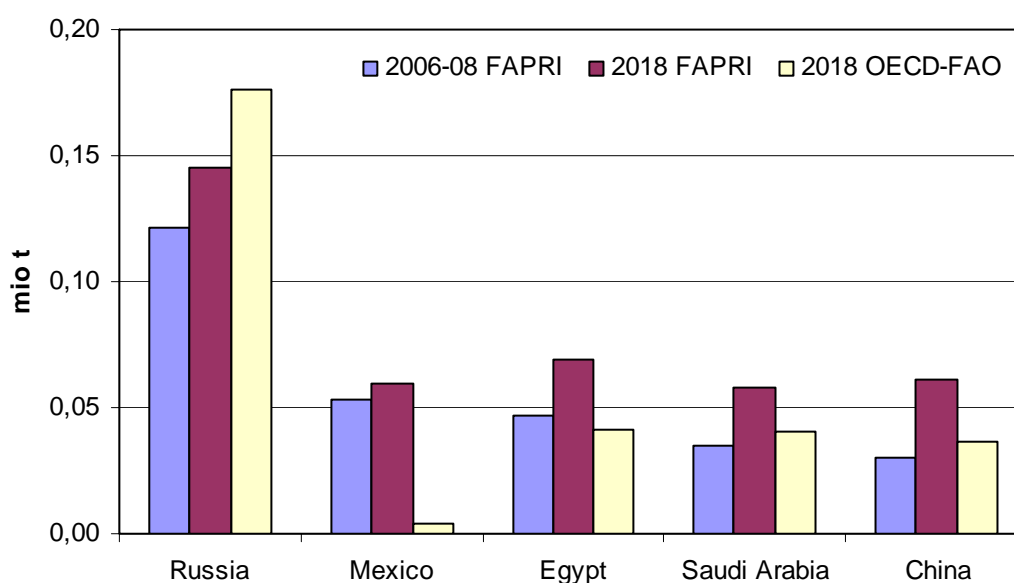
Also the three less prominent net exporters Uruguay, Ukraine and Argentina significantly grow their sales by 90%, 370% (from weak exports levels of 2008 though) and 415% respectively over the baseline, according to FAPRI. OECD-FAO

forecast, apart from also expecting rapidly growing Uruguay's exports, are substantially more bearish as regards Argentina (net exports stagnating) and Ukraine (slowly decreasing till the end of the baseline).

Net importers

Russia, a leading importer with a share of between 23% (FAPRI) and 28% (OECD-FAO) in world butter imports in 2008, gradually increases its domestic production as well as its butter imports (12% increase over the baseline to 145 000 tonnes in 2018) as the growth in consumption outpaces the growth in local production, FAPRI projects. Driven by economic growth and Westernized diets, steady growth occurs in Asia, especially in China (+72% over the baseline, which translates to 5.6% annual increase over the projected period). Egypt increases its imports by 30% over the baseline period, while Mexico butter imports remain stable (3% increase between 2008 and 2018). OECD-FAO projections are more bearish. Even though figures for Russia's imports are higher (179 000 tonnes in 2018), the OECD-FAO outlook, contrary to FAPRI, projects an overall decrease in Russia's imports of 28% over the baseline. Similarly, Egypt and Mexico net imports are to fall by 22% and 29% respectively over the baseline (Mexico's net imports place it far down the list of the main net importers). OECD-FAO support projections for China (18% growth) and Saudi Arabia (26% increase) over the baseline.

Graph 9.1.4 Butter net importers



9.2. Cheese

Summary of recent developments

International cheese prices, after peaking in 2007 (5 500 USD/t in December 2007) along with other dairy products, have not been immune to the general downbeat situation in the sector and started falling from mid-2008, prompted by weak global demand and increasing supplies. Prices declined sharply to 2 450 USD/t in February 2009 – the lowest level in 5 years. Since then international cheese markets

recovered slightly but the prospects are still uncertain, as reflected in cheese prices adjusting up and down around 2 500 USD/t in the second quarter of 2009.

Outlook for world cheese markets

World cheese market is projected to continue expanding considerably fuelled by increasing demand sustained by economic and population growth. FAPRI expects world production to grow by 18.2 % between 2008 and 2018 reaching 18.3 million tonnes in 2018 (or to increase by 22% if the averages of the past and future decade are compared - see table 9.2.1) to meet strongly growing consumption (+18.5% between 2008 and 2018).

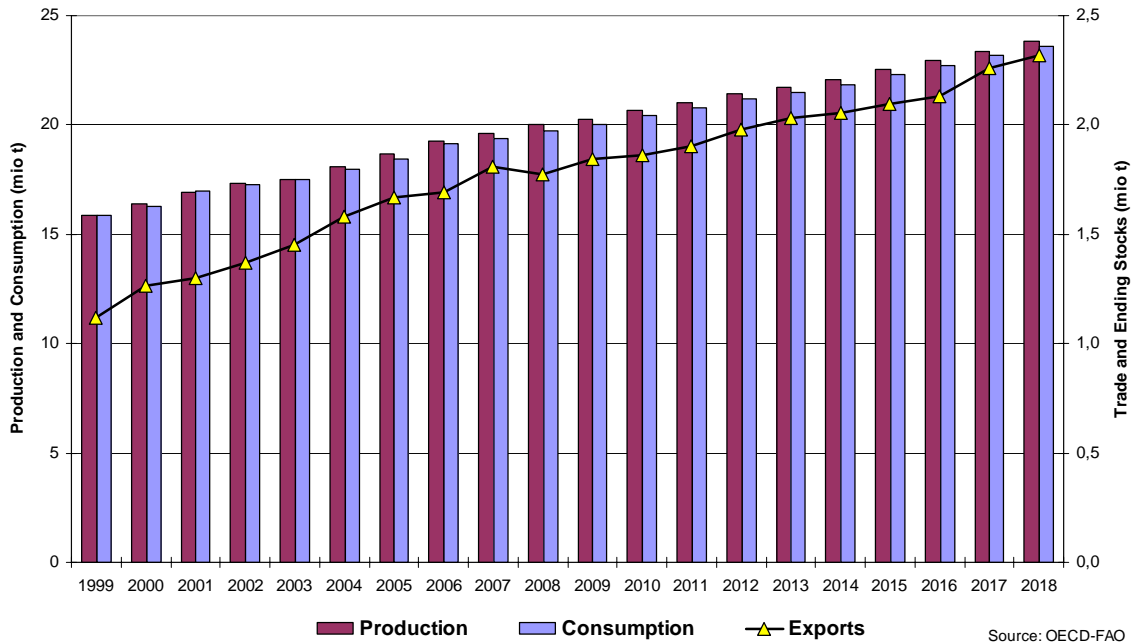
OECD-FAO projections for world production and consumption are slightly more bullish than FAPRI as it expects the former to increase by 18.9% over the baseline period and amount to 23.8 million tonnes at the end of it (the baseline's average for production should be 24% higher than the average of the past decade), while the latter is forecasted to expand by 19.8% (+1.8% per year) over the baseline (although when comparing the 10 year's averages, OECD-FAO suggests a marginally higher increase in production).

Table 9.2.1 Comparison of Outlook for world cheese markets
(Index for averages over past and next decade)

	Production	Consumption	Exports
1999 to 2007	100	100	100
2009 to 2018			
FAPRI	122	123	124
OECD-FAO	124	123	139

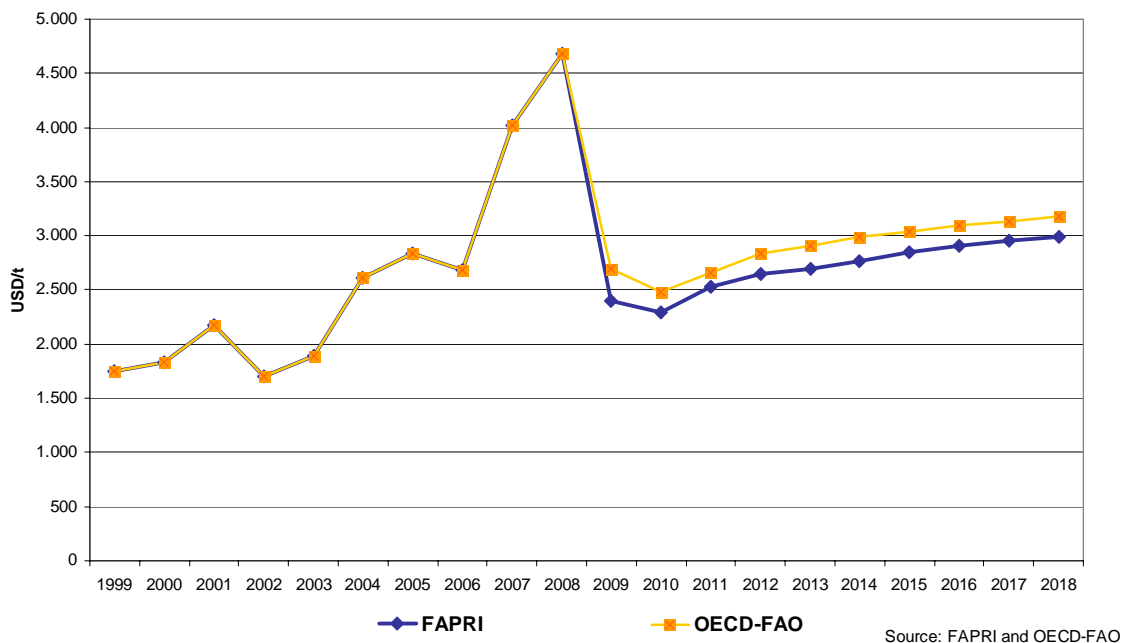
According to both Outlooks, due to strong global demand, growth in cheese trade should outpace that of production and consumption (more details on trade evolution in the "Outlook for trade" section below).

Graph 9.2.1 World cheese balance sheet



With OECD-FAO being generally slightly more optimistic about the future world cheese price developments, both Outlooks expect the prices to decrease even further in 2010 compared to 2009 level due to unfavorable economic conditions. Once economic prosperity returns to global consumers, prices are expected to start strengthening over the baseline but remain well below the 2007 peak levels. Average international cheese prices over the baseline will be still 33% above the average of 1999-2006 (24% higher according to FAPRI).

Graph 9.2.2 Projected world cheese prices (Cheddar, FOB Oceania, USD/t)



Main producers and users

The EU and the US were by far the world's biggest cheese producers (accounting for about 70% share of world production) and consumers over the past decade and they are to uphold their top positions over the baseline, both Outlooks agree. According to FAPRI, in the EU, because of higher returns from cheese production and restricted milk supply (milk production decreasing from 2011 till the end of the baseline), more milk will be diverted from butter and SMP into cheese production, which should rise by 12.2% (14.8% growth according to OECD-FAO) over the baseline.

Stable growth occurs in both cheese consumption (+2.2% on average across the group- OECD-FAO) and production (+2% on average – OECD-FAO) in all the top 10 producing and consuming countries, both Outlooks agree.

Both Outlooks project a strong increase in Egypt's production (+41% - OECD-FAO and +19% - FAPRI respectively) over the baseline, along rapidly growing consumption. This growth, according to OECD-FAO, will give Egypt the position of the third biggest cheese producer (and the fourth biggest consumer after Russia) in the world, with roughly 1 million tonnes produced in 2018.

Table 9.2.2 Key cheese producers and consumers

AVG from to	in 1000 tonnes			Change vs past			World share	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	1999 2007	2008	2009 2018	1999 2007	2008	2009 2018	1999 2007	2009 2018
Top Producers	13.838	15.416	16.934	100	111	122	100%	100%
European Union	6.304	6.840	7.257	100	109	115	46%	43%
United States	3.970	4.462	4.782	100	112	120	29%	28%
Brazil	482	630	821	100	131	170	3%	5%
Argentina	422	540	694	100	128	165	3%	4%
Egypt	420	433	481	100	103	115	3%	3%
Russia	323	425	462	100	132	143	2%	3%
Australia	372	347	430	100	93	116	3%	3%
New Zealand	298	332	407	100	112	137	2%	2%
Canada	330	306	330	100	93	100	2%	2%
Ukraine	164	256	291	100	156	177	1%	2%
Top Consumers	13.636	15.212	16.766	100	112	123	100%	100%
European Union	5.915	6.415	6.870	100	108	116	43%	41%
United States	4.071	4.488	4.855	100	110	119	30%	29%
Russia	480	683	740	100	142	154	4%	4%
Brazil	487	627	782	100	129	160	4%	5%
Argentina	393	490	644	100	125	164	3%	4%
Egypt	427	437	490	100	102	115	3%	3%
Canada	339	319	345	100	94	102	2%	2%
China	250	294	356	100	118	143	2%	2%
Japan	243	260	296	100	107	122	2%	2%
Mexico	209	238	279	100	114	133	2%	2%

Source: FAPRI

Moreover, FAPRI projects a strong increase in China's consumption of 36.5% over the baseline (3.2% of annual growth), while OECD-FAO forecasts are for roughly half of these (+17% over the baseline and +1.6% annually).

Outlook for trade

Strong demand leads to a 31% increase in world cheese trade over the baseline period (stronger than the projected world production growth of almost 19%),

according to OECD-FAO. FAPRI also expects a significant, though lesser, increase in world cheese net exports of 24.8% over the same period.

Similar trends and proportions remain valid, when comparing the averages of the past decade (1999-2007) and of the next one (baseline decade) as illustrated in table 9.2.1. The world cheese trade is forecasted to be 39% higher than in the past decade and also significantly stronger than expansion of production (24% increase), according to OECD-FAO. FAPRI projections for cheese trade are more bearish in the above context as cheese exports are to be 24% higher than in the past decade, which is only 2 percentage points higher than the change in world production.

Table 9.2.3 Key cheese traders

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	1999 2007	2008	2009 2018	1999 2007	2008	2009 2018	1999 2007	2009 2018
Net Exporters	943	1.022	1.168	100	108	124	100%	100%
European Union	389	425	387	100	109	99	41%	33%
New Zealand	272	302	377	100	111	139	29%	32%
Australia	162	134	184	100	83	114	17%	16%
Ukraine	48	65	78	100	135	162	5%	7%
Switzerland	23	36	23	100	157	99	2%	2%
Argentina	29	33	50	100	113	170	3%	4%
Uruguay	17	20	25	100	116	148	2%	2%
Brazil	-5	3	39	100	160	880	0%	3%
Net Importers	943	1.022	1.168	100	108	124	100%	100%
Russia	157	260	278	100	165	177	17%	24%
Japan	206	205	223	100	99	108	22%	19%
Mexico	72	88	104	100	123	146	8%	9%
Saudi Arabia	53	82	91	100	153	170	6%	8%
South Korea	36	52	61	100	143	167	4%	5%
China	25	46	63	100	185	256	3%	5%
United States	115	40	80	100	35	70	12%	7%
Algeria	22	24	31	100	107	140	2%	3%
Canada	12	15	18	100	129	150	1%	1%

Source: FAPRI

Net exporters

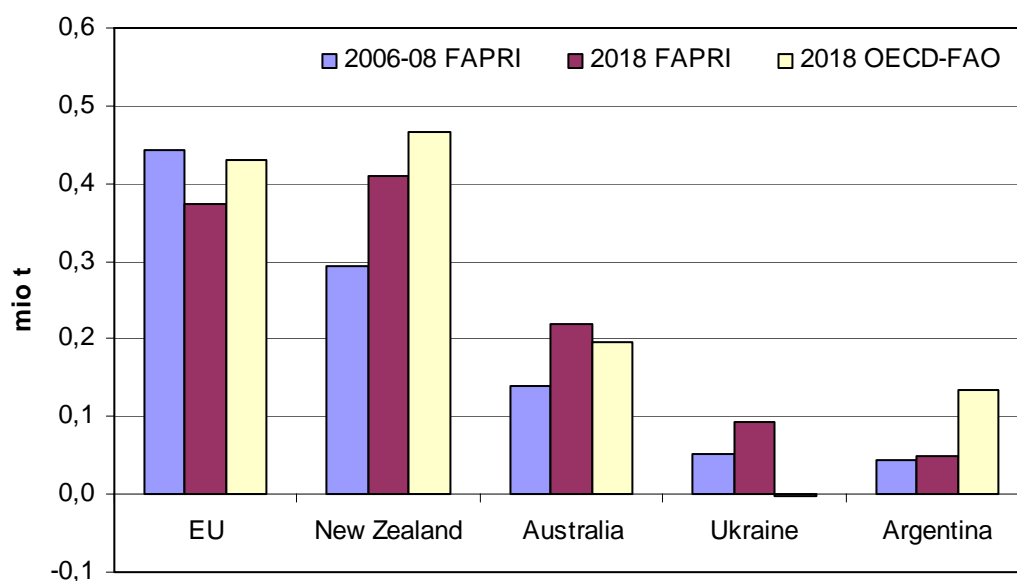
The EU has been the top largest net exporter over the past decade with average net exports amounting to 390 000 tonnes per year, according to FAPRI figures. Both Outlooks project that EU exports will decrease over the baseline period (by 12% - FAPRI, 7% - OECD-FAO) as a result of strong domestic demand and the EU position of top net exporter will be lost to New Zealand. The only other country on the list of top 8 net exporters that will see their exports decreasing is Switzerland (with 3.3% annual decrease over the baseline).

Similarly to its last year's Outlook, FAPRI projects New Zealand and Australia to grow their net exports (by 36% and 63% respectively over the baseline) and increase their combined world cheese market share by 6.6% to reach 49.2% at the end of the baseline. Argentina and Ukraine become increasingly important players in international cheese markets, together accounting for 9.1% of total exports by 2018.

OECD-FAO also projects strong growths for cheese net exports of both New Zealand and Australia; however of a different magnitude than FAPRI (a 70% and 33% increase respectively). OECD-FAO agrees that Argentine will turn an increasingly important player with its net exports almost tripling over the baseline, Ukraine however, will see its net exports decrease significantly and will become a net importer in 2018.

In addition, both OECD-FAO and FAPRI offer bullish projections as to Brazilian cheese exports growth (+ 36% per year FAPRI, + 25% for OECD)

Graph 9.2.3 Cheese net exporters

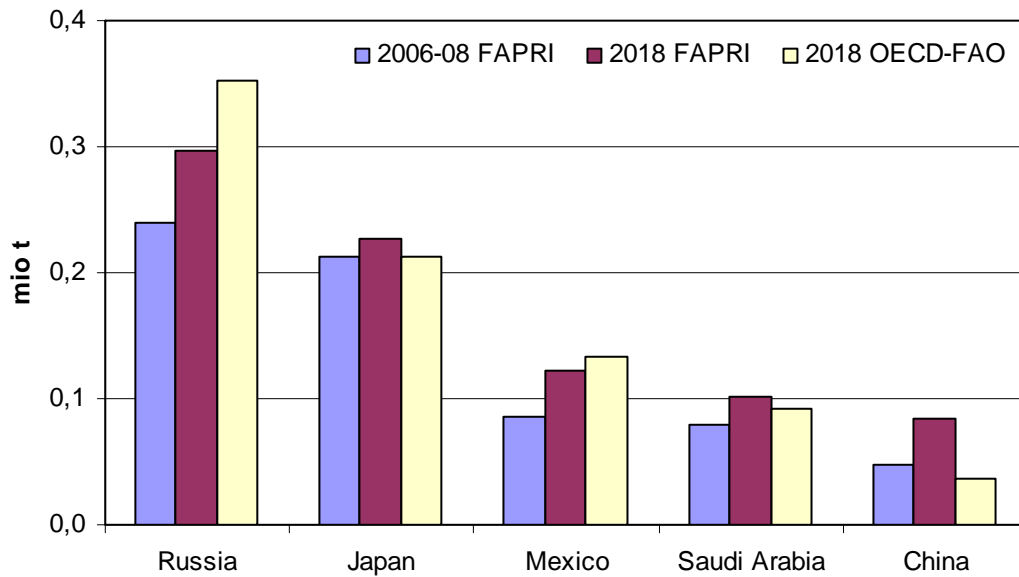


Net importers

Russia and Japan are the leading importers, accounting for roughly 43% of total world imports, according to FAPRI. They will steadily increase their cheese imports throughout the baseline. Also the following two main net importers, Mexico and Saudi Arabia, will further expand their imports by 38 % and 24% respectively over the baseline. Sustained by economic and population growth, cheese imports of other Asian countries (China, Indonesia, Malaysia, Philippines, South Korea, Thailand, and Vietnam) should increase on average by 2.6% annually, with Chinese net imports growing by 84% over the baseline (to 84 000 tonnes in 2018).

OECD-FAO figures are bolder as regards Russia's and Mexico's net imports. The former is expected to increase its imports by 20% over the baseline (to 353 000 tonnes in 2018), while the latter's imports increase by 63% (to 133 000 tonnes in 2018). The projections for net imports are substantially more modest for China (42% growth over the baseline to 37 000 tonnes in 2018) and also, although to a lesser extent, for Saudi Arabia, than FAPRI expects.

Graph 9.2.4 Cheese net importers



9.3. Skimmed milk powder

Summary of recent developments

Low stocks, high feed costs, rebounding global demand, and limited growth in supplies from major exporters saw world SMP price almost double (+95%) in 2007. It was the biggest growth among the main dairy products, largely due to residual function of SMP in the dairy product processing system. In the second half of 2007, SMP prices started to ease as food manufacturers looked for cheaper substitutes. From mid-2008 following the general downbeat trend in dairy sector resulting from declining global demand, SMP prices at international markets plummeted to 1750 USD/t in February 2009, the level last seen back in 2003. Since then prices have firmed up but due to continuing weak global demand and strong international competition, a substantial revival in prices has not taken place. Global exports declined significantly in the first months of 2009 mainly due to much weaker exports from OECD countries (the US and the EU) and stocks have been growing substantially.

Outlook for world SMP markets

Both OECD-FAO and FAPRI project increases in world consumption, production and trade of SMP, though the latter is more bullish in its outlook, especially regarding trade.

When comparing the average of consumption and production of the past and next decade (see table 9.3.1), consumption during the baseline is expected to grow stronger than production, according to both Outlooks. FAPRI projections, which however cover only the main players in world dairy market, seem more bullish. FAPRI expects world SMP production and consumption over the baseline to be higher by 10% and 13% respectively than the average of 1999-2007, while OECD-

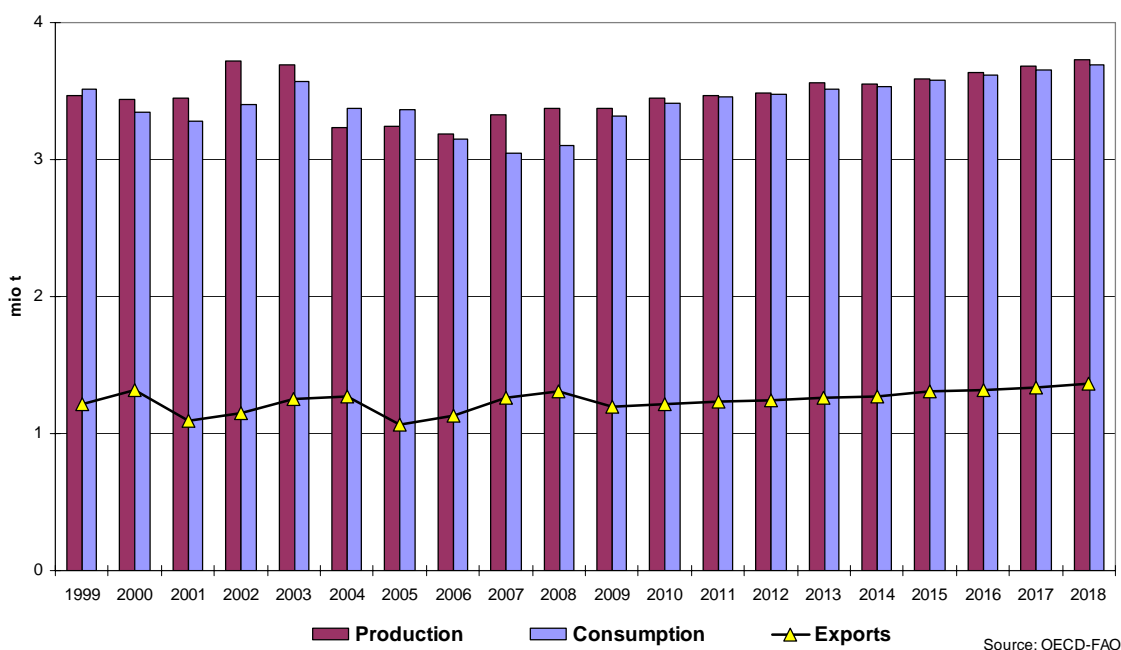
FAO expects the baseline values to be higher by only 4% and 6% respectively compared to the past decade.

Table 9.3.1 Comparison of Outlook for world SMP markets
(Index for averages over past and next decade)

	Production	Consumption	Exports
1999 to 2007	100	100	100
2009 to 2018			
FAPRI	110	113	121
OECD-FAO	104	106	107

When looking at the developments during the baseline period only, then world SMP consumption outpaces production, especially according to OECD-FAO, which expects consumption to increase over the baseline by almost 19% (reaching 3.7 million tonnes in 2018) and world production by 11% (to 3.73 million tonnes). FAPRI projects a similar trend for world SMP over the baseline albeit with a substantially stronger growth in production than OECD-FAO (+18% in consumption and +16% in production).

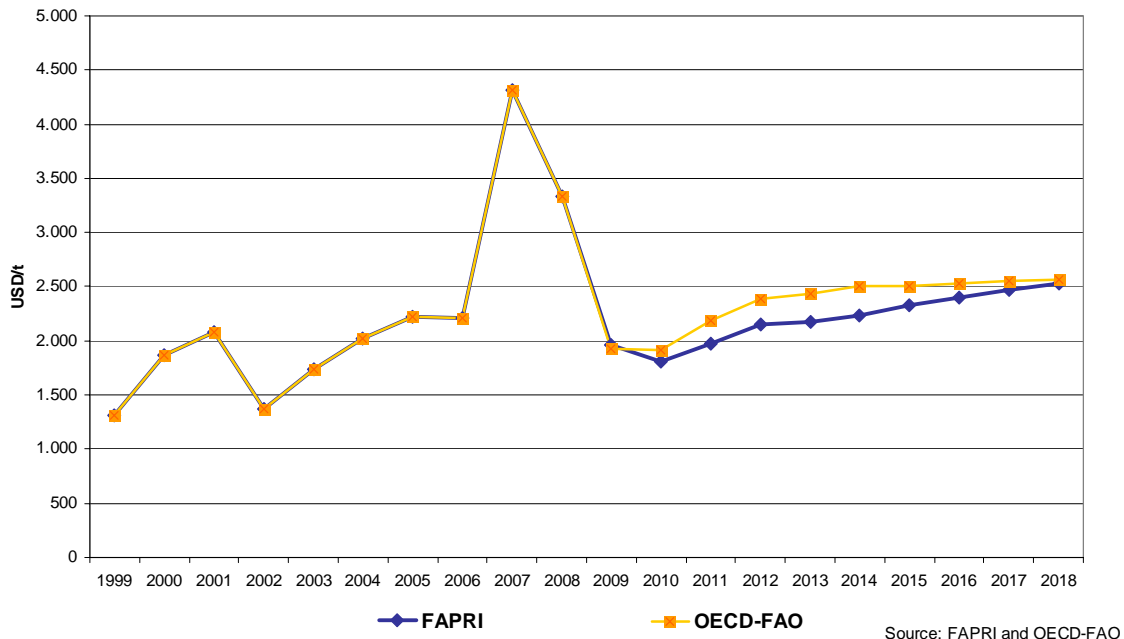
Graph 9.3.1 World SMP balance sheet



World SMP prices, after dropping further from their 2007 peaks (stagnating according to OECD-FAO figures) are to pick up in 2010 and grow steadily over the baseline with an upward pressure maintained by strong economic and population growth, both Outlooks project. OECD-FAO is slightly more bullish and expects SMP prices to reach 2565 USD/t in 2018 (34% increase from the bottom level of 2010), while FAPRI projections give 2526 USD/t in 2018.

The prices should remain higher than the average of those seen in 1999-2006 (prior to the peaks of 2007/2008) by 19% (FAPRI) or 27% (OECD-FAO).

Graph 9.3.2 Projected world SMP prices (FOB Oceania, USD/t)



Main producers and users

SMP production increases in all the major producing countries except for the EU. EU SMP output declines by 9.5 % between 2008 and 2018 due to the fact that more milk is channelled from SMP to cheese production because of higher returns from the latter sector, according to FAPRI. The US SMP production drops substantially from 2008 to 2009 and then increases by 3% annually, however the US still remains behind the EU as the second largest producer. Due to strong global demand, SMP production in India, New Zealand, Australia (after a weak output in 2008) and particularly Brazil (improved domestic economic conditions and favorable government policies in place) grows considerably, by 48%, 22%, 51% and 93% respectively over the baseline. In absolute terms, 30% of the SMP world production growth comes from India. The growth in SMP production in India (162 000 tonnes) accounts for roughly 30% of the world's production growth (544 000 tonnes) over the baseline.

OECD-FAO forecasts agree with the trends in production signalled in FAPRI's outlook. EU production falls by 7.5% over the baseline (-0.8% annually). US production drops in the first year of the outlook but then climbs up steadily by 0.7% per year, overtaking the EU as the world's bigger SMP producer already from 2014. OECD-FAO projections for production growth in India, New Zealand, Australia and Brazil are on average more modest compared to FAPRI but reflect the strength of increases, with 17%, 22%, 35% and 59% respectively.

Table 9.3.2 Key SMP producers and consumers

AVG from to	in 1000 tonnes			Change vs past			World share	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	1999 2007	2008	2009 2018	1999 2007	2008	2009 2018	1999 2007	2009 2018
Top Producers	3.305	3.385	3.650	100	102	110	100%	100%
European Union	1.190	1.015	982	100	85	83	36%	27%
United States	666	828	761	100	124	114	20%	21%
India	211	339	431	100	161	205	6%	12%
New Zealand	251	280	327	100	111	130	8%	9%
Australia	229	179	244	100	78	106	7%	7%
Japan	183	170	160	100	93	87	6%	4%
Brazil	101	133	212	100	132	210	3%	6%
Russia	126	120	141	100	96	112	4%	4%
Canada	81	83	86	100	103	106	2%	2%
Ukraine	72	65	58	100	91	81	2%	2%
Top Consumers	3.043	3.107	3.434	100	102	113	100%	100%
European Union	980	840	784	100	86	80	32%	23%
United States	429	425	465	100	99	109	14%	14%
India	198	298	366	100	151	185	6%	11%
Japan	227	210	198	100	93	87	7%	6%
Mexico	173	210	253	100	121	146	6%	7%
Russia	165	160	182	100	97	110	5%	5%
Indonesia	99	156	166	100	158	167	3%	5%
Brazil	114	138	175	100	121	153	4%	5%
China	103	96	146	100	93	142	3%	4%
Algeria	74	84	110	100	113	147	2%	3%

Source: FAPRI

Consumption grows steadily in the majority of the main players over the projection period, with the exception of the EU and Japan, where it falls by 16% and 11% respectively, according to FAPRI. OECD-FAO, contrary to FAPRI, is more upbeat about future EU consumption as it projects it to grow by 6.5% over the baseline but supports FAPRI's projection of Japan's consumption declining over the baseline, albeit to a lesser extent (-2%).

Outlook for trade

FAPRI forecasts world SMP net trade, stimulated by strong import demand, especially from Asia, to increase by 31 % over the baseline period and almost double the growth in world production (+16%). It is projected to fall by almost 9% in 2009 compared to the previous year (SMP trade is the only one across all the dairy products that falls in 2009), but then recover and grow strongly by 4.1% annually fuelled by strong world demand.

OECD-FAO forecasts for SMP trade flows differ from the ones of FAPRI as it expects a significantly smaller growth in world SMP exports of 4% over the baseline, which will be outpaced by growth in world production over the same period (+11%).

Table 9.3.3 Key SMP traders

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	1999 2007	2008	2009 2018	1999 2007	2008	2009 2018	1999 2007	2009 2018
Net Exporters	1.015	1.077	1.225	100	106	121	100%	100%
United States	196	385	299	100	196	152	19%	24%
New Zealand	251	272	325	100	108	130	25%	27%
European Union	234	175	198	100	75	85	23%	16%
Australia	193	119	190	100	61	98	19%	16%
Ukraine	52	40	42	100	77	81	5%	3%
India	14	39	66	100	271	465	1%	5%
Argentina	20	13	27	100	65	138	2%	2%
Uruguay	14	13	18	100	90	128	1%	1%
Canada	26	11	10	100	43	40	3%	1%
Net Importers	1.015	1.077	1.225	100	106	121	100%	100%
Mexico	151	198	225	100	131	149	15%	18%
Indonesia	100	154	166	100	154	166	10%	14%
Algeria	75	91	110	100	121	146	7%	9%
Thailand	67	77	87	100	115	130	7%	7%
Philippines	89	70	86	100	79	97	9%	7%
Malaysia	53	58	72	100	108	135	5%	6%
Russia	40	40	41	100	101	103	4%	3%
China	40	40	60	100	100	150	4%	5%
Japan	43	35	38	100	81	88	4%	3%
Egypt	24	31	35	100	133	147	2%	3%
Vietnam	26	25	32	100	99	125	3%	3%
Saudi Arabia	25	23	38	100	94	152	2%	3%

Source: FAPRI

Net exporters

According to both OECD-FAO and FAPRI, SMP net exports in the next decade will continue to be dominated by 4 major players: New Zealand, the US, the EU and Australia (together they account for 83% of global net exports over the baseline).

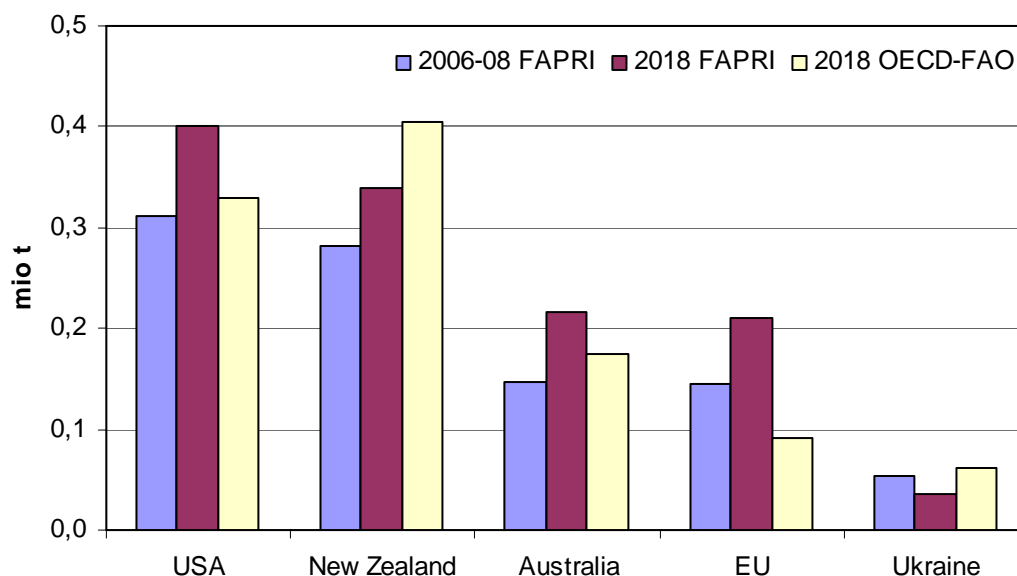
However, the outlooks following the discrepancies over the production levels, differ also on the export performance on the top player – the US. US net exports following the declining production drop by 56% in the first year of the outlook (from the record SMP sales of 2008) and then grow strongly by 10% per annum over the baseline to reach 400 000 tonnes in 2018 and become the world's leading SMP net exporter (overtaking New Zealand with its 2% annual growth already in 2015), according to FAPRI. OECD-FAO projections are less bullish for the US exports. After a less significant drop in US exports in the first year (-39%), they grow by 2% annually over the baseline, which is not enough to overtake New Zealand (with its SMP exports increasing by 2% annually as well) as the leading SMP exporter.

As the two Outlooks have diverging opinions on future EU SMP consumption levels, the opinions on SMP surplus production and its disposal differ as well, impacting on exports levels. FAPRI projects a steady increase of EU net trade of 1.8% annually over the baseline to 209 000 tonnes in 2018, while OECD-FAO expects it to decline by 5% annually over the baseline to 92 000 in 2018, as the domestic consumption increases.

In addition, Brazil, which used to be a net importer over the last decade, with the strongly increasing production over the baseline is expected to become an important

net exporter with 50 000 tonnes (FAPRI) and roughly 13 000 (OECD-FAO) of net exports in 2018.

Graph 9.3.3 SMP net exporters



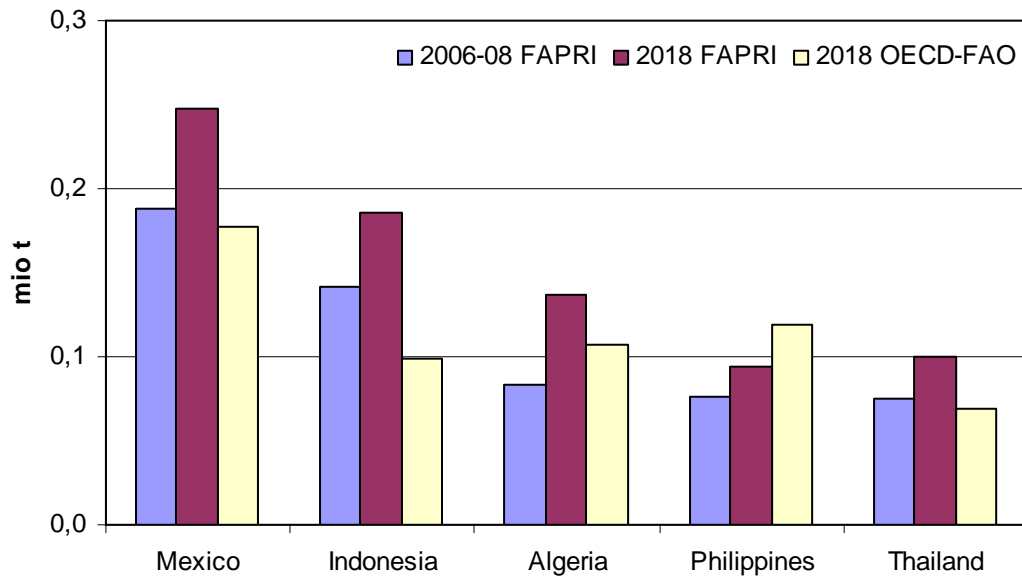
Net importers

On the imports side, both FAPRI and OECD-FAO expect Mexico to stay as the leading SMP net importer over the baseline, though the latter is more reserved about the size of Mexico's imports at the end of the baseline period (178 000) compared to FAPRI (248 000).

Moreover, OECD-FAO forecasts the highest growth in SMP imports from China (54% from 2008 to 2018) and a substantial decrease in Russia's imports due to stronger domestic production (36% over the baseline). To the contrary, FAPRI expects Russia's imports to stagnate with only a 0.3% increase in imports over the outlook period.

FAPRI forecasts that Southeast Asia (Indonesia, Malaysia, Philippines, Thailand, and Vietnam) maintains strong SMP imports, accounting for 36% of the world total. OECD-FAO is less bullish in its projections for the above countries (Indonesia' and Thailand imports are expected to stagnate) and projects that these will account for 32% of the world total imports at the end of the baseline.

Graph 9.3.4 SMP net importers



9.4. Whole milk powder

Summary of recent developments

World whole milk powder markets due to high feed costs, rebounding global demand, decreased stocks and limited growth in supplies from major exporters recovered from the previous downturns and saw world WMP price increase by 91% in 2007. In the late 2007, WMP prices started to ease as food manufacturers looked for cheaper substitutes. Initially, WMP prices showed more resistance, with a premium over SMP reaching 1000 USD/t in mid-2008; but following the decline of the whole sector they crashed down to 1850 USD/t in February 2009. After bottoming out, WMP prices have started firming in the course of April and May. However, the situation on the markets continues to be uncertain, which prevents prices from a healthy recovery.

Outlook for world WMP markets

Both FAPRI and OECD-FAO forecast increases in world consumption, production and exports of WMP with the latter being slightly more bullish about the growth trough all the areas, especially trade. OECD-FAO forecasts world consumption to grow by 28% (24.5% according to FAPRI) between 2008 and 2018 (40% increase from the average over the baseline compared to the average for the past decade, see table 9.4.1).

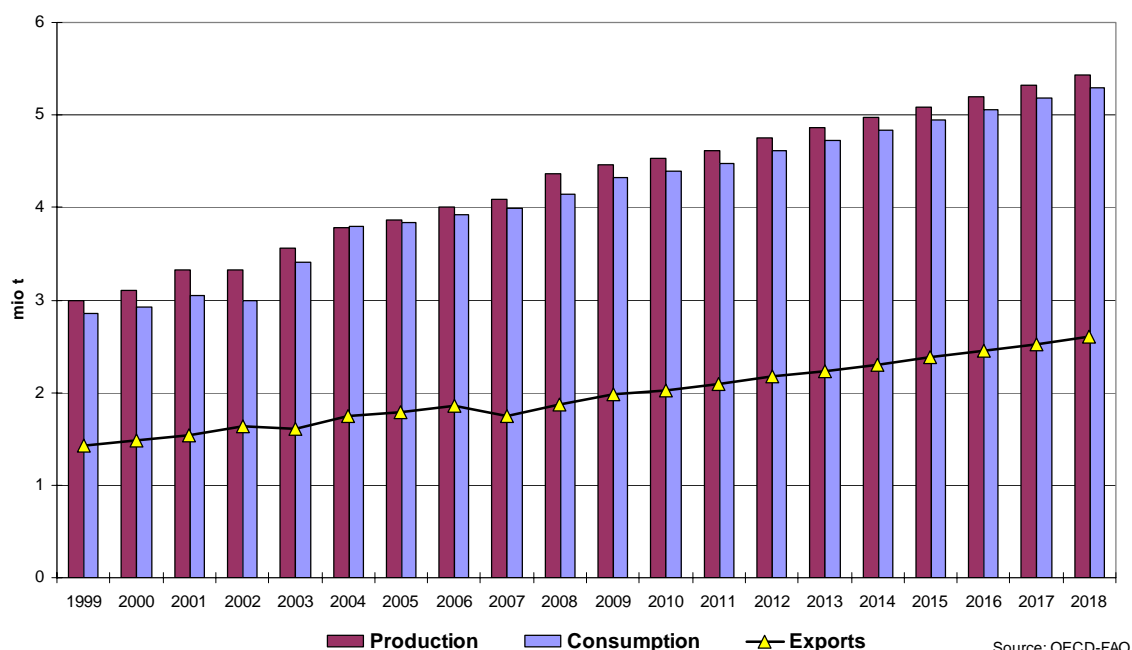
Table 9.4.1 Comparison of Outlook for world WMP markets
(Index for averages over past and next decade)

	Production	Consumption	Exports
1999 to 2007	100	100	100
2009 to 2018			
FAPRI	134	141	116
OECD-FAO	138	140	138

Stimulated by strong import demand, especially from Asia, world WMP production increases by 24.5% (OECD-FAO) and 21.2% (FAPRI) over the next decade.

World WMP exports grow strongly over the baseline (38%), OECD-FAO projects, to fuel the growing import demand and reach 2.6 million tonnes in 2018. Contrary to butter and cheese, and similarly, but still to a higher level than SMP, world trade in WMP will account in 2018 for a relatively large share global production (48%), according to the OECD-FAO. FAPRI forecasts a more modest increase in trade of 23.4% over the baseline, and only 16% (compared to 38% of OECD-FAO) when comparing averages of the past decade with the baseline period.

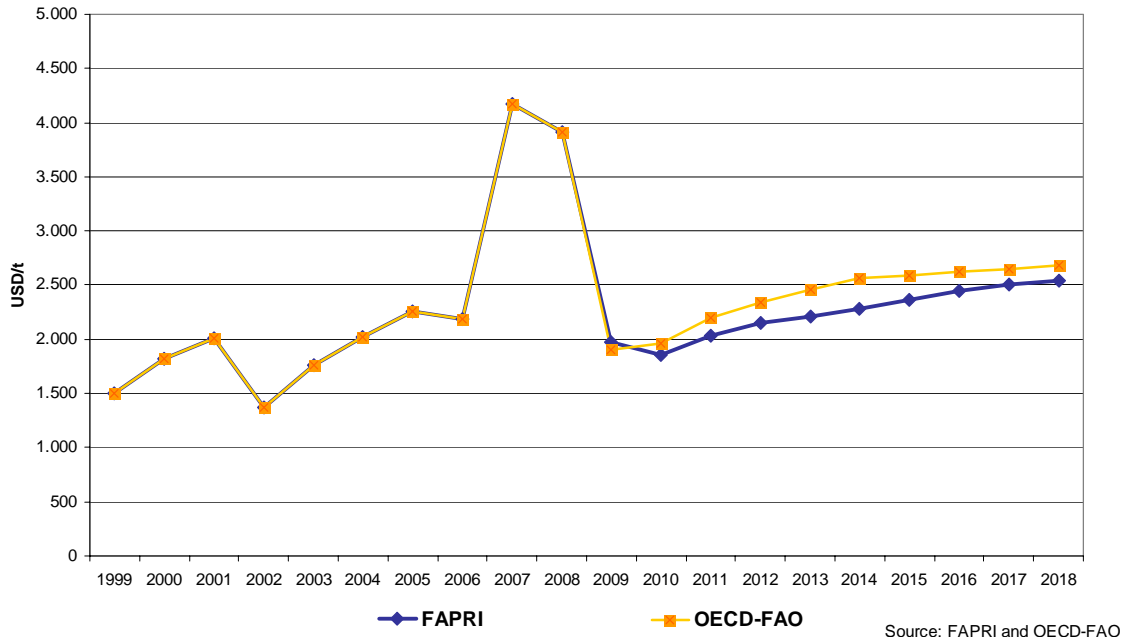
Graph 9.4.1 World WMP balance sheet



According to both FAPRI and OECD-FAO, prices are to recover from the 2008/09 drops and, with the upward pressure of a strong global economic and population growth, reach levels of 2 550 (FAPRI) and 2 690 USD/t (OECD-FAO) by the end of the baseline. Contrary to OECD-FAO that expects the world price to bottom in 2009 and then to start climbing up again, FAPRI projects that WMP prices will decrease further in 2010 (1 850 USD/t) and grow onwards.

Average international cheese prices over the baseline should be between 20% (FAPRI) and 28% (OECD-FAO) above the average of 1999-2006.

Graph 9.4.2 Projected world WMP prices (FOB Oceania, USD/t)



Main producers and users

According to both Outlooks, world WMP consumption and production will grow in most countries (though not in the EU, and in the case of Australia it will be higher than the current production but lower than the average one in the last decade). Brazil, China and New Zealand increase their production at the highest rate. China is expected to increase its production by 87% when comparing averages of the last decade with the baseline. Improved economy and favourable government policies will enable Brazil, according to FAPRI, to increase its production at the highest rate of the main producers (+92% when comparing the averages of the past and baseline decade) and to overtake New Zealand as the world's third largest producer and to equal with the lower level of the EU production over the baseline. OECD-FAO predicts stronger growth in Argentina's production of 4.9% annually over the baseline compared with 3.7% forecasted by FAPRI. Similar developments and figures (with the EU as the only entity with consumption declining) are valid for WMP consumption for both outlooks.

Table 9.4.2 Key WMP producers and consumers

AVG from to	in 1000 tonnes			Change vs past			World share	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	1999 2007	2008	2009 2018	1999 2007	2008	2009 2018	1999 2007	2009 2018
Top Producers	3.408	4.107	4.582	100	121	134	100%	100%
China	760	1.198	1.418	100	158	187	22%	31%
European Union	893	814	734	100	91	82	26%	16%
New Zealand	564	685	730	100	122	129	17%	16%
Brazil	382	580	734	100	152	192	11%	16%
Argentina	222	217	261	100	98	118	7%	6%
Mexico	109	131	147	100	120	135	3%	3%
Australia	178	127	174	100	71	98	5%	4%
Russia	92	105	118	100	114	128	3%	3%
Colombia	78	104	91	100	133	117	2%	2%
Indonesia	46	48	59	100	104	129	1%	1%
Top Consumers	2.680	3.316	3.782	100	124	141	100%	100%
China	800	1.180	1.372	100	148	172	30%	36%
Brazil	431	525	600	100	122	139	16%	16%
European Union	398	415	377	100	104	95	15%	10%
Algeria	137	180	203	100	132	148	5%	5%
Mexico	144	139	166	100	96	115	5%	4%
Russia	110	135	140	100	123	127	4%	4%
Venezuela	112	122	124	100	109	111	4%	3%
Malaysia	73	97	114	100	133	156	3%	3%
Saudi Arabia	73	95	122	100	131	168	3%	3%
Indonesia	64	91	105	100	143	165	2%	3%

Source: FAPRI

Outlook for trade

Both Outlooks project a substantial increase in world WMP trade over the baseline; they do however differ on the magnitude of the change. According to FAPRI, WMP trade grows 23.4% over the baseline (+2.1% annually), which is roughly in line with the global production increase of 21%.

OECD-FAO projections are much bolder as the Outlook expects the global exports to grow by 39% over the baseline and outpace the growth in global production of 25% over the same period.

Table 9.4.3 Key WMP traders

AVG from to	in 1000 tonnes			Change vs past			Shares in world trade	
	Past	Current	Projected	Past	Current	Projected	Past	Projected
	1999 2007	2008	2009 2018	1999 2007	2008	2009 2018	1999 2007	2009 2018
Net Exporters	1.402	1.438	1.621	100	103	116	100%	100%
New Zealand	563	666	726	100	118	129	40%	45%
European Union	495	399	358	100	81	72	35%	22%
Argentina	137	122	158	100	89	115	10%	10%
Australia	152	99	137	100	65	90	11%	8%
Colombia	19	35	5	100	184	25	1%	0%
Ukraine	12	23	29	100	197	252	1%	2%
Uruguay	19	21	25	100	110	131	1%	2%
Net Importers	1.402	1.438	1.621	100	103	116	100%	100%
Algeria	138	179	203	100	130	147	10%	12%
Malaysia	68	97	114	100	142	167	5%	7%
Saudi Arabia	66	95	122	100	143	184	5%	8%
Venezuela	83	93	92	100	113	112	6%	6%
Indonesia	18	44	45	100	244	252	1%	3%
Vietnam	41	40	63	100	98	155	3%	4%
Thailand	36	39	47	100	110	132	3%	3%
Egypt	35	38	49	100	107	139	3%	3%
Russia	18	30	22	100	170	125	1%	1%
Philippines	26	14	22	100	54	85	2%	1%
Peru	12	13	18	100	107	147	1%	1%

Source: FAPRI

In 2007 China became a net exporter of WMP. However, Chinese WMP exports were negatively affected by the milk scandal for the next couple of years (already a 45% drop from 2008 to 2009). According to FAPRI, over the long run, as domestic WMP production expands (+35%), Chinese WMP exports increase substantially (25% of annual increase between 2009 and 2018) and reach 77 000 tonnes in 2018.

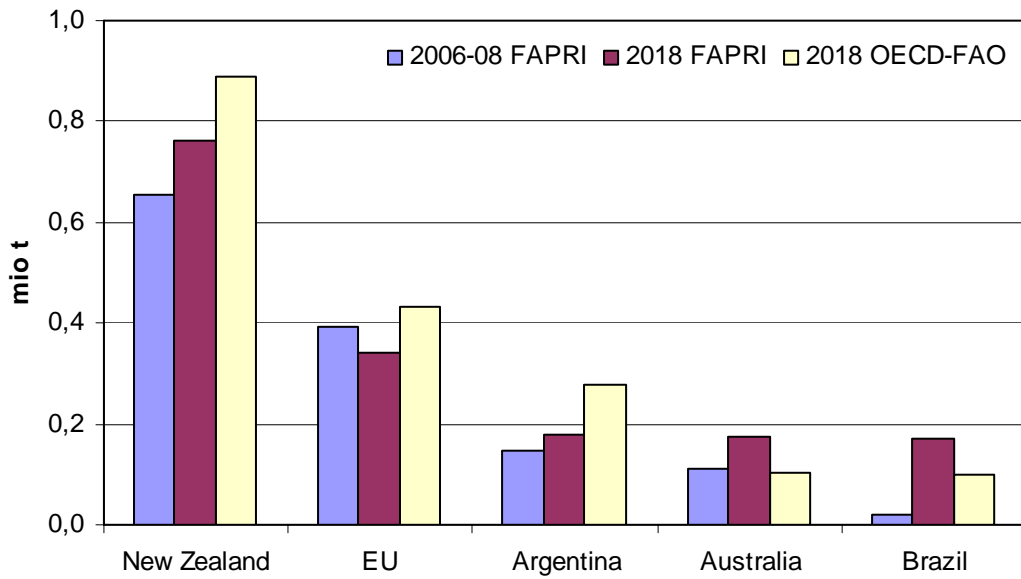
OECD-FAO forecasts do not support the growth in Chinese WMP exports. China is expected to become again a net importer as early as 2009 and, as domestic consumption is outpacing production, increase its imports by almost 3% annually over the baseline.

Net exporters

FAPRI and OECD-FAO predict the top 5 net exporters to stay in the same order over the baseline, however OECD-FAO is more bullish as regards the top 3 net exporters than FAPRI and especially in relation to Argentina's net exports. Out of this group, according to OECD-FAO, EU WMP exports decline – as the only among the main net exporters - by 6.3% (compared with a 14.3% drop by FAPRI) over the baseline. New Zealand's exports grow by 38% (14.2% FAPRI) over the baseline to 890 000 in 2018. Argentina's net exports are to grow annually over the baseline by 7.1% (compared to 3.9% according to FAPRI) and almost double over this period.

On the contrary, for Australia and Brazil, FAPRI forecasts are more upbeat as they project a growth of 78% and 211% respectively over the baseline. In the case of Brazil, this means a 12% annual growth and net exports reaching the level of 171 000 tonnes in 2018. OECD-FAO expects Brazil WMP net exports to increase "only" by 6.6% annually to 98 000 tonnes in 2018.

Graph 9.4.3 WMP net exporters

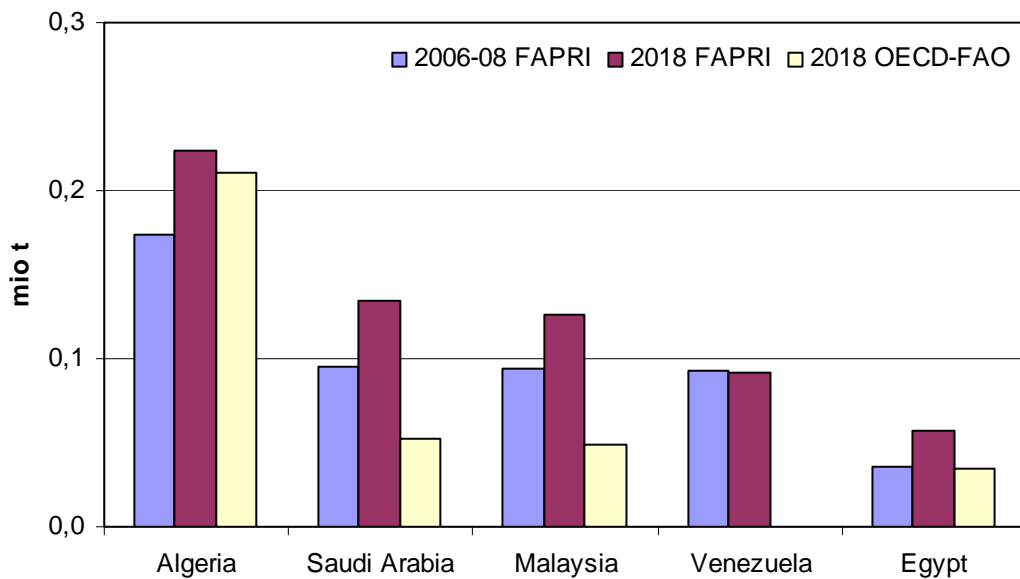


Net importers

The import side will remain fragmented compared to the exports, with the six largest importers covering only less than 30% of the world market.

Major WMP importers: Algeria, Saudi Arabia, and Malaysia continue to steadily expand their imports by 25%, 42% and 29% respectively over the baseline, according to FAPRI. Southeast Asian WMP imports will rise 4% annually throughout the baseline and account for about 20% of world imports by 2018. OECD-FAO projections are more modest for all the main net importers (although OECD-FAO does not provide forecasts for Venezuela).

Graph 9.4.3 WMP net importers



10. BIOFUELS

Global biofuel production has expanded considerably in the last few years. As a consequence of the various policy measures put in place by many countries, promoting the use and the production of biofuels, global ethanol production is projected to almost double between 2009 and 2018, reaching 148 billion litres at the end of the projection period (OECD-FAO outlook). An even higher rate of growth is expected for biodiesel, with the level of production projected to increase from 19 billion litres in 2009 to 44 billion litres in 2018.

Taking into account the numerous discrepancies between OECD-FAO and FAPRI in terms of basic assumptions and geographical coverage, an exact comparison of the corresponding projections about global production, consumption and trade projections is not always straightforward. However, FAPRI and OECD-FAO projections differ on the price development of ethanol, with FAPRI prices systematically lower than those estimated by OECD-FAO.

The importance of biofuels in the context of world agricultural commodities has been considerably increasing during the last few years, in parallel with their exponential growth, which has been supported by governmental policies aiming at promoting the use of renewable energy sources in the transport sector. Indeed, a high number of developed and developing countries have adopted specific policies, notably by imposing a minimum mandatory use of biofuels and/or providing financial incentives (e.g., subsidies, tax credits and exemptions). The key legislative acts on biofuels, especially the US Energy Independence and Security Act (EISA) of 2007, in particular the new Renewable Fuels Standard (RFS), and the EU Renewable Energy Directive (RED) of 2008, are taken into account for the projections.

Biofuels now start playing a major role in creating global demand for feedstocks as maize, wheat, sugar (ethanol feedstocks) and vegetable oils (biodiesel), thus competing with food and feed uses for the utilisation of agricultural land. Besides, because of their global dimension, biofuels have often become the focus of many trade analyses.

As a consequence, biofuels have been lately added to the baseline projections of the world agricultural outlook of OECD-FAO, FAPRI and USDA. However, since their development is very recent, projections over the next decade can be only compared to a recent historical period.

Recent developments (2005-2008)

Between 2005 and 2007, world biofuels consumption grew from 45 to 69 million litres, corresponding to a remarkable increase of 23% on an annual basis. Ethanol was by far the most important type of biofuel, with a share of more than 85% on the total consumption, the remaining part being covered by biodiesel. However, biodiesel consumption developed at a higher rate (+57% per year) than ethanol

(+19%), mainly as a result of its particular diffusion in the EU, where the biofuels sector is less developed and can therefore perform a more significant growth.

Given that ethanol and biodiesel are substitution products for conventional transport fuel (respectively for gasoline and diesel), biofuels prices, and thus the development prospects of the industry, are strongly dependent on crude oil prices. In this respect, the high commodities prices volatility in 2008 resulted in high uncertainty for the sector: in the first half of last year, the soaring oil prices seemed to guarantee a rosy future for biofuels; conversely, the dramatic drop in oil price, after the hike of July, led to a significant squeezing of biofuels' profitability and to the closing down of a large number of ethanol and biodiesel plants worldwide. However, it should be recalled that, even in a situation of low oil prices, the government mandates for biofuels use remain binding and thus continue to foster their demand.

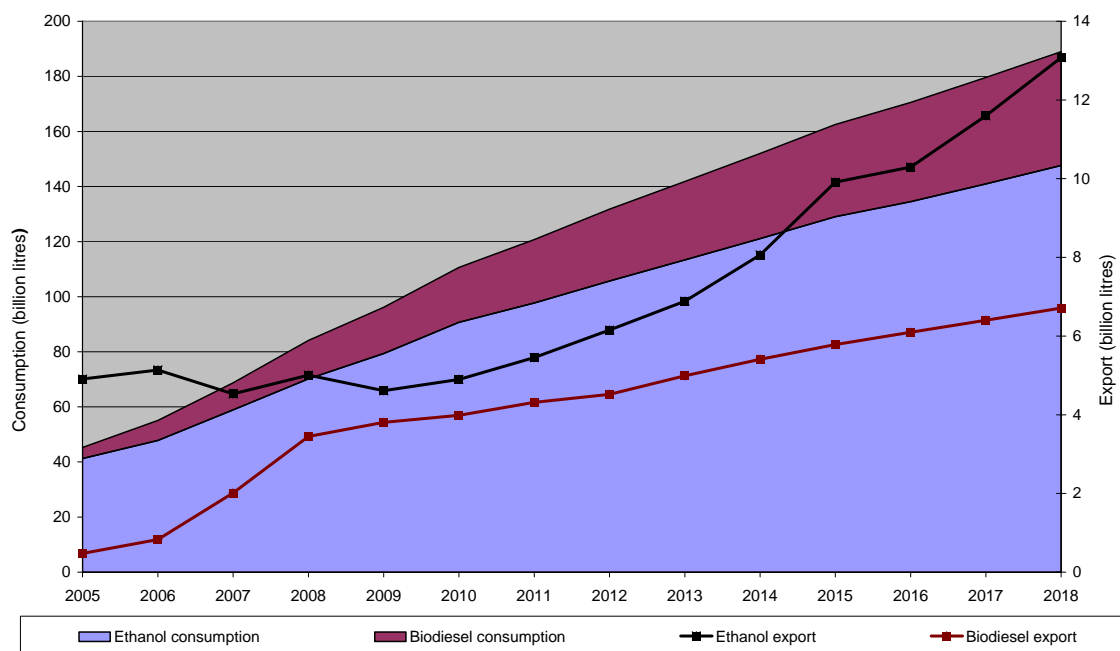
Outlook for world biofuels markets

It is evident that the outlook for the biofuels sector is largely dependent on a series of key assumptions, as: (1) the extent, to which the different markets will be able to meet the corresponding government mandates for biofuel use; (2) the projected evolution of crude oil price. On the second point, taking into account that the exogenous assumptions made by OECD-FAO and FAPRI are substantially different (see chapter 2 on macroeconomic assumptions), the outlook comparison for the two organisations is biased in the very foundation.

According to the OECD-FAO Agricultural outlook for 2009-2018, the biofuels sector as a whole is expected to continue the growth of the last years, although at a more moderate rate (+7.8% per year), so that the global consumption would increase from 96 billion litres in 2009 to 189 billion in 2018. As for the recent past, biodiesel consumption is expected to achieve a higher growth rate compared to ethanol (10.5% vs. 7.1%), although ethanol would remain the most important biofuel type, with a projected share of 77%.

Global trade of biofuels is also projected to record a rising trend, with total exports increasing from 8.4 billion litres in 2009 to 19.8 billion in 2018, corresponding to an annual increase of 10.0%.

Graph 10.0.1: World biofuels balance sheet by biofuel type (billion litres)



Source: OECD - FAO outlook 2009

The following table compares projections carried out by OECD-FAO and FAPRI, comparing the 10 years average over the projection period (2009-2018) to the reference period (2005-2007). Figures are indicated as indexes, 100 being the average for the reference period.

Table 10.0.1 Comparison of outlook for world biofuels market

	Production	Consumption	Trade (exports)
2005 to 2007	100	100	100
2009 to 2018			
OECD-FAO	263	258	223
FAPRI	252	249	329

Despite the differences in terms of assumptions and methodology, OECD-FAO and FAPRI come to similar conclusions regarding the development prospects of the biofuels sector: they expect a growth of about 150%, or slightly higher, between the averages of the two considered periods. On trade evolution, OECD-FAO is less optimist (+123%) than FAPRI (+229%); however, this difference could be mainly due to the trade approach of FAPRI, based on country net-trade, rather than on a separate consideration of exports and imports.

10.1. Ethanol

Recent developments (2005-2008)

The global ethanol sector expanded considerably in the last few years: between 2005 and 2007, total ethanol production rose from about 40 billion litres in 2005 to 59 billion litres in 2007. In 2008, world production grew again by almost 20%, thus going beyond the mark of 70 billion litres.

2008 was also characterised by the spectacular volatility of ethanol price, which was related to the generalised escalation of commodities prices (in particular of oil) in the first half of the year and the subsequent sharp drop.

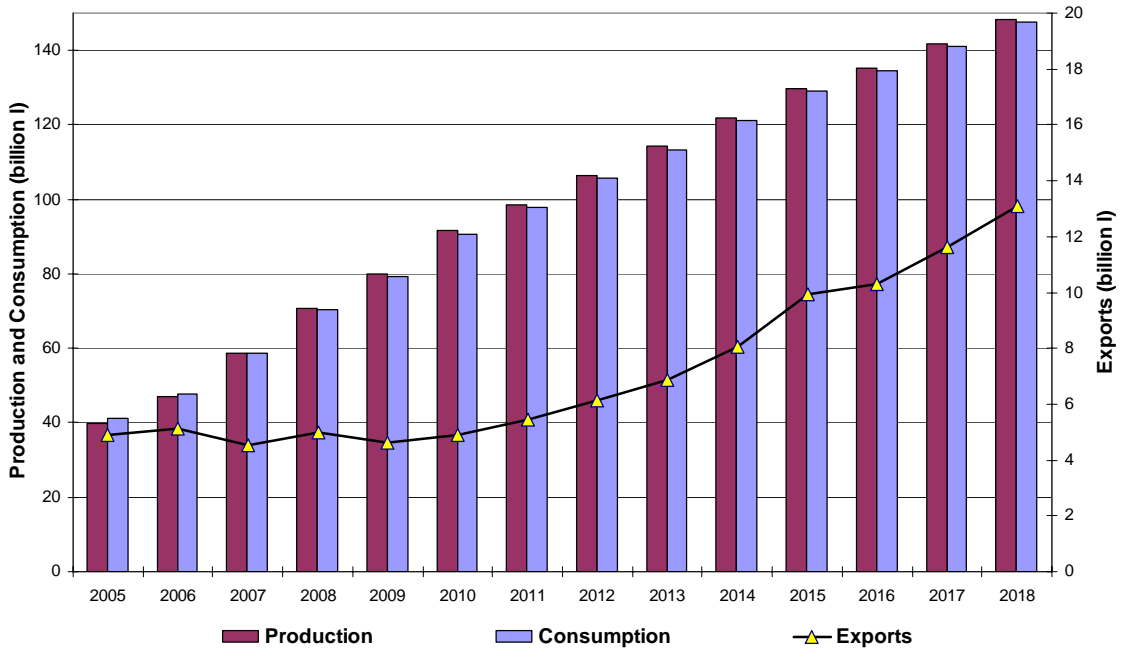
Among the main producing countries, the larger expansion of ethanol occurred in the USA, which more than doubled their production from 15 to 34 billion litres between 2005 and 2008. As a result, the USA clearly outdistanced Brazil, whose production rose in the same period by "only" 46% (from about 15 to 22 billion litres). In 2008, the USA and Brazil covered respectively 50% and 30% of global ethanol production, followed at distance by the EU with a 9% share.

Outlook for world ethanol markets

According to the OECD-FAO outlook, global ethanol production will increase from 79 to 148 billion litres between 2009 and 2018, corresponding to an annual growth rate of 7.1%. FAPRI projections, which do not explicitly provide a total for world production, forecast a slightly less sharp increase (+6.9%), calculated on the most important players of the ethanol market.

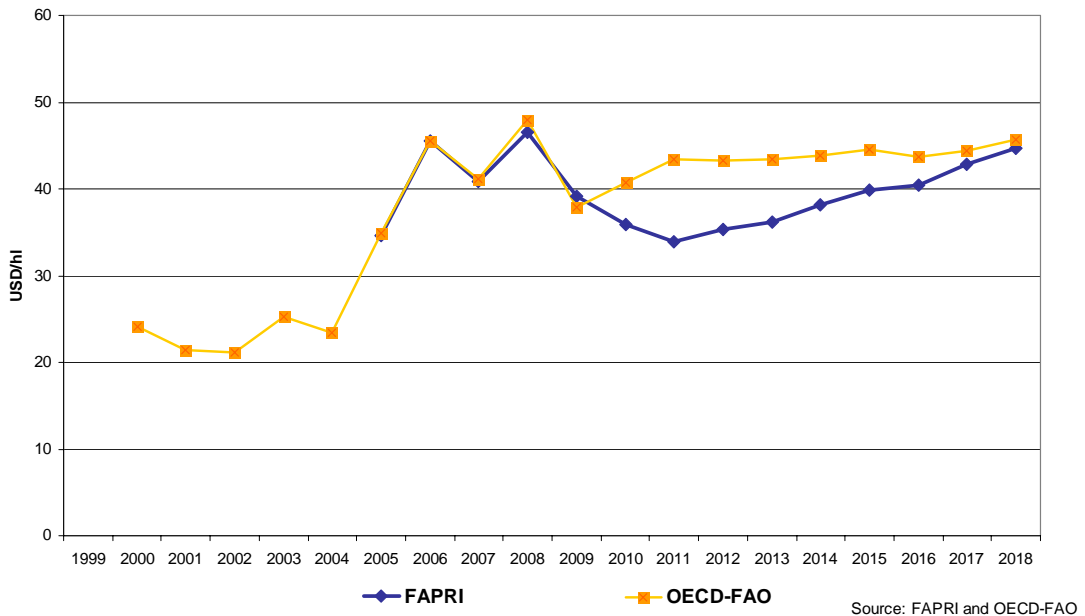
With regard to global trade, the OECD-FAO projects that the global ethanol exchanges should grow by 12.3% per year between 2009 and 2018, thus reaching the volume of 13 billion litres by the end of the period. On its side, FAPRI believes in an even more rapid development of trade flows: finally, it estimates that the total volume will attain 19 billion litres in 2018, despite considering only the sum of all positive net exports.

Graph 10.1.1 World ethanol balance sheet (OECD-FAO outlook)



Source: OECD – FAO

Graph 10.1.2 Ethanol: projected world prices



World ethanol prices are supposed to be highly correlated with crude oil prices, but are also influenced by ethanol production capacities and by the degree of implementation of biofuels policies.

In the OECD-FAO baseline, ethanol prices are projected to follow closely the development of oil price and thus to increase steadily over the projection period, recovering from 38 USD/hl in 2009 to over 46 USD in 2018 (see chapter 2).

On the contrary, for FAPRI, the development of ethanol price does not seem to follow (at least in the short term) the evolution of oil price: starting from a level of 39 USD/hl in 2009, FAPRI projects a decline to a low of 34 USD/hl in 2011, although in the same period oil price rises from USD32 to USD72 per barrel. Afterwards, a gradual strengthening of ethanol price is forecast, to reach 45 USD/hl at the end of the projection period.

All in all, FAPRI world ethanol price projection remains, with the exception of 2009, systematically lower than the OECD-FAO outlook until 2018. This result is quite surprising, when considering that FAPRI generally assumes higher oil prices than OECD-FAO for the projection period. Beside the fact that oil price is not the only factor behind the evolution of ethanol price, this surprising result could be explained by a possible discrepancy in the time lag considered by OECD-FAO and FAPRI between the change in oil price and the corresponding variation of ethanol price.

Main producers and users

The world ethanol production is dominated by the United States and Brazil. Relatively smaller players are EU, Canada, China and India. Unless mentioned otherwise, the figures regarding main producers and users, as well as for the trade outlook, are from OECD-FAO projections.

OECD-FAO projects the **USA** production to increase by 5.3% per year from 40 billion litres in 2009 to 63 billion litres by the end of the projection period. The USA consumption, boosted by the EISA mandates, is projected to grow at an even faster rate (+6.3%), expanding from 41 billion litres to more than 71 billion litres between 2009 and 2018. The shortage is covered by imports. Although a small share of US ethanol is assumed to be produced from wheat and sorghum, the vast majority uses maize as the feedstock. FAPRI outlook is perfectly in line with the OECD-FAO projections for the USA.

Brazilian ethanol production is expected to more than double within the projection period, from 29 billion litres in 2009 to 53 billion litres in 2018 (corresponding to an annual increase of +9.2% per year). Domestic consumption in Brazil would increase from 20 billion litres in 2009 to 41 billion litres in 2018. FAPRI projects the same level for Brazilian production in 2018, but a lower consumption (35 billion litres).

The **EU** production of ethanol is supposed to increase from 5.7 billion litres in 2009 to almost 14 billion litres in 2018. Consumption growth, however, outpaces production and expands from 7.3 billion litres to almost 17 billion litres over the projection period. FAPRI appears to be much more sceptical on the development of biofuels in the EU and projects consumption of ethanol in 2018 at only 8.3 billion litres. According to FAPRI, the shares of the three ethanol feedstocks are projected to remain stable over time and reach 3.8 million tonnes of wheat, 1.7 million tonnes of barley and 1.0 million tonnes of maize in 2018.

Canada's ethanol production is not expected to expand considerably over the projection period (from 1.5 million litres in 2009 to 1.6 billion litres in 2018), a development which is completely shared by FAPRI. At the same time, consumption

is projected to increase at a somewhat faster rate from 2.0 to 2.6 billion litres in 2018 (3.8 billion litres for FAPRI). For FAPRI, at the end of the projection period, 2.2 million tonnes of maize and 1.0 million tonnes of wheat will be transformed to ethanol.

China's production is expected to increase by 3.8% per year over the projection period, thus reaching 5.7 billion litres at the end of the projection period. Consumption would attain a slightly lower level (5.6 billion litres) in 2018. FAPRI foresees a less dynamic development for the Chinese ethanol production, which is forecast at 2.4 billion litres in 2018, corresponding, in terms of feedstock, to 4.4 million tonnes of maize.

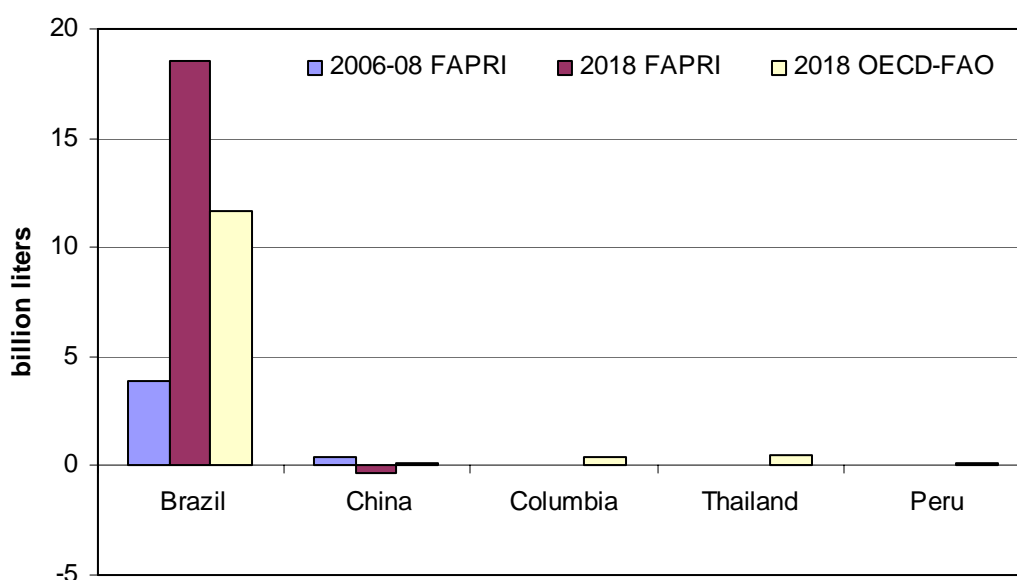
India's ethanol production is forecast to increase from 2.1 billion litres to 3.9 billion litres in 2018 (against 2.8 billion litres for FAPRI), whereas consumption would reach 3.6 billion litres in 2017.

Outlook for trade

Net exporters

Brazil is by far the world largest ethanol exporter and is projected to strengthen this position over the projection period, increasing its exports by almost three times, from 4.1 billion litres in 2009 to 11.6 billion litres in 2018. FAPRI baseline is even more optimistic and projects Brazil's exports at 18.5 billion litres. On **China**, the outlooks are slightly divergent, since the OECD-FAO expects China to remain a net exporter, whereas FAPRI believes that it will turn into a small net importer.

Graph 10.1.3 Ethanol net exporters

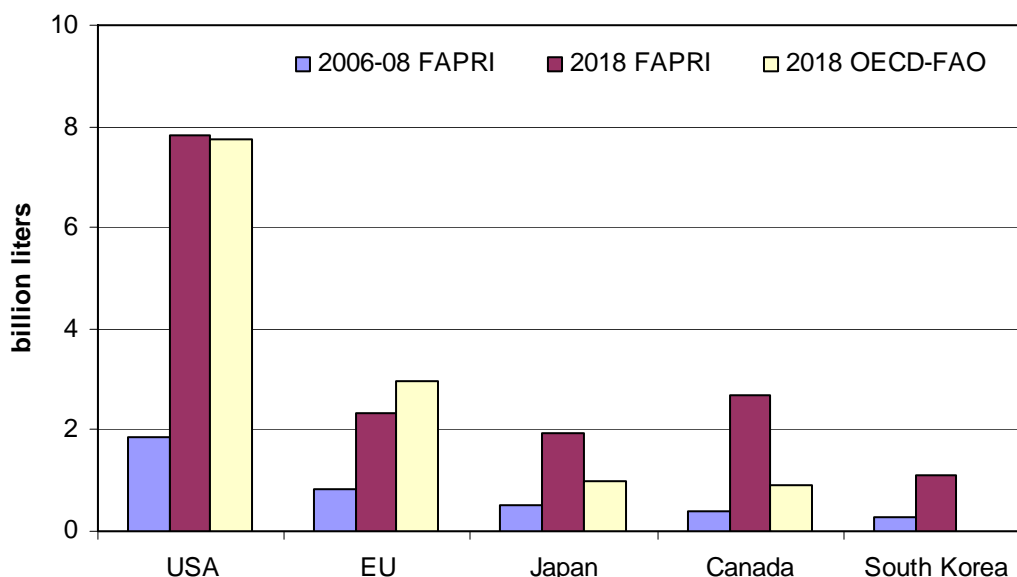


Net importers

The **United States**, while being the first world producer, are expected to conquer the position as the world's leading importer of ethanol, with net imports expected to increase from 1.2 billion litres in 2009 to 7.8 billion litres in 2018 (identical projection for FAPRI). **EU** imports would increase from 1.6 billion litres in 2007 to

3.0 billion litres in 2018 (2.3 billion for FAPRI). Regarding **Canada**, the projections on imports development show a certain gap: while OECD-FAO expects them to be lower than 1 billion litres in 2018, FAPRI forecasts them at a significant level (2.7 billion), as consumption is higher in FAPRI. The projected level of **Japan's** imports in 2018 is also quit uncertain, given that OECD-FAO estimates them at about 1 billion litres, while FAPRI expects roughly the double.

Graph 10.1.4 Ethanol net importers



10.2. Biodiesel

Summary of recent developments

Between 2005 and 2007, global biodiesel production increased from 4.5 to 11.5 billion litres. In 2008, world production further jumped to more than 16.3 billion litres. The EU is the most important player in the biodiesel sector, with a share of 50% on global production, corresponding to roughly 8 billion litres, and of 66% on consumption in 2008. The US is the second largest producer of biodiesel, with about 2.7 billion litres in 2008, followed by Argentina (1.4 billion), Brazil (1.1 billion), and Australia (0.9 billion). As in the case of ethanol, and even to a larger extent, biodiesel was subject to a situation of extreme price volatility in 2008.

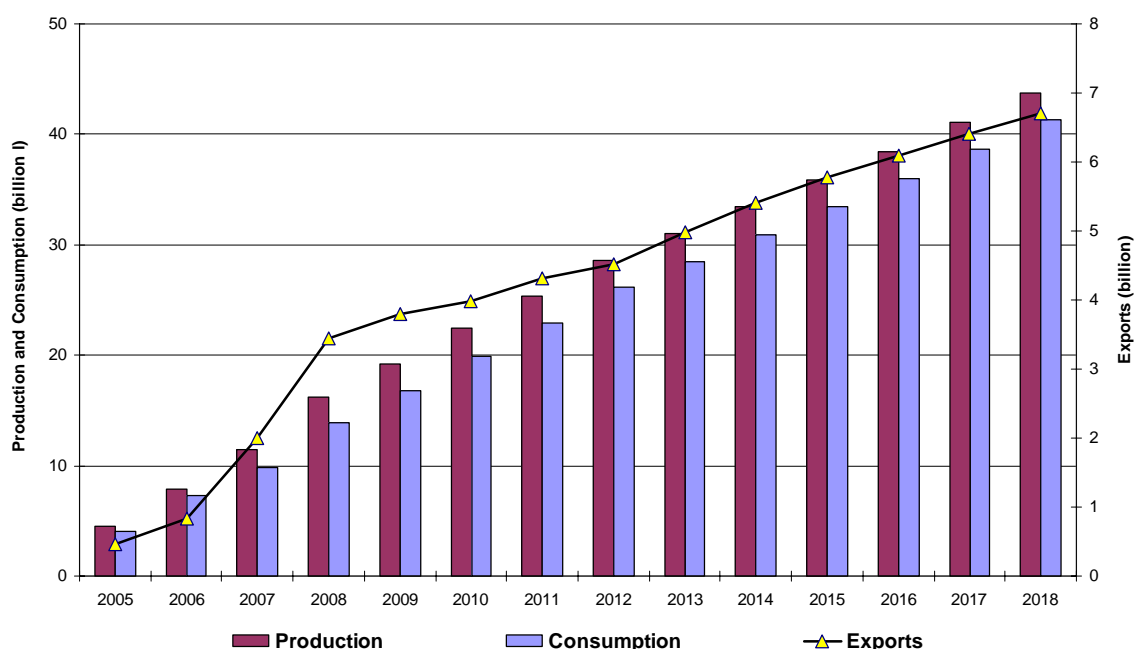
Outlook for world biodiesel markets

According to the OECD-FAO outlook, the annual growth rate of biodiesel production until 2018 (+9.6%) is expected to be even higher than for ethanol, albeit starting from a lower basis: production is projected to increase from 19 billion litres in 2009 to 44 billion litres in 2018. Again, FAPRI data do not explicitly provide an aggregate for world production, but foresee an annual increase of 6.0% over the projection period, calculated on the basis of the considered countries only.

As to global trade, according to the OECD-FAO, the growth rate of biodiesel over the projection period (6.5% per year) is expected to be more limited compared to

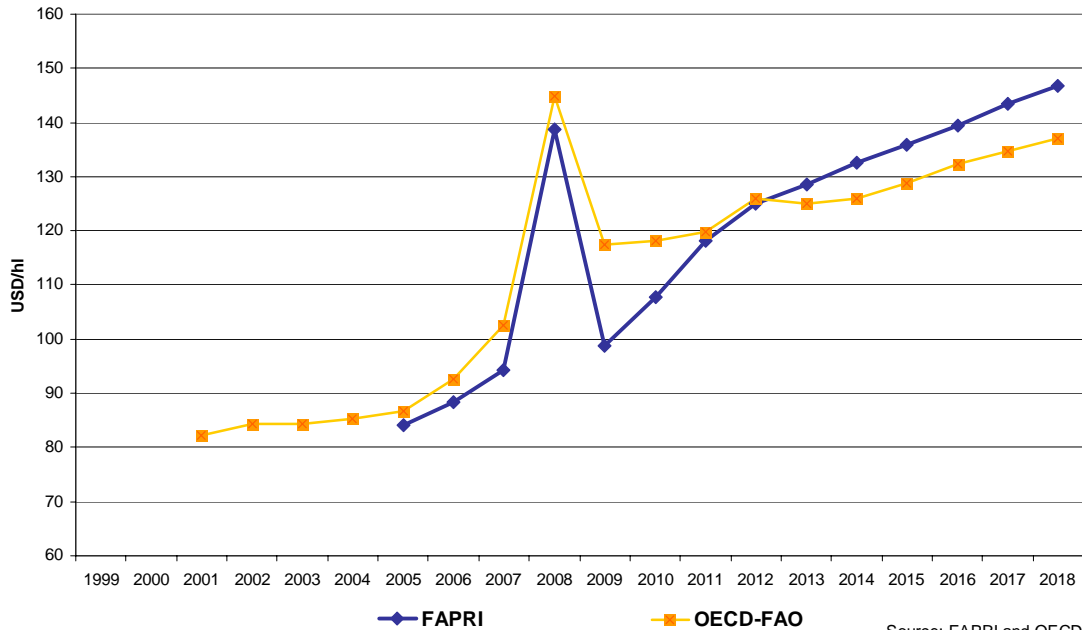
ethanol, but global traded volumes rise nevertheless from 3.8 billion litres in 2009 to 6.7 billion in 2018. On the other hand FAPRI forecasts a very different scenario, where global traded volumes reach only 2.9 billion litres in 2018. This huge gap between OECD-FAO and FAPRI is fundamentally due to a different view about the inclination of Argentina to run domestic processing of its vegetable oil production into biodiesel: while the OECD-FAO outlook believes in a strong development of biodiesel production in Argentina, destined in large part to the export to the EU, FAPRI is more prone to think that the Argentinean vegetable oil production would rather be exported as such to the EU, where it would be then processed into biodiesel. In the end, FAPRI's assumption leads, all other things being equal, to considerably lower production and exports of biodiesel for Argentina, and thus to higher production and lower imports for the EU. As a result, FAPRI forecasts a significantly lower level of global biodiesel trade. However, apart from this different assumption regarding the place where biodiesel would be processed, there are no major inconsistencies between OECD-FAO and FAPRI as regards the fundamentals of the world biodiesel market.

Graph 10.2.1 World biodiesel balance sheet



Contrary to the case of ethanol, both FAPRI and OECD-FAO biodiesel prices seem to follow closely the development of crude oil price, and thus increase progressively between 2009 and 2018. Also the relative level of biodiesel price in the two outlooks seems to be perfectly compatible with the corresponding relative level of oil price. In short, OECD-FAO projects an increase from the 2009 levels of 117 USD/hl to around 137 USD/hl, whereas for FAPRI the corresponding price rises from 99 USD/hl to 147 USD/hl.

Graph 10.2.2 Biodiesel: projected world prices



Source: FAPRI and OECD-FAO

Main producers and users

Unless mentioned otherwise, the figures regarding main producers and users, as well as for the trade outlook, are from OECD-FAO projections.

The **EU** is projected to remain the biggest producer and consumer of biodiesel. Production would increase from 9.6 billion litres in 2009 to 18.4 billion litres in 2018 (9.9 billion litres in FAPRI). EU consumption is forecast to expand from 10.8 billion litres to 22.3 billion litres (11 billion for FAPRI). The vast majority of EU biodiesel in 2018 is produced from rapeseed oil, the other feedstocks being soybean oil and sunflower oil.

Biodiesel production in the **United States** is expected to increase from 3.2 billion litres in 2009 to around 5.2 billion in 2018 (4.5 billion for FAPRI). Although biodiesel consumption is also likely to grow during the projection period, from 1.4 billion litres in 2009 to 3.8 billion litres in 2018 (identical level for FAPRI), the USA is destined to remain an important net exporter of biodiesel.

Brazil is projected to more than double its biodiesel production, from 1.2 billion litres in 2009 to 3.0 billion litres in 2018 (3.3 billion in FAPRI).

Argentina is expected to increase its production of biodiesel from 1.8 billion litres in 2009 to 3.8 billion litres in 2018. The corresponding FAPRI figure for 2018 is much lower (1.9 billion), as a consequence of the different assumption on the capacity of Argentina to process domestically its soybean oil production into biodiesel. Consumption of biodiesel in Argentina, albeit slowly increasing from 210 million litres in 2009 to 630 million in 2018 (870 million for FAPRI), remains largely below the level of its production.

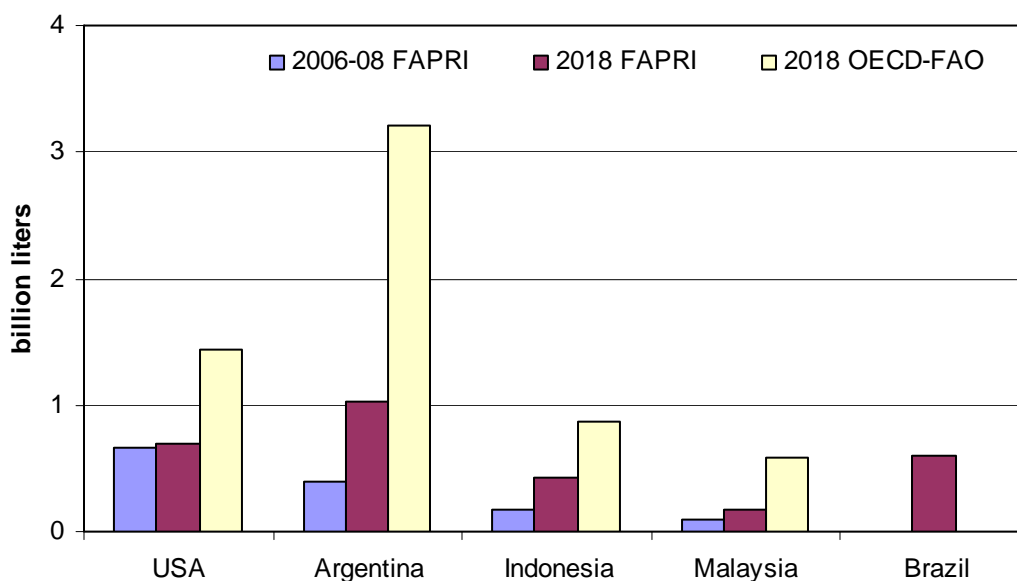
Outlook for trade

Net exporters

According to the OECD-FAO outlook, the biodiesel export market is destined to be increasingly dominated by **Argentina**, whose policies support domestic crush of oilseeds, and hence provide biodiesel feedstock. Its exports are projected to increase from 1.5 billion litres in 2009 to 3.2 in 2018 (+8.9% on annual basis), when they would represent almost the half of global exports. On the other hand, FAPRI foresees a much lower level of exports for Argentina in 2018 (1.0 billion litres) and a lower share on global trade due to the reasons mentioned before.

Although the OECD-FAO expects the **United States** to remain the second-largest biodiesel exporting countries, their exports are expected to stagnate at a level of 1.5 billion litres, result of a sharp decline in the short-term, followed by a recovery in the second part of the projection period. FAPRI foresees the same type of development for the USA biodiesel exports and is even more bearish on the level of exports in 2018 (700 million litres).

Graph 10.2.3 Biodiesel net exporters

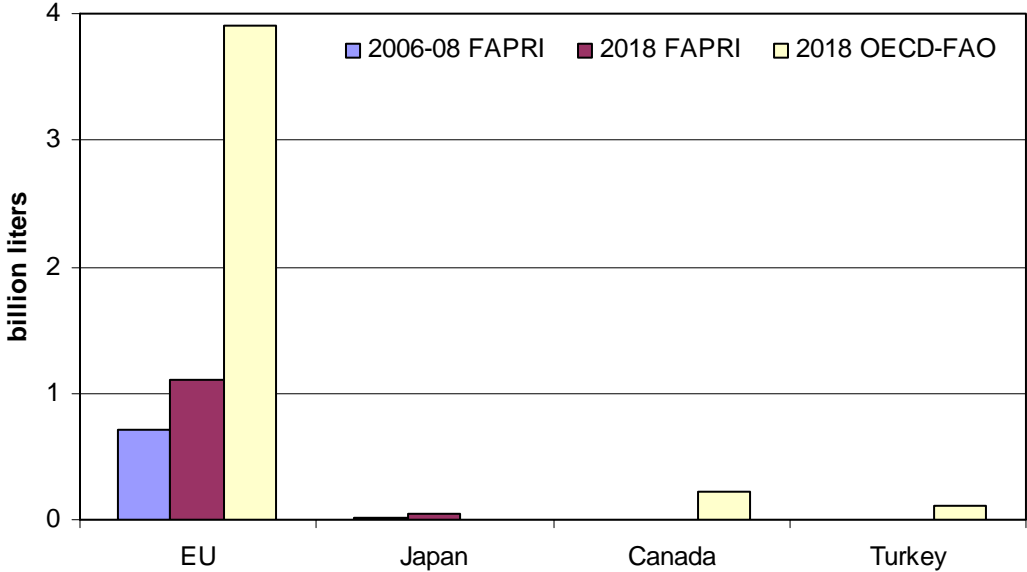


Net importers

Biodiesel imports are dominated by the **European Union**, which, according to the OECD-FAO outlook, would represent about 60% of global imports in 2018. The EU imports are projected to expand from 1.3 billion litres in 2009 to 3.9 billion litres in 2018. Again, FAPRI projects much lower import figures for the EU, due to the different assumptions about processing of biodiesel in Argentina.

The remaining 40% of global imports is shared among a large number of small biodiesel-importing countries.

Graph 10.2.4 Biodiesel net importers



11. SENSITIVITY ANALYSIS

Rapidly changing economic environment, combined with uncertainty about the actual depth of the slowdown in 2009 and possible speed of economic recovery, calls for additional analysis to gain deeper understanding of the impact on economic slowdown on baseline results. Among the most rapidly changing and disputed macroeconomic parameters, were economic growth and crude oil prices.

The OECD-FAO baseline conducted three separate sensitivity analyses reflecting higher oil price, as well as two different paths of macroeconomic growth. In its analysis, OECD-FAO focused only on one indicator at the time (income growth or oil price), while recognising that these scenarios do not capture the full effect of the current economic slowdown and should serve only as indicators of possible economic paths. While the OECD-FAO analysis on individual factors is beneficial in assessing the impact of single parameters on the baseline results, they lack a comprehensive vision of how different the baseline would be in the presence of an updated and consistent macroeconomic forecast.

After discussing the OECD-FAO sensitivity analysis and a set of updated macroeconomic parameters used to obtain an alternative scenario run in-house (referred to as "alternative scenario"), the chapter compares different prices obtained in-house and by OECD-FAO to the OECD-FAO baseline. The results are presented as percentage changes in prices compared to baseline levels.

11.1. OECD-FAO Sensitivity Analysis

As the economic situation further deteriorated from the macroeconomic assumptions used in the OECD-FAO baseline dating from the end of 2008, the initial baseline projections referred to in this report were made subject to scenario analysis. These relied on alternative GDP growth estimates based on short-term updates provided by the OECD and World Bank for years 2009 – 2010 showing much lower levels of GDP growth than in the baseline, complemented by simple assumptions on longer term recovery developments. Sensitivity of agricultural prices to higher oil prices than in the baseline was also discussed.

The first scenario ("lower GDP – faster recovery") assumes that following the depressed levels of GDP for 2009 and 2010, incomes enter a rapidly increasing path and quickly approach the absolute levels of the baseline projections (discussed in Chapter 2) with those levels assumed to be fully reached only in 2018.

The second scenario ("lower GDP – slow recovery") assumes the same level of lower GDP for 2009 and 2010, with income growth rates in each country in the recovery phase after 2010 assumed to be the same as in the baseline projections, but starting from the lower 2010 levels, with absolute income levels never reaching those projected in the baseline.

In another scenario the oil price was changed to the higher levels used in the 2008 OECD-FAO baseline, when the oil price was assumed to grow from 90 USD/barrel to 104 USD/barrel in 2018. The baseline kept oil prices in the 43 – 70 USD/barrel range.

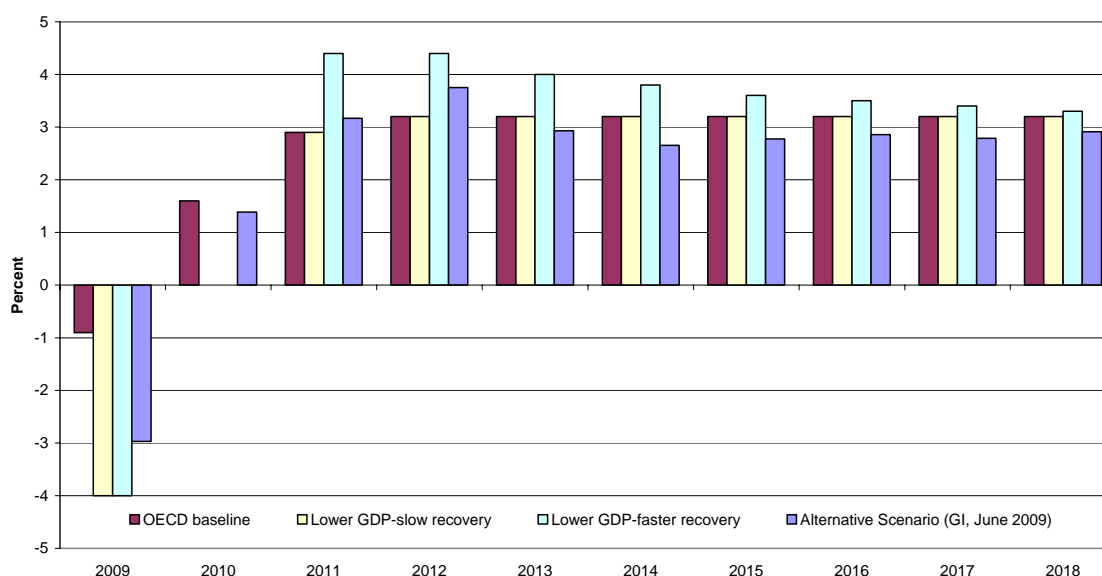
Sensitivity analysis results, in the form of percentage change of prices, are presented together with results of analysis done in-house and discussed together later in the chapter.

11.2. Description of macroeconomic parameters of "alternative" scenario

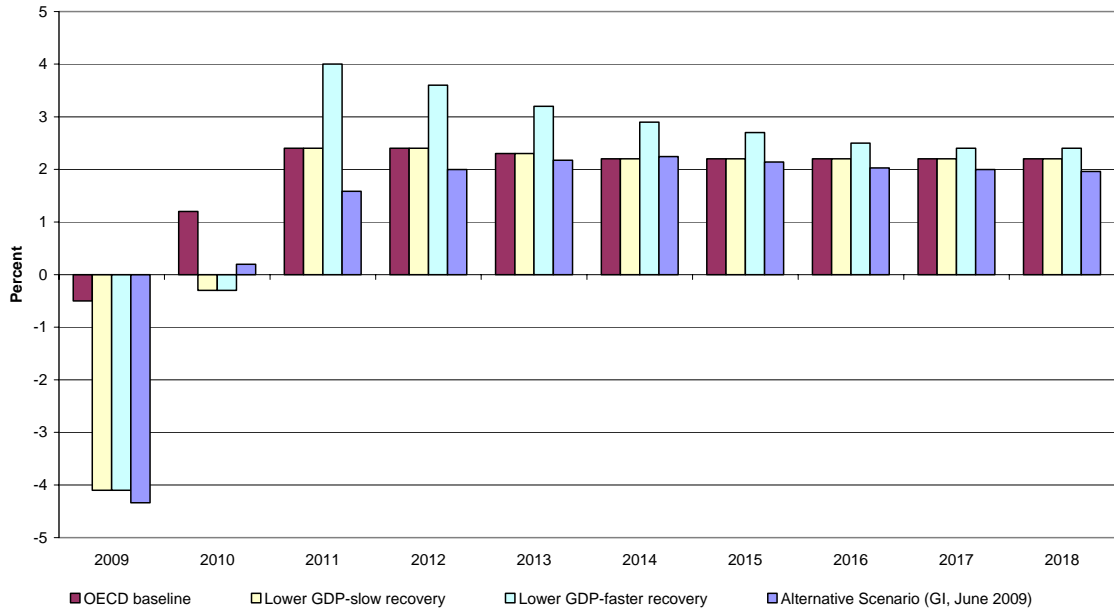
An update reflecting the latest macroeconomic forecast from IHS-Global Insight from June 15, 2009 was used to run an alternative scenario. While there are still question marks about the full extent of economic slowdown and prospects for economic recovery, the macroeconomic environment is likely to be relatively more stable now than it was at the end of last year and thus lends itself better to future projections. The length of the chapter does not allow a complete assessment of differences in macroeconomic assumptions but mentions only a few.

Compared to the OECD-FAO baseline, the macroeconomic growth for 2009 and 2010, forecasted in June 2009, is worse for the majority of countries. Countries experiencing negative or very small growth rates are expected to rebound in 2011. As shown on Figures 11.1 - 11.4., EU, US, and Russia's growth prospects by IHS Global Insight are lower over the projection period than growth rates used in the baseline. By contrast China's (graph 11.4) growth prospects have improved.

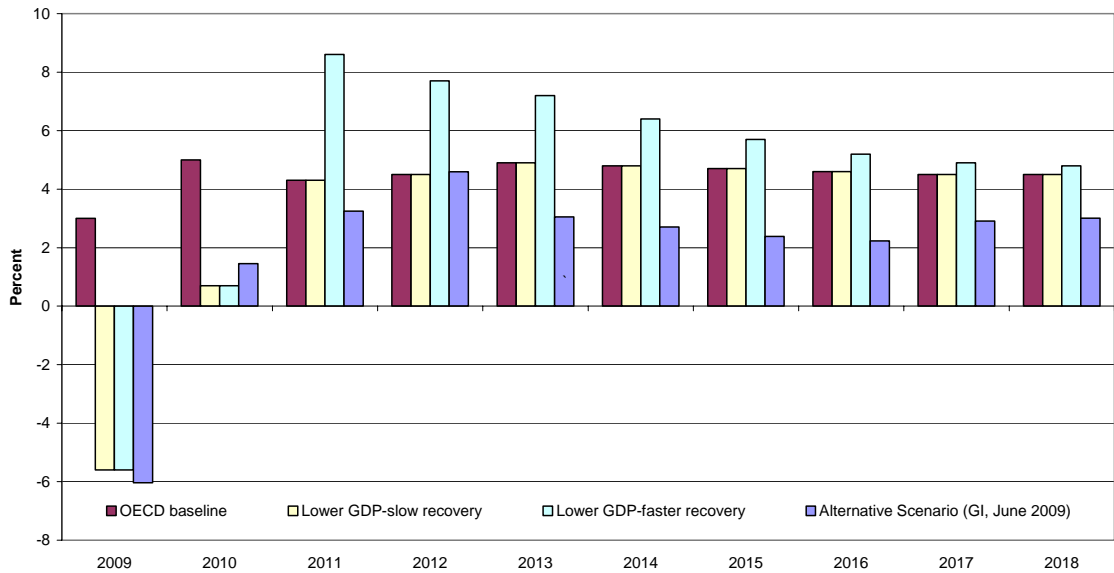
Graph 11.1 US GDP Growth: Baseline vs Alternative Scenarios



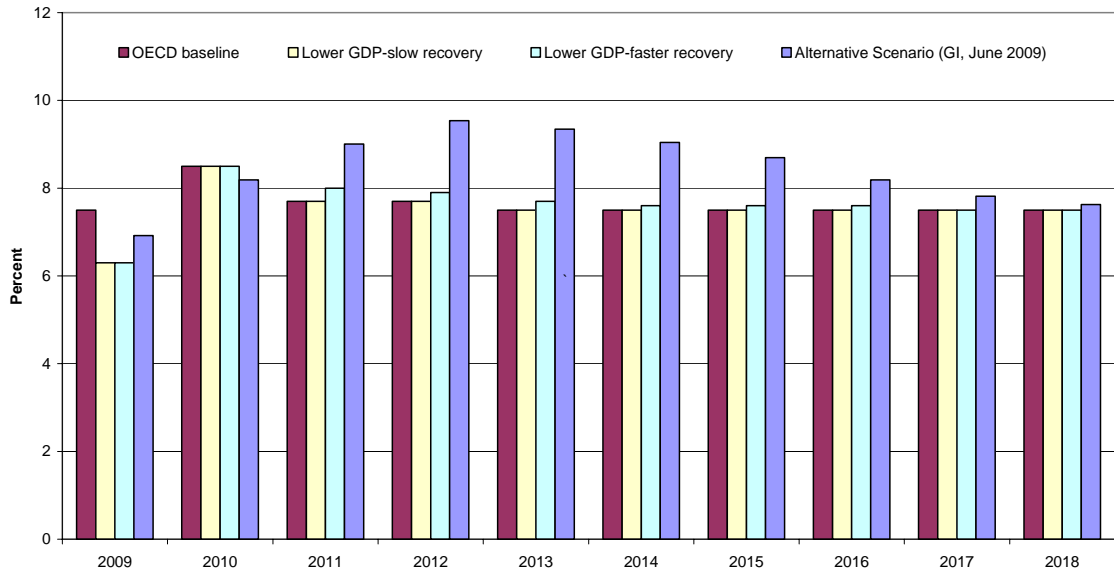
Graph 11.2 EU GDP Growth: Baseline vs Alternative Scenarios



Graph 11.3 Russia GDP Growth: Baseline vs Alternative Scenarios

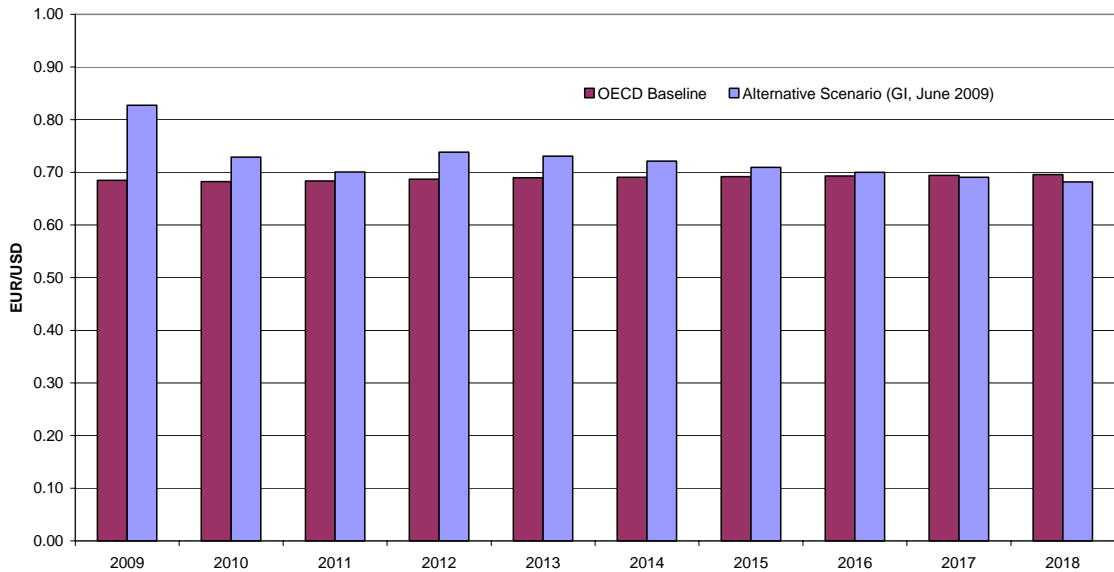


Graph 11.4 China GDP Growth: Baseline vs Alternative Scenarios

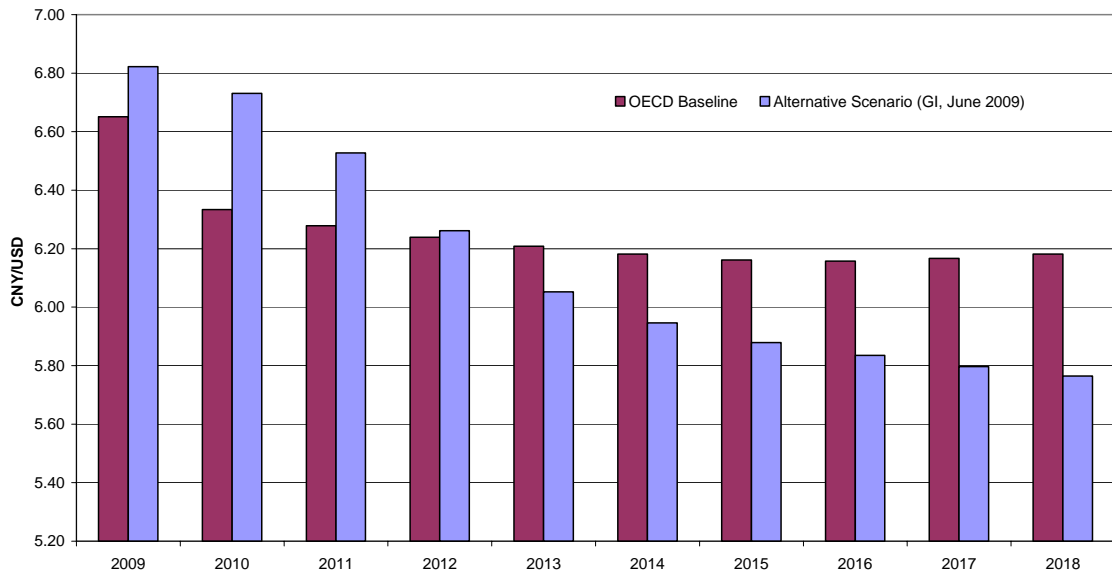


Figures 11.5 - 11.7 show projections for developments of EUR-USD, Chinese Yuan-USD, and Russian Rouble-USD exchange rates. While after 2010 the EUR-USD exchange rate forecasted by IHS Global Insight is close to that used in the OECD-FAO baseline, the Chinese Yuan continues its appreciation. By contrast, the Russian Rouble (graph 11.7) depreciates.

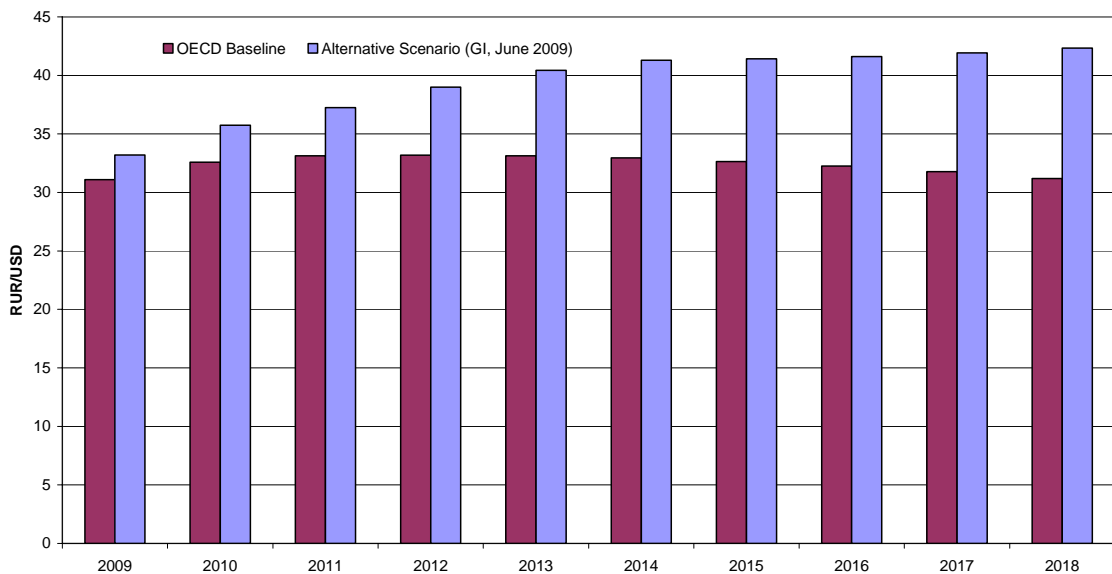
Graph 11.5 EUR/USD Exchange rates Baseline vs Alternative Scenario



Graph 11.6 CNY/USD Exchange rates Baseline vs Alternative Scenario

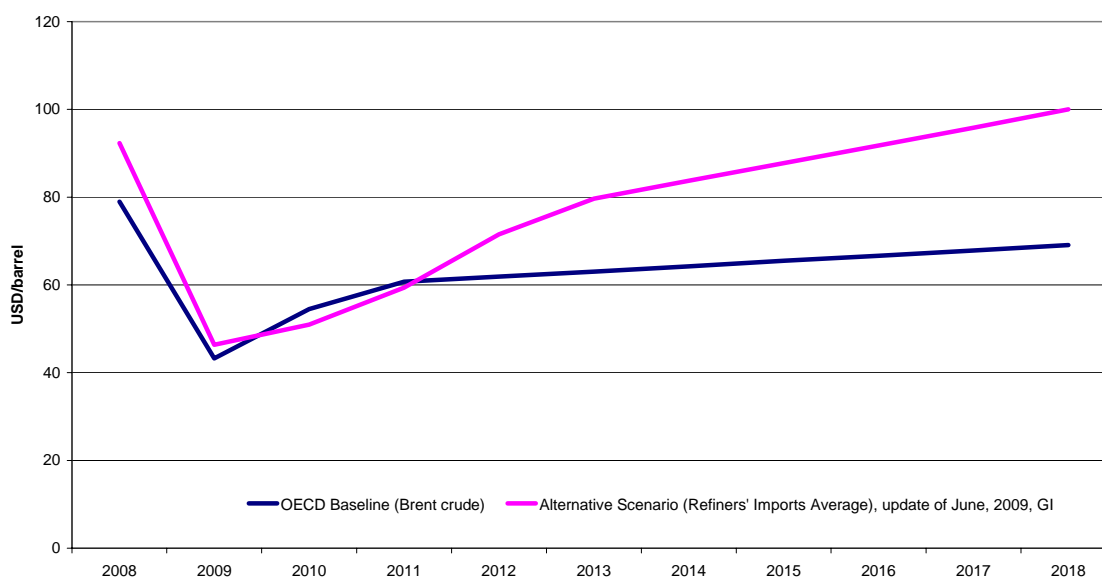


Graph 11.7 RUR/USD Exchange rates Baseline vs Alternative Scenario



Finally, Figure 11.8 shows the difference between the crude oil prices used in the OECD-FAO baseline and in the alternative scenario. While in 2009 prices converge slightly above 40 USD/barrel, the price used in the alternative scenario after 2012 increases faster and reaches 100 USD/barrel at the end of the projection period.

Graph 11.8 Oil price: Baseline vs Alternative Scenarios



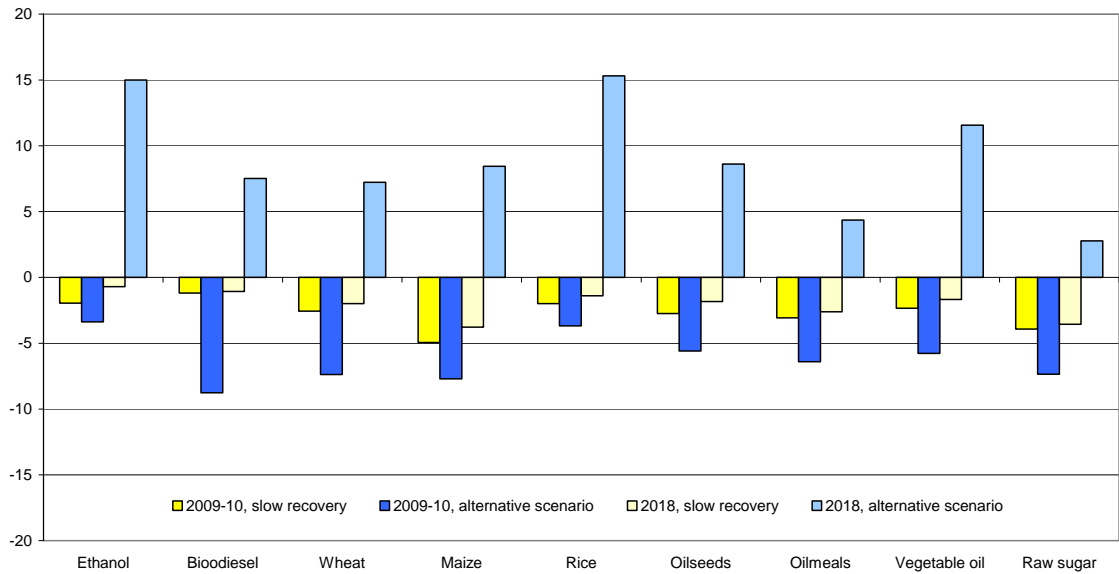
11.3. Results and comparisons of sensitivity analysis

Given that until 2012 the oil price is expected to be the same in the baseline scenario and in the alternative scenario, the price effects compared to the baseline in the alternative scenario can be divided into two periods:

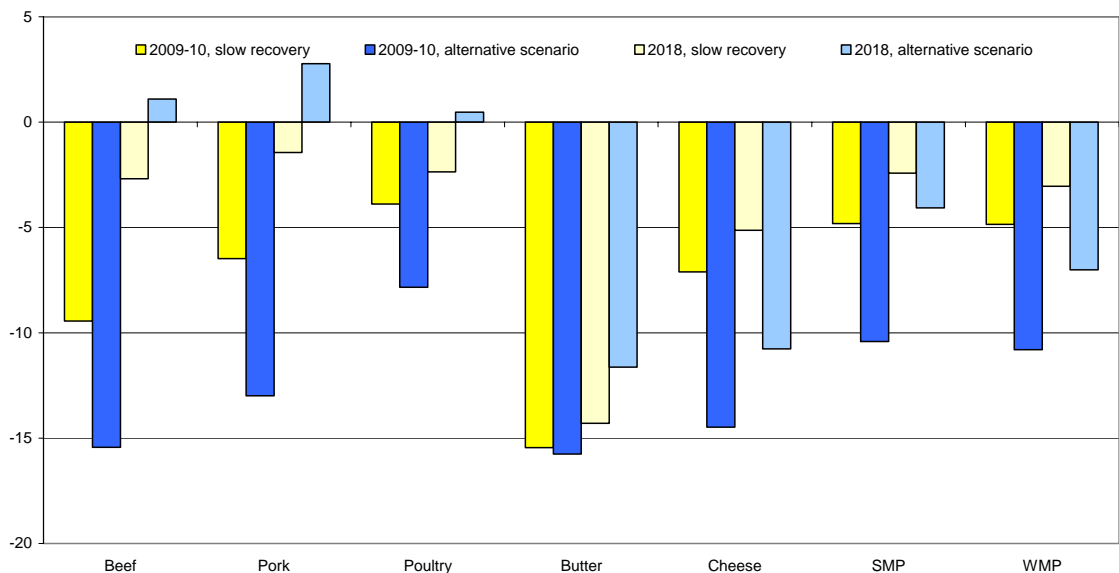
- **before 2012 (blue bar):** the price effects mainly stem from the different values of the macroeconomic indicators other than the oil price, notably lower GDP growth. All prices drop compared to the baseline, but the decrease is more important for those agricultural commodities with higher income demand elasticities such as dairy and meats (especially beef and pig-meat, less so poultry). As demand for livestock and dairy is more reactive to income changes than demand for cereals, grains used for animal feed tend to be more responsive to changes in income than those directed to human consumption. Given that biofuel demand is largely driven by mandates, the projections show little impact on the of ethanol price in this period;

- **beyond 2012 (light blue bar):** the increasing oil price plays an important role after 2012. Because crop prices have a significantly higher sensitivity to oil price changes compared to livestock products (this relation is reinforced through biofuel use), crop prices are projected to increase compared to the baseline levels. Meat prices also increase, although much less than crops. On the contrary, prices of dairy products remain below the baseline level. A substantial decrease in Russia's demand for dairy products, in particular butter and cheese, explains these results. The drop in demand is related to the different macro-economic assumptions used in the alternative scenario (lower GDP for Russia and the depreciation of the Rouble).

Graph 11.9 Percentage change in prices of biofuels and crops in alternative scenarios compared to baseline

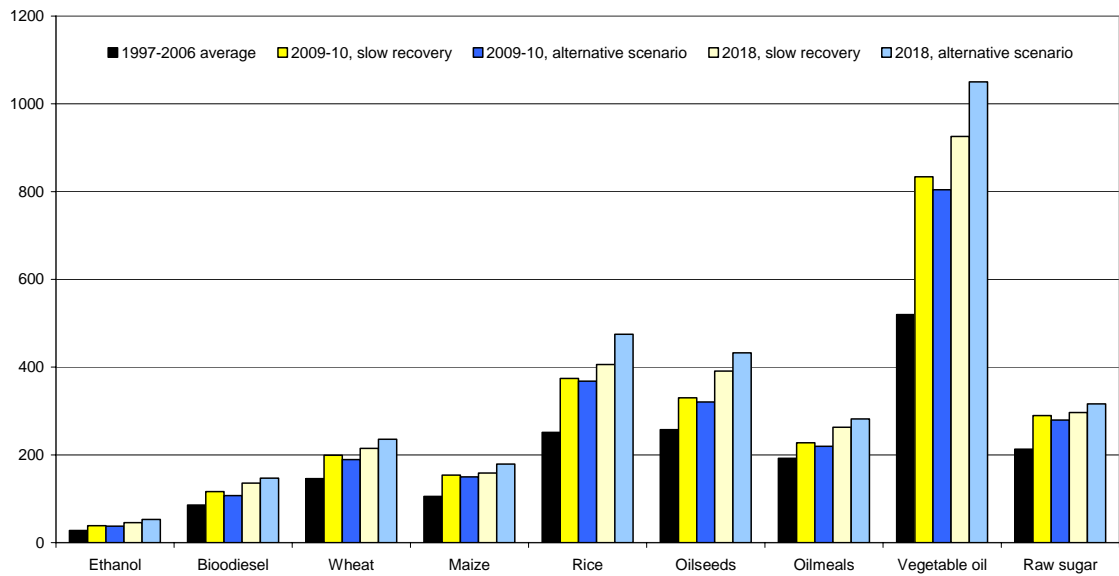


Graph 11.10 Percentage change in prices of meats and dairy in alternative scenarios compared to baseline

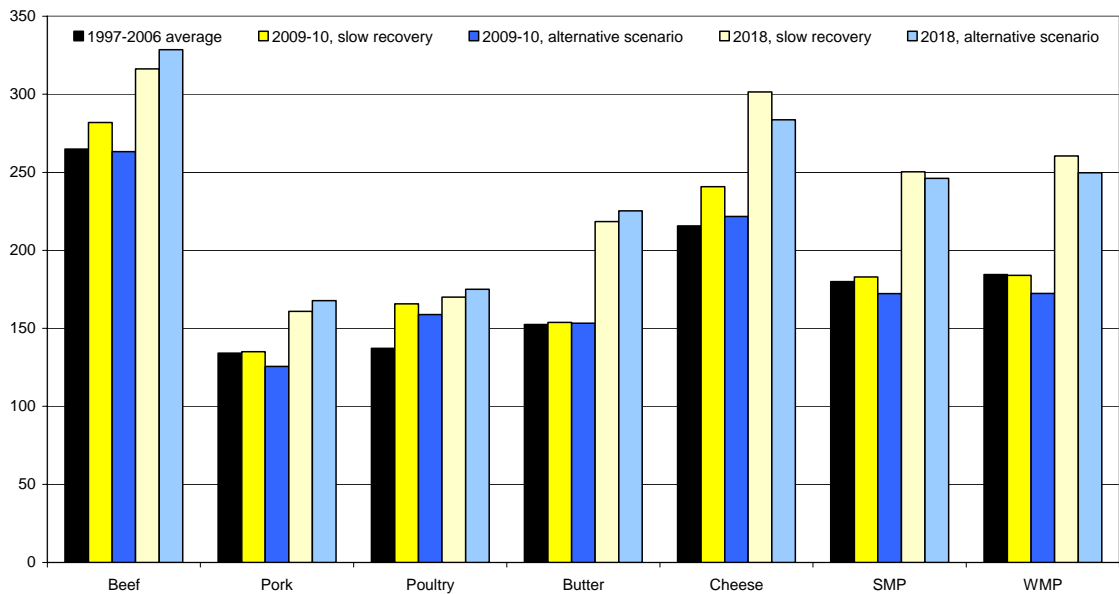


Compared to historical levels, all nominal prices under the alternative scenario are projected to remain above their levels in 1997-2006 (see graphs 11.11 and 11.12).

Graph 11.11 Prices of crops and biofuels: historical average and alternative scenarios



Graph 11.12 Prices of meats and dairy: historical average and alternative scenarios



12. "CURRENT EVENTS": IS THERE MORE VOLATILITY ON THE AGRICULTURAL COMMODITY MARKETS?

Prices of agricultural commodities and "volatility" have been in the spotlight since agricultural commodity prices reached their peaks of in late 2007 and early 2008. The problem of price volatility is not new. The issue of how to address the discontinuity of supply in the face of continued demand has been debated for ages. In addition, today's discussion of volatility overlaps with a discussion of greater uncertainty in a rapidly changing economic and natural environment. This chapter intends to look at past price volatility of some commodities in order to detect whether volatility has been increasing over time. By comparing price volatility to other economic variables (oil price, stocks, volume of trade in futures markets), this chapter also allows one to see whether certain relations can be observed over a given time period. The overall intention is therefore to understand historical price volatility. As to the future, it is clear that much will depend on how variable the determinants of price volatility will be, a question to which there is no definitive answer although medium-term projections may provide an indication of possible trends.

After describing the theoretical aspects of volatility, this chapter looks at whether volatility in agricultural commodity markets has increased or not. The final part summarises implications and policy considerations, and draws some conclusions on future prospects.

12.1. Theoretical aspects of volatility

Volatility provides a measure of the possible variation or movement in a particular economic variable. Wide price movements over a short period of time typify the term "high volatility". While volatility has been discussed extensively recently, it is not unusual for prices to change as market clearing conditions require supply to be matched with demand. Lack of predictability and uncertainty associated with increased volatility may influence both producers and consumers. High fluctuations in prices may limit the ability of consumers (processors) to secure supplies and control input costs. In macroeconomic terms, while price hikes are beneficial for net exporting countries that benefit from improved balance of payments, they increase the import bill of net importing countries.

Two measures of volatility are used:

1. Historical (realised) volatility, based on observed (realised) movements of price over an historical period. Historical volatility tells us how volatile an asset has been in the past. It represents past price movements and reflects the resolution of supply and demand factors.

2. Implicit volatility⁸. Implicit volatility is the markets' view on how volatile an asset will be in the future. It represents the market's expectation of how much the price of a commodity is likely to move and tends to be more responsive to current market conditions.

This note uses historical volatility and does not refer to implicit volatility.

12.2. Analysis: is there more volatility now?

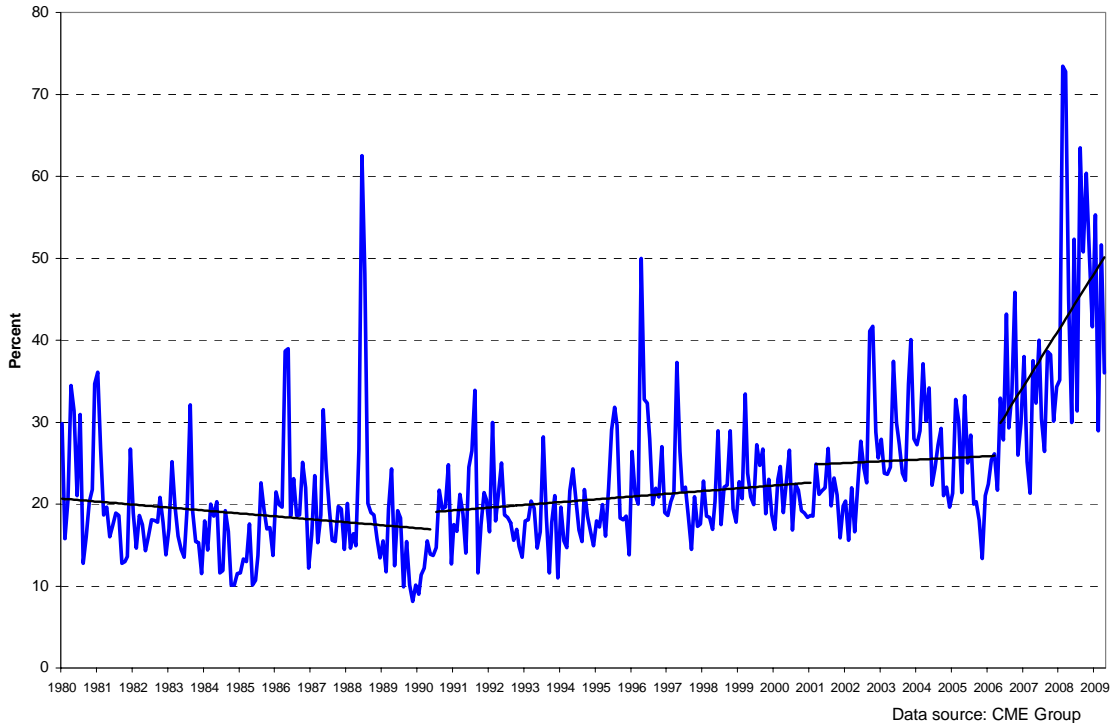
Weekly and monthly data are used for monitoring prices on commodity markets. Although they reflect trends in price developments, they also hide more serious volatility issues by averaging daily data. Calculations of meaningful price volatility measures call for daily data which are often not readily available for some commodities.

We looked at wheat, maize and soybeans oil on the CBOT, and milling wheat and rapeseed on MATIF.

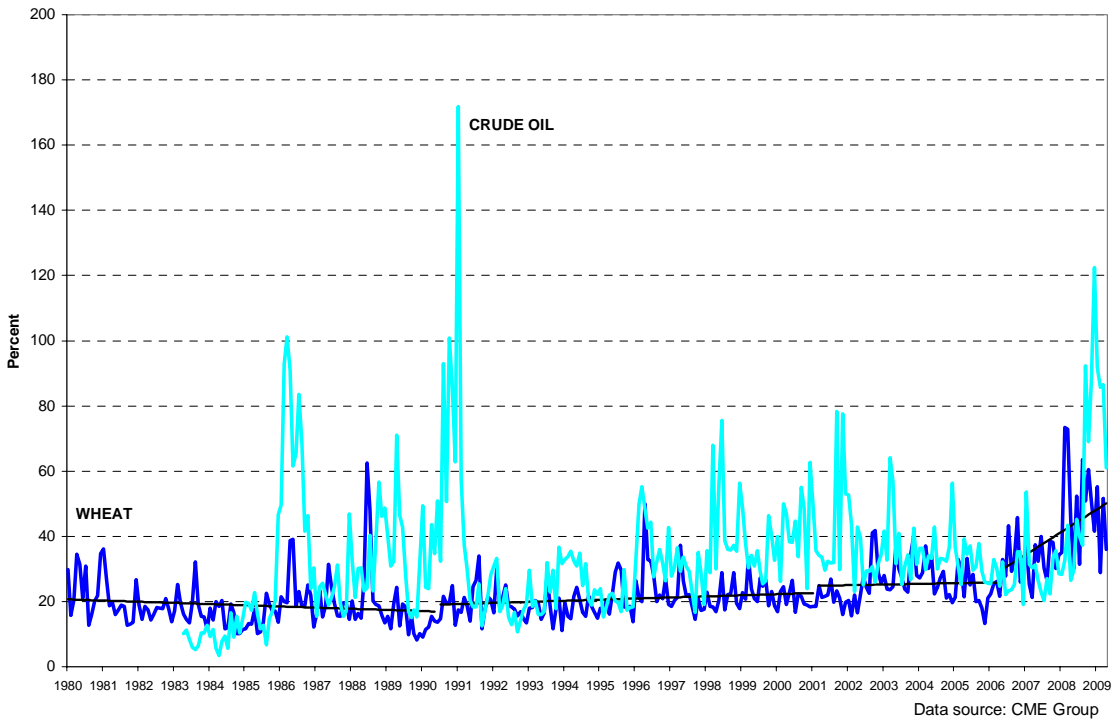
Figure 12.1 shows historical volatility of wheat on CBOT on a monthly basis. Volatility of crude oil is added on graph 12.2. It clearly appears that wheat volatility has had an increasing trend over the observed period, ranging between 30% and 73%. By observing the evolution since 1980, one can divide data into 4 distinct intervals. During the first decade (1980 – 1990) volatility was decreasing while during the second decade it had an increasing trend. Between 2001 and 2006 the trend in wheat volatility was relatively stable although at a level that was higher than in the past. Since May 2006 a linear trend line is showing dramatic increases.

⁸ This is calculated from the Black-Scholes formula for the price of a European call option on a stock.

Graph 12.1 US Wheat, Historical Volatility, Monthly annualised



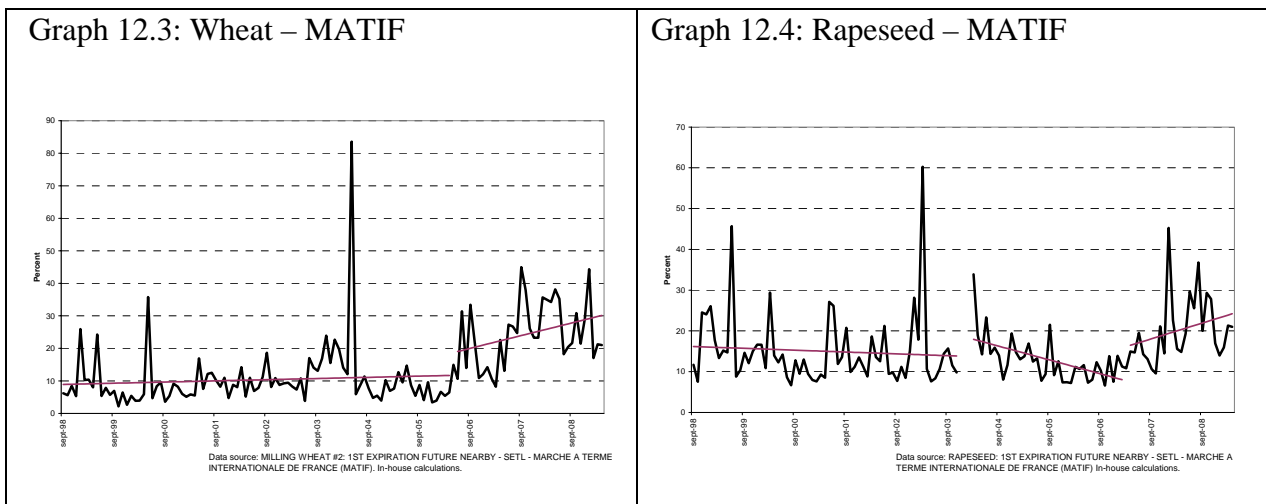
Graph 12.2 US Wheat and Crude Oil, Historical Volatility, Monthly annualised



Volatility can also fluctuate in any given period. In case of wheat two peaks can be observed before the period of price hikes of 2007 – 2008. The first one occurred in June 1988 when historical volatility reached 62.5%, the second one in April 1996 when it

reached 50%. In 1988 and 1996, prices soared due to a shortfall in production. An additional reason for the peak in spring 1996 may have been speculation on futures contracts that took place in Chicago resulting in wheat price spike. Analyses of other commodities share similarities with the trends observed in wheat volatility. Although increased volatility can occur in any given period, actual peaks differ on the basis of the commodity and developments of their fundamentals.

Commodities traded on European exchanges, although smaller in terms of volume, were not shielded from increased volatility. Graphs 12.3 and 12.4 show the development of historical volatility for milling wheat and rapeseed on MATIF.

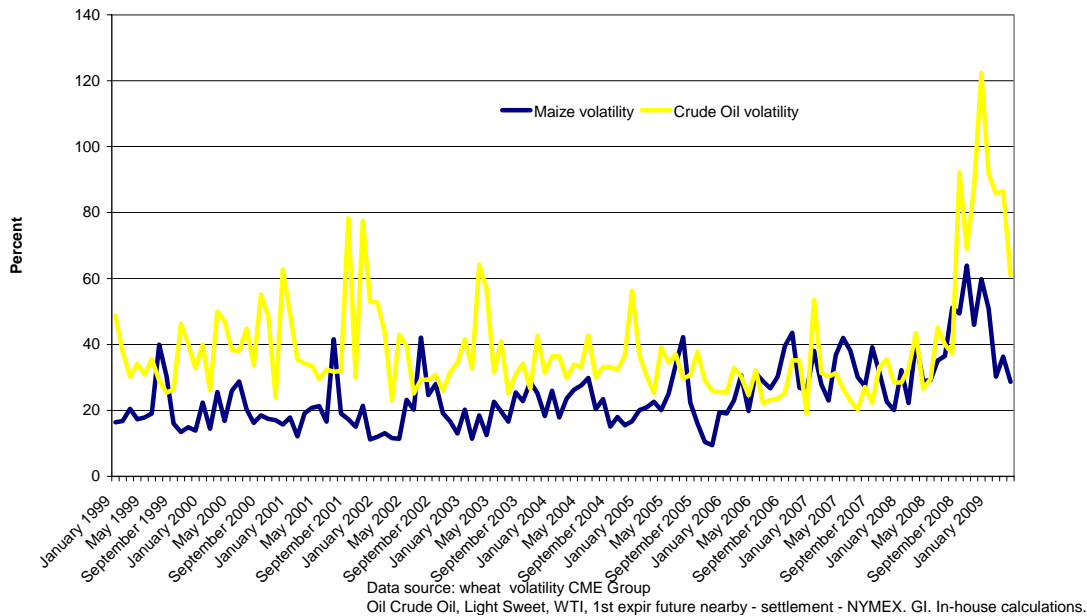


Ignoring the peak of May 2004, MATIF wheat experienced the highest volatility in September 2007 and January 2009 when it reached around 44%. However, in between those peaks, the volatility was as low as 18%, and reached 21 % in April 2009. The yearly average was at its highest in 2008, although so far in 2009 it is decreasing. Although experiencing peaks, wheat volatility on MATIF was relatively stable between 1998 and mid-2006 when it started increasing. The MATIF rapeseed contract dates back only to November 1998 and thus the data might not be sufficient to conclude whether or not volatility increased. However, results indicate that in 2008 volatility stayed above 30% longer than in the past. Trend lines fitted to subsets of data show varying patterns although after 2007 we observe an increasing slope.

12.2.1. Crude oil volatility and agricultural commodity volatility

Due to increasing and tightening linkages between crude oil and agricultural commodities, it is interesting to look at the relationship between crude oil volatility and commodity volatility. With maize being used as the main ethanol feedstocks, it has been shown that oil prices contributed to increases in maize prices, and that biofuels feedstocks and crude oil prices were correlated. In addition, biofuels use is being driven by government blending mandates which are said to contribute to price stabilisation of feedstocks in a form of guaranteed demand. While the analysis presented in this note does not allow an exploration of the impact of all factors contributing to the relationship between maize and crude oil prices and detect causality, volatility of both graphed on figure 12.5 has been following similar paths since May 2006.

Graph 12.5 US Maize and Crude Oil Historical Volatility, monthly annualised



12.2.2. Prices, volatility, and stocks

An often cited reason for increased volatility is lack (or lower levels) of physical stocks resulting in limited buffering capacity should increasing demand or short term supply challenges occur. Although data on stocks are considered rather unreliable, stocks serve as a proxy for balance between supply, demand, and trade. Since there is no single answer to the question of "what normal stocks are", we only compare current level of stocks to their historical levels. The analyses ignore many other factors that influence earlier mentioned parameters. The prices in nominal terms are international reference prices.

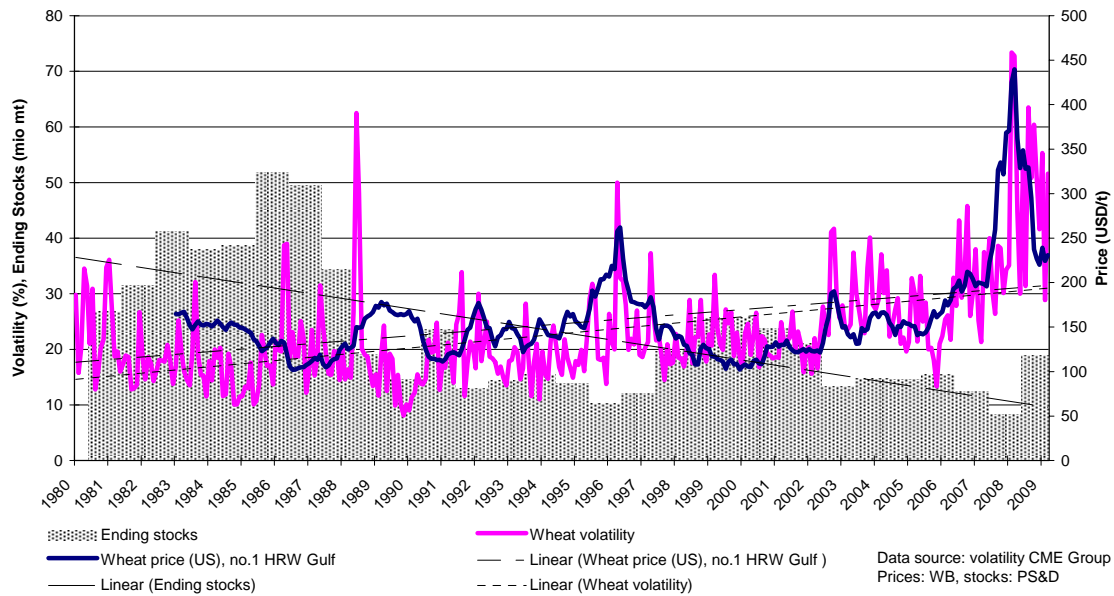
Although some of the CBOT contracts are said to be used as "world" contracts, we did not find a straightforward relationship between the volatility on the CBOT and levels of world stocks. When looking at the relationship between CBOT volatility and the levels of US stocks, it appeared that in some commodities, notably maize and soybeans, peaks in volatility often coincide with lower stocks, although long-term trends do not show an inverse relation between the two.

Wheat volatility, US ending stocks and price (wheat, US, No.1 HRW Golf) are graphed on figure 12.6.

The trends in relationships between volatility, stocks, and prices are as expected. Trend lines for volatility and price are moving together, although at times the relationship between prices and volatility (higher prices are accompanied by higher volatility) does not hold when looking at monthly data.

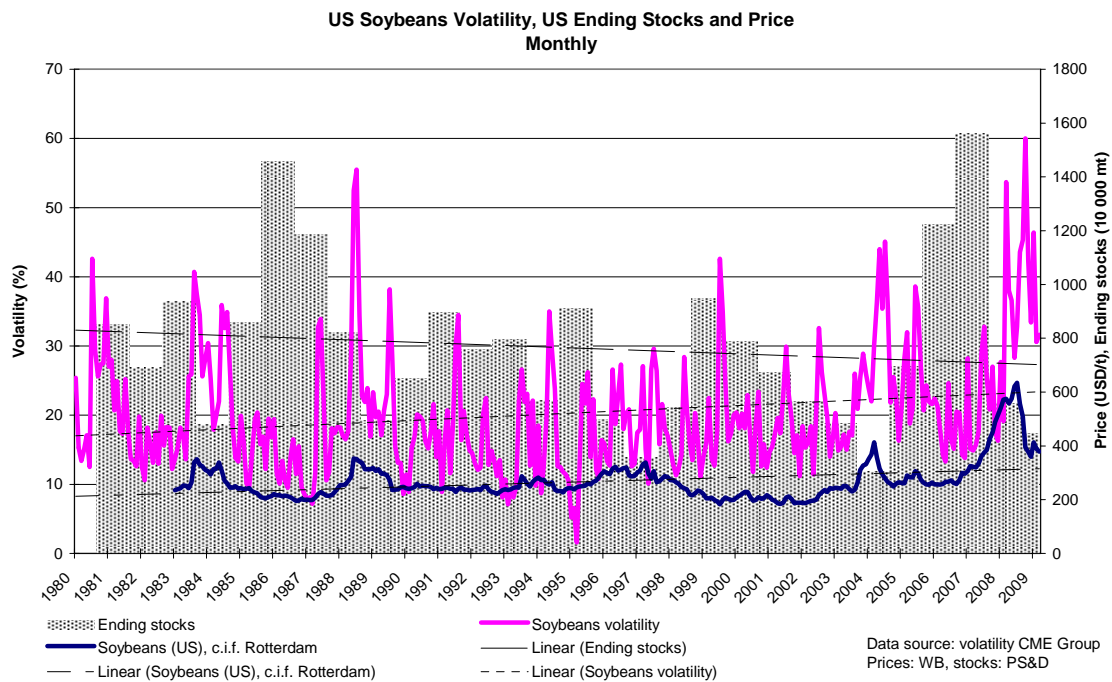
Price peaks seem to coincide with volatility peaks which in turn appear more likely to occur at periods of lower stock levels, such as in May 1996, October 2002 or March 2008. One can also observe an inverse relationship between stocks and volatility, as well as stocks and prices.

Graph 12.6 US Wheat Volatility, US Ending Stocks and Price Monthly



For **soybeans** (graph 12.7) we observe an inverse relationship between US ending stocks and volatility. Similar observations can be made for stocks and prices. Although the price used does not correspond to the US market, we note an expected negative trend. Interestingly, although as already mentioned, graph 12.7 uses Rotterdam price and CBOT volatility, the trend lines of both are moving in parallel, suggesting that increased volatility accompanied higher prices.

Graph 12.7



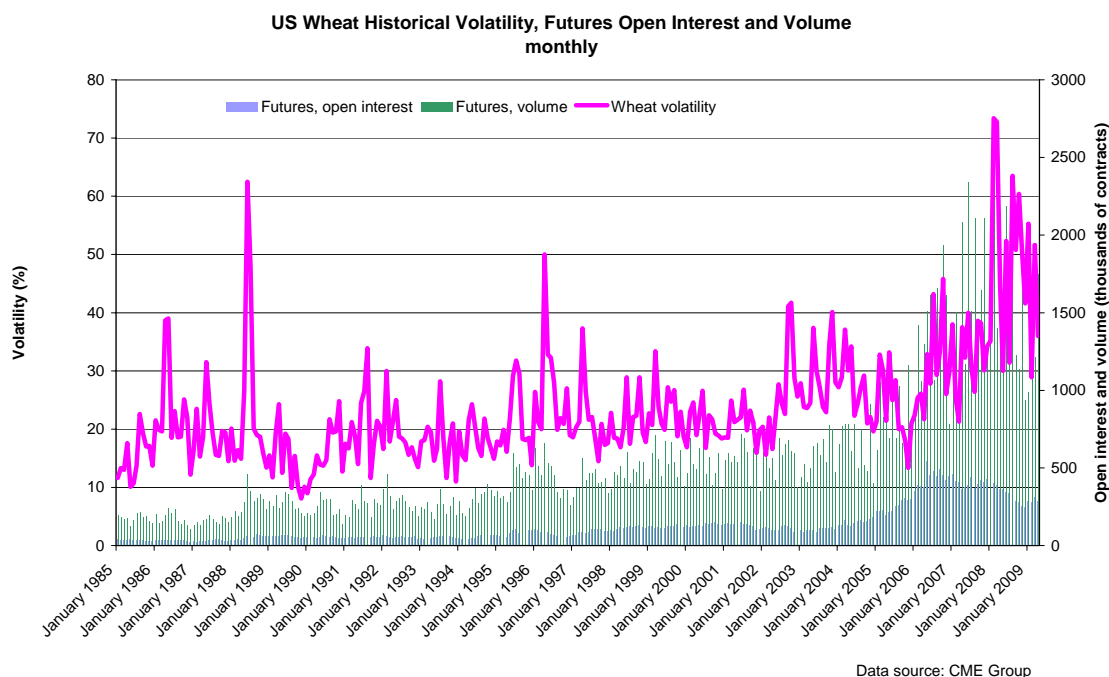
12.2.3. Volatility and futures market

Graph 12.8 shows US wheat volatility against **futures open interest and volume** on the CBOT starting from 1985. It appears that increases in open interest starting in July 2005 coincide with increases in volatility on average. It seems that changes in volatility became sharper and changed more dramatically on a month-to-month basis. Similarly, the fall in open interests and volume in the second half of 2008 coexists with a decline in volatility.

The Commission working paper⁹ attached to the Commission communication on food prices in Europe did not explore volatility directly but analysed whether there is a speculative bubble in commodity markets. The document did not find evidence for or against a speculative bubble but concluded that the most likely explanation of price increases since the beginning of 2007 to mid-2008 seems to be a combination of economic fundamentals and factors specific to the financial markets, which might have amplified price changes.

⁹ SEC(2008) 2971: Is there a speculative bubble in commodity markets?

Graph 12.8



12.3. Other analysis

FAO has explored the issue of volatility in its Food Outlook.¹⁰ The FAO product coverage is broader, and covers both historical and implied volatility. The FAO calculated volatility as "the annualised standard deviation of the logarithmic change in monthly prices". Thus, "volatility" in the FAO documents does not correspond to volatility used in this note, and measures variation of monthly prices. Nevertheless, we can still compare the results in qualitative terms although absolute figures are not comparable. In the crops studied in both analyses, volatility increased. The FAO concluded that international wheat prices are more volatile now: our analyses of daily settlement data from CBOT and MATIF confirm increased volatility on the wheat market. In the case of rice, the FAO noted a dramatic increase in volatility. Our analysis indicates an increase in volatility on the US market while recognizing that trading volume and open interests for rice on CBOT are rather low. For maize and soybeans, analysis of monthly data by FAO revealed volatility contained at 30%. Our analysis of daily settlement data indicates much higher values for both commodities. In case of vegetable oil both analysis found a resurgence of volatility.

12.4. Implications

Price volatility is driven by a wide variety of factors, such as market fundamentals, stock levels, changing weather patterns and related impacts, cycles in key markets, large purchases by governments, exchange rate movements, oil prices, trade policies and their

¹⁰ <http://www.fao.org/docrep/010/ah876e/ah876e13.htm>

<http://www.fao.org/docrep/010/ai466e/ai466e13.htm>

transmission, investment in agricultural production, etc. These factors coincide with the factors responsible for the price hikes. However, the causality of some of the factors cannot be determined. Commodities for which demand is inelastic (such as agricultural products) tend to be more volatile. Long-term structural changes are also responsible for the increase in price variability, although their effects are not immediate.

Climate change has the potential to impact production variability, and thus market fundamentals. So far on the EU level, no correlation has been established between the warming of the last decades and the level of crop yields, which have generally increased.¹¹ However, the impact of climate change might be already visible in other, more vulnerable countries.

The on-going financial crisis brings along shortages in credit availability and trade financing and thus influences market fundamentals. In addition, the financial crisis influences the amount of investment capital on commodity exchanges which can influence volatility.

A frequent culprit of increased price volatility is "speculation" based on investing in futures contracts on commodity markets to profit from price fluctuations. The wider and more unpredictable price changes are, the greater the possibility of realizing large gains by speculating on future price movements of the commodity in question. Although a presence of "speculators" on the derivatives markets is a necessary condition for functioning markets and efficient hedging, volatility can attract significant speculative activity and destabilise markets, which are both the cause and effect of increased volatility. In thinly traded markets where only small quantities of physical goods are traded, the value of speculative trades may create false trends and drive up prices for consumers. The likely explanation of price increases since the beginning of 2007 to mid-2008 seems to be a combination of economic fundamentals and factors specific to the financial markets, which might have amplified price changes.

12.5. Conclusions

Although volatility has always been a feature of agricultural commodity markets, the evidence suggests that volatility has increased at least in some commodity markets. Based on the relationship between CBOT volatility, US ending stocks and international reference prices, we conclude that in the cases studied it appears that trend lines for volatility and prices have moved together. There also seems to be an overlap between periods of high prices and increased volatility. When US prices were studied such as in the case of wheat and maize, the expected inverse relationship between stocks and prices was confirmed. Volatility peaks also seem to coexist with decreased stocks. As to the link with oil price volatility, we observe that since May 2006 price volatility in maize and oil price volatility move closely together. While other factors and fundamentals are at play and have to be considered, there is a time overlap between increased volatility and increase in open interests on the commodity markets.

In the medium term, projections reviewed in this comparison report indicate stabilisation of stocks which hints at decreasing levels of price volatility on a yearly basis. However, yearly prices changes projected in the baselines are a poor indication of potential

¹¹ Commission Staff Working Document: Adapting to climate change: the challenge for European agriculture and rural areas. SEC(2009) 417.

volatility since commodities undergo price adjustments daily. In addition, projections assume normal weather conditions and relatively steady economic recovery. Medium term projections are likely to be of less use to investors on the commodity markets benefiting from short-time price changes. However, with increasing biofuels production, a tightened interdependence between crude oil and commodity markets can be expected which could result in increased transmission of crude oil price volatility into agricultural commodity markets.

Although volatility and prices for many commodities decreased recently, it is too early to tell whether decreases are temporary or part of a trend. Persistence of volatility points to uncertainty in developments of market fundamentals. Higher price volatility means higher costs of managing risks (such as higher margins on futures contracts and higher premiums for crop revenue insurance). It is likely that higher cost of risk mitigation would eventually translate into higher consumer prices.

Annex - Definition of historical volatility

For reasons of limited data availability we relied on settlement prices presented by commodity exchanges which are available on a daily basis. The use of nearby futures as a reference price is also justified by frequently using nearby futures as international reference prices. For a large part this chapter relies on already calculated volatility measures by the CME¹² Group. For consistency we used settlement prices and formulae applied in the CME calculations for European exchanges (rapeseed and milling wheat on Euronext Paris¹³ MATIF) and oil.

The CME calculation of historical volatility calculation is the annualized standard deviation of the first difference in the logarithmic values of the nearby futures settlement prices. Mathematically,

$$Volatility = STDEV_{Days}^{Days} \left(LN \frac{SettlePx T}{SettlePx T - 1} \right) * \sqrt{252}$$

Where 252 is the estimated number of trade days in a year to convert volatility into annualised terms.

¹² Chicago Mercantile Exchange (CME), referred to as CBOT (Chicago Board of Trade).

¹³ Euronext Paris, referred to as MATIF (Marché à terme International de France)

13. CONCLUSION

A strong supply response last year, particularly in developed countries, coupled with an economic slowdown, has brought agricultural commodity prices significantly down from their 2007 – 08 peaks. Continued weakness of the global economy is likely to further dampen commodity prices in the near future.

Strengthening of prices is expected with economic recovery, though the extent and speed of economic recovery remains surrounded by uncertainty. . Despite the rather gloomy economic prospects, the baselines reviewed in the present report are fairly optimistic that sustained crop prices will remain at or above the levels observed prior to the 2007-08 price peaks.

Financial crises, like the one the world is currently experiencing, are normally deeper and last longer than other recessions with potential permanent losses in the potential output level compared to the pre-crisis situation. Because the macro-economic assumptions used in the OECD and FAPRI baselines have been overtaken by the rapid evolution of the crisis, we did a sensitivity analyses using the same model of the OECD but taking into account the macroeconomic projections of June 2009 (with lower GDP growth and a higher oil price). The results show that in the short-term (until 2011) the effects of the economic and financial crisis have bearish effects on all products compared to the OECD baseline. In the medium-term however, a higher oil price than the one assumed by the OECD will eventually sustain prices that, for all products, will remain above their historical levels of 1996-2007.

With increasing ethanol production, a tightened interdependence between the crude oil and commodity markets can be expected. The economic slowdown and accompanying liquidity constraints affected international trade. However, at this point it is not possible to distinguish how much trade decreased because of lower demand and how much is down to lack of credit. Despite the economic slowdown, agriculture is expected to fare relatively well compared to other sector due to relatively low income elasticity for food.

Although not immune to the current economic malaise, developing countries are projected to remain the main source of growth in world demand and trade once economic growth resumes. Middle income countries with increasing per capita incomes are expected to experience the most rapid growth. Increasing incomes are also accompanied by diversification of diet and higher consumption of animal based proteins both as dairy and meat, mostly in Africa and Middle East. In regions where limited land availability or climatic conditions prevent the expansion of domestic crop production and policy support for domestically produced meat exists, growth in consumption and imports of feed grains and oilmeals is likely to occur. Relative to average consumption during 2006-08, oilmeals use in developing countries will be almost 60% greater in 2018, consumption of butter and poultry about 50% greater, and that of vegetable oil about 40% higher.

Agricultural commodity production also shifts away from developed countries to emerging and middle income developing countries. Non-OECD countries are expected to provide the fastest growth of value-added agricultural and food products such as beef, pork, butter, cheese, skim and whole milk powders. The growth in total crop production is slowing but is partially offset by declining growth in the world

population. During the projection period, according to USDA, world average per capita use of vegetable oils is projected to rise 12%, compared with 5% for total coarse grains and 3% for meat. Per capita use is projected to decline nearly 3% for wheat and 2% for rice. Most of the growth is expected to come from yield improvements.

Nevertheless, traditional exporters such as Argentina, Australia, Canada, EU and US remain important players in the upcoming decade. Countries making significant investments in their agricultural sectors, such as Brazil, Russia, Ukraine, and Kazakhstan can also be expected to have an increasing presence in export markets. However, growth in exports and imports of developing countries will exceed that of developed countries.

Finally, this comparison report includes a chapter on price volatility. It concludes that volatility has increased at least on some commodity markets. Moreover, in all cases studied it appears that trend lines for volatility and prices have moved together and that periods of high prices seem to overlap with increased volatility. An inverse relationship has been observed between stocks and prices, whilst volatility peaks seem to coexist with decreased stocks. As to the link with oil price volatility, since May 2006 price volatility in maize and oil price volatility seem to show similar paths. While other factors and fundamentals are at play and have to be considered, there is also a time overlap between increased volatility and increase in open interests on the commodity markets.

In the medium term, projections reviewed in this comparison report indicate stabilisation of stocks which hints at decreasing levels of price volatility on a yearly basis. However, yearly price changes projected in the baselines are a poor indication of potential volatility since commodities undergo price adjustments daily. In addition, projections assume normal weather conditions and relatively steady economic recovery.