OECD Agricultural Outlook 2000-2005

OECD

2000 Edition

OECD Agricultural Outlook

2000-2005

OECD

ORGANISATION FOR ECONOMIC CO-OPERATION
AND DEVELOPMENT

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FOREWORD

The *Agricultural Outlook* provides a medium term assessment of future trends and prospects in the major agricultural commodity markets of the OECD countries. The Outlook is published annually during the first quarter, as part of a continuing effort to promote informed discussion of emerging policy issues. This sixth edition of the *Agricultural Outlook* provides a medium term market assessment which takes account of the current depressed state of many agricultural commodity markets, both globally and in a number of Member countries and is conditional on the policy responses by OECD governments.

The projections to 2005, presented in the Outlook, constitute a plausible medium-term future for the markets of key commodities. They are the result of close co-operation between the OECD Secretariat and commodity experts in Member countries and hence reflect their combined knowledge and expertise. The projections are based on a number of assumptions relating to current or announced agricultural and trade policies in OECD countries, the underlying macro-economic environment, and developments in major non-OECD countries. The OECD's Aglink model is used to guarantee internal consistency in the figures. The model is also used to generate scenarios around the outlook baseline so that sources of uncertainty and policy issues can be analysed. In addition to the projections, this edition of the Outlook also includes two special focus sections. The first one discusses selected market issues related to the Berlin Agreement on further reform of the Common Agricultural Policy of the European Union. The second section provides a discussion of modern agricultural biotechnology. The fully-documented outlook database, including historical data, projections and selected scenario results, is available on CD-Rom.

The *Agricultural Outlook* is published on the responsibility of the Secretary-General of the OECD. The views expressed and conclusions reached in this report do not necessarily correspond to those of the governments of OECD Member countries.

provided by Armelle Elasri; Gaëlle Gouarin; Maryse Mohier; Grégoire Tallard; and Nathalie Troubat. Secretarial services were provided by Christine Cameron. Technical assistance in the preparation of the outlook database diskette was provided by Frano Ilicic. Many other colleagues in the OECD Secretariat furnished useful comments on earlier drafts of the OECD *Agricultural Outlook*. The first draft of this report was translated by the OECD Translation Service; subsequent revisions were translated by Maryse Mohier, Sylvie Poret and Nathalie Troubat.

Agricultural Commodity Database

Only a small part of the Agricultural Commodity Database is published in the statistical annex to this report. The full data set is available on CD-ROM. It constitutes the most up-to-date and comprehensive source of information on the outlook. A complete documentation of the database accompanies each data package.

The CD ROM contains tables, generally for the period 1970-2005, for Argentina, Australia, Canada, China, the Czech Republic, the European Union, the Former Soviet Union, Hungary, Japan, Korea, Mexico, New Zealand, Norway, Poland, the Slovak Republic, Switzerland, Turkey, the United States plus totals for the OECD, non-OECD area and the World.

The 2000 edition of the Agricultural Commodity Database has been further improved and includes expanded detail on recent policy changes in the European Union and the United States. Also new this year is a special section on sugar, which encompasses the world's main producing countries/regions.

The results of two scenario analyses reported in *The OECD Agricultural Outlook* report are included which highlight: *a)* the impacts of the European Union's Berlin Agreement CAP Reforms, and *b)* the impact of the United States' Marketing Loan Program for soyabeans.

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ACRONYMS AND ABBREVIATIONS

Acronyms

ABARE	Australian Bureau of Agricultural and Resource Economics
ALIC	Agriculture and Livestock Industry Corporation
AMS	Aggregate Measurement of Support
APEC	Asian Pacific Economic Co-operation
ARMS	Agricultural Resource Management Survey
ASEAN	Association of South East Asian Nations
BSE	Bovine spongiform encephalopathy
rBST	Recombinant bovine somatotropin
Bt	Plant varieties genetically engineered to contain Bacillus thuringienis bacterium
CAP	Common Agricultural Policy
COFCO	China Cereals, Oils and Foodstuff Import and Export Company
CPI	Consumer price index
CRP	Conservation Reserve Program
DEIP	Dairy Export Incentive Program (US)
EU or EU 15	European Union of 15 Member States
ECB	European Corn borer
ECU	European Currency Unit
EEP	Export Enhancement Program (US)
ERS	Economic Research Service of the US Department for Agriculture
euro	The single currency of the eleven EU countries participating in the European Economic and Monetary Union
EUROSTAT	Statistical Office of the European Communities
FAIR ACT	Federal Agriculture Improvement and Reform Act (US)
FAO	Food and Agriculture Organisation
FMD	Foot and mouth disease
FAS	Foreign Agricultural Service of the US Department for Agriculture
FMMO	Federal Milk Marketing Orders (US)
FTAA	Free Trade Area of the Americas
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
GM	Genetically modified
GMO	Genetically engineered or modified plant, animal, micro-organism or virus
HFS	High Fructose Syrup
HR	Herbicide Resistant
IMF	International Monetary Fund
IP	Identity Preservation
MAF	Ministry of Agriculture and Forestry (New Zealand)
MAFF	Ministry of Agriculture, Forestry and Fisheries (Japan)
MERCOSUR	Common Market of the South
MLC	Meat and Livestock Commission (United Kingdom)
MFN	Most Favoured Nation
NAFTA	North American Free Trade Agreement
NASS	National Agricultural Statistical Survey (US)
NIS	New Independent States
NTBs	Non-Tariff Barriers
OECD	Organisation for Economic Co-operation and Development
OMB	Office of Management and Budget (United States)
OYS	Objective Yield Survey
PSE	Producer Support Estimate
R&D	Research and Development
RR	Roundup Ready seed varieties
RTAs	Regional Trading Arrangements
SMP	Skim milk powder
SPS	Sanitary and phyto-sanitary measures
STEs	State Trading Enterprises
TRQ	Tariff rate quota
UNESCO	United Nations Educational Scientific and Cultural Organisation
URAA	Uruguay Round Agreement on Agriculture
USDA	United States Department of Agriculture
VAT	Value added tax
WMP	Whole milk powder
WTO	World Trade Organisation

For an explanation of technical terms, see the Glossary

Abbreviations and symbols

A$	dollars (Australian)		**kt**	thousand tonnes
bn	Billion		**L**	litre
C$	dollars (Canadian)		**lw**	live weight
cwe	carcass weight equivalent		**mha**	million hectares
c.i.f.	cost insurance freight		**mn**	million
cts/lb	US cents per pound		**mt**	million tonnes
dw	dressed weight		**NZ$**	dollars (New Zealand)
ECU	European currency unit		**pw**	product weight
euro	European currency unit		**rtc**	ready-to-cook
f.o.b.	Freight on board		**rw**	retail weight
ha	Hectare		**t**	tonnes
JFY	Japanese fiscal year beginning 1 April		**t/ha**	tonnes per hectare
Y	Japanese yen		**US$**	dollars (United States)
kg	Kilogram			

THE OUTLOOK IN BRIEF

- Agricultural markets are forecast to recover gradually from a cyclical trough that has seen the value of many commodities reduced to historic lows in the past two years. But the recovery will be modest in the early years of the Outlook and real, inflation-weighted prices will be relatively unchanged during this period, although their longer-term trend continues to decline.

- The main factor driving recovery will be the strengthening demand for farm products as the global economy recovers faster than expected from the economic and financial shocks of the past three years. Broader and more vigorous economic growth is forecast for the OECD area and sustained recovery in Southeast Asia – the former engine of global commodity import growth. Brazil and Russia appear to be emerging earlier than expected from their currency crises, helping to cement more confident conditions for demand and for global trade.

- The pace and extent of market recovery could be put at risk by the apparent lack of enthusiasm and dedication with which nations have pursued further policy reforms over the last couple of years. In responding to pressures on farm incomes, a number of OECD countries have resorted to additional measures of support and protection that have not always been consistent with the longer term direction of reform and which risk delaying needed adjustments.

- Farm trade talks within the WTO – and especially China's ability to play its part in these – offer unrivalled opportunities to accelerate the liberalisation process. A favourable outcome to these negotiations would enhance the proper functioning of markets and create an environment for stronger recovery in both world trade and producer incomes. China's trade liberalisation could offer a substantial further boost to demand for farm products, especially if accompanied by domestic reforms.

- While markets adjust to lower prices, OECD farm production will stagnate in the near term but quicken later as trade and price prospects improve. Developing countries will account for more of the expected growth in global output in the next 5 years. However, yield and productivity improvements will play a far larger part than acreage increases due to land and water constraints in developing countries and official set-aside and conservation policies in the OECD area.

- Demand will also expand more rapidly in developing countries with renewed emphasis on growth in feed grain and meat trade as improved consumer spending power and migration of rural populations to urban areas results in up-graded diets. New technologies will also bring changes in trade flows as processed products develop a larger share of trade in some commodities in tandem with increasing globalisation and integration of the agri-business supply chain.

- OECD Governments face many less familiar challenges in agricultural markets, not only from growing consumer concerns but also from broader public unease over a whole range of issues such as methods of production, food quality and safety, animal welfare and the environment. These are all coming under more intense public scrutiny. The political challenge will be to tackle these often complex issues in ways that not only meet genuine consumer and civil society concerns but avoid obstructing market reform and trade liberalisation.

- The key challenge for governments in the period ahead will be to maintain a clear focus on the benefits of further reform, to renew efforts to integrate agriculture into the multilateral trading system, while addressing legitimate domestic policy interests in ways that are effective and minimise distortions to production and trade.

An economic silver lining?

Outlook for economic growth improves…

Prospects for agricultural markets have taken a significant turn for the better since this time last year, as improving global economic conditions promise stronger demand. GDP growth has been more vigorous than expected in most regions, including some of those worst hit by the financial crises of the past two years. Consumer spending power in many affected countries seems to be stabilising or starting to recover. Currency market volatility has also begun to settle, improving prospects for the trade finance upon which much farm product demand depends. The outlook for growth in almost all OECD Member countries has also improved significantly, helping to support recovery in Non-Member Economies. Asia's rapid recovery is particularly encouraging for agricultural commodities, as this region was the main engine of demand growth prior to the crash of 1997.

… particularly in Asia, encouraging trade

China and Japan have weathered the Asian storm, sidestepping the worst currency and deflationary scenarios feared by some observers a year ago. Russia's economic contraction after its 1998 financial crisis was also shallower than expected although it may be too early to bank on the past year's surprisingly positive growth continuing. Latin American and African countries continue to lag the stronger global economic trends. However, the former region appears to have emerged less damaged by the Brazilian real crisis than some observers expected, quelling fears of a regional slump in farm product demand.

Although another year of relatively low prices is likely

World prices have fallen substantially for many commodities

Agricultural markets have been in a low price cycle for the past three years and many products are now more than 35 per cent below their recent highs, particularly grains, oilseeds and pig meat. The depth and duration of the collapse has sprung from both market and policy factors. World production of many products has been rising in recent years, partly in response to earlier inflated prices. Despite El Niño, global weather has been mostly favourable for several years running while advances in technology and its wider application have generated sustained rises in crop yields and livestock productivity. However, rising supply has met flattening demand and trade in the wake of the Asian, Russian and Brazilian crises. Demand for value-added foodstuffs and their component raw materials fell steeply in many developing countries, building stocks and intense downward pressure on prices. But if

economic recovery is sustained as expected, world demand should start to overtake supply and stocks should fall. Trade volumes should also rise and prices strengthen. But re-balancing markets will take time and another year of relatively low commodity prices looks likely.

Government aid and curbed policy reforms may have delayed recovery

Expectations of regular emergency aid could disrupt markets…

Policies pursed by some OECD exporting countries have contributed to depressed prices and the slow recovery expected in the early years of the Outlook. Many governments find it hard to resist supporting farmers in periods of low prices – even when this conflicts with longer-term market reform objectives. Some governments have spent large extra sums to shield producers from market signals while others have curbed needed policy reforms. The US administration, for example, topped its generous 1998 farm aid package of US$5.6 billion (mostly to crop farmers) with US$8.7 billion of extra spending in 1999. As lump sum, backdated support, this was not expected to immediately distort production. However, there is a danger that two consecutive years of handouts may encourage US farmers to expect automatic aid on this scale whenever world prices are low. That could be far more disrupting for markets.

… as would continuing US Loan Deficiency Payments

The US 1996 Federal Agriculture Improvement and Reform (FAIR) Act's provisions for marketing loans and loan deficiency payments also helped shelter producer returns from low crop prices over the last two years. In 1998 combined "loan" payments for wheat, maize, rice, cotton and oilseeds totalled US$3.7 billion and could exceed US$5 billion in 1999. By keeping producer prices above market-clearing levels, these schemes boosted revenues for participating farmers and heavily influenced their marketing and storage decisions. Also, in raising production incentives, the schemes boosted export supplies of supported commodities, depressing world prices further. The US Congress is also under pressure to revisit the FAIR Act's "freedom to farm" provisions (due for re-negotiation in 2002) and to reinstate farm subsidy regimes dismantled in 1996 when farm prices were high. However, this Outlook assumes no changes will be made to the FAIR Act, that additional income payments will not recur and that those already made will not directly affect production.

… EU reforms downsized and may have to be revisited

EU Heads of State responded to depressed markets by diluting reforms to the Common Agricultural Policy proposed by the European Commission over a year earlier under the so-called Agenda 2000 plan. The version emerging from their Berlin meeting in March 1999 softened proposed cuts in support prices for commodities and revised direct compensatory payments to producers. It also extended the time frame for these changes. However, a ceiling was placed on total agricultural spending. The "Berlin Agreement", incorporated in this year's Outlook projections, also continued to shift farm spending from direct price support to less distorting direct payments. A special section on the Berlin Agree-

ment in this Outlook suggests its reforms will enable the European Union to export wheat without subsidy from 2004 – provided the euro stays low against the US dollar. Export subsidies are likely to continue for other agricultural commodities, however. A further review of CAP reforms is proposed in 2003 when pressure to cut subsidies again is likely to build amid costs of EU enlargement and possibly new WTO imperatives.

Expanded use of export assistance measures

Use of export credits and food aid increases

Low world prices for farm products have been sustained by continuing export subsidies by the European Union, the United States and others, and possibly by wider application of export credits and credit guarantees. Food aid has also expanded sharply, reversing four years of significant decline in its use. While this may have helped to support donors' markets and relieved suffering in recipient nations, it has also affected commercial sales. Other policy measures to protect domestic markets from low world prices included higher import tariffs in the Czech Republic, Poland and India. While all these measures may have provided farmers with some temporary relief, they risk considerable longer-term costs by impairing efficiency of agricultural markets, reducing farmers' self-reliance (by raising hopes that support will continue) and delaying adjustments vital to turn markets around.

OECD production will stagnate in response to disappointing trade and price performance

OECD production to decline in the early years of the Outlook

Sluggish price recovery amid growing stocks and weak demand is expected to curb OECD production of many crops until 2001. Weak export demand, a downturn of the production cycle in North America and tightening supplies in Oceania are also expected to restrain beef output in the early years of the Outlook. Despite cheaper feed, low prices for the end product could force pig meat output lower until 2001. Only poultry is likely to enjoy sustained expansion amid lower feed costs and more competitive margins in the beginning of the Outlook. However, even this sector may see output growth begin to falter as feed costs start to rise again when grain and oilseed prices recover in later years. Despite these constraints, production trends in the latter part of the Outlook period should strengthen in the OECD area for most agricultural products – probably exceeding the previous decade's growth rates. Faster growth is expected in developing countries as a whole than in the OECD area, although less rapid than in the previous decade.

World-wide production growth more dependant on higher productivity and yields

Growing productivity is expected to account for most additional farm product output in the latter part of the Outlook period. Although large tracts of potential cropland remain available in Non-Member Economies (especially NIS, China and South America), lack of irrigation and other restrictions prevent much of this being brought on stream.

Large swathes of farmland will also remain fallowed in the OECD area by set-asides and conservation programmes. So, unless major weather-related crop failures give commodity prices a bigger lift than foreseen in the Outlook, incentives to reverse the long-term decline in global arable areas will be minimal. World production of cereals is forecast to show the strongest gain in crop production between 1999 and 2005, followed by oilseeds and sugar. Larger total supplies of meat are also projected by 2005 with profitability and improved productivity favouring pork and poultry relative to beef. High milk-feed price ratios, particularly in the early years, and more productivity gains, should also help to raise milk output per cow over the Outlook period, although the effect on total supply will remain restricted in most countries by production quotas. The main growth in world dairy product output by 2005 will be in cheese, followed by whole milk powder and butter. However, falling butter output in OECD countries will reduce world supply of skim milk powder by the Outlook horizon.

World demand for farm products will strengthen, mainly in developing countries...

Demand growth stronger over medium term than in the late 1990s

Overall growth in world demand should be stronger in the medium term than in the second half of the 1990s, especially for oilseeds, cereals and dairy products. Growth of global meat consumption, on the other hand, is expected to slow slightly, as slackening red meat off-take in developed countries offsets the continued rise in white meat consumption (especially poultry) based on changing dietary preferences and cheaper prices. Most consumption growth for farm products will take place in developing countries, especially Asia, Latin America and the Middle East where demand is closely linked to economic and population growth and demographic shifts from rural to large urban centres. These countries have enjoyed strong GDP expansion in the past, and are expected to do so again in the future, as the impact of earlier financial crises fades. Rising per capita incomes should then recapture the longer-term dietary shift from locally produced staple foods toward cereals, animal-based proteins and convenience foods. Demand for high-value foods and their constituent bulk commodities should also increase.

Steep rise in OECD feed use likely

Sizeable growth in OECD feed use of cereals and oilseeds is expected in the medium term. The United States, in particular, should boost feed use of coarse grains to meet domestic livestock sector demand from growing poultry, pork and beef exports. EU cereal consumption should also rise sharply over the outlook period, as grain prices fall with the new CAP reforms. Although this will displace some EU oilmeal consumption, oilmeal imports should be supported by lower domestic oilseed production ensuing from the reforms. Poultry, pork and cheese should all benefit from large consumption gains in OECD Member countries over the Outlook period.

Meat to lead growth in OECD exports...

Assuming economic recovery stays on track, developing countries should fuel most of the growth in farm product trade in the medium term. These countries, especially in Asia, should increase their share of world imports by 2005, mostly from OECD countries whose exports will rise more rapidly than in the second half of the 1990s. Exports from developing countries like Argentina, Brazil and other Non-Member Economies should also rise, in competition with OECD supplies. Meat is expected to lead the growth in OECD net exports with pork (+98 per cent) and poultry (+48 per cent) showing the biggest gains by 2005 against the 1994-98 average (see Figure 1). Fastest growth in the dairy sector will be in cheese (+33 per cent) and whole milk powder (+23 per cent). A decade of

... cheese and WMP to lead dairy product exports...

Figure 1. **OECD exports to expand within the Outlook horizon**
(2005 compared to 1994-98 average)

Source: OECD Secretariat.

stagnation in net world cereal trade (despite big shifts in trade flows) should also finally end with OECD area exports expected to rise 26 per cent by 2005 from the average for 1994-98. Coarse grain exports should grow faster than those of wheat. The European Union is expected to be able to export wheat without export subsidies from 2004 onward as a result of CAP reforms and world price developments, although its coarse grain shipments are expected to be constrained by the export subsidy limit (see section on Agenda 2000/ Berlin Agreement).

... and, coarse grain exports to grow faster than wheat

... *Supporting a recovery in world prices*

Beef, sheep meat and poultry prices to rise more than pig meat

A return to stronger economic growth in Non-Member Economies is expected to generate more demand for cereals, oilseeds and their products over the Outlook period. Assuming a standstill or fall in export subsidy use by OECD countries after 2000, generally tighter world stock to use ratios should set the stage for a gradual recovery in prices which, by 2005, should be above the lows seen recently for all sectors (see Figure 2). Higher feed costs, production curbs, strengthening imports and restrictions on subsidised exports should also strengthen world

Figure 2. **Outlook for world prices to 2005**
(Index 1993 = 1)
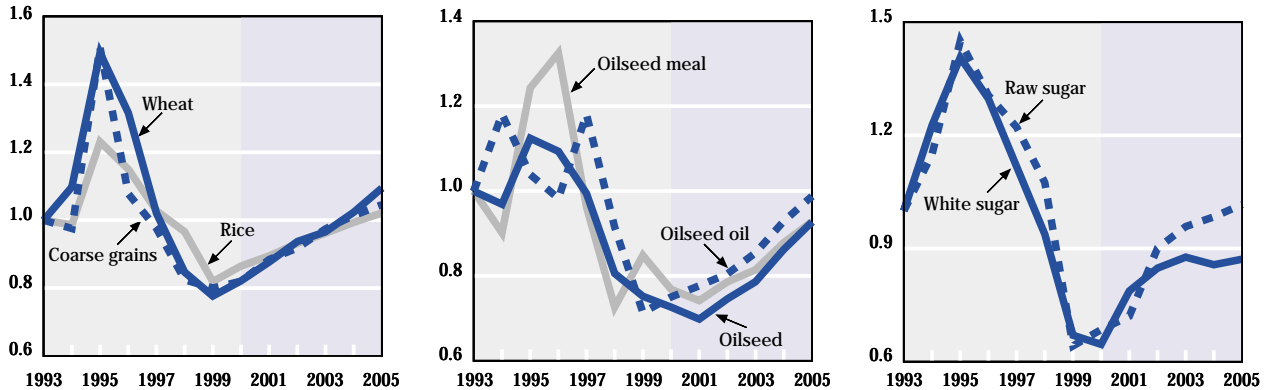
prices for beef, sheep meat, and poultry by 2005 and to levels generally above their 1994-98 averages. World pig meat prices may rise only slowly because it will take time for supply adjustments to the last two years of poor profitability to work through. Productivity gains from larger, vertically co-ordinated pig meat operations – particularly in North America – will also limit the impact of higher feed costs and stronger demand in this sector. Despite higher production in Non-Member Economies and in OECD Member countries not subject to milk quotas, world prices of cheese, skim milk powder and whole milk powder should exceed their 1994-98 averages by 2005. However, real, inflation-adjusted prices of most agricultural products are expected to be little changed to 2005, although their long-term trend continues to decline – albeit slowly.

Main uncertainties for the Outlook

Seattle highlighted disparate national interests and expectations from WTO

The Outlook's medium term projections are conditional on various macroeconomic, policy and market assumptions. One of the biggest questions is whether economic recovery in developing countries will be sustained in coming years. If economic problems resurface amid the present generally favourable production prospects, trade growth would be slower, stocks higher and prices lower. This applies particularly to commodities whose demand is highly responsive to changes in consumer incomes – meat and dairy products and the feed stuffs to produce them. Another key area of uncertainty and concern is the recent drop in enthusiasm with which countries are pursuing trade policy reforms. Early agreement in the next round of WTO negotiations could start to influence markets benignly towards the end of the medium-term. However, a delayed launch to these negotiations highlights the disparate interests and expectations various countries have from the WTO – a situation that precludes a reliable assessment of the potential outcome at this stage. In the Outlook projections pre-

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Figure 2. *(cont.)* **Outlook for world prices to 2005**
(Index 1993 = 1)
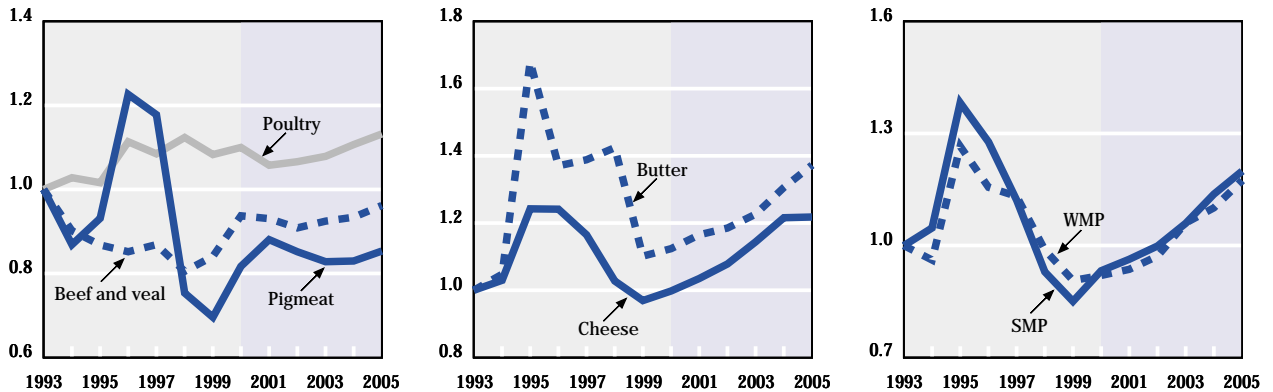
sented in this report, country commitments under the Uruguay Round Agreement on Agriculture (URAA) have been kept at their 2000 levels – the end of the URAA implementation period – through to 2005.

New issues are emerging

Which could complicate the reform and liberalisation process

Although OECD Agricultural Ministers affirmed commitments to market-oriented policy reforms in March 1998, the global trading environment within which negotiations will take place has become more complex. Public concern has heightened over a whole range of new issues, including food production methods, safety and quality, environmental impacts of intensive farming, future viability of rural areas and the welfare of animals. Such issues are now rapidly moving centre-stage in the farm policy agendas of many OECD countries and how they are tackled will have far reaching implications for market and trade reform.

GMOs are the subject of hot debate…

One hotly debated issue has been the use of genetic engineering to produce new crop varieties. So far these methods have been mainly used in the bulk commodity sector – to increase managerial flexibility and cut input costs by reducing agro-chemicals use (the latter bringing environmental side benefits). In the future, however, companies producing GM crops will aim to broaden their scope by offering commodities of more direct benefit to consumers, like nutritionally improved foods and environmentally friendly crops for industrial purposes.

Impact on trade of Cartagena Protocol on Biosafety unclear at this stage

At present, the United States is the main producer of GM crops, which are estimated to account for over 55 per cent of its soyabean and 30 per cent of maize sowings in 1999. In the same year, the global area planted to GM crops was estimated at nearly 40 million hectares,

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compared to just 2.8 million in 1996. However, despite their rapid uptake, GMOs are now meeting more resistance among farmers, consumers and governments as attention focuses on possible, though so far unsubstantiated, health and environmental risks. Although this antipathy was initially strongest in Europe, it has since spread to other parts of the world. GMO labelling regulations are now under consideration in most OECD Member countries while a number of major food processors have stopped buying GM ingredients and some governments have delayed approval of new GM crop varieties. These questions over public acceptance make it difficult to assess how the market for GM products will develop in the future. In this respect, it is not clear whether the Cartagena Protocol on Biosafety, as recently agreed in Montreal, through its requirement for prior approval by importers and labelling by exporters will help to reduce trade disruptions in GMO products. Issues surrounding commercialisation of GM crops are the subject of a special section in the Outlook.

Greater reliance on regulations

Over use of regulations must be avoided

OECD governments have responded to these new concerns with increased regulation both for commodity markets and the agro-food sector. Such an approach is justifiable if legitimate public concerns or consumers' desire for choice cannot be adequately addressed by markets. However, the obvious pitfall is excessive "red tape" that prevents agricultural industries from performing efficiently and economically. Differences in regulations between one country and another can also act as non-tariff barriers to trade, as illustrated by the growing number of trade disputes over food safety standards and quality regulations. If regulations are deemed necessary, they must be shaped – and used – in ways that will compliment rather than obstruct policy reform and trade liberalisation. Given the increasing globalisation of markets, this will be a challenge, but not an insurmountable one, and the Outlook assumes OECD Member countries' policies will generally support these objectives.

Further trade reform would strengthen agricultural trade and prices...

The URAA has helped but much more remains to be done

The URAA marked a fundamental change in the rules governing agricultural trade, bringing them for the first time under multilateral disciplines. It clearly achieved many "systemic" reforms and has already begun to deliver some of its vaunted benefits under the three main headings: capping and reducing export subsidies, limiting barriers to imports and reducing trade-distorting domestic support. The URAA also aimed to provide a more open and effective dispute settlement process. Most gains to agricultural trade so far have sprung from disciplines on export subsidies and the opening of some formerly closed markets. However, the hoped-for improvements in mar-

ket access have been modest. Many tariff rate quotas have been under-filled for meats, dairy products and cereals while the URAA's tariff-cutting formula has not prevented several countries from retaining trade barriers at prohibitively high levels in sensitive sectors like dairy, rice and sugar. Domestic support has also stayed high, and has been increasing again in recent years in many countries and some are still able to use subsidies that distort trade and depress prices within their existing URAA commitments.

… Not least in the realm of export credits

Markets would be less distorted with more disciplines on export subsidies and export credits

One of the main areas of unfinished URAA business is the need to create disciplines for government-supported, competitive export credits and credit guarantees for agricultural exports. These include direct financing, interest rate support and insurance/guarantees. The United States has traditionally been the largest provider of export credits but all major agricultural exporters have some form of officially supported credit insurance and guarantee programme. In contrast with declining use of direct export subsidies, use of government export credits (sometimes a de facto subsidy) has expanded significantly in recent years – albeit shifting away from bulk cereals and toward animal and vegetable products. While the bulk of export credits has been used for trade between OECD countries, they are also being used in a broader geographical area, especially Southeast Asia in the wake of its economic crisis. In line with URAA commitments, negotiations have been underway in the OECD for several years to develop disciplines on officially supported export credits for farm products. All the major exporters would benefit from an agreement to reduce price and trade distortions caused by the subsidy element in some export credits. However, special allowances may be needed for least-developed, net food-importing countries facing recovering commodity prices in later years.

URAA experience poses new challenges for the WTO

Protectionism depresses growth, ultimately increases poverty

Once up and running, the URAA and related agreements revealed several areas where more work needs to be done under the auspices of the WTO. Transparency and administration of tariff rate quotas needs to be improved and loopholes in export subsidy disciplines closed. The role and influence of State Trading Enterprises (STEs) has been suggested by some as needing to be examined. Some countries want more consistency and balance between reform and non-market concerns related to the "multifunctional" characteristic of agriculture. Many developing countries believe trade reforms have brought them little benefit so far and/or that they need more flexibility because of their special developmental needs. Yet it must be emphasised that the alternative path of protectionism has been proved time and again to lead to lower growth,

reduced efficiency, lower standards of living and, ultimately, increased poverty. The OECDs conclusion is that not only do the URAA rules for agricultural trade need to be strengthened, the system itself needs to prove itself more transparent and accountable to win broader support amongst all participants in global agricultural markets.

China remains a major uncertainty

China's WTO entry should boost global trade – especially with domestic reforms

After 13 years of negotiations, the November 1999 bilateral agreement with the US on China's WTO entry is a key trade policy development. Other bilateral agreements are still under negotiation, primarily with the European Union and this will probably stretch the accession process well into the first-half of 2000 and possibly 2001. The bilateral protocols require China to meet WTO commitments by the end of the URAA phase-in period for developing countries (*i.e.* in 2004, except for tariff rate quota commitments to be fully implemented by 2005). Implications of China's WTO membership and liberalisation of its agricultural trade, are not incorporated within the Outlook projections. However, entry into the WTO is expected to lower China's trade barriers for a number of agricultural products, provide greater discipline over the operation of trade policies and should lead to an increase in OECD trade over the medium term.

Renewed efforts required from governments

Governments need to maintain a focus on the benefits of further reform

Substantial protection and distortion of agricultural markets and trade will still exist after completion of the URAA implementation period in 2001. For global markets to reap the considerable benefits of further liberalisation, a new agreement needs to strengthen the three pillars of URAA discipline, attend to "unfinished business" from that Round and address new issues in ways that will enable rather than impede liberalisation and other reforms. Reaching such agreement may require more innovative, inclusive and transparent approaches to multilateral negotiations. Success in these objectives would strengthen the role that prices play in the functioning of commodity markets, help raise incomes around the world and expand demand for farm products. The key challenge for governments in the period ahead will be to maintain a clear focus on the benefits of further reform, to renew efforts to integrate agriculture into the multilateral trading system, while addressing legitimate domestic policy interests in ways that are effective and minimise distortions to production and trade.

ECONOMIC AND POLICY ASSUMPTIONS

Key economic assumptions

- World average growth of 3 per cent in gross domestic product (GDP) strengthening to 3.5 per cent in 2000. OECD area growth in GDP improving from 2.8 per cent in 1999 to 2.9 per cent in 2000, then moderating to 2.6 per cent from 2001 onward. Although US growth moderates from 3.8 per cent in 1999 to 3.1 per cent in 2000, falling to 2.3 per cent in 2001. European Union GDP growth is also seen gaining momentum from 2.8 per cent in 2000 compared with 2.5 per cent in last year's baseline.

- Following positive GDP growth for most Asian countries in 1999, stronger growth is expected for 2000. China's growth, although slowing, should rebound after 2001 and remain high by world standards. Latin America to exhibit positive growth in 2000.

- Inflation rates to remain low in most OECD countries despite pressures beginning to build from the doubling of oil prices in 1999. A repeat of previous macroeconomic shocks seen in the 1970s and 1980s is not expected, with restrained prices for most non-oil commodities.

- Currency markets to be less volatile. Potential for weaker yen or dollar possibly mutually offsetting but not included in the Outlook. The forecasts also assume an euro/US dollar exchange rate of 0.94 euro/US$ equal to US$1.06/euro. Weaker or stronger euro rates will have converse effects on the EU's export competitiveness – as will changes in world commodity prices from those foreseen in the Outlook.

Key policy assumptions[1]

- Continuation of existing or announced national agricultural policies in OECD Member countries. This includes those programmes authorised by the 1996 Federal Agriculture Improvement and Reform (FAIR) Act (1996-2002) of the United States, the Berlin Agreement on the Agenda 2000 CAP reforms in the European Union in 1999, the PROCAMPO programme in Mexico, rice tariffication implementation in Japan, as announced in 1999, and the elimination of beef import quotas in Korea by 2001.

- Compliance with commitments made in the URAA to be implemented over the period 1995-2000. The final level of these phased reforms (reductions in domestic support and export subsidies and increases in market access) in 2000 are assumed to be maintained unchanged to the year 2005. Similarly, commitments made in regional trade agreements such as the North American Free Trade Agreement (NAFTA) are assumed to be fully implemented.

- The Outlook takes no account of new regulations that might arise from emerging issues including food safety, quality, environment, animal welfare etc. including rules agreed under the Cartagena Protocol on Biosafety for trade in GMO commodities – all of which could influence trade flows.

- It assumes the United States will not make additional "hardship" or other emergency payments to its producers as relief from low commodity prices and other adverse market conditions and that it will not change the provisions of the FAIR Act governing farm support generally.

- No account is taken of the potential for further changes to the Common Agricultural Policy of the European Union when the Berlin Agreement reforms are reviewed in 2003.

Notes:

Historical data on leading macroeconomic indicators such as GDP growth rates, inflation and exchange rates are consistent with those published in the *OECD Economic Outlook No. 66 December 1999.* The assumptions made about the future paths of these variables are based on Member country replies to a questionnaire and Secretariat estimates about medium term developments. The World Bank has been used as the source for growth assumptions for Non-Member Economies.

1. Detailed description and evaluation of national agricultural and trade policies, including estimates of the level and composition of support, can be found in the OECD annual report *Agricultural Policies in OECD Countries: Monitoring and Evaluation, 2000.*

A selection of future agricultural policy events

2000	Completion of URAA reforms in developed countries
	Opening for signature of Cartagena Protocol on Biosafety
	Opening of WTO negotiations on agriculture and services
	Expiry of WTO waiver for EU Lomé Convention
	Possible accession of China to the WTO
	UN Conference (CSD-8) to include land management and sustainable agriculture
2001	Proposals for new US agricultural legislation
	Expiry of EU production quota system for sugar
2002	Expiration of US Federal Agriculture Improvement and Reform (FAIR) Act of 1996
	Target date for ASEAN countries to achieve tariffs below 5 per cent
	Completion of EU "Agenda 2000" reforms for arable crops
	UN Conference on Environment and Development (Rio +10)
2003	EU target date for review of milk quota scheme
	Expiration of the "peace" clause in the URAA on 31st December
2004	Completion of URAA reforms in developing countries
2005	Target date to conclude negotiations for FTAA agreement
	EU target date for initial further enlargement
	Target date for launch of EU Berlin Agreement reforms for dairy products
2008	Target date for start of GHG emissions trading
	Target date for completion of EU Berlin Agreement reforms for dairy products
	EU target date for application of higher welfare standards for poultry
2010	Target date for open trade and investment among developed APEC members

The past year has produced a transformation in the macroeconomic backdrop to the Outlook's projections. The world economy is recovering much faster than expected from the Asian, Russian and Brazilian economic and financial upheavals of the past three years. Growth prospects have improved in almost all OECD countries and are being continually up-graded for the next two or three years – the reverse of last year, when forecasts became increasingly gloomy as crises elsewhere unfolded.

US expansion notable for its duration and accompanying low inflation

The United States economy especially continues to outperform expectations. For the fourth year running, actual growth has exceeded projections while the anticipated slowdown is pushed further forward. The expansion has been notable for its duration, falling unemployment, higher labour productivity and low inflation. Both the OECD Secretariat and the IMF have up-graded estimates of US productive potential, leading to GDP growth higher than last year's baseline to the Outlook horizon, but especially during the first two years.

Growth in the European Union member states is gaining momentum, averaging about 2.8 per cent in 2000 and 2001 compared to 2.5 per cent in last year's baseline. However, the rate moderates in 2002-05 to the 2.5 per cent expected last year for this period. Here too growth brings a sharp decline in unemployment, yet no significant inflation pressures.

Japan's GDP growth forecast is little changed from last year. As expected, there are signs of gradual emergence from recession with GDP growth turning positive in 1999 and continued growth expected over the Outlook period – albeit at a relatively low rate. However, Korea, one of the Asian countries more severely impacted by the regional financial crisis, emerged with greater speed and vigour than expected. Its GDP growth may have been up to 9 per cent in 1999 and a rate of around 6 per cent is expected over the next two years, before moderating thereafter – far higher rates than assumed last year.

Canada's economy continued to expand in 1999, aided partly by US growth, but growth will probably moderate with the anticipated US slowdown over the next two years (albeit at a growth rate well above last year's). Australia's economy also performed better than expected with stronger GDP growth rates forecast during the first half of the Outlook, easing during the second half to be little changed from last year's baseline.

Forecasts for OECD growth are revised upward

Overall forecasts for the OECD area's GDP growth are revised upward relative to last year's, to 2.8 per cent in 1999 and 2.9 per cent

Figure 3. **World GDP growth projections encouraging**
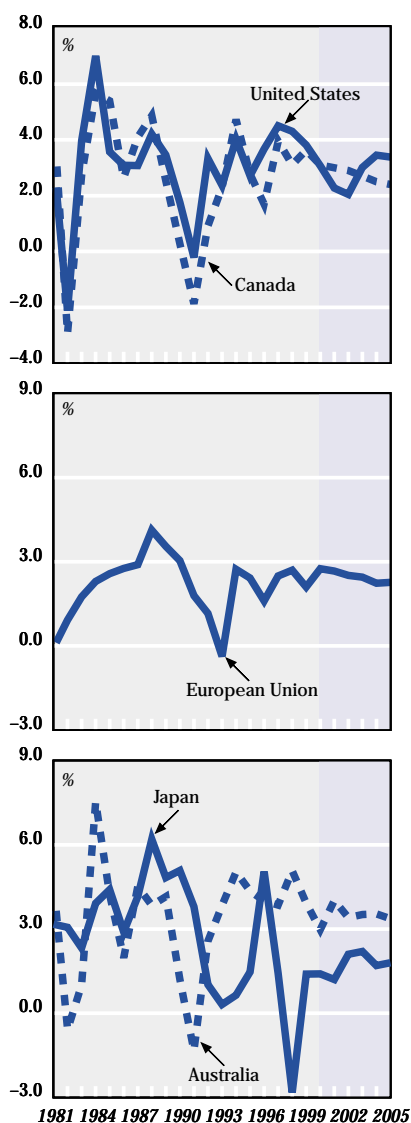
Source: OECD Secretariat.

in 2000, moderating to 2.6 per cent from 2001 onward. Figure 3 illustrates the projections of GDP growth for selected OECD Member countries.

Sustained recovery seen for Asia...

Most Non-Member Economies are also recovering strongly. Following positive GDP growth in 1999 for almost all the Asian countries hit by the earlier economic crises, stronger growth is seen for most in 2000. This recovery is likely to be sustained. Only Indonesia, worst hit by the 1997-98 "meltdown", has lingered in negative GDP growth through 1999, although even here there are signs that decline is now being reversed. China has weathered the storm better than expected and its GDP growth, while slowing, remains very rapid by global standards. Although projections for the first two years are reduced, China's growth after 2001 should return to levels comparable to last year's baseline.

The economic downturn in Russia following the 1998 financial crises was shallower than expected and positive growth has likely occurred in 1999 – although the extent to which this can be sustained into the future is subject to many variables.

... Though Latin America still lags

The Latin American region is one of the few not yet contributing to global economic improvement. GDP growth in Mexico, for example, is expected to lag last year's baseline rates during the first two years of the Outlook while Argentina's decline was sharper than expected, prompting downward GDP revisions throughout the forecast horizon (albeit with largest declines in the first two years). Although the slowdown was milder than expected in Brazil, which seems to have emerged from its crisis, the Latin American region as a whole exhibited zero growth in 1999.

Although oil prices are fuelling inflation, a repeat of earlier shocks is not expected

World GDP growth in summary, grew at an average of 3 per cent in 1999, (*versus* 2.2 per cent in 1998) and should accelerate to 3.5 per cent in 2000. It is important to note that this favourable situation is occurring without significant price inflation. Although inflationary pressures are now being fuelled by the doubling of oil prices during 1999, the Outlook does not expect a repeat of the large medium-term macroeconomic shocks that similar oil price hikes had in the 1970s and 1980s. Inflation rates are therefore expected to remain low in most OECD countries, with restrained prices for most non-oil commodities after a continued descent in 1999.

Exchange rate prospects – generally more stability?

Foreign exchange markets were relatively calm during 1999 after the previous year's turmoil. A new currency, the euro, was launched at

Figure 4. Exchange rate projections

Foreign currency/US$

Australia (left scale)

Canada (left scale)

Japan (right scale)

EU (left scale)

1981 1985 1989 1993 1997 2001 2005
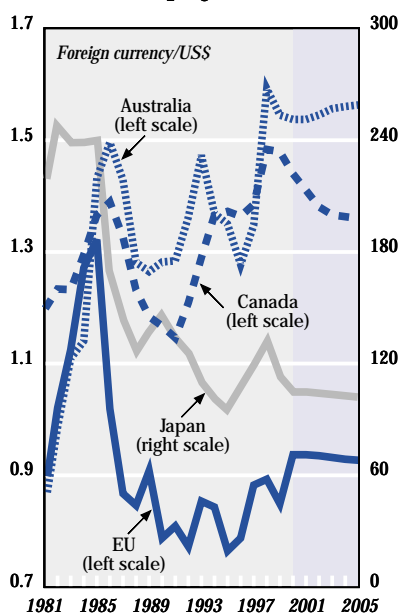
Source: OECD Secretariat.

the start of 1999. Its depreciation relative to the dollar throughout the year, did not create undue concern in financial markets. The yen appreciated against the US dollar and the euro – a trend which, if held, might lead some to question Japan's emergence from recession. On the other hand, some observers query whether the US dollar itself can maintain a value that may not be justified by fundamentals. The threat of US dollar depreciation could presage a less favourable world macroeconomic picture. However, overall, the Outlook also assumes the euro will continue to depreciate slightly relative to the US dollar while the yen will remain relatively unchanged. These assumptions reverse last year's expectation of a stronger euro and weaker yen through the Outlook period. Projections of currency rates for selected OECD Member countries are illustrated in Figure 4.

Exchange rates for many countries involved in the Asian financial crises also stabilised, with the Indonesian rupiah and the Korean won regaining some of their lost value. The Brazilian real also improved from its lowest point in 1998 and seem to have temporarily stabilised, albeit at lower levels than pre-crisis. Although the Russian rouble continued its nominal depreciation relative to the US dollar, the rate of depreciation moderated while appreciating in real terms.

Trade growth will leap in 2000 – but more for manufactures than commodities

The slowdown of world economic activity during 1997 and 1998 was a major restraint on growth of world trade which rose only 3 per cent in 1998 compared to a 10 per cent rise in 1997. The rate is expected to improve sharply as the world economy expands, however, and the 7 per cent growth expected in 2000 will considerably exceed projected real growth in GDP. However, growth in trade in manufactures should continue to outpace agricultural and mining products in both value and volume terms.

Foundations laid for strong farm product demand

In summary, more optimistic prospects for GDP growth in most countries – especially in the near-term – lay the foundations for higher consumption and trade for most agricultural products relative to last year. A stronger yen against the dollar also implies stronger Japanese demand for agricultural products while a weaker euro (*versus* last year's projections) improves EU export competitiveness and implies less need for export subsidies.

Regional trade pacts – are they compatible with reform?

More intra-regional activity may reflect trade creation rather diversion

An interesting development during the 1990s was the increase in scope and number of regional trade agreements (RTA) at a time when

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multilateral trade liberalisation was being implemented and encouraged by the launch of the WTO. By the end of the decade, there were more than 100 RTAs in force, with nearly all countries participating in at least one agreement. There has also been a greater concentration of intra-regional trade. For example, from 1990 to 1998 trade among countries that now make-up NAFTA grew from 41 per cent of their total trade in 1990 to over 50 per cent by 1998 while trade between EU member States rose from 59 per cent to almost 63 per cent of their total. Similar trends developed among Mercosur, ASEAN, and the Andean Community regional trading blocks too.

RTAs are not incompatible with multilateralism if structured to create rather than divert trade, *i.e.* by adhering to the Most Favoured Nation (MFN) principle and providing equal access to all potential trade partners. It is possible that the increased intra-regional activity described above may reflect trade creation rather than diversion, but more research needs to be done to establish this.

New policy challenges for trade

OECD Agriculture Ministers confirmed their commitment to market-oriented policy reform when they met at the OECD in Paris in March 1998. However, since then, emerging issues of public concern have strewn the path with potential obstacles. These include food safety, quality and production methods, environmental issues, sustaining rural areas and animal welfare. Some of these issues may be best left to consumer choice but others may require government regulation. If rules are necessary, however, they must be constructed and applied in ways that are consistent with the ongoing process of policy reform and trade liberalisation. Will some of the new regulations arising from these issues create unjustified trade or demand discrimination against some commodities, food products or supply origins? Such questions can really only be answered over time – a situation that creates a significant element of uncertainty for a number of bulk traded products.

Already up in 1998, PSEs expected to increased again in 1999

Another element muddying the trade policy outlook is the extent and duration of the slump in world prices of most agricultural commodities. Governments are, not surprisingly, tempted to look for ways to support their farming constituencies – sometimes in ways that interfere with the market process and international trade. Measured by the OECD Secretariat's Producer Support Estimate (PSE), this type of support had already increased in 1998 (reversing some years of decline) and preliminary signs are that PSEs will be higher yet again in 1999, increasing from 36 per cent to an estimated 40 per cent. For the second year running, the United States' government has provided emergency payments to farmers. It is also under increasing pressure to revise provisions of the 1996 FAIR Act – held up by the United States itself as a global icon of the market-oriented principle. The output enhancing

effects of these emergency payments are not yet clear. But, if two consecutive years of government largesse encourage US farmers to expect help whenever world prices are low, then these payments may yet have a distorting effect. However, because of the lump sum, backdated form of these payments, they should not directly effect production to the same degree as other forms of support. See Box 1 for a fuller discussion of these issues. For the purposes of the Outlook we assume additional emergency payments will not recur and that existing payments will not directly affect the projections.

EU reforms due for review in 2003

The outcome is also uncertain at this stage for other policy reforms toward greater market orientation. The European Union, for example, revised its Common Agricultural Policy under the Agenda 2000 programme, deepening reforms initiated in 1992. In the "Berlin Agreement" version of Agenda 2000 (incorporated in the Outlook), the European Union has continued to shift assistance away from direct price supports toward less-distorting direct payments to producers. Although the changes are less radical than originally mooted, support prices are nonetheless cut substantially for certain products while crop and livestock producers are partially compensated in ways that are at least partly decoupled from production. The extent to which these reforms will be re-visited (as scheduled) in 2003, introduces another element of uncertainty. An analysis of the Berlin Agreement is provided in a special section in this report.

Next WTO Round outcome – a key uncertainty at the far end of the Outlook

Public opinion in some countries has begun to question liberalisation and globalisation

Finally, we are at the eve of a new round of trade negotiations. The URAA for the first time included agricultural trade within a rules-based system. Even though problems have emerged in the URAA's implementation, its disciplines should certainly be not only continued but strengthened. However, the opening negotiating positions of the various trading partners are extremely diverse while public opinion in some countries has begun to question concepts of trade liberalisation and globalisation, as manifest at the Seattle attempt to launch the next round of trade negotiations in the WTO. Although trade liberalisation enhances global welfare, there are short-term adjustment costs for those involved that need to be addressed.

In summary, although negotiations on agriculture (and services) will begin under the build-in URAA agenda, the outcome of the negotiations is highly unpredictable at this stage, preventing a fully comprehensive

Box 1.   Will US emergency payments impact on future production?

- The long march toward more market-oriented farm policies in the United States culminated in 1996 with the passage of the Federal Agriculture Improvement and Reform (FAIR) Act. Initially dubbed the "Freedom to Farm" Act, this legislation was supposed to have halted over half a century of government attempts to influence commodity pricing and farmers responses to market signals.

- The FAIR Act set about reducing the "conditionality" of US farm support in two radical ways. First, it abolished limits on area and planting flexibility long required in return for farm program payments. Secondly, it introduced a system of declining fixed payments to replace a deficiency payments programme. Under the prior system, if farmers' market prices fell below a fixed target price, all eligible producers received payments based on the difference between the two. So instead of working within output controls and government target pricing, farmers were freed to decide the type and quantity of crops they would grow in response to market signals.

- "Freedom to Farm" was launched on a favourable tide of high market prices for most farm commodities amid predictions (including by OECD) that buoyant markets were likely to continue. With their new-found planting freedom, US farmers responded by expanding area and production, (as did market-oriented farmers elsewhere too). However, the ensuing rise in supply proved ill-timed, arriving on world markets just as financial crises around the globe began to stifle demand growth in several key food importing countries. Not surprisingly, market prices for most farm commodities fell sharply.

- Pressure on US farm incomes caused by lower commodity prices in 1998 and 1999 was compounded by natural disasters including droughts and heat waves in some regions and excessive rainfall in others. Faced with this combination, the US government found it hard to stick with the disciplined, market-oriented ideals enshrined in the FAIR Act. So, in 1998, the lump sum program payments made under the Act were supplemented by "emergency" payments, including an extra US$2.9 billion "market loss assistance payment" (calculated from regular FAIR Act payments) and US$1.5 billion for crop losses due to natural disasters. In 1999, compensation for market losses rose to $US5.5 billion while natural disaster aid was $US1.2 billion.[1]

- Some observers have interpreted these developments as signalling an end to the "experiment with farmers managing price risk on their own".[2] Others argue that the negative market developments and the US government's responses were exceptional events and thus do not constitute a threat to the basic structure of the FAIR Act or its basic philosophy of fixed payments without supply controls.

- Like most emergency aid, payments in those years were made "*ex post*", *i.e.* generally after planting decisions had been made. Furthermore, neither type of US emergency aid was directly linked either to prices or returns ruling at the time. However, the key question for the Outlook is whether extra payments made in 1998 and 1999 may affect US farmers' future production plans via their expectations. There are several ways in which this might happen.

  1. First, these payments have a direct impact on farmers' current income and wealth. This, in turn, might provide the means and incentive to invest more of their own money and time in production – especially those farmers facing constraints on borrowing or costs of taking on additional labour. So the extent to which payments ease farmers' financial constraints might be reflected in higher production in following years than would have occurred without this assistance.

  2. Whether for market loss or natural disaster, "top-up" payments may also reduce producer perceptions of the risks associated with future production. Disaster payments are, by definition, based on climate variability. The fact that additional payments were made in two years of significant drought appears to confirm the role of such aid as insurance against future years of adverse weather. Thus, to the extent that producers are risk-averse, this leads to higher-than-otherwise planned production. Such payments might also dampen farmers' responsiveness to forward market price signals.

  3. Market loss assistance payments also broaden the traditional definition of "disaster" payments. As the name implies these payments were made because market prices were perceived as "too" low. Farmers might therefore be encouraged to expect similar government responses in future periods of low prices. In effect, eliminating the fear of "disastrously" low market prices may increase expectations of future returns (while reducing the expected variability of those returns). This too might contribute to higher plantings and planned production than without the payments.

4. The market loss assistance payments were made in proportion to the FAIR Act payments which, in the absence of "supplement", would have been progressively reduced. Envisaged when the payments were implemented, this reduction was intended to signal to farmers a "time-limit" on this type of government support. However, the "top-ups" of 1998 and 1999 may now have blurred that signal by reducing the credibility of government resolve to cut future farm payments. In short, if farmers perceive the "top-up" as separate from the specific program used in a given year – *i.e.* more than a "one-off" event – then a long run incentive will be created to keep land (and possibly other factors) in agricultural production.

• Empirical evidence on the magnitude of these non-price effects of agricultural policies is difficult to come by. Using different methodologies, both Hennessy and Burfisher *et al.* estimate modest production effects attributable to the reduction in risk associated with direct payments.[3, 4] Young and Westcott (2000) discuss the potential for disaster payments to affect production through expected revenues, but do not quantify the importance of that link.[5] More empirical research in this area would be very worthwhile.

1. Agricultural Policies in OECD Countries : Monitoring and Evaluation 2000.
2. Barry, P., "Risk Management and Safety Nets for Farmers". *Choices* (Third Quarter 1999): 1.
3. Hennessy, D.A. "The Production Effects of Agricultural Income Support Policies Under Uncertainty". *Amer. J. Agr. Econ. 20* (Feb. 1998): 46-57.
4. Burfisher, Mary E. (USDA), Sherman Robinson, IFPRI, Karen Thierfelder, USNA, "Northern American Farm Programs and the WTO". (Invited paper presented to the American Association of Agricultural Economists, Boston, Massachusetts, 7 January 2000).
5. Young, C. Edwin, Paul C. Westcott, "How Decoupled is US Agricultural Support for Major Crops?" (Paper presented to the American Association of Agricultural Economists, Boston, Massachusetts, 7 January 2000. Revised version to be published in AJAE, August 2000).

analysis of how future agricultural markets will function. So for the purposes of this Outlook, countries are assumed to adhere to their URAA commitments through to 2005.

What future influence may China have on world trade in farm products?

An important development in the WTO context this year is China's prospective entry after 13 years of negotiations. China and the United States reached an agreement in November 1999, removing a major hurdle to China's membership. Bilateral discussions between the European Union and China during the first part of 2000 are expected to conclude successfully, while bilateral agreements have been reached with most other major trading partners, paving the way for entry if not this year then by early 2001. China is entering as a developing country and so will fulfil its WTO commitments by the end of the URAA implementation period in 2004 (except for its tariff rate quota commitments, to be fully implemented in 2005). Although China is expected to be a WTO member before the end of the Outlook period, implications of its entry to the WTO and the liberalisation of its trade regime are not incorporated into the Outlook because entry conditions are not known at the time of writing.

But market reform is assumed to continue

All the future policy uncertainties described above are assumed to be of a passing nature. OECD Member governments are assumed to stick to their commitment to reform and to find ways within the WTO process to tackle the new questions posed by globalisation and emerging public expectations. Broadly, the Outlook reflects an assumption that, on the whole, policies evolve within OECD Member countries over the medium term so as to remain "friendly" to better functioning domestic and international agricultural markets.

AGENDA 2000-BERLIN AGREEMENT: EFFECTS ON EUROPEAN AND WORLD MARKETS

What is the Berlin Agreement?

In March 1999 EU Heads of State agreed on an agriculture policy reform package to meet four goals: budget reduction, addressing expected internal market imbalances, preparation for enlargement and trade policies that better fitted current and future international trade agreements. The policy changes are focused on certain commodities and the details vary across these commodities as well as across regions. The reform package can be summarised as continuing the shift that began with the 1992 CAP reform package from support prices to direct payments. The reform package has been called Agenda 2000. However, to distinguish it from previous proposals of that name (to which Member States did not agree) we refer to the final form incorporated in our baseline projections as "the Berlin Agreement".

To analyse these reforms, the Outlook focuses mainly on support prices and direct payments. The support price reductions vary in timing and magnitude. For cereals and beef, cuts occur at the outset (starting from 2000) while dairy price support starts to fall in 2005. As cereal support prices fall, compensatory payments rise for cereals but decline for oilseeds and for land set-aside. The net effect is to make direct payments uniform for cereals, oilseeds and set-aside by 2002, removing the previous preferential treatment of oilseeds. Beef producers will also receive bigger compensatory payments in the form of increases in existing, and introduction of new, premia. A new direct payment for dairy producers based on production quota volumes will be introduced as price supports fall (over a term now delayed until 2005). Milk production quota also increases in two phases, the first round intended to "legalise" existing over-quota production and the second comprising a new quota to be applied across Member States which should thus directly increase production. In short, the Berlin Agreement will result in lower support prices, higher direct payments for some products, equalised payments across crops and higher milk production quota.

How does the Berlin Agreement affect markets?

Market management tools can be used to influence the outcome

The market impact of these changes will depend on how they are implemented and how they affect decision-making of the various agents

in the markets – especially producers. Implementation is the prerogative of the European Commission and European Council which retain control over export subsidies, intervention stocks and the level of compulsory set-aside. Depending on how these instruments are used, decision-makers could work with – or against – translating lower support prices into lower market prices of farm products. In this analysis, they are expected to reduce export restitutions and to limit intervention purchases, which lead to downward pressure on prices, and to maintain the announced 10 per cent rate of compulsory set-aside.

Direct payments may or may not distort production directly

Harmonisation of direct payments to crop producers is a key element of the policy changes. As crop area payments are equalised for the three main land uses – cereals, oilseeds, set-aside – so cropping decisions should rest upon relative market returns and costs, rather than unequal support. However, to receive a payment the land must be placed within this group of uses, so the allocation of land between these three uses and other uses is still affected by the payment. The dairy payment is based upon quota rather than production which makes it very unlikely to distort output directly – provided milk production remains at or near the milk production quota ceiling – although the payments will hold resources in the industry. The direct payments for beef are separated into several distinct premia for holding or slaughtering specific types of cattle or calves, each paying a certain amount and limited to a maximum number of payments. Ceilings on these can be binding in some regions and not in others, clearly with opposite consequences for the farmers' marginal returns. The Outlook calculates that the beef premia will increase aggregate beef supply to varying degrees depending on its proximity to the ceilings (see Box 2).

How to analyse the Berlin Agreement

To understand the consequences of the Berlin Agreement, we created a counter-factual baseline in which past policies (determined by the 1992 CAP Reform) remain operational to 2005. These projections are then compared with the Outlook, which reflects implementation of the Berlin Agreement. Extending past policy would have held support prices, direct payments and milk production quota constant, at 1999 levels. Oilseed payments would remain adjustable to reflect the market price relationship to the reference price and for area planted in excess of the Blair House limits. The total set-aside rate (compulsory and voluntary) is maintained at 15.5 per cent in both scenarios. Although the voluntary set-aside would be lower with the higher support prices and more distortionary payments of the 1992 Reform policies, this is assumed to be offset by a higher compulsory set-aside. In reality, such a precise substitution is unlikely, yet this assumption serves to narrow the scope of the analysis (see Table 1).

Box 2. How do direct payments affect beef supply?

- Under the Berlin Agreement, direct payments are increased for producers of both suckler cows and male bovine cattle while new slaughter premia are introduced for calves and adult cattle. The suckler cow premium operation changes so 20 per cent of claims can go to replacement heifers (and are assumed to do so). Finally, national support totalling euro 493 million can be added to the adult slaughter premia, (also assumed to occur in full). The large variety of premia payments raises questions as to how much they may offset the decline in support prices and the overall net effect on producer's marginal returns. The following explains the methodology used in the Outlook to deal with this issue:

  – Each type of payment has a ceiling subject to national/individual limits. Ceilings can be binding for farmers in some geographical areas but not others, at any given time. Where ceilings are not binding, additional animals could still receive a payment – so the premium affects decision-making. Conversely, in regions where binding ceilings are exceeded, no additional animal receives a payment – so the premium does not affect decision-making. The amount by which supply will change thus depends upon the degree to which ceilings are binding which, in turn depends upon the level of existing supply in relation to that ceiling. When total animal numbers are far below the ceiling, the relationship between animal numbers and payments is one-to-one so supply shifts out by the full amount of the payment. When animal numbers are very high relative to the ceiling, no additional payments are made so there is no outward shift in supply at all.

  – To incorporate the effect of these payments into the Outlook, data on past payments and ceilings are compared to estimate a "rate" of payment based on the ratio of animal numbers to the ceiling. This effectively makes the connection between animal numbers and premia payments, a link that can then be extended to assess the new premia. This relationship determines the level below which the supply curve is shifted out by the full amount of the payment, the level above which there is no shift in supply and the degree of the shift in supply between these two points (see Figure 5).

Figure 5. **Beef direct payments and beef supply**

Source: OECD Secretariat.
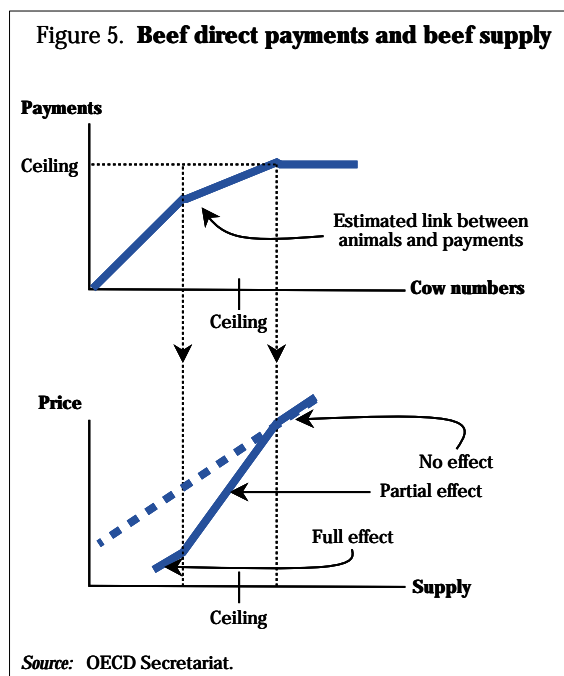
Table 1. **Counter-factual 1992 Reform extension compared to the Outlook**

	2000	2001	2002	2003	2004	2005
European Union markets						
Wheat area, million hectares						
Outlook with Berlin Agreement	17.6	17.8	18.2	18.4	18.6	18.5
1992 Reform Scenario	17.5	17.6	17.7	18.0	18.5	18.6
Change due to Berlin Agreement	0%	1%	3%	3%	1%	−1%
Coarse grain area, million hectares						
Outlook with Berlin Agreement	19.3	18.9	18.9	19.0	19.0	19.0
1992 Reform Scenario	19.3	18.9	18.7	18.8	19.0	19.2
Change due to Berlin Agreement	0%	0%	1%	1%	0%	−1%
Oilseed area (incl. non-food), million hectares						
Outlook with Berlin Agreement	5.8	5.6	5.3	5.2	5.1	5.1
1992 Reform Scenario	5.9	6.0	6.2	6.3	5.7	5.4
Change due to Berlin Agreement	−3%	−7%	−14%	−16%	−11%	−5%
Wheat exports, million tonnes						
Outlook with Berlin Agreement	15.4	15.3	15.2	15.4	15.4	24.1
1992 Reform Scenario	15.4	15.4	15.4	15.4	15.4	15.4
Change due to Berlin Agreement	0%	−1%	−2%	0%	0%	56%
Coarse grains exports, million tonnes						
Outlook with Berlin Agreement	10.4	10.4	10.4	10.4	10.4	10.4
1992 Reform Scenario	10.4	10.4	10.4	10.4	10.4	10.4
Change due to Berlin Agreement	0%	0%	0%	0%	0%	0%
Oilseed imports, million tonnes						
Outlook with Berlin Agreement	20.7	20.9	21.5	21.1	21.2	20.7
1992 Reform Scenario	20.6	20.3	19.9	19.0	19.9	20.4
Change due to Berlin Agreement	1%	3%	8%	11%	6%	1%
Beef exports, million tonnes cwe						
Outlook with Berlin Agreement	0.80	0.82	0.82	0.82	0.82	0.82
1992 Reform Scenario	0.79	0.82	0.82	0.82	0.82	0.82
Change due to Berlin Agreement	0%	0%	0%	0%	0%	0%
Total exports of butter, cheese, SMP & WMP, million tonnes						
Outlook with Berlin Agreement	1.34	1.34	1.37	1.38	1.40	1.37
1992 Reform Scenario	1.31	1.30	1.33	1.34	1.37	1.37
Change due to Berlin Agreement	2%	3%	3%	3%	3%	0%
Wheat intervention stocks, million tonnes						
Outlook with Berlin Agreement	2.1	0.0	0.0	1.0	3.5	0.0
1992 Reform Scenario	2.8	1.0	0.0	0.6	4.6	9.9
Change due to Berlin Agreement	−23%	−100%	−100%	63%	−25%	−100%
Coarse grain intervention stocks, million tonnes						
Outlook with Berlin Agreement	19.0	17.2	16.7	16.8	18.0	19.4
1992 Reform Scenario	20.3	20.8	21.7	22.4	25.7	30.9
Change due to Berlin Agreement	−6%	−17%	−23%	−25%	−30%	−37%
Wheat price, euro/tonne						
Outlook with Berlin Agreement	125	118	118	116	114	118
1992 Reform Scenario	133	136	137	136	131	125
Change due to Berlin Agreement	−7%	−13%	−14%	−15%	−13%	−6%
Coarse grains price, euro/tonne						
Outlook with Berlin Agreement	114	106	103	101	101	102
1992 Reform Scenario	123	123	120	117	115	115
Change due to Berlin Agreement	−7%	−14%	−14%	−14%	−13%	−11%
Beef price, euro/100 kg dw						
Outlook with Berlin Agreement	362	294	263	263	269	275
1992 Reform Scenario	389	333	316	306	305	304
Change due to Berlin Agreement	−7%	−12%	−17%	−14%	−12%	−9%

Table 1. **Counter-factual 1992 Reform extension compared to the Outlook** *(cont.)*

	2000	2001	2002	2003	2004	2005
Milk price, euro/100 litres						
Outlook with Berlin Agreement	30	30	30	30	30	29
1992 Reform Scenario	30	30	30	31	31	30
Change due to Berlin Agreement	–1%	–1%	–1%	–1%	–1%	–3%
World market prices						
USA wheat export price, US$/tonne						
Outlook with Berlin Agreement	115	123	131	135	143	153
1992 Reform Scenario	115	122	131	135	142	153
Change due to Berlin Agreement	0.3%	0.3%	–0.1%	0.1%	1.2%	0.2%
USA maize export price, US$/tonne						
Outlook with Berlin Agreement	92	99	103	109	114	117
1992 Reform Scenario	92	99	103	109	113	117
Change due to Berlin Agreement	0.0%	0.1%	0.0%	0.3%	0.5%	–0.1%
EU oilseed import price, US$/tonne						
Outlook with Berlin Agreement	197	189	202	213	233	251
1992 Reform Scenario	197	188	197	207	231	253
Change due to Berlin Agreement	0.0%	0.6%	2.3%	2.6%	1.0%	–1.0%
EU whole milk powder export price, US$/100 kg						
Outlook with Berlin Agreement	154	157	163	178	184	197
1992 Reform Scenario	154	158	163	178	185	197
Change due to Berlin Agreement	–0.1%	–0.4%	–0.3%	–0.1%	–0.1%	–0.2%

Market impacts of the Berlin Agreement are…

… Relatively lower oilseed payments shift land towards cereals

The EU wheat price averages 11 per cent lower and the EU coarse grain price 12 per cent lower under the Berlin Agreement than under extension of the prior regime. The lower cereal prices are partly offset by higher direct payments to producers. However, lower oilseed direct payments have a negative impact on returns to oilseed producers. Land is thus reallocated from oilseeds to cereals. The Outlook calculates oilseed area will be 9 per cent, or 500 000 hectares, lower on average than under a 1992 Reform extension. These changes would be greater had Blair House limits not already restrained the oilseed payments and, hence, area under this reform.

… Wheat intervention stocks fall as exports rise

The Berlin Agreement affects individual cereals in different ways. EU wheat production exceeds consumption routinely throughout the Outlook by about the amount of the URAA limits on subsidised exports. Wheat intervention stocks are small in the Outlook in comparison to the 1992 Reform extension scenario. In this counter-factual scenario, more significant intervention stocks would be required due to the larger gap between production and consumption and in order to maintain prices at the higher support levels. Following the Berlin Agreement, the Outlook expects the EU wheat price to remain above the world price until 2004, during which time exports require subsidy

and must therefore remain within the URAA limits. However, as the lower price of wheat under the Berlin Agreement lifts consumption closer to production, intervention stocks should slowly fall. By 2004, world wheat prices rise to EU wheat price levels, allowing unsubsidised exports to start. This should allow EU total wheat exports of 24 million tonnes in 2005, 3.5 million tonnes of which serve to deplete intervention stocks. The greater exports will in turn increase EU wheat prices. The full difference between domestic production and consumption will be exported to world markets by the end of the Outlook, whereas some portion of the difference would be purchased into intervention stocks in the event of an extension of the 1992 Reform package. In short, the Berlin Agreement raises wheat exports above the level that would have resulted from an extension of the 1992 Reform and also eliminates wheat intervention stocks.

… But coarse grain intervention stocks remain large

Coarse grain intervention stocks, in contrast, are expected to remain high even under the Berlin Agreement. The margin of EU coarse grain production over domestic consumption is greater than the URAA limits in the Outlook. Hence, unlike the case of wheat, even with subsidised exports at URAA limits, coarse grain intervention stocks remain large in the Outlook and are growing in the final years. Also, unlike the wheat results, the potential for unsubsidised coarse grain exports is not realised during the Outlook. Still, without the Berlin Agreement's adjustments, higher support prices would result in even greater intervention stocks and no decrease in subsidised exports. The average 12 per cent price reduction ensuing from the Berlin reforms reduces the margin of coarse grain production over domestic consumption by 4 million tonnes. This slows the intervention stock accumulation, but the European Union coarse grain policies remain dependent upon subsidised exports and public stocks in the Outlook, even at lower support prices.

… While more oilseed imports are required

Oilseed imports are higher under the Berlin Agreement as area shifts out of oilseeds and into cereals (driven by harmonisation of direct payments) lowering oilseed output by an average 8 per cent. Oilseed meal use also declines, as cheaper grain takes some of its share in feeds. With meal prices falling too, the effects on EU oilseed crush are negative. However, as EU crush falls in response, so the value of the oil product rises (because there is no change in EU oil demand) partially offsetting the lower meal prices. The Outlook calculates that the equation of lower domestic supply and only slightly lower demand for products will require oilseed imports averaging 5 per cent or almost 1 million tonnes higher than under the counter-factual extension of the 1992 CAP reform policies.

… Subsidised dairy exports rise to 2005 – if production increases

Dairy and beef markets are also directly affected by the Berlin reforms, as well as indirectly by lower feed costs. However, because

the key dairy policy changes only start in 2005 – and most beef output is a by-product of dairy production – much of the impact on these markets comes beyond the Outlook horizon. The only dairy policy change before 2005 is the targeted milk quota increase. We assume only about half of this will be realised as higher milk production (*i.e.* mid-way between the possible extremes of either full or no production increase resulting from the larger quota). On this basis, the European Union has 3 per cent more dairy product subsidised exports prior to 2005 as production increases without any change in support prices. In 2005, however, the Berlin Agreement's lower support prices (by 2.5 per cent on a calendar year basis) boost dairy product consumption by as much as the extra production from enlarged milk quotas. This results in subsidised exports beginning to fall, ending the Outlook at the levels they would be under an extension of the 1992 Reform policy.

… Lower beef prices and stocks have small impact on output and trade

Until 2005, the impact on the beef market is small overall, if significant in terms of EU market price and stock reduction. The size and timing of the impacts reflect *a)* the relatively greater influence of the largely unchanged policy in the dairy sector (dairy being the primary source of beef supply) and *b)* the closer link between beef direct payments and production than in crop and dairy sectors. So, while the Berlin Agreement leads to market prices of beef averaging 12 per cent lower, the net impact on returns is limited by effects of higher direct payments on producers marginal decision-making. The Outlook concludes that by 2005 there will be a 5 per cent lower beef cow herd and 2 per cent lower beef output than under an extension of the 1992 Reforms. The beef market will still be responding to these changes when, in 2005, cross-effects from the more substantial dairy reforms begin. Production falls because, at the margin, direct compensation under the Berlin Agreement is not sufficient to offset lower beef prices. Under the Berlin Agreement, then, the fall in beef prices reduces the amount of production in excess of consumption and, in turn, lowers intervention stocks. In either scenario, EU beef exports are held at or near the URAA maximum. However, under the Berlin Agreement, stocks are more than 600 000 tonnes lower in 2005 because of lower support prices. While pork, poultry and sheepmeat producers benefit from feed costs which are 8 per cent lower on average, consumers will begin to buy more beef as its price falls relative to other meats. Also, as prices decrease for pork and poultry, the gap between EU and world prices for these products will decline, reducing the need for export subsidies.

The euro and world prices determine the possibility of unsubsidised exports

Wheat exports are sensitive to the euro

The euro/US dollar exchange rate is critical in determining the value of EU farm goods and therefore when and to what extent cereals,

EU cereal prices in 2005 with different exchange rates assumptions

Euro/tonne

1.05 euro/US$
0.93 euro/US$
0.80 euro/US$

150
100
50
0

Wheat Berlin | Wheat 1992 | Coarse grains Berlin | Coarse grains 1992
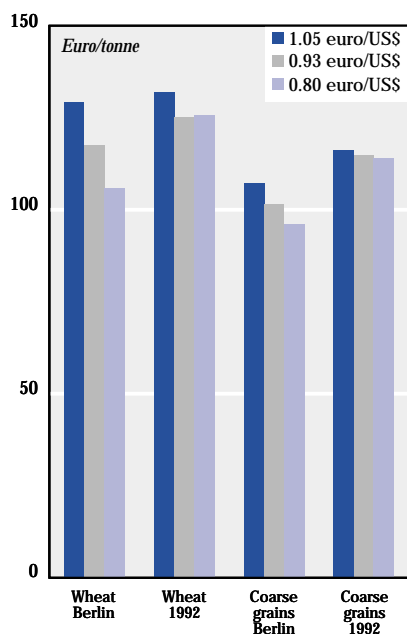
Notes:
a) The price for wheat is the weighted average producer price of common and durum wheat.
b) The price for coarse grains is the weighted average price for maize, barley and oats.
Source: OECD Secretariat.

particularly wheat, can be exported without restitution and thus, free of restriction from the URAA limits on subsidised exports. The Outlook assumes an exchange rate of 0.94 to 0.93 euro/US$ (equivalent to US$1.06 to 1.08 euro). If from 2000 to 2005 the euro turns out stronger or weaker than this, wheat exports could be significantly lower or higher respectively. To test the sensitivity of the results to currency variables, two alternative euro assumptions have been made. Under the strong euro scenario, the exchange rate changes to 0.80 euro/US$, similar to the ECU of the mid-1990s. Under the weaker euro scenario, the rate is 1.05 euro/US$. Trade implications similar to those of a weaker or stronger exchange rate also result from world prices respectively rising above or falling below the Outlook levels (see Figure 6).

The weaker the euro the sooner the European Union can begin unsubsidised wheat exports and the greater the quantity that can be exported without subsidy. In the figure, EU prices of wheat and coarse grains in 2005 are shown under the new (Berlin) and past (1992) policy regimes. Taking the case of wheat under the Berlin Agreement, at left, the weakest rate explored of 1.05 euro/US$, EU unsubsidised wheat exports begin in 2003, and exports may exceed the URAA limit on subsidised exports. Hence, internal EU wheat prices are higher. At the other extreme, 0.80 euro/US$, unsubsidised exports are ruled out and EU prices remain at support price levels and intervention stocks rise. The figure also shows wheat prices under the same exchange rates under an extension of the 1992 Reform package. Wheat prices remain near the effective support price in all circumstances, with unsubsidised wheat exports possible only under the weakest of euro values and only in the final year of the Outlook.

Unsubsidised coarse grain exports might become possible in the medium-term at a sufficiently weak euro, but the rate of 1.05 euro/US$ is not sufficient to allow competitive EU coarse grain exports at the world prices of the Outlook. Yet while the Berlin Agreement's support price cuts may not eliminate the gap between EU and world prices, cross-price effects imply that some coarse grains area is shifted into wheat when EU wheat exports are not restricted by URAA limits. As unsubsidised wheat exports rise, upward price pressure on EU internal wheat markets also causes substitution in demand between wheat and coarse grains. Conversely, if the euro or world market prices are such that EU wheat exports must be subsidised even to 2005 and are therefore limited by the URAA, then the cross-commodity effects would cause lower coarse grain prices and higher coarse grain intervention stocks.

Need for export subsidies decreases, but remains significant, in particular for dairy products

In summary, the four goals of the Berlin Agreement are to reduce and control budget spending, to address expected internal market imbalances, to prepare for enlargement and to position the European Union for future trade negotiations. The Outlook incorporates the Berlin Agreement, with its lower support prices and higher direct

payments. The policy changes lead to EU production exceeding domestic consumption by smaller amounts for cereals and beef in the near term and for dairy products from 2005. Falling beef production follows from the result that compensation (increased premia payments) does not fully offset lower prices for producers (at the margin). The beef surplus falls, but exports still require subsidies. Subsidised beef exports remain at the URAA limit to 2005. Unsubsidised wheat exports become possible from 2004, but export subsidies are needed for coarse grains throughout the Outlook period. Moreover, coarse grain exports remain at URAA limits and intervention stocks remain substantial due to the still larger excess of production over consumption. Nevertheless, the dependence on subsidised exports is decreased by the lower support prices. In dairy markets, the need for export subsidies increases in the short term as a larger quota is partly used to raise production at current support prices rather than to simply "legalise" existing over-quota production.

It, therefore, appears that, given the smaller margin of production over domestic consumption, there is less reliance on subsidised exports and public stocks for most commodities, excluding dairy prior to 2005. Indeed, the Berlin Agreement's lower support prices and less distorting direct payments discourage production and encourage consumption, hence reducing the level of internal market distortion. However, subsidised exports continue to play an important role and, particularly for coarse grains, public stocks remain important.

Key variables … world prices and implementation by the Commission

However, it must be stressed that the success of the programme appears to hinge mainly upon two factors: actual world prices in euro (as compared to our price projections) and the way in which reforms are implemented. This is especially true for wheat, where the outlook projects a continued large margin of production over consumption and unsubsidised exports beginning from 2004. A favourable outcome could be jeopardised by a strong euro and/or weak world prices, with cross-commodity effects on coarse grains. Regarding implementation of the Berlin Agreement, the European Commission and European Council retain discretion to set restitutions, intervention stocks and set-aside. These instruments can be applied to limit the internal price decreases, resulting in more modest increases in consumption and less likelihood of unsubsidised wheat exports. If implementation decisions, a strong euro or weak world prices cause an increasing difference between EU internal prices and world prices, particularly for wheat, the European Union would need to rely more on export subsidies and its position in future trade negotiations would only differ in terms of the levels of public stocks from what would have occurred by simply extending the 1992 regime.

The Berlin Agreement reforms have reduced internal market distortions

The Berlin Agreement is a continuation of policy changes towards less reliance on export subsidies. Our analysis shows that the use of

these may indeed fall under certain market outcomes and exchange rate assumptions. Indeed, rising world prices are likely to allow unsubsidised wheat exports, barring unfavourable conditions. Pork and poultry exports are likely to be more competitive in world markets due to lower feed costs. While other commodities remain dependent upon subsidised exports, the internal market imbalance is reduced, with the exception of dairy in the short-term. This implies less market distortion as high support prices are partially replaced by higher, but more decoupled direct payments to producers.

However, distortions remain. Support prices of cereals, beef and dairy products can still maintain internal EU prices above world levels while direct payments remain linked, albeit to varying degrees, to production – especially for crops and beef. The Berlin Agreement reduces support prices and may narrow or eliminate the gap between EU and world prices, yet price transmission between world markets and EU markets has not improved for all commodities. Declining world prices for coarse grains, beef and most dairy products will not be directly reflected in lower EU internal prices, but only indirectly through cross-commodity effects. The price gap will widen under such circumstances for these commodities, renewing the need for higher export subsidies. At the beginning of 2000, the euro was relatively weak against the dollar, and this improves the competitiveness for EU agricultural exports and possibilities for export without subsidy. However, if the euro strengthens, gaps between EU and world prices would again raise obstacles to unsubsidised exports. In this situation the European Union's domestic prices would, of course, become even more difficult to support at levels higher than world prices if export subsidies were reduced further in the next WTO round of trade negotiations.

CEREALS

Main projections

- Bullish fundamentals should lift world cereal prices from current depressed levels by 2005. Global production will be restrained by low prices at the start of the Outlook but as demand strengthens from Asia and other markets, stocks-to-use ratios will tighten, enabling price recovery in the later years. Cereal prices show little change in real, inflation-adjusted, terms, although their longer-term trend continues to decline.

- World cereal production is expected to rise by nearly 13 per cent between 1999 and 2005, with developing countries accounting for a larger share of the growth compared to OECD countries. Much of the increase will stem from higher yields with the long-term decline in sown area unlikely to be reversed in the medium term. Within the OECD, the United States, followed by the European Union, Hungary, Poland and Australia will account for most of the additional 65 million tonnes of cereal output between 1999 and 2005.

- Growth in world cereal demand is forecast to be stronger in the medium term than in the second half of the previous decade. World total use (food, feed and industrial) is expected to rise by nearly 221 million tonnes or about 12 per cent between 1999 and 2005, with the greatest increase in coarse grains. Over 75 per cent of the growth in cereal's use is expected to occur in developing countries, especially in Asia, the Middle East and Latin America.

- Grain net exports from the OECD area should rise by 21 per cent by 2005 compared with the 1994-98 average. Coarse grain trade rises slightly faster than that of wheat in spite of some unsubsidised wheat exports from the European Union following the 1999 CAP reforms. The OECD area to remain a small net exporter of rice.

- Cereal stocks in major OECD exporting countries are expected to tighten slightly by 2005 compared to 1999. The stocks-to-use ratio for total cereals will decline as demand growth for domestic consumption and exports outstrips rising production.

Key issues

- The outcome of the next WTO trade round will be critical for future cereal markets. Protection and market distortion persists and need to be tackled. Unfinished business from the URAA includes continuing export subsidies, lack of disciplines on export credits (use of which has risen as export subsidies have declined) and the role of State Trading Organisations. Tariffication could be tightened up to reduce tariff dispersion and peak tariffs, while increases in market access still have a long way to go. The Aggregate Measurement of (a country's total agricultural) Support has been undershot by some influential players, and has not constrained them from spending more in ways that could distort markets in the future.

- Modern biotechnology is seen by many to offer the means by which to feed an expanding world population, but has become a source of increasing agricultural trade tensions. It is uncertain whether the recently agreed Cartagena Protocol on Biosafety will help facilitate trade involving GMO products and avoid trade disruption.

- The extent to which NIS and developing/emergent economies apply new technologies could revolutionise their yields and production capacity with profound effects on future trade flows.

- China's WTO entry has potential to boost trade flows if accompanied by domestic policy reforms including the monopolistic roles of STEs. With growing meat consumption and livestock herds, India could eventually become a major player in world coarse grain import trade.

Outlook in brief

Bumper supplies and lack-lustre demand have pushed world cereal prices down to historical lows at the beginning of the Outlook. However, medium term fundamentals are more bullish, especially after 2001. As global stocks-to-use ratios tighten, world cereal prices are projected to increase by 2005 to around US$150 per tonne for wheat, US$115 for maize and US$300 per tonne for rice (milled basis) (see Figure 7). All these nominal prices would be below the average for the five years, 1994-98, and real prices (inflation adjusted) are projected to be relatively flat when compared with the declining trend over the longer term (see Figure 8).

Yields more important than area in boosting output now

Global cereal production is projected to grow by nearly 13 per cent between 1999 and 2005, with the largest increase in coarse grains (+124 million tonnes), followed by wheat (+72 million tonnes) and rice (+36 million tonnes). Developing countries are expected to account for more than half of the growth in world wheat and coarse grain production and all the growth in rice output. However, the OECD area should also increase total cereal output by nearly 9 per cent, or an extra 65 million tonnes, by 2005. Much of the additional output will be produced in the United States, especially maize, followed by the European Union, Hungary, Poland and Australia. Higher relative returns are expected to encourage more growth in wheat than coarse grain output in the European Union, however. Globally, increases in cereal productivity are expected to remain the primary source of output growth as price incentives (barring a major crop shortfall) are

Figure 7. **Nominal cereal price to increase**
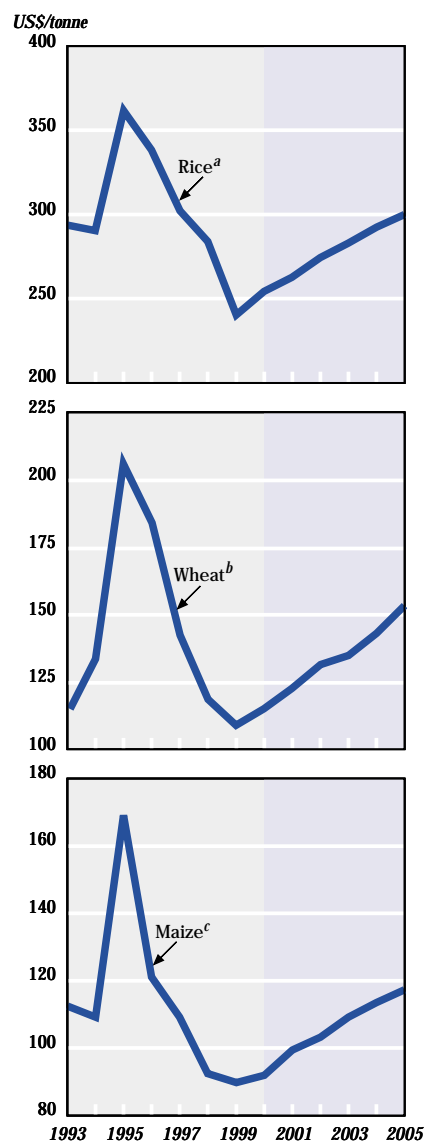
US$/tonne

Rice[a]

Wheat[b]

Maize[c]

1993 1995 1997 1999 2001 2003 2005

unlikely to be sufficient to reverse the long-term decline in sown area. Within the OECD, much land will be kept out of production – in the EU's annual set-aside programmes (6.5 m.ha.) and the US multi-year Conservation Reserve Program (14.7 m.ha) – limiting their producers' ability to plant more in response to higher prices.

Stronger world cereal demand will finally boost trade

Growth in global demand for cereals is forecast stronger in the medium term than in the second half of the 1990s. World consumption is projected to expand by 221 million tonnes or nearly 12 per cent between 1999 and 2005. Growth in feed, industrial uses and exports is expected to drive most of the increased demand within the OECD area over the medium term. Around three-quarters of the global expansion in food and feed consumption of cereals is expected to take place in developing countries, particularly those in the Middle East, Latin America and Asia. As the impact of the latter region's economic and financial crisis fades, rising incomes, relatively fast population growth and ongoing migration from rural to large urban centres will transform national diets away from staple foods to more cereals, animal-based proteins and convenience foods. Although market liberalisation and privatisation has increased domestic cereal production within some of these countries in recent years, larger imports will still be needed to meet the pace of expected demand expansion (see Figure 9).

After a decade of relative stability (albeit masking sizeable shifts in the country composition of imports), world cereal trade has an opportunity to resume growth. OECD area net exports alone are expected to rise by 21 per cent by 2005 compared with the 1994-98 average. Coarse grain exports should rise slightly faster than wheat even though the 1999 CAP reforms and stronger world prices enable the European Union to export wheat without subsidies in the final year of the Outlook. Changes in the euro/US dollar exchange rate will have an important impact on EU cereal export prospects. Within the projected world price outlook, continuation of a weaker euro would improve EU competitiveness and its ability to export without subsidies at an earlier stage, just as a stronger euro would have the opposite effect. Japan will remain the largest importer of cereals within the OECD. As a whole, the OECD will remain a small net exporter of rice, mainly from the United States and Australia. China which has been a net exporter of cereals in recent years is projected to switch back to net imports over the Outlook period. Rising imports are expected of coarse grains especially to meet expanding livestock production and higher feed demand.

Global cereal stocks have declined in absolute terms and in relation to consumption since the early 1990s with the reduced role of governments in public stockholding. Some further tightening of cereal stocks is expected by 2005, with the stocks-to-use ratio for total cereals falling as demand grows faster than production. Ending stocks were built up in most OECD cereal exporting countries in the 1998 and 1999 seasons as export demand weakened with the financial

Figure 8. **Little change
in real cereal prices**

Figure 8. **Little change
in real cereal prices**

US$/tonne

Rice

Wheat

Maize
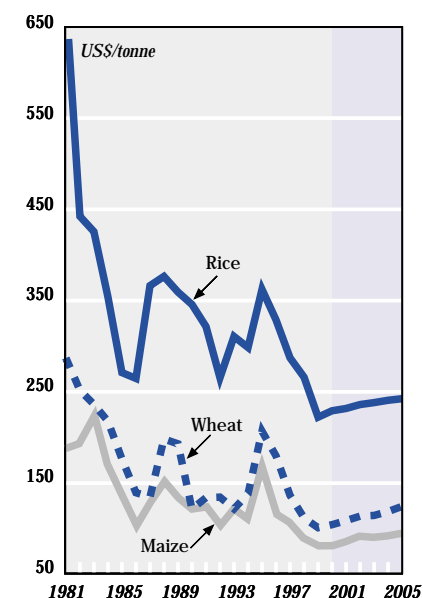
Source: OECD Secretariat.

Figure 9. **Declining cereal
self-sufficiency of developing
countries**

Million tonnes

%

Consumption
Production
Self-sufficiency
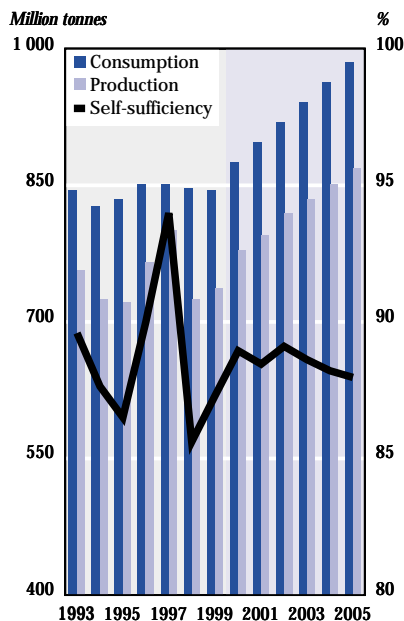
Source: OECD Secretariat.

crises in southeast Asia and other regions. However, these too should be drawn down over the Outlook period. Wheat stocks are projected to decline by 25 per cent between 1998 and 2005 with the bulk of the reduction occurring in the United States and the European Union where both exports and domestic use should increase. Coarse grain stocks within the OECD area are projected to drop by 16 per cent over the Outlook horizon. In the case of the European Union, intervention stocks of coarse grains other than maize are projected to rise by the close of the Outlook horizon as higher yields and production outweigh gains in domestic feed consumption and exports stimulated by lower prices. However, in general, lower levels of commercial cereal stocks in OECD exporting countries will help to underpin higher prices towards the end of the Outlook period. In contrast to the OECD situation, cereal stocks held by developing countries are projected to increase slightly from 1999 to 2005, but not sufficiently to offset the reduction in the OECD area (see Figure 10).

Key issues and uncertainties

The next round of trade negotiations

The outcome of the next round of WTO multilateral trade negotiations will be of considerable importance to the functioning of world cereal markets. The URAA has already delivered benefits to world cereal trade by capping and reducing export subsidies, barriers to imports and trade-related domestic support of Member countries. Despite all the progress in these three areas (and the URAA's creation of more effective dispute settlement procedures), protection and distortion of cereal trade persists. However, while the need for further trade liberalisation is clear, new issues are emerging which have made the reform process more difficult.

For cereal trade, unfinished business from the URAA includes the continuing availability of export subsidies, lack of disciplines on export credits and taxes, inadequate market access and continuing trade-distorting domestic supports. New issues have also emerged including the role of State Trading Enterprises and trade rules for new cereal varieties developed through modern biotechnology.

URAA disciplined export subsidies for the first time

The URAA was the first multilateral agreement to impose disciplines on the use of export subsidies – both in value and volume terms – for agricultural products. This aspect has probably delivered the biggest single benefit to cereal markets, particularly to wheat trade which has suffered from repeated bouts of competitive export subsidisation use over many years.

High world prices in 1995 and 1996 led to a virtual halt in export subsidy use by the United States and the European Union (although the latter continued to apply them to rice) and at one stage even encouraged the European Union to impose taxes to restrict grain exports. However, the decline in world market prospects from

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Figure 10. **Lower cereal stocks over the Outlook**

Million tonnes   *%*

- OECD area
- Non-OECD area
- World stock to use ratio

1993 1995 1997 1999 2001 2003 2005
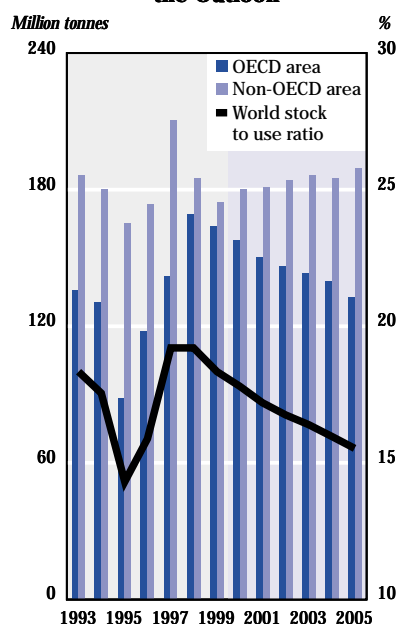
Source: OECD Secretariat.

early 1997 has seen the European Union and some other smaller cereal exporters resume applying subsidies, which have grown as world prices have fallen. The European Union has also drawn on unused WTO subsidy volume commitments from earlier years and is currently the major user of export subsidies in the OECD area. In contrast, the US export subsidy facility – the Export Enhancement Program – has been mothballed for wheat since 1995 and, for most of that time for coarse grains too (although a small barley sale was made with EEP in 1998). Canada can also use export subsidies under the URAA but has avoided these since eliminating its internal grain transport subsidies in 1995.

Use of export subsidies declines

Overall, then, world cereal markets have been subject to a lower use of export subsidies than agreed by WTO members under the URAA. So, even with a standstill in subsidy allowances at the conclusion of the URAA implementation period in 2000-01, there remains ample opportunity to increase their use on world cereal markets. For example, in the period 1995-97 which encompassed a phase of high world prices, it is estimated that only 20 per cent of total OECD export subsidy volume commitments for wheat and flour were utilised by Member countries. For coarse grains the utilisation rate was estimated at 47 per cent and for rice 35 per cent (although the latter represented only a small share of global rice trade). Depending how these subsidies were targeted, country-wise, they would have provided plenty of scope for trade distortion. The gradual rise in world cereal prices over the Outlook horizon, amid the phasing in of some domestic policy reforms, eventually imply less recourse to export subsidies, although their use may remain heavy in the initial years of lower world prices. By making further cuts in export subsidies (and tightening rules to prevent their circumvention), the outcome of the next multilateral trade talks could bring considerable extra benefits to world cereal markets – especially to wheat and barley trade.

But food aid and export credits are being used more

The URAA exempted international food aid from export subsidy reduction commitments. However, after declining in the previous four years, cereal food aid has rocketed in 1998-99 and 1999-2000. Countries with mounting grain stocks have donated some of these to Asian and other markets where commercial trade had become constrained by various economic and financial crises. These developments raise a number of issues. To what extent is the provision of cereal food aid being driven by supply and market factors in donor countries? Are some food aid shipments substituting for commercial trade? Are they being influenced by the discipline on the use of export subsidies? These and other concerns have led some countries to suggest that food aid may need to be addressed in the next trade round.

Meanwhile, as the use of export price subsidies has been sharply reduced under the URAA, the focus has been sharpening on the rising use by government agencies of competitive credits and credit guarantees to

finance exports. All major cereal exporting countries have some form of export credit insurance or guarantee programme, although the United States has traditionally been the largest provider of credit guarantees for cereals. Not only has use of credits and guarantees soared recently, there has been a tendency to broaden their sphere of influence, especially to the Asia region following the financial and economic crisis in 1998.

The potential for subsidised finance to distort trade was recognised in the URAA which urged development of international disciplines to govern their use in farm product trade, through OECD negotiations. While this dialogue has been underway for several years, major exporters have yet to reach agreement. Resolution of the export credit issue is vital, however, since this could well be the issue that determines whether or not there is progress in reducing direct price subsidies in cereal trade (and in agricultural trade in general) in the next round, something that would be in the interest of all major exporting countries. Of course, any such agreement would need to make special provision for financing and food security concerns of the least developed and net food importing developing countries which could face higher food import costs.

Export controls question the reliability of international markets, fuelling protectionism

Practices such as export prohibitions and restrictions were permitted under the URAA, provided the WTO was notified and consideration shown for the food security situation in affected importer countries. Of the cereal exporters, only the European Union, Czech Republic, Hungary and Poland have applied restrictions such as taxes or licences on exports in recent years. The March 1999 Berlin reforms maintain the instrument of export taxes within the market management measures available under the CAP. However, it was agreed that in future their use would be restricted to a safeguard measure in cases of extreme emergency. Whilst export prohibitions and restrictions are potentially more trade damaging than export taxes (unless prohibitive) in that they completely restrict foreign access to domestic supplies, taxes on exports induce trade distortions as much as export subsidies. Applying export taxes – by limiting adjustments of supply and demand in domestic markets – has the effect of raising prices in world markets. It is not surprising, therefore that export controls of any form are a cause of apprehension for cereal importing countries and can undermine their confidence that adequate supplies will always be available from exporting countries at times of relative shortage. Indeed, periodic or arbitrary use of export taxes and, in extreme cases, export restrictions can jeopardise attempts to achieve more open markets. Such measures no only cast doubt on the reliability of international markets, but encourage protectionist demands for more food self-sufficiency in importing countries.

... While market access needs to be improved further

The URAA re-wrote the basic rules for market access in agricultural product trade. To open markets, participating countries agreed

to prohibit non-tariff barriers (NTBs), convert existing non-tariff barriers to tariffs and then reduce these progressively. They also pledged to maintain historical trade volumes and provide minimum levels of import opportunity to their cereal markets, either with special arrangements or by establishing tariff-rate quotas (TRQs). However, tariffication procedures provided considerable leeway for countries changing NTBs to tariff-equivalents. Averaging of tariff cuts across different cereal sectors enabled considerable tariff dispersion, so very high initial tariffs could be set for some grains, negating or muting the impact of tariff cuts on market access.

Guidelines for tariff reduction also enabled countries to apply minimal cuts in border protection for sensitive cereal products. The result is that average tariffs, tariff bindings and applied tariffs continue to show huge variation between countries and for different cereals. On average, the lowest protection is on feed grains and the highest on rice. There is clearly a lot of scope in the next round for further tariff reductions and for larger tariff rate quotas that would reap more benefits to cereal trade. Finally, although traditional trade barriers have declined as a result of the URAA, the influence of other "technical" regulatory hurdles has been growing for trade in bulk commodities like cereals. These technical barriers include issues like labelling, quality standards and inspection certification.

Trade-distorting domestic support is far from extinct

Cuts in trade-distorting domestic support began under the URAA with obligations to reduce an Aggregate Measurement of Support (AMS). This represented the value of all of a country's trade distorting domestic policies – with certain exceptions. Governments could, for example, continue to use measures that did not (or only minimally) distort trade (*e.g.* de-coupled payments). Also, because the AMS did not apply to individual commodities, it allowed high levels of support to remain in place for some cereal products. In addition, there are no limits under the URAA for subsidies in support of production if these fall within a special, temporary exemption from AMS reduction commitments and where payments are based on fixed areas, yields or number of animals and related to production limiting programmes. EU compensatory payments to cereal producers for the price cuts arising from CAP reform fall within this category. All WTO participating countries are reducing support in those other domestic policies that have a big influence on production and which are thus most trade distorting. Indeed, following such policy reforms, support levels for cereals (and other agricultural products) in some countries are actually less now than the cuts they agreed in their AMS. The downside of this welcome situation, however, is that it offers scope for countries "outperforming" their AMS targets, to increase support without breaking their URAA obligations. Under this heading comes the US decision to introduce billions of dollars of additional income support for cereal and other producers in 1998 and 1999. While these were provided as so-called "de-coupled measures", their recurring nature could build hopes of regular support on this scale, encouraging production

decision unrelated to market signals by cereal farmers that would render the payments no longer "minimally distorting". A qualitative evaluation of the market impacts of these measures is provided in Box 1. Further benefits could also accrue to world cereal trade from a new round of negotiations if commitments were tied to specific cereal crops. This too would encourage participants to make their support policies minimally production and trade distorting.

Role of state trading enterprises will likely come under the microscope

In terms of new issues, the role of state trading enterprises (STEs) is expected to come under increasing scrutiny during the next round of WTO farm trade negotiations. STEs operate in several countries and can be active in import and export, particularly in cereal markets and especially in wheat trade. USDA data estimates 33 per cent of global wheat exports during 1994-97 were handled by the two main exporting STEs – the Australian and Canadian Wheat Boards. In the same period, STEs in China, Japan, Egypt, Pakistan, Indonesia and other countries accounted for between a third and a half of world wheat imports, although some of these countries have since opened trade to private agencies. STEs also account for nearly half of world rice exports, about a third of rice imports and a significant share of coarse grain imports, especially by Japan (the leading importer) and China.

Concern over the influence of STEs focuses on their lack of transparency in pricing and other aspects of their operations. This has invited suspicion that export subsidies, import barriers or other violations of WTO obligations could be concealed, or at least enabled. Some detractors also claim STEs' exclusive rights to buy and/or sell particular cereals create monopolistic advantages that could be used to non-competitive ends (*i.e.* through pooling returns to producers, cross-subsidising operations and/or enabling price discrimination between markets). All of these practices could contribute to trade distortion. Some governments also underwrite the borrowings of their STEs, *e.g.* for advanced payments to producers, conferring a cost saving or subsidy unavailable to private traders. In fact, only a few STEs have the potential to affect world cereal trade and in some cases reforms are taking place either to reduce or eliminate the government role and the need for "single desk", statutory trading rights. This issue is not only important to existing WTO members but to several prospective member countries in which STEs form a significant part of their trade infrastructure.

Trade friction continues over GMOs

Development of new cereal varieties via biotechnology (containing genetically modified organisms, GMOs) has expanded rapidly in recent years. However, problems with regulatory approval and civil society concerns have disrupted trade in some countries. Labelling has been proposed as a way of meeting consumer demands for information to provide freedom of choice. But this may not be simple or straightforward in practice. For example, levels of tolerance need to be set for maximum quantities of GMO material allowed in "non-GMO" commodity shipments, or processed feed and food products. Sampling and

verification procedures and control points for such checking also need to be agreed between all the trading parties. Exporting countries may also need to be able to segregate GMO varieties from non-GMO crops in their handling, storage and distribution systems.

Differences in regulatory procedures for GMOs between countries have emerged as a major point of conflict in terms of trade disruption. Yet despite such variations, all countries tend to examine similar health, safety and environmental factors in reaching a decision. The Cartagena Protocol on Biosafety was recently negotiated in Montreal. Under this Protocol importing countries are required to notify their willingness to accept imports of living modified organisms (LMOs) and to provide the necessary authorisation to importers and exporters are required to label these products. The aim being to ensure that the recipient countries have the opportunity to assess risks in advance of shipment. Whether this will help facilitate trade in GMOs is unclear at this time.

Huge scope for yield improvement in some countries

As well as the pace of trade policy reform, there are market uncertainties for the cereal outlook. One is the extent to which developing and NIS countries will apply available technologies to raise cereal production. While many of these countries have scope to bring more arable land into production, albeit under existing water or irrigation constraints, yields offer enormous potential for improvement. A significant change in either factor (land availability or productivity) could have far reaching implications for the future tonnage and composition of cereal trade to, and in some cases from, these countries. Within Asia, trade prospects with China especially raise a major uncertainty for world cereal markets. The Outlook assumes China will remain largely self-sufficient in cereals, particularly for wheat but that recent net exports of coarse grains will change to net imports as growing livestock numbers demand more feed. India is another potential market mover that cannot be easily quantified in the future. With growing meat consumption and an expanding livestock sector, it could become a significant import force in world coarse grain markets in coming years (see Box 3).

Box 3.   Will India need to import grain as the green revolution matures?

- India's food grain output, comprising wheat, rice and pulses almost quadrupled between 1950-51 and 1998-99 from 51 to 198 million tonnes (see Figure 11). Self-sufficiency was achieved by the end of the 1970s and small net exports began in the early 1990s (in 1998 India exported about 2 million tonnes of food grains). However, growth in output in recent years has failed to match that of population, expected to reach one billion by the end of 2000.

- In the first half of the 20 th century too, the rate of increase in food grain output was lower than population growth and agricultural policy demanded accelerating production for food security. With large-scale public investments in irrigation and scientific research, the so-called "green revolution" of the mid-sixties was born.

- Prior to this technological leap, food grain production had slowed from 3.2 per cent per annum during the 1950s (largely due to expanded area) to only 1.7 per cent in the 1960s and 2.1 per cent in the 1970s. Large-scale imports were needed. The 1980s marked another turning point, however, as India adopted revolutionary changes in seed

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technology, pushing up productivity first for wheat and later in rice. Thanks largely to these advances in yield, production growth averaged 3.5 per cent per annum in the 1980s – in excess of the area-based expansion rate of the 1950s. During the 1990s, however, as the main impact of the green revolution waned, the rate fell sharply to only 1.7 per cent, barely equal to the annual growth in population (see Figure 12).

• A new national agricultural policy currently under government discussion aims to redress this trend, targeting a 50 per cent increase in food grain output to 300 million tonnes in the next ten years. However, evidence suggests the increase in productivity from high-yielding varieties over the last thirty years may be slowing while availability of suitable land for food grain production is also nearing its limits. The rapid growth in the use of fertilisers over the last three decades is also likely to taper off and decline as input subsidies are abolished (as part of broader economic reforms). So achieving the government target may have to depend on other improvements. For example, there is considerable scope to reduce post-harvest losses (currently estimated at 10-15 per cent of production). Cropping intensity could also be increased - especially on irrigated land. More area could be brought under irrigation while farm structures could be improved. However, fruition of most of these schemes will require increased foreign investment – in agricultural systems, storage facilities, transport infrastructure and improved technologies in food processing.

• Food grain production targets must also be viewed in the context of current per capita supply of food grains. Within India this is still low by international standards, even declining in 1998 to about 200 kilograms, (its lowest since 1991 when India embarked on its major economic reforms). So, even if food grain output did manage to rise by 50 per cent in the next ten years, steady growth in both population and per capita income would still probably need modest net imports in the medium term and, some experts predict, as much as 10-45 million tonnes of food grain imports by 2030.

Figure 11. **Rising food grains production in India**
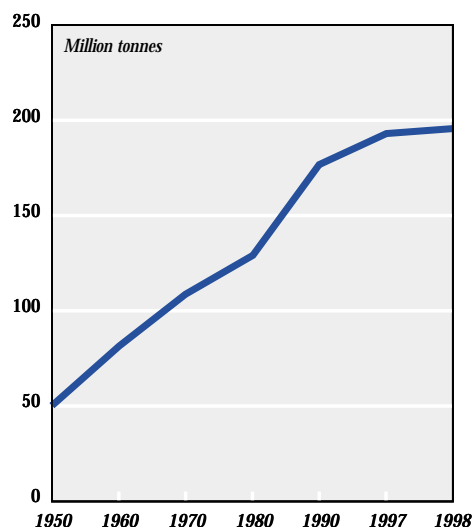
Note: Food grains means wheat, rice and pulses.
Source: Report of the Indian economic survey, 1998-99.

Figure 12. **Slowing growth rates of food grains production in India**
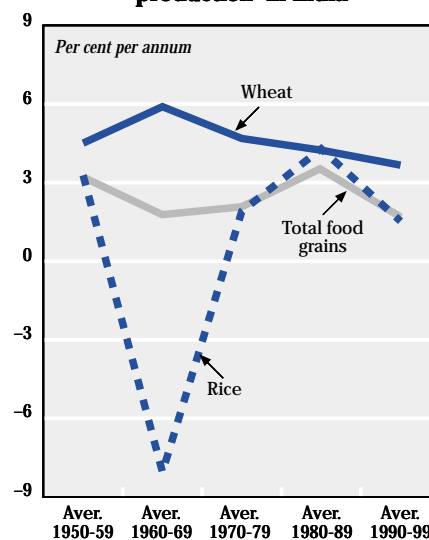
Note: Food grains includes wheat, rice and pulses.
Source: Rapport of the Indian economic survey, 1998-99.

Box 4. Use of export subsidies and export credits in cereal trade

- There are a large number of ways in which governments can affect the export competitiveness of their countries' agricultural products. Export subsidies and credits are two of the tools available to boost a nation's exports against those of its rivals. Whether an explicit price subsidy is given to exporting or importing agents to reduce the price paid for traded goods, it is effective in favouring the exporting country's trade. Officially supported export credits can take several forms and may also reduce an importer's total costs below those available from normal commercial finance. In addition, there are other policies which countries can use to enhance their own exports at the expense of competitors. For example, state trading enterprises may be able to cross subsidise from controlled markets, domestic or foreign access under a quota, to competitive markets. Food aid may also be used as a mechanism for internal price support or to facilitate exports. Whatever form an export policy takes, if it reduces the importer's financing costs below the market rate, then it lowers the costs of acquiring the commodity relative to alternative sources and effectively distorts international markets. The OECD Secretariat is currently engaged in a broad ranging analysis of measures that affect exports and export competition. Work is most advanced on the issues of export subsidies and export credits and this box draws on some preliminary results of that work.

Export subsidies in cereal trade

- Export subsidies were limited under the URAA and subject to commitments that they be reduced annually throughout the implementation period. By 2000, subsidised exports are to reach final spending and quantity levels 36 per cent and 21 per cent respectively below those of the base period (1986-88). While export subsidies for commodities are, in many countries, already lower than the agreed limits, they remain significant in some cases. Cereal export subsidies especially are expected to remain influential in the medium-term projections to 2005, as the European Union continues to use them to keep domestic prices at or above support price levels.

- In the short run, the European Union is expected to subsidise wheat and coarse grain exports at the URAA limit. Unsubsidised wheat exports from the European Union are also expected in the last year of the Outlook period, based on the expected relationship between EU internal market and world prices (and relative exchange rates). However, world prices do not rise sufficiently to allow the European Union to be competitive in coarse grain exports. Over the Outlook period, other OECD exporters are assumed not to subsidise cereal exports.

- To estimate the effects of subsidised exports on world cereal markets (excluding rice) the Outlook's baseline projections are compared with a scenario under which no wheat or coarse grain exports are allowed to be subsidised from 2001 onward. In this case, the difference between EU production and consumption must either be exported without subsidy (if EU prices are competitive with world prices) or held as intervention stocks. The result is a de facto trade agreement that eliminates subsidised exports without changing any internal EU policies or subsidising any other commodities. The exclusion of other countries from this analysis is justified by the assumed suspension of their cereal export subsidies.

What if EU subsidised cereal exports were to be eliminated?

- If EU subsidised cereal exports are eliminated, any surplus production cannot be exported in the short run, when EU internal prices are above world prices. The European Union must then buy more cereals into intervention to maintain domestic internal prices above support levels. As a result, coarse grain intervention stocks are double the Outlook levels by 2005 in the event of an elimination of export subsidies. However, while domestic prices decline in this scenario, there is a simultaneous increase in world prices as EU subsidised cereal exports cease. Almost immediately, this price increase is sufficient to make EU wheat exports competitive at world prices. So wheat intervention stocks rise only briefly and are then released onto world markets. In subsequent years, any EU wheat production in excess of domestic consumption will be exported at (then relatively higher) world prices, without having to resort to subsidies. The consequent recovery in the EU wheat price leads to substitution between coarse grains and wheat in both production and consumption, reducing pressure to build coarse grain intervention stocks and increasing wheat exports further. The long-term effects of ending subsidised cereal exports are not large, although the EU cereal exports shift from coarse grains to wheat. The final results are similar to the situation projected by the Outlook, due to the decreasing importance of wheat export subsidies (see Table below).

Effects of a hypothetical elimination of EU cereal export subsidies

	2001			2005		
	Outlook projection	No cereal subsidies	Per cent difference	Outlook projection	No cereal subsidies	Per cent difference
EU wheat exports (excl. aid), mt	14.3	0.0	−100%	23.1	24.6	7%
World wheat price, US$/tonne	123	128	4%	153	155	1%
EU coarse grain exports, mt	0.4	0.0	−100%	10.4	1.2	−89%
World maize price, US$/tonne	99	108	9%	117	122	4%

Export Credits in cereal trade

- Export credits (here, we are concerned with official support, as opposed to those offered by the private market) take various forms. These include direct credits or financing, guarantees, insurance or interest rate support. The importer may receive a loan at an interest rate below the normal market rate, for a length of time which exceeds that which the market would offer and/or under a repayment schedule with abnormal timing or an unusual grace period. If the importer does not then face a fee adequate to offset these special conditions, his total costs for financing purchases from that exporter are lower than they would have been without such officially supported export credits. So the programme can effectively subsidise the importer.

- Although a successful Arrangement on Guidelines for Officially Supported Export Credits has existed in the context of the OECD for over 20 years, agricultural products are specifically excluded from its scope. As long as there is no protocol in this respect, governments will be free to provide credits to importers on any terms, no matter to what degree they effectively subsidise the importer.

- It should be noted, however, that export credits under official support may also be offered on the same conditions as supplied by private enterprises in the market, in which case they may not distort the market at all.

- The key to evaluating distortion, then, is the total cost: when the fees do not entirely cover the benefits associated with the loan conditions, the effective price to importers is lowered. In fact a present value calculation, based on the details of any government credit programme, can be computed and adjusted for any fees to calculate a de facto subsidy equivalent as a per cent of the face value of the loan. However, such analysis requires detailed data about export credit programmes and this is not generally available. As an example drawn from publicly available US data, Hyberg, Smith, Skully and Davison (1995) calculated the 1992 subsidy equivalent for US wheat and maize credits of approximately 6 per cent of the face value of the loan. It must be understood that this study is out of date and so may not accurately reflect the current effects of export credit programmes. Yet this old estimate is used in this example as the per cent by which US export credits reduce an importer's total costs by offering financing on terms which are better than those available in the private market. While export credit programmes operate in a very different manner than export subsidies and so are not directly comparable, the subsidy equivalent is a useful measure of the resulting trade distortion. When this percentage is applied to the FY 1998 applications publicly reported by USDA's Foreign Agricultural Service (FAS) for wheat, rice and feed grains (US$1.7 billion) a subsidy equivalent value results of US$103 million, or – effectively – US$1.20 per tonne. In this case, the subsidy equivalent is small compared to the total value of cereal exports (which in FY 1998 totalled US$10 billion – FAS). However, it is more significant relative to the cereal export subsidy spending limit stipulated under the URAA (US$499 million for 1999) – again, recognising that the comparison is weakened by the different mechanisms underlying these two export competition policies. It is also possible to estimate costs of export credit programmes to the US taxpayer, using the calculations provided by the US Office of Management and Budget (OMB), based on default rates and fees. The 9.3 per cent of loan value from the OMB computations is multiplied to the cereal allocations to give an approximate cost for credits on cereal exports of US$159 million or US$1.85 per tonne.

Figure 13. **Allocation of export credits**

Billion US$

- Animal products
- Vegetable products
- Bulk cereals
- Fats and oils
- Prepared foods
- Other

1995 1996 1997 1998

Source: OECD Secretariat.

- For the purposes of this box, Participants to the Export Credit Arrangement at the OECD granted permission to reproduce some aggregate results from a confidential survey. The survey is not at this time complete and does not cover all commodities, but enough responses have been compiled to provide preliminary statistics (see Figure 13). This shows the total of all responses for bulk cereal allocations alone increased over the span of the survey by US$465 million, or 22 per cent. The data also show an increase in total officially-supported export credit for these agricultural commodity allocations – from US$11 billion in 1995 to US$18 billion in 1998 – and the survey reports widespread use of export credits by several OECD countries. Future empirical work on export credits is needed to update estimates of subsidy rates and to expand the scope to examine other exporters' officially supported credit schemes for farm product exports. In the meantime – and in the absence of any protocol governing their use, the potential for their expansion is clearly great.

Other topics

- These evaluations are limited by the assumption of perfect competition and the simplified treatment of agricultural commodities as largely homogeneous within broad groupings. Clearly, the results would be different where there are monopolistic or oligopolistic market agents or where quality differences would result in different trade or policy implications. In addition, the results are limited in that they exclude other export competition policies to which countries might be tempted to turn, particularly in the event of further export subsidy reduction or an export credit arrangement. For example, state-trading enterprises might be established with authority to cross-subsidise. Alternatively, food aid might be abused in order to increase exports, particularly if countries make it more cost-effective by pushing a small part of costs onto importers, rather than only using granted food aid. Indeed, if countries do nothing more than replace existing distorting schemes with new ones, there may be no positive effect at all from an agreement to limit certain trade policies, except for a loss of transparency.

OILSEEDS

Key commodity assumption

- Continuation of US oilseed policy and income support measures as currently projected by the USDA. Loan rate for soyabeans to be reduced in 2001 and to remain at US$181 per tonne. No account taken of possible changes after the FAIR Act's scheduled expiration in 2002. Other support policies to remain broadly unchanged. Land enrolled in the US Conservation Reserve Program to increase to authorised level.

- Implementation of the European Union's "Berlin Agreement" provisions for support price reduction, not fully offset by harmonisation of direct producer payments with those of cereals. Set-aside rate (including voluntary set-aside and applying to industrial oilseeds) to increase from 10 per cent in 1999 to 15.5 per cent from 2000 to 2005. No account taken of possible EU cereal policy changes which could follow from a scheduled review of the Berlin agreement in 2003.

- No account taken of possible changes to Chinese import tariff and quota regime springing from WTO accession on terms outlined in the November 1999 draft bilateral agreement with the United States.

- No major changes to India's differential import duty structure for oilseeds and products.

Main projections

- A further small decline in prices followed by modest recovery towards the end of the Outlook period reflects a relative oversupply in the oilseed sector. Prices of soyabeans imported into Europe averaged $264 per tonne during 1994-98, but fell to a low of $195 per tonne in 1999. A return to such prices is not expected before 2002, based on moderate production gains and continued strong growth in demand. As market balance is gradually restored, aided by lower stocks and higher prices of competing crops, oilseed prices should rise slowly and reach about $240 per tonne by 2005.

- So far there has been little production response to low prices. The Outlook does not expect that to change much for a few more years yet because of improvements in productivity and market signals are still being muffled by the impact of policies. Soyabean supplies from South America and palm oil supplies from South East Asia are particularly competitive – partly due to currency depreciations. In the United States, meanwhile, subsidies cushion the impact of low market prices as incentives in the programmes favour production of soyabeans. The forecast of world oilseed production (rapeseed, soyabeans and sunflowerseed) of nearly 250 million tonnes by 2005 implies that production will increase by over 3 per cent or nearly 7 million tonnes a year.

- Income and population growth combined with consumption-boosting low prices should fuel vigorous expansion in the world's oilseed economy. Lower feed costs are stimulating oilmeal use in the main expanding markets like the European Union, China and the United States. Growth in world oilmeal consumption will remain on a trend at about 4 per cent a year.

- The pace of import growth is expected to slow, with Asian oilseed and palm oil requirements to account for much of the forecast modest expansion in world trade. This should benefit continued growth of oilseed exports from Australia, Brazil, and the United States as well as oilmeal exports by Argentina.

Outlook in brief

Policies work against price recovery for most of the Outlook

The Outlook suggests further small decline in prices and a slow oilseed price recovery, partly reflecting the impact of US oilseed policy (see Figure 14). Soyabean production in the United States – the major producer – is currently only partly responsive to world prices. When these fall below the loan rate (US$193 per tonne up to 2000 and US$181 per tonne thereafter), government revenue guarantees are activated for a large part of production. In 1999-2000, outlays under a programme known as "loan deficiency payments" (LDP) are expected to reach about US$33 per tonne. As a result price signals to reduce output are muted and breaking the expansionary habit borne from nine consecutive years of acreage increase is more difficult. This is particularly so in view of decades of acreage controls that ended with the 1996 FAIR Act. The impacts of LDPs under the FAIR Act may have been modified by subsequent events like the Brazilian reforms, a major devaluation of the Brazilian real and the slowdown in import requirements. The role of the payments in adding to supplies and the importance of the choice of the US loan rate level are expected to decline as strong demand growth reduces excess supplies (see Figure 15). The resulting recovery in prices will eliminate the payments by about 2004 (see Figure 16). The price outlook also suggests an initial pressure on South American oilseed producers to moderate their expansion. Asian suppliers of palm oil may be less affected because they have lower cost of production, allowing some flexibility to reduce prices to prevent stocks accumulating. So while the palm oil price projection throughout the Outlook period to 2005 remains below the average of US$580 per tonne for 1994-1998, it should continue to attract further investment.

Figure 14. **Strengthening demand to increase oilseed prices**

US$/tonne
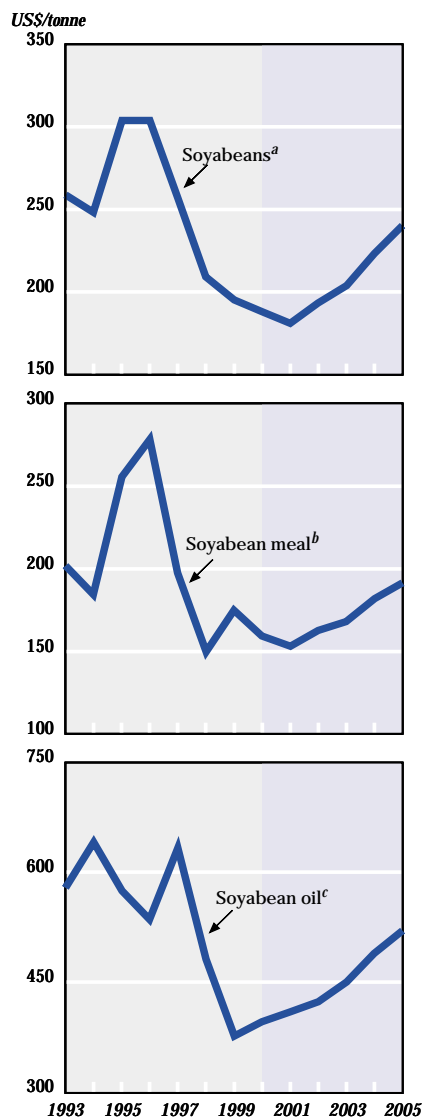
Notes:
a) US soyabeans, c.i.f., Rotterdam.
b) Argentine soyabean pellets, c.i.f., Rotterdam.
c) Dutch soyabean oil, f.o.b., ex-mill.
Source: OECD Secretariat.

Plentiful supplies will continue

Investment in research and infrastructure has reduced the production costs of oilseeds and oilseed products worldwide. Efficient farmers in Argentina are reported to have total costs, including transport to an export port, of around US$125-135 per tonne. Palm oil production is not land-intensive and there have been steady improvements in productivity which have reduced (inflation-adjusted) production costs during 1951-91 by an annual average of 2.6 per cent. Ongoing productivity trends like these – plus the availability in South America of land resources – suggests oilseed meal and vegetable oil supplies will be plentiful – even at a lower level of average prices. Ample evidence for this is provided by the recent rate of increase in global production – between 1993-98 world soyabean production alone grew from 118 to 158 million tonnes. This expansion is driven mostly by strong livestock sector demand for oilmeals in animal feed. But this also leads to additional supply of soyabean oil, as the joint product resulting from oilseed crushing. In combination with palm oil, this leads to plentiful supplies of oils over the medium term.

But demand is strong and growth in consumption becomes more widespread

World demand for oilseeds and oilseed products is expected to remain strong over the medium term. World oilseed consumption has grown at an annual rate of 3.8 per cent during the period 1972-97 – which is double the rate achieved by cereals. The projections suggest this pattern will continue. World oilmeal consumption is forecast to increase at nearly 5 million tonnes a year, with more than half the increase occurring in developing countries. Larger feed requirements reflect growing meat production but also the shift in favour of white meat (poultry and pork) and away from red meats (beef and lamb). By 2005, poultry will be the leading meat consumed in OECD countries. However, it is poultry's expansion in developing countries that is becoming the driving force in oilmeal consumption. Vegetable oil consumption in developing countries will also maintain its expansionary path. It is the strong demand for the oil component of oilseeds that leads to increasing oil prices over the medium term, in spite of large supplies of vegetable oils and palm oil.

Trade growth depends increasingly on importers' domestic policy decisions

While trade is expected to grow, though at a slower rate than in the 1990's, the direction of future trade flows is less certain. Domestic policies are changing in the two major importing countries. In China, regional production policies and excess crush capacity are reflected in shifts in trade policy as well as in domestic taxation of oilseeds versus products. In the European Union, the impact on plantings of harmonised producer payments for cereals and oilseeds (under the latest CAP reforms) is not yet clear, although it is likely to be small (see the separate analysis of the Berlin Agreement reforms). Export availability from the major exporter, the United States, is partly linked

Figure 15. **World oilseed stocks
to fall**

Million tonnes %

- OECD area
- Non-OECD area
- World stocks
  to use ratio

1993 1995 1997 1999 2001 2003 2005
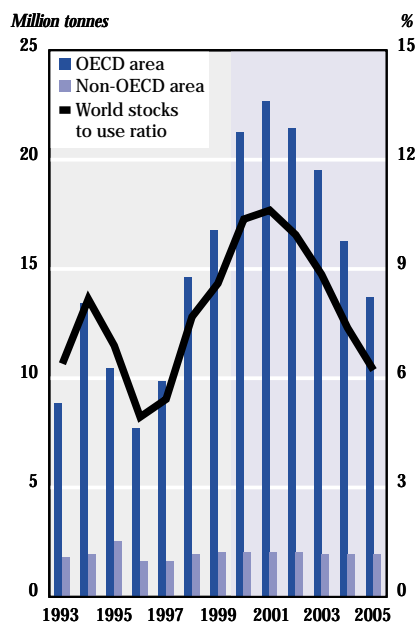
Source: OECD Secretariat.

Figure 16. **US loan deficiency
payments for soyabeans
to decline**

US$/tonne

Average soyabean price
received by US farmers

Loan deficiency
payment

US soyabean
loan rate

1993 1995 1997 1999 2001 2003 2005
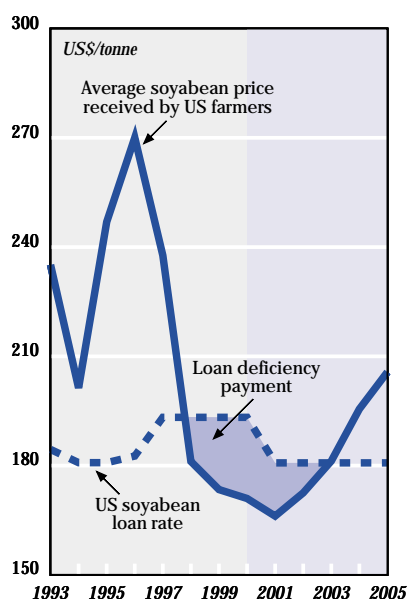
Source: OECD Secretariat.

to farm programmes which are due for re-authorisation in 2002 and partly to temporary assistance programmes whose future is uncertain.

Key issues and uncertainties

Brazil has effectively moved the goal posts for global costs and returns

Brazil's comparative advantage in producing soyabeans has been enhanced by a series of policy reforms that seem to promise low prices into the foreseeable future. The major currency devaluation in early 1999 was a key factor, although its influence was augmented by earlier micro-economic reforms (infrastructure privatisation), as well as liberalisation and de-regulation in the oilseed sector itself. With its combination of improved productivity and substantial land availability, Brazil is now changing the way international oilseed prices are determined.

This is the second time Brazil has triggered a seismic shift in world oilseed markets. Over the past 20 or 30 years its expanded output – by offering a harvest halfway through the traditional US-marketing year – brought diversity of supply which levelled the seasonal swing. Now Brazil has become the major low cost supplier, setting the benchmark for world prices of soyameal. At the same time, currency depreciations in the countries supplying nearly all the world's palm oil exports – Malaysia and Indonesia – have pushed down the value of the oil content of soyabeans (about 18 per cent by weight). These developments are part of the reason why the major supplier of soyabeans (the United States) has in effect been caught with domestic policies that maintain a support price which is now too high and therefore have trade distorting effects.

OECD oilseed support policies to remain costly

The price outlook for oilseeds assumes policies will not be radically changed in the next five years. Only gradual recovery is expected in low world prices that have made producer support more expensive. Total costs for programmes for oilseed producers in OECD countries have risen from US$5.3 billion in 1997, to US$6.4 billion in 1998, and a provisionally estimated at US$7.7 billion in 1999 – raising their contribution to the total value of the oilseeds produced from 18 to 29 per cent. Most of this support is in the form of direct payments from government programmes financed by taxpayers and the bulk of the increase occurred in the United States, from US$0.8 billion to US$4.2 billion *i.e.* from 4 to 25 per cent of the value of output. The price outlook suggests that such payments in the US are near their peak and will gradually disappear by 2004.

The increase in payments is directly related to the fall in international prices since farmers in the United States have so far been assured of receiving (subject to various limits) a minimum of US$193 per tonne for their soyabeans through a mix of market prices

and government support (see Box 5). However, the United States is by no means the only exporter distorting market signals by providing "safety net" and "emergency" help to farmers. Although the scale of support in other exporting countries like Argentina and Brazil is much lower, pressure is rising to provide more assistance. So far the focus is on debt relief, tax and cost reduction (*i.e.* cuts in highway tolls and diesel costs) rather than trade measures.

But the demand outlook is very favourable

Prospects for oilseed and by-product consumption are closely tied to growth in incomes, especially in terms of lower income groups' ability to purchase meat and cooking oils. In this respect, economic growth prospects in developing countries, while less optimistic than before the Asian financial crises, are improving. Overall, strengthening demand for livestock products is expected to encourage expanding animal production in non-OECD countries and, with it, a growth in oilmeal consumption. Over the Outlook period, this should amount to an additional 22 million tonnes (including 9 million tonnes in China alone).

The rate of increase in consumption of livestock products in the OECD area is slowing down. Currently meat and dairy product consumption creates an indirect per head demand for about 73 kg of oilmeals. Nonetheless, livestock production continues to expand, partly in response of strong exports to non-OECD countries. This is sustaining growth in OECD oilmeal consumption which should rise by 14 million tonnes over the Outlook period, with half this increase attributable to increased requirements in the United States. Although the pace of growth is now slower than in Non-Member Economies, the total requirement will still account for nearly 60 per cent of world oilmeal consumption as the requirements for oilmeals in these countries are still very low in per head terms – at about 10 kg.

Trade in vegetable oils illustrates the responsiveness of demand in developing countries to income, price and policy factors. In 1992-93, for example, Indian imports were barely 100 000 tonnes. Imports following economic growth and trade policy reforms (removal in 1995 of import restrictions and subsequent tariff reductions to 16.5 per cent, though recently increased to 27.5 per cent) rose to an estimated 4.6 million tonnes in 1999-2000.

Though import trade will be more exposed to unpredictable policy changes

Along with the growth in imports, however, has come an increase in the share of imports at risk to future policy changes in importing countries. In the major import market of the European Union policy reforms under the Berlin Agreement are expected to have only a small impact on trade. However, it is possible that oilseed support in the European Union (the world's second largest assistance programme for oilseed producers at some euro 2.5 billion in 1999) could be reduced by future budget constraints – and that could have more profound effects on trade. Traded tonnages could be even more exposed to trade or

Box 5.   **Do US oilseed policies impact on world prices?**

- US farmers again planted a record area of soyabeans in 1999 despite very low market prices. This raises the question: "what prices are these farmers responding to – those set by markets or by government programmes?" In practice the United States' 355 000 soyabean farmers responded to a mix of relative market prices and policy measures.

- Under the traditional commodity loan programme, farmers receive a loan by pledging their crop as collateral. Farmers then have up to nine months to repay the loan plus accrued interest – or to default and forfeit ownership of the crop to the government. This system was changed to avoid both the costs of stockholding for the government and of lower returns to farmers caused by the price depressing effects of the stocks. From 1991, a marketing loan scheme has provided two other loan based payment options: "marketing loan gains" and "loan deficiency payments". In 1998 the fall in prices triggered both payments which covered 88 per cent of soyabean production. As the United States produces nearly half the world's soyabean crop, the scheme is clearly of enormous relevance to international oilseed markets.

Marketing loan gains and loan deficiency payments

- Under the marketing loan scheme for soyabeans and other oilseeds, producers can receive price support – linked to a loan rate – while retaining ownership of their crop. The "marketing gain" option allows producers to receive a loan – currently US$193 per tonne and to be reduced to US$181 per tonne from 2001-02 – which has to be repaid sometime during the loan period at a rate based on the market price; the maximum repayment is equal to the loan rate plus accrued interest. When the repayment rate is below the loan rate, the farmer can keep the difference. In 1998 this difference or "marketing gain" amounted to US$39 per tonne on 8.1 million tonnes of soyabeans at a total cost for all oilseeds of US$322 million.

- With the "loan deficiency payment" option, producers can receive benefits without having to take out and later repay a commodity loan. After the sale of their crop, farmers receive a payment equal to the difference between the national loan rate and the local county market price (to ease the scheme's administration this local county price is used as a proxy for the actual market price obtained by the producer). In 1998 these payments averaged US$16 per tonne on 58 million tonnes of soyabeans for a total cost of US$904 million. In 1999-2000 the payment is expected to be about US$33 per tonne. The payments are subject to limits of US$75 000 per person per year. For 1999 this limit was increased to $150 000, partially to avoid a build-up of stocks due to the likelihood of farmers using the traditional loan programme (*i.e.* leaving/forfeiting their crops to the government) as the payment limit does not apply to this programme.

Impact greater on smaller farmers

- The impact on farmers' incentives – and the efficiency of the various farm programmes – depends on many factors. These include: programmes for other crops (*i.e.* for maize); the size of the farm; and the variable costs of production. As the loan rates in 1998 for soyabeans covered about 250 per cent of the variable costs of production compared with 150 per cent for maize the programme incentives favoured soyabeans. The average area on a farm sown to soyabeans was 74 hectares in 1998. However, most production comes from larger farms with output above the payment ceilings. The larger the farm, the smaller the payment limit as a share of total returns and so the less important the incentive to base cropping decisions on farm support programmes instead of market prices. The actual share of production affected by the limits on payments is not known. Another issue when evaluating the impact of the loan programmes is that a lot of support is given in other ways too. For example, with an average area sown to soyabeans of 74 hectares and an average yield of 2.2 tonnes per hectare, the "average" loan deficiency payment (assuming US$33 per tonne) would have been about US$5 370 per farmer in 1999. However, total assistance to oilseed producers in the United States in that year was about US$4.2 billion, or roughly US$11 950 per farmer. So about US$6 580 in support per farmer accrued through other programmes than the marketing loan scheme.

Impact on world prices

• A comparison was made of projected market outcomes with those which would have prevailed had US soyabean producers not received additional support under the loan programmes but only from market returns. The results (which assume that there were no loan programme payments for other crops and that other countries' policies remain unchanged) show that marketing loans for soyabeans have a price depressing impact on world prices of soyabeans but this dissipates over time. We estimated the marketing loans to be US$49 per tonne in 2000, US$43 per tonne in 2001, US$31 per tonne in 2002, US21 per tonne in 2003, US$2/t in 2004 and nothing in 2005. The withdrawal of such payments leads to lower soyabean output (initially –5 per cent) and increased output of maize (initially +2 per cent) and wheat (initially +1 per cent). These production changes have temporary impacts on export levels and world prices. Initially world prices of soyabeans are 6 to 7 per cent higher while world maize prices are 3 per cent lower. However, these effects are eroded by 2004 as markets adjust.

domestic policy changes in China and India. China is already the world's largest meat producer, the third largest soyameal user and, as the projections show, will soon overtake Japan as the second largest importer of oilseeds. A change in the domestic policy bias, away say from cereal production, could impact considerably on future oilseed production and imports. Also, while China has emerged as a major net importer of oilseeds, recent changes in its trade policy regime underline the unpredictability of this trade. Oilseed, oilmeal and vegetable oil imports have all fluctuated enough to jolt world prices in recent years. A cut in the import quota for vegetable oil, for example, contributed to an increase in rapeseed imports from only 0.1 million tonnes in 1996-97 to about 2.7 million in 1998-99 – the largest single trade factor in a world import market of only about 6.7 million tonnes. Similarly, India's share of world vegetable oil imports has risen from virtually zero in 1995 to over 10 per cent, now supplying over 40 per cent of its domestic needs. Here too, future policies, including import tariffs and domestic support prices may have far reaching consequences for world trade and prices of both oilseeds and products.

Changes in human health concerns and animal welfare policies could boost oilseed demand

Although OECD markets are considered mature in terms of growth in total demand for oilseed products, growing health and food quality consciousness is influencing dietary choices based at least partly on the ways food is grown and processed, and sometimes reinforced by policies. In general such developments have positive implications for the oilseed sector, either by encouraging consumption or by creating value-added opportunities for oilseed product suppliers. Most of these developments tend to be gradual and based on consumer decisions like the shift away from animal fat consumption to vegetable-oil based margarines and spreads and the willingness to

pay more for organic products (proved by rising demand). Trade has, for example, emerged in organic soyabeans for human consumption, with exports from Canada, China and the United States to Japan and Europe. Sometimes governments – on nutritional and medical advice, or driven by perceived medical cost imperatives – attempt to influence consumption patterns. Government action rather than market forces can also impact oilseed demand in areas like animal welfare. Regulations, for example, that animals have more space or other changes in living conditions can lead to increased feed requirements and costs. Restrictions on the use of protein meal from animal sources are another example of measures that can affect – in this case boost – demand for oilseed proteins. Such restrictions have already been adopted in Portugal and the United Kingdom for all animal feeds and, if extended throughout Europe, would create an important volume of consumption in world trade terms (about 2 million tonnes).

Markets increasingly exposed to policy events linked to international prices

As well as the usual market risks like the effect of weather on production, there is now a growing number of risks from policy events. The next trade round of course, may well be a source of significant policy changes but these are likely to be well signalled to the market – in time for participants to start making adjustments. This is not the case with many of the recent market-related policy changes. When, for example, vegetable oil prices rose in 1998, "temporary" export taxes appeared in Indonesia, in Russia and the Ukraine. In the two latter cases they remain in force. The fall in oilseed prices since 1998-99 also led to the increase in support payments in the United States. The US measures may be temporary and avoid direct trade intervention, but some of them (*i.e.* marketing loan payments) are linked to market prices so they can have had a sizeable impact on production and export supplies. They may also have fostered expectations among producers that such aid will become normal in times of low prices (an issue examined in Box 1), as well as concerns that markets will continue to experience distortion from government intervention.

SUGAR

Key commodity assumptions

- No changes to US or the EU policy settings, including US tariffs and mechanisms governing preferential import quotas. No significant change to EU basic prices for beet, intervention price for white sugar, or A and B production quotas.

- Japanese duty and surcharges and South Korean import tariffs to remain unchanged.

- Brazil's policy of cane use for ethanol production assumes rising world crude oil prices over the medium term.

- Outlook takes no account of changes that might occur to China's trade or domestic regime policy settings as a result of prospective WTO membership.

Main projections

- Fundamental shifts in the world sugar market's structure in the past year suggest low prices will continue in the medium term. Brazil's sugar policy reforms and its 1999 devaluation have been key factors, unleashing a competitive sugar industry roughly the size of the tonnage traded on world markets. The rising wave of low-cost export supplies from Brazil has become the main factor determining sugar's international value – for the medium, and possibly the longer, term too.

- Despite the interim prospects of continuing depressed prices, the Outlook suggests a gradual recovery by 2005 to US$230 per tonne or over 10 cents per pound for raw sugar – just below the level prevailing during 1988-98, before the current downturn. The delay in this recovery reflects not only the existing surplus, but the likely slow pace at which producers will – or indeed can – bring supply back into balance with demand in view of existing support policies.

- For that part of production which is responsive to world prices, the market outlook for the next two years or so will depend heavily on how fast excess stocks can be run down. Price responsiveness to surplus in the sugar industry tends to be low – for structural and policy reasons – although some impact from two seasons of poor producer returns should begin to emerge by 2001-02. Even then, world production is still expected to rise by an average of some 2 million tonnes or 3 per cent a year over the Outlook period.

- World sugar consumption is still recovering from the effects of the Asian financial crises but should resume its historical expansion as economic growth in these and other developing countries improves. However, an increasing share of sweetener consumption may be captured by non-nutritive sweeteners which are inexpensive relative to sugar and less dependent on natural resources, especially water, for their production.

- While there is potential for expanding import requirements in some non-producing countries, the general outlook is for exports to stabilise. However, there is much uncertainty in view of the highly variable import needs of some major players. More than half world imports (which were about 32 million tonnes on average in 1994-98) are fairly predictable – that is, shipped to countries which either lack resources to expand their domestic output or, like the United States and the European Union, have specific import quotas to defend their own producers. However, four major producers (China, India, Indonesia and Russia) are highly unpredictable. Since 1993, for example, each of these countries has varied its imports by more than 2 million tonnes, equivalent to 6 per cent of total world imports.

Outlook in brief

Grim prospects for producers selling at world prices

The sugar price outlook (see Figure 17) will be depressing reading for cane producers and processors in the few countries with either no tariffs or low tariffs. In annual terms, raw sugar prices are currently around US$140 per tonne and futures prices for 2001 are little better. However, we expect a gradual recovery to about US$230 per tonne by 2005. This price outlook reflects current excessive stocks as well as the new shape of the international market with Brazil now in the driving seat. World sugar stocks are equivalent now to over 40 per cent of consumption and have been accumulating as output overtook demand for the past six successive seasons. How grim the price outlook is for exporters, however, will depend on their costs of production.

Over-supply from high cost producers will continue

Structural and policy changes as well as market developments will determine future producer shares of the world sugar market. While sugar beet is an annual crop and production can be cut back or expanded like cereals or oilseeds, it only accounts for 29 per cent of world output. And, in any event, very little of this production is responsive to world prices, protected as it is by high tariffs, often produced at high cost and within boundaries determined by quotas, limited import access commitments, etc. Cane sugar, in contrast, is derived from a crop that may be cut annually (or even more frequently) but which is only replanted every 4-5 years. There is thus a very long time lag between market signals, policy adjustments and the actual effects in terms of sugar production. Most of the future annual growth in world production – around 2 million tonnes a year – will be from cane sugar. However, only about a quarter of world output and less than half world exports come from cane exporters with low costs and low or no tariffs.

Figure 17. **World sugar prices to recover slowly**

US$/tonne

White sugar[b]
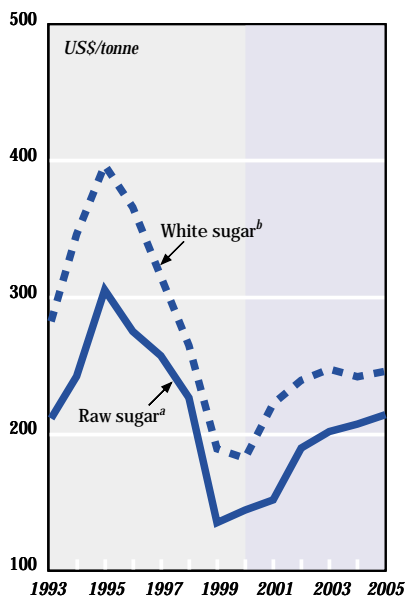
Raw sugar[a]

Notes:
a) New York No. 11 spot price in US$ per tonne, raw.
b) London No. 5, US$ per tonne, white, f.o.b. Europe.
Sources: FO Licht, OECD Secretariat.

Figure 18. Rising imports of raw sugar by three major importers

Million tonnes

Legend: China, India, Russia

(X-axis years: 1993, 1995, 1997, 1999, 2001, 2003, 2005; Y-axis: 0 to 12)
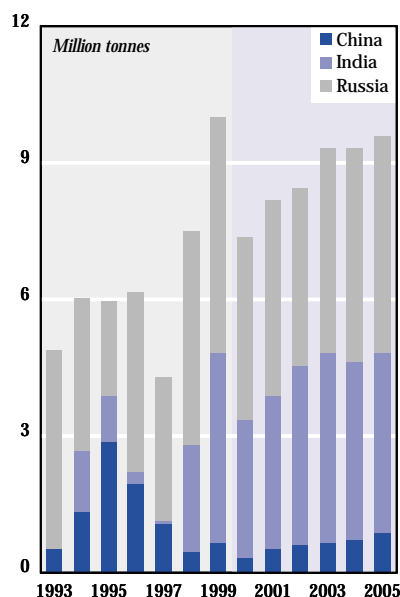
Sources: FO Licht, OECD Secretariat.

Figure 19. Exports of raw sugar to stabilize

Million tonnes

Legend: Brazil, World

(X-axis years: 1993, 1995, 1997, 1999, 2001, 2003, 2005; Y-axis: 0 to 45)
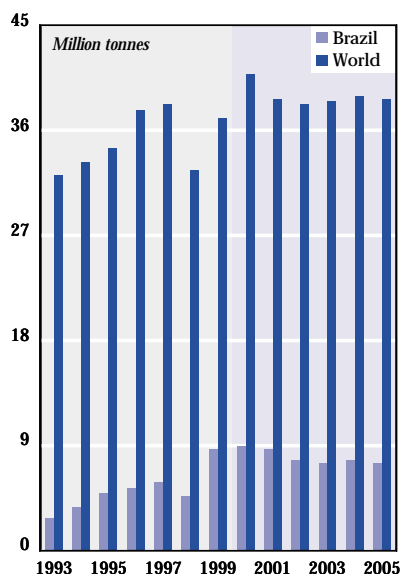
Sources: FO Licht, OECD Secretariat.

Because of current support policies that retain excess production capacity in other "higher cost" cane and beet exporting countries, the export market share held by this group is unlikely to change very much during the forecast horizon.

While demand growth can only soak up some of the surplus

Nearly 90 per cent of the expected growth in consumption – about 14 million tonnes during the Outlook period – will be in developing countries. Asian countries should resume their historical leading role in this respect. Between 1990-97 this region raised off-take by 3.7 per cent and imports by over 6 per cent per annum, underpinning world prices in the US$240 per tonne mark during a period of global over-capacity. However the extent to which future Asian consumption growth will be reflected in higher imports is uncertain. It therefore seems unwise to bank on Asia alone removing enough of the world surplus to rescue sugar prices in the medium term from current depressed levels. As a result, much of the world's production capacity will remain uneconomic for the time being.

Trade increasingly dominated by policy uncertainties

Weak sugar prices are making future imports a hostage to political fortune. Many countries have recently increased tariff barriers and when or to what extent these may be lowered again is unknown. There are no signs that the recent instability in import levels by some major importers such as China, India and Russia – due partly to instability of domestic policies – will decrease. Future sugar export policy is also uncertain – for the two leading world suppliers, Brazil and the European Union, as well as other influential exporters like Cuba, Mexico and Pakistan. Brazilian exports are also at risk from potential changes to the country's domestic alcohol programme (which can account for half the country's cane output) and, in turn from shocks from the international petroleum market. Only about half of EU exports are subject to limits set by the URAA, while some of the remainder reflect the practise of re-exporting the equivalent of commitments to import cane sugar, the rest reflects other regulatory features including stock management decisions. Figures 18 and 19 provide information on historic trends and expected development for major sugar importing and exporting countries.

Key issues and uncertainties

Major changes in the structure of the international sugar market

Has Brazil ushered in a new era of low prices?

Adoption of market-driven exchange rates by Brazil in January 1999 has had profound consequences for the world sugar market, effectively re-structuring the basis for international price setting. Brazil's low cost producers (who have been effectively shielded from low world prices by devaluation) have increased their share of world

sugar exports from just 6 per cent in 1990 to a forecast 27 per cent in the year 2000. In effect the combination of Brazil's sugar and alcohol reforms and devaluation has begun a new era of lower – and probably slightly more responsive – world sugar prices.

Underlining the new competitive pressures this puts on other exporters are recent estimates of Brazilian costs of production, much of which is now from large-scale, integrated growing and processing operations. In October 1999, for example, reports suggested costs in the Centre and South of the country (generating 85 per cent of total output) were as low as US$110 per tonne or US$5 cents per pound (ignoring finance and land costs). Like the sheer speed of Brazil's production and export growth, this reveals that big advances in productivity have sprung from earlier increases in investment.

One implication of these developments – and their impact on price prospects – is that the higher-cost exporters (*i.e.* the European Union, Turkey and other countries which supply about half the world's sugar trade) will have to spend more to compete. However, as their export costs balloon, pressures will build to reduce output, improve their underlying competitiveness and rely less on subsidised exports. In this sense, the recent changes in market structure could become self-sustaining and perhaps of longer term benefit to the market's economic health.

The production "super-tanker" will be slow to respond to price signals

The reputation of the international sugar market as a "super-tanker", slow to change direction, reflects both policy and structural factors. Even under the imperative of Brazil's fierce, new competition, such factors will continue to restrain responsiveness to price – thus sustaining price instability. Over 70 per cent of world sugar production is derived from sugar cane which is typically harvested over 4-5 seasons before being replanted. Processing factories also have no alternative uses. So, each year it is only that part of production due for re-planting (about 20 per cent) which can be removed at relatively low cost. (A typical option for producers is to reduce their use of agro-chemicals, notably fertilisers). Thus, if prices fall, the leeway for rapid attempts by growers and processors to reduce supply is small – indeed probably even less than fluctuations sometimes seen in cane yields caused by variations in rainfall.

So far, then, despite nearly two seasons of low world prices, no major exporter has substantially cut back production. There are now signs this may yet happen early in the Outlook in the European Union and Brazil. A minor exporter Turkey – has already reduced production quotas. Historically, among major exporters, only Australian, the European Union and Thai planted areas show some direct link with world prices and in two of these cases the link is only partial. In the European Union, a higher-cost exporter, only about 35 per cent of beet output is either fully (20 per cent as "C" sugar) or partly (15 per cent as

"B" quota sugar) exposed to world prices. It is thus not surprising that studies suggest changes in EU planted area in response to world price changes are rarely more than 100 000 hectares or 5 per cent of the total area. In Thailand, meanwhile, only the 65 per cent of production exported is directly linked to world prices. The European Union and Thailand also face low prices for alternative crops while Australia has few other cropping options in "cane country". The costs (and time lag involved) of changing cane plantations into, for example, orange groves similarly offer little incentive for Brazil to drop sugar output. So, while the Brazilian competition has encouraged some moderation of the policies that insulate producers from world prices (and so delay the necessary production response) over three-quarters of world sugar output is still not yet market-orientated.

Producers shielded from harsh market realities by stop-gap assistance

The decline in world prices has led a number of countries that both produce and import sugar to further restrict access to their markets. This reaction fits poorly with the reform process now underway, because any increase in tariffs and related reference prices simply raises protection and masks market signals. In some cases – like the recent increases in border protection by the Czech Republic, Hungary and Poland there is little impact on the world market as their imports are already limited by tariffs. However, increasing protection – depending on its duration – can have important long-term implications for the efficiency of these countries' industries. Increases in tariffs and imposition of tariff quotas by potential large importers like Egypt, India, Indonesia and Russia can also disturb the international sugar market and the pace of reform – when their imports decline world sugar trade and prices come under more pressure.

Future prospects for the international sugar market to spread adjustment risk and generate price stability depend heavily on major players adopting more market-orientated policies. In this respect, it is encouraging that some countries now seem to be adopting measures that recognise the importance of efficiency and better targeting of policies. For example, Egypt which has a consumer subsidy scheme, chose not to raise import duties – but to introduce a support-buying scheme to temporarily help its domestic industry. The Philippines has also used support buying and auctions for the right to import while Indonesia, which has no import duties, has introduced a combination of support buying and import licensing of raw sugar to shield producers in the short term from falling domestic prices. In all of these countries, the extent of genuine market orientation by producers has yet to be calculated. However, consumers have clearly benefited by retaining access to cheaper sugar imports.

Environment and sustainability are coming to the fore in shaping industry policy

Compliance with laws to safeguard the environment has long been a fact of life for the sugar industry. Now a broader and much

longer-term view of environmental factors is emerging. Sustainability of resources will be of vital importance to future development of both sugar and non-calorific sweetener industries. Since different sectors of the sweetener industry use very different amounts of natural resources, changes in the value of these will clearly affect their future competitive positions.

Examples of this have already emerged with concern for bio-diversity and preservation of unique eco-systems in Australia and the United States where cane production is either in, or close to zones classified by UNESCO as World Heritage Sites. In Queensland (where most Australian sugar is grown) the clearing of remnant lowland rain forest and destruction of wetlands for cane production led the Federal Government to launch a Sugar Coast Environmental Rescue Package at a cost of A$16 million equivalent to A$2 500 per grower. In Florida, phosphorus contained in the runoff from sugar plantations has entered the Everglades National Park. New regulations tied to legislation have been added to existing management practices like filter strips, artificial wetland lagoons etc. that have led to changes in production systems and affect long term supply prospects. For example, the largest grower/processor in the region has made a commitment to reduce phosphorus runoff by 20 per cent in return for an operating license that will run until at least 2010.

Producing a kilo of sugar can put strain on finite water resources

Other notable global sustainability issues include global warming, land use and water management. Emissions, land and water use in both consumption and production vary considerably between the different sweeteners with those having limited bulk, for example, tending to use considerably less resources. China provides an example of a resource-sensitive option, which other countries may well follow. Half of its sweetener needs in 1998 were obtained from 14 factories with "closed-loop" production systems making the non-nutritive sweetener, saccharin (at a cost of about US$12 per tonne in sugar equivalent terms). This policy may generate much less employment but it also requires far less resources -practically no land or water. By comparison, US data suggests that, at the agricultural stage alone, producing a kilo of sugar from cane, beet and maize consumes 400, 100 and 30 litres of water, respectively. Water pricing could therefore cause changes in comparative production cost advantages of the different bulk sweeteners at some later stage.

WTO implications for sugar and sweetener industries

So far the URAA has had more influence on the politics than the economics of sugar production and no more than a marginal impact on the international sugar market. In the European Union and the United States, the provisions of the URAA are now emerging as factors determining production and shaping sugar policy reform. In the case of the European Union they will restrain export subsidies and require policy responses and in the case of the United States they will restrain further restrictions

on import access. Largely to meet WTO commitments in a context of low world prices, the Commission for the European Union is reported as planning to cut production quotas by half a million tonnes (or 3.4 per cent) in 2000-01. As sugar finally starts to attract more scrutiny from the WTO's international trade disciplines, economic factors could at last begin to start shaping resource use and investment. The WTO process should exercise restraint on trade distortions in two ways. One is the on-going development of "case law" – as trade disputes are resolved in other commodity sectors, so legal precedents are established, with implications that may shape future sugar and sweetener trade policies too. Secondly, there are the broader liberalisation pressures to be acted upon in the next round of trade negotiations.

Sugar is more exposed to demands for reform in the next WTO Round

While the likely outcome of a new round of negotiations is clearly uncertain at this stage, the broad outlines are well known. Core concerns – market access, export measures and domestic support – all tackled in the URAA – will be re-examined. New "issues" are also attracting attention, like environment and labour standards. A repeat of the "across the board" approach, covering all agricultural sectors, is likely to be demanded, since this offers the best opportunity for fair sharing of benefits and burdens. In this respect, the sugar industry is more vulnerable to some reform priorities than others, notably from pressure to accelerate cuts in export subsidies or exceptionally high import tariffs – or, indeed, the special import quotas that favour poorer developing countries. These priorities imply that sugar industries heavily dependent on export subsidies – or on "mega" tariffs – will be more exposed to demands for reforms. Conversely, those industries more dependent on world prices for their returns would benefit from any WTO-engineered improvement in access to import markets and lowering of protection. The low prices being projected over the Outlook, after all, are partly policy-induced, underlining not only how much efficiency has been impaired, but also the gains in terms of trade and market functioning that could accrue from policy reforms.

While supply risks are more concentrated on the fortunes of fewer producers

This year has demonstrated how swiftly market structure can change due to unforeseen events – like the new role of Brazil in setting world prices. In this instance, the unprecedented impact of Brazilian supplies leaves the market more open to price risk from weather factors in that country (production was hit by frost in 1975), as well as events in the international alcohol and petroleum markets. Demand-side risks have also increased as major import markets have emerged that protect domestic industries, for example in China, India and Russia. This recent increase in "political" risk to imports is one reason why the low price outlook is expected to persist for some time yet.

Fact File: World sugar and sweetener market

Economic factors

- Demand for sweeteners is influenced by numerous factors other than sweetness and price. These include taste, nutrition, bulkiness, preservative qualities, heat resistance, mixing abilities etc. World consumption per head of sugar is about 20 kg, meeting about 85 per cent of total sweetener needs. Other nutritive sweeteners include glucose, dextrose and fructose, among which high fructose syrup (HFS) accounts for about 7 per cent of the global sweetener market. Among the many, mostly synthetic, high-intensity sweeteners (HIS), the most important are saccharin (300 times as sweet as sugar and with about 5 per cent of global sweetener market) and aspartame (200 time sugar's sweetness).

- Sugar production is widely spread throughout the world, characterised by modest land requirements (less than 2 per cent of the world's arable land), but often-substantial water needs. It is also relatively labour intensive. Costs of production and consumer prices vary enormously. In general, prices of HIS products in sugar equivalent terms are dramatically lower (about US$0.2 cts/lb in the United States in 1997) while the cost of producing HFS is about that of the low cost cane producers (though prices and market shares between sweeteners are usually fixed by the extent of local industry protection). In the first half of the 1990s, prior to recent cost reductions and currency changes, the low-cost cane producers (Brazil, Guatemala and Malawi) had average production costs of about US$275 per tonne or 12.5 cts/lb – about a third less than those of the low-cost beet producers (Belgium, the United Kingdom and the United States).

The pressure groups

- Sugar policies can bring both economic advantages and handicaps to a wide range of interest groups. Producer returns can be enhanced, for example, by federal or country trade pacts that favour local suppliers, industries and services – whether providing ships or sugar. But while a number of groups can share the benefits from such policy measures (*i.e.* tariff protection with import quotas) they must also share responsibility for the inefficiencies such measures encourage. These groups include not only the beet and cane producers and the sugar processors (some of which are vertically integrated with producers) but port-based refiners of imported raw sugar and high fructose syrup producers. The European Union and the United States also aim to foster some foreign producers' economic development within special market access measures – effective export subsidy arrangements that cover over 40 developing countries. Overall, the cost of support to sugar consumers in OECD countries is enormous, estimated at some US$7.3 billion during 1996-98, equivalent to US$6.7 on a per head basis.

The role of policies

- Minimum government support policies for sugar typically consist of tariffs and price regulations. The tariffs usually provide some domestic price stability and assistance to domestic producers and processors as a result of increased output at higher prices. Price regulations are used to manage the sharing of this assistance. Only about 10 per cent of world sugar consumption takes place at world prices. Despite reforms, many major players in world sugar trade face policies that can affect trade flows. These include government ownership of sugar factories (China, Egypt and Indonesia), production controls (the European Union), export controls or export monopoly (Australia, Pakistan, India and Thailand), export subsidies (the European Union, Poland and South Africa), and restrictions or indirect subsidies on substitutes (fructose syrup in the EU, Japan and the United States). There have been some notable cases of tariffs being abandoned (Australia and Brazil) or of low tariffs being re-introduced after their elimination (Indonesia and Russia). There are also at least two cases of governments sponsoring a progressive run-down of high-cost local industries (Chinese Taipei and Uruguay). Tackling tariffs is a key issue because they have played a large part in lowering and destabilising the world price of sugar, reducing and re-distributing export earnings, and maintaining less economic sugar production in higher-cost regions and countries.

Box 7. **Reform of sugar policies: Domestic price regulation options**

Background

- Institutionalised pricing regulations are arguably the main obstacle to sugar policy reform. The high official prices to which growers and processors become accustomed tend to foster an automatic resistance to calls for change – whether from internal interests or external factors like the WTO trade liberalisation process. This widespread reliance on price regulation reflects the way the sugar industry is shaped. On the one hand, there is a close inter-dependence of many growers and few processors. Typically the grower only has the option of delivering his perishable products (cane or beet) to one factory. The factory, on the other hand, is unable to perform any other function than processing cane or beet. Evidence shows this equation of mutual dependency and inherent conflict tends to result in growers sharing revenue with processors on a very rough 70:30 or 60:40 basis – unless vertical integration allows co-operatives or private ownership to cover both production and processing stages. Price determination becomes distorted when derived from government regulations, especially when these remain on the statute books long after technical/productivity advances render them inefficient or unfair.

Competition-based reforms could bring real benefits…

- The competitiveness of the Australian sugar industry has been enhanced by government and industry reviews of sugar market regulation – more recently using competition policy principles. Since 1977 there have been 11 major reviews. Extensive consultation is carried out and the results published regularly to foster constructive public debate. The sugar industry's manifold regulations are examined from the perspective of competition principles and the approach emphasises the role of efficiency in policy reform. Although the state of Queensland maintains its unique solution to the grower/processor interdependency problem (compulsory purchase of the crop at the factory gate), many of the previous regulations on price pooling and supply controls have been reformed or withdrawn, along with removal of the external tariff.

- A more permanent review and reform process, also based on competition policy principles has emerged in the United Kingdom, in the context of utility regulation. For these industries, often with inherent oligopoly/monopoly problems as well as large capital and re-structuring needs, a system of "conduct regulation" has evolved. Under this approach, the conduct of all parties in the industry is subject to regular economic analysis within a contractual/legal framework.

… and could encourage more trade liberalisation

- Lessons learned from the Australian and UK models could make a useful contribution to the debate over how to approach adjustment and trade liberalisation in the global sugar industry. Tariff reductions and more open market access will inevitably reduce a domestic industry's revenues as "the cake" shrinks. It must also be remembered that cost structures of growers and processors (for example shares of fixed and variable costs) are different and so likely to vary during a gradual tariff-reduction process. Since industry's attitude to trade liberalisation is formed by revenue expectations from price-regulation regimes (and since most price regulations have no economic-based "flexibility" mechanisms) there is an understandable reluctance to embrace trade liberalisation. Yet there may be ways to cushion the industry during the adjustment process. If, for example, a more flexible formula than the traditional fixed 60:40 revenue sharing equation could be devised during transition from a price-regulated system, one of the key industry arguments against trade liberalisation might be weakened.

MEAT

Key commodity assumptions

- The Berlin Agreement on the reform of the EU meat sector to be implemented (decrease by 20 per cent in support prices for beef from 2000 and parallel increase in beef premiums).

- Proposals made by the Dutch Ministry of Agriculture to reduce manure from intensive livestock production and impacts of these measures on pig meat production have not been taken into account.

- Due to the foot and mouth disease (FMD) recent epidemic, pig meat exports from Chinese Taipei to Japan will not be possible until 2002.

- Access by Argentina and Uruguay to FMD-free beef markets of the Pacific area will remain limited to the United States and Canada.

Main projections

- Gains in beef prices on the Pacific market will be limited by more US exports, a jump in Canadian shipments and rising competition from other meats.

- The Berlin Agreement reforms should reduce EU surplus beef supply, pruning stocks and stabilising exports. However, price levels are unlikely to enable the EU to export unsubsidised beef, except on a sporadic basis.

- World pig meat prices should remain below the 1994-98 average. A cyclical rise in US output and an increase in exports will prevent producer returns recovering to normal levels. A slight upturn is expected in pig meat exports from Chinese Taipei but the bulk of the Japanese demand should be met by OECD exports.

- Stagnating world poultry meat trade, due mainly to a drop in Russian imports, should continue until 2000. A gradual upturn is then expected as Chinese imports grow and prospects improve for Russian demand recovery.

- With sheep meat consumption flat or declining in many OECD countries – and access to the US market now restricted by tariff quotas – demand from non-OECD countries has become even more vital to the OECD's two major sheep meat exporters, Australia and New Zealand. However, with intense competition from other meats, opportunities to expand sales look bleak so that net exports of sheep meat from the OECD area are likely to stagnate.

Key issues

- Any faltering in non-OECD economic recovery would have a significant impact on meat prices as meat is one of the more income elastic agricultural products.

- Environmental factors are clamping down on EU pig expansion.

- Unilateral action to protect domestic prices in producer countries – like import tariff quotas – could sharpen exporter competition and delay the recovery in world meat markets.

- Evolution of the Chinese meat market has the potential to jolt world markets.

Figure 20. **Most meat prices to rise**
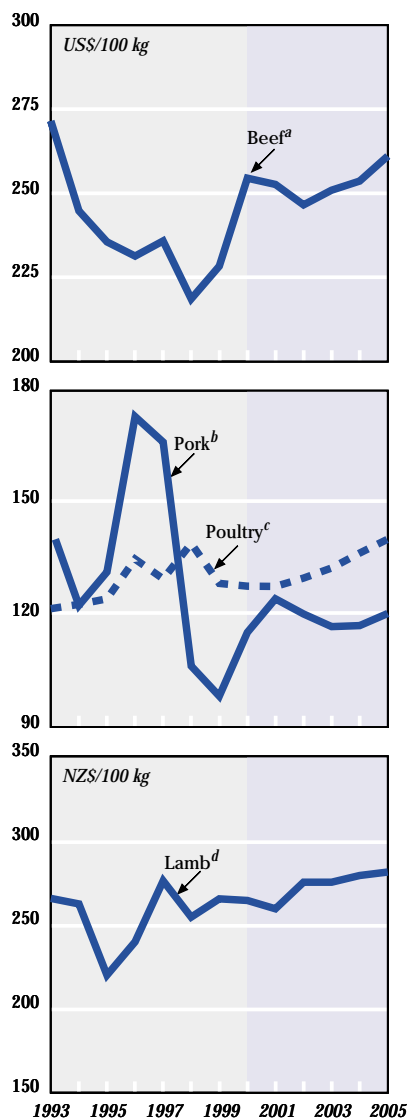
Outlook in brief

Pacific beef market reviving – but competition will restrain prices

With the upturn in demand in Asia, especially in Korea, beef trade should increase in the Pacific area. The structure of this market is clearly changing as major markets like Japan and Korea open up and prices are determined less by US demand and more by other major importers. However, on the supply side, a sharp rise in United States' and Canadian exports will re-ignite intense competition, restraining upward price tendencies (see Figure 20).

Berlin Agreement reforms unlikely to allow large scale unsubsidised beef exports by the EU

The main influence on Atlantic beef markets will be the effect of the EU Berlin Agreement reforms in reducing EU beef surpluses by boosting consumption between 2000 and 2003 (to the degree that the 20 per cent cut in support prices for beef will be reflected in lower consumer prices) and discouraging output (the price cuts are not fully matched by higher direct payments to producers). The growing market preference for younger, and hence lighter animals, should also work towards lower production. This should bring about a drop in stocks and a stabilisation of exports (see Figure 21). Although EU prices should drop from 2001 onward, the decline will probably be insufficient to offset freight costs and quality differences (even at the end of the Outlook period), preventing more than occasional exports of unsubsidised EU beef to Pacific markets (see Figure 22).

Although Argentine beef production should remain flat, more export supply may be freed by declining domestic consumption. The potential benefits to Argentinean and Uruguayan producers of easier access to Pacific beef markets (deriving from their FMD free status) are not clear-cut over the projection period. Grass-fed beef from South America will take time to gain a foothold in the Pacific countries. Until then, Argentinean and Uruguayan prices will probably be set largely by market conditions in Brazil and other main players on the Atlantic market.

Rising North American pig meat supply is a key factor on the world market

Pig meat production should rise sharply in the United States, after a cyclical fall in 2000 and 2001. The historically low prices of recent years hit "hog/corn" margins and caused a steep fall in traditional pig/maize production. Yet restructuring has cut costs of production, slaughter and processing (through concentration) and secured more regular supply from modern large-scale producers (through vertical integration and co-ordination). The upturn in production from 2002 should help meet an expected rise in US consumption and boost exports. With similar structural changes taking place in Canada,

Figure 21. **EU beef stocks to fall and exports to stabilize**

thousand tonnes

Exports

Stocks
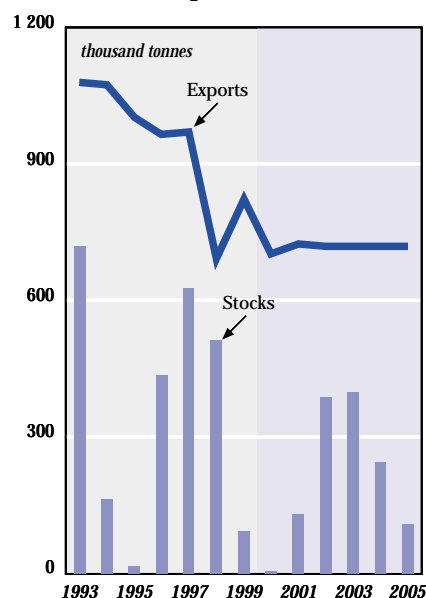
Figure 22. **EU beef price remains the highest of the major exporting countries**

US$/100 kg dw

European Union

United States

Argentina

Australia
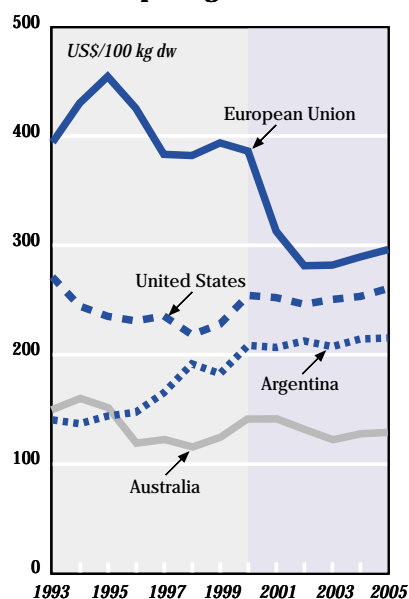
the North American pig meat sector's export potential has improved and the region can now supply consistent quality products at very competitive prices. This is a key factor keeping world pig meat prices below historic levels of return.

It will take many years for Chinese Taipei to recoup its lost Japanese custom

Exports of pig meat from Chinese Taipei have been embargoed since foot-and-mouth disease was declared in March 1997, prompting its main outlet, Japan, to turn to western countries for supplies, especially the United States. It will take Chinese Taipei many years to recoup lost Japanese business and even by 2005 its exports are expected to be only a third of the average shipped during 1994-98. Another important factor in the Asian market is an expected sharp increase in Korea's pig meat imports.

OECD consumers' taste for poultry meat strengthens

World demand for poultry meat is still rising strongly. In fact it is the only meat whose per capita consumption is increasing in all OECD countries (and many others too). A dramatic rise is expected in the United States especially, where annual per capita consumption is forecast to climb by 8 kg from 1994-98 (averaged) to 2005. United States' output should also rise sharply, fuelled by restrained feed costs and widespread vertical integration. This should generate export surpluses of around 3 million tonnes in 2005, despite the slight decline in 1998-2000, reflecting the fall in Russian demand (Russian imports during first half 1999 dropped 70 per cent in volume terms against first half 1998). However, US exports are heavily dependent on two Non-Member Economies, China and Russia, whose demand is not sheltered from turn arounds of their economic or political situation.

The outlook for EU poultry meat remains uncertain. Although domestic demand should rise, growing competition on world markets pushes prices below 1994-98 average levels and reduced profitability. To offset the threat to traditional export markets, European poultry processors are focusing on higher value-added products and branding on the internal EU market. Outside the European Union they are seeking joint ventures with, or acquisitions of, producers in promising markets.

Brazil is certainly one important competitor of the Non-Member Economies with production being boosted by foreign investment in its processing sector and improved breeding and processing technology. Brazilian exporters are active on traditional EU markets like the Middle East and Russia and are also offering robust competition for US, Thai and Chinese exporters to Japan. Brazil has also received SPS clearance for poultry exports to Canada and can now compete for Canada's poultry TRQ. Thailand is another country to watch. Having already used its currency advantage during the Asian financial crisis to improve short-term export competitiveness, it is now working to improve its meat quality and industry standards. Use of antibiotic

growth promoters in feeds has been banned, animal welfare standards raised and quality assurance schemes implemented. Finally, China is also emerging as a major player in the poultry meat market (see special focus on China later in this section).

But OECD sheep meat production on a downward path

With little change expected in the European Union, sheep meat market prospects in the OECD will depend mainly on trends in Oceania and, to a lesser extent, in the United States. New Zealand's sheep numbers have fallen sharply as land has been switched to other uses and no early recovery is expected from the low point expected in 2000. Australian output is likely to decrease slightly as beef is more profitable and uncertainties overhang returns from wool production. United States output is expected to fall reflecting the difficulties of this sector which lost a third of its flock between 1990 and 1998. Long term restructuring is needed in this area where a large part of production comes from flocks smaller than 100 head.

US imposes temporary TRQ for sheepmeat

US lamb stakeholders reacted to the steep rise in imports in recent years by filing a petition against shipments from Australia and New Zealand, claiming these had depressed US lamb meat prices and severely undermined the financial performance of the US lamb industry. The US government agreed and introduced tariff quotas in July 1999, to run for three years. It also decided to introduce a three year assistance package of about US$100 million to raise productivity and quality and encourage consumption. The Australian government, in turn, set up a two-year assistance package to specialist lamb producers, including direct financial aid to farmers and a development programme for the industry as a whole.

The US protectionist measure will hit export volumes from Oceania, by far the largest US supplier. Using the OECD *Aglink* model, the Australian Bureau of Agricultural and Resource Economics calculated Australian lamb exports to the United States will be about 5 per cent lower (in terms of carcass weight) in 2000 and 2001 (when tariff quotas apply all year round) than they would have been without these limits. Even though this is only a relatively moderate loss of trade, the US action is clearly against the spirit of trade liberalisation under the URAA and of market oriented policy reform as agreed by OECD Ministers for Agriculture when they last met in Paris in March 1998. It will also sharpen competition between Australia and New Zealand for non-OECD custom, especially in the Middle and Far East. The tariff quotas could also raise prices for domestic lamb in the US domestic market, encouraging consumers to switch to other meats.

Will MERCOSUR producers become big players in the Pacific beef market?

Whether or not MERCOSUR countries emerge as big players on the Pacific beef market depends on three principal factors – their Foot and Mouth Disease (FMD) status, their ability to raise supply and their pricing.

URAA change to regional "FMD-free" status may help

Latin American suppliers launched eradication programmes at the end of the 1980s to win access to profitable FMD-free markets. That ambition received a boost when the URAA allowed parts of a country to be declared FMD-free status (with or without vaccination) replacing the previous "whole-country" clearance requirement. This has already allowed Argentina and Uruguay to export to the United States and to Canada, under quotas reserved for these Latin American countries. In 1998, Uruguay was recognised internationally as an FMD-free area without vaccination, and Argentina hopes to obtain the same status in 2000 (having halted vaccinations in April 1999). In theory this should allow both countries to ship to Asian markets. Brazil, the world's fifth largest exporter (mainly supplying the Atlantic market), has also obtained FMD-free status (with vaccination) for two of its southern states from the International Office of Epizooties. It too hopes to win access to the US quota in 2000. A key issue is also if, and when, other importing countries in the Pacific region will recognise the FMD-free status of Latin American countries and change veterinary import regulations accordingly.

Nevertheless, will supply in the MERCOSUR countries be sufficient to meet the export potential? On the one hand, the low productivity of South American herds is a significant limiting factor (mean carcass weight is only 207 kg in Argentina, for example, against 246 kg in Australia). Cattle numbers too have been either flat or dropping in recent years. Argentine herds especially have been hit by adverse weather (*El-Niño*-linked drought and floods) and by lower profits from beef than from dairy and arable crops. The government's concern over this decline was illustrated when a National Livestock and Meat Programme which was launched in early 1999, under which Argentina aims, as regards beef, to raise production, lift standards and modernise the industry. It also hopes to breathe fresh life into exports with concessionary loans, more technical assistance to breeders and a beef promotion agency. As far as Brazil is concerned, the two regions now boasting FMD-free status are not big beef producers.

The 40 per cent devaluation of the Brazilian real against the US dollar, in early 1999, has had a variety of effects. Within Brazil, it reduced import demand. Around 60 per cent of Brazil's farm imports are from other MERCOSUR countries, which hence need to find

alternative outlets for their beef (exports are vital to Uruguay, which sends around 45 per cent of its beef production abroad, and Argentina too exports around 15 per cent of its production). But the Brazilian devaluation also made the country more competitive on all markets (over the first nine months of 1999, Brazilian beef exports rose by 50 per cent in volume terms over the same period in 1998). That accordingly means sharper competition for other MERCOSUR countries on markets outside Latin America.

But are the markets there?

In the short term the threat from MERCOSUR countries to other exporters of beef to the Pacific area is slight. Quotas allocated to them in North America are small, Asian markets are remote, MERCOSUR's supply is restricted and markets for their high-quality beef from grass-fed animals have yet to be established. Apart from Brazil, their currencies are also strong, limiting their competitiveness. However, over the medium term, MERCOSUR could become more competitive. Ongoing multilateral trade negotiations could improve their access to North America's markets (Argentina is already expected to have filled the US quota for 1999) while production within MERCOSUR could eventually rise considerably. It is also possible that the Brazilian crisis may eventually compel its MERCOSUR neighbours to seek greater competitiveness through devaluations (though perhaps not Argentina whose currency is tied to the US dollar).

The Chinese meat market is undergoing major structural changes

Pig meat represents nearly 70 per cent of China's total meat production, followed by poultry (20 per cent). About 80 per cent of pig meat is produced by small family units fattening one to three pigs a year, mainly on crop residues and food waste. Although such operations sometimes use maize, barley or soyameal, they revert to residues whenever feed prices rise sharply. China's animal production sector is modernising, however, creating more family farms and large breeding units specialised in pig or poultry which are more dependent (sometimes solely) on feed grains and concentrates – a trend which is likely to accelerate in the future.

Feed constraints on Chinese meat output

Population growth and inflows to cities along with rising incomes should have a positive impact on animal protein consumption and hence demand for meat and this could stimulate Chinese production. However, as pig and poultry breeding becomes more commercially oriented, it will rely more on feed grains and concentrates, whose cost and availability may increasingly influence expansion trends (especially as demand for quality feed is likely to rise faster than supply).

Given these constraints on supply of livestock feed, the challenge facing China's animal production sector is to give priority to livestock which use feed grains and oilmeals more efficiently (poultry)

or less intensively (grass-fed cattle, sheep) than pigs. But another key factor is China's lack of good quality grazing land. Chinese agricultural research hence aims to develop high-protein feed crops that can withstand drought and low temperature and by encouraging more efficient use of crop residues for feed. Farming that combines feed crops with grain and cash crops will also be encouraged. This grain-saving approach is already reflected in the government's switch of priorities away from supporting pig-breeding and towards poultry (it is aiding poultry breeding units) cattle and sheep.

Robust growth is therefore expected to continue in Chinese poultry meat production, albeit somewhat less rapid than in the past. Poultry consumption should also be boosted as prices remain cheaper than those of other meats. Growth in pig meat production, in contrast, should slacken as constraints and costs of feed supply work through to prices. However, while this should reduce its share of consumption, pork remains the first choice for Chinese consumers and less-favoured beef and sheep meat will see production grow far less in absolute terms.

Despite the increases in domestic output, demand for animal protein could outstrip China's ability to supply – unless the government steps up feed imports. Alternatively, China could increase its meat imports substantially (particularly poultry meat – mainly legs and wings). On the other hand, greater involvement of foreign firms in the meat sector – via acquisitions and joint ventures – and rationalisation of industry structure could enable China to slightly raise its meat exports (again mainly poultry), to Japan, Indonesia, the NIS and the Middle East.

Even minute changes in China's vast demand can jolt world markets

Chinese meat import potential could increase sharply if import licences were abolished and/or WTO entry were achieved swiftly (customs duties would be cut from 45 to 12 per cent for beef, from 20 to 12 per cent for pig meat and from 20 to 10 per cent for poultry meat between 1999 and 2004) or decrease if Chinese incomes rise more slowly than expected – see the 1999 edition of the OECD *Agricultural Outlook*. The FMD outbreaks in several regions of China, which have led to extensive slaughter, could also have repercussions on meat imports. Given the sheer size of the Chinese market, even minute percentage changes in domestic supply and demand could send major shock waves through to international trade.

Pig meat production growth runs into environmental barriers

Outlets for surplus slurry can raise costs

Environmental considerations will be one of the main factors determining the location and structure of pig meat production in Europe and the United States in the next few years. In Denmark, the leading pig meat exporter, slurry spreading is now confined to strict

slurry quantity/land area ratios. The largest production units are thus forced to either seek other farms to dispose of their slurry surpluses or obtain land for this purpose – a capital cost burden that reins in unit expansion and limits increases in production.

Production growth is also constrained in the Netherlands by environmental regulations. As from 2003, pig producers will be required to enter into manure disposal contracts, limiting the number of pigs raised to those with either sufficient arable land, contracts with other arable farmers for manure disposal or with manure processing plants for products used outside of Dutch agriculture. Initial estimates are that this new system will reduce pig numbers by 15 per cent. United States' pig-breeding was traditionally located in areas with a feed grain surplus (*i.e.* the "corn belt"), then expanded further to the southeast, especially North Carolina, Kansas and Oklahoma, where environmental laws were less restrictive. However, as constraints evolved in those areas too, production has moved on again, to Texas and Utah.

Differences in the degree of environmental regulation from one country or region to another can clearly translate into higher or lower costs that may affect export competitiveness. Given their size and lower population densities (compared with Europe) opportunities for developing pig production thus seem far more promising in the United States and Canada.

The so-called non-trade issues over food products may in fact impact on trade

Animal welfare is amongst the so-called non-trade issues which may be on the agenda for the next round of multilateral trade negotiations. There is increasing awareness, if not concern, within civil society in a number of OECD countries about the potential impacts of modern production methods on this aspect of food production in general and livestock production in particular. While there may be market-orientated solutions to these questions, there is also growing demand from certain circles in civil society for more and stronger government regulation. But this raises the issue that differences in regulation from one country to another will affect a country's competitiveness and indeed that regulations may be used as non-tariff barriers to trade. While policy makers should take care that regulations concerning animal welfare are in line with the broader objectives for policy reform and trade liberalisation, future developments in this regard are uncertain and may have an impact on the medium term outlook for meat markets. A more detailed discussion of this question is provided in Box 8.

Macroeconomic trends remain also uncertain

Some major economic and policy caveats must be attached to the Outlook for meat markets. For example, it is assumed that economies of countries recently in crisis will stabilise from 2000 onwards and that, in subsequent years, GDP growth rates for Asia and Latin America will revert to levels similar to those prevailing prior to 1997. If the

Box 8. Emerging issues in agriculture: Farm animal welfare

- Amid the broader public concern for food quality and production methods, animal welfare has emerged as an important issue in many OECD countries. Increasingly, society looks to governments to adopt policies to ensure farm animal welfare and legislation for animal welfare has evolved from simple anti-cruelty measures to more comprehensive rules and guidelines for the rearing, transport and slaughter of farm animals. Most OECD countries have rules governing the transport and slaughter of farm animals and many also have regulations for the rearing of farm animals. Policy responses to animal welfare concerns differ according to cultural, social and political values.

- In closed economies where minimal farm animal welfare standards are an objective, the policy issue is limited to achieving these social objectives at least cost. However in an open economy context, the question is whether these domestic objectives can be achieved without violating the rules of the trading system. Though no trade disputes have yet arisen, conflicts between domestic objectives and international trade rules could easily arise, given the economic importance of trade in animals and livestock products and as different regulations evolve between countries. OECD imports and exports of live animals and livestock products, for example, were valued at approximately some US$22.2 billion and US$19.4 billion, respectively in 1998.

What is farm animal welfare?

- *Animal welfare refers to the state of the animal in relation to its environment. Animal welfare can thus be defined with respect to veterinary and animal behaviour science-based principles and can be measured.*

- *Farm animal welfare is often viewed as amalgam of science based information on the state of animals and moral concern for their treatment by humans. The generally accepted obligations for animal use are the provision of essential food, water and shelter, health care and maintenance, alleviation of pain and suffering and the ability to enjoy minimal movement.*

Demand for animal welfare

- In most OECD countries, satisfaction from food is tied to characteristics, which satisfy criteria of health, pleasure and ethics. While benefits of the health and pleasure characteristics of food can only be obtained through individual consumption, the ethics quality of food may yield satisfaction even if not consumed by the individual. The ethics quality or characteristic of food is in particular applicable to questions dealing with methods of production and thus farm animal welfare standards.

Policy Options

- ***Voluntary approaches:*** Some suggest that it is the market that should determine the demand and supply for products produced according to specific farm animal welfare standards. However, this approach excludes all those who value farm animal welfare from an ethical stance, but do not participate in the market for these products. A further difficulty is that differing animal production methods do not usually leave any tangible sign on the product. Labelling is suggested to correct for lack of information on production methods to permit consumers to choose among livestock products according to production methods. But labelling is not a simple issue. What is the label to identify? Who is to assure the integrity of the label? Governments or third parties may assist producers in developing codes of production and certifying that the products do meet the standards of production.

- ***Regulatory approach:*** Voluntary or government assisted approaches to promote higher standards for animal welfare may not be sufficient if there is pressure to change production methods to raise the overall standard of farm animal welfare. In this case, regulation can be used to achieve specific animal welfare standards. This is the general direction of animal welfare legislation in many European countries and to a lesser extent in New Zealand. When a regulatory approach is used to promote minimal animal welfare, consumers are assured that products are produced at some minimum welfare standard.

- *Defining the standard*. It is preferable that standards have a scientific basis in terms of relating production techniques to animal suffering and stress. However, the acceptability of specific standards is also conditioned by cultural values, socio-economic systems and the ethical perspectives which vary between countries. With advances in genetic engineering the question of what is an acceptable standard may also have to evolve with the species. All of these arguments will need to draw upon and to reconcile diverse expert opinion- veterinarians, economists and ethicists.

- *Dealing with costs*. Adoption of animal welfare standards may entail additional costs to producers, either for one-time conversion costs or increased variable costs. However, if an appropriate technology exists to meet the standard, then producers may be able to change their production methods without incurring significantly increased costs. Technologies may also be developed that permit farmers to meet the standards without increasing costs. Development of animal varieties, which are more efficient in their conversion of feed to energy, can also reduce the possible increased costs of applying animal welfare regulations. There may be an argument for the use of public money for the development of animal friendly production, handling and processing technologies meeting animal welfare criteria in countries where this is a high priority objective. Compensatory approaches may also be considered when animal welfare is valued as a public good, as often done for environmental goods. However, such policies may need to be limited in time so as not to reduce incentives for innovation in technology that can contain costs and achieve given animal welfare standards. If costs of production increase, they will be transmitted to consumers and this price increase may affect demand for the products concerned.

- ***International trade issues:*** When a country's domestic regulations for animal welfare standards are higher than those of their trading partners – and by implication its costs of production, domestic producers may find that they are priced out of export markets or even from their domestic market when imports are permitted. This may raise doubts as to the possibility to raise animal welfare standards without regard to what is done in other countries.

- *Trade Agreements.* Current interpretations of the international trade agreements under the WTO are not likely to permit trade restrictions based on animal welfare production criteria. In particular, Article III of the General Agreement on Tariffs and Trade requires identical treatment for "like" products regardless of country of origin. Production measures that ensure animal welfare do not alter in any identifiable manner the final product, thus production processes can not be used to distinguish products and such products may be considered "like" products. Restricting trade on the basis of production methods would thus be in conflict with this interpretation of Article III. The trade agreements do, however, provide for exceptions, though case law in some of these areas has not yet been established. For instance, it may be possible to appeal to Article XX(*a*), which permits trade restrictions for reasons of public morals, but current interpretations suggest it must be the effect of the product which is morally offensive and not its production method. Article XX(*b*) provides for trade restrictions to protect human, plant or animal health, but farm animal welfare is not strictly speaking an issue of animal health.

- Labelling of products according to production standards may provide an alternative path to this issue as it would at least permit consumers to make informed choices. It is uncertain whether required labelling of imports according to production methods is possible within the framework of the Technical Barriers to Trade agreement, which ensures that labelling and other technical requirements do not create unnecessary obstacles to trade. In conclusion, some form of multilateral agreement may offer some hope of progress in this area. By, acknowledging the different dimensions of this complex issue and by drawing together the views of animal scientists, ethicists and economists the multilateral approach could provide a path toward international recognition of animal welfare standards.

recovery in non-OECD countries falls short of expectations, the impact on meat prices could be significant – especially in the final years of the Outlook when slower or even negative demand growth in some of them could face renewed upturn in supply.

Risk of protectionist habits re-emerging

Whenever a market experiences a slump in prices, the risk is real that some countries will be tempted to take unilateral trade action to shore up their farmers' incomes (this was what happened in 1999 – for sheep meat in the United States and pig meat in some European Union countries). There is also a risk that the main players will be tempted to resort again to unfair competition, like export credits or massive food aid. Such measures would delay the inevitable adjustment process in world markets, shift the adjustment to less or not supported segments of the market and distort trade – a response that would depress world meat prices and farm incomes far longer than currently expected.

DAIRY PRODUCTS

Main projections

- Dairy product prices are expected to climb in the medium term as global demand recovers from lower levels caused by the recent economic crises in Asia, Latin America and Russia.

- World dairy trade continues to shift from supply-led trade in basic commodities to demand-led trade in high value-added products. Furthermore, technological advances, especially protein extraction and fractionating, have also given birth to a fast-growing dairy ingredients market.

- Despite its policy reforms, including the elimination of support prices, the United States is unlikely to become a major exporter of dairy products in the medium term.

- The rules introduced under the Uruguay Round agreement and efficient WTO dispute settlement procedures are meanwhile expected to reduce risks of global trade distortion from support and trade policies.

Key issues

- What can the US do to realise its ambitions to become a major exporter of dairy products? Production costs and proximity to markets are handicaps but there may be potential to export some of its large whey powder surplus.

- The next WTO Round may take another look at how export subsidies, import duties and lack of transparency of tariff quota management affect trade. The widespread role of State Trading Enterprises in the dairy sector may be questioned as well. But consumer concerns are now becoming an important issue. And OECD governments may be looking at WTO-legal ways of supporting producer prices, such as price discrimination and pooling.

- The speed of Asian and Russian economic recovery will be key factors affecting demand in the Outlook period.

Figure 23. **Dairy product prices to recover**

US$/100 kg
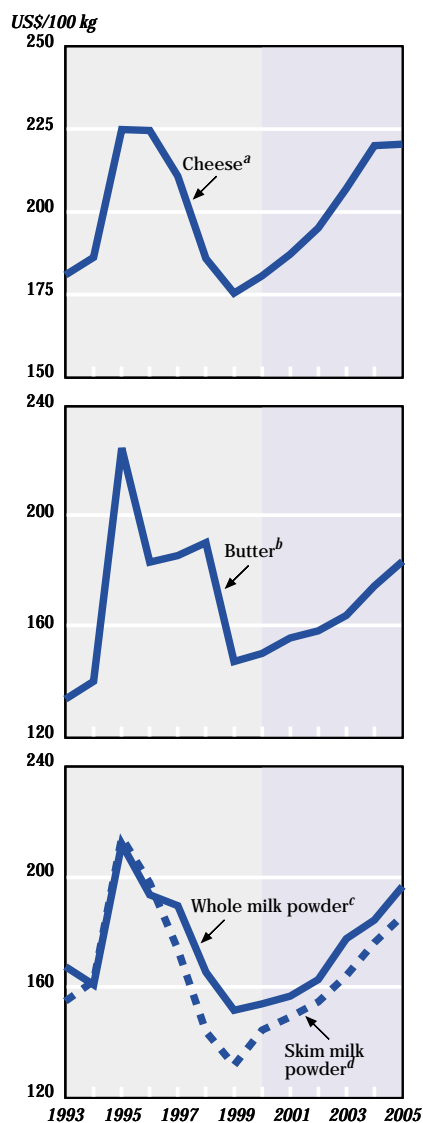
Notes:
a) F.o.b. export price, cheddar cheese, 40 lb blocks, Northern Europe.
b) F.o.b. export price, butter 82% butterfat, Northern Europe.
c) F.o.b. export price, WMP 26% fat, Northern Europe.
d) F.o.b. export price, not fat dry milk, extra grade, Northern Europe.
Source: OECD Secretariat.

Outlook in brief

Dairy product prices to increase as world demand recovers

Dairy product prices should increase in the medium term as world demand recovers from its sharp decline caused by recent economic turmoil in Asia, Latin America and Russia (see Figure 23). Skim milk powder (SMP) prices should benefit from economic recovery in Asia, which accounts for around 50 per cent of world SMP imports. Moreover, in the event that SMP demand falls in favour of whole milk power (WMP) or whey, output of SMP is also likely to decline since the major exporting countries prefer to process it into higher value-added products such as caseinates. This is particularly the case in New Zealand and the European Union (see Figure 24). As a result, Australia, some Latin American countries and the central and eastern European countries have increased their share of the international market share of SMP. WMP prices will also be heavily influenced by the economic outlook in Asia and Latin America while demand for this product will benefit from a shift away from SMP and condensed milk. Butter prices are strongly dependent on economic conditions in Russia, the major import market. However, these products should also benefit from an expected rise in vegetable oil prices. Cheese prices should rise considerably reflecting strong global demand, especially in the OECD area, which accounts for 80 per cent of world consumption.

Further expansion in milk production

Milk output in the OECD area as a whole is expected to continue to expand over the projection period at a similar rate as in recent years, with the United States remaining by far the main contributor to the growth in milk production in absolute terms. But the rate of growth in milk output in Australia and New Zealand will be lower than in the past (about 3 per cent per annum on average between 1999-2005, compared to about 4.5 per cent between 1994-98). In the Non-Member Economies area (excluding the NIS), the average growth rate per annum of milk output is expected to be about 1 per cent lower in the projection period than in the 1994-98 period. As in the past, the growth in production in the region will be a response to increasing domestic demand. This is particularly the case in Asia, but also in Latin America, particularly in Brazil. However, for some low-cost producing countries of South America, especially Argentina and Uruguay, the increase is likely to be export-led. In those countries of Europe in transition, the growth in milk output is expected to return to positive numbers, due to improved yields. In Russia, dairy production is not expected to recover in the near future (see Box 9) However, milk production is expected to decrease at a much lower rate than in the second half of the 1990's.

Box 9. Russia: Uncertain import demand and the outlook for livestock product trade

• Russia remains one of the most important meat and dairy product export markets for OECD countries – even with 1999 imports between 30 and 50 per cent below pre-crisis levels. As domestic livestock production continues to fall, consumption stabilises and the rouble appreciates in real terms, Russia's imports of these products may begin to recover.

• Both meat and dairy production in Russia continue to decline and neither is expected to recover in the near future, while feed grains remain in short supply. In 1999, animal production was 4 per cent below 1998 levels. A small grain harvest in 1999, following a dismal one in 1998 has drastically depleted grain stocks. Infrastructure and organisational shortcomings within Russia's post-Soviet agriculture have not yet demonstrated improvement either. The difficult financial situation of large farms encourages many of them to avoid the banking system and to dispose of their produce outside regular market channels. Many farms have resorted to barter transactions, which makes them less responsive to market signals while meat and dairy production is constantly shifting towards small-scale household production, mostly for family use and only loosely linked with the market. Costs of production are meanwhile rising with the still relatively high rate of inflation making imports more competitive with domestic produce as the rouble continues the slow but generally constant real appreciation that began in the second quarter 1999.

• Russian consumption of livestock and dairy products fell sharply in the second half 1998 and preliminary data shows a further drop in the first half 1999, albeit at slower rates. Consumption data are expected to finally demonstrate stability in the final months of 1999 as real incomes began to grow from the very low levels prevailing at the start of the year. This should also support some recovery in imports from the very low levels that followed the financial crisis. Imports of meat and meat products from outside the NIS area, for example, rose by 220 per cent in October 1999 compared to October 1998, while dairy product imports climbed as much as 290 per cent.

• The medium term situation for Russian meat and dairy industries will depend partly on grain availability and partly on the macroeconomic performance of the Russian economy. Grain production will probably continue to fluctuate around an average of 65-70 million tonnes, compared to 55 million tonnes in 1999. Improved grain supplies will be offset, however, by structural impediments and the low efficiency of livestock farms, hampering any substantial revival in meat and dairy production for the time being. Meat and dairy consumption is expected to grow, however, as real incomes profit from expected growth in GDP of 1-3 per cent yearly in the medium term. Imports should also become relatively cheaper in the mid-term as the rouble recovers. This combination of – rising demand, weak domestic production response and a firmer rouble – suggests both meat and dairy imports will grow:

  – Poultry imports should rebound from a low of about 0.4 million tonnes in 1999 to between 0.7-1.0 million over the medium term, though remaining below pre-crisis levels. Poultry consumption is expected to exceed pre-crisis levels, however, as its relatively low price compared with other protein sources makes it first choice to upgrade diets. Domestic production should be able to partly satisfy this growing demand, but only if grain availability and feed prices permit.

  – Russian pig meat imports should remain stable in the medium term at about 0.35-0.45 million tonnes. Imports in 1999 were supported by US and EU food aid donations as well as sizeable EU export subsidies, limiting the post-crisis fall in consumption. An expected slight rise in domestic demand based on higher incomes may be curbed by a reduction in export subsidies and halting of food aid programmes in the medium term. Russian pig meat production will tend to stabilise.

  – In the past year the United States and European Union food aid programmes and EU export subsidies helped lift Russian beef imports above the 1998 level. In the medium-term however, as consumption is expected to stabilise, imports should also stay fairly stable between 0.55-0.64 million tonnes, compared with about 0.59 million tonnes in 1999, assuming US and EU assistance does not become a permanent feature. On the production side, a special programme was introduced earlier to develop the Russian beef sector during a 1997-2005 timeframe. However, budgetary pressures are expected to thwart such plans for the time being so production will probably continue its decline, along with a further drop in cattle numbers.

Figure 24. **The EU and New Zealand to reduce skim milk powder exports**
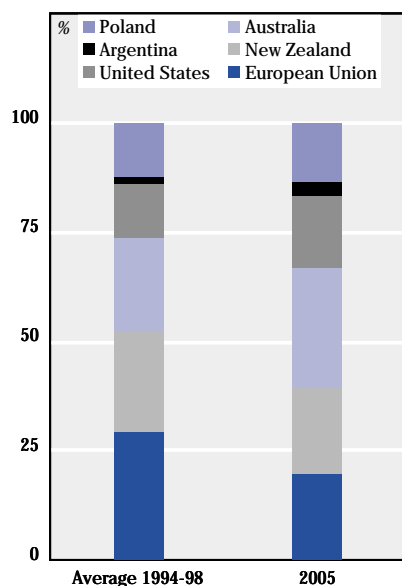
Note: SMP exports in volume of the main exporting countries.
Source: OECD Secretariat.

Reforms driving world trade increasingly toward more value-added products

World trade in dairy products continues to shift from supply-led trade in basic commodities to demand-led high value-added products. Two factors are driving this change: the reduction in subsidised exports agreed under the URAA and the wider adoption of more de-coupled domestic support policies. This has reduced the volume of surpluses available for dumping on international markets and enabled market forces to exert more influence on both producer and processor decision making. Butter and SMP especially (the two basic products that received most support and export subsidies during the 1980s) will see their share of OECD exports continue to fall (see Figure 25).

Technological advances, especially protein extraction and fractionating, have also enabled rapid development of the dairy ingredients market. Whey, for instance, a by-product of cheese, whose value was not enhanced before, is now being processed into whey powder, which is tending to replace skim milk powder in manufacture of foodstuffs, animal feed and into protein concentrates for the agro-food industry. Growing demand is reflected in a rise in US whey powder prices since 1990.

Figure 25. **OECD butter and SMP exports to decrease**

Legend:
- Whey powder
- Whole milk powder
- Cheese
- SMP
- Butter
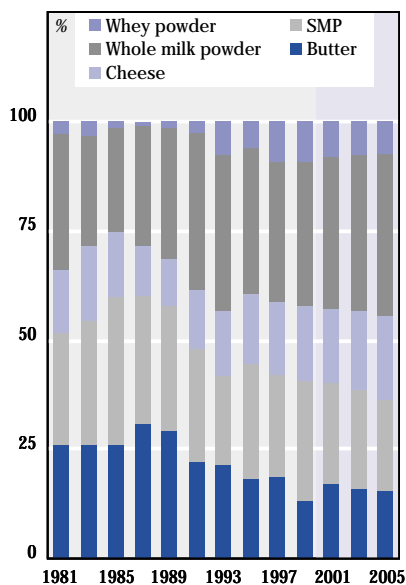
Source: OECD Secretariat.

Figure 26. **US dairy exports: only whey powder to increase**
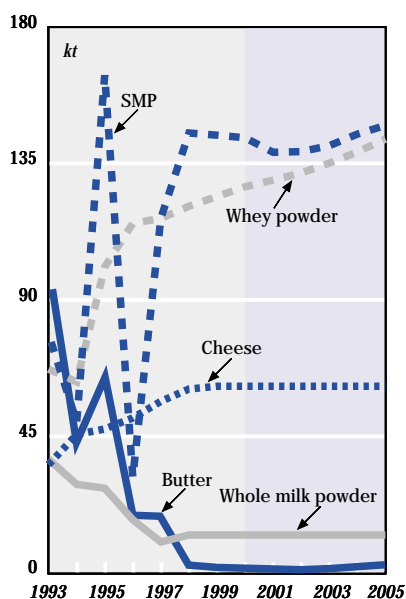
Source: OECD Secretariat.

Key issues and uncertainties

Are US export ambitions realistic?

Although the United States has never been a major exporter of dairy products to the world market, its exporters now cherish ambitions in this direction. Policy changes – mainly the replacement of price support programmes with a "recourse loan" programme for milk processors – might help them achieve their objective. This change was initially scheduled for early 2000, but the dairy price support system has been extended through 2000 with a milk support price of US$9.90 per hundred weight. Because these changes create more potential risks, they could force less efficient milk producers to leave the industry. However, the question remains to be answered whether these policy changes really will make the US dairy industry competitive on the world market.

The gap between US and world prices for bulk dairy products will probably close somewhat

For many years, the world export market was used in the United States' dairy policy as a means of balancing its vast domestic market. Periodic surpluses of bulk products were simply cleared with the help of government financed export subsidies (the DEIP programme) leading to erratic export volumes of SMP from one year to the next. Unlike high value-added products (manufactured mainly by private companies or large multinationals with substantial marketing experience) most of these bulk products are made by co-operatives which have tended to be slow to adjust marketing policies to meet changes in demand. With the cut in subsidised exports required under the URAA, and with prices of US milk powder and butter (usually subsidised commodities) uncompetitive with world prices, no increase is expected in US exports of either product. However, as the gap between US and world bulk dairy product prices will probably close during the Outlook period and in certain years, it is possible that at that time the United States might become competitive without export subsidies. Commercial exports of other dairy products are expected to be confined to various niche markets, either in neighbouring countries or as high value-added products in which raw materials account for a smaller share of the cost. Opportunities for growth may also exist in export markets where consumers favour a US label – ice-creams, for example. One product above all with growing export potential, however, is whey powder (see Figure 26). The US produces this in large quantities (as a by-product of cheese) but, unlike other producers, has only a small outlet within its own domestic market.

The pace of dairy expansion in the western US is expected to slow

The competitiveness of the US dairy sector on global markets depends on several factors including production costs (linked mostly to feed costs), processors' international marketing experience,

proximity to markets, industry's production technology and the distribution infrastructure. While the last two factors appear to pose no restrictions on exports, the others may raise bigger hurdles in the short to medium term. In the realm of production costs, for example, even if the removal of dairy product price support forces the less successful producers out of business, only the larger production units (especially in the West where production costs are some 15 per cent below the national average) may be competitive enough to export without subsidies. Cost pressures will increase too with coarse grain prices expected to start rising again from 2000. The pace of dairy expansion in the western US is meanwhile expected to slow as alfalfa supplies tighten and environmental curbs strengthen. Expansion of major production units elsewhere in the country may also lose favour as the end of price support raises exposure to market risks, slowing growth in low-cost milk production. This situation when added to the fact that domestic demand is expected to continue rising and taking more output, makes it unlikely that the United States will become a major player on global dairy product markets in the medium term.

Fewer trade distortions likely from domestic support policies?

Changes to domestic supports will have to consider trade impacts

Domestic support policies are likely to be more keenly scrutinised by competing exporting countries – and challenged in the WTO if suspected of distorting trade. The shape of things to come was illustrated by the recent WTO dispute Panel judgement on whether Canada's Special Milk Classes Scheme was consistent with the URAA. Under the Scheme, the low price of milk destined for certain end-uses is offset by the high prices for others. The Panel viewed the Scheme as a disguised form of export subsidy, since the export prices of products made from special milk classes are lower than the domestic prices of comparable products. Canada will probably have to change its policy, and this may have some impact on its international competitiveness.

Similarly, criticism is being levelled at the US Federal Milk Marketing Orders scheme. Some feel this is a form of cross-subsidisation between more expensive drinking milk and cheaper milk used in processing – a means of exporting manufactured dairy products at artificially low prices. Some economists have estimated the indirect support this gives US dairy producers at US$500 million. Reforms which entered into force on 1 October 1999 do not dispute the principle of this scheme. However, if challenged in the WTO, the United States might well have to change this aspect of its dairy policy.

In shaping CAP reforms the European Union took care to ensure that its new dairy policy measures would not be vulnerable to challenge under in the WTO. This is why a proposal by some EU member States to set up a dual pricing system for milk, like the North American examples above, was turned down.

All these experiences suggest that future changes to domestic support policies will have to be carefully scrutinised for any potential impact on trade. Policies will have to be formulated to be consistent with the URAA in the knowledge that WTO disputes settlement procedures can – and will – play an increasingly influential role. An awareness of this factor by major export players may therefore promise less risk of future domestic policies that distort trade. Market impacts and distortions of price pooling for milk, which some countries might consider as an alternative for current support policies, are assessed in Box 10.

Any world market impacts of dairy policy reform in Japan, a major importer of dairy products?

The new policy for the Japanese dairy industry was adopted in March 1999. Its objectives are to make the industry more market-orientated and more competitive vis-à-vis imported products and to assure the continuity of dairy farming in the country. This is considered important in Japan in view of the sector's functions in maintaining rural societies and preserving the environment.

The various parts of the reform include more transparent pricing of milk and dairy products, a rationalisation of milk collection, a review of the milk standard for transaction, the abolishment of all support prices and the implementation of a direct payment scheme for dairy farmers. The last two measures will be implemented by the Japanese 2001 fiscal year. The aim of the direct payment scheme is to compensate the income gaps between areas, especially in favour of the producers located far from major consumption areas who produce milk for processing purposes. The supply management scheme will stay in place and the state trading enterprise, ALIC, will continue to control imports of the designated dairy products (butter, SMP, condensed milk). However, the details of the new policy are still under consideration and it is therefore difficult to assess its precise impacts for the moment.

Possible issues for discussion in the next round of multilateral negotiations

Will the next round be able to materialise the potential gains allowed by the URAA?

The first set of possible issues for WTO discussion concerns trade liberalisation opportunities that might arise from quantitative changes in export subsidies and export credits as well as tariff quotas and customs duties.

The response to the financial crisis in Asia demonstrated the distorting effect export credits can have on trade. The United States, for instance, set up a US$100 million programme to guarantee export credits for farm products to Malaysia for 1998, enabling a 60 per cent increase in the value of its dairy exports to this destination compared with 1997. Over the same period, dairy exports from Malaysia's

Box 10. **Price discrimination and price pooling in dairy markets**

- Under the URAA, countries have agreed to lower support levels in the spirit of reform towards more competitive and market oriented agricultural sectors. While this may not be in the spirit of the URAA, faced with growing limits on traditional support policies, the temptation may nevertheless arise in certain OECD countries to maintain levels of support through alternative means which do not violate URAA commitments. Multiple pricing systems that discriminate between end uses and pool prices are one way to raise producer returns. By averaging returns across differently priced uses, these schemes distort markets such that producers receive a price for their marginal unit of production greater than would otherwise occur. However, applying price discrimination requires that part of the domestic market can be insulated from both foreign and domestic competition. In this respect, large parts of domestic dairy markets of OECD countries tend to be less responsive to price changes and are largely segregated from world markets by trade restrictions and natural barriers due to the transport costs of perishable products. This makes them ideal candidates for price discrimination and pooling schemes.

- In order to evaluate the domestic and trade distortions that may arise, such a pricing scheme is implemented in a representative OECD country in place of existing support prices. The representative country's fresh product market uses about a third of total milk production and the level of support prices are about two times the level of world prices. The pricing scheme is implemented in such a way as to maintain this gap between internal and world prices. This is achieved by raising the price in the insulated fresh milk market while allowing manufactured dairy products to be traded at world prices, with producers receiving an average price across these markets (see Table below).

Daily pricing scheme in place of support prices
Fluid milk market discrimination in a representative OECD country

Domestic milk	Allocation (per cent change)	Price	*World market*	Price (per cent change)
Fluid milk	−22%	123%	Cheese	0.3%
Manufacturing	14%	−49%	Whole milk powder	0.4%

- By construction, this hypothetical example does not necessarily violate the letter of the URAA, even though it distorts markets. The WTO Appellate Body decision that the Canadian milk price pooling scheme was inconsistent with its obligations regarding export subsidies (October 1999) would not prevent this policy. The Appellate Body's ruling rested in part on the presence of a benefit to exporters in that they could purchase milk at a price below the milk price faced by processors who sell their output in domestic markets. The policy measure used in this scenario does not vary input prices contingent on export performance and so does not violate at least the WTO ruling regarding Canada's pricing scheme. To be more specific, this policy bears closer resemblance to certain classes of milk (5*a*, 5*b* and 5*c*) about which no decision was made, rather than to those classes (5*d* and 5*e*) which were found to create inconsistencies with Canada's export subsidy commitments. Of course, there are also domestic support commitments which may be violated by such a policy. However, as regards export subsidy limits at least, the policy evaluated in this example may only violate the spirit of the URAA in terms of transparency and liberalising trade.

How does this affect consumers?

- The demand response must be "disaggregated" between the different markets: *i.e.* the insulated domestic markets (fresh products), where consumers face higher prices, and those markets for traded products (manufactured products), where consumption may take place at lower world prices. The higher price of fresh products discourages consumption, so some milk is reallocated to manufacturing use. At the same time, consumers face world prices for manufactured dairy products rather than higher support prices, so consumption of manufactured dairy products increases. In this hypothetical example, the net effect of increased production and consumption of dairy products is higher imports than under the traditional support price system. Of course, these results depend upon the elasticities and relative sizes of the markets for insulated and traded goods. They cannot, therefore be generalised to other countries without taking their special circumstances into account.

• Whereas a price support system is financed by consumers (through high domestic prices) and by taxpayers (through subsidies on exports) a price discrimination and pooling scheme places the full costs onto the consumers within the insulated market. The ability of such a policy to artificially raise producer prices depends upon the barriers against imports into the insulated market. These barriers would become more difficult to sustain as the insulated market price rises relative to world prices, placing an upper limit on the level of internal prices in insulated markets and, consequently, on the average producer price.

… and world markets?

• The consequences for world markets of price pooling, relative to price support, are ambiguous and depend on the relative sizes and price elasticities of the fresh and manufactured product markets. If fresh products take a larger part of total milk use and the price elasticities in this market segment are high, then the price increase which results from price discrimination is likely to shift a substantial amount of milk to the manufacturing milk market and imports of dairy products may fall or exports rise. In the representative country example, the manufacturing milk market is large compared to the market for fresh products. Thus, a large share of consumption (of manufactured products) is affected by shifts from high support prices to lower world prices, so consumption increases and imports are higher than under a price support regime. The important point is that this policy may not violate the URAA, assuming there is no change in the level of domestic support and particularly if net dairy product imports increase.

• While the market effects of moving from a price support scheme to a price pooling scheme may be ambiguous, the market consequences of such a scheme compared to market liberalisation are certainly not. Price discrimination and price pooling provides producers with an average price greater than the marginal return and so stimulates more production above what would have occurred if producers had only received the world price. As production is increased and a segment of consumption is insulated from competition, so imports fall or exports rise under such pricing arrangements compared with trade within a liberalised market.

traditional large suppliers, Australia and New Zealand, fell by 10 and 25 per cent, respectively.

Use, or non-use of export subsidies can also impact on a country's international competitiveness, the best example perhaps being what has happened to subsidised cheese exports from the EU (see Figure 27). Prohibitive duties on the other hand, can lead to a de facto ban on imports (duties of several hundred per cent are not unusual on dairy products). The pricing rationale introduced under the URAA was designed to advance reform in these areas. The question now is whether the next round of trade negotiations will be able to really harness that potential.

As well as these quantitative changes, another issue for discussion could be improvements in tariff quota management where lack of transparency eventually diminishes their value and tends to re-erect barriers to trade. In the dairy product sector, management of US cheese quotas and Canadian milk quotas have both drawn criticism from other suppliers. In Canada's case, the WTO Appellate Body confirmed that by restricting access to the tariff-rate quota for fluid

Figure 27. **URAA limits on subsidised exports to shrink EU's share of world cheese market**
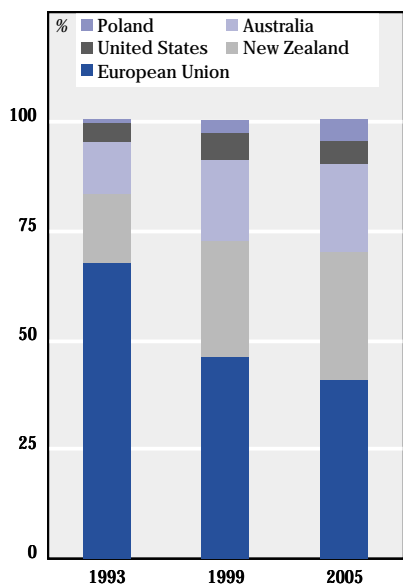
Source: OECD Secretariat.

milk to entries valued below C$20, Canada's action was inconsistent with its obligations under the URAA. The operations of State Trading Enterprises (STEs), which are widespread in the dairy sector, may also be called into question in the new trade round (see 1998 edition of the *OECD Agricultural Outlook*). Tangible progress in all these areas would certainly be a major step forward in liberalising trade and reducing market distortions.

Can consumer concerns be addressed without trade disruption?

However, some countries also want to see the next round of negotiations cover concerns not directly linked to trade but which might ultimately affect it. Many of these relate to the dairy industry, including animal welfare, use of the hormone rBST to boost milk production, use of genetically modified organisms and antibiotics in animal feed as well as environmental concerns. Some countries would like socio-economic or even ethical factors to be covered by the WTO. However, others fear that inclusion of such factors within the SPS Agreement – which uses purely scientific criteria to determine validity of an import restriction made on health grounds – might encourage some countries to exploit consumer concerns to protect their own farming industries against foreign competition.

Consumers in certain parts of the world, especially in the European Union and in Japan, are increasingly demanding to know more about the food they eat, its quality, safety and even the methods by which it is produced. More reliable and detailed information is being sought, especially in the livestock industry after the emergence of several large-scale health scares in a number of countries in recent years.

What speed trade liberalisation after the year 2000?

The pace of dairy policy reform and trade liberalisation after the year 2000 will affect dairy market trends in the medium term. The next round of WTO multilateral trade negotiations will be a determining factor here. The speed at which new disciplines are introduced – especially reductions in subsidised exports – could mean that trade will expand more rapidly than expected. Moreover, the way in which further trade liberalisation is reconciled with the growing consumer concerns mentioned above clearly injects a large element of uncertainty into the outcome.

How will the recent financial crises in Non-Member Economies affect markets?

The recent financial crises in various non-OECD economies is likely to affect market shares of the leading exporting countries, at least in the short term. Economic problems in Brazil, for example, culminating in a 50 per cent devaluation of the real in January 1999, pushed down year-on-year demand for imported dairy products by 5 to 20 per cent in volume terms and 15 to 40 per cent in value (depending on the product) in the first 9 months of 1999. Argentina and Uruguay, whose dairy exports to

Brazil were favoured by the MERCOSUR pact, (Brazil accounted for respectively 75 and 90 per cent of these two countries' dairy exports in 1997), might have to seek other outlets in the short term, especially in NAFTA countries (the United States is the leading customer for Argentine cheese) and other parts of South America outside of MERCOSUR (*e.g.* Venezuela which has a customs agreement with Argentina, or Bolivia and Columbia). Therefore keener competition between exporting countries for these markets seems inevitable. This is particularly true of WMP exports, Brazil being the leading importer in volume terms, accounting alone for 12 per cent of all world trade in the product. Argentine and Uruguayan dairy farmers could respond to falling milk producer prices due to oversupply and decline in export outlets by slowing down production by reducing their use of livestock feed supplements. However, in the medium term Argentina and Uruguay will probably refocus their export drive on MERCOSUR outlets, especially Brazil, because price levels of dairy products within this free trade area are higher than on the world market.

Russian and Asian demand recovery cannot be taken for granted yet

Russia's devaluation of the rouble has also reduced consumer purchasing power (butter and cheese prices rose by 200 per cent just after the crisis in August 1998) as well as imports (which dropped to 150 000 tonnes for butter and 130 000 tonnes for cheese in 1998, from 250 000 tonnes and 280 000 tonnes respectively in 1997). Commercial imports of dairy products, already very uneven since the early 1990s, are not expected to recover in the short term, especially as food aid sent by developed countries does not contribute towards stabilising markets (the European Union and the United States set up programmes to send 90 000 tonnes of SMP to Russia). This food aid may also hit Russian commercial imports from countries with low production costs, such as Australia and New Zealand, for example, whose exporters may now have to seek other outlets. When and to what extent Russian commercial dairy imports will recover is hard to predict (see Box 9).

In spite of Asia's improving economic outlook in the medium term, there remains doubt whether economic recovery will be sustained in some countries, especially in Indonesia, so import uncertainties are not over yet. In 1996, Asia (excluding Japan and the Middle East) accounted for some 25 per cent of world dairy imports in value terms. So here too, if demand does disappoint, the result may be keener competition for other markets unaffected by an economic crisis.

MODERN AGRICULTURAL BIOTECHNOLOGY: SELECTED MARKET ISSUES

Introduction

This section synthesises issues relevant to understanding how biotechnology may affect supply and demand, and hence markets for agricultural products. It represents some preliminary findings on the topic to be dealt with in greater depth in future work.

Definitions

- **Modern agricultural biotechnology** is the application of cellular and molecular biology to diverse agricultural production processes and products. One important aspect of this new agricultural biotechnology is in the breeding of new plant varieties as well as specialised micro-organisms through genetic modification (GM) or engineering.
- Genetic engineering refers to a set of technologies that artificially move functional genes across species boundaries to produce novel organisms as well as to suppress or enhance gene functioning in the same species.
- **Genetically modified organism – GMO –** refers to any plant, animal or micro-organism, or virus, which has been genetically engineered or modified.
- **Insect resistant – Bt crops** are engineered so as to contain a gene from the soil bacterium *Bacillus thurigenesis* that is specifically toxic to certain insect pests.
- **Herbicide resistant – HR-crops** are genetically engineered to resist high doses of specific herbicides.
- **Recombinant bovine somatotropin-rBST** is a genetically engineered version of a naturally occurring hormone, which stimulates milk production in cows.

Although modern biotechnology has played a part in agriculture for over 15 years, it is only with the recent large-scale introduction of genetically modified (GM) major crops that this topic has become an important public talking point. This is hardly surprising, since food is not only essential to life, but also an expression of how society sees itself in cultural, religious and even political terms. Some observers are optimistic about the potential benefits of agricultural biotechnology to society and advocate its rapid development and the release of new products to the market. However, others are concerned about uncertainties in the long run with respect to food safety and the environment. They find there is no conclusive evidence, on one side or another, concerning these issues and no consensus on the benefits and the possible risks of GM crops.

The recent OECD Edinburgh Conference on the Scientific and Health Aspects of Genetically Modified Foods, provided for an exchange of views of about 400 participants from over 25 countries in three main areas: genetic modification and food production; GM food and human health and regulatory frameworks; and consumer involvement. Its purpose was to seek common ground on whether and how applications of GM technologies in the food and crops sector can serve the needs of society. A final report of the conference will be available on the OECD website: http://www.oecd.org/subject/biotech/edinburgh.htm.

Consumer and producer response to these new technologies will, to a large extent, determine their market success or failure over the next few years, and in turn, their future commercial development for the agro-food sector. Within the OECD, agricultural biotechnology may offer important economic, efficiency and environmental gains for both the agricultural and agro-food sectors, but further assessments are still needed.

Consumers may also benefit from biotechnology's contribution towards meeting their more exacting demands in terms of food quality. However, the evaluation of scientific evidence differs within and between countries and this contributes to generating concerns among portions of civil society. Concentration of R&D activities within a limited number of firms and questions about the role of patents for innovations in the industry, in particular with respect to living organisms, has raised a number of ethical, economic and policy issues. In addition, the growing degree of firm concentration in the seed and agrochemical industries and increasing prevalence of downstream vertically co-ordinated arrangements (while not unique to agriculture) are also a concern among some farmer and consumer groups.

According to the FAO close to 800 million people are undernourished and over 2 billion suffer from deficiencies in micronutrients.[1] At the same time, natural resource degradation, continues to worsen as a growing population attempts to earn a living from a shrinking land area, particularly in developing countries.[2] The development of plant varieties through genetic modification may permit more intensive food production without further degradation of the environment and the natural resource base. While many improved varieties are being developed through traditional breeding techniques to achieve these results, it is recognised that genetic engineering can reduce the time needed to develop a plant variety with specific characteristics. Furthermore, this technology also enables the transfer of beneficial traits between species which traditional breeding methods cannot. The possibilities provided by modern biotechnology for adapting crops to specific climatic, soil and water conditions can potentially provide important benefits for agriculture in developed and in developing countries, where crop stress, in particular, frequently reduces yields and quality. Nevertheless, the use of modern biotechnology for food crops in developing countries will depend upon the successful transfer of technologies and capacity building as well as access to genetic resources and the resolution of patenting issues.

Genetically modified organisms: present and future status

The "first generation of genetically modified crop varieties" has focused on the agronomic traits of crops, giving them herbicide, pest and/or virus resistance. Depending on the crop and the trait incorporated, the technology is expected to permit a reduction in pesticide and herbicide use with anticipated environmental benefits. Higher crop yields may also result from reducing crop losses from weeds, insects or viruses or by permitting a narrower row spacing in planting. Thus far, the genetically engineered improvements have not increased the fundamental yield capacity of the plant from enabling full achievement of present productive capacity.[3, 4] But the modification of agronomic traits is only the beginning of the contributions of genetic engineering to modifying the food chain. Future generations of products, many already developed, but yet to be released, focus on output traits. These include soyabeans with improved animal nutritional qualities through increased protein and amino acid content, crops with modified oils, fats and starches to improve processing and digestibility. High oleic acid soyabeans, (already grown in the US) and low phytate or phytic acid maize are examples.[5]

On the industrial side, high lauric acid canola can be used to replace coconut and palm kernel oil in the manufacture of lubricants and detergents and coloured cotton plants may alleviate the need for chemical dyes (some of these plants are already available).[6] Further developments will produce more consumer oriented quality traits such as nutraceuticals or "functional foods", crops modified to produce medicines or food supplements within the plant. These could possibly provide immunity to disease or improve health characteristics of traditional foods, for instance beta-carotene canola or Vitamin A supplemented rice.[7] The Swiss Federal Institute of Technology has recently developed such a rice variety. Plants that fix nitrogen with greater efficiency, thereby reducing the need for fertilisers or plants that resist drought, flood and extreme temperatures are also envisaged as are plants which can be used to remedy past ecological damage.[8]

Some researchers suggest that crops like cotton can be engineered to produce wrinkle free and/or fire resistant cotton or oilseed rape plants modified to produce biodegradable plastics. The potential for such developments seems very large and thus envisioned benefits of the agricultural applications of this technology are substantial.

Expansion of Genetically Modified (GM) Crops

Since genetically modified crops were first commercialised four years ago, the area harvested of these crops has risen dramatically, particularly in the United States and Latin America. Table 2 provides a summary of data on area harvested of genetically modified crops world-wide, based on industry estimates. These may differ from national statistics where available, but they do provide a global estimate of the use of GM varieties.[9] The United States now accounts for about 72 per cent of the total area harvested of GM crops.

Table 2. **Area harvested world-wide of genetically modified crops**

	1996	1997	1998	1999	Share of area harvested world-wide of genetically modified crops, 1999
	Million hectares				Per cent
Argentina	0.1	1.4	4.3	6.7	17
Australia	< 0.03	0.05	0.1	0.1	< 1
Canada	0.1	1.3	2.8	4	10
China	1.1	1.8	n.a.	0.3	< 1
France	0	0	< 0.1	< 0.1	< 1
Mexico	0	0	< 0.1	< 0.1	< 1
Portugal	0	0	0	< 0.1	< 1
Spain	0	0	< 0.1	< 0.1	< 1
United States[1]	1.5	8.1	20.5	28.7	72
World[2]	2.8	12.8	27.8	39.9	100

1. The US Department of Agriculture estimates differ from the above industry estimates as follows: 1996: 3.2 million hectares; 1998: 20.23 million hectares.
2. In 1998, excludes China.
Sources: James, C. (1997-1999), "Global Review of Transgenic Crops", ISAAA Briefs, 1997-1999, The International Service for the Acquisition of Agri-biotech Applications (ISAAA), Itahca, USA.

Table 3 provides information on area harvested of GM varieties in the United States according to crop type. In 1999, according to estimates from the Objective Yield Survey (OYS) of the US National Agricultural Statistical Service (NASS), herbicide resistant (HR) soyabeans accounted for about 57 per cent of the soyabean area harvested, while insect resistant (Bt) maize accounted for about 30 per cent and HR maize for 8 per cent of total maize area harvested. A small portion of maize varieties is both herbicide and insect resistant. The OYS also estimates that Bt cotton accounts for 27 per cent of area harvested and HR varieties for 38 per cent.[10, 11] In Argentina, over 70 per cent of soyabean and 20-25 per cent of maize area harvested are estimated to be genetically modified, while in Canada, HR canola accounts for about 50 per cent of all canola planted.[12]

If we examine the growth of GM crops according to their traits on a world-wide basis, we find that there has been a shift from virus resistance dominance in 1996 (China's tobacco production) to herbicide resistance which now accounts for over 60 per cent of the traits characterising GM crops, as shown in Table 4.

Table 3. **Area harvested – Genetically modified crops: United States**
In per cent

	1966	1997	1998	1999
HR soyabean	7.4	17	44.2 (42[1]*)	57[1]*
HR maize[4]	3	4.3	18.4 (9[2]*)	8[2]*
HR cotton	–	10.5	26.2 (33[3]*)	38[3]*
BT maize	1.4	7.6	19.1 (26[2]*)	30[2]*
BT cotton[1]	14.6	15	16.8 (23[3]*)	27[3]*

* Estimates from NASS, Objective Yield Survey – August 1998, 1999.
1. 8-state total accounting for 71 per cent of harvested acreage.
2. 7-state total accounting for 69 per cent of harvested acreage.
3. 5-state total accounting for 60 per cent of harvested acreage.
4. Includes seed obtained by traditional breeding but developed using biotechnology techniques to identify the herbicide-tolerant genes.
Source: USDA – ERS and NASS Crop Report, October 8, 1999.

Table 4. **Area harvested world-wide of genetically modified crops by trait**

	1996	1997	1998
	In per cent		
Herbicide tolerant	23	54	71
Insect resistant	37	31	28
Virus resistant	40	14	
Herbicide tolerant and insect resistant	–	< 1	1
Quality traits	< 1	< 1	< 1

Source: James, C. (1997-1999), "Global Review of Transgenic Crops", *ISAA Briefs*, 1997-1999.

These area-harvested estimates reflect very high rates of technology adoption during the first years of their commercialisation and are particularly impressive when compared to that of other seed technologies, such as hybrid corn. For instance, adoption of HR soyabean in the first four years exceeded that of hybrid maize adoption over the first seven years.[13] While expected profit is an important factor in motivating adoption, other factors such as farmer education and socio-economic background as well as farm size are also important factors. Preliminary empirical studies evaluating the adoption of GM seed technologies find that it is the technology's contribution to flexible crop management and ease of cultivation that is a major factor in its adoption. While preliminary indications of the economic effects of these technologies are possible these must be interpreted under the appropriate caveats, given the limited time period of observation. Average yield changes should not be attributed uniquely to GM seed technology, as numerous other factors are important in determining yields, such as weather, inputs, and location.

Adoption of Agricultural Biotechnology innovations

Herbicide Resistant Crops

A highly important factor in crop profitability is controlling weeds that compete with the crop for soil nutrients, water and sunlight necessary for plant growth. Biotechnology has been able to genetically modify a number of major agricultural crops to resist the application of concentrated doses of post-emergent herbicides. This permits farmers not only to tend a larger acreage but also to apply herbicide in lieu of tillage to control weeds.[14] As the herbicide is able to control the growth of a wide variety of weeds once the plant has emerged, only one application is likely to be needed compared to three or more under conventional varieties. GM seed varieties are however, more costly than the conventional varieties, due to a technology fee applied to the seed cost. These fees are based on the need for firms to recoup R&D investments in the development of the patented seed. However, these fees tend to decline over the patent life of the product and are eliminated when the patent expires. Purchase of these varieties also carries specific requirements, fixed under contract, such as, no use of own grown seeds (for up to three years in certain

cases). For instance, cotton, maize, soyabean and canola seed varieties, commonly known as Roundup Ready (RR) varieties, were specifically developed to be resistant to glyphosate, a herbicide effective on a wide range of weeds. The RR crop varieties are the most widely used genetically modified herbicide resistant varieties, but others are also on the market, such as Liberty Link (LL) corn, and BXN cotton, which are resistant to different herbicide compositions.

So though seed costs may be higher, the lower herbicide costs are expected to compensate the farmer. For instance, in 1998, a conventional soyabean herbicide programme, including total seed and herbicide, cost about US$25 per acre, while the Roundup package costs about US$16.5 per acre.[15] So, if weed control can be achieved with only one treatment, substantial cost reductions with no change in yields will translate into higher profits. More than one application may however, be necessary due to the non-residual nature of Roundup.[16, 17] Analyses of 1997 data carried out in the context of the Agriculture Resource Management Study (ARMS) by the Economic Research Service (ERS) of the United States Department of Agriculture (USDA), indicates an important reduction in herbicide use for soyabeans and some reduction in cotton herbicide use.

But profitability can also depend on yield effects of the technology. A recent survey examining yields of herbicide resistant RR soyabeans in eight northern US states finds that these varieties generally have lower yields.[18] Yet other surveys find little difference between RR varieties and conventional ones. The ERS, using USDA's ARMS survey over the 1996-1998 period, finds that only for a few regions and some years are mean yields higher for adopters of herbicide resistant varieties. Most of the time differences in yields of HR crops compared to conventional ones are insignificant for most crops: 4 out of 5 regions for maize, for 9 of the 13 regions for soyabeans, and 3 out of 5 for cotton. In some years though, yields are higher for adopters in some regions.[19] Mean yield differences must be used with caution as these differences may not be attributed uniquely to the use of GM seed technology, since they are influenced by other factors not controlled for, including irrigation, weather, soils, nutrient and management practices.[20] A 1999 detailed analysis of ARMS data for 1997, controlling for both farm and farmer characteristics, finds that the effect of adoption of herbicide-tolerant soyabeans on yields is positive and significant, but small. For herbicide resistant cotton the effects on yields are also positive and significant, while there was apparently no effect on herbicide-resistant maize yields.[21, 22] Thus, there is no conclusive evidence yet of HR varieties on yields in general.

In terms of profitability, the results are mixed for HR varieties. According to the 1999 detailed analysis of ARMS 1997 data, it was found that in spite of slightly higher yields for soyabeans, "the effect on variable profits was not statistically significant as slightly higher revenues and lower herbicide costs did not compensate for higher adopter's seed costs and technical fees".[23] In contrast, the impact on profits for herbicide-resistant cotton was positive and significant.

Other studies also find positive effects on profits of herbicide-resistant varieties. For example, a university study of the economic effects of Roundup Ready soyabeans, assuming only one application of Roundup and no effects on yields, calculates a net gain of US$15 per acre compared to conventional programmes.[24] However the effects are often mixed as they are conditional on location and types of weed problems experienced. This effect was reported in a study comparing Roundup Ready packages (seed and herbicide use) to conventional ones, which finds that with heavy weed pressure, net gains for using the Roundup programme are about US$42 per acre greater than the conventional one. However, where early (pre-emergent) weeds are the problem the conventional packages do better, with net gains of over US$21 per acre compared to the Roundup package.[25] A study of HR canola in Canada indicates that cost reductions and yields vary substantially across farmers and regions, and thus no overall conclusion on changes on profitability can be made.[26] These studies tend to indicate that measuring the profitability implications of HR varieties requires a great deal of caution. It may be the case that even though profitability may not be highly significant and positive in all cases, it is the ease and flexibility in the use of HR varieties, which has provided a major incentive for their adoption.

Insect Resistant Crops

Crop losses from insect infestation can be quite substantial. In some regions of the United States, for example, it is estimated that up to 10 per cent of production can be lost and on a world basis between 15 to 20 per cent, though the figures are far higher in developing countries and vary considerably between different crops. Combating pest infestation should therefore be a high priority for both developed and developing nations.

Insect resistant maize is referred to as Bt maize (Bt cotton for insect resistant cotton) after a toxin-producing gene inserted to control the common European corn borer (ECB) and other pests of the same family. However, where several types of pests can infest crops during the growing season it is often necessary to apply other insecticides, even on Bt varieties. Where weeds are also a problem, herbicides must also be applied; though some varieties include both Bt and HR characteristics. Studies undertaken by various University extension services confirm the yield advantage for Bt maize hybrids through the control of the ECB. It was also found that Bt maize varieties reduce use of other insecticides normally used to combat the ECB. For cotton there have also been significant reductions in insecticide use for pests targeted by Bt according to the ERS analysis of the ARMS survey for 1997.[27]

The decision to adopt Bt varieties is perhaps more complicated than in the case of HR crops because expected profits will also depend upon the probability of the severity of ECB infestation. Additional seed costs of Bt maize have to be weighed against lower insecticide costs and expected levels of crop infestation and yields to

calculate an economic threshold above which it is economically worthwhile to adopt Bt varieties. University research finds that yield increases from better control of ECB ranges from 4 to 8 per cent depending on year and location. Estimated economic benefits were found to vary between US$7.5 and US$40 per acre when maize prices were set at US$86 per tonne.[28] A study by the National Center for Food and Agricultural policy using industry provided farm survey data for 1997 and 1998 compared the profitability of Bt maize with conventional varieties. With knowledge of actual infestation levels, a US$24.70 per acre cost differential for Bt seed varieties, and assuming a maize price of US$96 per tonne in 1997 and US$77 per tonne in 1998, a simple calculation found that the average change in income per acre in 1997 was a gain of US$44.46 when ECB infestation levels were high, but a loss of US$4.47 in 1998 when the infestation was low. In total, farmers gained US$72 million from Bt maize in 1997, while they lost about US$26 million in 1998.[29] These aggregate results, however, may mask significant regional differences.

A 17-region ERS analysis of adoption rates of pest resistant crops for 1997 found that the two main reasons for adoption of Bt varieties given by farmers were to increase yields through improved pest control and to decrease pesticide costs. The study also found that while farmers may cut their pesticide costs through use of insect-resistant varieties, "expected benefits depend on infestation levels and associated yield advantages and pesticide use".[30]

Much attention has also been given to the long-term efficacy of the use of Bt crops. Government agencies in some OECD Member countries and scientists recognise that continued exposure to Bt toxins, the unique characteristic of Bt crops, will likely increase the risk of Bt resistant strains of ECB.[31, 32, 33] Refuge areas are thus recommended by governments and seed producers to permit resistant insects to breed with non-resistant insects. Required refuge areas are designated by their probabilities of insect resistance breeding, which is a function of both type of Bt variety used and geographical location. Thus, in the northern US states and Canada, required refuge is about 20 per cent (or 30-40 per cent if sprayed with pesticides), while in southern states, specifically in areas where cotton is grown, it is 50 per cent for a number of varieties.[34]

rBST

The use of recombinant bovine growth hormones (rBGH or rBST) to stimulate milk production in dairy cows has been another major contribution of modern biotechnology to agriculture. As with crops, the decision to adopt or not adopt depends on a number factors. In the case of rBST however, expected profitability is likely to be a more important factor than for crops, given the increased management required. To determine if it is worthwhile to adopt the technology a producer may simply estimate the additional revenues realised from rBST less the additional costs.[35] Quality of management and nutritional

composition of feed, however, affect the size and duration of milk yield response to rBST. Thus it is generally in herds which are best managed that milk yield can be expected to increase by the largest amount. Though it has been referred to as a size neutral technology, so that equipment and training needed to administer rBST are such that small, medium-size and large dairy mangers could profitably use it, adoption survey results indicate that the largest dairy farms employing modern management and feed systems are those which derive the maximum benefits from the technology.[36, 37]

According to farm surveys undertaken in two of the main dairy states in the United States, Wisconsin and California, the adoption of rBST remains moderate. A Wisconsin survey in 1999 reports that about 15 per cent of dairy farmers are using rBST, a more than doubling in the number of adopters since 1995. However, the adoption varies by size of herd with 71 per cent of farmers with 200+ head of cattle using rBST in contrast to only 4 per cent with herds of under 50 head. However, less than half the herd is treated.[38] From a 1998 California survey data, it is estimated that about 25 per cent of farmers are using rBST on about 30 per cent of their herd, thus less than 10 per cent of all cows are actually being treated.[39] According to Monsanto, about 30 per cent of dairy cows across the United States are being treated with rBST, which implies that about 21 per cent of US dairy farms use rBST. These limited adoption rates appear to contrast with the expected profits of adopting rBST and also contrast with adoption rates observed for GM crops, where even under varying profitability, adoption of the technology has been rapid and widespread. Various explanations may be available for this. For example, in Wisconsin non-adopters cited concern over consumer reaction and possible effects on herd health as reasons for not using rBST, while in California animal stress was one of the motivations in non adoption.

Agricultural Biotechnology Industry

Industry concentration

The upstream economic structure of agriculture as well as the regulatory systems are recognised as important not only for the continued growth in innovations in the agribiotech field but also for the introduction of GM crops into the food system. To maximise the social benefits from biotechnology, it is required that markets, regulatory and research systems function efficiently. How these elements interact and develop will determine the relative rates of acceptance by both producers and consumers and thus the extent to which modern biotechnology can contribute over time to improving global food and industrial supplies.

Though mergers and acquisitions are normal business practice, it is likely that the pace of technological innovation is intensifying the stimulus for structural change in agribusiness. Over the past 5 years

the agricultural seed and agro-chemical industries have become increasingly concentrated with a surge of mergers, acquisitions (partial or full) as well as growth in vertical up- and downstream co-ordination. Some analysts contend that the recent spurt of concentration patterns in certain industries is the result of developments in modern agriculture biotechnology, which feeds upon the development of specialised production processes, requiring tailored inputs that are the output of large research and development operations.[40] Concentration may be necessary to obtain R&D economies of scale in the race for patents necessary for firm survival and growth.[41, 42] An alternative interpretation is that the kind of R&D that has to be done is so expensive that consolidation is necessary to fund it. This hypothesis suggests that taking advantage of scale economies is required to afford some of the R&D, such as Monsanto's massive life science research center in St. Louis, Missouri. This path of industry evolution is however, raising concerns in policy and legal circles. The reasons for this are the possible abuse of market power, the effects on product innovation and implications for the evolution of farm structure. The standard reason for limiting industry concentration is to limit the market inefficiencies from non-competitive behaviour. But in the case of agribiotech industries, which earn their rents from patenting their innovations, their growing concentration may not just lead to the loss of economic efficiency but also have a negative impact on future innovations.[43]

Some of the most important mergers and acquisitions in this sector have been between the seed, biotechnology and agro-chemical companies. Since 1996, Monsanto has spent almost US$8 billion in acquiring seed and agro-chemical firms and DuPont, the world's largest chemical company, acquired Pioneer Hi-Bred International, the worlds largest seed company, for US$7.7 billion in 1999. Such linkages from the seed through to the processed food sector could affect the evolution of agricultural marketing and farming arrangements.

It has been suggested that we are now experiencing the "biotransformation" of agriculture where the traditional driving forces of growth and value creation that form the foundation of the agribusiness infrastructure are being redefined by biotechnology.[44, 45] Agricultural biotechnology, it is argued, is creating a new array of products that will be reshaping agricultural markets for food and feed as well as providing links to the industrial based economy and a redefinition of linkages from the farm-gate to end users. Industry is focussing on the development of innovative new product systems and business structures to create and capture the value generated from the farm gate all the way to the consumer.[46] These strategies rely on a complementary seed and agrochemical industry as well as the very close co-ordination with the downstream food and feed industries. Indeed, the future generations of agricultural biotechnology innovations are expected to be more explicitly geared to final consumer demand for products.[47]

The agri-biotech industry is essentially a knowledge-based industry, requiring innovation and product development for continued firm

growth. Thus there is also a close link to the R&D base and market dominance, with mergers and acquisitions serving to continue the growth of R&D capacities and innovation to dominate specific market sectors.[48] The importance of R&D and patents control, along with marketing and distribution systems of the resulting products, appears to guarantee the continued growth of these agro-biotech complexes.

Research and Development

The supply of innovations is to some extent determined by the legal framework protecting intellectual property rights. One of the main reasons why governments provide patent protection is to create incentives that maximise the difference between the value of intellectual property that is created and used, and the social cost of its creation.[49] By permitting inventors to earn a monopoly rent on their invention, incentives are provided.[50] The underlying assumption is that private firms will invest in innovation only if they receive an adequate return, which is their ability to appropriate some of the value that users place on the invention. Where producers cannot capture a sufficient portion of the value of the invention, they are not likely to invest a socially optimal amount in innovative activities.

The public sector in many OECD countries has maintained large agriculture research and extension stations for improving crop and livestock characteristics for the benefit of consumers and producers. Public R&D organisations do not privately capture the financial gains of research output, but rather it is the public – farmers, consumers and society as a whole, through geographic and inter-sectoral spillovers – which benefit from the knowledge created by the research.[51, 52] Furthermore, the role of the public sector in plant variety development may help to foster competition. However, public R&D may also reduce the economic incentives provided by the attribution of intellectual property rights to firms. In certain OECD countries, substantial collaborative research efforts between private firms and various public sector or publicly funded institutions are underway.

Demand and Markets

Consumer response

Consumer demand is based on many factors. Consumer response to GMOs will depend on many complex and interrelated factors. These include perceived product benefits versus costs, confidence in the government regulations, evaluations of possible health and environmental risks and their ethical stance towards genetic engineering in general. Among OECD countries the difference is particularly marked between North America and Europe. North Americans are overall quite favourable to the use of agricultural biotechnology for food production, two-thirds to three-quarters believe the technology can bring benefits to the environment as well as to nutrition.[53] In contrast, Europeans until now have

displayed scepticism about the net benefits to be had from the technology in agriculture in its present state.[54] Governments take into account certain of these public concerns with other important information in deciding if there is a need for specific policies.

The main consumer and general public issues focus on health concerns related to foods containing genetically modified materials or the unknown long term effects of GM crops on the environment and ethical considerations related to genetic engineering.[55] These consumer concerns or uncertainties have generated in many countries a demand for labelling of products containing or made through genetic modification. This reflects consumers' desire to choose to consume or not consume products which have been genetically modified. Their choice may reflect ethical considerations or be based only upon perceived risks to health or to the environment, irrespective of the availability of scientific evidence. They are nonetheless examples of individual values, which have been traditionally protected by policies that require informed consent.[56]

Most countries have food labelling requirements with respect to food content, but process or production methods have rarely been subject to labelling. However, with the advent of GMOs, the issue of labelling according to methods of production has arisen in a number of OECD countries. Specific regulations referring to novel foods, where these include products derived from biotechnology have been promulgated or are in the process of development in a number of OECD countries. In the course of 1999, Japan, South Korea, Australia and New Zealand have joined the European Union and Switzerland in requiring labelling on GMOs, to be applied in the near future, with precise dates of application varying across countries. The exact rules governing the labelling of these foods differ across countries and are in the process of being precisely articulated. These regulations contrast with those in the United States or Canada which do not require labelling of GMOs unless the food or food ingredient is no longer substantially equivalent to the corresponding existing food or food ingredient as regards composition, nutritional value or intended use or if potential allergens are identified.

Labelling and market implications

Where labelling of GMOs, in either the final product or process, is required this might imply the need to separate crops and products accordingly. This is likely to have market impacts due to changes in relative costs associated with separate transport, storage and processing systems. If traceability of the product from its origin to final user is also required, a system of tracking which permits Identity Preservation (IP) is needed. Definition of tolerance levels for non-GM commodity shipments and foodstuffs is an important factor in facilitating the segregation and in determining its costs. Tolerance arises because of the impossibility, in any practical food processing, handling and distribution chain, of ensuring absolute purity of products

and has been used in the industry for many years. For instance, the EU recently regulated that if the presence of GM material is lower than 1 per cent for each ingredient in foodstuffs and if this presence is adventitious, the labelling obligation does not apply. The approval of the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, in January 2000 in Montreal may have implications for the labelling of GM crops for food, feed and processing in trade. The agreement, the objective of which is to contribute to ensuring an adequate level of protection in the field of safe transfer, handling and use of living modified organisms resulting from modern biotechnology. (*Article 1*) is to be signed and ratified by participating countries beginning in May 2000. Different views on the implementation of the agreement remain *(http://www.biodiv.org/)*.

IP systems are already widely used for many crop and livestock products, as it permits the segregation and grading of crops to facilitate trade and sale of products. Premium value crops such as high oil maize, high protein wheat or speciality products such as organic produce are distributed through systems dependent upon some form of identity preservation. The increased costs of segregation along the food chain for these products are transferred down to the final user (consumer or processor) who usually expects to pay a higher price for these higher-value products.

While Identity Preservation can be used in segregating certain GM and non-GM crops, to do so for bulk commodities such as maize and soyabeans, may require substantial changes in present marketing systems. It is most likely that bulk crops may be segregated so that GM and non-GM crops can be identified in trade, but traceability from the farm may not to be needed. Nevertheless, either IP or segregation procedures will increase costs for processors as well as consumers. At present, there is only limited information on the cost of segregating GM and non-GM crops. Tolerance levels and testing requirements in terms of procedures and the number of test points are important factors determining the costs of IP.[57, 58] But the total difference in price for a non-GM and a GM crop at the final stage could also include a price premium for the non-GM crop. The extent to which non-GM crops will command a premium will depend on supply and demand of the crop and consumer's willingness to pay for the non-GM quality of the product.

If modern agricultural biotechnology for food continues to develop as envisioned by the major agri-biotech industries through specialised trait commodities, the role of IP systems will become more important and will most likely bring about significant changes in production, marketing and pricing of major agricultural commodities. And it may also imply different types of relationships between input suppliers, farmers and downstream industries and thus the structure of agriculture in general. For instance, in the United States 70 per cent of speciality crops are now produced under contract. According to some industry leaders, within a decade, a quarter of all grain production will be devoted to

quality or input traits, which will result in improved profitability for farmers. Within this context it is therefore likely that substantial investments will be made to improve the cost efficiency and reliability of identity preservation systems. This may be a positive aspect of the evolution in the food system, whether for identity preservation of GM and non-GM crops or speciality and high value crops.

Market Outlook considerations

As more countries adopt labelling regulations of GMOs – and the uncertainty remains over consumer uptake – some food processors and retail food chains are setting up non-GM food lines or have begun labelling of GM foods. This apparent rise in the demand for non-GM commodities by the food industry could be an attempt to pre-empt consumer response to GM products. It is already becoming widespread with major supermarket chains, including Icelandic, Sainsbury and Tesco (all UK), Carrefour (France) and Co-op (Italy), for example, all attempting to make their "own brand" food lines essentially GM free. Major processors in Japan have also announced that they are only importing non-GM commodities. And in the United States a number of processors are requesting non-GM commodities for their processing, most likely in anticipation of import demands from countries with non-GM preferences.

The GM issue has also raised some uncertainty over future demand for soyabeans and maize. To what extent the GM and non-GM commodity demand will affect markets is difficult to predict at present, as consumers, the food industry and government regulations are changing rapidly. Differentiating otherwise similar commodities by production process or origin, segments the market and creates price differentials. These in turn should generate substitution in animal feeds or between inputs in processed products. The magnitude of the impact on market demand and prices will depend on the size of the demand shifts and relative price elasticities across the subsectors. Over the next few years the impacts of these adjustment will be made clearer.[59] In the end it will be the relative demand/supply ratio that will determine if a discount or premium is applied to GM crops or not and this will necessarily affect the producers' future decisions. But it may also be the case that the gains from the use of GM technology, such as management flexibility or reductions of input costs, may be so large that even under the assumption of moderate price discount for GM crops farmers will continue to use GM varieties. It is also conceivable that future generations of GM products would have sufficiently attractive consumer attributes to warrant a premium. Consumer response to the products of agricultural biotechnology will clearly determine the nature of future products.

A number of estimates of the impacts of demand for non-GM crops are being made though none are precise due to the lack of

overall national and international data. No calculations were carried out with the Secretariat's *Aglink* model on the possible impacts of distinguishing between GM and non-GM commodities for this reason. Small price premia were observed in the fall of 1999 for non-GM soyabeans and maize, which varied according to location. The price premium a commodity can command will depend on supply of each type of commodity(GM, non-GM), and consumer willingness to pay. As of September, non-GM maize supply was sufficient to meet demand, thus discounts for GM maize were not anticipated. The range of premia being offered for non-GM soyabeans would imply no significant imbalances between non-GM demand and supply.[60]

The small number of observations concerning economic as well as environmental performance however limits the possibility of rigorous analysis. In addition, the changing regulatory situation in many OECD Member countries contributes to the difficulty in making clear-cut assessments on the market and economic impacts of these technologies for the moment. Consumer response to the technology remains uncertain in many OECD countries, though there are a number of instances where the food industry appears to be anticipating consumer response by developing both GM and non-GM food lines, particularly in Europe. How these events will effect future market developments for these commodities as well as their conventional counterparts remains an open question at this moment in most OECD countries.

Notes

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METHODOLOGY

The projections presented and analysed in this document are the result of a process bringing together information from Member countries and a number of other sources. Consistency in this process is ensured by the use of the OECD's *Aglink* model. A large amount of expert judgement, however, is applied at various stages of the Outlook process. The *OECD Agricultural Outlook* presents a single assessment, judged by the Secretariat to be plausible given the underlying assumptions, the procedure of information exchange outlined below and the information to which it had access to, as of 17 March 2000.

The starting point of the Outlook process is the reply by Member (and some Non-Member Economies) countries to an annual questionnaire circulated by the Secretariat at mid-year. Through these questionnaires, the Secretariat obtains information from Member countries on future market developments and on the evolution of agricultural policies in OECD countries. This information is supplemented by that obtained from other sources, such as the FAO, the World Bank or the IMF, to establish a view of the main forces determining market developments in the non-OECD area. This part of the process is aimed at creating a first insight into possible market developments and at establishing the key assumptions which condition the Outlook. These assumptions are indicated in the text and in specific tables of the present report.

As a next step, the OECD's *Aglink* model is used to facilitate a consistent integration of this information and to derive an initial set of global market projections (baseline). *Aglink* is a dynamic economic model of major temperate-zone agricultural commodity markets. It currently consists of modules for the eight main agricultural producing and trading countries, or groups of countries, within the OECD, a complete agricultural sector module for China and Argentina, and a beef sector module for other MERCOSUR countries. The modules are all developed by the Secretariat in conjunction with country experts and, in some cases, assistance from other national administrations. The initial baseline results are compared with those obtained from the questionnaire replies and any emerging issues are discussed in bilateral exchanges with Member countries. On the basis of these discussions and of updated information, a second baseline is produced.

In addition to quantities produced, consumed and traded, the baseline also includes projections for nominal prices for the commodities concerned. Unless otherwise stated, prices referred to in the text are also in nominal terms.

The information generated is used to prepare reports presenting Outlook assessments for cereals, oilseeds, sugar and livestock products. These reports are discussed at the annual meetings of the Working Group on Meat and Dairy Products and the Working Group on Cereals, Animal Feeds and Sugar of the OECD Committee for Agriculture. The Outlook discussions in the Working Groups focus on key issues emerging from the replies to the questionnaires and any adjustments which have to be made to Member (and observer) country projections in order to derive a coherent global baseline. Subsequent to the meetings of the commodity Working Groups and final data revisions, a revised baseline is produced and its sensitivity to major uncertainties is evaluated. The revised projections form the basis of a draft of the present *OECD Agricultural Outlook* publication, which is discussed by the Working Party on Agricultural Policies and Markets of the Committee for Agriculture, prior to publication.

The procedure implies that the projections presented in this report are heavily conditioned by those developed by Member countries. It also reconciles inconsistencies between individual Member country projections through the use of a formal modelling framework and highlights the sensitivity of the outcomes to key assumptions. The review process ensures that the judgement of Member country experts is applied to the projections and related analyses. However, the final responsibility for the projections and their interpretation rests with the OECD Secretariat.

ANNEX I.   STATISTICAL TABLES

Table 1 - **ECONOMIC ASSUMPTIONS**

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
REAL GDP[b]											
Australia	%	4.5	3.9	5.1	3.9	3.0	4.0	3.4	3.5	3.5	3.4
Canada	%	3.2	4.0	3.1	3.6	3.1	3.0	2.9	2.7	2.5	2.4
EU 15	%	2.4	2.5	2.7	2.1	2.7	2.7	2.5	2.5	2.2	2.3
Hungary	%	3.1	4.6	5.1	3.8	3.5	3.7	4.1	4.5	4.6	4.6
Japan	%	1.2	1.4	–2.8	1.4	1.4	1.2	2.1	2.2	1.7	1.8
Korea	%	4.6	5.0	–5.8	9.0	6.5	5.7	5.5	5.3	5.0	5.0
Mexico	%	3.0	6.8	4.9	3.4	3.3	4.0	4.6	4.9	4.9	5.0
Poland	%	5.9	6.8	4.8	3.5	5.2	5.8	5.4	5.0	5.1	5.1
United States	%	3.8	4.5	4.3	3.8	3.1	2.3	2.0	3.0	3.4	3.4
OECD[c, e]	%	2.8	3.3	2.3	2.8	2.9	2.6	2.5	2.9	2.9	2.9
Argentina	%	4.0	8.6	3.9	–1.1	1.7	3.0	4.7	4.1	4.1	4.1
China	%	10.0	8.8	7.8	7.0	6.8	7.0	7.5	7.6	7.6	7.6
Rest of world[d]	%	4.1	4.1	1.0	2.1	3.8	4.2	4.5	4.5	4.5	4.5
CPI[b]											
Australia	%	2.0	0.3	0.9	1.4	4.2	3.5	2.8	3.0	2.8	2.5
Canada	%	1.3	1.6	1.0	1.8	1.8	1.9	2.0	2.1	2.1	2.2
EU 15	%	2.5	2.1	1.7	1.2	1.8	1.8	1.9	1.8	1.7	1.7
Hungary	%	20.6	18.3	14.2	9.9	8.0	6.0	5.2	4.0	3.5	3.2
Japan	%	0.6	1.7	0.6	–0.3	–0.3	–0.3	0.2	0.5	0.5	0.5
Korea	%	5.5	4.4	7.5	0.9	2.5	2.8	2.7	2.7	2.9	3.0
Mexico	%	22.6	20.6	15.9	16.5	10.7	8.7	7.6	7.0	6.6	6.3
Poland	%	21.3	14.9	11.6	7.0	7.1	5.4	4.5	4.1	3.7	3.6
United States	%	2.4	2.3	1.5	1.6	2.3	2.4	2.3	2.2	2.2	2.1
OECD	%	4.5	4.3	3.6	2.8	3.0	2.5	2.3	2.3	2.2	2.1
Argentina	%	1.9	0.8	–1.4	8.1	2.3	2.5	2.7	3.1	3.6	3.9
China	%	10.1	2.8	–2.0	–1.0	2.5	3.0	4.0	4.5	4.7	4.7
POPULATION											
Australia	million	18.2	18.4	18.6	18.8	18.9	19.2	19.4	19.6	19.8	20.0
Canada	million	29.9	30.3	30.5	30.9	31.2	31.6	31.9	32.2	32.5	32.8
EU 15	million	373.1	374.1	375.1	376.0	377.0	378.0	379.1	380.1	381.2	381.8
Japan	million	125.8	126.2	126.5	126.7	126.9	127.1	127.3	127.4	127.6	127.7
Korea	million	45.5	46.0	46.4	46.9	47.3	47.7	48.1	48.4	48.8	49.1
Mexico	million	92.2	94.2	95.8	97.3	98.9	100.3	101.7	103.1	104.4	105.8
Poland	million	38.6	38.7	38.7	38.8	38.9	39.0	39.1	39.2	39.4	39.5
United States	million	265.1	266.8	269.2	270.7	273.0	275.3	277.5	279.8	282.0	284.3
OECD	million	1 086.9	1 094.2	1 101.5	1 107.9	1 115.1	1 122.2	1 129.4	1 136.4	1 143.5	1 150.1
Argentina	million	35.2	35.7	36.1	36.6	37.0	37.4	37.8	38.2	38.5	38.8
China	million	1 214.6	1 226.3	1 236.9	1 246.9	1 256.2	1 264.9	1 273.1	1 281.1	1 288.7	1 296.2
Rest of world[d]	million	3 091.5	3 151.5	3 214.0	3 276.6	3 339.7	3 402.8	3 466.2	3 529.6	3 593.3	3 656.9
EXCHANGE RATE											
Australia	A$/US$	1.39	1.35	1.59	1.55	1.54	1.54	1.55	1.56	1.56	1.56
Canada	C$/US$	1.39	1.38	1.48	1.48	1.44	1.41	1.38	1.37	1.36	1.36
EU 15	Euro/US$	0.83	0.88	0.89	0.85	0.94	0.94	0.94	0.93	0.93	0.93
Hungary	Ft/US$	156.9	186.6	214.3	236.0	247.6	251.0	260.2	266.4	271.5	275.9
Japan	¥/US$	111.4	121.0	130.9	114.3	106.0	106.0	104.0	102.1	100.3	98.5
Korea	'000 won/US$	0.95	0.95	1.40	1.19	1.20	1.20	1.20	1.21	1.22	1.23
Mexico	NM$/US$	6.90	7.92	9.15	9.59	9.61	9.61	10.14	10.65	11.17	11.69
New Zealand	NZ$/US$	1.61	1.51	1.87	1.89	1.95	1.95	1.94	1.93	1.93	1.92
Poland	Zl/US$	2.83	3.28	3.49	3.95	4.24	4.37	4.48	4.57	4.65	4.72
Argentina	Pesos/US$	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
China	Yuan/US$	8.35	8.29	8.18	8.20	8.17	8.33	8.57	8.85	9.17	9.49

Notes: **a)** Historical information for real GDP, CPI, population and exchange rates were obtained from *OECD Main Economic indicators*, December 1999. Assumptions for the projection period draw on the recent medium term macroeconomic projections of the OECD Economic Department (as presented in the recent "General assessment of the macroeconomic situation" chapter of the *OECD Economic Outlook* No. 66, December 1999), World Bank projections November 1999 and responses to a questionnaire sent to Member country agricultural experts. **b)** Annual per cent change. **c)** Excludes Iceland. **d)** Excludes NIS and Slovakia. Source: World Bank, 31st May 1999. **e)** Annual weighted average real GDP growth rates in OECD countries are based on GDP weights using 1991 purchasing power parities.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 2 - *MAIN POLICY ASSUMPTIONS FOR CEREAL MARKETS*

Crop year[a]		Average 94/95-98/99	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06
CANADA											
Tariff-quotas[b]											
wheat	kt	..	296	314	332	350	350	350	350	350	350
barley	kt	..	318	351	385	418	418	418	418	418	418
EU15[c]											
Cereal support price[d]	Euro/t	117	119	119	119	110	101	101	101	101	101
Cereal compensation[e, f]	Euro/t	49.6	50.4	54.3	54.3	58.7	63.0	63.0	63.0	63.0	63.0
Compulsory set-aside rate	%	9.4	5.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Set-aside payment[f]	Euro/t	68.8	68.8	68.8	68.8	58.7	63.0	63.0	63.0	63.0	63.0
Tariff-quotas[b]											
wheat[g]	kt	350	350	350	350	350	350	350	350	350	350
coarse grains[g]	kt	..	2 831	2 831	2 831	2 831	2 831	2 831	2 831	2 831	2 831
Subsidised export limits[b]											
wheat	mt	14.6	18.0	16.8	15.6	14.4	14.4	14.4	14.4	14.4	14.4
coarse grains	mt	10.0	12.6	12.0	11.4	10.4	10.4	10.4	10.4	10.4	10.4
JAPAN											
Rice land diversion program	'000 ha	733	787	963	963	963	787	787	787	787	787
Wheat support price[h]	'000 ¥/t	151	150	149	148	148	148	148	148	148	148
Barley support price[i]	'000 ¥/t	130	130	129	128	128	128	128	128	128	128
Wheat tariff-quota	kt	..	5 635	5 670	5 705	5 740	5 740	5 740	5 740	5 740	5 740
over-quota tariff	'000 ¥/t	..	60.0	58.3	56.7	55.0	55.0	55.0	55.0	55.0	55.0
Barley tariff-quota	kt	..	1 344	1 352	1 361	1 369	1 369	1 369	1 369	1 369	1 369
over-quota tariff	'000 ¥/t	..	42.5	41.3	40.2	39.0	39.0	39.0	39.0	39.0	39.0
Rice tariff-quota[j]	kt	..	..	..	724	767	767	767	767	767	767
over-quota tariff	'000 ¥/t	..	..	..	351	341	341	341	341	341	341
KOREA											
Wheat tariff	%	2.8	2.6	2.5	2.4	2.3	2.2	2.0	1.9	1.8	1.8
MEXICO											
Cereal income payment[k]	MN$/ha	491	556	626	729	807	878	944	1 010	1 077	1 145
Wheat NAFTA tariff	%	10.5	9.0	7.5	6.0	4.5	3.0	1.5	0.0	0.0	0.0
Fidelist social program	MN$ mn	949	1 201	1 493	1 377	1 524	1 657	1 783	1 908	2 033	2 162
Tortilla consumption subsidy	MN$ mn	745	0	0	421	0	0	0	0	0	0
Maize tariff-quota[l]	kt	2 655	2 733	2 815	2 899	2 986	3 076	3 168	3 263	3 361	3 462
Barley tariff-quota[l]	kt	166	174	182	191	201	212	222	233	245	257
POLAND											
Wheat tariff	%	20	20	20	20	20	20	20	20	20	20
Barley tariff	%	20	20	20	20	20	20	20	20	20	20
UNITED STATES											
Wheat maximum loan rate	US$/t	37.9	0.0	0.0	94.8	94.8	88.6	80.1	80.1	81.2	86.7
Maize maximum loan rate	US$/t	74.4	74.4	74.4	74.4	74.4	69.7	64.2	64.2	66.9	72.0
Prod. flex. contract payment											
wheat	US$/t	..	23.2	24.4	23.4	21.0	16.9	16.3	0.0	0.0	0.0
maize	US$/t	..	19.1	14.8	14.3	12.9	10.4	10.1	0.0	0.0	0.0
CRP areas[m]	mha	7.8	6.4	6.4	6.6	7.4	7.6	7.7	7.8	7.8	7.8
wheat	mha	4.1	3.7	3.8	4.0	4.4	4.5	4.6	4.7	4.7	4.7
coarse grains	mha	3.7	2.7	2.6	2.7	3.0	3.1	3.1	3.1	3.1	3.1
Subsidised export limits[b]											
wheat	mt	..	18.0	16.8	15.7	14.5	14.5	14.5	14.5	14.5	14.5
coarse grains	mt	..	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Wheat EEP payment[n]	US$/t	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHINA											
Wheat support price	Yuan/t	1 201	1 292	1 285	1 330	1 378	1 448	1 528	1 617	1 710	1 801
Coarse grains support price	Yuan/t	1 003	1 153	1 182	1 230	1 286	1 357	1 440	1 531	1 610	1 692
Rice support price	Yuan/t	1 882	2 023	2 042	2 135	2 234	2 331	2 438	2 477	2 517	2 561
Wheat tariff	%	10.4	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Coarse grains tariff	%	13.4	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0

Notes: *a)* Beginning crop marketing year – see Glossary of Terms for definitions. *b)* Year beginning 1 July. *c)* Prices and payments in market euro – see Glossary of Terms. *d)* Common intervention price for soft wheat, barley, maize, rye and sorghum. *e)* Compensatory area payments. *f)* Actual payments made per hectare based on program yields. *g)* Maize and sorghum imports by Spain and Portugal; including durum wheat and oats quota allocated to Canada. *h)* Government purchase price, domestic wheat. *i)* Government purchase price, barley, 2nd grade, 1st class. *j)* Husked rice basis. *k)* Applies to producers of wheat, maize and sorghum. *l)* NAFTA agreements for the US and Canada. *m)* Includes wheat, barley, maize, oats and sorghum. *n)* Average per tonne of total exports.

Source: OECD Secretariat.

Table 3 - **WORLD CEREAL PROJECTIONS**

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
WHEAT											
OECD[b]											
Production	mt	238.3	242.5	258.3	245.3	250.2	258.6	259.4	266.7	268.4	270.5
Consumption	mt	176.1	178.5	186.9	185.1	191.6	190.7	192.1	196.9	198.9	197.7
feed use	mt	61.0	61.7	70.7	67.9	68.8	71.2	71.7	74.1	75.1	72.9
Closing stocks	mt	45.2	47.9	61.0	57.6	50.3	50.3	49.4	49.9	49.4	43.4
NON-OECD											
Production	mt	328.1	361.9	324.9	332.3	348.0	356.8	363.8	370.0	373.7	378.2
Consumption	mt	392.8	402.9	397.9	400.3	411.4	422.4	428.8	437.6	445.7	453.3
feed use	mt	36.5	36.6	30.5	28.7	38.2	39.1	39.9	41.3	42.4	43.7
Net trade[d]	mt	–61.5	–60.3	–58.2	–63.6	–65.9	–67.8	–68.3	–69.2	–69.9	–78.8
Closing stocks	mt	75.4	86.7	72.0	67.6	70.1	72.3	75.6	77.2	75.0	78.8
WORLD[c]											
Production	mt	566.4	604.5	583.2	577.5	598.2	615.4	623.2	636.7	642.0	648.8
Consumption	mt	568.9	581.4	584.8	585.4	603.1	613.1	620.8	634.6	644.7	651.0
feed use	mt	97.5	98.3	101.2	96.7	107.1	110.3	111.7	115.4	117.5	116.6
Closing stocks	mt	120.6	134.7	133.0	125.2	120.4	122.6	125.0	127.1	124.5	122.2
Price[e]	US$/t	162	143	119	109	115	123	131	135	143	153
COARSE GRAINS											
OECD[b]											
Production	mt	456.9	471.7	479.3	469.0	467.1	470.2	480.3	489.6	499.3	508.3
Consumption	mt	419.0	429.3	426.1	433.3	430.9	439.1	448.6	453.3	459.0	465.5
feed use	mt	314.1	321.4	320.4	322.8	324.9	328.7	338.8	341.9	346.6	353.6
Closing stocks	mt	76.9	85.8	100.1	98.4	99.7	92.9	88.7	85.3	83.6	82.1
NON-OECD											
Production	mt	419.4	438.6	399.9	405.5	430.8	437.9	456.0	464.1	476.6	488.9
Consumption	mt	449.3	449.0	448.4	444.6	464.5	475.7	491.2	503.5	518.1	532.7
feed use	mt	260.7	262.8	258.4	258.6	276.5	286.7	300.2	311.2	323.8	336.7
Net trade[d]	mt	–32.6	–22.7	–38.9	–37.4	–34.9	–38.0	–35.8	–39.7	–42.1	–44.4
Closing stocks	mt	59.3	72.2	62.6	60.9	62.1	62.2	62.9	63.2	63.8	64.3
WORLD[c]											
Production	mt	876.3	910.2	879.3	874.5	897.9	908.1	936.2	953.7	975.9	997.2
Consumption	mt	868.3	878.3	874.6	877.9	895.4	914.8	939.7	956.8	977.1	998.2
feed use	mt	574.8	584.2	578.8	581.4	601.4	615.4	639.1	653.1	670.4	690.3
Closing stocks	mt	136.1	158.0	162.7	159.3	161.7	155.1	151.6	148.5	147.4	146.4
Price[f]	US$/t	120	109	93	90	92	99	103	109	114	117
RICE											
OECD[b]											
Production	mt	23.3	23.5	22.3	23.2	22.6	23.0	22.7	22.9	22.8	22.9
Consumption	mt	21.5	21.5	21.5	21.7	21.8	22.0	22.1	22.2	22.3	22.5
Closing stocks	mt	7.7	8.7	7.9	8.1	7.8	7.8	7.8	7.6	7.4	7.2
NON-OECD											
Production	mt	353.0	359.7	360.2	362.0	370.4	378.6	384.2	388.5	394.5	399.3
Consumption	mt	353.9	355.9	362.6	367.4	370.4	380.3	385.6	389.8	395.0	399.6
Net trade[d]	mt	–1.0	–1.2	–1.6	–1.3	–1.1	–1.0	–0.8	–0.8	–0.7	–0.6
Closing stocks	mt	48.4	51.5	50.6	46.5	47.5	46.8	46.2	45.7	46.0	46.2
WORLD[c]											
Production	mt	376.3	383.2	382.5	385.2	393.0	401.6	407.0	411.4	417.4	422.2
Consumption	mt	375.4	377.4	384.2	389.1	392.2	402.3	407.7	412.0	417.4	422.1
Closing stocks	mt	56.0	60.2	58.5	54.5	55.3	54.7	53.9	53.3	53.3	53.4
Price[g]	US$/t	315	302	284	241	254	263	274	283	292	300

Notes: **a)** Beginning crop marketing year – see Glossary of Terms for definitions. **b)** Excludes Iceland. **c)** Source of data is USDA. **d)** Non-OECD net exports (imports) equal OECD net imports (exports). **e)** No. 2 hard red winter wheat, ordinary protein, USA f.o.b. Gulf Ports (June/May). **f)** No. 2 yellow corn, USA f.o.b. Gulf Ports (September/August). **g)** Milled, 100%, grade b, Nominal Price Quote, NPQ, f.o.b. Bangkok (August/July).

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 4 - **MAIN POLICY ASSUMPTIONS FOR OILSEED MARKETS**

Crop year[a]		Average 94/95-98/99	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06
AUSTRALIA											
Tariffs[b]											
soyabean oil	%	9.3	9.0	8.7	8.3	8.0	8.0	8.0	8.0	8.0	8.0
rapeseed oil	%	9.3	9.0	8.7	8.3	8.0	8.0	8.0	8.0	8.0	8.0
CANADA											
Tariffs[b]											
rapeseed oil	%	8.8	8.2	7.6	7.0	6.4	6.4	6.4	6.4	6.4	6.4
EU15[c]											
Oilseed compensation[d, e]	Euro/t	94	94	94	94	82	72	63	63	63	63
compulsory set-aside rate	%	11.4	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
set-aside payment[e]	Euro/t	68.8	68.8	68.8	68.8	58.7	63.0	63.0	63.0	63.0	63.0
Tariffs[b]											
soyabean oil	%	8.8	8.2	7.6	7.0	6.4	6.4	6.4	6.4	6.4	6.4
rapeseed oil	%	8.8	8.2	7.6	7.0	6.4	6.4	6.4	6.4	6.4	6.4
JAPAN											
Deficiency payments											
soyabeans	bn.¥	9.7	12.3	16.1	16.2	16.2	16.2	16.2	16.2	16.2	16.2
Tariffs[b]											
soyabean oil	'000 ¥/t	15.0	14.0	12.9	11.9	10.9	10.9	10.9	10.9	10.9	10.9
rapeseed oil	'000 ¥/t	15.0	14.0	12.9	11.9	10.9	10.9	10.9	10.9	10.9	10.9
KOREA											
Soyabean (for food) tariff	%	4.6	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Soyabean (for food) mark up	'000 won/t	120	142	178	176	167	159	161	161	162	161
MEXICO											
Soyabeans income payment[j]	MN$/ha	491	556	626	729	807	878	944	1 010	1 077	1 145
Tariffs[f]											
soyabeans[g]	%	7.0	6.0	5.0	4.0	3.0	2.0	1.0	0.0	0.0	0.0
soyabean meal	%	10.5	9.0	7.5	6.0	4.5	3.0	1.5	0.0	0.0	0.0
soyabean oil	%	7.0	6.0	5.0	4.0	3.0	2.0	1.0	0.0	0.0	0.0
POLAND											
Tariffs[b]											
rapeseed	%	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
soyabean meal	%	8.0	6.7	6.7	5.4	5.4	4.3	4.3	3.4	3.4	3.4
soyabean oil	%	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
UNITED STATES											
Soyabeans loan rate[h]	US$/t	150	193	193	193	193	181	181	181	181	181
CRP area											
soyabeans	mha	1.6	1.5	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.3
Tariffs[b, i]											
rapeseed	US$/t	7.9	7.4	6.9	6.3	5.8	5.8	5.8	5.8	5.8	5.8
soyabean meal	US$/t	6.2	5.8	5.3	4.9	4.5	4.5	4.5	4.5	4.5	4.5
rapeseed meal	US$/t	2.3	2.2	2.0	1.7	1.7	1.7	1.7	1.7	1.7	1.7
soyabean oil	%	21.4	20.8	20.2	19.7	19.1	19.1	19.1	19.1	19.1	19.1
rapeseed oil	%	7.1	7.0	6.8	6.6	6.4	6.4	6.4	6.4	6.4	6.4
Subsidised export limits[b]											
oilseed oils	kt	..	409	320	231	141	141	141	141	141	141
CHINA											
Soyabean support price	Yuan/t	2 127	2 336	2 359	2 466	2 591	2 749	2 930	3 130	3 344	3 579
Tariffs[b]											
soyabeans	%	13.4	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
soyabean meal	%	20.2	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
soyabean oil	%	25.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0

Notes: **a)** Beginning crop marketing year – see Glossary of Terms for definitions. **b)** Year beginning 1 July, except for Japan 1 April. **c)** Prices and payments in market euro's – see Glossary of Terms. **d)** Compensatory area payments, before penalties. **e)** Payments made per hectare based on regional yields. **f)** Tariffs are NAFTA rates applied to imports from the US. **g)** Seasonal tariff, 1 October to 31 December. **h)** For non recourse commodity loans. **i)** Non–NAFTA suppliers. **j)** Weighted average of autumn/winter and spring/summer.
Source: OECD Secretariat.

Table 5 - WORLD OILSEED PROJECTIONS

Marketing year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
OILSEEDS											
OECD[b]											
Production	mt	97.4	103.3	109.2	107.1	112.2	110.9	109.5	110.3	110.6	112.9
Consumption	mt	100.1	105.9	109.1	106.7	111.2	114.2	115.8	117.8	118.7	119.7
crush	mt	89.4	94.9	96.0	96.4	100.6	103.1	105.0	106.4	107.2	108.1
Closing stocks	mt	11.2	9.8	14.6	16.7	21.3	22.6	21.5	19.5	16.2	13.7
NON-OECD											
Production	mt	102.4	109.9	112.2	114.3	116.6	122.7	125.4	129.4	133.2	135.7
Consumption	mt	98.6	105.3	107.1	112.4	113.1	118.0	120.3	123.9	128.3	131.4
crush	mt	83.8	90.2	93.3	97.8	98.0	102.5	104.4	107.6	111.8	114.6
Net trade[d]	mt	3.8	4.6	4.8	1.7	3.6	4.7	5.1	5.5	4.9	4.3
Closing stocks	mt	1.9	1.6	1.9	2.1	2.0	2.0	2.0	2.0	2.0	2.0
WORLD[c]											
Production	mt	199.9	213.2	221.3	221.3	228.8	233.6	234.9	239.7	243.8	248.7
Consumption	mt	198.7	211.2	216.1	219.1	224.3	232.2	236.1	241.8	247.1	251.2
crush	mt	173.3	185.1	189.3	194.2	198.7	205.6	209.4	214.0	218.9	222.6
Closing stocks	mt	13.1	11.4	16.6	18.8	23.3	24.7	23.5	21.4	18.2	15.7
Price[e]	US$/t	270	269	218	203	197	189	202	213	233	251
Price[f]	US$/t	264	257	209	195	188	181	194	204	224	240
OILSEED MEALS											
OECD[b]											
Production	mt	65.2	69.5	69.9	70.2	73.4	75.3	76.7	77.8	78.3	78.9
Consumption	mt	79.0	80.4	86.2	88.7	88.2	90.1	90.9	91.9	92.8	93.8
Closing stocks	mt	2.3	2.2	2.5	2.6	2.9	3.1	2.7	2.8	2.6	2.5
NON-OECD											
Production	mt	59.2	64.6	65.8	68.3	68.9	72.3	73.8	76.2	79.4	81.5
Consumption	mt	45.1	52.7	49.6	50.0	53.6	57.2	59.7	62.0	65.1	66.6
Net trade[d]	mt	13.9	11.1	16.5	18.7	15.1	15.0	13.9	14.2	14.3	14.8
Closing stocks	mt	2.7	3.3	3.0	2.6	2.9	3.0	3.2	3.2	3.2	3.3
WORLD[c]											
Production	mt	124.4	134.1	135.7	138.5	142.3	147.6	150.5	154.0	157.7	160.4
Consumption	mt	124.2	133.1	135.8	138.7	141.8	147.3	150.7	153.9	157.9	160.4
Closing stocks	mt	4.9	5.5	5.4	5.2	5.8	6.1	5.9	6.0	5.8	5.8
Price[g]	US$/t	195	182	137	160	145	140	148	154	166	175
Price[h]	US$/t	213	197	150	175	159	153	162	168	181	192
VEGETABLE OILS											
OECD[b]											
Production	mt	21.8	23.1	23.6	23.5	24.5	25.0	25.4	25.7	25.9	26.2
Consumption	mt	22.3	23.1	23.7	25.8	26.2	26.8	27.5	28.0	28.4	29.0
Closing stocks	mt	1.9	1.8	2.1	2.5	2.5	2.6	2.7	2.7	2.6	2.5
NON-OECD											
Production	mt	37.1	38.1	41.4	43.7	44.6	46.3	47.5	48.7	50.3	51.5
Consumption	mt	36.0	38.3	40.0	41.5	42.8	44.4	45.6	46.5	47.8	48.6
Net trade[d]	mt	0.6	0.0	0.4	2.6	1.7	1.9	2.1	2.3	2.4	2.7
Closing stocks	mt	4.6	4.4	5.4	5.0	5.2	5.1	4.9	4.9	5.0	5.3
WORLD[c]											
Production	mt	58.9	61.2	65.0	67.3	69.1	71.3	72.9	74.4	76.2	77.7
of which: palm oil	mt	17.1	17.1	19.3	20.6	21.4	21.8	22.4	22.7	23.1	23.5
Consumption	mt	58.3	61.4	63.7	67.2	68.9	71.2	73.1	74.5	76.1	77.5
Closing stocks	mt	6.6	6.2	7.5	7.5	7.7	7.8	7.6	7.5	7.6	7.8
Oil price[i]	US$/t	583	649	503	392	413	427	443	470	511	543
Palm oil price[j]	US$/t	578	640	514	363	383	397	413	440	481	512

Notes: **a)** Beginning crop marketing year – see Glossary of Terms for definitions. **b)** Excludes Iceland. **c)** Source of data is USDA. **d)** Non-OECD net exports (imports) equal OECD net imports (exports). **e)** Weighted average oilseed price, Europe. **f)** US soyabean import price, c.i.f. Rotterdam. **g)** Weighted average meal price Europe. **h)** Argentine soyabean meal pellets, 45/46% protein import price, c.i.f. Rotterdam. **i)** Weighted average price of oilseed oils and palm oil. **j)** Crude palm oil, 5% ffa, generally South East Asia origin, c.i.f. North West Europe.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 6 - **MAIN POLICY ASSUMPTIONS FOR MEAT MARKETS**

		Average 1994-98	1997	1998	1999	2000	2001	2002	2003	2004	2005
CANADA[a]											
Beef tariff-quota	kt pw	78	76	76	76	76	76	76	76	76	76
over-quota tariff	%	28.3	28.8	28.0	27.3	26.5	26.5	26.5	26.5	26.5	26.5
Poultry meat tariff-quota	kt pw	57	60	61	65	66	69	72	73	75	77
EU15[b]											
Beef support price[c, d]	Euro/kg dw	2.81	2.78	2.78	2.78	2.59	2.41	2.22	2.22	2.22	2.22
Pig meat basic price[d]	Euro/kg dw	1.52	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
Sheep meat basic price	Euro/kg dw	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04
Male bovine premium[e]	Euro/head	135	152	152	152	178	203	229	229	229	229
Adult bovine slaughter premium[f]	Euro/head	0	0	0	0	49	75	102	102	102	102
Calf slaughter premium	Euro/head	0	0	0	0	17	33	50	50	50	50
Suckler cow premium	Euro/head	135	145	145	145	163	182	200	200	200	200
Tariff-quotas[g]											
beef[d, h]	kt pw	136	144	144	144	144	144	144	144	144	144
pig meat[d, i]	kt pw	..	38	51	63	76	76	76	76	76	76
poultry meat[d]	kt pw	..	23	25	28	30	30	30	30	30	30
sheep meat[j]	kt cwe	273	280	280	280	280	280	280	280	280	280
Subsidised export limits[d]											
beef[k]	kt cwe	..	1 011	948	885	822	822	822	822	822	822
pig meat[k]	kt cwe	..	503	483	463	444	444	444	444	444	444
poultry meat	kt cwe	..	375	345	316	286	286	286	286	286	286
JAPAN[l]											
Beef stabilisation prices											
upper price	¥/kg dw	1 081	1 050	1 045	1 040	1 035	1 035	1 035	1 035	1 035	1 035
lower price	¥/kg dw	830	810	805	795	785	785	785	785	785	785
Beef tariff[m]	%	46.6	44.3	42.3	40.4	38.5	38.5	38.5	38.5	38.5	38.5
Pig meat stabilisation prices											
upper price	¥/kg dw	519	510	505	495	485	485	485	485	485	485
lower price	¥/kg dw	391	385	380	370	360	360	360	360	360	360
Pig meat import system											
tariff	%	4.9	4.8	4.5	4.4	4.3	4.3	4.3	4.3	4.3	4.3
standard import price[n]	¥/kg dw	483	466	443	433	423	423	423	423	423	423
Poultry meat tariff[o]	%	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
KOREA											
Beef tariff	%	38.4	42.8	42.4	42.0	41.6	41.2	40.8	40.4	40.0	40.0
Beef mark-up	%	57.0	40.0	20.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0
Pig meat tariff	%	34.4	33.4	32.2	31.0	29.8	27.9	26.1	25.2	25.0	25.0
MEXICO[p]											
Beef tariff[q]	%	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Pig meat tariff[q]	%	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Pig meat tariff-quota	kt pw	74	76	79	81	84	87	90	94	94	94
in-quota tariff	%	14.0	12.0	10.0	8.0	6.0	4.0	2.0	0.0	0.0	0.0
Poultry meat tariff-quota	kt pw	101	104	107	110	113	116	120	123	123	123
UNITED STATES											
Beef tariff-quota[r]	kt pw	656	697	697	697	697	697	697	697	697	697
over-quota tariff	%	..	28.8	28.0	27.2	26.4	26.4	26.4	26.4	26.4	26.4
CHINA											
Beef tariff	%	49.0	50.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Pig meat tariff	%	40.0	45.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Sheep meat tariff	%	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Poultry meat tariff	%	40.0	45.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

Notes: **a)** Tariff-quotas are a WTO agreement for non-NAFTA beef suppliers and a NAFTA agreement for US poultry meat. **b)** Prices and payments in market euro's – see Glossary of Terms. **c)** Price for R3 grade male cattle. **d)** Year beginning 1 July. **e)** Weighted average of bull and steer payments. **f)** Includes national envelopes for beef. **g)** Excludes Association Agreements – for pig and poultry meat these imports may form part of some tariff-quotas. **h)** Excludes access for ACP countries, beef balance sheet and EU – former Yugoslavia agreements. **i)** Excludes sausages and preserved meat. Access for ACP countries excluded. **j)** Voluntary restraint agreements and import quota for Chile prior to 1995. **k)** Includes live trade. **l)** Year beginning 1 April. **m)** Emergency import procedures for frozen beef triggered from August 1995 and again from 1.8.1996. **n)** Pig carcass imports. Emergency import procedures triggered from November 1995 to March 1996 and from July 1996 to June 1997. **o)** Boneless chicken meat applied rate. **p)** Tariff-quotas are NAFTA agreements for US and Canadian pig meat and US poultry meat. **q)** Frozen product, non-NAFTA suppliers. **r)** Non-NAFTA suppliers. Includes 40 kt of access commitments for Uruguay and Argentina. Trigger level for voluntary restraint agreements before 1995.
Source: OECD Secretariat.

Table 7 - **OECD MEAT PROJECTIONS**[a]

Calendar year		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
BEEF AND VEAL[b]											
Production	kt cwe	26 443	26 861	26 843	27 198	26 748	26 927	27 355	27 418	27 449	27 399
Net trade	kt cwe	867	975	903	878	761	765	788	798	810	802
Consumption	kt cwe	25 622	25 593	26 045	26 748	26 123	26 047	26 306	26 594	26 777	26 747
Ending stocks	kt cwe	952	1 263	1 150	719	581	694	953	976	836	714
Per capita consumption	kg rwt	16.5	16.4	16.6	16.9	16.4	16.2	16.3	16.4	16.4	16.3
Price, Australia[c]	A$/100 kg dw	185	163	181	196	221	214	207	194	196	202
Price, EU[d]	Euro/100 kg dw	345	339	342	335	362	294	263	263	269	275
Price, USA[e]	US$/100 kg dw	233	236	219	228	255	253	247	251	254	261
Price, Argentina[f]	Pesos/100 kg dw	157	165	192	183	209	207	213	208	215	216
PIG MEAT[g]											
Production	kt cwe	32 363	31 868	34 372	35 075	34 621	34 705	35 181	35 697	35 943	35 996
Net trade	kt cwe	459	672	880	1 027	823	863	876	893		
Consumption	kt cwe	31 707	31 099	33 139	34 031	33 730	33 723	34 186	34 671	34 903	34 954
Ending stocks	kt cwe	793	787	1006	871	758	761	758	762	762	750
Per capita consumption	kg rwt	22.8	22.2	23.5	24.0	23.6	23.4	23.6	23.8	23.8	23.7
Price, EU[h]	Euro/100 kg dw	138	164	119	121	135	119	117	122	125	132
Price, USA[i]	US$/100 kg dw	140	166	106	98	115	124	120	117	117	120
POULTRY MEAT											
Production	kt rtc	28 665	29 879	30 556	31 534	32 861	33 809	34 451	35 180	35 756	36 439
Net trade	kt rtc	2 144	2 572	2 628	2 444	2 598	2 712	2 862	2 976	3 089	3 185
Consumption	kt rtc	26 475	27 277	27 922	29 044	30 222	31 065	31 586	32 202	32 667	33 252
Stock changes	kt rtc	45	30	6	46	40	32	3	2	1	1
Per capita consumption	kg rwt	21.4	21.9	22.3	23.1	23.9	24.4	24.6	24.9	25.1	25.4
Price, EU[j]	Euro/100 kg rtc	91	90	87	83	85	80	78	78	79	81
Price, USA[k]	US$/100 kg rtc	130	130	139	128	128	128	130	133	137	140
SHEEP MEAT											
Production	kt cwe	2 741	2 692	2 713	2 687	2 686	2 642	2 630	2 609	2 594	2 581
Net trade	kt cwe	320	310	306	332	311	299	309	310	307	296
Consumption	kt cwe	2 403	2 342	2 378	2 355	2 372	2 341	2 317	2 294	2 283	2 280
Stock changes	kt cwe	18	30	29	0	4	2	4	5	5	6
Per capita consumption	kg rwt	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.7
Price, Australia[l]	A$/100 kg dw	190	200	178	208	204	218	231	233	240	246
Price, Australia[m]	A$/100 kg dw	65	75	79	79	78	83	88	89	91	94
Price, New Zealand[n]	NZ$/100 kg dw	251	277	255	266	265	260	276	276	280	282
TOTAL MEAT											
Per capita consumption	kg rwt	62.6	62.4	64.2	65.8	65.7	65.9	66.3	66.9	67.1	67.2

Notes: **a)** Excludes Iceland. Carcass weight to retail weight conversion factors of 0.7 for beef and veal, 0.78 for pig meat and 0.88 for sheep meat. Rtc to retail weight conversion factor 0.88 for poultry meat. **b)** Do not balance due to statistical differences in New Zealand. **c)** Weighted average price of cows 201-260 kg, steers 301-400 kg, yearling < 200 kg dw. **d)** Producer price. **e)** Choice steers, 1100-1300 lb lw, Nebraska – lw to dw conversion factor 0.63. **f)** Buenos Aires wholesale price linier, young bulls. **g)** Do not balance due to consumption in Canada which excludes non-food parts. **h)** Pig reference price – EU15 starting in 1995. **i)** Barrows and gilts, No. 1-3, 230-250 lb lw, Iowa/South Minnesota – lw to dw conversion factor 0.72. **j)** Weighted average farmgate live fowls, top quality, (lw to rtc conversion of 0.75), EU15 starting in 1995. **k)** Wholesale weighted average broiler price 12 cities. **l)** Saleyard price, lamb, 16-20 kg dw. **m)** Saleyard price, wethers, < 22kg dw. **n)** Lamb schedule price, all grade average.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 8 - *MAIN POLICY ASSUMPTIONS FOR DAIRY MARKETS*

		Average 1994-98	1997	1998	1999	2000	2001	2002	2003	2004	2005
AUSTRALIA[a]											
Domestic support payment[b]	A$c/kg	2.12	2.20	1.70	1.13	0.57	0.00	0.00	0.00	0.00	0.00
CANADA											
Milk target price[b]	C$c/litre	53.9	54.6	55.3	55.8	56.5	57.4	58.7	60.1	61.4	62.9
Butter support price	C$/t	5 340	5 338	5 388	5 467	5 510	5 530	5 550	5 571	5 591	5 611
SMP support price	C$/t	4 121	4 251	4 383	4 470	4 587	4 794	5 027	5 237	5 392	5 590
Dairy subsidy	C$c/litre	4.25	3.80	3.10	2.34	1.59	0.85	0.22	0.00	0.00	0.00
Cheese tariff-quota	kt pw	..	20	20	20	20	20	20	20	20	20
Subsidised export limits											
cheese	kt pw	..	11	10	10	9	9	9	9	9	9
SMP	kt pw	..	51	49	47	45	45	45	45	45	45
EU15[c, d]											
Milk quota[e]	mt pw	116	117	117	117	118	119	119	119	119	119
Milk target price	Euro/litre	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.310
Butter intervention price	Euro/t	3 282	3 282	3 282	3 282	3 282	3 282	3 282	3 282	3 282	3 200
SMP intervention price	Euro/t	2 055	2 055	2 055	2 055	2 055	2 055	2 055	2 055	2 055	2 004
Tariff-quotas[m]											
butter[f]	kt pw	74	81	83	85	87	87	87	87	87	87
cheese[g]	kt pw	47	61	75	89	102	102	102	102	102	102
SMP	kt pw	..	51	57	62	68	68	68	68	68	68
Subsidised export limits[a]											
butter	kt pw	369	452	435	417	399	399	399	399	399	399
cheese	kt pw	..	384	363	342	321	321	321	321	321	321
SMP	kt pw	253	310	298	285	273	273	273	273	273	273
other milk products	kt pw	894	1 095	1 049	1 004	958	958	958	958	958	958
JAPAN[c]											
Deficiency payment ceiling[h]	kt pw	2 340	2 400	2 400	2 400	2 400	2 400	2 400	2 400	2 400	2 400
Milk guaranteed price[b]	¥/litre	77.3	76.5	76.1	74.9	74.9	74.9	74.9	74.9	74.9	74.9
standard transaction price[i]	¥/litre	65.8	65.3	64.9	63.8	63.8	63.8	63.8	63.8	63.8	63.8
deficiency payment[j]	¥/litre	11.6	11.2	11.2	11.1	11.1	11.1	11.1	11.1	11.1	11.1
Butter stab. indicative price	'000 ¥/t	980	965	955	931	931	931	931	931	931	931
SMP stab. indicative price	'000 ¥/t	518	524	524	524	524	524	524	524	524	524
Cheese tariff[k]	%	33.3	32.4	31.5	30.7	29.8	29.8	29.8	29.8	29.8	29.8
Tariff-quotas											
SMP	kt pw	..	93	93	93	93	93	93	93	93	93
designated products[l]	kt pw	..	137	137	137	137	137	137	137	137	137
other products[l]	kt pw	..	128	130	132	134	134	134	134	134	134
MEXICO[m]											
Butter tariff[n]	%	14	12	10	8	6	4	2	0	0	0
Tariff-quotas											
cheese	kt pw	..	9	9	9	9	9	9	9	9	9
milk powders	kt pw	106	124	125	126	128	129	131	132	134	135
of which: NAFTA	kt pw	42.5	43.7	45.0	46.4	47.8	49.2	50.7	52.2	53.8	55.4
Liconsa social program	MN$ mn	2 358	2 886	3 087	3 458	3 458	3 458	3 458	3 458	3 458	3 457
UNITED STATES[o]											
Milk support price[b]	US$c/litre	23.1	23.2	22.8	22.5	22.5	0	0	0	0	0
Butter support price	US$/t	1 420	1 411	1 391	1 433	1 433	0	0	0	0	0
SMP support price	US$/t	2 291	2 297	2 264	2 229	2 227	0	0	0	0	0
Cheese tariff-quota	kt pw	120	124	128	132	136	136	136	136	136	136
Subsidised export limits[a]											
butter	kt pw	..	34	30	25	21	21	21	21	21	21
SMP	kt pw	..	92	84	76	68	68	68	68	68	68

Notes: **a)** Year ending 30 June. **b)** For manufacturing milk. **c)** Year beginning 1 April. **d)** Prices and payments in market euro's – see Glossary of Terms. **e)** Total quota, EU15 starting in 1995. **f)** Calendar year minimum access for New Zealand before 1995. **g)** Calendar year minimum access for Australia, New Zealand and Canada before 1995. **h)** Manufacturing milk eligible for deficiency payments. **i)** Paid to producers. **j)** Difference between transaction price and guaranteed price. **k)** Excludes processed cheese. **l)** Whole milk equivalent. **m)** Year beginning 1 July. **n)** NAFTA suppliers. **o)** Year beginning 1 January.

Source: OECD Secretariat.

Table 9 - **WORLD DAIRY PROJECTIONS (BUTTER AND CHEESE)**

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
BUTTER											
OECD[b, f]											
Production	kt pw	3 479	3 511	3 479	3 471	3 582	3 557	3 538	3 520	3 518	3 531
Imports	kt pw	137	146	169	189	186	185	195	205	196	195
Exports	kt pw	631	685	623	549	667	692	703	705	692	696
Consumption	kt pw	3 000	2 977	2 969	3 013	3 028	2 994	2 973	2 969	2 978	2 981
Closing stocks	kt pw	369	354	363	420	453	469	486	497	501	510
NON-OECD											
Production	kt pw	3 150	3 128	3 207	3 224	3 271	3 408	3 487	3 585	3 638	3 690
Consumption	kt pw	3 650	3 661	3 665	3 588	3 753	3 916	3 996	4 087	4 136	4 192
Net trade[d]	kt pw	–494	–540	–454	–360	–481	–507	–507	–500	–496	–501
Closing stocks	kt pw	73	62	58	54	52	50	48	46	44	43
WORLD[f]											
Production[c]	kt pw	6 629	6 639	6 686	6 694	6 852	6 964	7 024	7 105	7 156	7 221
Consumption	kt pw	6 650	6 638	6 634	6 601	6 781	6 911	6 969	7 056	7 114	7 173
Closing stocks	kt pw	442	416	422	475	506	519	534	543	545	553
Price[e]	US$/100 kg	185	186	191	148	151	156	159	164	175	184
CHEESE											
OECD[b]											
Production	kt pw	11 676	12 023	12 270	12 510	12 843	13 084	13 331	13 535	13 783	13 986
Imports	kt pw	562	580	625	646	665	684	699	710	723	736
Exports	kt pw	1 023	1 084	1 091	1 123	1 152	1 203	1 223	1 273	1 349	1 354
Consumption	kt pw	11 259	11 497	11 765	12 124	12 359	12 561	12 804	12 972	13 158	13 369
Closing stocks	kt pw	623	641	680	588	585	588	592	593	592	590
NON-OECD											
Production	kt pw	1 948	1 908	1 753	1 888	1 909	1 936	2 049	2 078	2 079	2 155
Consumption	kt pw	2 401	2 401	2 219	2 371	2 401	2 457	2 576	2 643	2 707	2 776
Net trade[d]	kt pw	–461	–504	–466	–478	–487	–519	–523	–563	–626	–618
Closing stocks	kt pw	76	92	92	90	90	91	91	91	91	91
WORLD											
Production[c]	kt pw	13 624	13 931	14 023	14 398	14 752	15 020	15 380	15 613	15 861	16 141
Consumption	kt pw	13 660	13 898	13 984	14 495	14 760	15 019	15 380	15 615	15 865	16 146
Closing stocks	kt pw	699	733	773	679	675	679	683	684	683	681
Price[g]	US$/100 kg	207	211	186	175	181	187	195	207	220	220

Notes: ***a)*** Year ending 30 June for Australia and 31 May for New Zealand in OECD aggregate. ***b)*** Excludes Iceland. ***c)*** Source of data is FAO. ***d)*** Non-OECD net exports (imports) equals OECD net imports (exports). ***e)*** F.o.b. export price, butter, 82% butterfat, northern Europe. ***f)*** Do not balance due to statistical differences in New Zealand. ***g)*** F.o.b. export price, cheddar cheese, 40 lb blocks, northern Europe.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 10 - *WORLD DAIRY PROJECTIONS (POWDERS AND CASEIN)*

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
SKIM MILK POWDER											
OECD[b, f]											
Production	kt pw	2 655	2 720	2 606	2 664	2 686	2 638	2 589	2 532	2 494	2 458
Imports	kt pw	271	294	241	239	264	269	270	240	237	237
Exports	kt pw	881	979	843	990	990	960	974	942	921	903
Consumption	kt pw	2 022	1 968	1 907	1 935	1 936	1 911	1 872	1 833	1 837	1 822
Closing stocks	kt pw	366	390	489	468	492	527	540	538	510	481
NON-OECD											
Production	kt pw	664	588	698	648	630	706	661	678	705	699
Consumption	kt pw	1 279	1 275	1 295	1 395	1 356	1 398	1 365	1 379	1 390	1 365
Net trade[d]	kt pw	–611	–685	–602	–751	–725	–692	–704	–702	–684	–666
Closing stocks	kt pw	49	47	51	55	54	54	54	54	54	54
WORLD[f]											
Production[c]	kt pw	3 320	3 308	3 304	3 313	3 315	3 344	3 249	3 210	3 199	3 157
Consumption	kt pw	3 301	3 243	3 202	3 330	3 292	3 309	3 237	3 212	3 226	3 186
Closing stocks	kt pw	415	437	540	523	546	581	594	592	564	535
Price[e]	US$/100 kg	178	174	144	132	145	149	155	164	176	186
WHOLE MILK POWDER											
OECD[b]											
Production	kt pw	1 771	1 744	1 773	1 758	1 911	1 923	1 941	2 010	2 071	2 118
Imports	kt pw	51	54	61	61	60	58	54	53	51	52
Exports	kt pw	1 008	985	1 012	956	1 081	1 095	1 101	1 153	1 198	1 231
Consumption	kt pw	812	811	821	870	886	887	895	910	924	939
NON-OECD											
Production	kt pw	691	734	774	785	775	787	803	818	833	839
Consumption	kt pw	1 637	1 671	1 720	1 679	1 796	1 823	1 850	1 918	1 980	2 018
Net trade[d]	kt pw	–957	–931	–950	–895	–1 020	–1 036	–1 047	–1 100	–1 147	–1 179
WORLD											
Production[c]	kt pw	2 462	2 478	2 547	2 543	2 686	2 710	2 745	2 828	2 904	2 957
Consumption	kt pw	2 448	2 482	2 541	2 549	2 682	2 710	2 745	2 828	2 904	2 957
Price[g]	US$/100 kg	184	190	166	152	154	157	163	178	184	197
WHEY POWDER											
NON-OECD											
Net trade	kt pw	–221	–272	–238	–263	–247	–248	–245	–248	–251	–254
Wholesale price, USA[h]	US$/100 kg	46	48	48	44	44	41	44	47	49	49
CASEIN											
Price[i]	US$/100 kg	449	435	405	393	434	441	448	475	487	486

Notes: **a)** Year ending 30 June for Australia and 31 May for New Zealand in OECD aggregate. **b)** Excludes Iceland. **c)** Source of data is FAO. **d)** Non-OECD net exports (imports) equal OECD net imports (exports). **e)** F.o.b. export price, nonfat dry milk, extra grade, Northern Europe. **f)** Do not balance due to stastitical differences in New Zealand. **g)** F.o.b. export price, WMP 26% butterfat, Northern Europe. **h)** Edible dry whey, Wisconsin, plant. **i)** World price, New Zealand.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 11 - **OECD TRADE PROJECTIONS**[a]

		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
EXPORTS												
Wheat	kt	81 241	81 891	79 791	83 999	85 899	88 529	88 869	90 139	90 702	99 035
Coarse grains	kt	77 894	64 745	83 159	82 476	78 633	81 289	80 220	84 541	87 598	90 697
Rice	kt	4 889	5 008	5 389	5 120	4 927	4 952	4 788	4 932	4 925	4 860
Oilseeds	kt	28 942	29 354	29 703	32 148	32 567	31 918	32 148	32 095	32 930	33 377
Oilseed meals	kt	9 447	11 930	9 863	9 597	11 611	11 881	12 764	13 208	12 826	12 485
Vegetable oils	kt	4 349	5 254	4 676	3 045	4 458	4 651	4 895	4 994	5 213	5 186
Beef[b]	kt	4 697	4 947	4 882	5 060	5 024	5 078	5 089	5 180	5 376	5 641
Pig meat[b]	kt	2 054	2 271	2 612	2 861	2 500	2 529	2 640	2 824	2 889	2 972
Poultry meat	kt	3 277	3 771	3 857	3 773	3 854	3 984	4 157	4 301	4 446	4 572
Sheep meat[b]	kt	868	839	848	856	847	842	856	862	863	856
Butter	kt	631	685	623	549	667	692	703	705	692	696
Cheese	kt	1 023	1 084	1 091	1 123	1 152	1 203	1 223	1 273	1 349	1 354
Skim milk powder	kt	881	979	843	990	990	960	974	942	921	903
Whole milk powder	kt	1 008	985	1 012	956	1 081	1 095	1 101	1 153	1 198	1 231
Whey powder[c]	kt	221	272	238	263	247	248	245	248	251	254
IMPORTS												
Wheat	kt	19 716	21 634	21 548	20 375	20 028	20 681	20 559	20 907	20 832	20 259
Coarse grains	kt	45 304	42 067	44 308	45 073	43 691	43 308	44 410	44 813	45 510	46 309
Rice	kt	3 850	3 811	3 835	3 817	3 850	3 949	4 026	4 103	4 181	4 242
Oilseeds	kt	32 720	34 003	34 454	33 877	36 146	36 576	37 271	37 611	37 846	37 679
Oilseed meals	kt	23 335	23 075	26 363	28 254	26 688	26 870	26 673	27 427	27 122	27 316
Vegetable oils	kt	4 976	5 273	5 043	5 671	6 179	6 597	6 951	7 282	7 593	7 904
Beef[b]	kt	3 582	3 651	3 679	3 874	3 976	3 998	3 978	4 041	4 220	4 462
Pig meat[b]	kt	1 586	1 587	1 705	1 807	1 624	1 674	1 762	1 921	1 971	2 034
Poultry meat	kt	1 133	1 199	1 228	1 329	1 255	1 272	1 295	1 325	1 357	1 387
Sheep meat[b]	kt	423	417	431	426	436	440	441	442	446	447
Butter	kt	137	146	169	189	186	185	195	205	196	195
Cheese	kt	562	580	625	646	665	684	699	710	723	736
Skim milk powder	kt	271	294	241	239	264	269	270	240	237	237
Whole milk powder	kt	51	54	61	61	60	58	54	53	51	52

Notes: **a)** For meats, year are calendar year; for grains, meals and oils products, year are crop or marketing year; for dairy products, year are calendar year but year ends 30 June for Australia and 31 May for New Zealand in the OECD aggregate. **b)** Includes trade of live animals. **c)** Net exports.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 12 - **WHEAT PROJECTIONS**

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
AUSTRALIA											
Production	mt	18.1	19.4	22.1	22.8	22.7	23.0	22.5	22.6	22.5	22.7
Consumption	mt	4.3	5.1	5.1	5.2	5.4	5.4	5.5	5.5	5.4	5.4
Exports	mt	14.2	15.7	16.4	17.2	17.5	17.7	17.1	17.1	17.0	17.1
Price[b]	A$/t	206	193	180	177	180	187	195	195	207	228
CANADA											
Production	mt	25.2	24.3	24.1	27.0	26.8	29.6	27.1	26.4	25.9	25.0
Consumption	mt	7.8	7.4	8.1	8.1	7.5	7.9	8.1	8.4	8.6	8.6
Exports	mt	18.2	20.0	14.7	19.0	19.7	20.2	19.2	18.3	17.6	16.7
Closing stocks	mt	7.0	6.0	7.4	7.3	6.9	8.5	8.4	8.2	8.0	7.6
Price[c]	C$/t	207	200	179	170	174	175	183	187	198	210
EU15											
Production	mt	92.9	93.4	102.1	96.0	100.1	103.0	107.3	110.1	111.7	113.6
Consumption	mt	80.2	81.8	85.2	86.3	88.9	92.2	94.2	95.7	96.2	95.1
Exports[d]	mt	14.6	14.2	14.7	14.7	15.4	15.3	15.2	15.4	15.4	24.1
Closing stocks	mt	12.4	13.2	18.1	14.3	12.4	10.3	10.6	11.9	14.4	11.1
Price[e]	Euro/t	134	130	120	132	125	118	118	116	114	118
HUNGARY											
Production	mt	4.7	5.3	4.9	2.7	4.0	5.4	5.8	6.1	6.2	6.4
Consumption	mt	3.2	3.2	3.2	2.4	2.7	2.8	3.0	3.2	3.3	3.3
Exports	mt	1.8	1.5	2.4	0.7	1.2	2.7	2.7	2.9	3.0	3.2
Price[f]	'000 ft/t	16.1	20.7	15.5	18.5	18.9	19.0	20.8	21.6	22.6	24.6
JAPAN											
Production	mt	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Consumption	mt	6.3	6.3	6.2	6.4	6.4	6.4	6.5	6.5	6.5	6.6
Imports	mt	5.9	6.0	5.7	5.8	5.8	5.8	5.9	5.9	6.0	6.0
Closing stocks	mt	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Price[g]	'000 ¥/t	24.5	26.1	24.9	20.1	20.4	21.2	21.8	21.9	22.2	23.6
KOREA											
Consumption	mt	3.8	4.2	5.1	4.2	4.4	4.5	4.5	5.1	5.0	4.4
Imports	mt	3.7	4.2	5.0	4.1	4.3	4.4	4.4	5.1	4.9	4.3
Price[h]	'000 won/t	188.9	203.3	248.4	138.6	147.9	159.2	172.6	179.9	193.7	210.6
MEXICO											
Production	mt	3.6	3.6	3.3	3.2	3.3	3.3	3.5	3.7	3.9	4.0
Consumption	mt	4.9	5.1	4.9	4.8	5.1	5.4	5.4	5.4	5.7	5.8
Imports	mt	1.6	1.7	2.0	2.0	2.2	2.6	2.4	2.2	2.2	2.2
Price[i]	MN$/t	1195	1306	1379	1370	1440	1597	1842	2017	2102	2227

For notes, see end of the table.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 12 - **WHEAT PROJECTIONS** (cont.)

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
NEW ZEALAND											
Production	mt	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
Consumption	mt	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
Imports	mt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Price[j]	NZ$/t	274	263	248	230	247	261	275	279	295	313
POLAND											
Production	mt	8.5	8.2	9.5	9.1	8.8	9.3	9.2	9.7	10.1	9.9
Consumption	mt	9.1	9.3	9.6	9.5	9.4	9.4	9.7	9.6	9.8	9.9
Imports	mt	1.0	0.6	0.4	0.1	0.4	0.2	0.2	0.1	0.0	0.0
Price[k]	Zl/t	436	502	446	479	503	527	549	565	580	591
UNITED STATES											
Production	mt	64.3	67.5	69.3	62.6	61.8	62.1	60.8	64.4	63.9	64.6
Consumption	mt	34.7	34.2	37.7	35.9	39.5	33.9	32.2	34.2	34.7	34.8
Imports	mt	2.5	2.6	2.8	2.6	2.6	2.7	2.8	2.8	2.8	2.8
Exports	mt	30.0	28.3	28.4	28.5	29.7	30.2	32.2	33.8	34.8	35.1
Closing stocks	mt	16.3	19.7	25.7	26.5	21.8	22.6	21.8	21.0	18.3	15.8
Price[l]	US$/t	135	124	97	94	99	105	113	117	124	132
OTHER OECD[m]											
Production	mt	20.2	20.0	22.0	21.2	21.7	22.0	22.4	22.8	23.1	23.4
Consumption	mt	21.3	21.4	21.4	21.7	21.9	22.2	22.5	22.8	23.1	23.3
Net trade	mt	-0.2	-1.4	0.1	-0.6	-0.3	-0.2	-0.1	0.0	0.1	0.1
ARGENTINA											
Production	mt	12.4	14.8	10.6	14.5	14.9	15.5	16.3	16.9	17.1	17.3
Consumption	mt	5.0	4.9	5.5	5.4	5.7	5.7	5.7	5.9	6.0	6.0
Exports	mt	7.4	10.2	5.8	9.0	9.3	9.9	10.6	11.1	11.2	11.4
Price[n]	Pesos/t	148	127	111	99	103	110	115	118	124	134
CHINA											
Production	mt	107.9	119.8	107.7	113.0	114.4	115.5	116.8	117.8	119.0	119.8
Consumption	mt	112.2	112.9	113.9	115.7	116.1	117.5	118.6	119.9	121.0	121.7
Imports	mt	5.5	0.8	1.2	1.6	1.6	1.6	1.6	1.9	1.9	1.9
Closing stocks	mt	27.5	33.4	27.8	25.2	24.6	23.8	23.1	22.3	21.6	20.9
Price[o]	Yuan/t	1 277	1 261	1 280	1 335	1 462	1 531	1 613	1 682	1 759	1 853
NIS											
Production	mt	64.9	81.9	57.5	62.9	73.2	74.1	75.3	76.1	77.2	78.0
Consumption	mt	72.5	73.5	66.6	63.4	68.7	72.1	72.3	73.2	73.7	74.6
Net trade	mt	-2.6	-1.2	0.5	-0.9	1.3	2.0	2.9	2.8	3.3	3.2
Closing stocks	mt	12.3	16.5	7.0	7.4	10.6	10.7	10.7	10.9	11.0	11.2
REST OF WORLD[p]											
Production	mt	140.9	143.6	147.2	140.1	143.6	149.6	153.3	157.0	158.2	160.9
Consumption	mt	200.9	209.2	209.3	213.1	218.3	224.6	229.3	235.9	242.3	248.2
Net trade	mt	-61.2	-68.4	-63.1	-70.8	-74.6	-77.9	-80.1	-81.2	-82.5	-91.6
Closing stocks	mt	35.0	35.9	37.0	34.7	34.6	37.5	41.6	43.9	42.3	46.6

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** AWB net pool return, ASW 10. **c)** CWB final producer price, No. 1 CWRS, in store Thunder Bay or Vancouver. From 1995 in store St Lawrence or Vancouver. **d)** Excludes intra-EU15 trade. **e)** Weighted average producer price, common and durum wheat, year ended 31 December. **f)** Average price at farm level **g)** Average import price c.i.f., all wheat, year ended 31 December. **h)** Import price. **i)** Average producer price. **j)** Indicative wheat price. **k)** Average procurement price. **l)** Average price received by farmers. **m)** Includes Czech Republic, Norway, Switzerland and Turkey. Excludes Iceland. **n)** Export price f.o.b., Argentinean ports. **o)** Free market price. **p)** Excludes Slovakia.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 13 - **COARSE GRAINS PROJECTIONS**

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
AUSTRALIA											
Production	mt	9.4	10.2	10.1	8.2	8.9	8.6	9.0	9.2	9.4	9.8
Consumption	mt	5.4	5.4	5.5	5.4	5.1	5.2	5.1	5.2	5.3	5.3
Exports	mt	4.1	3.8	5.2	3.1	3.3	3.6	3.8	4.0	4.1	4.4
Price[b]	A$/t	189	179	133	140	164	163	175	177	194	194
CANADA											
Production	mt	25.5	25.1	26.6	26.7	26.3	25.9	28.6	29.3	28.6	28.6
Consumption	mt	21.6	22.4	22.9	23.0	23.3	24.0	24.3	24.9	25.3	25.8
Exports	mt	5.0	4.4	4.1	4.1	4.1	3.5	5.4	5.6	4.7	4.2
Closing stocks	mt	4.0	4.3	4.8	5.2	4.8	4.1	4.2	4.5	4.4	4.4
Price[c]	C$/t	145	121	144	134	123	129	132	136	140	144
EU15											
Production	mt	99.2	108.3	104.8	102.6	99.4	98.8	100.2	100.9	102.7	104.2
Consumption	mt	90.9	93.7	92.1	91.2	90.5	93.3	93.6	93.8	94.4	95.6
Exports[d]	mt	11.2	8.8	14.7	11.4	10.4	10.4	10.4	10.4	10.4	10.4
Closing stocks	mt	19.3	23.8	25.3	28.1	29.9	28.4	27.9	28.0	29.3	30.8
Price[e]	Euro/t	123	120	107	116	106	98	98	98	98	97
HUNGARY											
Production	mt	7.1	8.5	7.6	8.4	8.5	8.9	9.3	9.6	10.2	10.6
Consumption	mt	6.3	6.8	6.1	7.2	7.3	7.4	7.6	7.8	7.9	8.1
Exports	mt	0.8	1.4	1.5	1.5	1.2	1.6	1.7	1.9	2.2	2.5
Closing stocks	mt	1.1	1.1	1.2	0.8	0.8	0.8	0.8	0.8	0.9	0.9
Price[f]	'000 ft/t	15.3	15.5	18.0	20.7	21.2	22.9	24.3	26.2	27.9	29.9
JAPAN											
Production	mt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Consumption	mt	21.9	22.1	22.2	22.5	21.7	21.8	22.0	22.0	22.1	22.1
Imports	mt	21.9	21.8	21.8	22.3	21.4	21.6	21.8	21.6	21.8	21.9
Closing stocks	mt	7.8	8.2	8.0	8.0	7.9	7.9	7.9	7.8	7.8	7.8
Price[g]	'000 ¥/t	16.8	18.4	17.3	11.9	12.3	12.7	13.3	13.6	14.1	14.3
KOREA											
Production	mt	0.4	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Consumption	mt	9.1	7.9	7.8	8.5	8.6	8.8	9.0	8.8	8.9	9.0
Imports	mt	8.7	7.5	7.4	8.7	8.1	8.3	8.5	8.3	8.4	8.5
Closing stocks	mt	1.2	1.0	0.9	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Price[h]	'000 won/t	151	182	182	117	119	127	131	138	144	148
MEXICO											
Production	mt	23.7	24.5	23.4	24.9	26.2	27.0	27.8	28.4	28.9	29.4
Consumption	mt	28.7	29.6	28.8	29.1	30.6	31.5	32.5	33.6	34.4	35.4
Imports	mt	4.9	4.3	5.6	4.8	4.4	4.5	4.8	5.2	5.5	6.0
Price[i]	MN$/t	1 183	1 354	1 380	1 436	1 550	1 605	1 732	1 821	1 975	2 104

For notes, see end of the table.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

*Table 13 - **COARSE GRAINS PROJECTIONS** (cont.)*

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
NEW ZEALAND											
Production	kt	611.4	602.0	622.8	649.0	652.0	653.0	654.8	656.8	658.8	659.7
Consumption	kt	637.9	625.2	663.6	692.4	684.6	673.8	676.9	675.4	677.6	679.9
Imports	kt	40.8	41.4	32.9	59.4	35.8	24.6	28.2	27.3	27.6	27.8
Price[j]	NZ$/t	240	260	249	221	233	245	250	255	252	252
POLAND											
Production	mt	16.6	17.2	17.6	16.5	16.6	17.6	17.6	17.8	17.7	18.4
Consumption	mt	17.4	17.5	18.5	18.4	18.1	17.3	17.7	17.4	17.9	18.4
Imports	mt	0.9	0.7	0.5	1.4	1.1	0.0	0.0	0.0	0.0	0.0
Price[k]	Zl/t	381	418	390	428	480	502	525	522	550	552
UNITED STATES											
Production	mt	259.7	261.8	272.7	264.3	263.9	265.8	270.2	276.6	283.9	289.3
Consumption	mt	202.0	207.9	206.3	211.7	209.2	213.3	220.2	223.1	225.8	228.7
Exports	mt	55.8	45.5	56.1	59.9	57.6	60.2	56.8	60.6	64.0	66.9
Closing stocks	mt	35.7	38.6	51.9	47.2	47.0	42.4	38.7	34.8	32.1	29.1
Price[l]	US$/t	99	96	76	78	80	86	90	95	99	102
OTHER OECD[m]											
Production	mt	14.3	15.0	15.4	16.2	16.0	16.1	16.3	16.4	16.5	16.7
Consumption	mt	15.0	15.4	15.4	15.6	15.7	15.8	15.9	16.1	16.2	16.3
Net trade	mt	–0.8	–0.9	–0.1	0.8	0.3	0.3	0.3	0.4	0.4	0.4
ARGENTINA											
Production	mt	17.7	24.8	17.5	19.7	21.0	22.3	23.3	23.7	24.3	24.3
Consumption	mt	7.9	9.4	8.6	9.1	9.3	9.5	10.1	10.5	11.0	11.5
Exports	mt	9.9	15.1	9.2	10.7	11.7	12.8	13.2	13.2	13.3	12.8
Closing stocks	mt	0.4	0.7	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Price[n]	Pesos/t	119	96	91	95	98	103	97	101	104	107
CHINA											
Production	mt	130.6	139.5	133.6	137.1	140.1	143.8	148.1	153.2	157.4	161.8
Consumption	mt	125.2	127.9	132.0	135.2	139.4	143.2	147.8	152.9	157.6	162.4
Imports	mt	3.3	2.2	2.6	3.4	4.0	4.2	4.4	4.5	4.8	5.0
Closing stocks	mt	31.7	42.0	40.1	40.1	40.1	40.0	40.0	40.1	40.1	40.1
Price[o]	Yuan/t	1 156	1 220	1 195	1 227	1 282	1 360	1 435	1 521	1 600	1 681
NIS											
Production	mt	61.4	70.6	40.6	42.5	50.1	50.5	51.0	51.9	53.0	54.3
Consumption	mt	61.8	59.2	47.9	43.3	49.4	50.4	51.6	52.4	53.8	55.2
Net trade	mt	1.3	2.5	0.3	0.7	0.5	0.1	–0.6	–0.5	–0.8	–0.9
Closing stocks	mt	7.6	12.6	5.0	3.5	3.6	3.6	3.6	3.6	3.6	3.6
REST OF WORLD[p]											
Production	mt	208	202	207	204	218	219	232	234	240	247
Consumption	mt	253	251	258	255	265	271	280	286	294	302
Net trade	mt	–44.2	–45.1	–51.8	–50.8	–48.0	–51.6	–48.8	–52.7	–54.5	–55.8
Closing stocks	mt	19.4	16.9	17.0	16.8	17.9	18.1	18.7	19.0	19.6	20.1

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** Cash price, bulk feed barley, Sydney. **c)** CWB final price, No. 1 CW barley, St Lawrence since 1995, Thunder Bay before. **d)** Excludes intra-EU15 trade. **e)** Weighted average producer price, barley, year ended 31 December. **f)** Maize farm gate price. **g)** Farm gate price. **h)** Average import price c.i.f., maize, year ended 31 December. **i)** Average producer price, maize. **j)** Indicative price, feed barley. **k)** Average procurement price, barley. **l)** Maize average producer price. **m)** Includes the Czech Republic, Norway, Switzerland and Turkey. Excludes Iceland. **n)** Export price, f.o.b., Argentinean Ports. **o)** Maize free market price. **p)** Excludes Slovakia.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 14 - **RICE PROJECTIONS**

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
OECD											
AUSTRALIA											
Production	mt	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1
Consumption	mt	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4
Exports	mt	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8
Price[b]	A$/t	214	226	212	192	190	181	189	197	200	201
EU15											
Production	mt	1.6	1.8	1.7	1.6	1.6	1.6	1.7	1.7	1.7	1.7
Consumption	mt	1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.2
Imports[c]	mt	1.6	1.7	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Closing stocks	mt	0.5	0.7	0.8	0.7	0.7	0.6	0.6	0.5	0.4	0.3
Price[d]	Euro/t	323	304	280	249	242	251	259	258	249	240
JAPAN											
Production	mt	9.4	9.1	8.1	8.3	8.4	8.7	8.7	8.7	8.6	8.6
Consumption	mt	9.2	9.2	9.0	9.1	9.1	9.1	9.1	9.1	9.0	9.0
Imports	mt	0.8	0.6	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7
Closing stocks	mt	5.3	6.0	5.0	4.2	3.8	3.8	3.8	3.8	3.8	3.8
Price[e]	'000 ¥/t	302	274	280	260	276	281	285	290	294	300
KOREA											
Production	mt	5.1	5.4	5.1	5.2	5.0	4.9	4.9	4.8	4.8	4.8
Consumption	mt	5.2	5.2	5.0	5.0	5.0	5.1	5.0	5.0	5.0	5.0
Imports	mt	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Closing stocks	mt	0.7	0.8	1.1	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Price[f]	'000 won/t	1 715	1 817	1 917	2 014	2 118	2 237	2 346	2 479	2 622	2 775
MEXICO											
Production	mt	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Consumption	mt	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7
Imports	mt	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4
Price[b]	MN$/t	1 273	1 476	1 519	1 216	1 226	1 260	1 349	1 481	1 603	1 747
UNITED STATES											
Production	mt	5.9	5.8	5.9	6.6	6.2	6.3	6.0	6.1	6.1	6.1
Consumption	mt	3.4	3.3	3.7	3.7	3.6	3.7	3.8	3.9	3.9	4.0
Exports	mt	2.8	2.7	2.7	2.6	2.8	2.8	2.6	2.7	2.7	2.6
Closing stocks	mt	0.9	0.9	0.7	1.4	1.5	1.7	1.6	1.5	1.4	1.3
Price[b]	US$/t	196	214	195	148	150	142	149	158	169	178
OTHER OECD[g]											
Production	mt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Consumption	mt	0.9	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1
Net trade	mt	-0.7	-0.8	-0.8	-0.8	-0.8	-0.8	-0.9	-0.9	-0.9	-1.0

For notes, see end of the table.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 14 - **RICE PROJECTIONS** *(cont.)*

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
OECD NON-MEMBER COUNTRIES											
ARGENTINA											
Production	mt	0.7	0.7	1.0	0.9	0.9	0.9	0.9	1.0	1.1	1.1
Consumption	mt	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Exports	mt	0.5	0.5	0.7	0.6	0.6	0.6	0.7	0.7	0.8	0.8
Closing stocks	mt	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Price[h]	Pesos/t	399	450	320	292	321	294	300	306	308	317
CHINA											
Production	mt	131.6	137.5	131.3	134.1	135.1	135.7	136.4	136.9	137.7	138.4
Consumption	mt	130.8	131.4	131.7	133.3	133.7	134.6	135.3	135.7	136.3	137.0
of which: feed	mt	32.9	35.0	35.5	36.5	37.2	38.0	39.0	39.8	40.7	41.6
Imports	mt	0.7	0.4	0.3	0.4	0.5	0.5	0.6	0.6	0.6	0.6
Closing stocks	mt	25.5	29.6	26.5	25.4	25.3	25.1	24.9	24.6	24.4	24.2
Price[i]	Yuan/t	2 004	1 945	1 935	2 197	2 347	2 406	2 497	2 541	2 592	2 648
CHINESE TAIPEI											
Production	mt	1.4	1.5	1.3	1.4	1.2	1.1	1.1	1.1	1.0	1.0
Consumption	mt	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.1
Closing stocks	mt	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2
Price[j]	'000 t$/t	21	21	20	20	20	20	20	20	20	20
INDIA											
Production	mt	81.8	82.3	84.7	87.1	86.7	87.9	89.6	91.3	93.4	95.1
Consumption	mt	79.2	78.0	80.9	82.0	82.8	85.8	87.0	88.1	89.4	91.1
Closing stocks	mt	11.2	10.5	11.0	11.0	11.0	12.6	12.3	11.9	11.7	12.2	12.7
Price[k]	Rupee/t	4 256	4 450	4 700	5 769	5 886	5 972	6 072	6 159	6 254	6 346
INDONESIA											
Production	mt	32.2	31.1	32.1	32.1	32.8	33.6	33.7	34.1	34.6	35.0
Consumption	mt	34.4	35.2	35.5	35.7	36.1	36.8	37.3	37.7	38.1	38.6
Imports	mt	3.0	6.1	3.9	2.0	2.8	3.0	3.5	3.6	3.5	3.6
Closing stocks	mt	2.7	3.5	4.0	2.4	1.9	1.8	1.8	1.8	1.8	1.7
Price[l]	'000 rupiah/t	547	555	805	1 020	1 077	1 114	1 161	1 239	1 324	1 409
NIS											
Production	mt	0.8	0.8	0.8	0.7	0.9	0.8	0.8	0.8	0.8	0.8
Consumption	mt	1.1	1.1	1.1	1.0	1.1	1.2	1.2	1.2	1.2	1.2
Net trade	mt	-0.3	-0.2	-0.3	-0.3	-0.3	-0.3	-0.4	-0.4	-0.4	-0.4
THAILAND											
Production	mt	14.6	15.5	15.2	15.9	16.0	16.3	16.1	16.3	16.4	16.5
Consumption	mt	8.6	8.8	8.9	9.0	9.1	9.1	9.2	9.2	9.2	9.2
Exports	mt	5.9	6.4	6.7	5.5	6.9	7.1	7.1	7.1	7.3	7.3
Closing stocks	mt	0.7	1.1	0.7	2.0	2.1	2.1	2.0	2.0	2.0	2.0
Price[l]	Baht/t	5 046	5 472	6 629	5 799	6 241	6 565	6 955	72 81	7 633	7 964
REST OF WORLD[m]											
Production	mt	89.8	90.4	93.7	89.8	96.9	102.2	105.5	107.1	109.4	111.4
Consumption	mt	98.0	99.9	102.9	104.7	105.9	111.3	114.3	116.5	119.3	121.1
Net trade	mt	-8.2	-8.0	-10.9	-12.0	-9.1	-9.1	-8.7	-9.4	-9.9	-9.7
Closing stocks	mt	7.8	6.3	7.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** Producer price. **c)** Includes intra-EU15 trade. **d)** Producer price, paddy rice. **e)** Market price, husked rice. **f)** Producer price, native king, polished grade b. **g)** Includes the Czech Republic, Norway, Switzerland and Turkey. Excludes Iceland. **h)** Export price. **i)** Free market price, weighted average of japonica and indica. **j)** Government purchase price. **k)** Farm harvest price, rough basis. **l)** Paddy, farm harvest price. **m)** Excludes Slovakia.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 15 - **OILSEED PROJECTIONS**

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
AUSTRALIA											
Production	mt	1.0	1.1	2.1	2.3	2.1	2.2	2.3	2.2	2.4	2.4
Consumption	mt	0.5	0.5	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0
crush	mt	0.5	0.5	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1.0
Exports	mt	0.5	0.6	1.3	1.5	1.3	1.4	1.4	1.3	1.4	1.4
Price[b]	A$/t	365	390	344	281	297	295	310	326	354	377
CANADA											
Production	mt	9.1	9.2	10.5	11.9	10.3	9.1	9.0	9.3	10.0	10.8
Consumption	mt	5.4	5.8	5.9	6.1	6.3	6.1	6.3	6.5	6.7	7.0
crush	mt	4.4	4.8	4.9	4.9	5.1	5.0	5.2	5.4	5.7	5.9
Exports	mt	3.9	3.8	4.8	5.2	4.6	3.7	3.0	3.1	3.5	4.0
Price[c]	C$/t	416	420	373	284	298	288	299	315	345	370
EU15											
Production	mt	13.3	14.5	14.9	13.6	13.0	12.4	11.7	11.5	11.4	11.7
Consumption	mt	31.2	32.5	33.2	32.0	33.1	32.7	32.7	32.1	32.0	31.8
crush	mt	28.3	29.4	29.9	29.0	30.1	29.7	29.7	29.1	29.0	28.8
Imports[d]	mt	18.6	19.0	19.4	18.9	20.7	20.9	21.5	21.1	21.2	20.7
Closing stocks	mt	1.7	1.8	1.9	1.8	1.8	1.8	1.8	1.7	1.7	1.7
Price[e]	Euro/t	232	264	195	195	196	190	200	209	226	241
HUNGARY											
Production	mt	0.8	0.7	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Consumption	mt	0.6	0.5	0.7	0.7	0.6	0.7	0.7	0.7	0.8	0.8
crush	mt	0.6	0.5	0.6	0.6	0.5	0.6	0.6	0.7	0.7	0.8
Exports	mt	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.3	0.2	0.2
Price[f]	'000 ft/t	36.8	41.8	49.0	50.7	49.8	44.8	47.1	48.4	54.0	59.7
JAPAN[g]											
Production	mt	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Consumption	mt	7.0	7.2	7.0	7.1	7.1	7.0	7.0	7.0	7.0	7.0
crush	mt	6.0	6.2	6.1	6.1	6.1	6.0	6.0	6.0	6.0	6.0
Imports	mt	6.9	7.2	6.9	7.0	6.9	6.8	6.9	6.9	6.9	6.9
Closing stocks	mt	1.5	1.7	1.7	1.8	1.8	1.7	1.7	1.8	1.8	1.8
Price[h]	'000 ¥/t	35.1	41.9	39.5	28.3	24.6	21.9	21.4	22.5	23.8	25.6
KOREA											
Production	mt	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Consumption	mt	1.6	1.6	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.6
crush	mt	1.2	1.2	1.0	1.1	1.1	1.2	1.1	1.1	1.1	1.1
Imports	mt	1.5	1.4	1.4	1.3	1.4	1.5	1.4	1.4	1.4	1.4
Price[i]	'000 won/t	2 067	2 004	1 972	2 779	2 899	3 023	3 150	3 288	3 436	3 592
MEXICO											
Production	mt	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.3
Consumption	mt	3.8	4.3	4.5	4.4	4.7	4.8	5.1	5.2	5.5	5.7
crush	mt	3.3	3.7	3.8	4.0	4.1	4.2	4.4	4.6	4.8	5.0
Imports	mt	3.6	4.1	4.3	4.3	4.5	4.6	4.8	5.0	5.2	5.4
Price[j]	MN$/t	1 790	2 229	2 265	2 207	2 212	2 106	2 316	2 578	2 832	3 120

For notes, see end of the table.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

*Table 15 - **OILSEED PROJECTIONS** (cont.)*

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
POLAND											
Production	mt	0.8	0.6	1.0	1.0	0.8	1.3	1.4	1.4	1.5	1.5
Consumption	mt	0.9	0.8	1.0	1.0	1.1	1.4	1.5	1.6	1.7	1.7
crush	mt	0.8	0.8	0.9	1.0	1.0	1.3	1.4	1.5	1.6	1.6
Imports	mt	0.2	0.2	0.1	0.0	0.3	0.1	0.1	0.1	0.2	0.2
Price[k]	Zl/t	762	869	895	669	852	880	915	942	968	990
UNITED STATES											
Production	mt	70.3	75.2	77.7	74.9	82.6	82.6	81.9	82.4	82.0	83.0
Consumption	mt	46.6	49.9	51.6	49.9	53.0	56.0	57.2	59.1	59.5	60.1
crush	mt	41.8	45.1	45.1	45.7	48.7	51.2	52.7	54.0	54.3	54.8
Exports	mt	23.5	24.1	22.3	24.3	25.4	25.8	26.7	26.7	27.1	27.0
Closing stocks	mt	6.7	5.6	9.8	11.0	15.7	17.7	16.5	14.5	11.3	8.8
Price[l]	US$/t	227	238	181	182	152	144	157	168	188	206
OTHER OECD[m]											
Production	mt	1.6	1.6	1.7	1.9	1.8	1.8	1.8	1.8	1.8	1.8
Consumption	mt	2.5	2.7	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
crush	mt	2.5	2.7	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Net trade	mt	–1.0	–1.1	–1.4	–1.1	–1.2	–1.2	–1.2	–1.2	–1.2	–1.2
ARGENTINA											
Production	mt	20.4	24.3	25.0	26.5	27.2	27.6	27.9	28.4	28.9	28.9
Consumption	mt	18.0	21.3	22.3	22.8	23.6	24.4	24.9	25.5	26.0	26.5
crush	mt	17.6	21.0	21.8	22.4	22.9	23.3	23.6	23.9	24.2	24.4
Exports	mt	2.7	3.6	3.2	3.8	3.8	3.3	3.0	3.0	2.9	2.4
Closing stocks	mt	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2
Price, (soyabeans)[n]	Pesos/t	241	224	175	184	182	179	191	203	222	240
Price, (sunflower)[n]	Pesos/t	266	293	225	167	178	183	200	215	239	260
CHINA											
Production	mt	24.5	24.2	25.0	25.8	25.9	26.2	26.8	27.4	28.4	29.4
Consumption	mt	26.8	28.4	30.1	31.9	32.6	33.4	34.1	34.9	35.8	36.7
crush	mt	19.3	21.8	23.1	24.3	24.9	25.7	26.5	27.4	28.3	29.3
Exports	mt	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2
Imports	mt	2.6	4.4	5.3	6.3	6.8	7.3	7.5	7.7	7.6	7.5
Price[o]	Yuan/t	2 792	2 967	3 105	2 907	2 850	2 846	3 068	3 292	3 618	3 930
NIS											
Production	mt	6.2	5.9	6.2	7.5	6.0	6.1	6.2	6.4	6.5	6.6
Consumption	mt	4.6	4.3	4.6	6.1	4.9	4.9	4.9	5.0	5.1	5.3
crush	mt	4.1	3.7	4.1	5.6	4.6	4.6	4.6	4.7	4.8	4.9
Exports	mt	1.9	2.0	2.1	1.9	1.7	1.7	1.8	1.8	1.8	1.9
Closing stocks	mt	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
REST OF WORLD[p]											
Production	mt	51.2	55.2	55.7	54.2	57.2	62.6	64.3	67.0	69.2	70.6
Consumption	mt	48.9	51.0	49.8	51.4	51.8	55.1	56.0	58.2	61.1	62.7
crush	mt	42.8	43.5	44.1	45.4	45.5	48.7	49.5	51.4	54.3	55.7
Net trade	mt	2.2	4.1	5.5	2.8	5.5	7.5	8.3	8.8	8.1	7.9
Closing stocks	mt	1.4	1.2	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** Producer price, rapeseed. **c)** Winnipeg cash price, canola No. 1, Pacific Coast. **d)** Excludes intra-EU15 trade. **e)** Import price, rapeseed c.i.f. Hamburg. **f)** Sunflower seed farmgate price. **g)** Excludes sunflower seed. **h)** Import price c.i.f., soyabeans, year ended 31 December. **i)** Producer price, soyabeans. **j)** Average producer price, soyabeans. **k)** Rapeseed average procurement price. **l)** Average price received by farmers, soyabeans. **m)** Includes Czech Republic, Norway, New Zealand, Switzerland and Turkey. **n)** Export price, f.o.b., Argentinean Ports. **o)** Soyabeans free market price. **p)** Excludes Slovakia.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

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Table 16 - **OILSEED MEALS PROJECTIONS**

Marketing year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
AUSTRALIA											
Production	mt	0.3	0.3	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6
Consumption	mt	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8	0.8	0.7
Imports	mt	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.1
Price[b]	A$/t	269	269	269	242	245	244	248	255	264	272
CANADA											
Production	mt	3.0	3.2	3.3	3.3	3.4	3.3	3.4	3.6	3.7	3.9
Consumption	mt	2.4	2.5	2.8	2.3	2.4	2.9	2.9	3.0	3.2	3.3
Imports	mt	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Exports	mt	1.3	1.5	1.3	1.7	1.7	1.2	1.2	1.2	1.3	1.3
Price[c]	C$/t	184	179	141	165	161	136	148	160	181	200
EU15											
Production	mt	19.3	20.1	20.5	19.9	20.6	20.4	20.3	20.0	19.9	19.8
Consumption	mt	34.7	34.5	38.0	40.0	38.5	38.0	38.2	38.2	38.2	38.2
Imports[d]	mt	16.3	15.8	18.9	20.8	18.5	18.2	18.4	18.8	18.8	19.0
Exports[d]	mt	1.0	1.4	1.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Closing stocks	mt	1.1	1.1	1.1	1.3	1.4	1.4	1.4	1.4	1.4	1.4
Price[e]	Euro/t	189	192	140	181	169	163	171	177	189	199
HUNGARY											
Production	mt	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3
Consumption	mt	0.8	0.8	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1
Imports	mt	0.5	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.7
Price[f]	'000 ft/t	21.5	26.5	28.4	35.3	35.0	31.6	34.2	34.7	37.5	39.5
JAPAN[g]											
Production	mt	4.3	4.4	4.3	4.4	4.3	4.3	4.3	4.3	4.3	4.3
Consumption	mt	5.2	5.3	5.2	5.4	5.5	5.6	5.6	5.7	5.7	5.6
Imports	mt	1.0	1.0	1.0	1.0	1.2	1.3	1.4	1.5	1.4	1.3
Price[h]	'000 ¥/t	29.7	39.8	29.9	17.9	16.7	17.6	19.1	20.3	21.2	22.4
KOREA											
Production	mt	0.9	0.9	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9
Consumption	mt	2.6	2.6	2.5	2.7	2.9	2.9	3.0	2.8	2.9	3.1
Imports	mt	1.6	1.8	1.7	1.9	2.2	2.1	1.7	2.0	1.9	2.2
MEXICO											
Production	mt	2.5	2.9	2.8	3.0	3.1	3.2	3.3	3.5	3.6	3.8
Consumption	mt	2.7	3.0	3.0	3.3	3.3	3.5	3.7	3.8	4.0	4.2
Imports	mt	0.2	0.1	0.1	0.3	0.2	0.3	0.3	0.4	0.4	0.4
Price[i]	MN$/t	1498	1621	1397	1478	1541	1491	1657	1797	2020	2224

For notes, see end of the table.
p: provisional; **e:** estimate.
OECD Secretariat.

Table 16 - **OILSEED MEALS PROJECTIONS** *(cont.)*

Marketing year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
POLAND											
Production	mt	0.5	0.4	0.5	0.6	0.6	0.7	0.8	0.8	0.9	0.9
Consumption	mt	1.1	1.1	1.1	0.8	1.3	1.6	1.6	1.7	1.6	1.7
Imports	mt	0.8	0.8	0.9	0.5	1.0	1.1	1.1	1.1	1.1	1.1
Price[j]	Zl/t	467	559	552	510	477	465	519	550	621	680
UNITED STATES											
Production	mt	32.7	35.5	35.3	35.7	38.1	40.0	41.2	42.2	42.5	42.8
Consumption	mt	27.2	28.2	29.9	30.5	30.7	31.7	32.1	32.7	33.3	33.8
Imports	mt	1.0	1.3	1.2	1.3	1.2	1.1	1.1	1.1	1.0	0.9
Exports	mt	6.6	8.5	6.5	6.6	8.6	9.4	10.2	10.6	10.2	9.9
Price[k]	US$/t	217	205	153	154	160	155	163	169	181	190
OTHER OECD[l]											
Production	mt	1.4	1.5	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Consumption	mt	1.9	2.0	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Net trade	mt	-0.5	-0.5	-0.5	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
ARGENTINA											
Production	mt	12.2	15.1	15.1	15.2	15.6	15.9	16.2	16.5	16.7	16.9
Consumption	mt	0.5	0.5	0.6	0.6	0.7	0.7	0.6	0.6	0.5	0.5
Exports	mt	11.6	14.3	14.5	14.6	15.0	15.3	15.7	15.9	16.3	16.5
Closing stocks	mt	0.5	0.6	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.2
Price, (soya meal)[m]	Pesos/t	181	141	120	136	128	125	136	137	154	164
Price, (sun meal)[m]	Pesos/t	88	79	50	61	52	49	58	59	75	84
CHINA											
Production	mt	13.6	15.5	16.3	17.2	17.7	18.3	18.9	19.6	20.3	21.0
Consumption	mt	14.6	16.2	17.3	17.9	19.7	20.6	20.9	22.0	22.3	23.2
Imports	mt	1.6	1.2	1.5	1.2	2.4	2.7	2.4	2.8	2.4	2.5
Price[n]	Yuan/t	1 959	1 853	1 379	1 615	1 459	1 434	1 563	1 673	1 870	2 045
NIS											
Production	mt	1.9	1.6	1.9	2.5	2.2	2.2	2.3	2.3	2.4	2.5
Consumption	mt	2.3	2.0	2.3	3.2	2.8	2.9	3.0	3.2	3.3	3.5
Net trade	mt	-0.5	-0.3	-0.6	-0.6	-0.4	-0.7	-0.8	-0.8	-0.9	-1.0
REST OF WORLD[o]											
Production	mt	31.5	32.3	32.4	33.3	33.4	35.8	36.3	37.8	39.8	40.9
Consumption	mt	27.5	33.7	29.2	28.0	30.2	32.9	35.0	36.1	38.7	39.2
Net trade	mt	3.8	-2.0	3.8	5.5	2.7	2.7	1.1	1.6	1.1	1.6
Closing stocks	mt	2.1	2.7	2.1	1.9	2.4	2.6	2.8	2.9	2.9	3.0

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** Average import price c.i.f., soyabean and other oilseed meals, year beginning 1 July. **c)** Canola meal price, f.o.b. Ontario plants. **d)** Excludes intra-EU15 trade. **e)** Soyabean meal price, 44/45%, f.o.b. ex-mill Hamburg. **f)** Calculated domestic price. **g)** Excludes sunflower seed. **h)** Average import price c.i.f., soyabean cake, year ended 31 December. **i)** Calculated import price of soyabean meal. **j)** Calculated import price. **k)** Wholesale price, soyabean meal, 48% solvent, Decatur. **l)** Includes Czech Republic, Norway, New Zealand, Switzerland and Turkey. Excludes Iceland. **m)** Export price, f.o.b., Argentinean Ports. **n)** Calculated import price. **o)** Excludes Slovakia.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 17 - **VEGETABLE OILS PROJECTIONS**

Marketing year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
AUSTRALIA											
Production	kt	187	188	277	294	287	301	314	325	336	345
Consumption	kt	301	285	336	338	346	386	423	446	463	472
Imports	kt	137	131	123	124	154	192	216	227	232	232
Price[b]	A$/t	285	252	252	175	154	151	156	170	196	229
CANADA											
Production	kt	1 461	1 630	1 574	1 623	1 699	1 628	1 699	1 782	1 873	1 972
Consumption	kt	909	891	975	1016	1033	1053	1073	1087	1096	1108
Imports	kt	96	129	45	103	241	241	241	241	241	241
Exports	kt	639	872	608	710	907	816	877	943	1025	1110
Price[c]	C$/t	772	812	710	486	505	507	513	542	591	630
EU15											
Production	kt	8 202	8 545	8 672	8 424	8 720	8 627	8 601	8 454	8 418	8 364
Consumption	kt	8 324	8 524	8 806	10 233	10 376	10 661	10 963	11 149	11 271	11 462
Imports[d]	kt	2 087	2 197	2 334	2 699	2 986	3 246	3 494	3 732	3 941	4 170
Exports[d]	kt	1 944	2 161	2 145	750	1 319	1 206	1 143	1 040	1 083	1 064
Closing stocks	kt	699	665	720	859	871	876	865	861	867	876
Price[e]	Euro/t	477	563	416	357	383	395	407	430	464	491
HUNGARY											
Production	kt	238	215	286	279	239	310	290	305	334	357
Consumption	kt	140	136	165	223	250	253	264	281	279	286
Exports	kt	130	131	122	104	88	113	92	96	135	164
Price[f]	'000 ft/t	111	137	143	134	124	129	135	142	156	170
JAPAN[g]											
Production	kt	1 499	1 548	1 535	1 548	1 537	1 517	1 514	1 517	1 515	1 514
Consumption	kt	1 836	1 896	1 844	1 862	1 864	1 884	1 909	1 920	1 928	1 937
Imports	kt	350	345	335	314	325	366	389	401	412	423
Closing stocks	kt	186	187	213	213	212	210	204	202	201	200
Price[h]	'000 ¥/t	81	87	86	62	54	55	56	57	60	63
KOREA											
Production	kt	218	216	189	195	199	213	208	207	204	200
Consumption	kt	444	426	399	534	548	548	555	566	570	581
Imports	kt	226	210	210	339	349	335	347	359	366	381
Price[h]	'000 won/t	605	886	635	486	512	530	552	590	647	694
MEXICO											
Production	kt	647	624	753	797	825	849	886	918	956	985
Consumption	kt	1 121	1 133	1 230	1 419	1 470	1 565	1 620	1 648	1 691	1 735
Imports	kt	491	512	487	631	653	725	742	739	743	750

For notes, see end of the table.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 17 - **VEGETABLE OILS PROJECTIONS** *(cont.)*

Marketing year[a]		**Average 94/95-98/99**	**97/98**	**98/99**p	**99/00**e	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	**05/06**
POLAND											
Production	kt	317	296	340	375	390	497	528	561	591	606
Consumption	kt	496	544	485	454	563	665	704	728	760	779
Imports	kt	192	258	166	133	196	224	244	255	273	270
UNITED STATES											
Production	kt	8 146	8 870	8 969	8 983	9 581	10 063	10 349	10 616	10 689	10 794
Consumption	kt	7 260	7 666	7 932	8 120	8 150	8 217	8 335	8 509	8 678	8 946
Imports	kt	647	669	658	621	554	510	499	521	547	572
Exports	kt	1 487	1 929	1 579	1 241	1 878	2 231	2 479	2 593	2 634	2 519
Closing stocks	kt	777	706	823	1 065	1 174	1 299	1 332	1 367	1 290	1 190
Price[i]	US$/t	531	570	439	375	360	350	353	372	408	454
OTHER OECD[j]											
Production	kt	843	918	978	1 020	1 019	1 014	1 016	1 021	1 021	1 021
Consumption	kt	1 467	1 587	1 515	1 559	1 567	1 596	1 610	1 633	1 653	1 669
Net trade	kt	–616	–666	–515	–539	–548	–583	–593	–612	–632	–649
ARGENTINA											
Production	kt	4 261	4 750	5 110	5 043	5 358	5 673	5 949	6 219	6 486	6 738
Consumption	kt	580	595	670	652	643	689	709	695	694	710
Exports	kt	3 674	4 170	4 450	4 411	4 713	4 981	5 245	5 523	5 790	6 025
Closing stocks	kt	267	254	244	225	226	228	223	224	227	230
Price, (soya oil)[k]	Pesos/t	529	611	400	378	401	399	408	433	452	473
Price, (sunflower oil)[k]	Pesos/t	554	672	445	388	413	412	423	450	471	493
CHINA											
Production	kt	4 670	5 321	5 673	5 941	6 063	6 208	6 371	6 539	6 735	6 925
Consumption	kt	7 497	7 537	8 539	9 219	9 558	10 335	10 727	10 737	10 941	11 173
Imports	kt	3 185	2 477	2 852	3 360	3 568	4 199	4 428	4 273	4 285	4 330
Closing stocks	kt	464	597	493	508	520	530	537	543	550	558
Price[l]	Yuan/t	6 165	6 936	5 303	4 148	4 349	4 585	4 891	5 366	6 035	6 644
NIS											
Production	kt	1 527	1 379	1 490	2 036	1 689	1 730	1 770	1 832	1 896	1 965
Consumption	kt	2 095	2 149	2 105	2 409	2 404	2 455	2 448	2 439	2 455	2 553
Net trade	kt	–539	–706	–572	–394	–733	–725	–679	–607	–559	–588
Closing stocks	kt	186	125	82	103	121	121	121	121	121	121
REST OF WORLD[m]											
Production	kt	26 593	26 602	29 068	30 627	31 447	32 579	33 320	34 060	35 119	35 831
Consumption	kt	25 785	27 921	28 621	29 099	30 083	30 801	31 665	32 581	33 591	34 062
Net trade	kt	412	–1 080	–745	1 909	1 249	1 829	1 856	1 578	1 363	1 538
Closing stocks	kt	3 728	3 392	4 584	4 203	4 318	4 267	4 066	3 967	4 132	4 364

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** Average import price c.i.f., soyabean, sunflower and other oilseed oils, year beginning 1 July. **c)** Weighted average price of soyabean and rapeseed oils. **d)** Excludes intra-EU15 trade. **e)** Rapeseed oil price, f.o.b. ex-mill Hamburg. **f)** Calculated domestic price. **g)** Excludes sunflower seeds. **h)** Calculated import price. **i)** Wholesale price, crude soyabean oil, Decatur. **j)** Includes Czech Republic, Norway, New Zealand, Switzerland and Turkey. Excludes Iceland. **k)** Export price, f.o.b, Argentinean Ports. **l)** Calculated import price. **m)** Excludes Slovakia.

p: provisional. **e:** estimate.

Source: OECD Secretariat.

Table 18 - *BEEF AND VEAL PROJECTIONS*[a]

Calendar year[b]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
PACIFIC MARKET											
AUSTRALIA											
Production	kt cwe	1 845	1 939	1 987	1 999	1 807	1 950	2 041	2 084	2 110	2 015
Consumption	kt cwe	704	753	718	715	682	697	710	733	735	735
Exports	kt cwe	1 153	1 189	1 278	1 287	1 136	1 264	1 339	1 359	1 383	1 288
Price[c]	A$/100 kg dw	185	163	181	196	221	214	207	194	196	202
CANADA											
Production	kt cwe	1 014	1 076	1 151	1 309	1 319	1 313	1 293	1 292	1 341	1 456
Consumption	kt cwe	958	973	935	953	953	969	993	1 009	1 005	1 005
Imports	kt cwe	254	253	239	248	256	264	273	276	274	268
Exports	kt cwe	301	360	416	608	626	612	577	557	609	717
Price[d]	C$/100 kg dw	326	324	324	345	371	360	342	343	346	355
JAPAN											
Production	kt cwe	563	531	530	540	538	549	556	562	566	574
Consumption	kt cwe	1 469	1 464	1 487	1 454	1 498	1 521	1 537	1 574	1 584	1 616
Imports	kt cwe	907	924	951	930	960	973	982	1 013	1 018	1 042
Price[e]	'000 ¥/100 kg dw	107	117	107	102	101	101	99	99	99	99
KOREA											
Production	kt cwe	279	338	377	341	330	347	357	353	343	332
Consumption	kt cwe	458	517	494	524	548	566	592	633	667	710
Imports	kt cwe	188	240	110	171	200	214	230	280	324	378
Price[f]	'000 won/100 kg dw	535	485	401	429	382	379	372	377	381	391
MEXICO											
Production	kt cwe	1 274	1 273	1 307	1 288	1 345	1 450	1 517	1 590	1 635	1 665
Consumption	kt cwe	1 387	1 417	1 500	1 519	1 529	1 628	1 706	1 778	1 838	1 883
Imports	kt cwe	114	144	193	231	184	179	189	188	204	218
Price[g]	MN$/100 kg dw	1 417	1 784	1 937	1 738	2 025	1 901	2 033	2 140	2 265	2 437
NEW ZEALAND											
Production	kt cwe	616	646	634	561	622	613	657	689	722	731
Consumption	kt cwe	126	144	129	135	131	130	134	137	136	134
Exports	kt cwe	505	506	507	428	493	485	524	554	588	629
Price[h]	NZ$/100 kg dw	158	134	178	197	206	202	180	165	174	193
UNITED STATES											
Production	kt cwe	11 609	11 714	11 803	12 116	11 790	11 203	11 217	11 346	11 416	11 403
Consumption	kt cwe	11 791	11 767	12 032	12 461	12 034	11 527	11 536	11 606	11 705	11 665
Imports	kt cwe	1 046	1 063	1 198	1 358	1 412	1 379	1 288	1 234	1 271	1 368
Exports	kt cwe	872	969	985	1 024	1 190	1 061	957	963	971	1 095
Price[i]	US$/100 kg dw	233	236	219	228	255	253	247	251	254	261
OTHERS											
Chinese Taipei imports	kt cwe	69	75	82	88	88	78	82	87	91	95
Singapore imports	kt cwe	23	24	20	26	26	27	28	29	30	31
Hong Kong (China) imports	kt cwe	61	50	61	52	53	51	54	55	55	56

For notes, see end of the table.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 18 - *BEEF AND VEAL PROJECTIONS[a] (cont.)*

Calendar year[b]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
MERCOSUR MARKET												
ARGENTINA												
Production	kt cwe	2 671	2 975	2 600	2 642	2 677	2 693	2 711	2 743	2 803	2 901
Consumption	kt cwe	2 260	2 555	2 320	2 299	2 291	2 313	2 304	2 341	2 371	2 389
Exports	kt cwe	420	437	291	353	401	390	418	412	442	522
Price[j]	Pesos/100 kg dw	157	165	192	183	209	207	213	208	215	216
BRAZIL												
Production[k]	kt cwe	6 374	6 423	6 522	6 728	6 871	6 766	6 850	7 038	7 163	7 421
Consumption	kt cwe	6 309	6 364	6 291	6 470	6 372	6 439	6 526	6 658	6 771	7 055
Net trade	kt cwe	77	100	250	258	390	327	323	379	392	366
CHILE												
Production[k]	kt cwe	256	263	257	262	254	252	251	252	253	255
Consumption	kt cwe	334	363	356	386	382	389	389	399	398	403
Net trade	kt cwe	−78	−101	−99	−124	−127	−137	−138	−146	−145	−148
PARAGUAY												
Production[k]	kt cwe	211	216	219	164	168	180	191	202	210	219
Consumption	kt cwe	201	202	207	218	219	225	230	234	238	244
Net trade	kt cwe	10	14	12	−54	−52	−45	−39	−33	−28	−25
URUGUAY												
Production[k]	kt cwe	435	474	475	483	485	496	501	507	507	508
Consumption	kt cwe	193	177	184	191	190	193	195	198	199	202
Net trade	kt cwe	240	298	291	293	295	303	307	309	308	306
OTHER MARKETS												
EU15												
Production	kt cwe	7 856	7 889	7 624	7 590	7 549	8 012	8 182	7 925	7 663	7 500
Consumption	kt cwe	7 327	7 109	7 395	7 555	7 314	7 536	7 583	7 573	7 475	7 294
Imports[l]	kt cwe	372	387	347	365	380	380	380	380	380	380
Exports[l]	kt cwe	941	971	692	821	706	727	722	722	722	722
Closing stocks	kt cwe	352	630	514	93	3	132	389	400	246	111
Price[m]	Euro/100 kg dw	272	270	272	267	288	234	210	210	214	219
HUNGARY												
Production	kt cwe	67	63	67	74	81	89	98	98	111	125
Consumption	kt cwe	63	64	60	69	77	83	94	96	111	129
Price[n]	'000 ft/100 kg dw	29	30	38	40	44	44	67	73	81	93
POLAND												
Production	kt cwe	429	457	457	439	410	430	448	467	508	538
Consumption	kt cwe	419	447	375	409	386	404	415	430	473	500
Price[o]	Zl/100 kg dw	412	448	432	425	456	477	493	509	519	535
OTHER OECD[p]												
Production	kt cwe	892	934	907	940	956	971	991	1 011	1 033	1 059
Consumption	kt cwe	920	939	921	955	971	986	1 006	1 026	1 048	1 074
Net trade	kt cwe	−26	−5	−15	−14	−15	−15	−15	−15	−15	−15
CHINA												
Production	kt cwe	3 922	4 150	4 481	4 774	5 038	5 252	5 432	5 629	5 855	6 094
Consumption	kt cwe	3 859	4 117	4 436	4 728	4 992	5 207	5 390	5 588	5 815	6 056
Price[q]	Yuan/100 kg	1 024	1 107	1 154	1 165	1 221	1 298	1 405	1 523	1 650	1 785

Notes: **a)** Excludes trade of live animals. **b)** Year ended 30 September for New Zealand. **c)** Weighted average price of cows 201-260 kg, steers 301-400 kg, yearling < 200 kg dw. **d)** Grade A slaughter steers > 1251 lb lw, Ontario – lw to dw conversion factor 0.6. **e)** Wholesale carcass price B2-B3 steers, Tokyo. **f)** Farm price of native cattle male 500 kg. **g)** Huasteco steers grade 1A, 400 kg lw. **h)** Schedule price M grade cow, 145.5-170 kg dw. **i)** Choice steers, 1100-1300 lb lw, Nebraska – lw to dw conversion factor 0.63. **j)** Buenos Aires wholesale liner, young bull, lw to dw conversion factor 0.55. **k)** Indigenous basis, including live exports but excluding live imports. **l)** Excludes intra-EU15 trade. **m)** Adult male bovines R3, EU15 starting in 1995. **n)** Producer price, bull, class 1. **o)** Average procurement price. **p)** Includes Czech Republic, Norway, Switzerland and Turkey. Excludes Island. **q)** Producer price.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 19 - **PIG MEAT PROJECTIONS**[a]

Calendar year[b]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
PACIFIC MARKET											
CANADA											
Production	kt cwe	1 266	1 257	1 338	1 522	1 552	1 566	1 568	1 588	1 638	1 613
Consumption[c]	kt cwe	801	764	822	861	872	879	889	900	918	933
Exports	kt cwe	377	420	432	558	582	601	594	596	621	598
Price[d]	C$/100 kg dw	159	187	123	122	138	147	143	141	138	139
JAPAN											
Production	kt cwe	1 309	1 283	1 286	1 280	1 295	1 295	1 296	1 289	1 280	1 276
Consumption	kt cwe	2 096	2 079	2 090	2 145	2 087	2 092	2 099	2 103	2 107	2 109
Imports	kt cwe	783	731	721	854	792	797	804	814	827	833
Price[e]	'000 ¥/100 kg dw	47	49	47	44	41	42	41	41	42	43
KOREA											
Production	kt cwe	868	896	939	957	953	994	1 029	1 049	1 058	1 059
Consumption	kt cwe	869	895	898	983	994	1 085	1 143	1 180	1 205	1 199
Net trade	kt cwe	–5	–17	42	–26	–42	–91	–115	–131	–147	–140
Price[f]	'000 won/100 kg dw	167	171	179	151	172	180	173	169	170	176
MEXICO											
Production	kt cwe	921	939	961	966	1 018	1 096	1 137	1 178	1 225	1 272
Consumption	kt cwe	961	965	1 019	1 039	1 063	1 174	1 252	1 331	1 421	1 523
Imports	kt cwe	53	48	80	95	67	99	137	176	218	272
Price[g]	MN$/100 kg dw	1 251	1 760	1 477	1 468	1 605	1 696	1 757	1 778	1 808	1 860
UNITED STATES											
Production	kt cwe	8 069	7 835	8 623	8 762	8 380	8 310	8 550	8 787	8 909	8 964
Consumption	kt cwe	7 940	7 630	8 304	8 626	8 201	8 090	8 318	8 510	8 601	8 600
Imports	kt cwe	305	287	319	373	358	336	327	340	357	344
Exports	kt cwe	414	474	557	550	542	548	556	619	665	711
Price[h]	US$/100 kg dw	140	166	106	98	115	124	120	117	117	120
CHINESE TAIPEI											
Production	kt cwe	1 126	1 030	892	900	905	929	969	987	1 008	1 032
Consumption	kt cwe	881	870	910	938	968	983	944	949	959	973
Exports	kt cwe	235	70	3	21	1	14	40	53	64	74
OCEANIA											
AUSTRALIA											
Production	kt cwe	354	344	369	363	363	366	374	383	381	378
Consumption	kt cwe	354	348	364	356	359	358	368	376	374	372
Exports	kt cwe	14	17	25	60	31	37	24	45	58	68
Price[i]	A$/100 kg dw	212	219	180	216	224	227	216	204	219	230
NEW ZEALAND											
Production	kt cwe	50	48	50	53	52	52	53	53	54	54
Consumption	kt cwe	57	55	57	62	59	61	62	63	65	65
Imports	kt cwe	7	7	7	9	7	9	9	10	10	11
Price[j]	NZ$/100 kg dw	281	286	270	294	313	319	302	283	301	312

For notes, see end of the table.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 19 - **PIG MEAT PROJECTIONS**[a] (cont.)

Calendar year[b]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
OTHER MARKETS											
EU15											
Production	kt cwe	16 422	16 250	17 581	17 901	17 804	17 754	17 807	17 891	18 019	18 048
Consumption	kt cwe	15 500	15 406	16 380	16 753	16 970	16 822	16 822	16 888	16 994	16 999
Imports[k]	kt cwe	37	54	44	49	55	58	59	64	69	74
Exports to Pacific markets	kt cwe	327	389	349	501	446	444	498	520	547	577
Exports to other markets[k]	kt cwe	585	518	700	800	547	550	550	550	550	550
Price[l]	Euro/100 kg dw	138	164	119	121	135	119	117	122	125	132
HUNGARY											
Production	kt cwe	355	337	400	455	486	498	498	524	529	526
Consumption	kt cwe	322	262	321	375	406	420	420	439	447	448
Exports	kt cwe	66	96	100	103	103	103	105	113	112	111
Price[m]	'000 ft/100 kg dw	23	28	30	29	39	37	42	43	44	48
POLAND											
Production	kt cwe	1 945	1 890	2 025	2 039	1 940	1 987	2 075	2 152	2 040	1 997
Consumption	kt cwe	1 985	1 898	2 071	2 041	1 931	1 950	2 011	2 069	1 954	1 891
Exports	kt cwe	26	39	20	43	62	77	98	113	130	146
Price[n]	Zl/100 kg dw	381	466	434	488	524	554	579	603	625	650
OTHER OECD[o]											
Production	kt cwe	804	789	800	776	779	787	795	802	810	808
Consumption	kt cwe	821	797	812	790	788	794	801	809	817	815
Net trade	kt cwe	–13	–7	–11	–12	–9	–7	–7	–7	–7	–7
ARGENTINA											
Production	kt cwe	152	137	116	155	157	158	162	166	175	181
Consumption	kt cwe	202	194	185	209	214	208	212	213	219	223
Imports	kt cwe	51	59	71	54	58	50	50	47	44	42
Price[p]	Pesos/100 kg dw	139	163	140	140	151	160	169	160	160	160
CHINA											
Production	kt cwe	34 251	34 643	36 500	37 326	38 187	39 378	40 243	41 302	42 430	43 435
Consumption	kt cwe	34 084	34 506	36 398	37 236	38 093	39 284	40 167	41 241	42 378	43 390
Exports	kt cwe	182	162	144	139	140	140	128	119	113	108
Price[q]	Yuan/100 kg	799	851	842	860	907	955	1 028	1 103	1 186	1 278

Notes: **a)** Excludes trade of live animals. **b)** Year ended 30 September for New Zealand. **c)** Excluding non-food parts. **d)** Carcass price, index 100, Ontario. **e)** Wholesale carcass price, excellent grade, Tokyo. **f)** Farm price of pigs 100 kg. **g)** Supreme grade. **h)** Barrows and gilts, No. 1-3, 230-250 lb lw, Iowa/South Minnesota – lw to dw conversion factor 0.72. **i)** Weighted average price, pigs 60-73 kg dw. **j)** Schedule price, pigs > 50 kg dw, Canterbury. **k)** Excludes intra-EU15 trade. **l)** Pig reference price – EU15 starting in 1995. **m)** Producer price. **n)** Procurement price. **o)** Includes Czech Republic, Norway, Switzerland and Turkey. Excludes Iceland. **p)** Price (live), males and females, lw to dw conversion factor 0.73. **q)** Pig meat reference price.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 20 - **POULTRY MEAT PROJECTIONS**

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
AUSTRALIA											
Production	kt rtc	539	557	602	627	639	653	669	676	691	692
Consumption	kt rtc	521	542	579	606	619	632	647	653	667	668
Exports	kt rtc	17	15	23	20	20	21	22	23	24	24
Price[b]	A$/100 kg rtc	307	318	344	356	362	366	369	377	382	401
CANADA											
Production	kt rtc	898	917	963	1011	1042	1079	1 121	1 168	1 198	1 230
Consumption	kt rtc	927	950	985	1052	1085	1121	1 163	1 212	1 244	1 278
Imports	kt rtc	111	128	139	165	175	180	186	193	201	206
Price[c]	C$/100 kg rtc	158	168	163	151	154	158	161	164	169	175
EU15											
Production	kt rtc	8 247	8 549	8 731	8 758	8 948	9 081	9 315	9 529	9 720	9 859
Consumption	kt rtc	7 626	7 847	7 970	8 089	8 281	8 392	8 600	8 807	8 991	9 124
Imports[d]	kt rtc	256	268	295	305	310	313	317	320	323	327
Exports[d]	kt rtc	863	931	1029	974	977	1002	1032	1042	1052	1062
Price[e]	Euro/100 kg rtc	91	90	87	83	85	80	78	78	79	81
HUNGARY											
Production	kt rtc	382	390	398	359	364	370	385	394	399	406
Consumption	kt rtc	279	291	291	248	250	251	256	265	270	277
Exports	kt rtc	103	109	110	112	115	120	130	130	130	130
Price[f]	'000 ft/100 kg rtc	15	17	19	21	22	24	21	22	23	24
JAPAN											
Production	kt rtc	1 240	1 228	1 209	1 190	1 220	1 231	1 232	1 228	1 225	1 224
Consumption	kt rtc	1 756	1 745	1 719	1 724	1 739	1 745	1 742	1 740	1 738	1 739
Imports	kt rtc	509	496	497	564	519	514	510	511	513	515
Price[g]	'000 ¥/100kg rwt	111	114	115	115	115	116	116	116	116	116
KOREA											
Production	kt rtc	428	445	427	507	559	571	578	591	611	639
Consumption	kt rtc	442	473	450	526	579	591	599	612	633	662
Imports	kt rtc	13	26	19	19	20	21	21	22	22	23
Price[h]	'000 won/100 kg rtc	176	163	190	147	149	150	152	154	156	158
MEXICO											
Production	kt rtc	1 343	1 442	1 599	1 675	1 738	1 780	1 808	1 847	1 872	1 908
Consumption	kt rtc	1 481	1 595	1 772	1 863	1 883	1 940	1 983	2 038	2 079	2 133
Imports	kt rtc	139	156	175	190	148	162	177	192	208	226
Price[i]	MN$/100 kg rtc	921	1 118	1 238	1 250	1 348	1 412	1 531	1 607	1 712	1 810

For notes, see end of the table.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

*Table 20 - **POULTRY MEAT PROJECTIONS** (cont.)*

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
NEW ZEALAND											
Production	kt rtc	86	89	93	98	102	107	111	119	128	138
Consumption	kt rtc	86	88	93	98	102	107	111	119	128	138
POLAND											
Production	kt rtc	419	474	530	550	579	600	625	645	659	668
Consumption	kt rtc	441	501	532	550	581	599	626	648	664	673
Imports	kt rtc	52	66	51	35	36	35	36	38	40	40
Price[j]	Zl/100 kg rtc	413	480	473	524	556	581	597	617	633	652
UNITED STATES											
Production	kt rtc	14 319	14 952	15 128	15 861	16 746	17 393	17 637	17 987	18 237	18 636
Consumption	kt rtc	12 115	12 366	12 619	13 354	14 145	14 710	14 858	15 081	15 205	15 491
Exports	kt rtc	2 169	2 565	2 515	2 495	2 562	2 655	2 781	2 907	3 034	3 147
Price[k]	US$/100 kg rtc	130	130	139	128	128	128	130	133	137	140
OTHER OECD[l]											
Production	kt rtc	765	835	876	899	922	945	973	995	1017	1038
Consumption	kt rtc	800	878	913	934	956	977	1002	1025	1048	1070
Net trade	kt rtc	–36	–41	–37	–36	–33	–32	–31	–31	–31	–31
ARGENTINA											
Production	kt rtc	742	780	875	886	881	924	945	999	1 015	1 018
Consumption	kt rtc	777	815	923	919	924	943	963	1 012	1 023	1 021
Imports	kt rtc	43	48	65	57	63	63	63	63	63	63
Price[m]	Pesos/100 kg rtc	128	115	112	118	123	122	123	119	122	126
CHINA											
Production	kt rtc	9 250	10 400	10 920	11 315	11 692	12 200	12 785	13 506	14 339	15 178
Consumption	kt rtc	9 526	10 813	11 156	11 745	12 353	12 931	13 641	14 425	15 278	16 187
Imports	kt rtc	623	780	715	828	978	1 052	1 172	1 260	1 329	1 438
Exports	kt rtc	347	367	479	397	316	320	316	341	390	429
Price[n]	Yuan/100 kg rtc	886	933	941	949	990	1046	1114	1189	1271	1358

Notes: **a)** Year ended 30 September for New Zealand. **b)** Average retail price of chicken. **c)** Weighted average producer price of broilers < 2 kg, Ontario – lw to rtc conversion factor 0.75. **d)** Excludes intra-EU15 trade. **e)** Weighted average farmgate live fowls, top quality, lw to rtc conversion of 0.75, EU15 starting in 1995. **f)** Procurement price. **g)** Consumer price. Young boneless broilers. **h)** Farm price of hi-broiler 1 kg. **i)** Average producer price, chicken. **j)** Average procurement price. **k)** Wholesale weighted average broiler price 12 cities. **l)** Includes Czech Republic, Norway, Switzerland and Turkey. Excludes Iceland. **m)** Brazil export price. **n)** Producer price.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 21 - *SHEEP MEAT PROJECTIONS*[a]

Calendar year[b]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
AUSTRALIA											
Production	kt cwe	604	603	617	618	629	593	582	567	561	557
Consumption	kt cwe	328	317	324	312	342	326	314	304	302	306
Exports	kt cwe	282	288	293	305	285	269	268	264	259	251
Price[c] (lamb)	A$/100 kg dw	190	200	178	208	204	218	231	233	240	246
Price[d] (mutton)	A$/100 kg dw	65	75	79	79	78	83	88	89	91	94
CANADA											
Production	kt cwe	10	10	10	10	10	10	11	11	11	11
Consumption	kt cwe	23	22	24	25	25	25	25	25	25	25
Imports	kt cwe	13	12	14	15	15	15	15	14	14	14
Price[e] (lamb)	C$/100 kg dw	578	618	583	580	613	591	566	563	569	581
EU15											
Production	kt cwe	1 121	1 089	1 116	1 122	1 121	1 116	1 117	1 114	1 111	1 111
Consumption	kt cwe	1 350	1 325	1 354	1 356	1 359	1 357	1 359	1 357	1 356	1 357
Imports[f]	kt cwe	234	242	241	236	242	245	246	247	249	250
Price[g]	Euro/100 kg dw	304	322	270	321	314	300	286	286	287	288
JAPAN											
Consumption	kt cwe	72	64	61	60	60	60	59	58	58	57
Imports	kt cwe	72	64	61	60	60	60	59	58	58	57
MEXICO											
Production	kt cwe	38	36	36	37	38	40	41	42	43	45
Consumption	kt cwe	54	58	63	65	68	70	72	75	77	80
Imports	kt cwe	20	22	27	28	29	30	31	33	34	35
Price[h]	MN$/100 kg dw	1 964	2 419	2 660	2 782	3 028	2 980	3 076	3 248	3 448	3 693
NEW ZEALAND											
Production	kt cwe	537	543	547	519	527	535	545	552	557	560
Consumption	kt cwe	108	101	106	102	101	100	97	97	99	102
Exports	kt cwe	412	416	412	419	426	434	446	453	456	455
Price[i] (lamb)	NZ$/100 kg dw	251	277	255	266	265	260	276	276	280	282
Price[i] (mutton)	NZ$/100 kg dw	122	141	127	102	104	108	115	123	125	127
UNITED STATES											
Production	kt cwe	125	118	114	108	98	94	91	88	85	82
Consumption	kt cwe	156	151	163	156	147	143	140	137	134	131
Imports	kt cwe	35	38	51	50	52	52	52	52	52	52
Price[j] (lamb)	US$/100 kg dw	343	388	326	326	354	348	341	342	347	355
OTHER OECD[k]											
Production	kt cwe	293	281	263	263	253	243	234	224	214	205
Consumption	kt cwe	294	287	268	264	255	245	235	225	216	206
Net trade	kt cwe	–2	–4	–3	–1	–1	–1	–1	–1	–1	–1

Notes: **a)** Excludes trade of live animal. Assumptions for the projection period were provided by most of the Member countries in response to a questionnaire supplied in April 1999. **b)** Year ended 30 September for New Zealand. **c)** Saleyard price, lamb, 16-20 kg dw. **d)** Saleyard price, wethers, < 22kg dw. **e)** A/B grade slaughter lambs, 80-94 lb lw, Toronto – lw to dw conversion factor 0.5. **f)** Excludes intra-EU15 trade. **g)** Market price for sheep meat, EU15 starting in 1995. **h)** Average producer price, sheep. **i)** Schedule price, all grade average. **j)** Choice grade slaughter lamb, 95-115 lb. lw, San Angelo – lw to dw conversion factor 0.5. **k)** Includes Czech Republic, Hungary, Korea, Norway, Poland, Switzerland and Turkey. Excludes Iceland.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 22 - *MEAT PER CAPITA CONSUMPTION PROJECTIONS*

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
AUSTRALIA											
Total meat	kg/person	83.1	84.4	84.9	84.6	84.6	84.1	84.2	84.3	84.0	83.3
Beef and veal	kg/person	27.0	28.6	27.0	26.7	25.2	25.5	25.7	26.2	26.0	25.8
Pig meat	kg/person	15.2	14.7	15.2	14.8	14.8	14.6	14.8	15.0	14.8	14.5
Poultry meat	kg/person	25.1	25.9	27.4	28.4	28.8	29.1	29.4	29.4	29.7	29.5
Sheep meat	kg/person	15.8	15.2	15.3	14.7	15.9	15.0	14.3	13.7	13.5	13.5
CANADA											
Total meat[b]	kg/person	71.3	70.4	71.6	73.9	74.4	75.1	76.4	77.6	78.0	78.5
Beef and veal	kg/person	22.4	22.5	21.5	21.6	21.4	21.5	21.8	22.0	21.6	21.4
Pig meat	kg/person	20.9	19.7	21.0	21.7	21.8	21.7	21.7	21.8	22.0	22.2
Poultry meat	kg/person	27.3	27.6	28.4	29.9	30.6	31.2	32.1	33.1	33.7	34.3
EU15											
Total meat	kg/person	67.3	67.0	69.7	70.9	71.2	71.4	71.7	72.1	72.4	72.3
Beef and veal	kg/person	13.7	13.3	13.8	14.1	13.6	14.0	14.0	13.9	13.7	13.4
Pig meat	kg/person	32.4	32.1	34.1	34.8	35.1	34.7	34.6	34.7	34.8	34.7
Poultry meat	kg/person	18.0	18.5	18.7	18.9	19.3	19.5	20.0	20.4	20.8	21.0
Sheep meat[c]	kg/person	3.2	3.1	3.2	3.2	3.2	3.2	3.2	3.1	3.1	3.1
HUNGARY											
Total meat[b]	kg/person	53.7	50.4	54.7	55.9	59.3	61.0	62.4	65.0	67.3	69.4
Beef and veal	kg/person	4.3	4.4	4.1	4.8	5.4	5.8	6.6	6.7	7.8	9.1
Pig meat	kg/person	24.6	20.0	24.6	28.8	31.4	32.6	32.7	34.3	35.0	35.1
Poultry meat	kg/person	24.1	25.2	25.2	21.6	21.8	22.0	22.5	23.3	23.8	24.5
JAPAN											
Total meat[b]	kg/person	34.0	33.6	33.5	33.6	33.6	33.7	33.8	33.9	34.0	34.1
Beef and veal	kg/person	8.2	8.1	8.2	8.0	8.3	8.4	8.5	8.6	8.7	8.9
Pig meat	kg/person	13.0	12.9	12.9	13.2	12.8	12.8	12.9	12.9	12.9	12.9
Poultry meat	kg/person	12.3	12.2	12.0	12.0	12.1	12.1	12.0	12.0	12.0	12.0
KOREA											
Total meat[b]	kg/person	30.6	32.2	31.2	34.2	35.4	37.1	38.3	39.4	40.4	41.1
Beef and veal	kg/person	7.0	7.9	7.4	7.8	8.1	8.3	8.6	9.2	9.6	10.1
Pig meat	kg/person	14.9	15.2	15.1	16.4	16.4	17.7	18.6	19.0	19.3	19.0
Poultry meat	kg/person	8.5	9.0	8.5	9.9	10.8	10.9	11.0	11.1	11.4	11.9
MEXICO											
Total meat[b]	kg/person	33.3	34.0	36.1	36.7	36.6	38.1	39.1	40.2	41.1	42.1
Beef and veal	kg/person	10.5	10.5	11.0	10.9	10.8	11.4	11.7	12.1	12.3	12.5
Pig meat	kg/person	8.1	8.0	8.3	8.3	8.4	9.1	9.6	10.1	10.6	11.2
Poultry meat	kg/person	14.1	14.9	16.3	16.8	16.8	17.0	17.2	17.4	17.5	17.7

For notes, see end of the table.

p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 22 - **MEAT PER CAPITA CONSUMPTION PROJECTIONS** *(cont.)*

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
NEW ZEALAND											
Total meat	kg/person	81.9	82.7	81.9	83.5	82.5	82.8	83.4	85.1	86.9	89.0
Beef and veal	kg/person	23.8	26.9	23.8	24.7	23.8	23.5	24.0	24.3	24.0	23.5
Pig meat	kg/person	12.0	11.4	11.8	12.7	12.0	12.3	12.5	12.6	12.7	12.7
Poultry meat	kg/person	20.5	20.6	21.7	22.6	23.5	24.3	25.0	26.7	28.4	30.3
Sheep meat	kg/person	25.6	23.8	24.6	23.5	23.2	22.7	21.9	21.6	21.8	22.5
POLAND											
Total meat[b]	kg/person	57.8	57.8	60.6	60.9	58.9	59.8	61.6	63.4	62.0	61.2
Beef and veal	kg/person	7.6	8.1	6.8	7.4	7.0	7.2	7.4	7.7	8.4	8.9
Pig meat	kg/person	40.1	38.3	41.7	41.1	38.8	39.0	40.1	41.1	38.7	37.3
Poultry meat	kg/person	10.0	11.4	12.1	12.5	13.2	13.5	14.1	14.5	14.8	15.0
UNITED STATES											
Total meat[b]	kg/person	95.2	94.5	97.1	101.0	100.4	99.7	100.0	100.6	100.7	100.7
Beef and veal	kg/person	31.1	30.9	31.3	32.2	30.9	29.3	29.1	29.0	29.1	28.7
Pig meat	kg/person	23.4	22.3	24.1	24.9	23.4	22.9	23.4	23.7	23.8	23.6
Poultry meat	kg/person	40.2	40.8	41.3	43.4	45.6	47.0	47.1	47.4	47.4	48.0
OTHER OECD[d]											
Total meat[b]	kg/person	26.6	26.9	26.7	26.6	26.5	26.4	26.4	26.4	26.4	26.3
Beef and veal	kg/person	7.6	7.7	7.4	7.6	7.6	7.6	7.7	7.7	7.8	7.9
Pig meat	kg/person	7.6	7.3	7.3	7.0	6.9	6.9	6.8	6.8	6.8	6.7
Poultry meat	kg/person	8.3	9.0	9.3	9.3	9.4	9.5	9.6	9.7	9.8	9.9
ARGENTINA											
Total meat[b]	kg/person	68.8	74.5	71.4	70.5	69.8	69.8	69.4	70.6	70.9	70.7
Beef and veal	kg/person	44.9	50.1	44.9	44.0	43.3	43.3	42.7	43.0	43.1	43.1
Pig meat	kg/person	4.5	4.2	4.0	4.5	4.5	4.3	4.4	4.4	4.4	4.5
Poultry meat	kg/person	19.4	20.1	22.5	22.1	22.0	22.2	22.4	23.3	23.4	23.1
CHINA											
Total meat[b]	kg/person	32.4	33.6	35.2	36.2	37.1	38.2	39.1	40.3	41.5	42.7
Beef and veal	kg/person	2.2	2.4	2.5	2.7	2.8	2.9	3.0	3.1	3.2	3.3
Pig meat	kg/person	21.9	21.9	23.0	23.3	23.7	24.2	24.6	25.1	25.6	26.1
Poultry meat	kg/person	6.9	7.8	7.9	8.3	8.7	9.0	9.4	9.9	10.4	11.0

Notes: **a)** Year ended 30 September for New Zealand. Consumption expressed in retail weight. Carcass weight to retail weight conversion factors of 0.7 for beef and veal, 0.78 for pig meat and 0.88 for sheep meat. Rtc to retail weight conversion factor 0.88 for poultry meat. **b)** Includes sheep meat. **c)** Includes goat meat. **d)** Includes Czech Republic, Norway, Switzerland and Turkey. Excludes Iceland.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 23 - **MILK PROJECTIONS**

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
AUSTRALIA											
Production	mt pw	9.0	9.3	9.7	10.5	10.9	11.1	11.3	11.6	11.9	12.1
Liquid sales	mt pw	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0
Industrial use	mt pw	7.1	7.4	7.8	8.6	9.0	9.1	9.3	9.6	9.9	10.1
Price[b]	A$c/litre	28.9	29.6	29.4	28.9	26.4	27.7	28.6	29.4	30.5	30.8
Price[c]	A$c/litre	23.8	24.0	23.9	23.2	20.8	24.3	23.9	23.4	24.3	24.7
CANADA											
Production	mt pw	8.0	8.1	8.2	8.2	8.1	8.2	8.2	8.3	8.3	8.4
Liquid sales	mt pw	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9
Industrial use	mt pw	4.7	4.8	4.9	4.8	4.8	4.8	4.8	4.9	4.9	5.0
Price[d]	C$c/litre	60.6	60.8	61.7	62.7	62.9	63.5	64.3	65.4	66.2	67.4
Price[e]	C$c/litre	53.9	54.6	55.3	55.8	56.5	57.4	58.7	60.1	61.4	62.9
EU15											
Production	mt pw	120.7	120.6	120.7	120.8	121.2	121.3	121.2	120.9	120.7	120.8
Liquid sales	mt pw	29.8	29.1	28.1	28.1	28.3	28.5	28.5	28.5	28.5	28.9
Industrial use	mt pw	83.4	84.6	85.4	85.6	85.8	85.9	85.8	85.7	85.7	85.6
Price[f]	Euro/litre	0.314	0.309	0.324	0.311	0.309	0.308	0.308	0.310	0.311	0.302
HUNGARY											
Production	mt pw	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.4
Liquid sales	mt pw	0.6	0.6	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8
Industrial use	mt pw	1.0	0.9	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2
Price[g]	Ft/litre	40.4	48.6	56.8	61.4	63.6	63.8	74.2	73.7	76.3	78.7
JAPAN											
Production	mt pw	8.5	8.6	8.6	8.4	8.5	8.6	8.7	8.7	8.8	8.9
Liquid sales	mt pw	5.2	5.2	5.0	5.1	5.1	5.1	5.2	5.2	5.3	5.4
Industrial use	mt pw	3.3	3.4	3.4	3.2	3.3	3.4	3.4	3.4	3.4	3.4
Price[h]	¥/litre	86.4	84.4	85.2	83.9	83.9	83.9	83.9	83.9	83.9	83.9
KOREA											
Production	mt pw	2.0	2.0	2.0	2.1	2.2	2.3	2.3	2.4	2.4	2.5
Liquid sales	mt pw	1.3	1.4	1.2	1.1	1.3	1.3	1.4	1.4	1.4	1.4
Industrial use	mt pw	0.7	0.5	0.8	1.0	0.9	1.0	1.0	1.0	1.1	1.1
Price[i]	Won/litre	459.6	468.1	527.9	600.6	554.1	552.8	559.5	564.8	592.3	610.0
MEXICO											
Production	mt pw	7.7	7.8	8.3	8.5	8.5	8.6	8.8	9.0	9.2	9.4
On farm use	mt pw	2.2	2.2	2.7	2.5	2.4	2.4	2.4	2.4	2.3	2.3
Liquid sales	mt pw	2.8	2.9	2.9	3.1	3.1	3.2	3.3	3.4	3.5	3.7
Industrial use	mt pw	2.8	2.8	2.7	2.9	3.0	3.1	3.1	3.2	3.3	3.4
Price[j]	MN$/litre	2.1	2.6	2.9	2.4	2.8	3.2	3.6	4.0	4.4	4.7
NEW ZEALAND											
Production	mt pw	10.2	11.1	11.4	10.9	12.2	12.5	12.7	12.9	13.1	13.4
Liquid sales	mt pw	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Industrial use	mt pw	9.8	10.7	11.0	10.5	11.8	12.1	12.3	12.5	12.8	13.1
Price[k]	NZSc/litre	29.6	31.1	29.2	30.8	28.8	29.4	29.8	29.7	30.5	31.1

For notes, see end of the table.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 23 - **MILK PROJECTIONS** *(cont.)*

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
POLAND											
Production	mt pw	12.1	12.1	12.6	12.4	12.6	12.8	13.0	13.2	13.4	13.7
On farm use	mt pw	3.6	3.4	3.4	3.5	3.4	3.3	3.1	3.0	2.8	2.7
Liquid sales	mt pw	3.3	3.2	3.3	3.1	3.2	3.3	3.4	3.6	3.7	3.8
Industrial use	mt pw	5.2	5.6	5.9	5.8	6.0	6.2	6.4	6.6	6.9	7.2
Price[l]	Zl/litre	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8
UNITED STATES											
Production	mt pw	71.1	71.4	72.0	73.6	74.4	75.0	76.0	77.0	77.7	78.7
Liquid sales	mt pw	25.0	25.0	25.0	24.8	24.8	24.9	24.9	25.0	24.9	25.0
Industrial use	mt pw	45.4	45.8	46.4	48.2	49.1	49.7	50.6	51.6	52.4	53.3
Price[m]	US$c/litre	28.8	27.4	32.2	30.0	30.1	32.0	32.9	33.8	34.5	35.6
Price[n]	US$c/litre	31.4	30.3	35.0	32.6	32.7	34.7	35.8	36.7	37.5	38.7
OTHER OECD[o]											
Production	mt pw	14.8	14.5	14.4	14.5	14.5	14.7	14.8	14.9	15.0	15.2
On farm use	mt pw	3.1	2.9	2.9	2.8	2.8	2.8	2.8	2.7	2.7	2.7
Liquid sales	mt pw	3.1	2.9	2.8	3.1	3.1	3.1	3.1	3.2	3.2	3.3
Industrial use	mt pw	8.6	8.6	8.7	8.6	8.7	8.8	8.9	9.0	9.1	9.2
ARGENTINA											
Production	mt pw	8.7	9.1	9.4	9.8	10.0	10.3	10.5	10.6	10.6	10.5
Liquid sales	mt pw	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.5
Industrial use	mt pw	6.6	6.8	7.1	7.5	7.6	7.9	8.1	8.1	8.1	8.0
Price[p]	Pesos c/litre	18.7	20.0	19.3	17.6	17.0	17.0	17.9	19.2	21.0	22.9
CHINA											
Production	mt pw	8.6	8.6	9.3	9.1	10.0	10.5	11.0	11.8	12.4	13.1
Industrial use	mt pw	3.2	3.3	3.1	3.1	3.4	3.5	3.7	4.0	4.2	4.4
Other uses	mt pw	5.3	5.4	6.1	6.1	6.6	7.0	7.3	7.8	8.3	8.7
Price[p]	Yuan/litre	2 673	2 681	2 597	2 761	2 791	2 953	3 153	3 340	3 574	3 815
REST OF WORLD[q]											
Production	mt pw	165.6	171.7	179.4	183.0	191.2	197.3	204.8	210.4	216.0	221.7
Industrial use	mt pw	62.0	64.9	65.7	65.1	66.2	69.0	71.2	73.2	74.1	75.5
Other uses	mt pw	103.5	106.8	113.8	117.9	125.0	128.3	133.6	137.2	141.9	146.2
WORLD											
Production	mt pw	522.7	525.8	533.7	538.6	550.3	559.5	570.4	580.4	589.8	599.3

Notes: **a)** Year ended 30 June for Australia and 31 May for New Zealand. **b)** Weighted average farm price, market and manufacturing milk. **c)** Average price, manufacturing milk. **d)** Fluid milk price, class 1, Ontario. **e)** Industrial milk target return. **f)** Weighted average farm price, raw cow's milk. **g)** Producer price. **h)** Average producer price, all milk. **i)** Producer price, 4th grade raw milk. **j)** Average producer price. **k)** Average farm price, all milk, milk to milkfat conversion factor 0.043. **l)** Average procurement price. **m)** Average farm price, manufacturing milk, 3.5% fat, Minnesota-Wisconsin. **n)** Average received by farmers for all milk. **o)** Includes Czech Republic, Norway, Switzerland and Turkey. Excludes Iceland. **p)** Price of milk to producers. **q)** Excluding Slovakia and NIS.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 24 - **BUTTER PROJECTIONS**

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
AUSTRALIA											
Production	kt pw	144	147	154	172	174	180	185	184	183	190
Consumption	kt pw	64	63	66	68	70	68	68	69	70	70
Exports	kt pw	84	99	95	100	111	127	123	122	120	126
Price[b]	A$/100 kg	238	222	251	271	234	240	244	253	267	282
CANADA											
Production	kt pw	90	90	86	85	84	83	83	84	84	86
Consumption	kt pw	82	82	78	81	81	81	82	83	84	84
Exports	kt pw	8	12	8	4	4	3	3	3	3	3
Price[c]	C$/100 kg	534	534	539	547	551	553	555	557	559	561
EU15											
Production	kt pw	1 860	1 853	1 838	1 856	1 866	1 855	1 849	1 843	1 827	1 812
Consumption	kt pw	1 756	1 765	1 746	1 755	1 750	1 747	1 743	1 740	1 737	1 731
Imports[d]	kt pw	83	89	93	105	108	110	110	110	110	110
Exports[d]	kt pw	205	227	175	160	193	199	200	204	196	183
Closing stocks	kt pw	240	214	224	269	300	318	334	344	348	356
Intervention stocks	kt pw	82	52	61	119	150	168	184	194	199	207
Price[e]	Euro/100 kg	341	341	354	371	364	363	362	362	363	356
HUNGARY											
Production	kt pw	14	12	14	14	14	14	14	15	15	15
Consumption	kt pw	13	11	13	13	13	13	13	14	14	14
Exports	kt pw	1	1	1	1	1	1	1	1	1	1
JAPAN											
Production	kt pw	85	87	89	84	83	83	84	84	84	80
Consumption	kt pw	90	90	84	81	83	83	84	84	84	80
Imports	kt pw	1	0	0	0	0	0	0	0	0	0
Price[f]	'000 ¥/100 kg	97	99	99	98	96	96	96	96	96	96
KOREA											
Production	kt pw	3	4	4	4	3	3	3	3	3	4
Consumption	kt pw	4	5	4	4	4	4	4	4	4	4
Imports	kt pw	0	1	1	1	1	1	1	1	1	1
MEXICO											
Production	kt pw	14	17	11	11	14	14	14	14	14	14
Consumption	kt pw	39	42	38	39	41	41	42	47	53	57
Imports	kt pw	25	25	27	28	28	27	28	33	39	43
Price[g]	MN$/100 kg	1 576	1 881	2 334	2 196	1 991	2 015	2 098	2 224	2 515	2 622
NEW ZEALAND											
Production[h]	kt pw	326	377	381	325	402	392	406	406	402	412
Consumption	kt pw	31	31	31	31	32	32	32	32	32	32
Exports[i, j]	kt pw	268	300	310	254	330	320	334	334	330	340
Price[b, j]	NZ$/100 kg	340	301	320	362	294	303	306	316	333	351

For notes, see end of the table.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 24 - **BUTTER PROJECTIONS** (cont.)

Calendar year		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
POLAND											
Production	kt pw	163	165	172	170	170	174	175	177	179	184
Consumption	kt pw	158	159	170	171	170	169	175	177	179	184
Exports	kt pw	8	3	5	5	4	3	3	3	3	3
Imports	kt pw	2	5	1	1	4	3	3	3	3	3
Price^k	Zl/100 kg	664	865	880	886	933	967	1006	1040	1078	1103
UNITED STATES											
Production	kt pw	541	522	491	520	539	523	487	469	484	490
Consumption	kt pw	539	506	511	549	560	542	516	503	502	502
Exports	kt pw	30	18	3	2	2	1	1	2	2	3
Closing stocks	kt pw	14	10	12	12	12	12	12	12	12	12
Price^l	US$/100 kg	243	256	392	292	294	293	303	323	320	321
OTHER OECD^m											
Production	kt pw	240	237	241	231	232	235	237	240	243	245
Consumption	kt pw	224	224	228	223	223	212	214	217	220	223
Net trade	kt pw	16	11	13	9	9	23	23	23	23	23
ARGENTINA											
Production	kt pw	49	49	52	55	51	52	53	53	54	54
Consumption	kt pw	45	48	49	51	51	51	52	52	52	53
Exports	kt pw	5	4	2	4	3	3	3	3	4	3
Price^n	Pesos/100 kg	352	369	340	284	281	284	287	296	310	329
CHINA											
Production	kt pw	76	77	77	76	84	88	92	98	104	110
Consumption	kt pw	89	91	92	91	98	102	107	113	119	125
Imports	kt pw	14	14	15	15	15	15	15	15	15	15
NIS											
Production	kt pw	550	389	410	405	399	403	407	417	426	430
Consumption	kt pw	674	569	555	528	537	551	561	577	590	600
Imports	kt pw	195	253	203	182	196	206	213	219	225	231
REST OF WORLD^o											
Production	kt pw	2 459	2 599	2 653	2 673	2 722	2 850	2 920	3 001	3 039	3 082
Consumption	kt pw	2 825	2 939	2 953	2 901	3 051	3 196	3 260	3 328	3 359	3 398
Net trade	kt pw	–365	–339	–300	–227	–329	–346	–341	–327	–319	–317

Notes: **a)** Year ending 30 June for Australia and 31 May for New Zealand. **b)** Average export price, f.o.b. **c)** Wholesale support price. **d)** Excludes intra-EU15. **e)** Average wholesale price, branded butter, Cologne. **f)** Average wholesale price for major users. **g)** Value of production divided by volume of production. **h)** Includes AMF measured in butter equivalent. **i)** Includes AMF measured in product weight. **j)** Year ended 30 June. **k)** Wholesale price, exit plant. **l)** Average wholesale price, grade A butter, Chicago. **m)** Includes Czech Republic, Norway, Switzerland and Turkey. Excludes Iceland. **n)** Wholesale price (precios mayoristas). **o)** Excludes Slovakia.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 25 - **CHEESE PROJECTIONS**

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
AUSTRALIA											
Production	kt pw	270	290	310	325	354	365	375	401	428	438
Consumption	kt pw	174	185	192	190	195	197	209	217	219	232
Exports	kt pw	123	128	153	175	193	200	200	218	244	242
Price[b]	A$/100 kg	375	370	396	373	359	368	380	397	418	429
CANADA											
Production	kt pw	305	337	330	340	348	347	350	353	356	360
Consumption	kt pw	308	329	326	331	338	340	344	349	353	357
Imports	kt pw	22	22	23	23	23	23	23	23	23	23
Exports	kt pw	17	23	28	28	29	26	27	27	27	27
Price[c]	C$/100 kg	667	696	715	726	750	780	810	838	865	896
EU15											
Production	kt pw	6 468	6 581	6 673	6 699	6 770	6 826	6 903	6 964	7 045	7 140
Consumption	kt pw	6 124	6 188	6 322	6 417	6 493	6 559	6 633	6 688	6 752	6 850
Imports[d]	kt pw	99	114	127	145	166	176	182	185	188	191
Exports[d]	kt pw	501	512	448	447	443	443	452	461	481	481
Price[e]	Euro/100 kg	422	400	405	390	387	385	385	388	389	378
HUNGARY											
Production	kt pw	54	57	57	59	58	59	59	61	62	62
Consumption	kt pw	48	52	51	52	51	51	52	53	56	59
Exports	kt pw	11	13	14	15	17	18	19	20	20	20
JAPAN											
Production[f]	kt pw	111	114	124	125	123	127	131	135	139	143
of which: domestic	kt pw	33	34	35	38	42	44	46	48	50	52
Consumption	kt pw	196	206	218	223	224	232	240	248	256	264
Imports[g]	kt pw	164	171	183	185	182	188	194	200	206	212
Price[h]	'000 ¥/100 kg	33	37	40	33	32	32	33	33	34	34
KOREA											
Production	kt pw	7	6	10	12	11	12	12	12	13	13
Consumption	kt pw	18	21	25	25	26	27	27	28	29	29
Imports	kt pw	11	15	13	14	14	15	15	16	16	16
MEXICO											
Production	kt pw	117	116	127	138	139	141	142	146	149	154
Consumption	kt pw	143	141	157	165	166	170	172	177	180	186
Imports	kt pw	26	25	30	27	28	29	30	31	32	32
Price[i]	MN$/100 kg	2 049	2 516	2 739	2 319	2 693	3 051	3 466	3 789	4 184	4 541
NEW ZEALAND											
Production	kt pw	232	267	276	230	294	339	346	362	387	394
Consumption	kt pw	33	34	36	38	40	42	45	47	46	46
Exports[j]	kt pw	193	219	242	256	257	297	301	315	341	347
Price[b, j]	NZ$/100 kg	367	358	373	379	381	398	412	429	452	464

For notes, see end of the table.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 25 - **CHEESE PROJECTIONS** (cont.)

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
POLAND											
Production	kt pw	404	445	475	476	488	500	512	525	540	555
Consumption	kt pw	390	425	449	458	458	465	472	481	491	506
Exports	kt pw	21	26	33	30	40	44	48	53	58	58
Price[k]	Zl/100 kg	684	892	1032	1041	1090	1124	1 157	1 190	1 213	1 241
UNITED STATES											
Production	kt pw	3 239	3 325	3 403	3 613	3 753	3 858	3 986	4 058	4 142	4 201
Consumption	kt pw	3 332	3 412	3 480	3 706	3 846	3 951	4 079	4 151	4 235	4 294
Imports	kt pw	150	141	156	155	155	155	155	155	155	155
Exports	kt pw	52	57	61	62	62	62	62	62	62	62
Price[l]	US$/100 kg	310	292	349	323	330	341	361	370	372	382
OTHER OECD[m]											
Production	kt pw	548	565	574	580	586	593	599	605	611	617
Consumption	kt pw	492	504	508	517	523	526	532	534	541	547
Net trade	kt pw	57	62	66	62	62	66	66	70	70	70
ARGENTINA											
Production	kt pw	396	415	420	438	436	446	456	454	457	465
Consumption	kt pw	380	390	400	414	419	433	427	448	439	459
Exports	kt pw	14	19	16	24	18	13	30	7	19	7
Price[n]	Pesos/100 kg	261	281	274	216	206	212	219	232	245	245
CHINA											
Production	kt pw	186	191	171	169	185	193	204	217	229	242
Consumption	kt pw	192	197	178	177	193	201	212	225	237	250
Imports	kt pw	7	7	8	8	8	8	8	8	8	8
NIS											
Production	kt pw	276	210	214	223	220	209	210	209	208	216
Consumption	kt pw	436	484	467	470	483	492	501	511	519	529
Imports	kt pw	165	281	253	252	268	288	296	306	316	318
REST OF WORLD[o]											
Production	kt pw	1 056	1 062	918	1 032	1 044	1 065	1 159	1 180	1 168	1 219
Consumption	kt pw	1 366	1 309	1 152	1 292	1 291	1 317	1 425	1 450	1 505	1 534
Net trade	kt pw	–314	–249	–233	–257	–247	–252	–266	–271	–336	–315

Notes: **a)** Year ended 30 June for Australia and 31 May for New Zealand. **b)** Average export price, f.o.b. **c)** Industry price of cheddar cheese. **d)** Excludes intra-EU15 trade. **e)** Average ex-store wholesale price, Emmental Kempten, Cologne. **f)** Includes cheese produced from natural cheese imports. **g)** Includes natural cheese imports. **h)** Average import price, natural cheese, c.i.f.. **i)** Value of production divided by volume of production. **j)** Year ended 30 June. **k)** Wholesale price exit plant. **l)** Average wholesale price, American cheese, 40 lb blocks, f.o.b., Winconsin. **m)** Includes Czech Republic, Norway, Switzerland and Turkey. Excludes Iceland. **n)** Wholesale price (precios mayoristas). **o)** Excluding Slovakia.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 26 - *SKIM MILK POWDER PROJECTIONS*

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
AUSTRALIA											
Production	kt pw	212	223	215	249	251	263	272	269	269	280
Consumption	kt pw	38	41	40	36	37	37	37	38	38	38
Exports	kt pw	175	192	178	214	217	229	237	234	234	244
Price[b]	A$/100 kg	247	246	250	221	214	227	235	248	266	284
CANADA											
Production	kt pw	66	65	70	73	65	61	62	63	62	65
Consumption	kt pw	33	31	38	39	33	33	33	34	34	34
Exports	kt pw	35	30	31	39	34	28	28	29	27	29
Price[c]	C$/100 kg	412	425	438	447	459	479	503	524	539	559
EU15											
Production	kt pw	1 197	1 194	1 142	1 161	1 173	1 144	1 106	1 072	1 020	966
Consumption	kt pw	982	954	937	982	966	946	934	906	889	874
Imports[d]	kt pw	55	73	66	75	82	84	86	56	55	55
Exports[d]	kt pw	243	283	176	253	263	247	245	226	215	178
Closing stocks	kt pw	146	155	250	250	276	311	323	320	291	260
Intervention stocks	kt pw	107	136	204	190	216	250	262	259	230	199
Price[e]	Euro/100 kg	206	207	197	199	196	198	198	201	202	203
HUNGARY											
Production	kt pw	5	5	5	5	5	5	5	5	5	5
Consumption	kt pw	5	7	6	6	6	6	6	6	6	6
JAPAN											
Production	kt pw	195	200	202	189	193	197	201	205	209	213
Consumption	kt pw	274	260	257	248	250	252	254	258	261	264
Imports	kt pw	75	66	52	40	57	55	53	53	52	51
Price[f]	'000 ¥/100 kg	19	21	22	15	19	19	19	19	20	21
KOREA											
Production	kt pw	20	31	18	24	24	22	23	23	23	23
Consumption	kt pw	23	31	21	27	26	25	26	26	25	26
Imports	kt pw	4	1	3	3	3	3	3	3	3	3
MEXICO											
Production	kt pw	25	25	25	25	26	26	26	27	27	27
Consumption	kt pw	143	156	127	130	132	137	138	138	138	138
Imports	kt pw	117	133	103	104	106	110	111	112	111	111
Price[g]	MN$/100 kg	1 360	1 604	1 556	1 491	1 641	1 694	1 853	2 066	2 324	2 566
NEW ZEALAND											
Production	kt pw	196	231	211	227	220	205	211	198	186	187
Consumption	kt pw	8	8	8	8	8	8	8	8	8	8
Exports[h]	kt pw	191	212	205	219	212	197	203	190	178	179
Price[b, h]	NZ$/100 kg	291	291	281	265	271	293	302	316	336	357

For notes, see end of the table.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 26 - **SKIM MILK POWDER PROJECTIONS** *(cont.)*

Calendar year		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
POLAND											
Production	kt pw	122	120	131	124	123	125	124	125	127	130
Consumption	kt pw	27	17	37	13	12	14	12	12	14	15
Exports	kt pw	100	111	101	115	115	116	117	118	118	120
Price*i*	Zl/100 kg	461	552	535	497	588	627	667	724	791	849
UNITED STATES											
Production	kt pw	533	552	515	514	530	513	478	461	478	475
Consumption*j*	kt pw	429	414	364	371	389	376	341	322	335	329
Exports	kt pw	102	117	145	144	144	139	139	141	145	148
Closing stocks	kt pw	50	57	65	65	65	65	65	65	65	65
Price*k*	US$/100 kg	245	243	236	228	238	253	281	278	281	283
OTHER OECD*l*											
Production	kt pw	84	74	73	73	76	77	80	84	87	88
Consumption	kt pw	59	50	73	74	77	78	82	85	88	89
Net trade	kt pw	26	24	–1	–1	–1	–1	–1	–1	–1	–1
ARGENTINA											
Production	kt pw	36	40	40	44	44	47	48	47	47	47
Consumption	kt pw	20	21	23	24	25	25	25	23	21	21
Exports	kt pw	17	17	15	19	20	23	24	25	26	28
Price*m*	Pesos/100 kg	278	298	250	242	224	218	226	241	262	281
CHINA											
Consumption	kt pw	41	40	42	49	48	49	50	50	49	50
Imports	kt pw	42	41	45	50	50	50	51	51	50	51
NIS											
Production	kt pw	214	196	197	196	193	195	197	202	206	208
Consumption	kt pw	187	160	156	191	187	189	190	196	201	203
Imports	kt pw	18	10	8	40	38	39	39	41	42	42
Exports	kt pw	44	44	50	45	44	45	46	47	47	47
REST OF WORLD*n*											
Production	kt pw	399	335	444	391	374	445	397	410	433	424
Consumption	kt pw	1 026	1 047	1 067	1 124	1 088	1 127	1 093	1 103	1 111	1 084
Net trade	kt pw	–621	–705	–626	–735	–713	–682	–696	–694	–678	–661

Notes: **a)** Year ended 30 June for Australia and 31 May for New Zealand. **b)** Average export price, f.o.b.. **c)** Average wholesale price. **d)** Excludes intra EU15 trade. **e)** Average wholesale price, SMP, Cologne. **f)** Unit import price for feed use. **g)** Average import price c.i.f., SMP and WMP. **h)** Year ended 31 June. **i)** Wholesale price, exit plant. **j)** Excludes domestic feed use. **k)** Average wholesale price, non-fat dry milk, f.o.b., Central States. **l)** Includes Czech Republic, Norway, Switzerland and Turkey. Excludes Iceland. **m)** Wholesale price (precios mayoristas). **n)** Excludes Slovakia.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 27 - **WHEY POWDER AND CASEIN PROJECTIONS**

Calendar year		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
AUSTRALIA											
Net trade, whey	kt pw	32.4	35.3	40.2	50.9	61.3	64.8	68.2	76.6	85.5	89.5
Exports, casein	kt pw	5.0	5.7	9.0	7.4	7.7	6.6	6.0	5.5	5.1	4.7
CANADA											
Net trade, whey	kt pw	6.5	11.0	-0.4	11.0	11.0	11.0	11.0	11.0	11.0	11.0
EU15											
Net trade, whey	kt pw	172.9	218.8	190.0	192.6	166.7	165.9	162.1	160.5	160.0	164.7
Casein											
production	kt pw	133.2	131.0	146.0	103.7	109.2	113.3	115.9	120.0	122.2	120.8
consumption	kt pw	148.0	167.2	177.0	133.5	136.2	140.6	144.3	146.7	148.5	148.1
net trade	kt pw	-13.6	-30.2	-31.0	-29.7	-27.0	-27.3	-28.4	-26.7	-26.3	-27.4
HUNGARY											
Net trade, whey	kt pw	1.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
JAPAN											
Net trade, whey	kt pw	-36.3	-46.1	-43.1	-47.0	-51.2	-55.9	-60.9	-66.4	-72.3	-78.8
Imports, casein	kt pw	11.8	10.7	9.6	10.4	10.2	9.7	9.4	8.9	8.6	8.3
Import price, casein	'000 ¥/100 kg	52.2	57.4	57.5	48.3	48.5	49.1	48.9	50.4	50.7	49.9
KOREA											
Net trade, whey	kt pw	-22.1	-23.2	-24.0	-23.0	-23.0	-23.0	-23.0	-23.0	-23.0	-23.0
MEXICO											
Net trade, whey	kt pw	-42.0	-49.2	-56.6	-50.5	-49.4	-48.8	-49.3	-51.1	-54.0	-57.4
NEW ZEALAND											
Net trade, whey	kt pw	3.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Exports, casein	kt pw	79.3	79.2	85.3	101.5	99.4	99.8	102.9	103.8	105.6	109.2
Export price, casein	US$/100 kg	449.5	434.8	405.4	392.6	434.3	441.2	447.7	474.9	486.8	485.7
POLAND											
Net trade, whey	kt pw	3.4	7.7	7.7	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Exports, casein	kt pw	7.8	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
UNITED STATES											
Whey											
production	kt pw	525.4	515.7	534.8	533.7	555.7	571.5	587.6	599.0	610.5	623.2
consumption	kt pw	426.6	406.2	419.8	415.5	434.3	447.9	461.6	469.8	477.6	486.1
exports	kt pw	103.5	117.0	121.0	124.2	127.4	129.6	132.0	135.2	138.9	143.1
price*a*	US$/100 kg	45.9	47.8	48.5	44.4	43.6	41.2	43.9	47.1	48.6	49.4
Imports, casein	kt pw	71.4	70.0	71.2	72.7	73.9	73.3	75.2	77.7	79.8	82.3
ARGENTINA											
Net trade, whey	kt pw	-11.7	-6.3	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0
CHINA											
Net trade, whey	kt pw	-50.9	-74.1	-68.5	-71.2	-73.7	-76.3	-79.1	-82.2	-85.3	-87.5
NIS											
Net trade, whey	kt pw	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
REST OF WORLD*b*											
Net trade, whey	kt pw	-158.4	-191.6	-163.1	-185.7	-167.9	-166.2	-159.8	-159.5	-159.5	-160.4

Notes: **a)** Wholesale price, edible dry whey, Wisconsin, plant. **b)** Excluding Slovakia and NIS.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 28 - **WHOLE MILK POWDER PROJECTIONS**

Calendar year[a]		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
AUSTRALIA											
Production	kt pw	115	134	128	157	169	155	147	157	161	159
Consumption	kt pw	35	38	34	32	33	33	34	34	35	35
Exports	kt pw	81	97	95	139	139	130	122	132	136	134
EU15											
Production	kt pw	990	954	959	944	958	968	989	1 019	1 050	1 077
Consumption	kt pw	455	466	477	507	522	523	525	535	547	555
Exports[b]	kt pw	540	493	487	441	441	450	469	489	508	527
JAPAN											
Production	kt pw	64	57	52	53	53	53	53	53	53	53
Consumption	kt pw	64	57	52	53	53	53	53	53	53	53
MEXICO											
Production	kt pw	101	91	91	99	103	103	113	119	124	130
Consumption	kt pw	136	129	132	138	140	137	142	146	148	155
Imports	kt pw	38	42	47	45	43	40	35	33	31	31
Price[c]	MN$/100 kg	2 605	3 077	3 673	3 110	3 611	4 091	4 648	5 081	5 611	6 089
NEW ZEALAND											
Production	kt pw	357	373	401	336	460	474	469	490	512	527
Consumption	kt pw	1	1	1	1	1	1	1	1	1	1
Exports[d]	kt pw	356	372	400	335	459	473	468	489	511	527
Price[e]	NZ$/100kg	311	309	310	318	313	322	330	348	369	386
POLAND											
Production	kt pw	39	40	39	39	39	39	39	40	40	41
Consumption	kt pw	35	36	35	36	36	36	36	37	37	37
Exports	kt pw	5	4	6	5	4	4	4	4	4	5
UNITED STATES											
Production	kt pw	67	55	65	64	63	62	62	61	60	60
Consumption	kt pw	48	46	55	53	52	52	51	51	50	49
Exports	kt pw	20	10	13	13	13	13	13	13	13	13
Closing stocks	kt pw	3	3	2	2	2	2	2	2	2	2
OTHER OECD[f]											
Production	kt pw	42	39	43	45	45	47	48	49	49	49
Consumption	kt pw	25	24	24	31	31	33	34	34	33	33
Net trade	kt pw	17	15	19	15	14	15	15	16	16	16
ARGENTINA											
Production	kt pw	155	166	203	218	215	216	220	214	201	182
Consumption	kt pw	109	113	124	123	131	131	134	136	144	149
Exports	kt pw	51	62	80	97	86	87	87	79	59	34
Price[g]	Pesos/100 kg	352	369	338	297	284	286	292	307	314	326
CHINA											
Consumption	kt pw	64	61	57	79	81	84	86	89	92	95
Exports	kt pw	5	7	5	7	7	7	7	7	7	7
Imports	kt pw	69	68	63	86	88	91	93	96	99	102
NIS											
Production	kt pw	180	168	158	158	159	160	161	162	162	163
Consumption	kt pw	222	209	198	199	200	201	202	203	203	204
Imports	kt pw	49	49	49	50	50	50	50	50	50	50
REST OF WORLD[h]											
Production	kt pw	357	400	413	408	401	410	422	442	470	494
Consumption	kt pw	1 241	1 287	1 340	1 264	1 369	1 393	1 413	1 475	1 526	1 554
Net trade	kt pw	–896	–881	–931	–856	–969	–983	–991	–1 033	–1 056	–1 061

Notes: **a)** Year ended 30 June for Australia and 31 May for New Zealand. **b)** Excludes intra-EU15 trade. **c)** Value of production divided by volume of production. **d)** Including exports of other dairy products made from WMP. **e)** Export price. **f)** Includes Czech Republic, Korea, Norway, Switzerland and Turkey. Excludes Iceland. **g)** Prix de gros (precios mayoristas). **h)** Excludes Slovakia.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 29 - ***DAIRY PER CAPITA CONSUMPTION PROJECTIONS***^a

Calendar year^b		*Average 1994-98*	*1997*	*1998*p	*1999*e	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
AUSTRALIA											
Milk	L/person	100.9	100.7	99.8	99.0	99.2	99.1	98.9	98.7	98.5	97.9
Butter	kg/person	3.5	3.4	3.5	3.6	3.7	3.6	3.5	3.5	3.5	3.5
Cheese	kg/person	9.5	10.0	10.3	10.1	10.3	10.3	10.8	11.1	11.1	11.6
SMP	kg/person	2.1	2.2	2.1	1.9	2.0	1.9	1.9	1.9	1.9	1.9
WMP	kg/person	1.9	2.1	1.8	1.7	1.7	1.7	1.7	1.8	1.8	1.8
CANADA											
Milk	L/person	91.4	90.4	89.1	89.4	88.2	88.0	87.8	87.6	87.4	87.0
Butter	kg/person	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Cheese	kg/person	10.3	10.9	10.7	10.7	10.8	10.8	10.8	10.8	10.9	10.9
SMP	kg/person	1.1	1.0	1.2	1.3	1.0	1.0	1.0	1.0	1.0	1.0
EU15											
Milk	L/person	77.6	75.6	72.7	72.6	72.9	73.2	73.3	72.8	72.6	73.4
Butter	kg/person	4.7	4.7	4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.5
Cheese	kg/person	16.4	16.5	16.9	17.1	17.2	17.4	17.5	17.6	17.7	17.9
SMP	kg/person	2.6	2.6	2.5	2.6	2.6	2.5	2.5	2.4	2.3	2.3
WMP	kg/person	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5
HUNGARY											
Milk	L/person	54.5	54.6	51.6	54.7	58.1	61.7	65.4	69.4	73.7	78.2
Butter	kg/person	1.3	1.1	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4
Cheese	kg/person	4.7	5.1	5.0	5.2	5.0	5.1	5.1	5.3	5.6	5.9
SMP	kg/person	0.5	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
JAPAN											
Milk	L/person	39.8	39.7	38.7	39.1	38.9	39.1	39.5	39.9	40.3	40.7
Butter	kg/person	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.6
Cheese	kg/person	1.6	1.6	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.1
SMP	kg/person	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
WMP	kg/person	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
KOREA											
Milk	L/person	28.5	30.5	25.7	23.1	25.9	26.5	27.2	27.7	27.2	27.0
Butter	kg/person	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cheese	kg/person	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
SMP	kg/person	0.5	0.7	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.5
MEXICO											
Milk^c	L/person	29.1	29.7	29.6	30.7	30.0	30.7	31.1	31.8	32.7	33.7
Butter	kg/person	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5
Cheese	kg/person	1.6	1.5	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.8
SMP	kg/person	1.6	1.7	1.3	1.3	1.3	1.4	1.4	1.3	1.3	1.3
WMP	kg/person	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5
NEW ZEALAND											
Milk	L/person	89.2	88.0	87.2	86.3	86.3	85.5	84.9	84.3	83.5	82.8
Butter	kg/person	8.5	8.4	8.3	8.1	8.3	8.2	8.2	8.1	8.0	7.9
Cheese	kg/person	8.9	9.2	9.6	10.1	10.5	11.0	11.4	11.8	11.7	11.6
SMP	kg/person	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0
WMP	kg/person	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

For notes, see end of the table.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 29 - **DAIRY PER CAPITA CONSUMPTION PROJECTIONS**[a] *(cont.)*

Calendar year		Average 1994-98	1997	1998p	1999e	2000	2001	2002	2003	2004	2005
POLAND											
Milk	L/person	82.8	79.3	81.6	76.4	80.2	82.3	85.6	88.6	91.6	93.3
Butter	kg/person	4.1	4.1	4.4	4.4	4.4	4.3	4.5	4.5	4.5	4.7
Cheese	kg/person	10.1	11.0	11.6	11.8	11.8	11.9	12.1	12.3	12.5	12.8
SMP	kg/person	0.7	0.4	0.9	0.3	0.3	0.4	0.3	0.3	0.4	0.4
WMP	kg/person	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
UNITED STATES											
Milk	L/person	91.5	91.0	90.0	89.1	88.0	87.8	86.9	86.7	85.8	85.4
Butter	kg/person	2.0	1.9	1.9	2.0	2.1	2.0	1.8	1.8	1.8	1.8
Cheese	kg/person	12.6	12.8	12.9	13.7	14.1	14.4	14.7	14.8	15.0	15.1
SMP[d]	kg/person	1.6	1.6	1.4	1.4	1.4	1.4	1.2	1.1	1.2	1.2
WMP	kg/person	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
OTHER OECD[e]											
Milk[c]	L/person	35.2	33.2	31.7	34.2	33.4	33.4	33.1	33.3	33.2	33.1
Butter	kg/person	2.6	2.6	2.6	2.5	2.5	2.3	2.3	2.3	2.3	2.3
Cheese	kg/person	5.8	5.9	5.9	5.9	5.9	5.8	5.8	5.8	5.8	5.7
SMP	kg/person	0.7	0.6	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9
WMP	kg/person	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ARGENTINE											
Milk	L/person	59.5	61.2	61.7	60.9	62.1	62.8	62.9	62.7	62.2	62.0
Butter	kg/person	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Cheese	kg/person	10.8	10.9	11.1	11.3	11.3	11.6	11.3	11.7	11.4	11.8
SMP	kg/person	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.6	0.6	0.5
WMP	kg/person	3.1	3.2	3.4	3.4	3.5	3.5	3.6	3.6	3.7	3.8
CHINA											
Milk[f]	L/person	4.3	4.2	4.8	4.7	5.1	5.3	5.6	5.9	6.2	6.5
Butter	kg/person	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cheese	kg/person	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
SMP	kg/person	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WMP	kg/person	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NIS											
Milk	L/person	187.6	184.2	171.2	168.0	164.6	166.0	167.0	170.7	173.5	174.3
Butter	kg/person	2.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Cheese	kg/person	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
SMP	kg/person	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
WMP	kg/person	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
REST OF WORLD[g]											
Milk[f]	L/person	32.5	32.9	34.4	34.9	36.3	36.6	37.4	37.7	38.3	38.8
Butter	kg/person	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Cheese	kg/person	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
SMP	kg/person	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
WMP	kg/person	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Notes: **a)** Milk excludes on farm use. **b)** Year ended 30 June for Australia and 31 May for New Zealand. **c)** In Mexico, Switzerland, Turkey and Poland, on farm use is large. **d)** Excludes feed use. **e)** Includes Czech Republic, Norway, Switzerland and Turkey (and Korea for WMP). Excludes Iceland. **f)** Fluid milk and other dairy products not specified. **g)** Excludes Slovakia and NIS.
p: provisional; **e**: estimate.
Source: OECD Secretariat.

Table 30 - **OTHER SELECTED COUNTRIES' PROJECTIONS: BUTTER AND SMP**

Calendar year		*Average 1994-98*	*1997*	*1998*p	*1999*e	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
BUTTER											
OECD											
CZECH REPUBLIC[a]											
Production	kt	68	62	65	57	55	55	55	55	55	55
Consumption	kt	44	41	41	38	36	22	22	22	22	22
Exports	kt	24	22	25	20	20	34	34	34	34	34
Imports	kt	1	1	1	1	1	1	1	1	1	1
NORWAY[b]											
Production	kt	16	20	20	17	17	18	18	19	19	19
Consumption	kt	13	18	18	14	15	15	16	16	16	17
Exports	kt	3	3	3	3	3	3	3	3	3	3
Imports	kt	0	0	0	0	0	0	0	0	0	0
SWITZERLAND[b]											
Production	kt	40	39	39	39	39	39	39	39	39	39
Consumption	kt	43	40	45	43	43	43	43	43	43	43
Exports	kt	0	0	0	0	0	0	0	0	0	0
Imports	kt	3	4	4	4	4	4	4	4	4	4
TURKEY[b]											
Production	kt	116	116	116	118	120	122	125	127	129	132
Consumption	kt	124	125	125	127	129	131	134	136	138	141
Exports	kt	0	0	0	0	0	0	0	0	0	0
Imports	kt	8	9	9	9	9	9	9	9	9	9
NON-OECD											
SLOVAK REPUBLIC[b]											
Production	kt	15	13	15	15	15	15	15	15	15	15
Consumption	kt	17	15	17	17	17	17	17	17	17	17
Exports	kt	0	0	0	0	0	0	0	0	0	0
Imports	kt	2	2	2	2	2	2	2	2	2	2
SMP											
OECD											
CZECH REPUBLIC[a]											
Production	kt	48	34	34	35	37	37	40	43	45	45
Consumption	kt	21	9	34	35	37	37	40	43	45	45
Exports	kt	28	25	0	0	0	0	0	0	0	0
Imports	kt	0	0	0	0	0	0	0	0	0	0
NORWAY[b]											
Production	kt	6	6	6	6	5	5	5	5	5	4
Consumption	kt	6	6	6	5	5	5	5	5	5	4
Exports	kt	0	0	0	0	0	0	0	0	0	0
Imports	kt	0	0	0	0	0	0	0	0	0	0
SWITZERLAND[b]											
Production	kt	30	34	33	32	33	34	35	36	37	38
Consumption	kt	25	29	27	27	28	29	30	31	32	33
Exports	kt	5	5	5	5	5	5	5	5	5	5
Imports	kt	0	0	0	0	0	0	0	0	0	0
TURKEY[b]											
Production	kt	0	0	0	0	0	0	0	0	0	0
Consumption	kt	7	6	6	6	6	6	6	6	6	6
Exports	kt	0	0	0	0	0	0	0	0	0	0
Imports	kt	7	6	6	6	6	6	6	6	6	6
NON-OECD											
SLOVAK REPUBLIC[b]											
Production	kt	15	17	17	18	18	19	19	19	20	20
Consumption	kt	5	7	7	7	7	7	7	7	7	8
Exports	kt	12	13	13	13	14	14	14	15	15	16
Imports	kt	2	3	3	3	3	3	3	3	3	3

Notes: **a)** Questionnaire response, summer 1999. **b)** OECD estimates.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 31 - *OTHER SELECTED COUNTRIES' PROJECTIONS: WHEAT*

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
OECD											
CZECH REPUBLIC[b]											
Production	kt	3 787	3 640	3 845	3 662	3 910	3 995	4 080	4 165	4 250	4 250
Consumption	kt	3 579	3 599	3 407	3 499	3 500	3 500	3 500	3 500	3 500	3 500
Feed use	kt	2 127	2 030	2 050	2 000	2 000	2 000	2 000	2 000	2 000	2 000
Food	kt	1 452	1 569	1 357	1 499	1 500	1 500	1 500	1 500	1 500	1 500
Exports	kt	352	83	500	100	435	520	605	690	775	775
Imports	kt	72	49	100	50	25	25	25	25	25	25
Ending stocks	kt	780	696	734	847	847	847	847	847	847	847
NORWAY[c]											
Production	kt	289	258	371	375	380	384	389	393	398	402
Consumption	kt	530	508	596	599	601	604	606	609	612	615
Feed use	kt	80	80	80	81	82	82	83	84	85	85
Food	kt	450	428	516	518	520	521	523	525	527	529
Exports	kt	0	0	0	2	4	5	7	9	11	13
Imports	kt	221	250	225	225	225	225	225	225	225	225
Ending stocks	kt	251	250	250	250	250	250	250	250	250	250
SWITZERLAND[c]											
Production	kt	619	616	612	630	627	624	622	619	616	613
Consumption	kt	877	895	861	879	876	873	870	868	865	861
Feed use	kt	205	196	199	201	203	206	208	211	213	214
Food	kt	672	698	662	678	673	667	662	657	652	647
Exports	kt	38	38	38	38	38	38	38	38	38	38
Imports	kt	294	287	287	287	287	287	287	287	287	287
Ending stocks	kt	754	750	750	750	750	750	750	750	750	751
TURKEY[c]											
Production	kt	15 475	15 442	17 220	16 500	16 764	17 032	17 305	17 582	17 863	18 149
Consumption	kt	16 362	16 395	16 533	16 700	16 967	17 239	17 514	17 795	18 079	18 369
Feed use	kt	1 086	1 150	1 150	1 150	1 150	1 150	1 150	1 150	1 150	1 150
Food	kt	15 276	15 245	15 383	15 550	15 817	16 089	16 364	16 645	16 929	17 219
Exports	kt	1 610	1 656	1 896	1 525	1 522	1 519	1 515	1 512	1 508	1 505
Imports	kt	1 637	2 558	1 725	1 725	1 725	1 725	1 725	1 725	1 725	1 725
Ending stocks	kt	1 931	1 574	2 090	2 090	2 090	2 090	2 090	2 090	2 090	2 090
NON-OECD											
SLOVAK REPUBLIC[c]											
Production	kt	1 895	1 886	1 792	1 812	1 882	1 957	2 035	2 116	2 201	2 288
Consumption	kt	2 156	2 508	2 570	2 665	2 667	2 645	2 685	2 716	2 738	2 826
Feed use	kt	1 067	1 000	1 000	1 021	959	908	921	945	970	970
Food	kt	1 090	1 508	1 570	1 645	1 708	1 738	1 764	1 771	1 768	1 856
Exports	kt	155	57	57	0	72	162	200	250	312	312
Imports	kt	377	680	850	850	850	850	850	850	850	850
Ending stocks	kt	75	6	22	18	12	12	12	12	12	12

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** Questionnaire response, summer 1999. **c)** OECD estimates.
p: provisional; **e**: estimate.
Source: OECD Secretariat.

Table 32 - *OTHER SELECTED COUNTRIES' PROJECTIONS: COARSE GRAINS*

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
OECD											
CZECH REPUBLIC[b]											
Production	kt	3 035	3 343	2 824	3 434	3 170	3 170	3 170	3 170	3 170	3 170
Consumption	kt	3 217	3 092	3 083	3 216	3 240	3 240	3 240	3 240	3 240	3 240
Feed use	kt	2 382	2 335	2 337	2 356	2 397	2 397	2 397	2 397	2 397	2 397
Food	kt	835	757	746	860	843	843	843	843	843	843
Exports	kt	58	64	59	608	75	75	75	75	75	75
Imports	kt	255	87	172	187	145	145	145	145	145	145
Ending stocks	kt	604	892	746	543	543	543	543	543	543	543
NORWAY[c]											
Production	kt	987	1 038	1 044	1 036	1 036	1 036	1 036	1 036	1 036	1 036
Consumption	kt	1 311	1 320	1 316	1 308	1 308	1 308	1 308	1 308	1 308	1 308
Feed use	kt	1 192	1 199	1 185	1 177	1 177	1 177	1 177	1 177	1 177	1 177
Food	kt	119	121	131	131	131	131	131	131	131	131
Exports	kt	0	0	0	0	0	0	0	0	0	0
Imports	kt	288	275	250	272	272	272	272	272	272	272
Ending stocks	kt	459	444	422	422	422	422	422	422	422	422
SWITZERLAND[c]											
Production	kt	672	681	651	656	646	636	627	617	610	610
Consumption	kt	962	963	936	939	930	920	911	901	894	894
Feed use	kt	689	674	664	667	659	652	644	637	631	631
Food	kt	273	289	272	273	270	268	266	264	263	262
Exports	kt	10	0	0	0	0	0	0	0	0	0
Imports	kt	293	262	285	284	284	284	284	284	284	285
Ending stocks	kt	325	310	310	310	310	310	310	310	310	311
TURKEY[c]											
Production	kt	9 643	9 953	10 891	11 026	11 162	11 300	11 440	11 581	11 724	11 869
Consumption	kt	9 520	10 015	10 027	10 140	10 253	10 369	10 485	10 603	10 722	10 842
Feed use	kt	8 219	8 693	8 701	8 793	8 885	8 979	9 074	9 170	9 267	9 365
Food	kt	1 301	1 322	1 327	1 347	1 368	1 389	1 411	1 432	1 455	1 477
Exports	kt	746	513	1 518	1 843	1 866	1 888	1 912	1 935	1 959	1 984
Imports	kt	752	869	957	957	957	957	957	957	957	957
Ending stocks	kt	1 766	1 985	2 288	2 288	2 288	2 288	2 288	2 288	2 288	2 288
NON-OECD											
SLOVAK REPUBLIC[c]											
Production	kt	1 620	1 821	1 652	1 693	1 730	1 749	1 769	1 789	1 810	1 830
Consumption	kt	1 580	1 613	1 644	1 653	1 644	1 661	1 678	1 695	1 713	1 731
Feed use	kt	964	987	1 011	1 027	1 039	1 043	1 047	1 052	1 056	1 060
Food	kt	616	626	633	626	605	617	630	644	657	671
Exports	kt	129	266	28	32	78	89	91	94	96	99
Imports	kt	43	0	0	0	0	0	0	0	0	0
Ending stocks	kt	136	93	73	81	89	89	89	89	89	89

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** Questionnaire response, summer 1999. **c)** OECD estimates.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 33 - **OTHER SELECTED COUNTRIES' PROJECTIONS: RICE**

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
OECD											
CZECH REPUBLIC[b]											
Production	kt	0	0	0	0	0	0	0	0	0	0
Consumption	kt	46	44	43	43	43	43	43	43	43	43
Exports	kt	15	16	12	12	12	12	12	12	12	12
Imports	kt	60	60	55	55	55	55	55	55	55	55
Ending stocks	kt	0	0	0	0	0	0	0	0	0	0
NORWAY[c]											
Production	kt	0	0	0	0	0	0	0	0	0	0
Consumption	kt	0	0	0	0	0	0	0	0	0	0
Exports	kt	0	0	0	0	0	0	0	0	0	0
Imports	kt	0	0	0	0	0	0	0	0	0	0
Ending stocks	kt	0	0	0	0	0	0	0	0	0	0
SWITZERLAND[c]											
Production	kt	0	0	0	0	0	0	0	0	0	0
Consumption	kt	50	50	53	45	45	45	45	45	45	45
Exports	kt	0	0	0	0	0	0	0	0	0	0
Imports	kt	50	60	50	42	45	45	45	45	45	46
Ending stocks	kt	11	16	13	10	10	10	10	10	10	11
TURKEY[c]											
Production	kt	154	165	165	165	165	165	165	165	165	165
Consumption	kt	412	450	457	457	457	457	457	457	457	457
Exports	kt	1	1	1	0	0	0	0	0	0	0
Imports	kt	261	286	293	292	292	292	292	292	292	292
Ending stocks	kt	43	45	45	45	45	45	45	45	45	45
NON-OECD											
SLOVAK REPUBLIC[c]											
Production	kt	0	0	0	0	0	0	0	0	0	0
Consumption	kt	12	15	15	15	15	15	15	15	15	15
Exports	kt	0	0	0	0	0	0	0	0	0	0
Imports	kt	12	15	15	15	15	15	15	15	15	15
Ending stocks	kt	0	0	0	0	0	0	0	0	0	0

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** Questionnaire response, summer 1999. **c)** OECD estimates.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 34 - *OTHER SELECTED COUNTRIES' PROJECTIONS: OILSEEDS*

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
OECD											
CZECH REPUBLIC[b]											
Production	kt	608	584	716	901	826	832	832	857	857	867
Consumption	kt	531	522	604	644	640	673	683	696	704	699
Crush	kt	501	510	525	636	632	665	673	686	689	689
Feed	kt	30	13	79	8	8	8	10	10	15	10
Exports	kt	101	104	84	300	200	181	170	180	177	182
Imports	kt	36	28	29	18	19	19	21	16	21	21
Ending stocks	kt	37	0	57	32	37	34	34	31	28	35
NORWAY[c]											
Production	kt	11	13	13	13	13	13	13	13	13	13
Consumption	kt	325	317	392	392	392	392	392	392	392	392
Crush	kt	310	300	375	376	375	375	375	375	375	375
Feed	kt	15	17	17	16	17	17	17	17	17	17
Exports	kt	0	0	0	0	0	0	0	0	0	0
Imports	kt	315	283	379	379	380	380	380	380	380	380
Ending stocks	kt	28	17	17	17	18	19	20	21	22	23
SWITZERLAND[c]											
Production	kt	51	52	52	52	52	51	50	49	49	48
Consumption	kt	143	144	144	144	144	77	74	73	70	68
Crush	kt	134	134	134	135	135	68	65	64	61	59
Feed	kt	9	10	10	9	9	9	9	9	9	9
Exports	kt	0	0	0	0	0	0	0	0	0	0
Imports	kt	91	92	92	92	92	26	24	23	21	20
Ending stocks	kt	0	0	0	0	0	0	0	0	0	0
TURKEY[c]											
Production	kt	892	940	905	909	909	909	909	909	909	909
Consumption	kt	1 525	1 744	1 866	1 866	1 866	1 866	1 866	1 866	1 866	1 866
Crush	kt	1 525	1 744	1 866	1 866	1 866	1 866	1 866	1 866	1 866	1 866
Feed	kt	0	0	0	0	0	0	0	0	0	0
Exports	kt	2	3	3	3	3	3	3	3	3	3
Imports	kt	648	807	964	960	960	960	960	960	960	960
Ending stocks	kt	112	105	105	105	105	105	105	105	105	105
NON-OECD											
SLOVAK REPUBLIC[c]											
Production	kt	230	263	257	257	257	256	255	255	254	253
Consumption	kt	204	241	230	229	229	230	230	230	230	231
Crush	kt	177	208	179	179	179	179	179	179	180	180
Feed	kt	27	33	51	50	51	51	51	51	51	51
Exports	kt	44	39	45	45	45	44	43	42	41	40
Imports	kt	24	18	18	18	18	18	18	18	18	18
Ending stocks	kt	18	28	28	29	29	29	29	29	29	29

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** Questionnaire response, summer 1999. **c)** OECD estimates.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

*Table 35 - **OTHER SELECTED COUNTRIES' PROJECTIONS: OILSEED MEALS***

Marketing year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
OECD											
CZECH REPUBLIC[b]											
Production	kt	290	295	304	368	366	385	389	397	399	399
Consumption	kt	521	495	607	557	512	521	521	529	521	521
Exports	kt	165	177	165	201	211	221	225	225	225	225
Imports	kt	396	377	468	390	357	357	357	357	347	347
Ending stocks	kt	0	0	0	0	0	0	0	0	0	0
NORWAY[c]											
Production	kt	241	235	295	295	295	295	295	295	295	295
Consumption	kt	126	137	137	137	137	137	137	137	137	137
Exports	kt	179	142	230	230	210	220	220	220	220	220
Imports	kt	67	70	62	62	62	62	62	62	62	62
Ending stocks	kt	47	63	53	43	53	53	53	53	53	53
SWITZERLAND[c]											
Production	kt	93	93	93	91	89	47	45	44	42	41
Consumption	kt	139	139	139	137	135	133	131	130	128	127
Exports	kt	1	1	1	1	1	1	1	1	1	1
Imports	kt	46	47	47	47	47	87	87	87	87	87
Ending stocks	kt	0	0	0	0	0	0	0	0	0	0
TURKEY[c]											
Production	kt	750	863	933	933	933	933	933	933	933	933
Consumption	kt	1 069	1 211	1 298	1 298	1 298	1 298	1 298	1 298	1 298	1 298
Exports	kt	36	5	5	5	5	5	5	5	5	5
Imports	kt	355	353	370	370	370	370	370	370	370	370
Ending stocks	kt	1	0	0	0	0	0	0	0	0	0
NON-OECD											
SLOVAK REPUBLIC[c]											
Production	kt	102	120	102	102	104	104	104	104	104	104
Consumption	kt	178	216	189	194	196	196	196	197	197	215
Exports	kt	63	50	88	88	88	88	88	88	88	88
Imports	kt	139	146	175	180	180	180	181	181	181	199
Ending stocks	kt	0	0	0	0	0	0	0	0	0	0

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** Questionnaire response, summer 1999. **c)** OECD estimates.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 36 - ***OTHER SELECTED COUNTRIES' PROJECTIONS: VEGETABLE OILS***

Marketing year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
OECD											
CZECH REPUBLIC[b]											
Production	kt	191	194	200	242	241	254	257	262	263	263
Consumption	kt	226	230	250	272	262	275	270	275	276	276
Exports	kt	27	25	27	32	34	31	36	36	36	36
Imports	kt	61	61	76	62	55	52	49	49	49	49
Ending stocks	kt	0	0	0	0	0	0	0	0	0	0
NORWAY[c]											
Production	kt	54	50	65	65	65	65	65	65	65	65
Consumption	kt	68	78	78	78	78	78	78	78	78	78
Exports	kt	8	0	15	3	3	3	3	3	3	3
Imports	kt	17	26	17	17	17	17	17	17	17	17
Ending stocks	kt	41	37	25	25	25	25	25	25	25	25
SWITZERLAND[c]											
Production	kt	36	36	36	36	36	18	18	17	16	16
Consumption	kt	68	67	66	66	67	66	66	66	66	66
Exports	kt	8	8	9	9	9	9	9	9	9	9
Imports	kt	39	39	39	39	40	57	57	58	59	59
Ending stocks	kt	2	2	2	2	2	2	2	2	2	2
TURKEY[c]											
Production	kt	561	638	677	677	677	677	677	677	677	677
Consumption	kt	1 098	1 206	1 115	1 132	1 150	1 167	1 186	1 204	1 223	1 241
Exports	kt	54	76	77	77	77	77	77	77	77	77
Imports	kt	586	644	505	532	549	567	585	604	622	641
Ending stocks	kt	66	70	60	60	60	60	60	60	60	60
NON-OECD											
SLOVAK REPUBLIC[c]											
Production	kt	68	80	69	69	71	72	72	72	72	72
Consumption	kt	72	82	73	74	73	74	74	74	74	72
Exports	kt	9	11	19	0	0	0	0	0	0	0
Imports	kt	13	13	22	5	2	2	2	2	2	0

Notes: **a)** Beginning crop marketing year – see the Glossary of Terms for definitions. **b)** Questionnaire response, summer 1999. **c)** OECD estimates.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

Table 37 - **MAIN POLICY ASSUMPTIONS FOR SUGAR MARKETS AND WORLD SUGAR PROJECTIONS**

Crop year[a]		Average 94/95-98/99	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06
MAIN ASSUMPTIONS FOR SUGAR MARKETS											
AUSTRALIA											
Tariff	A$/t	44.0	55.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BRAZIL											
Crude oil world price[d]	US$/barrel	16.4	20.3	13.1	17.7	21.4	22.0	22.6	23.3	24.0	24.8
CANADA											
Tariff, white sugar	C$/t	39.6	38.6	37.5	36.4	35.4	35.4	35.4	35.4	35.4	35.4
CHINA											
Tariff, white sugar	multiple[e]	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
EU 15											
Basic beet price	Euro/t	44.6	47.7	47.7	47.6	47.6	47.6	47.6	47.6	47.6	47.5
Intervention price, white sugar	Euro/100kg	58.8	63.2	63.2	63.2	63.2	63.2	63.2	63.2	63.2	63.2
A quota, white sugar	mio t	11.4	11.7	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
B quota, white sugar	mio t	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Tariff, white sugar, non-quota	Euro/100kg	48.9	47.2	45.4	43.7	41.9	41.9	41.9	41.9	41.9	41.9
JAPAN											
Combined import duty/surcharges, raw sugar	¥/kg	48.9	44.3	45.5	40.0	35.0	35.0	35.0	35.0	35.0	35.0
Minimum stabilisation price, raw sugar	¥/kg	23.5	23.0	23.0	20.2	20.2	20.2	20.2	20.2	20.2	20.2
KOREA											
Tariff, white sugar	multiple[f]	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
UNITED STATES											
Tariff, white sugar, non-quota	US$/t	399	389	378	368	357	357	357	357	357	357
Loan rate, white sugar	US$/t	504	504	504	504	504	504	504	504	504	504

Crop year[a]		Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
WORLD											
Production	mt	119.2	124.3	122.2	128.1	129.7	132.0	133.0	134.8	137.4	139.2
Consumption	mt	115.2	118.0	120.2	121.7	123.9	126.3	128.3	130.6	133.1	135.6
Ending stocks	mt	50.3	55.0	52.5	52.7	53.5	53.1	52.8	54.0	55.2	55.9
Raw sugar price[b]	US$c/lb raw	11.8	12.1	9.7	6.6	5.6	6.8	8.1	9.1	9.7	10.6
White sugar price[c]	US$c/lb	15.2	14.3	11.6	9.6	7.2	8.4	10.5	10.7	11.2	12.1

Notes: **a)** Beginning crop marketing year – see Glossary of Terms for definitions. **b)** New York No. 11, spot price. **c)** London No. 5, fob Europe. **d)** Crude oil import price, International Energy Agency. **e)** e.g. 1.8 = *ad valorem* tariff of 80 per cent. **f)** e.g. 1.5 = *ad valorem* tariff of 50 per cent.
p: provisional; **e**: estimate.
Source: OECD Secretariat.

Table 38 - **SUGAR PROJECTIONS**

Crop year[a]	Raw sugar equivalent	Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
AMERICA AND CARRIBEAN COUNTRIES											
CANADA											
Production	mt	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Imports	mt	1.1	1.1	1.3	1.4	1.4	1.5	1.5	1.5	1.6	1.6
Consumption	mt	1.3	1.2	1.5	1.5	1.5	1.6	1.6	1.7	1.7	1.8
Ending stocks	mt	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3
UNITED STATES											
Production	mt	6.9	6.6	7.2	7.3	7.5	7.6	7.8	7.9	8.1	8.3
Imports	mt	2.3	3.0	2.5	2.0	1.8	1.8	2.0	1.9	1.9	1.9
Consumption	mt	8.7	8.8	9.0	9.2	9.3	9.4	9.5	9.5	9.6	9.7
Exports	mt	0.5	0.5	0.5	0.5	0.3	0.4	0.4	0.4	0.4	0.4
Ending stocks	mt	1.5	1.6	1.8	1.4	1.1	0.9	0.7	0.6	0.5	0.5
Price[b]	US$c/lb	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2
MEXICO											
Production	mt	4.7	4.8	5.4	5.1	5.4	5.3	5.3	5.6	5.7	5.9
Imports	mt	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumption	mt	4.3	4.1	4.2	4.3	4.4	4.4	4.5	4.6	4.7	4.8
Exports	mt	0.4	0.7	0.6	0.7	1.3	0.8	0.8	0.9	1.0	1.0
Ending stocks	mt	1.7	1.6	2.2	2.3	2.0	2.0	2.0	2.0	2.0	2.1
Price[b]	Pesos/t	28.7	28.3	24.3	21.6	20.6	20.3	20.0	19.7	19.2	18.8
BRAZIL											
Production	mt	13.0	14.4	14.6	17.8	18.6	19.1	19.1	19.3	19.9	20.3
Consumption	mt	8.5	8.9	9.2	9.5	9.8	10.1	10.4	10.7	11.1	11.4
Exports	mt	4.9	5.9	4.5	8.9	8.3	8.9	8.6	8.3	8.6	8.8
Ending stocks	mt	3.2	3.4	4.3	3.7	4.2	4.3	4.4	4.6	4.9	5.1
Share of cane for ethanol production	%	65.2	63.1	67.0	57.7	54.9	54.3	53.1	51.9	50.7	49.4
CUBA											
Production	mt	4.1	4.3	4.3	4.5	4.8	5.0	5.2	5.3	5.4	5.6
Consumption	mt	0.6	0.6	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.7
Exports	mt	3.4	3.6	3.7	3.8	4.0	4.4	4.5	4.6	4.7	4.9
Ending stocks	mt	0.5	0.6	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8
AUSTRALIA											
Production	mt	5.4	6.0	5.3	4.9	5.2	5.7	5.7	5.9	6.0	6.1
Imports	mt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumption	mt	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1
Exports	mt	4.2	4.0	4.0	3.9	4.2	4.6	4.5	4.7	4.8	5.0
Ending stocks	mt	1.1	1.6	1.9	1.9	1.9	2.0	2.2	2.3	2.5	2.6
Price[c]	A$/t	325	317	355	255	208	235	269	295	307	334
OTHER WESTERN HEMISPHERE											
Production	mt	10.3	10.9	11.0	10.8	11.0	11.2	11.3	11.5	11.7	11.8
Imports	mt	1.6	1.3	1.7	1.0	1.2	1.1	1.1	1.1	1.0	1.0
Consumption	mt	7.7	7.8	8.2	8.3	8.4	8.6	8.7	8.9	9.1	9.2
Exports	mt	3.7	4.1	3.9	3.6	3.6	3.6	3.6	3.6	3.6	3.5
Ending stocks	mt	4.2	4.4	5.1	5.0	5.1	5.2	5.2	5.3	5.4	5.4
EUROPE											
EU 12											
Production	mt	17.5	18.9	16.7	16.9	17.0	17.2	17.3	17.3	17.4	17.4
Imports	mt	2.3	1.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Consumption	mt	13.7	13.9	13.1	13.0	13.0	13.0	13.1	13.1	13.1	13.1
Exports	mt	6.8	6.4	12.4	9.2	8.3	8.3	8.4	8.3	8.3	8.3
Ending stocks	mt	12.9	14.5	9.8	8.4	8.1	7.9	7.7	7.6	7.5	7.4
OTHER WESTERN EUROPE											
Production	mt	3.6	3.7	4.6	4.5	4.5	4.6	4.5	4.5	4.6	4.6
Imports	mt	1.0	0.7	0.6	0.1	0.2	0.0	0.0	0.1	0.0	0.0
Consumption	mt	4.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.3	4.3
Exports	mt	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Ending stocks	mt	1.1	1.1	1.8	1.7	1.8	1.8	1.7	1.7	1.7	1.6

For notes, see end of the table.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 38 - **SUGAR PROJECTIONS** (cont.)

Crop year[a]	Raw sugar equivalent	Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
EASTERN EUROPE											
Production	mt	3.4	4.2	3.6	3.9	3.9	4.0	4.0	4.1	4.1	4.2
Imports	mt	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Consumption	mt	3.6	3.6	3.9	4.0	4.1	4.2	4.3	4.4	4.4	4.5
Exports	mt	0.5	0.8	1.0	0.7	0.6	0.6	0.5	0.5	0.5	0.5
Ending stocks	mt	0.9	1.3	0.9	0.8	0.8	0.8	0.9	0.9	0.9	0.9
RUSSIA											
Production	mt	2.1	1.9	1.7	1.7	1.7	1.6	1.5	1.4	1.4	1.4
Imports	mt	3.5	3.1	4.9	4.8	4.7	4.0	4.1	4.3	4.6	4.6
Consumption	mt	5.5	5.6	5.5	5.6	5.7	5.8	5.8	5.8	5.9	6.0
Ending stocks	mt	1.9	1.4	2.2	3.1	3.6	3.3	2.9	2.7	2.7	2.6
UKRAINE											
Production	mt	3.5	2.9	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2.0
Imports	mt	0.2	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Consumption	mt	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Exports	mt	1.5	1.2	1.0	0.6	0.5	0.5	0.4	0.3	0.1	0.0
Ending stocks	mt	0.8	0.6	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.3
ASIA											
CHINA											
Production	mt	7.1	7.3	8.7	9.7	8.9	9.1	9.3	9.4	9.6	9.8
Imports	mt	1.6	1.1	0.5	0.5	0.5	0.6	0.4	0.8	0.8	0.8
Consumption	mt	8.1	8.0	8.7	8.8	8.9	9.1	9.2	9.5	9.6	9.8
Exports	mt	0.6	0.4	0.3	0.5	0.7	0.7	0.6	0.6	0.6	0.5
Ending stocks	mt	1.8	1.6	1.9	2.8	2.7	2.6	2.4	2.6	2.8	3.2
Price[d]	Yuan/100 kg	166.4	172.7	179.2	186.2	196.7	206.9	217.6	228.7	240.2	252.3
INDIA											
Production	mt	14.1	14.1	12.2	12.7	13.6	13.9	13.7	14.0	14.7	15.1
Imports	mt	1.0	0.1	2.4	4.2	3.0	3.4	4.0	4.2	3.9	4.0
Consumption	mt	14.2	15.0	15.6	16.2	16.6	17.0	17.4	17.9	18.3	18.8
Exports	mt	0.3	0.7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Ending stocks	mt	7.5	8.8	7.7	8.3	8.3	8.5	8.7	8.9	9.2	9.4
JAPAN											
Production	mt	0.8	0.8	0.9	0.8	0.9	0.9	0.9	0.9	0.9	0.9
Imports	mt	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.6	1.5
Consumption	mt	2.6	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4
Ending stocks	mt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Price[e]	¥/kg	154	150	152	135	137	137	137	137	138	139
KOREA											
Imports	mt	1.3	1.4	1.3	1.3	1.3	1.4	1.4	1.4	1.6	1.6
Consumption	mt	1.1	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.3
Exports	mt	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3
Ending stocks	mt	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
MALAYSIA											
Production	mt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Imports	mt	1.0	1.1	1.0	1.1	0.9	1.0	1.0	1.0	1.1	1.1
Consumption	mt	1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1
Ending stocks	mt	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2
PERSIAN GULF											
Production	mt	0.9	0.7	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Imports	mt	2.0	2.6	1.7	2.2	2.2	2.3	2.3	2.4	2.5	2.5
Consumption	mt	2.8	2.8	3.0	3.1	3.1	3.2	3.2	3.3	3.4	3.5
Ending stocks	mt	0.5	0.9	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SINGAPORE											
Imports	mt	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Consumption	mt	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Ending stocks	mt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
THAILAND											
Production	mt	5.2	6.1	4.3	5.5	5.2	5.3	5.5	5.7	5.8	5.8
Consumption	mt	1.7	1.8	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.2
Exports	mt	3.6	3.8	2.5	3.4	3.5	3.3	3.2	3.4	3.5	3.7
Ending stocks	mt	0.7	1.0	0.9	1.1	0.8	0.8	1.1	1.3	1.4	1.3
Price[e]	Baht/100kg	643	683	698	760	752	775	793	812	830	858

For notes, see end of the table.

p: provisional; **e:** estimate.

Source: OECD Secretariat.

Table 38 - **SUGAR PROJECTIONS** (cont.)

Crop year[a]	Raw sugar equivalent	Average 94/95-98/99	97/98	98/99p	99/00e	00/01	01/02	02/03	03/04	04/05	05/06
OTHER ASIA PACIFIC											
Production	mt	8.6	8.0	9.0	8.9	8.9	8.9	8.9	8.9	8.9	8.9
Imports	mt	5.3	6.9	5.6	5.5	5.9	5.9	6.1	6.7	7.0	7.4
Consumption	mt	12.3	12.8	12.9	12.9	12.9	13.2	13.5	13.8	14.2	14.6
Exports	mt	1.3	1.3	1.8	1.7	1.5	1.5	1.5	1.5	1.5	1.6
Ending stocks	mt	4.9	5.5	5.3	5.1	5.4	5.5	5.5	5.7	5.9	6.0
AFRICA											
NORTH AFRICA											
Production	mt	1.7	1.8	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Imports	mt	2.7	3.2	2.5	2.7	3.0	3.1	3.1	3.2	3.3	3.3
Consumption	mt	4.2	4.3	4.4	4.4	4.6	4.7	4.8	4.9	5.0	5.0
Ending stocks	mt	1.5	1.6	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.5
REPUBLIC OF SOUTH AFRICA											
Production	mt	2.1	2.5	2.7	2.8	2.9	2.8	3.0	3.1	3.2	3.2
Imports	mt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumption	mt	1.5	1.6	1.5	1.4	1.5	1.5	1.5	1.5	1.6	1.6
Exports	mt	0.7	1.0	1.0	1.3	1.5	1.3	1.5	1.6	1.6	1.6
Ending stocks	mt	0.7	0.7	0.8	0.9	0.8	0.8	0.8	0.9	0.9	0.9
OTHER SUB-SAHARAN AFRICA											
Production	mt	4.2	4.1	4.6	4.8	4.6	4.8	4.8	4.9	5.1	5.2
Imports	mt	2.4	2.5	3.1	2.1	3.2	2.9	2.7	2.9	2.9	2.9
Consumption	mt	4.5	4.8	5.0	4.9	5.4	5.7	5.7	5.8	6.0	6.2
Exports	mt	1.9	2.0	2.1	2.3	2.0	2.0	2.0	1.9	1.9	1.9
Ending stocks	mt	1.9	1.8	2.4	2.2	2.7	2.7	2.5	2.7	2.8	2.8

Notes: **a)** Beginning crop marketing year – see Glossary of Terms for definitions. **b)** Raw sugar producer price. **c)** Raw sugar consumer price. **d)** Cane producer price. **e)** White sugar consumer price.
p: provisional; **e:** estimate.
Source: OECD Secretariat.

REFERENCES

Argentina

Wheat production, export, price
Coarse grains production, export, stocks and price
Oilseed prices
Oilseeds production, import export crush
Vegetable oils production, import export
Oilseed meals production, import export
Rice production, exports, stocks and price

SAGPYA (1999) Buenos Aires, Argentina, *Medium term Outlook (1999).*
USDA (1999), *PS&D Database,* Washington DC.

Milk production, liquid sales, industrial use
Milk, butter, cheese, SMP and WMP prices
Butter production, export
Cheese production, export
SMP production, export
Whey powder, net trade
WMP production, import export

USDA (1999), PS&D Database, Washington DC.
INTA, Buenos Aires, Argentina.

Beef production, export
Poultry production, import
Pork production, import

USDA (1999), *PS&D Database,* Washington DC.

Poultry price
Pigmeat and beef meat price

FAO, FAOSTAT PC database, Rome (1999).
INTA, Buenos Aires, Argentina.
EAP, Buenos Aires, Argentina.

Consumption of all products

Calculated as production + imports – exports – change in stocks

Australia

Wheat production, exports, price
Coarse grain production, exports, price
Oilseed production, crush, exports
Oilseed meal price
Vegetable oils price
Beef production, exports, price
Pig meat production, exports, prices
Poultry meat price
Sheep meat production, exports, prices
Milk production, liquid sales, industrial use, prices
Butter production, exports, price
Cheese production, exports, price

ABARE, *Australian Commodity Statistics Bulletin 1999*, Canberra.

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WMP production, exports

Wheat feed use   ABARE (1999), Reply to OECD medium term questionnaire,
Coarse grain feed use   Canberra.
Oilseed crush
Oilseed meals production, imports, feed use
Vegetable oils production, imports
Poultry meat production, exports
Whey powder, net trade

Rice, production, exports   USDA (1999), *PS&D Database,* Washington DC.
Casein, net trade

Oilseed price   ABARE, *Australian Commodities – Forecasts and Issues (December
                                                            Quarter 1999)*, Canberra.

Consumption of all products   Calculated as production + imports – exports – change in
                                                            stocks

Canada

Wheat production, exports, stocks, price   Agriculture Canada (January 2000), *CANSIM Database,* Ottawa.
Coarse grain production, exports, stocks, price
Oilseed production, crush, exports, feed use, price
Oilseed meal production, imports, exports, price
Vegetable oils production, imports, exports, price
Beef production, imports, exports, price
Pig meat production, exports, price
Poultry meat production, imports, price
Sheep meat production, imports, price
Milk production, liquid sales, industrial use, prices, target
    return
Dairy subsidy
Butter production, exports, price, support price
Cheese production, imports
SMP production, exports, price

Whey powder net trade   FAO, FAOSTAT PC database, Rome (1999).

Consumption of all products   Calculated as production + imports – exports – change in
                                                            stocks

China

Wheat price   Replies to OECD medium term questionnaire, 1999, USDA
Coarse grains price   China team, Washington DC.
Oilseed price
Beef price

Pig meat price
Poultry price
Milk price

Wheat production, imports, stocks	USDA (1999), *PS&D Database,* Washington DC.

Coarse grains production, imports, stocks
Rice production, imports, feed, stocks
Oilseed production, imports, exports, crush
Oilseed meals production, imports
Vegetable oils production, imports, stocks
Beef production
Pig meat production, exports
Poultry meat production, imports, exports
Butter production, imports
Cheese production, imports
SMP imports

Milk production, industrial use, other use   FAO, FAOSTAT PC database, Rome (1999).
Whey powder net trade

Consumption of all products   Calculated as production + imports – exports – change in
                                                         stocks

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EU

EU

Wheat price   EUROSTAT (1999), CRONOS database module PRAG –
Coarse grain price   Agricultural prices and price indices, Brussels.
Rice price
Poultry meat price
Sheep meat price
Milk price

Pig meat price   Meat and Livestock Commission, *European Market survey*, 1999.

Oilseed price   ISTA Mielke BmbH, *Oil World Annual 1999,* Hamburg.
Oilseed meal price
Vegetable oil price

Wheat production, exports, stocks   EU Commission (1999), Reply to OECD medium term
Coarse grains production, exports, stocks   questionnaire, Brussels.
Oilseeds production

Beef and Veal production, exports, imports, stocks, male
       bovine premium
Pig meat production, exports, imports, stocks
Poultry meat production, exports, imports, stocks
Sheep meat production, imports
Butter production, imports, exports, stocks
Cheese production, imports, exports, stocks
SMP production, imports, exports, stocks

Rice production, imports, stocks   USDA (1999), *PS&D Database,* Washington DC.

Oilseed crush, imports, stocks	ISTA Mielke BmbH, *Oil World Statistics,* Hamburg.
Oilseed meals production, imports, exports, stocks	
Vegetable oils production, imports, exports, stocks	
Butter price	Agra Europe (1999), *Milk Products*, London.
Cheese price	
SMP price	ZMP, *Europamarkt Dauermilch (1999),* Bonn.
Consumption of all products	Calculated as production + imports – exports – change in stocks

Hungary

Wheat production, exports, price	USDA (1999), PS&D Database, Washington DC, Reply to OECD medium term questionnaire (1999), Budapest.
Coarse grains production, exports, stocks, price	
Oilseed production, crush, exports, price	
Oilseed meals production, imports, price	
Vegetable oils production, imports	
Beef and veal production and price	
Pig meat production, exports, price	
Poultry meat production, imports, price	
Butter production, exports, price	
Cheese production, exports, price	
SMP production	
Milk production, liquid sales, industrial use, price	FAO, FAOSTAT PC database, Rome (1999).
Whey Powder net trade	
Consumption of all products	Calculated as production + imports – exports – change in stocks

Japan

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Coarse grain price	
Oilseed price	
Oilseed meal price	
Oilseed meal imports	
Wheat production, imports, stocks	MAFF (1999), *Food Balance Sheets*, Japan Tokyo.
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Rice production, imports, stocks	
Oilseed production, crush, imports, stocks	
Oilseed meal production	
Vegetable oil production, imports, stocks	

Beef production, imports, price	ALIC (1999), *Monthly Statistics (various issues), Japan*, Tokyo.
Pig meat production, imports, price	
Sheep meat imports	
Poultry meat production, imports, price	
Milk production, fluid sales, industrial use, price, support price, transaction price, deficiency payment	
Butter production, imports, price, stabilisation price	
Cheese production, imports, price	
SMP production, imports, price, stabilisation price	
WMP production	
Sheep meat imports	MAFF (1999), *The Meat Statistics in Japan (various issues)* Tokyo.
Consumption of all products	Calculated as production + imports – exports – change in stocks

Korea

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Coarse grains price	
Rice price	
Oilseed price	
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Rice production, imports, stocks	
Oilseed production, crush, imports	
Oilseed meals production, imports	
Vegetable oils production, imports	
Beef production, imports, price	Replies to OECD medium term questionnaire, 1998, Seoul.
Pig meat production, net trade, price	
Poultry meat production, imports, price	
Milk production, liquid sales, industrial use	
Butter production, imports	
Cheese production, imports	
SMP production, imports	
Whey Powder net trade	FAO, FAOSTAT PC database, Rome (1999).
Consumption of all products	Calculated as production + imports – exports – change in stocks

Mexico

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Coarse grains production, price	INEGI, Mexico City.
Oilseed production, price	
Beef production, price	

Pig meat production, price
Poultry meat production, price
Sheep meat production, price
Butter production

Rice production, export, stocks and price   USDA (1999), *PS&D Database,* Washington DC.

Wheat support price   SAGAR (1999), Private Communication, Mexico City.
Maize support price
Cereal income payment
Oilseed support price
Soyabean income payment

Milk production, price   SAGAR, Boletin Mensual de Leche (1999), Mexico City.
Milk liquid sales, industrial use
Butter price
Cheese price
SMP price
WMP price

Consumption of all products   Calculated as production + imports – exports – change in
                                                         stocks

New Zealand

Wheat production, imports, price   MAF (1999), *Situation and Outlook for New Zealand Agriculture,*
Coarse grain production, price   Wellington.
Beef production, exports, price
Pig meat production, imports, price
Poultry meat production, price
Sheep meat production, exports, prices
Milk production, liquid sales, industrial use, prices
Butter production, exports, price
Cheese production, exports, price
SMP production, exports, price
WMP production, consumption, exports, price
Casein price

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Butter consumption
SMP consumption

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Consumption of all products   Calculated as production + imports – exports – change in
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Oilseed production, crush, imports	Reply to OECD medium term questionnaire (1999), Warsaw.
Oilseed meals production, imports	
Vegetable oils production, imports	
Pig meat production, exports, price	
Poultry meat production, imports, price	
Cheese exports	
Milk production, on farm use liquid sales, industrial use, price	WTO (81-84), GUS (88-90), IERIGZ (91-96), Reply to OECD medium term questionnaire (1999).
Butter production, exports, imports, price	
Cheese price	
SMP production, exports price	
Casein exports	USDA (1999), PS&D database, Washington DC.
Cheese production	GUS (89-95), IERIGZ (96), FAO FAOSTAT PC Database, Rome (1999).
Whey powder net trade	
Wheat price	GUS (86-96).
Coarse grains price	Reply to OECD medium term questionnaire (1999), Warsaw.
Oilseed price	
Oilseed meals price	
Vegetable oils price	
Beef production, price	
Consumption of all products	Calculated as production + imports – exports – change in stocks

United States

Wheat production, imports, exports, stocks, price, EEP payment	USDA, *Wheat Outlook (January 2000),* Washington DC.
Coarse grains production, exports and price	USDA, *Feed Outlook (January 2000)*, Washington DC.
Rice production, imports, exports, stocks and price	USDA, *Rice Outlook (January 2000)*, Washington DC.
Beef production, imports, exports, price	USDA, *Livestock, Dairy and January 2000),* Washington DC.
Pig meat production, imports, exports, price	
Poultry meat production, exports, price	
Sheep meat production, imports, price	
Milk production, liquid sales, industrial use, support price, prices	USDA, *Livestock, Dairy and Poultry (January 2000)*, Washington DC.
Butter production, exports, stocka, price	
Cheese production, imports, exports, price	
SMP production, exports, stocks, price	

| WMP production, exports, stocks | USDA Dairy Yearbook (1999), Washington DC. |
| Whey powder production, exports, price | |

| Casein imports | USDA (1999), PS&D Database, Washington DC. |

Oilseed production, crush, exports, and price	USDA, *Oil Crops Outlook (January 2000)*, Washington DC.
Oilseed meals production, imports, exports and price	
Vegetable oils production, imports, exports, stocks and price	

| Wheat target price, loan rate, ARP area, CRP area, other land idled | USDA, *Agricultural Outlook (1998)*, Washington DC. |
| Coarse grains ARP area, CRP area, other land idled | |

Maize target price, loan rate
Soyabean loan rate, CRP area

| Consumption of all products | Calculated as production + imports – exports – change in stocks |

Other OECD

Wheat production, consumption	Replies to OECD Questionnaires, 1999.
Coarse grains production, consumption	USDA (1999), *PS&D Database,* Washington DC.
Oilseed production, crush, consumption	
Oilseed meals production, consumption	
Vegetable oils production, consumption	
Rice production, consumption	

Beef production, consumption	OECD (1994), *Meat Balances in OECD Countries 1986-92,* Paris.
Pig meat production, consumption	Replies to OECD Questionnaires, 1999.
Poultry meat production, consumption	USDA (1999), *PS&D Database,* Washington DC.
Sheep meat production, consumption	

Milk production, on farm use, liquid sales, industrial use	OECD (1994), *Dairy Sector Indicators*, Paris.
Butter production, consumption	Replies to OECD Questionnaires, 1999.
Cheese production, consumption	
SMP production, conumption	
WMP production, consumption	

| Net trade in wheat, coarse grain, rice, oilseeds, oilseed meals, vegetable oils, beef, pig meat, poultry meat, sheep meat, butter, cheese, SMP and WMP | Calculated as production – consumption – change in stocks. |

OECD

Production of wheat, coarse grains, rice, oilseeds, oilseed meals, vegetable oils, butter, cheese, SMP, WMP

Consumption of wheat, coarse grains, rice, oilseeds, oilseed meals, vegetable oils, butter, cheese, SMP, whole milke powder

Imports of butter, cheese, SMP, WMP
Exports of butter, cheese, SMP, WMP

Stocks of wheat, coarse grains, rice, oilseeds, oilseed meals, vegetable oils, butter, cheese, SMP
Feed use of wheat, coarse grains
Oilseed crush

Calculated as Australia + Canada + EU + Japan + New Zealand + United States + Mexico + Korea + Poland + Hungary + other OECD.

Rest of world

Wheat production, stocks
Coarse grains production, stocks
Rice production, stocks
Oilseed production, crush, stocks
Oilseed meals production, stocks
Vegetable oils production, stocks

USDA (1999), *PS&D Database,* Washington DC.

Net trade of wheat, coarse grains, rice, oilseeds, oilseed meals, vegetable oils, butter, cheese, SMP, WMP, whey powder

Calculated as – net trade of (OECD + NIS + China + Argentina + Slovakia)

Milk production, industrial use, other uses
Butter production
Cheese production
SMP production
WMP production

Calculated as World – (OECD + NIS + Argentina + Slovakia + China)

Consumption of all products

Calculated as production – net trade – change in stocks

NIS

NIS wheat production, net trade, stocks
NIS coarse grains production, net trade, stocks
NIS rice production, net trade.
NIS oilseeds production, net trade, stocks

USDA (1999), *PS&D Database,* Washington DC.

Chinese Tapei, India
Rice production, stocks

USDA(1999) *PS&D Database,*Washington DC.

Indonesia
Rice production, imports, stocks

Thailand
Rice production, exports, stocks

Chinese Taipei, India, Indonesia, Thailand

Rice price	University of Arkansas rice database(1999), Fayetteville, USA. USDA *FAS reports(various*issues), Washington DC. IRRI *World Rice Statistics(various issues)*, Makati, Philippines.
Consumption of all products	Calculated as production – net trade – change in stocks

World

Wheat production, feed use, stocks, Coarse grains production, feed use, stocks Rice production, stocks Oilseed production, crush, stocks Oilseed meals production, stocks Vegetable oils production, stocks Butter, cheese, skim milk powder, stocks	Calculated as Rest of world + OECD + Argentina + China + NIS + Slovakia
Production of butter, cheese, skim milk powder, whole milk powder	FAO, FAOSTAT PC database, Rome (1999).
Wheat price	USDA, *Feed Outlook (January 2000),* Washington DC.
Coarse grains price Rice price	USDA, *Feed Outlook (January 2000),* Washington DC.
Oilseed price Oilseed meals price Oilseed oils price Palm oil price	ISTA Mielke GmbH, *Oil World Annual 1999,* Hamburg.
Butter price SMP price	USDA, *Livestock, Dairy and Poultry (January 2000),* Washington DC.
Cheese price	ABARE, *Australian Commodities – Forecasts and Issues (December Quarter 1999)*, Canberra.
WMP price	ZMP, *Europamarkt Dauermilch, November 1999*, Bonn.
Whey powder price	USDA*, Livestock, Dairy and Poultry (January 2000),* Washington DC.
Casein price	New Zealand Dairy Board, *International Market Update,* Wellington.
Tariffs, tariff-quotas and subsidised export limits for OECD countries unless otherwise specified	GATT (1996), *Uruguay Round GATT Schedules*, Geneva.
Consumption of all products	Calculated as production – net trade – change in stocks

Sugar

Production, import, export, cosnumption and ending stocks Prices and policy variables	ABARE SUGABARE database, Canberra.

ANNEX II. GLOSSARY OF TERMS

Agenda 2000 A CAP reform package proposed by the European Commission in 1998. After a number of modifications which weakened the reforms, the European Union Heads of State agreed to the package in March 1999. Beginning in 2000, the package reduces price supports and increases direct payments for cereals and beef, while lowering oilseed direct payments (by harmonising them with cereals) and raising the milk quota. Dairy support price reductions and the introduction of new dairy direct payments are delayed until 2005, along with a second round of milk quota increase. The package is sometimes referred to as the "Berlin Agreement" to distinguish the agreement from the initial European Commission proposals.

Aggregate Measurement of Support (AMS) The indicator of the value of all of a country's trade distorting support, with certain exceptions, on which the domestic discipline for the *Uruguay Round Agreement on Agriculture* is based. It differs from the Producer Support Estimate (see *Producer Support Estimate*) in many respects, the most important of which is that price gaps in the AMS calculation are estimated by reference to domestic administered prices and not actual producer prices, and that external reference prices are fixed at the average levels of the 1986-88 base period. In addition, many budgetary transfers that are included in PSEs are excluded from the AMS.

Agronomic traits Biological, physiological or biochemical characteristics of plants, such as herbicide resistance or insect resistance

APEC Forum for Economic Co-operation of 18 countries, formed in 1989, to promote free trade and investment flows, economic growth and stability in the Asia Pacific region.

Artificial wet land lagoons An environment management technique consisting of man made ponds and swamps which use natural processes to purify polluted water.

ASEAN Association of South East Asian Nations established in 1967 by Indonesia, Malaysia, the Philippines, Singapore and Thailand to promote the economic, social and cultural development of the region through co-operative programmes, to safeguard the political and economic stability of the region, and to serve as a forum for the resolution if inter-regional differences. Brunei Darussalam (1984), Vietnam (1995), Laos (1997) and Myanmar (1997) have since joined the Association.

Atlantic beef market World beef market excluding the Pacific Rim beef trade.

Baseline The set of market projections used for the Outlook analysis in this report and as a benchmark for the analysis of the impact of different economic and policy scenarios. A detailed description of the generation of the baseline is provided in the chapter on Methodology in this report.

Berlin Agreement	The CAP reform package to which European Union Heads of State agreed in March 1999. Beginning in 2000, the package reduces price supports and increases direct payments for cereals and beef, while lowering oil-seed direct payments (by harmonising them with cereal payments) and raising the milk quota. Dairy support price reductions and the introduction of new dairy direct payments are delayed until 2005, along with a second round of milk quota increase. Like the initial proposal by the Euroean Commission which was not accepted, the agreement is often referred to as "Agenda 2000".
Blair House Agreement	An agreement on agriculture between the United States and the European Community in 1992 dealing mainly with limits on oilseed subsidies in the EU which paved the way for the Uruguay Round Agreement.
Bovine Spongiform Encephalopathy (BSE)	A fatal disease of the central nervous system of cattle, first identified in the United Kingdom in 1986. On 20 March 1996 the UK Spongiform Encephalopathy Advisory Committee (SEAC) announced the discovery of a new form of Creutzfeldt-Jacob Disease (CJD), a fatal disease of the central nervous system in humans, which might be linked to consumption of beef affected by exposure to BSE.
Bt cotton, Bt maize	Crops which have been genetically engineered to contain a gene from the soil *bacterium Bacillus Thurigenesis* which is toxic to specific insects.
Bt resistant strains of ECB	Strains of European Corn Borer that have developed resistance to an insectide (either genetically engineered within the plant or applied externally) it was once intolerant of.
Cartagena Protocol on Biosafety	A draft international agreement, reached in Montreal in 2000, within the framework of the 1992 UN Convention on Biodiversity, that includes rules on the movement across borders of genetically modified crops.
Classical Swine Fever	A highly contagious disease that affects pigs and which normally results in the slaughtering of affected herds.
Cereals	Defined as wheat, coarse grains and rice.
Common Agricultural Policy (CAP)	The European Union's agricultural policy, first defined in Article 39 of the Treaty of Rome signed in 1957.
Coarse grains	Defined as barley, maize, oats, sorghum and other coarse grains in all countries except Australia, where it includes triticale and in the European Union where it includes rye and other mixed grains.
Conservation Reserve Program (CRP)	A major provision of the United States' Food Security Act of 1985 and extended under the Food, Agriculture, Conservation and Trade Act of 1990, and the Federal, Agriculture, Improvement and Reform Act of 1996 was designed to reduce erosion on 40 to 45 million acres (16 to 18 million hectares) of farm land. Under the programme, producers who sign contracts agree to convert erodible crop land to approved conservation uses for ten years. Participating producers receive annual rental payments and cash or payment in kind to share up to 50 per cent of the cost of establishing permanent vegetative cover. The CRP is part of the *Environmental Conservation Acreage Reserve Program*. The 1996 FAIR Act authorised a 36.4 million acres (14.7 million hectares) maximum under CRP, its 1995 level.

| **Crop year, coarse grains** | Refers to the crop marketing year beginning 1 April for Japan, 1 July for the EU and New Zealand, 1 August for Canada and 1 October for Australia. The US crop year begins 1 June for barley and oats and 1 September for maize and sorghum. |

| **Crop year, oilseeds** | Refers to the crop marketing year beginning 1 April for Japan, 1 July for the EU and New Zealand, 1 August for Canada and 1 October for Australia. The US crop year begins 1 June for rapeseed, 1 September for soyabeans and for sunflower seed. |

| **Crop year, rice** | Refers to the crop marketing year beginning 1 April for Japan and Australia, 1 August for the United States, 1 September for the European Union, 1 October for Mexico, 1 November for Korea and 1 January for other countries. |

| **Crop year, wheat** | Refers to the crop marketing year beginning 1 April for Japan, 1 June for the United States, 1 July for the EU and New Zealand, 1 August for Canada and 1 October for Australia. |

| **Dairy Export Incentive Program (DEIP)** | A US programme first authorised by the 1985 FSA Act under which the *Commodity Credit Corporation* subsidises exporters of US dairy products to help them compete with other subsidising nations. Eligible sales should be in addition to, and not displace, commercial export sales. The 1996 FAIR Act extended the programme to 2002. |

| **Decoupled payments** | Budgetary payments paid to eligible recipients which are not linked to to current production of specific commodities or livestock numbers or the use of specific factors of production. |

| **Domestic support** | Refers to the annual level of support, expressed in monetary terms, provided to agricultural production. It is one of the three pillars of the Uruguay Round Agreement on Agriculture targeted for reduction. |

| **euro** | The single currency of the eleven EU countries participating in the European Economic and Monetary Union introduced on 1 January 1999. Euro-denominated bank notes and coins will come into circulation from1 January 2002. |

| **Export credits** | Government financial support, direct financing, guarantees, insurance or interest rate support provided to foreign buyers to assist in the financing of the purchase of goods from national exporters. |

| **Direct payments** | Payments made directly by governments to producers. |

| **Export Enhancement Program (EEP)** | A US programme initiated in May 1985 under a *Commodity Credit Corporation* charter to subsidise the export of certain products to specified countries. The programme was formally authorised by the Food Security Act of 1985 and has been extended since under the FACT Act of 1990 and the FAIR Act of 1996. Under the EEP, exporters are awarded generic commodity certificates which are redeemable for commodities held in CCC stores, thus enabling them to sell commodities to designated countries at prices below those on the US market. |

Export restitutions (refunds)	EU export subsidies provided to cover the difference between internal prices and world market prices for particular commodities.
Export subsidies	Subsidies given to traders to cover the difference between internal market prices and world market prices, such as for example the EU *export restitutions* and the US *Export Enhancement Program* (see above). Export subsidies are now subject to value and volume restrictions under the *Uruguay Round Agreement on Agriculture.*
FAIR Act, 1996	Officially known as the Federal Agriculture Improvement and Reform Act of 1996. This US legislation replaces the 1990 FACT Act and governs almost all aspects of food and agriculture policy during the period 1996-2002.
Federal Milk Marketing Orders (FMMO)	A system designed to facilitate the marketing of milk in the United States, by specifying conditions under which milk handlers must operate within certain geographic areas.
Filter strips	An environmental management technique consisting of a strip of land between more intensively managed agricultural land and adjourning ecosystems (*i.e.* water courses or forests) that is managed less intensively and so acts as a buffer and filter.
Foot and Mouth Disease (FMD)	A disease of cattle that is endemic in some regions of the world. The spread of the disease is controlled by restrictions on exports of fresh, chilled or frozen beef from affected areas to non-affected countries, particularly in the Pacific beef market.
FTAA	Free Trade of the Americas, an intergovernmental effort to unite the 34 economies of the American continent into a single free trade area by the year 2005.
Genetic engineering	A set of technologies that artificially move functional genes across species boundaries to produce novel organisms as well as to suppress or enhance gene functioning in the same species.
Genetically modified organism (GMOs)	A plant, animal micro-organism or virus, which has been genetically engineered or modified.
Governors' grain responsibility system (China)	A comprehensive policy package to boost domestic grain production in China.
Greenhouse Gases (GHG)	Gases such as carbon dioxide or methane, etc., the emission of which affect the earth's atmosphere and contribute to global warming and climate change.
Herbicide resistant	Crops that are genetically engineered to resist high doses of specific herbicides.
Identity preservation (IP)	A tracking system of crop management that preserves the identity of the source or nature of the materials.
Industrial oilseeds	A category of oilseed production in the EU for industrial use (*i.e.* bio-fuels) that is subject to subsidy limits.

Insect resistant	Crops that are specifically toxic to certain insect pests, in particular Bt crops.
Intervention purchases	Purchases by the EC Commission of certain commodities to support internal market prices.
Intervention purchase price	Price at which the European Commission will purchase produce to support internal market prices. It usually is below 100 per cent of the intervention price, which is an annually decided policy price.
Intervention stocks	Stocks held by national intervention agencies in the European Union as a result of *intervention* buying of commodities subject to market price support. Intervention stocks may be released onto the internal markets if internal prices exceed intervention prices; otherwise, they may be sold on the world market with the aid of *export restitutions.*
Loan deficiency payments (LDP) (United States)	A variation of the non-recourse loan programme introduced as part of the FAIR Act of 1996 for specified commodities in which a producer receives an output subsidy equal to the difference between the established loan rate for that commodity and the lower market price, at county level, he receives at time of sale. Producers may elect to apply for this payment during the loan availability period on a quantity of the programme crop not exceeding their loan eligible production.
Loan rate	The commodity price at which the *Commodity Credit Corporation* (CCC) offers *non-recourse loans* to participating farmers. The crops covered by the programme are used as collateral for these loans. The loan rate serves as a floor price for participating farmers in the sense that they can default on their loan and forfeit their crop to the CCC rather than sell it in the open market at a lower price.
Lomé Convention	An agreement since 1975 covering aid and trade relations between the European Union and 71 African, Caribbean and Asian countries. This agreement is expected to be replaced by a new 20 year agreement – to be known as the Fiji Convention – in May 2000.
Market access	Governed by provisions of the *Uruguay Round Agreement* on *Agriculture* which refer to concessions contained in the country schedules with respect to bindings and reductions of tariffs and to other minimum import commitments.
Marketing Assistance Loan Programme	US loan programme since 1986 designed to provide producers of certain crops with financial assistance when prices are low while avoiding a disadvantage of the traditional loan programme (*see loan rate*) – the accumulation of government stocks that depress prices when disposed of. The programme effectively guarantees farmers a minimum price. Farmers can obtain payments in two ways. They can sell the crop and repay the loan at the posted county price (a USDA estimate of the local market price) and keep the difference known as "marketing gain". They can also obtain a payment without taking out a loan – see *loan deficiency payments.*

Market ECU	EU currency unit. Prior to the 1995 marketing year, policy prices and payments were converted to market ECUs using switchover coefficients of 1.2075 in 1994, 1.206 in 1993, 1.152 in 1992 and 1.1451 in 1990 and 1991. This system was abandoned for members of the European Monetary System when the ECU was replaced by the euro from 1 January 1999.
Marketing year, oil meal	Refers to the production year beginning 1 October for the United States.
Marketing year, oilseed oil	Refers to the production year beginning 1 October for the United States.
MERCOSUR	A multilateral agreement on trade, including agricultural trade between Argentina, Brazil, Paraguay and Uruguay. The agreement was signed in 1991 and came into effect on 1 January 1995. Its main goal is to create a customs union between the four countries by 2006.
Market Price Support (MPS) payment	Indicator of the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers arising from policy measures creating a gap between domestic market prices and *border prices* of a specific agricultural commodity, measured at the farm gate level. Conditional on the production of a specific commodity, MPS includes the transfer to producers associated with both production for domestic use and exports, and is measured by the price gap applied to current production. The MPS isnet of financial contributions from individual producers through producer levies on sales of the specific commodity or penalties for not respecting regulations such as production quotas (*Price levies),* and in the case of livestock production is net of the market price support on domestically produced coarse grains and oilseeds used as animal feed (*Excess feed cost*).
Milk quota scheme	A supply control measure to limit the volume of milk produced or supplied. Quantities up to a specified quota amount benefit from full *market price support.* Over-quota volumes may be penalised by a levy (as in the EU, where the "super levy" is 115 per cent of the target price) or may receive a lower price. Allocations are usually fixed at individual producer level. Other features, including arrangements for quota reallocation, differ according to scheme.
Modern agricultural biotechnology	The application of cellular and molecular biology to diverse agricultural production processes and products. One important aspect of this new agricultural biotechnology is in the breeding of new plant varieties as well as specialised micro-organisms through genetic modification (GM) or engineering.
New Production Adjustment Promotion Programme (NPAPP)	A programme for rice in Japan, for 1996-97, whose main objectives wereas to match domestic production to demand and establish desirable farm management practices. It is implemented also as part of environmental programmes. The target for rice paddy field diversion has been set at about 30 per cent of the total rice area. NPAPP is the sixth in a series of rice diversion programmes that began in 1971.
North American Free Trade Agreement (NAFTA)	A trilateral agreement on trade, including agricultural trade, between Canada, Mexico and the United States, phasing out tariffs and revising other trade rules between the three countries over a 15-year period. The agreement was signed in December 1992 and came into effect on 1 January 1994.

Oilseed oil	Defined as rapeseed oil (canola), soyabean oil, sunflower seed oil and palm oil, except in Japan where it excludes sunflower seed oil.
Oilmeal	Defined as rapeseed meal (canola), soyabean meal, and sunflower meal in all countries, except in Japan where it excludes sunflower meal.
Oilseeds	Defined as rapeseed (canola), soyabeans, and sunflower seed in all countries, except in Japan where it excludes sunflower seed.
Pacific beef market	Beef trade between countries in the Pacific Rim where foot and mouth disease is not endemic.
Post and pre-emergent weeds	Pre-emergent weeds are those that appear prior to the above ground growth of the crop and post emergent weeds are those that appear after the plant has already grown.
PROCAMPO	A programme of direct support to farmers in Mexico. It provides for direct payments per hectare on a historical basis.
Producer Support Estimate (PSE)	Indicator of the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at farm gate level, arising from policy measure, regardless of their nature, objectives or impacts on farm production or income. The PSE measure support arising from policies targeted to agriculture relative to a situation without such policies, *i.e.* when producers are subject only to general policies (including economic, social, environmental and tax policies) of the country. The PSE is a gross notion implying that any costs associated with those policies and incurred by individual producers are not deducted. It is also a nominal assistance notion meaning that increased costs associated with import duties on inputs are not deducted. But it is an indicator net of producer contributions to help finance the policy measure (*e.g.* producer levies) providing a given transfer to producers. The PSE includes implicit and explicit payments. The percentage PSE is the ration of the PSE to the value of total gross farm receipts, measured by the value of total production (at farm gate prices), plus budgetary support. The nomenclature and definitions of this indicator replaced the former Producer Subsidy Equivalent in 1999.
Quality traits	Biological or chemical composition of crop products, such as high phytate corn.
Recombinant bovine somatotropin (rBST)	A genetically engineered version of a naturally occurring hormone which stimulates milk production.
Recourse loan programme	Programme to be implemented under the US FAIR Act of 1996 for butter, non-fat dry milk and cheese after 1999 in which loans must be repaid with interest to processors to assist them in the management of dairy product inventories.
Scenario	A model-generated set of market projections based on alternative assumptions than those used in the baseline. Used to provide quantitative information on the impact of changes in assumptions on the outlook.

Segregation	A system whereby crops are separated for marketing purposes according to a specific characteristic.
Set-aside programme	European Union programme for cereal, oilseed and protein crop producers to set-aside a portion of their historical base acreage from current production. Set-aside rates for participants are adjusted each year during the course of the programme.
SPS Agreement	WTO Agreement on Sanitary and Phyto-sanitary measures, including standards used to protect human, animal or plant life and health.
Substantial equivalence	The concept of substantial equivalence, first described in an OECD publication in 1993, stresses that an assessment on novel food, in particular those that are genetically modified, should show that it is as safe as its traditional counterparts.
Support price	Prices fixed by government policy makers in order to determine, directly or indirectly, domestic market or producer prices. All administered price schemes set a minimum guaranteed support price or a target price for the commodity, which is maintained by associated policy measures, such as quantitative restrictions on production and imports; taxes, levies and tariffs on imports; export subsidies; and public stockholding.
Tariff-rate quota (TRQ)	A trade restriction involving a lower (in-quota) tariff rate for a specified volume of imports and a higher (over-quota) tariff rate for imports above the concessionary access level. Under the Uruguay Round agreement most countries have agreed to progressive reductions in the over-quota tariff rates. Some countries have also agreed to lower the in-quota tariff rates and/or raise the concessionary access level.
TBT Agreement	WTO Agreement on Technical Barriers to Trade which commits signatories to work towards compatibility of standardisation measures.
Uruguay Round Agreement on Agriculture (URAA)	The terms of the URAA are contained in the section entitled the "Agreement on Agriculture" of the Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations. This text contains commitments in the areas of *market access*, domestic support (see *AMS*), and *export subsidies*, and general provisions concerning monitoring and continuation. In addition, each country's schedule is an integral part of its contractual commitment under the URAA. There is a separate agreement entitled the Agreement on the Application of Sanitary and Phyto-sanitary Measures. This agreement seeks establishing a multilateral framework of rules and disciplines to guide the adoption, development and the enforcement of sanitary and phyto-sanitary measures in order to minimise their negative effects on trade. See also *Phyto-sanitary regulations* and *Sanitary regulations*.
Wide spectrum herbicides	Herbicides that are effective against a wide variety of plants.
WTO	World Trade Organisation created by the Uruguay Round agreement.