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USDA Agricultural Baseline Projections to 2009

Interagency Agricultural Projections Committee

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Abstract

This report provides long-run baseline projections for the agricultural sector through 2009. Projections cover agricultural commodities, agricultural trade, and aggregate indicators of the sector, such as farm income and food prices. The projections are based on specific assumptions regarding macroeconomic conditions, policy, weather, and international developments. The baseline assumes that there are no shocks due to abnormal weather or other factors affecting global supply and demand. The projections assume that current agricultural law of the 1996 Farm Act remains in effect throughout the baseline. The baseline projections presented are one representative scenario for the agricultural sector for the next decade. As such, the baseline provides a point of departure for discussion of alternative farm sector outcomes that could result under different assumptions. The projections in this report were prepared in October through December 1999, reflecting a composite of model results and judgmental analysis.

A number of factors have combined to weaken agricultural commodity prices in the initial years of the baseline. Global supplies for many agricultural commodities are large, as sizable crops have been produced both in the United States and other countries over the past several years, partly in response to high prices in the mid-1990s. Additionally in the late-1990s, world agricultural demand was weakened by the global financial crisis. As a result, the U.S. agricultural sector has faced strong foreign competition in a weakened global trade setting, reducing the value of U.S. agricultural exports. With economic recovery underway in most of the crisis-affected countries, global demand and trade are strengthening, and gains in U.S. agricultural exports are projected to resume in 2001. Nonetheless, the buildup of global supplies keeps agricultural prices under pressure for the next several years, lowering farm income. Longer run developments in the agricultural sector reflect continuing macroeconomic improvement. While strong export competition continues to influence the baseline, strengthening global economic growth provides a foundation for gains in trade and U.S. agricultural exports, resulting in rising market prices, increases in farm income, and stability in the financial condition of the U.S. agricultural sector.

Keywords: Projections, baseline, crops, livestock, trade, farm income, food prices.

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A Note to Users of USDA Baseline Projections

USDA long-term agricultural baseline projections presented in this report are a Departmental consensus on a long-run scenario for the agricultural sector. These projections provide a starting point for discussion of alternative outcomes for the sector. Baseline projections are typically made in conjunction with the President's Budget analysis.

The scenario presented in this report is not a USDA forecast about the future. Instead, it is a conditional, long-run scenario about what would be expected to happen under the 1996 Farm Act and specific assumptions about external conditions. The baseline reflects major agricultural policy decisions made through mid-November 1999 and includes short-term projections from the November 1999 *World Agricultural Supply and Demand Estimates* report. Trade projections in this report for 2000/01 incorporate long-term assumptions concerning weather, foreign trend yields, and foreign use and do not reflect short-term conditions that may impact trade that year.

Critical long-term assumptions include:

- U.S. and international macroeconomic conditions;
- U.S. and foreign agricultural and trade policies;
- Funding for U.S. agricultural export programs;
- Growth rates of agricultural productivity, both in the U.S. and abroad; and
- Normal (average) weather.

Changes in any of the assumptions can significantly affect the baseline projections, and actual conditions that emerge will alter the outcomes.

The baseline projections analysis was conducted by interagency committees in USDA and reflects a composite of model results and judgmental analysis. The Economic Research Service has the lead role in preparing the Departmental baseline report. The projections and the report were reviewed and cleared by the Interagency Agricultural Projections Committee, chaired by the World Agricultural Outlook Board. USDA participants in the baseline projections analysis and review include the World Agricultural Outlook Board, the Economic Research Service, the Farm Service Agency, the Foreign Agricultural Service, the Office of the Chief Economist, the Office of Budget and Program Analysis, the Risk Management Agency, the Agricultural Marketing Service, the Natural Resources Conservation Service, and the Cooperative State Research, Education, and Extension Service.

Baseline Projections on the Internet

These new USDA baseline projections will be available electronically on the Internet, updating last year's files, at http://usda.mannlib.cornell.edu/data-sets/baseline/. Also, an ERS briefing room for agricultural baseline projections has been set up at:

http://www.ers.usda.gov/briefing/baseline/

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USDA Agricultural Baseline Projections to 2009

Interagency Agricultural Projections Committee

Introduction

This report provides long-run baseline projections for the agricultural sector through 2009. Projections cover agricultural commodities, agricultural trade, and aggregate indicators of the sector, such as farm income and food prices.

The projections are a conditional scenario with no shocks and are based on specific assumptions regarding the macroeconomy, agricultural policy, the weather, and international developments. In particular, the baseline incorporates provisions of the Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Act) and assumes that current farm legislation remains in effect through the projections period. The projections are not intended to be a Departmental forecast of what the future will be, but instead a description of what would be expected to happen under the 1996 Farm Act, with very specific external circumstances. Thus, the baseline provides a point of departure for discussion of alternative farm sector outcomes that could result under different domestic or international assumptions.

The projections in this report were prepared in October through December 1999, in conjunction with the fiscal year 2001 President's Budget analysis. Projections reflect a composite of model results and judgmental analysis. Normal weather is assumed. The baseline reflects major agricultural policy decisions made through mid-November 1999 and includes short-term projections from the November 1999 *World Agricultural Supply and Demand Estimates* report.

Summary of Projections

The initial years of the baseline reflect the effects of a number of factors which have combined to weaken agricultural commodity prices. Global supplies for many agricultural commodities are initially large as sizable crops have been produced both in the United States and abroad over the past several years, partly in response to high prices in the mid-1990s. Additionally, in the late 1990s, world agricultural demand was weakened by the global financial crisis. As a result, the U.S. agricultural sector has faced strong foreign competition in a weakened global trade setting, reducing the value of U.S. agricultural exports. Marketing loan benefits and additional funds provided to the sector through appropriations legislation have offset some of the reduction in market cash receipts that has resulted. With economic recovery underway in most of the crisis-affected countries, global demand and trade are strengthening and gains in U.S. agricultural exports are projected to resume in 2001. Nonetheless, the buildup of global supplies is projected to keep agricultural prices under pressure over the next several years, with marketing loan benefits continuing to have an important role in the U.S. farm sector. U.S. farm income initially declines, largely reflecting a reduction in direct government payments to the sector from recent high levels.

Longer run developments in the agricultural sector reflect continuing macroeconomic improvement. Structural reform in countries most affected by the global financial crisis of the late 1990s leads to strengthening global economic growth, particularly in developing countries, providing a foundation for further gains in trade and U.S. agricultural exports. Expanding production potential in a number of foreign countries, however, results in continued strong export competition throughout the baseline. Nonetheless, improved trade growth leads to rising market prices, increases in farm income, and stability in the financial condition of the U.S. agricultural sector. Consumer food prices are projected to continue a long-term trend of rising less than the general inflation rate. Trends in consumer food expenditures towards a larger share for meals eaten away from home are expected to continue.

Macroeconomic Assumptions

The outlook for the world economy over the next 10 years reflects recovery from the global financial crisis, with the global economy moving back to a period of sustained growth. Thus, there are two distinct parts of the forecast. In the near- to midterm, the crisis recovery dominates the outcome, while in the longer-term structural reform leads to renewed sustained economic growth in the crisis countries, but at a lower rate than previously recorded. The outlook for the crisis countries is for moderate growth in the next few years, moving back to sustainable long-term growth rates by 2002. OECD countries are experiencing better than average growth. With the crisis moderating, world real GDP growth is projected to average about 3.2 percent annually between 2004 and 2009, compared with 2.8 percent between 1998 and 2003 and 2.5 percent during 1992-97.

Overall economic growth for developing economies was slowed by the financial crisis. This slowdown is important for global agricultural demand because many developing countries have incomes at levels where consumers diversify their diets and include more meats and other higher valued food products. Projected economic growth in Asia, while still strong, is significantly affected by the crisis and its aftermath. Growth between 1998 and 2003 is projected at 4.7 percent, increasing to 6.1 percent in 2004-2009. This is a reduction in the underlying growth rate for the region of almost 2 percent from the 8-percent GDP growth rate experienced between 1992-1997. The crisis in Brazil is assumed to be short-lived and no other significant disruption is assumed to emerge in South America over the projection period. Thus, strong growth is projected for the area, particularly in the out years, reflecting reduced debt, less government intervention in the private sector, growing intra-regional trade, and heavier foreign direct investment. Growth is also projected to increase in Africa, although not at rates which will translate into significant increases in per capita income.

For transition economies, growth is expected to remain strongest among the countries that are further along in the transformation from centrally planned to market economies. Countries of Central and Eastern Europe, particularly Poland and Hungary, are expected to show relatively strong growth. In contrast, major countries of the former Soviet Union, such as Russia and Ukraine, are once again faced with little or no growth in the near term and only modest growth later in the baseline. Although benefits of privatization and market-based pricing were beginning to contribute to production gains and more widespread consumption, the crisis set progress back by several years.

Developed countries were relatively unaffected by the financial crisis as structural adjustments undertaken throughout the second part of the 1980s and early 1990s created a foundation for growth. Developed economies, including the United States, are projected to grow at an annual average rate of 2.5 percent over the entire baseline, higher than the 2.1 percent rate in 1992-1997. Low inflation and interest rates also characterize the outlook for developed economies.

Overall, the U.S. economy was positively affected by the world financial crisis, as large capital inflows from trade-deficit countries reduced U.S. interest rates and slowed world growth pushed oil prices lower. Nonetheless, U.S. agriculture, as a trade-dependent sector, is generally sensitive to conditions in the international economy and was hurt by a strong dollar and weak overseas economic growth. U.S. GDP growth is expected to average 2.6 percent for most of the baseline, reflecting growth of the labor force and strong gains in productivity. U.S. productivity will remain high because of the rising share of business fixed investment and world trade in GDP. Investment made in the 1990s improved both the quantity and quality of the Nation's capital stock. Increased trade has facilitated higher productivity by opening markets, thereby stimulating increased investment spending, greater economies of scale in production, and greater economic specialization in areas of U.S. comparative advantage. Inflation is projected at under 3 percent as monetary policy is assumed to be relatively stringent, tightening when significant inflationary pressures are expected.

Agricultural Policy Assumptions

The baseline incorporates provisions of the 1996 Farm Act and assumes a continuation of current agricultural law through the end of the projections. The baseline also includes policy decisions as of mid-November 1999.

Nearly complete planting flexibility is provided under the 1996 Farm Act, allowing producers to respond to market prices and returns, augmented by marketing loan benefits in low price years. Marketing loan/loan deficiency payment provisions of the 1996 Farm Act provide an effective per-unit revenue floor at the loan rate, with a countercyclical effect occurring through marketing loan gains or loan deficiency payments when the price is below the loan rate. These benefits are particularly important in the early years of the baseline when many crop prices are low. The baseline assumes that marketing assistance loan rates for corn, wheat, upland cotton, and oilseeds will be determined based on formulas in the 1996 Farm Act, subject to minimum and maximum levels specified in the law. However, for crop year 2000/01, loan rates are assumed to remain at $5.26 a bushel for soybeans and $0.5192 per pound for upland cotton. Production flexibility contract payments are largely decoupled because they generally are not related to current plantings or to market prices.

The 1999 and the 2000 Appropriations Acts provided additional funds to the farm sector in fiscal years 1999 and 2000, including market loss assistance for contract crops. The 2000 Appropriations Acts also reinstated funding for cotton user marketing certificates (the Step 2 program) and extended the dairy price support program an additional year through the end of calendar 2000.

The baseline assumes that the Conservation Reserve Program (CRP) will gradually build from its recent level of about 32.5 million acres to its maximum authorized level of 36.4 million acres by 2003, with program authority extended to allow enrollment to remain at that level. New CRP enrollments reflect periodic regular signups and continuous signups, with a competitive selection process is used for CRP enrollments.

The baseline assumes full compliance with all bilateral and multilateral agreements affecting agriculture and agricultural trade. Projections assume full compliance with the internal support, market access, and export subsidy provisions of the Uruguay Round (UR) Agreement on Agriculture. The baseline assumes no accession to the World Trade Organization (WTO) by the former Soviet Union (FSU), China, or Taiwan; no enlargement of the European Union beyond its current 15 members; no implementation of more liberalized trade among the countries of the Asia-Pacific Economic Cooperation; and no expansion of the North American Free Trade Agreement. Agricultural and trade policies in individual foreign countries are assumed to continue to evolve along their current paths.

Annual quantity and expenditure levels for the Export Enhancement Program (EEP) are assumed to be in compliance with reductions in the UR agreement. The baseline assumes that no EEP expenditures occur in fiscal 2000, with EEP expenditures then assumed to resume for the rest of the baseline. P.L. 480 program levels are assumed to increase at the general inflation rate from their fiscal 2001 levels. Program levels projected for the GSM-102 and GSM-103 credit guarantee programs are constant in nominal dollars.

Crops

In the initial years of the baseline, many crops are adjusting to a period of low prices resulting from a number of years of large global production, foreign competition, and weak international demand. In these years, marketing loan benefits provide some safety net assistance to producers, augmenting market returns. In the longer run, more favorable global economic growth supports increases in trade and U.S. agricultural exports, although gains are somewhat muted by continued strong export competition and only moderate growth in import demand in some markets, such as for grains to China.

Planted acreage for the eight major U.S. field crops (corn, sorghum, barley, oats, wheat, rice, upland cotton, and soybeans) declines somewhat over the next few years before turning upward for the remainder of the baseline. By 2009, aggregate plantings for these crops approaches the recent high level of plantings for these crops attained in 1996. Planting flexibility of current agricultural legislation facilitates acreage movements by allowing producers to respond to market prices and returns, augmented by marketing loan benefits in low price years. Marketing loan benefits influence the aggregate level of plantings as well as the cropping mix in the early years of the baseline when many prices are relatively low, but projected acreage gains in the longer term reflect land drawn into production based on strengthening market incentives. Yield gains for many crops mitigate some of the pressure on total land use.

Export markets continue to be important in projected consumption growth for many U.S. field crops. Gains in disappearance for U.S. wheat and cotton are driven by exports, with U.S. trade showing larger absolute gains and growth rates than domestic demand. U.S. wheat exports rise steadily in the baseline but face greater competition from the European Union (EU) starting in 2004/05 when the EU is projected to be able to export wheat without subsidies. Cotton exports benefit from the resumption of Step 2 payments. Increases in use for feed grains and soybean oil also have growth rates for exports higher than for domestic markets, although absolute increases in domestic use are larger than trade gains, reflecting the relative sizes of the utilization categories. Strong competition in global corn trade from Argentina as well as moderate world import demand growth, particularly for China, which is projected to be a net corn exporter in the baseline, combine to mute U.S. corn export gains somewhat. Projected consumption increases for soybeans, soybean meal, and rice are primarily driven by domestic demand, with larger absolute increases and growth rates in domestic use than exports. Exports of soybeans and products have stronger gains in the first half of the baseline as low market prices discourage foreign production and encourage domestic crushing. Later in the baseline when prices strengthen, foreign production rises and increased competition lead to declines in U.S. soybeans exports. U.S. rice exports are expected to decline slowly throughout the baseline as U.S. rice prices increase faster than world prices, making U.S. rice exports less competitive in some markets.

Domestic demand for many crops is projected to grow slightly faster than population. Growth in domestic use of rice reflects a greater emphasis on dietary concerns and an increasing share of domestic population from Asia and Latin America. Gains in corn used for ethanol production, in part reflecting an assumed industrial usage program, and increases in corn sweetener use also exceed population growth rates. Increases in domestic soybean crush are largest in the first half of the projections when soybean prices are low, but continue to reflect strong growth in poultry production and demand for soybean meal throughout the baseline. Domestic wheat use, however, is nearly flat as declining feed use offsets food use gains. Additionally, increases in cotton textile imports in the second half of the baseline, reflecting liberalization of restrictions on cotton textile import quotas, lead to declining domestic mill use of cotton.

The ratios of ending stocks to use decline over the baseline for corn, wheat, soybeans, and rice, with nominal prices rising. Stocks-to-use ratios for cotton fall over the next few years from relatively high current levels, and then stabilize for the rest of the baseline.

Livestock

Expanded meat production over the past few years, following the sharp decline in grain and soybean prices from high levels in 1995/96, have pressured producer returns despite continued low feed costs. In response, production of red meats declines early in the baseline while increases in poultry production slow. In the longer run, moderate feed prices through much of the baseline, replenishment of forage supplies, low inflation, domestic demand strength, and gains in meat exports are expected to contribute to producer returns that encourage higher total red meat and poultry production, with a growing proportion being poultry.

The cattle herd is projected to contract over the next several years as cow-calf returns have been under drought-induced pressure and more heifers have been placed in feedlots rather than retained for calving. The cattle herd then builds up only slightly from a cyclical low near 95 million head in 2002, remaining below 97 million head at its peak in 2004 before turning downward again as producer returns provide economic incentives for only a brief and moderate expansion. Additionally, shifts toward a breeding herd of larger-framed, higher-grading cattle and heavy slaughter weights partially offset the need for further expansion of cattle inventories. The beef production mix continues to shift toward a larger proportion of fed beef, with almost all steers and heifers being feedlot fed. Beef production also continues to move toward a higher graded product being directed toward the export and domestic hotel-restaurant markets, with generally less desirable quality beef competing with pork and poultry in retail markets. The United States remains the primary source of high-quality, fed beef for export, including exports for hotel-restaurant trade. The United States becomes a net beef exporter near the end of the baseline.

The pork sector will continue to transform into a more vertically coordinated industry with a mix of production and marketing contracts. Increased vertical coordination in pork production will lower production costs and improve pork quality and product consistency, allowing pork to increasingly challenge beef in the hotel-restaurant market as well as at retail. Larger, more efficient pork producers will market a greater percentage of the hogs over the next 10 years. With a more vertically coordinated industry structure, the hog cycle is dampened. As a result, a slow expansion in pork production begins in 2002 and continues for the remainder of the baseline. The United States becomes an increasingly important net pork exporter, in part reflecting environmental constraints for a number of competitors that limit their production gains. However, projected gains in U.S. pork exports are somewhat muted by reduced market growth prospects for exports to Russia.

Continued technological advances and improved production management practices are expected in the broiler and turkey industries. However, further gains are not anticipated to hold down production costs as significantly as in the past 10 years when benefits particularly reflected economies of size achieved through increasing horizontal and vertical integration. The poultry sector continues to compete with other meats through developing new products and marketing practices, including home meal replacement in grocery stores. Competition in global poultry markets holds U.S. poultry exports to moderate gains. Asian imports are projected to continue to expand throughout the baseline, despite short-term setbacks in some markets in 1997-1999 due to the financial crisis. Russian imports, however, dropped sharply in 1998 and 1999, and only a slow and gradual recovery is projected.

Decreases in real prices of meats combined with increases in real disposable income allow consumers to purchase more total meat with a smaller proportion of disposable income. Poultry gains a larger proportion of both total meat consumption and total meat expenditures. On a retail weight basis, poultry consumption is projected to exceed red meat consumption by the end of the baseline.

Per capita consumption of eggs rises moderately in the baseline as greater use of eggs in processed foods, reflecting consumer use of more convenience foods, offsets declining shell egg use per person.

High milk-feed price ratios and dairy productivity gains push milk output per cow higher. Milk production grows despite slowly declining cow numbers. Lower real milk prices continue to push weaker operations out of dairying. Milk production will expand in the West as well as on large-scale dairy farms in the North. Expansion in commercial use of dairy products will be led by sales of cheese and dairy ingredients for processed foods, while fluid milk sales are stagnant.

Farm Income and Farm Financial Conditions

Farm income initially declines in the baseline as the agricultural sector goes through a period of weak commodity prices over the next few years and Government payments decline from recent high levels. Despite near-term cash flow difficulties, a strong financial position achieved during the 1990s will help farmers through this period. In the longer run, the outlook for the sector improves as large stocks are reduced, exports strengthen, and prices rise, leading to gains in farm income and greater stability in aggregate financial conditions.

Net farm income declines in the first years of the baseline, falling below $35 billion in 2001. Farm cash receipts improve marginally as commodity prices begin to recover from recent low levels. Production expenses also change only moderately in the initial years as the sector adjusts to lower incomes. However, direct government payments, which rose sharply over the last several years to bolster farm incomes, are projected to decline, reflecting reduced production flexibility contract payments, loan deficiency payments, and market loss assistance and crop loss assistance payments.

Beyond 2001, as large global supplies are reduced and as demand and trade strengthen, net farm income gradually moves upward for the rest of the baseline, exceeding $50 billion for the last few years of the projections. As direct government payments fall and then level off, the agriculture sector increasingly relies on the marketplace for its income. Government payments, which represented almost 10 percent of gross cash income in 1999, account for about 2 percent of gross cash income in the last few years of the projections. Both crop and livestock receipts are up in nominal terms due to larger production and higher prices. Production expenses increase in the baseline, with expenses for non-farm origin inputs rising faster than expenses for farm-origin inputs. Cash operating margins tighten somewhat early in the projections, with cash expenses increasing to 79-80 percent of gross cash income over the next few years before falling back to 76 percent later in the baseline.

With reduced farm income and cash flow over the next few years, debt management will be crucial to the financial condition of the agricultural sector. In the longer run, increasing farm incomes and relatively low interest rates assist in asset accumulation and debt management, thus leading to an improved balance sheet for the farm sector. Farm asset values initially level off for a few years but then increase through the rest of the baseline, mostly reflecting movements in agricultural land values. Farm debt rises less rapidly than asset values. As a result, debt-to-asset ratios continue the downward trend of the last 15 years from the high levels of over 20 percent in

the mid-1980s, declining to about 13 percent by the end of the baseline. With asset values increasing more than debt, farm equity rises significantly. Increasing farm income in the baseline, combined with rising farm equity, means relative stability in the financial condition of the farm sector.

Food Prices and Expenditures

Retail food prices in the baseline are projected to rise less than the general inflation rate, continuing a long-term trend. The largest price increases generally occur among the more highly processed foods, such as cereals and bakery products. Prices of these foods are related more to the costs of processing and marketing than to the costs of farm commodities. Expenditures for meals eaten away from home account for a growing share of food spending, reaching almost half of total food spending toward the end of the baseline.

Agricultural Trade

Relatively strong growth in the volume of global and U.S. agricultural trade is projected during the next 10 years, aided by ample global supplies and steady demand growth. Demand prospects are driven by the outlook for healthy economic growth in most of Asia, Latin America, North Africa, and the Middle East, moderate gains in developed countries, and continued progress toward freer trade through ongoing unilateral policy reforms and existing multilateral agreements. The solid prospects for trade expansion in these regions are expected to more than offset relatively weak growth in parts of Asia, Africa, and the former Soviet Union.

Despite robust demand, global and U.S. commodity prices and trade value are expected to remain weak over the first half of the baseline because of large stocks and continued output and productivity gains in exporting countries. Commodity prices and export earnings are projected to strengthen during the last half of the baseline because of steady growth in import demand and reduced U.S. and foreign stocks. Prospects for realizing the projected long-term recovery in commodity prices may, however, be dampened by continued strides in crop and livestock sector productivity in exporting countries.

Future trends in China's agricultural trade are key in the global outlook for commodity trade and prices. The baseline includes only modest growth in China's imports of wheat, coarse grains, cotton, and meats, but continued strong growth in import demand for soybean products. However, significant uncertainties exist regarding basic data and future policies in China, with the size of the country's agricultural economy increasing the potential significance of these issues for trade.

The baseline shows improved trade growth for several bulk commodities during 2000-09, compared with the 1980s and 1990s. Projected growth in wheat, coarse grain, and cotton trade is particularly strong compared with recent performance. The expansion of grain trade is broad-based, driven by rising incomes in developing regions, diet diversification, and increased demand for livestock products and feeds. For raw cotton, developing country demand, boosted by the phase-out of the Multi-Fiber Agreement by 2005, is also key to the outlook for stronger growth in demand and trade.

Global trade in soybeans and products is, by contrast, projected to slow significantly compared with the rapid growth of the 1990s. Continued strong gains in developing-country demand for feed protein is projected to be mostly offset by reduced demand in the EU that results from slowed livestock output and increased substitution of grain for protein feeds following Agenda 2000 reforms. Growth in soybean oil trade is projected slower than the very high rate achieved in the 1990s due to somewhat slower growth in developing country imports and competition from other oils, particularly palm oil.

U.S. export volume is projected to strengthen for wheat, coarse grain, and cotton, but to slow for rice and soybeans and products. U.S. wheat and coarse grain exports expand along with world trade, although competition is expected in both markets. By the middle of the projection period, U.S. wheat export growth is slowed when price conditions permit unsubsidized EU wheat to enter the market. Argentina and China are expected to remain strong competitors for coarse grain market share. U.S. raw cotton exports strengthen throughout the baseline, benefiting from both rising demand and reduced competition. U.S. rice exports are expected to fall during 2000-09 as domestic demand outpaces U.S. production. U.S. exports of soybeans and products slow sharply compared with the 1990s, reflecting projected trends in world trade, coupled with strong competition from Argentina and Brazil.

Global meat trade and U.S. meat exports are projected to recover from the recent slowdown in East Asian and FSU demand, showing strong and steady growth during 2000-09. Prospects for meat trade are supported by the economic rebound in key Asian markets, and by already-negotiated reductions in trade barriers. However, FSU imports are projected to recover only gradually and remain below the record levels reached in the late 1990s.

The total value of U.S. agricultural exports is projected to be unchanged in fiscal 2000 from 1999 at $49 billion, but then increases to almost $76 billion by 2009. Despite growth in export volume from 1998 levels, large global agricultural supplies and foreign competition have combined with weak international demand to push commodity prices lower, keeping the value of U.S. bulk and high-value product exports down through fiscal 2000. Thereafter, both bulk and high-value product exports are projected to strengthen for the rest of the baseline. Projected U.S. imports rise from $37 billion in fiscal 1999 to $51 billion, boosting the agricultural trade surplus to $25 billion by 2009.

Macroeconomic Assumptions

This section presents the macroeconomic projections underlying the USDA baseline. Factors affecting the domestic macroeconomic projections are presented first, followed by a discussion of the conditions determining the international projections. The projections presented this year are characterized by recovery from the global financial crisis, with the global economy now moving into a period of sustained growth.

The global financial crisis that took place in the late 1990s changed trade policies, trade patterns, and interest rates, and led to major exchange rate depreciations in dollar terms. These changes have had the expected consequence of reducing foreign demand for U.S. farm products at a time of worldwide agricultural surpluses. Although the dramatic changes that took place during the crisis are largely behind us, the lingering impact both in the United States and abroad will continue for years to come.

Domestic Macroeconomic Projections

Despite the very low income elasticity of demand for most farm products, U.S. economic conditions are crucial to U.S. agricultural prospects. U.S. GDP growth spurs world growth, since the United States is the largest single market for foreign goods. U.S. financial markets dominate world financial markets. The growth of developing economies and the relative strength of the dollar strongly influence farm export demand and prices. Further, U.S. inflation and interest rates directly influence farm and farm program costs.[1]

The United States experienced comparatively high growth and low inflation between 1996 and 1999. Productivity growth has been a key component of the low-inflation, high-growth economy. Average GDP growth was about 3.8 percent, with inflation staying below 2 percent. Short-term Treasury bill rates averaged below 5 percent, and 10-year Treasury bond yields averaged 6 percent during this period. In 1999, the unemployment rate fell to an estimated 4.3 percent, the lowest since 1969.

The turbulence in world financial markets, the world growth slowdown in 1998, and subsequent world recovery in 1999 had positive impacts on the U.S. economy. The strong dollar and weak world growth during most of 1998 and 1999 resulted in large U.S. trade deficits. U.S. agriculture and manufacturing, being very dependent on world trade, were hurt by the larger trade deficits of 1998 and 1999. Nevertheless, the large capital inflows from trade-deficit countries resulted in low long-term U.S. interest rates and slow world growth caused oil prices to fall precipitously. Low interest rates and low oil prices for much of 1999 helped support strong GDP growth and low inflation.

While the baseline domestic macroeconomic growth assumption is lower than an extrapolation of the past 5 years, it is more optimistic than would be expected from trend extrapolation of the last 10 or 20 years. Not since the 1970s has growth averaged 2.6 percent a year as assumed here for 1999 to 2009.

[1] Forecasts are based on data available through August 1999.

Underlying Policy and Aggregate Supply Assumptions

- Fiscal policy will result in structural Federal budget surpluses for the forecast horizon.

- Monetary policy will be relatively stringent as the Federal Reserve policy will tighten when significant inflationary pressures are expected, keeping inflation below 3 percent.

- Trend labor productivity growth will average from 1.5 to 1.8 percent in 1999 to 2009.

- Energy markets will be balanced in 2001. Thereafter crude oil prices will rise 0.8 percent per annum consistent with the Energy Information Administration s January 1999 *Annual Long Term Outlook*.

- Employment growth is expected to average 1.1 to 1.2 percent a year through 2009, which is broadly consistent with Bureau of Labor Statistics projections. This projection is consistent with the tightened welfare and disability qualifications now in place, and expected immigration.

- World GDP growth is expected to be about 3.2 percent from 2004-2009. Since the U.S. is 25 percent of the world economy, world growth is jointly determined with U.S. GDP growth. If growth outside of the United States were to slow below 2 percent or increase above 4 percent, the projected U.S. scenario would be unlikely.

Major Domestic Macroeconomic Projections

- The trend assumptions employed smooth over the impact of unpredictable events, such as recessions three or more years from now, to avoid introducing spurious cycles in forecasts dependent on these projections. The trends here are consistent with standard macroeconomic stylized facts, such as an increasing capital-to-labor ratio tends to raise labor productivity.

- Trend GDP growth is 2.6 percent. Disposable income and consumer spending growth are expected to grow at a trend 2.5 percent per year. Disposable income growth will be partly the result of growth in real compensation in a labor market which sees the unemployment rate averaging 5.0 percent. A pickup in the personal savings relative to the negative savings rates of 1999 is expected. Such low personal savings rates are not sustainable in the medium term and the increase in savings will be a major force slowing GDP growth in 2000 and 2001.

- The investment required to achieve high productivity growth implies augmenting domestic savings with a net inflow of foreign funds. This will result in continued trade deficits and will prevent a significant drop in real long-term interest rates despite continued budget surpluses and modest increases in the personal savings rate. The secular trade deficit will cause some modest fall in the value of the dollar. However, the growth in imports should moderate as the real value of the dollar falls modestly over the

forecast period. The lower valued dollar is expected to shrink the aggregate trade deficit over time.

- The sharp runup in oil prices seen in the second half of 1999 is expected to turn around by the second quarter of 2000. A colder than average U.S. winter could postpone this adjustment just as a milder than average winter could speed it up. The trend growth in oil prices is expected to result in average real crude oil prices lower than those of 1996 even by the end of the projection horizon. Inflation is expected to be almost as low as that in the early 1960s. Inflation, measured by the annual GDP deflator, is projected to average 2.7 percent from 2002 to 2009.

Projected trend GDP productivity growth for 2000 to 2009 of 1.7 percent annually is faster than has occurred in any decade since the 1970s, although it represents a slowdown from productivity gains of the last 4 years (see table 1). Some of this change in productivity reflects revised GDP and CPI measurement to overcome previous measurement failures. These changes boost measured GDP growth by 0.2 to 0.3 percent per year, while reducing GDP deflator inflation by the same amount. However, the majority of the rise in projected productivity growth is due to real structural changes in the U.S. economy reflected in aggregate supply and demand changes of the last decade.

Table 1. U.S. GDP and Productivity Growth

Selected time periods	Real GDP	Productivity	Working age population
	Average annual percentage change		
Business cycles: 1/			
1960I - 1969III	4.3	2.7	1.5
1969III - 1973IV	3.5	2.6	2.3
1973IV - 1980I	2.8	1.3	1.9
1981III - 1990II	3.0	1.2	1.2
1990II - present	2.6	1.4	1.0
Recent history			
1995II - 1999II	3.8	2.1	1.1

1/ Business cycles are measured from peak to peak of respective expansions.

Prospects for U.S. Long-term GDP Growth

During the current economic expansion, which began in the second quarter of 1990, real economic growth has averaged 2.8 percent. This 2.8 percent economic growth can be decomposed into average growth of 1.1 percent in working age population, 1.4 percent growth in productivity, and 0.1 percent average growth respectively in labor force participation of the

working age population, the rate of employment of the labor force, and in average hours worked per worker. Productivity growth in this expansion has contributed a greater share to overall economic growth than in recent business cycles.

Productivity has increased sharply over the previous 4 years. From the second quarter of 1995 through the second quarter of 1999, productivity has grown 2.1 percent per year after growing at an annual rate of 0.9 percent in the first 5 years of 1990s. The last 4 years of high productivity growth reflects more intense resource utilization, especially for labor, as well as extremely strong business investment, a more efficient price sensitive management structure, and increased foreign competition.

Potential productivity growth in the 1.6 to 1.8 range is expected over the baseline projection. This is above the 1.4 percent average growth for nonfarm business productivity over the last 30 years. Productivity will remain high because of the rising shares of business fixed investment and world trade in GDP. The shares of business fixed investment and foreign trade (the sum of U.S. exports and imports of goods and services) in GDP have risen from 9.5 percent and 19.4 percent in 1990 to 13.3 and 30.2 percent in the second quarter of 1999, respectively. The investment of the 1990s has improved both the quantity and quality of the Nation's capital stock. Increased trade has facilitated higher growth and productivity by opening markets. This has stimulated increased investment spending, the achievement of greater economies of scale in production, and greater economic specialization in areas of U.S. comparative advantage.

Over the next 10 years the shares of business fixed investment and foreign trade in GDP are expected to continue to rise, but at a slower pace than in the 1990s. Business fixed investment is expected to remain strong due to continuing tight labor markets, strong foreign competition, relatively low capital costs, and the continued expected strong profitability of business fixed investment. A common measure of expected business profitability is the market value of business capital relative to replacement cost. This measure is currently at a record high indicating an excellent business capital investment outlook. Export growth is expected to improve due to increasing world GDP growth and a lower valued dollar.

The consumer savings rate is expected to rise over the forecast horizon while remaining low by historical standards. Continued strong business investment demand will absorb the increased savings of consumers caused by the moderate increase in the consumer savings rate, with only modest impacts on real GDP growth and interest rates over the forecast period, as foreign investors fill the shortfall in aggregate domestic savings. The net result will be a continuing but smaller trade deficit.

Overall labor demographics point toward a slight slowing in employment growth. In the current economic expansion, employment and working age population have grown at a seasonally adjusted annual rates 1.3 and 1.0 percent, respectively. Overall U.S. population growth is expected to slow to 0.8 percent over the forecast horizon, with the working age population growth rate not declining significantly until 2010 or so. Growth in employment will be held down by a growing proportion of retirees in the general population and a slight upward

Macroeconomic Linkages to Agriculture

In many circumstances, factors external to agriculture can have very important influences on the farm sector. This is particularly true during periods of significant macroeconomic turmoil such as has occurred in some parts of the world since the middle of 1997.

Four macroeconomic factors have been particularly important in explaining the consequences for agriculture of the 1997-98 global financial crisis.

- income growth,
- exchange rate movement,
- terms of trade changes, and
- changing interest rates and credit availability.

These factors have tended to work in opposite directions in developing countries and in the United States during the current global crisis.

Developing Country Effects--A major driving force behind U.S. agricultural growth in the middle 1990's was the rapid pace of economic growth in developing countries. At relatively low levels of income, a high percent of the growth in income is used to purchase more food and agricultural products. Thus, high economic growth in developing countries translates into high demand for agricultural products and U.S. agricultural exports, while low growth tends to reduce demand for imported agricultural products. Thus, reduced economic activity in the crisis countries has contributed to lower U.S. agricultural exports. With agriculture a heavily trade-dependent sector, depreciations of foreign currencies against the U.S. dollar reduce the competitiveness of U.S. agricultural exports. The price of U.S. agricultural exports goes up in local currency terms in importing countries, thereby reducing U.S. exports. Changing "terms of trade" for agricultural commodities also can influence the demand for U.S. exports. A currency depreciation tends to raise prices of imported agricultural goods relative to domestically-produced nontraded goods, resulting in higher supplies of agricultural commodities produced domestically. This tends to reinforce the impacts of a depreciation and further reduce demand for imported agricultural products. Lastly, interest rates and credit availability are important determinants of agricultural supply. When interest rates are high and credit availability low, as occurred in the crisis countries, the cost of borrowing money for production goes up, thereby constraining domestic supply.

For developing countries in general, and especially the crisis-affected countries, Thailand, Korea, Indonesia, Malaysia, the Philippines, Russia, and Brazil, the crisis led to dramatic currency depreciations. Rapid growth in GDP stopped, then declined. The depreciation raised agricultural prices domestically against other products, a favorable terms-of-trade effect, while interest rates rose and credit availability declined. These factors led to declines in agricultural imports by some crisis-affected countries.

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Macroeconomic Linkages to Agriculture --continued

Effects in the United States--The crisis abroad led to somewhat higher income growth in the United States, in part because investment capital shifted to the United States from developing economies, which reduced interest rates. However, higher U.S. income provides only a small amount of additional domestic demand for food and agriculture because the U.S. is a high income country and food expenditures are a small share of total U.S. incomes. U.S. agriculture was more affected by appreciation of the U.S. dollar due to the crisis, which reduced the competitiveness of U.S. agricultural exports and supported the forces driving U.S. dollar-denominated prices of agricultural goods down. Further, to the extent that our competitors' currencies also depreciated against the dollar, their competitiveness was enhanced.

The appreciation of the U.S. dollar resulted in reduced terms of trade for agricultural products in the United States. That is, the price of agricultural products fell relative to other traded products. As a consequence, agricultural income fell relative to nonagricultural income. Low interest rates and ready credit availability in the United States reduced agricultural costs, but only marginally. The relatively lower cost of credit had only a small effect on profits because U.S. agriculture is a relatively low credit user with low debt-to-asset ratios. Overall, the rural economy sustained minor losses due to the financial crisis, as losses in exports of agricultural and manufactured goods were mostly offset by growth in other sectors. Despite negative impacts on manufacturing and agriculture, wage compensation in the rural economy grew almost as fast as for the overall U.S. economy during the crisis.

movement in the unemployment rate. Offsetting these trends is a continued rise in participation rates due to welfare reform and tighter requirements for disability benefits as well as a continued modest addition of workers over age 65. These factors are expected to generate net employment growth between 1.1 and 1.2 percent.

Adding the employment and potential productivity growth together gives a rise in potential GDP of between 2.7 and 3.0 percent per year. Due to inevitable recessions and/or supply shocks, the average projected annual GDP growth of 2.6 percent reflects some unused capacity in the economy in most years.

International Macroeconomic Assumptions[2]

The outlook for the world economy over the next 10 years is characterized by recovery from the global crisis and structural adjustments in Asia, the transition economies, and Latin America, and the secondary impacts of that crisis on the rest of the world. The return of Japanese GDP growth in 1999, because of its significance in world trade, is particularly important in the near term recovery. However, Japan's continued outlook for sluggish growth in the longer term is an important negative feature of the longer-term global outlook.

[2]The international macroeconomic assumptions used in the baseline were completed in October 1999.

There are two distinct phases of the world economic forecast. In the near to midterm, crisis recovery dominates the outcome, while in the longer-term structural reform leads to renewed sustained economic growth in the crisis countries but at a lower rate than previously recorded. Driving the Asia forecast is a restructuring of currency values in crisis countries, with a resulting reduction in import demand.

The outlook for the crisis countries is for moderate growth in the next few years, moving back to sustainable levels by 2002. OECD countries are experiencing better than average growth. The Third World debt crisis of the 1980s resulted in recessions in both developed and developing countries along with high inflation. The global crisis of 1997-98 was focused on developing countries with structural imbalances and resulted in deflationary pressures on global markets. Thus with the crisis moderating, world real GDP is projected to have average growth of about 3.2 percent annually between 2004 and 2009, compared with 2.5 percent during 1992-97, and 2.8 percent between 1998 and 2003.

Growth in Asia, while still strong, is significantly affected by the crisis and its aftermath. Growth between 1998 and 2003 is projected to be 4.7 percent, increasing to 6.1 percent in 2004-2009. This is a reduction in the underlying growth rate for the region of almost 2 percent, from the 8 percent GDP growth rate experience between 1992-1997. While the growth projection for Asia has been reduced, that of Latin America has been increased in the out years. Latin American growth is projected at 3.3 percent between 1998 and 2003 and 4.6 percent between 2004 and 2009, compared with an historical growth rate of 3.6 percent between 1992-1997. Growth is also projected to increase in Africa and the transition economies of Eastern Europe and the former Soviet Union, although not at rates which will translate into significant per capita income increases.[3] The developed economies, including the United States, are projected to grow at higher rates than in the 1992-1997 period, 2.5 compared with 2.1 percent. Inflation is expected to continue at unusually low levels in the developed economies and is potentially negative in the developing countries. The real price of oil is expected to remain low during the baseline.

Developed Economies

In the coming decade, real GDP growth will increase in the developed economies from the low rates of the first half of the 1990s. The structural adjustments undertaken throughout the second part of the 1980s and early 1990s has created a solid foundation for future growth. Low inflation and interest rates will help countries produce output close to potential levels. Government budgets, except in Japan, will be largely balanced. However, external imbalances may persist, particularly the large U.S. trade deficits with Japan and China. Among the major economies, only the United States will continue to carry a large current account deficit, although it is expected to decline slightly over the projections period. The continued large trade deficits for the United States is predicated on the assumption that countries around the world will still want to accumulate dollars as a reserve currency. If the euro begins to challenge the dollar's role as an alternative reserve currency, then the outlook for the competitive position of the United States

[3]Russia is currently one of the most seriously affected crisis countries. The growth cost of the transition between communist and capitalist systems resulted in substantial negative growth in the base period.

would change substantially. The United States will continue to bear the major burden for export-led growth of the crisis countries in the near term.

European Union. The monetary union between qualified EU members and introduction of a single currency enhances the efficiency of cross-border trade and investment within Western Europe. More uniform fiscal policies, as well as disciplined monetary policy guided by the German-based central bank, should lead to more stable growth prospects early in the baseline. The European economy is projected to expand by 2.4 percent on average between 1998 and 2003 and 2.5 percent from 2004 to 2009. Population growth will decline to virtually zero.

Unemployment will remain high relative to the United States, in the 10-percent range, but should gradually fall to 8 percent as more flexible wage and employment policies are adopted. Inflation should be well controlled as a strong unified currency, the euro, acts as an anchor for price stability. Fiscal consolidation by member countries will reduce inflationary expectations and lower long-term interest rates. The euro is projected to appreciate in real terms as the currency becomes widely used for world trade and for international reserves. Because of monetary union, national differences in real interest rates will disappear--financial markets will encompass the whole region, and thus investment opportunities will depend less on the relative availability of capital in each country.

Greater intra-European trade should encourage price arbitrage of homogeneous products and services, providing comparable prices across countries for both producers and consumers. As capital moves freely across borders, investors and producers would be able compete on more equal terms across countries, despite the lack of transnational mobility of workers. Even without formal eastward enlargement, closer integration with Eastern Europe also opens more trade and investment opportunities in the transition economies, particularly the former Soviet Union. As the transition economies gain higher per capita incomes, imports from the EU should rise accordingly.

Japan. The Japanese economy continues to be faced with significant structural problems, including a large fiscal deficit and approximately $1 trillion of nonperforming loans that are stifling the banking system. The acceptance of the role of Japan as a mature economy necessitates a reevaluation of their growth strategy. The rigidity in cultural values is the biggest constraint to current and future growth in Japan. Once the necessary structural adjustments are undertaken, growth at a modest rate will resume, but such adjustments will take some time. The slow, 1.2 percent growth between 1998 and 2003 is a reflection of this. The projection of 2.3 percent growth in the out years (2004 to 2009) is consistent with the overall projection of growth for the developed economies and only slightly below what is projected for the United States. Domestic demand will revive as Japanese banks slowly strengthen their capital base after writing off their significant bad loans and as the property and stock markets rebound. Manufacturing production should lead the way toward more vigorous economic activity, led prominently by exports of high-value products. In the longer run, recovery of Southeast Asian economies will provide additional demand for Japan's capital exports and manufactured goods.

The yen is expected to appreciate as the Japanese economy revives and then depreciates back to just above current levels as interest rates finally rise, but the current account surplus will remain

large. Deregulation of Japan's financial market is also likely to boost the yen as foreign capital funds are attracted. Opening Japan's retail and insurance markets to foreign competition will lower prices of goods and services. Opening the air transport market to more U.S. carriers will help boost Japanese tourism in the United States as airfares fall.

A structural problem of Japan's economy is the excess of savings over investment, as manifested in its sizable current account surplus. This fundamental imbalance, together with non-tariff barriers that restrict imports and foreign investment, keep the domestic economy isolated from global competition. High internal costs in the non-manufacturing industries such as farming, housing, and electric power generation have held back investors as well as consumers. More deregulation, not unlike that in the financial sector, will help sustain domestic demand, specifically private consumption and investment, as well as boost imports.

Canada. Canada's growth pattern in the 1990s has roughly tracked the U.S. GDP path because of the close integration of trade and investment. Projections over the next 10 years have Canada growing somewhat faster than the United States, 2.8 percent against 2.6 percent in the out years. NAFTA has reinforced the growing integration of the two economies. Canada has consistently had a trade surplus with the United States in the 1990s, the destination for 82 percent of its exports. A competitive Canadian dollar significantly influenced this pattern. A steady depreciation against the U.S. dollar since 1990, plus a lower inflation rate relative to the United States, has helped boost the Canadian currency's real exchange rate competitiveness.

The future growth path for Canada depends to a large extent on the pace of U.S. economic activity, augmented by growing trade with Asia and Mexico. Already considerable, Canadian trade with Asia should further expand as APEC relationships become closer. Although Asian growth is currently constrained by the aftermath of the crisis, as a region, Asia will still continue to grow faster than any other. Trade with Mexico is already on the rise as stimulated by NAFTA. The country's trade surplus is projected to continue growing beyond 2000.

The overhaul of Canada's fiscal policy from large deficit to surplus is principally responsible for the country's bright growth prospects. Less government spending and more funds available for private investment and consumption allowed market forces to revive previously anemic growth as interest rates significantly fell. Low inflation and interest rates are expected to carry healthy GDP expansion through the next decade. Also, foreign debt (as a percentage of GDP) will fall by 35 percent over the next 10 years. Domestic demand in the short- and long-term is to be led by fixed capital formation. Gross national savings (as a share of GDP) will increase to around 22 percent as compared to 19 percent for the United States.

Transition Economies

Countries that are ahead in the transformation to market economies are experiencing higher growth than those who have only recently carried out reforms. The first group includes Poland, the Baltic countries, the Czech Republic, Hungary, the Slovak Republic, Croatia, and Slovenia. The second group includes Bulgaria, Romania, and the former Soviet Union. The principal measure of the success of reform, which also coincides with higher GDP growth, is the degree of integration into the global economy--trade flows, investment flows, and currency convertibility.

More liberalized trade arrangements with more countries and the amount of foreign direct investment and portfolio inflows indicate the linkage level and relative competitiveness with the world at large, particularly with Europe and the other advanced economies.

Central and Eastern Europe. Transition economies in this region, except Bulgaria, posted relatively fast growth between 1996 and 1998 after severe contractions in the early 1990s associated with the switch from central planning. Poland, Hungary, and the Czech Republic had significant growth in the second half of the 1990s after undertaking market reforms and increasing openness to trade and competition. A reorientation of trade from the former Soviet Union to the West has contributed to their strong performance. But in some countries, like Bulgaria, reforms have only recently begun. Romania, which recently shed heavy state intervention in the economy, should soon expand in pace with its more advanced neighbors. The growth outlook for this region is relatively optimistic at over 4 percent in the next 10 years. A crucial advantage over the former Soviet Union is proximity and closer integration with the European Union. Foreign direct investment, particularly from high-cost countries like Germany, will increase the region's capacity to export. As the crossroads between the East and the West, the region should benefit as trade increasingly flows through its countries.

Former Soviet Union. After almost a decade of economic retrenchments and setbacks, the major countries of the former Soviet Union, including Russia and Ukraine, are once again faced with little or no growth in the near term and only modest growth toward the end of the projection period. The smaller countries of the region have been growing since 1996, with growth projected to be 1.5 percent in 1999. Overall GDP for the region is anticipated to average a modest 2.0 percent from 2004 to 2009. Although the fruits of privatization and market-based pricing were finally contributing to production gains and more widespread consumption, the crisis set progress back by several years. Capital flight has again become a problem. Failures in the banking system and overall policy environment have become ever more evident.

Prospects for mid-term growth in Ukraine are also affected by the crisis. Some improvement should occur after the crisis subsides. Significantly increased trade with Russia and the other former Soviet republics is critical in the Ukraine's transition to a higher income country. The smaller countries of the FSU are expected to average higher growth rates because of increasing trade and production of agricultural products and natural resources, particularly crude oil and natural gas. Nevertheless, only large inflows of foreign investments can lift their relatively slow growth prospects.

Developing Countries

Overall, the developing countries will maintain close to 4.5 percent average growth over the next decade, compared to around 5 percent during 1990-96. Emerging markets in Latin America will continue to attract investment funds as long as the developed economies maintain their healthy growth and if real interest rates in the United States, Europe, and Japan do not rise significantly. The currency devaluations in Southeast Asia will encourage more flexible exchange rates, which prevent overvalued currencies and act to discourage inflows of speculative funds or excessive borrowing of foreign money. The structural adjustments under way should lead to a stronger financial systems and stricter banking regulation. This will be reinforced by the development of

timely and transparent statistics. The risks of excessive lending will be reduced resulting in more stable growth paths in the longer run.

Mexico. The Mexican economy has recovered from its deep recession in 1995 that was precipitated by the peso's devaluation in late 1994. While the domestic sector has not fully bounced back in terms of real wages and former consumption levels, business investment and export growth are healthy again. Mid-term growth moves toward potential GDP of 5.0 percent. However, political problems still exist which should constrain growth slightly. The inflow of foreign capital and expanded trade with the United States because of NAFTA have boosted Mexico's production and export capacity. The devaluation of the peso by about 50 percent in 1994-95 made Mexican exports more price competitive.

Starting in 1996 the peso has appreciated in real terms against the U.S. dollar, largely because of Mexico's success in attracting foreign investment funds. That is, despite a floating exchange rate and inflation higher than in the United States, confidence in holding pesos, and in the Mexican economy in general, is strong. But these gains in purchasing power have fueled Mexican imports, generating a trade deficit and a higher current account deficit. The long-term growth outlook of 4.5 percent reflects the need to continue modernizing infrastructure and build up competitive export industries in Mexico. These entail imports of capital and intermediate inputs that would raise the current account deficit beyond 2000.

China. While China's growth has been consistently the strongest in Asia, it is expected to level off from double digits in the early 1990s to a more sustainable pace of around 7.4 percent over the next decade. With population growth of less than 1 percent per year, per capita GDP gains will remain impressive at near 7 percent annually. These gains will penetrate China's poor inner provinces and likely improve productivity in the agricultural sector as more capital-intensive farming and food processing are undertaken. Inflation has now subsided to single digits, but real output gains are expected to be slowed by adjustment problems of unemployment, as privatization of state-owned enterprises accelerates, and by competition from foreign firms. Credit supply will be directed less by the government and more by independent banks, and thus access to credit will increasingly be market-based. The eventual convertibility of the yuan in the capital account, which should attract more foreign equity funds, will also permit the outflow of domestic funds for foreign investments. Real wages will rise as worker productivity grows. The country's high savings rate will keep interest rates relatively low in spite of increasing demand for capital, especially to finance infrastructure projects. Competition for lower-value export markets should intensify as other developing countries, including Vietnam and India, increasingly enter those markets.

East and Southeast Asia. Output growth in East and Southeast Asia is projected to come down substantially over the next 5 years and recover slightly in the following 5 years. Growth is projected at 6.4 percent in the out years, down from 8.5 percent during 1992-1997. In the near term, growth is slowed by currency devaluation and deflation of asset prices, especially in Thailand, Indonesia, and Malaysia. Economic growth in these countries is assumed to begin to recover over the next 5 years, but long-term growth is projected to be about 2 percent lower than historical rates of recent years. Exports, buoyed by increased exchange rate competitiveness, and domestic demand, cushioned by high domestic savings, are expected to lead the recovery.

Impacts of Developing Country Income Growth and Exchange Rates on Agricultural Trade

Macroeconomic trends in developing countries are key factors in both short- and long-term projections of global agricultural trade and prices. Developing countries account for a significant share of world imports of major farm commodities, and most of the projected long-term growth in import demand. Since developing country consumers allocate a larger share of their budget to food, they generally make larger adjustments in consumption in response to changes in income and prices than do consumers in developed countries. Thus, except when border policies or financial constraints intervene, developing country imports are responsive to changes in macroeconomic variables that affect consumer budgets and food prices. Developing countries are also important exporters of farm goods, and export supplies respond to economic variables that affect local demand or producer incentives.

The economic assumptions underlying the baseline are consistent with many independent forecasts, calling for robust economic growth in developing regions, including Asia, Latin America, North Africa, and the Middle East. Prospects for the economies of Central and Eastern Europe (CEE) and the Former Soviet Union (FSU) are more cautious, but anticipate a gradual recovery to modest, positive rates of growth. However, the recent economic shocks to countries in Asia, Latin America, and the FSU, featuring significant adjustments to exchange rates, real prices, and incomes, triggered significant changes in global farm trade and prices. These events underscored the uncertainty involved in making projections of variables such as agricultural trade and prices that are sensitive to assumptions on economic activity in these regions.

The scenario results shown here illustrate the sensitivity of world trade and price levels for selected commodities to changes in the economic assumptions for major developing and transition regions. Sensitivity to two key variables is analyzed:

- change in the rate of income growth (measured by real gross domestic product), and
- change in local exchange rates (measured by real exchange rates with the U.S. dollar).

In the "slower income growth" scenario, the baseline income growth rate for all countries in the region is reduced by 1 percentage point during each year of the projections (1999-2009). In the "greater depreciation vs. dollar" scenario, the baseline rate of change in the real exchange rate is adjusted by 1 percent for all countries in the region for each year of the projections. Thus, the scenarios reveal the estimated impact of gradual and sustained changes in income or exchange rates, rather than the potential impact of relatively large or short-term shocks. The regions analyzed are developing Asia (includes China and excludes Japan); Africa and the Middle East; Latin America (includes Mexico); and the transition economies (FSU and CEE).

Results

The graphs in figures 1 and 2 show the impacts on selected variables in 2009, at the end of the 10-year simulation period. The results show significant impacts to global trade and prices due to alternate assumptions on income growth and exchange rates in developing regions. The differences in impacts across regions and commodities reflect variations in a region's importance to global demand in particular commodities, and in the responsiveness of local consumption and production.

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Impacts of Developing Country Income Growth and Exchange Rates on Agricultural Trade -- continued

Developing Asia: Developing Asia shows relatively large global impacts in both scenarios. The results partly reflect the region's important share of global trade volume for the commodities studied, particularly soyoil and meats. The impacts are also driven by the relative openness to imports of some goods by at least some importers, including soybeans and meal (China and much of Southeast Asia), corn and wheat (much of East and Southeast Asia) and soyoil (China, India, Pakistan). The impacts of the scenarios on this region, however, would likely have been substantially higher if the region's large economies, including China, India, and Indonesia, were more open to trade in such commodities as wheat, coarse grains, and meats.

Africa and the Middle East: This region shows generally small impacts relative to the other regions. In the case of soybean products and meats, the results largely reflect the region's small share of global trade. For wheat and coarse grains, however, the region accounts for a larger share of world trade than any of the other three regions studied. Impacts on wheat trade are relatively small because per capita use is already high and relatively unresponsive to changes in income or price, and because a number of markets remain regulated by border measures or state trading. For corn, although the region's feed-livestock sectors are expanding, responses are muted partially by trade restrictions, but also by competition with other feed grains, particularly barley. For wheat, coarse grains and other crops, trade responses to exchange rate movements are also affected by the limited capacity of the region's rain-fed production systems to respond to price signals.

Latin America: For Latin America, responses in both scenarios reflect the region's role as a major producer and net exporter of some of the commodities studied. For soy products, slowed growth in incomes increases exportable supplies, pushing down world prices and increasing world trade volume. For wheat, corn, and meats, lower incomes reduce both world trade and prices, as export gains by some countries are more than offset by lower import demand in others. The result show significant response to the depreciation of the region's exchange rates, with increases in regional exports leading to lower world prices, but increased trade volume, for soy products and meats.

Transition Economies: The transition countries, and particularly the FSU, account for a smaller share of world trade than during the 1980s, but alternate assumptions on future income growth and exchange rates still yield significant implications for world trade. Demand for wheat, feed grains, and meats is responsive to changes in income and prices. With slowed income growth, reduced demand in the region pushes down world prices, both by reducing imports and boosting exportable supplies. Reflecting the region's now large role in meat trade and high income elasticities of demand for meat, the largest impacts are on world meat prices. The responses to exchange rate depreciation are similar, with lower imports of meat and increased net exports of wheat and coarse grains, in each case leading to significantly lower world prices.

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Impacts of Developing Country Income Growth and Exchange Rates on Agricultural Trade -- continued

Figure 1. Impacts of Slower Income Growth, 2009

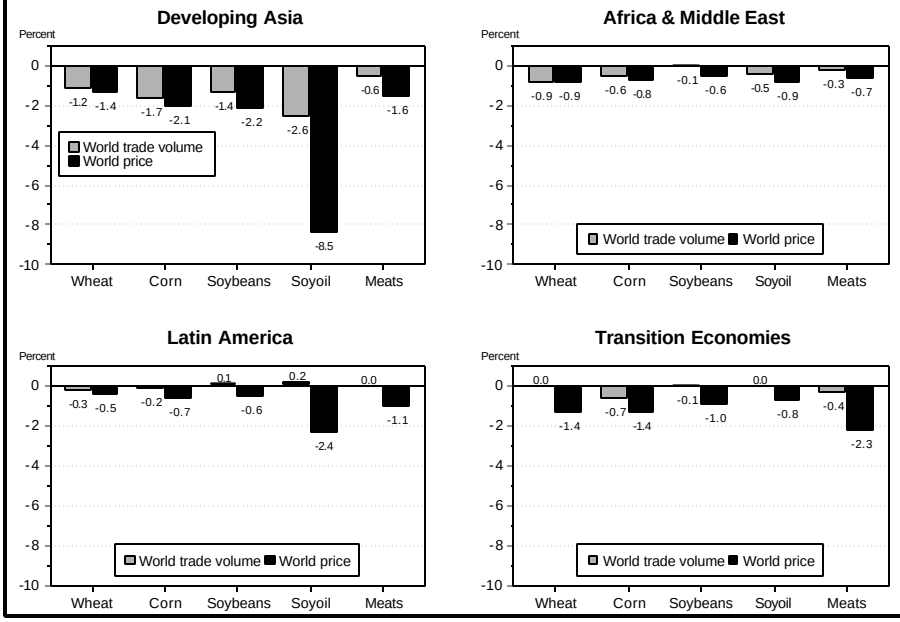
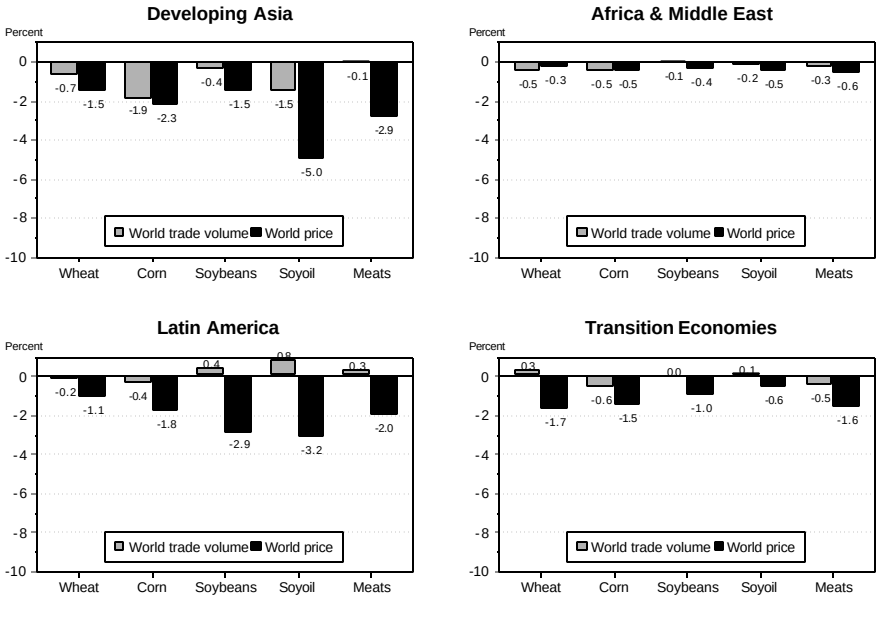


Figure 2. Impacts of Greater Depreciation vs. the Dollar, 2009



Japan provides a market for about 13 percent of developing Asia's exports, and Japan's economy is expected to show only sluggish near-term growth. About 40 percent of developing Asia's exports are typically destined for Asian markets other than Japan. Thus, the region-wide slowdown will be a significant drag on recovery. Recovery will also be affected by the fact that intra-regional investment, particularly from Japan, accounts for a large share of trans-border investment in the region. As a result, domestic savings performance and expansion of extra-regional trade will be important factors in the pace of recovery.

Indonesia, Thailand, Korea, and Malaysia are the most affected by the crisis, with Taiwan and China having only minor impacts. Healthy expansion in North America and Europe over the mid-term will help buoy growth in East Asia. China's continued GDP growth of over 7 percent per year will remain a source of strong import demand for other East Asian exports.

South Asia. South Asia continues its impressive growth over the projections period. Growth rates in South Asia are now projected to about equal those in Southeast and East Asia over the longer term. India, which produces 82 percent of the area's output, will grow on average by 5.5 percent annually, followed closely by Pakistan. Like China, India's large and increasingly liberalized domestic market will provide the bulk of the impetus for growth. India should also be capable of producing a more diversified set of export products, both manufactured and agricultural. Investment policy is increasingly liberalized and the inflow of foreign capital will boost the region's production capacity.

The proximity to energy sources in the Middle East and, in the future, to energy from Central Asia, should likewise be a boon. Potentially in the long run, exports of higher-technology products, especially from India, will generate currency reserves needed to help improve the region's infrastructure and industrial capacity. Competitive gains will depend on the region's low-cost labor, more open trade and investment policies, and real exchange rates that are not distorted by restrictions on capital flows.

Africa and the Middle East. The plentiful supply of fossil fuel, particularly oil, that will be produced in Central Asia after the turn of the century is a key factor moderating future energy price growth. This expectation, as well as the region's continued fast population growth, will hamper real per capita output gains, especially in the oil-exporting countries of the Middle East. Despite uncertainty in Iraq and Iran, future growth of 5.6 and 3.8 percent, respectively, is based on an assumption of a return to more market orientation. Combined with similar GDP expansion in Turkey, growth in the Middle East region is projected at a steady rate of 4.0 percent.

In Africa, potential growth hinges on the performance of Egypt, Nigeria, and South Africa, the continent's largest countries. Whereas GDP growth in Egypt is projected to be relatively strong, Nigeria and South Africa are not expected to grow as fast. Nigeria, because of continued political instability, corruption, and a largely unskilled labor force, will be unable to attract enough foreign investment and take advantage of its abundant oil resources. In South Africa, a large labor force of unskilled workers, high interest rates because of budget problems, and

Asia's Food System Infrastructure Important for Agricultural Trade

One important effect of the 1997-98 Asian financial crisis on the region's food system has been the scaling back of private and public investment in infrastructure in the financially distressed economies of Indonesia, Malaysia, the Philippines, South Korea, and Thailand. The level of infrastructure development in Asia is significant for U.S. agricultural trade. More than 40 percent of U.S. agricultural exports goes to the entire Asian region, with over 10 percent accounted for by the five financially distressed economies.

According to the World Bank, there is a strong relationship between infrastructure investment and economic growth, with every 1-percent increase in infrastructure stock associated with a 1-percent increase in GDP. Infrastructure development spurs a country's economic growth and thus its demand for food, and it reduces marketing costs for both domestic and foreign food products, lowering consumer prices and raising consumption. The level of infrastructure development can enhance the competitiveness of imported food products in large urban areas where international links via air and ocean shipping may be cheaper than links between rural and urban areas within the same economy. Infrastructure development can also increase the potential for economic diversification in rural areas and reduce post-harvest crop losses. Underinvestment in infrastructure can leave rural areas isolated, limiting the economic potential of the economy as a whole. Sizable investments are needed to maintain and expand infrastructure across Asia to sustain economic growth and facilitate trade, both within and among these economies.

With a large rural population and the world's most rapidly growing urban populations (figure 3), Asia faces large challenges in sustaining economic growth. Developing countries in the region have long underinvested in infrastructure. While sea and air links are well developed (Asia has the world's three busiest container ports: Hong Kong, China; Singapore; and Kaohsiung, Taiwan), road and rail service are less developed in China, South Asia, and Southeast Asia than in more developed parts of Asia (figure 4). The fragmented nature of its geography presents a unique challenge for road and rail development in Southeast Asia, particularly in Indonesia and the Philippines, both large archipelagos.

Infrastructure programs are often the first to be cut when fortunes fall in developing countries. As a result of the financial crisis, the Indonesian government currently has no plans to enhance agricultural infrastructure. Plans to build better harbor and cold storage facilities in Indonesia are being put on hold. The high price of spare parts and other materials is impinging on the government's ability to maintain and repair roads and bridges, further raising the cost of transporting food products to and from the countryside. In Malaysia, investment has been heavy in infrastructure development over the past decade, including major improvements in interstate highways, public transit, and port facilities; a new international airport; and improved electrical power generation. The financial crisis has led to the cancellation of one planned highway project and the cessation of work on the Bakun Hydroelectric Dam in Sarawak. In Korea, where government outlays for rural infrastructure have been at relatively low levels, the financial crisis has imposed greater budget constraints on rural infrastructure investment.

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Asia's Food System Infrastructure Important for Agricultural Trade--continued

Comprehensive data on infrastructure investment in Asia are difficult to find. According to one source, combined public and private sector investment in physical infrastructure before the financial crisis in developing Asia probably exceeded 5 percent of GDP, or about $80 billion a year (reference 1). But since the boom year of 1996, private investment in East and Southeast Asia has declined sharply, more than halving, because investors perceived increased risk and uncertainty in many of the region's economies. Public finance also declined. Economic contractions and slowdowns reduced tax and tariff revenue and diverted public funds to underwrite failing banking systems and to provide safety net programs for the swelling numbers of poor (Commonwealth of Australia, 1998).

International financial institutions also emphasize infrastructure in their development programs. The World Bank targets a significant share of its lending in the Asia Pacific region for infrastructure development. While total commitments to the region increased in 1998 to support banking reform and safety net programs, allocations to infrastructure declined. Asia Development Bank allocations for transportation and communication projects were relatively stable during 1995-98.

The lack of public and private funds in the short term means that existing infrastructure in the economically distressed parts of Asia will not be well maintained and new projects will be delayed. Any cutback or delay can have disproportionate consequences because of the frequently large size of, and long lead times needed for, many infrastructure projects.

However, the scaling back of infrastructure investment is expected to be transitory. With economic expansion accelerating in the region in 1999 and 2000 and with interest rates and inflation under better control, public and private infrastructure funds should become increasingly available to the crisis economies, which should benefit agricultural trade in the long run.

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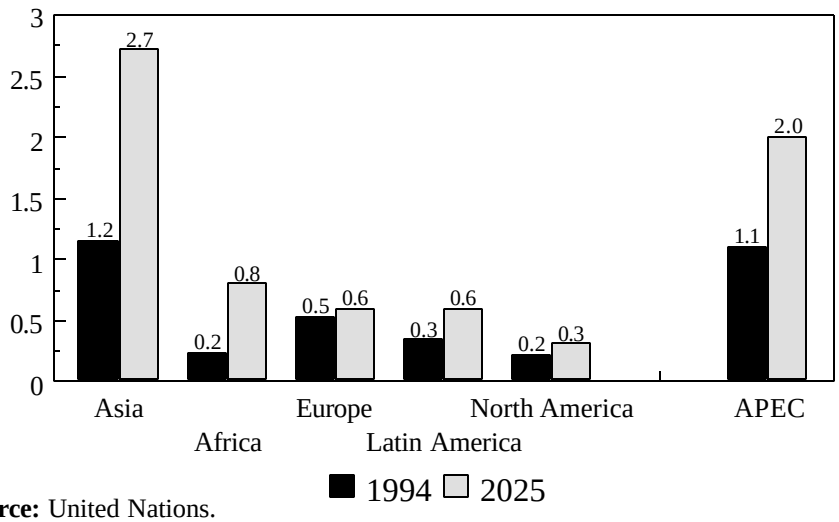
Figure 3--Urban Population Growth Trends

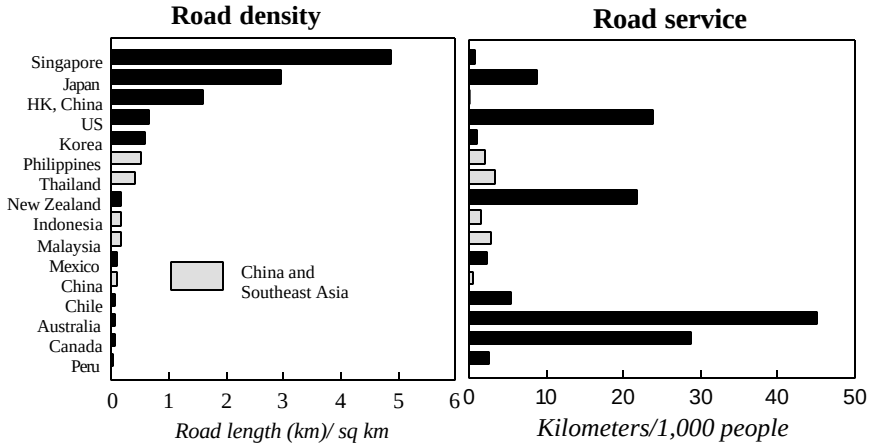
Asia's urban population projected to more than double by 2025.



Source: United Nations.

Figure 4--Road Density and Service

Roads are far less developed in China and Southeast Asia than in other parts of the world..



Note: Most data are for 1993; population numbers are for 1996.

Sources: Pacific Food Outlook, 1999-2000; David Canning, "A Database of World Infrastructure Stocks, 1950-95," The World Bank, 1998.

general social discontent will pose risks for investors and limit growth. The politically troubled countries of Algeria, Sudan, and Congo will drag overall growth down in North Africa and in Sub-Saharan Africa. Nevertheless, increased North African trade with Europe and market reforms in some East and West African countries are generating relatively faster growth. The multilateral proposal by developed countries to partially forgive foreign debts of the poorest countries that have initiated reforms should help sustain early gains and may encourage further reforms. However, the more optimistic growth scenarios still do not translate into significant per capita income increases as Africa's population growth remains the highest in the world at near 3 percent. Even so, positive per capita income growth is an improvement on declining per capita incomes over the past 20 years.

South America. The crisis in Brazil is assumed to be short lived and no other significant crisis is assumed to emerge in South America over the projection period. Strong growth is projected for the area, particularly in the out years, led by the MERCOSUR core countries of Brazil and Argentina. Freer trade will further integrate these countries' economies as they gear up for eventual hemispheric free trade with NAFTA countries. Behind the strong growth is reduced debt, less government intervention in the private sector, growing intra-regional trade, and heavier foreign direct investment. The past environment of overvalued currencies, large trade deficits, fiscal deficits, and low internal investment due to low savings is not expected to return. New economic policies now generate less inflation and more competitive industries as import barriers fall. Still, double-digit inflation in many countries (except Argentina and Chile) will carry through the next decade. Savings as a share of GDP are projected to rise only slowly and levels will remain substantially lower than in East and Southeast Asia. Because of this, the region's general dependence on foreign capital introduces the risk of capital flight in response to external shocks such as higher U.S. interest rates or another Mexican-type financial crisis.

World Population Growth

Population assumptions were updated in August 1999 using data obtained from the U.S. Bureau of the Census and the United Nations.

Africa and the Middle East will continue to have the fastest growing population over the next decade, averaging 2.2 to 2.5 percent per year. The next fastest regions are Asia and Latin America, averaging 1.3 to 1.5 percent per year. These assumptions indicate that per capita GDP gains in Asia and Latin America will outpace those of Africa and the Middle East by a bigger margin than their GDP growth differentials.

Populations in the developed and transition economies are projected to grow by less than 0.5 percent per year, with the slowest rates in Russia, Eastern Europe, Japan, and the European Union. Overall, the number of people in the world will increase at a declining rate. By 2009, the world's population will total nearly 6.8 billion, with over 80 percent living in developing countries.

Table 2. Domestic macroeconomic baseline assumptions

Item	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
GDP, billion dollars												
Nominal	8,511	8,899	9,173	9,801	10,327	10,882	11,466	12,082	12,731	13,414	14,135	14,894
Real 1992 chained dollars	7,552	7,844	8,035	8,236	8,450	8,670	8,895	9,126	9,364	9,607	9,857	10,113
percent change	3.9	3.9	3.1	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Disposable personal income												
Nominal (billions)	6,028	6,321	6,632	6,982	7,349	7,736	8,144	8,573	9,025	9,500	10,000	10,527
percent change	4.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Nominal per capita, dollars	22,304	23,158	24,093	25,153	26,263	27,424	28,638	29,908	31,233	32,617	34,060	35,565
percent change	3.1	3.8	4.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Real (billion 1992 chained)	5,348	5,530	5,712	5,867	6,013	6,164	6,318	6,476	6,638	6,804	6,974	7,148
percent change	3.2	3.4	3.3	2.7	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Real per capita, 92 dollars	19,790	20,260	20,752	21,137	21,489	21,849	22,217	22,592	22,973	23,359	23,752	24,150
percent change	2.3	2.4	2.4	1.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Consumer spending												
Real (billion 1992 chained)	5,153	5,387	5,540	5,662	5,802	5,948	6,096	6,247	6,404	6,564	6,728	6,896
percent change	4.9	4.4	2.8	2.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Inflation measures												
GDP price index, chained	112.7	114.3	116.1	119.0	122.2	125.5	128.9	132.4	136.0	139.6	143.4	147.3
percent change	1.0	1.4	1.6	2.5	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
CPI-U, 82-84=100	163.2	166.6	170.4	174.5	179.4	184.4	189.6	194.9	200.3	205.9	211.7	217.6
percent change	1.6	2.1	2.3	2.4	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
PPI, finished goods 82=100	130.7	132.6	134.7	137.7	141.0	144.4	147.8	151.4	155.0	158.7	162.5	166.4
percent change	-0.9	1.5	1.6	2.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PPI, crude goods 82=100	96.8	99.0	101.1	102.6	104.1	105.7	107.3	108.9	110.5	112.2	113.9	115.6
percent change	-12.9	2.3	2.1	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Crude oil price, $/barrel												
Refiner acq. cost, imports	12.1	17.6	21.5	20.5	21.2	21.9	22.7	23.5	24.3	25.1	26.0	26.9
percent change	-34.6	45.1	21.9	-4.7	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Real cost, 92 chained dollars	10.8	15.4	18.5	17.2	17.3	17.5	17.6	17.7	17.9	18.0	18.1	18.3
percent change	-35.2	43.1	20.0	-7.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Labor compensation per hour												
nonfarm business, 92=100	119.7	124.8	129.8	134.9	140.1	145.6	151.3	157.2	163.3	169.7	176.3	183.1
percent change	4.5	4.3	4.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Interest rates, percent												
3 month T-bills	4.8	4.6	5.3	5.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
6 month commercial paper	5.2	5.2	5.8	5.7	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Bank prime rate	8.4	7.9	8.8	8.4	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Treasury bonds (10-year)	5.3	5.6	6.2	5.9	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Moody's Aaa bonds	6.6	6.9	7.2	6.7	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Civilian unemployment												
rate, percent	4.5	4.3	4.2	4.5	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Nonfarm payroll emp., millions	125.8	128.4	130.0	131.5	133.1	134.7	136.3	138.0	139.6	141.3	142.8	144.4
percent change	2.6	2.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1
Total population, million	270.3	272.9	275.3	277.6	279.8	282.1	284.4	286.6	288.9	291.3	293.6	296.0
percent change	0.9	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Macroeconomic assumptions were completed in September 1999.

Table 3. Foreign real GDP baseline growth assumptions

Region/country	1997	1998	1999	2000	2001	2002	2003	Average 1992-1997	Average 1998-2003	Average 2004-2009
					Percent change					
World	3.2	1.6	2.8	2.9	3.0	3.1	3.1	2.5	2.8	3.2
less U.S.	3.0	0.9	2.5	2.9	3.1	3.3	3.3	2.3	2.7	3.3
Developed economies	2.7	1.8	2.9	2.6	2.5	2.5	2.5	2.1	2.5	2.5
United States	3.9	3.9	3.9	3.1	2.5	2.6	2.6	3.1	3.1	2.6
Canada	5.4	3.5	3.0	2.8	2.8	2.8	2.8	2.7	3.0	2.8
Japan	0.8	-2.9	2.0	1.5	1.8	2.3	2.3	1.4	1.2	2.3
Australia	1.7	4.0	2.7	2.5	2.5	2.5	2.5	3.6	2.8	2.5
European Union-15	2.5	1.7	2.6	2.7	2.6	2.5	2.5	1.7	2.4	2.5
Other Western Europe	2.5	2.8	2.1	2.6	2.8	2.8	2.8	1.6	2.7	2.8
Transition economies	2.0	-0.2	0.7	1.4	2.6	2.9	2.9	-5.7	1.7	2.7
Eastern Europe	3.9	3.1	2.7	3.9	4.5	4.6	4.5	2.2	3.9	4.2
Czech Republic	1.0	-2.1	1.0	3.3	3.9	5.2	5.2	1.1	2.8	5.2
Hungary	4.6	5.2	3.8	3.9	3.8	3.8	3.8	1.1	4.1	3.8
Poland	6.9	4.5	3.5	4.9	5.5	5.4	5.0	5.3	4.8	4.4
Former Soviet Union	1.3	-1.5	-0.1	0.3	1.7	2.1	2.1	-7.8	0.8	2.0
Russia	0.8	-4.6	-1.5	-1.0	1.4	2.4	2.4	-7.1	-0.2	2.4
Ukraine	-3.2	-1.7	-2.0	-1.0	2.5	2.5	2.5	-12.1	0.5	2.5
Other	2.5	1.5	1.5	1.6	1.8	1.8	1.8	-7.6	1.7	1.6
Developing countries	5.0	1.4	2.7	4.1	4.8	5.0	5.1	5.5	3.8	5.1
Asia	6.1	1.3	4.1	5.0	5.7	6.0	6.1	7.9	4.7	6.1
East & Southeast Asia	6.5	0.4	4.1	5.0	5.9	6.3	6.4	8.5	4.7	6.4
China	8.8	7.7	6.5	6.5	7.0	7.5	7.6	11.5	7.1	7.6
Hong Kong	5.2	-5.1	2.3	2.5	3.8	3.8	3.8	5.3	1.9	3.8
Korea	5.5	-5.7	4.5	5.0	6.0	6.0	6.0	6.8	3.6	6.0
Taiwan	6.8	4.8	5.0	5.5	5.6	5.6	5.6	7.6	5.4	5.6
Indonesia	4.9	-13.5	-4.0	1.5	3.0	5.0	5.0	7.2	-0.5	5.0
Malaysia	7.8	-6.7	1.6	3.5	4.5	5.0	5.0	8.5	2.2	5.0
Philippines	5.2	-0.5	1.5	3.5	4.5	4.8	4.8	3.8	3.1	4.8
Thailand	-0.4	-8.0	1.5	3.0	5.0	5.0	5.0	6.6	1.9	5.0
Vietnam	8.8	5.8	2.3	2.3	4.1	5.3	6.2	8.9	4.3	6.2
South Asia	4.7	4.5	4.3	5.2	5.3	5.3	5.3	6.0	5.0	5.3
India	5.2	4.5	4.5	5.5	5.5	5.5	5.5	6.4	5.2	5.5
Pakistan	-0.4	3.4	3.5	3.8	3.8	3.8	3.8	3.8	3.7	3.8
Bangladesh	5.9	5.6	2.5	4.1	4.8	4.8	4.8	5.0	4.4	4.8
Latin America	4.9	2.6	0.6	3.3	4.3	4.6	4.6	3.6	3.3	4.6
Caribbean & Central America	3.0	4.0	3.1	2.3	4.5	3.7	3.0	3.1	3.4	3.0
Mexico	7.0	4.6	2.7	3.8	4.0	4.5	4.5	2.7	4.0	4.5
South America	4.4	1.8	-0.3	3.3	4.4	4.7	4.7	4.0	3.1	4.8
Argentina	8.6	4.3	-2.0	3.1	4.5	5.0	5.0	5.4	3.3	5.0
Brazil	3.2	0.2	-1.6	3.0	4.5	5.0	5.0	3.4	2.7	5.0
Other	3.8	3.5	4.0	4.0	4.0	4.0	4.0	4.1	3.9	4.0
Middle East	4.0	-0.1	2.3	3.4	4.0	4.0	4.0	4.4	2.9	4.0
Iran	3.2	-2.5	1.5	2.8	3.8	3.8	3.8	3.3	2.2	3.8
Iraq	10.0	4.0	4.0	5.6	5.6	5.6	5.6	13.0	5.1	5.6
Saudi Arabia	1.9	-2.4	3.5	3.2	3.2	3.2	3.2	1.1	2.3	3.2
Turkey	7.7	2.9	1.5	4.0	4.4	4.4	4.4	5.0	3.6	4.4
Other	3.4	4.2	4.2	4.2	4.3	4.4	4.2	8.0	4.3	4.1
Africa	2.5	2.4	2.2	3.2	3.4	3.4	3.4	2.6	3.0	3.5
North Africa	2.8	3.7	2.1	4.2	4.1	4.1	4.2	2.8	3.7	4.2
Algeria	1.3	0.8	1.2	3.0	2.8	2.8	2.8	1.2	2.2	2.8
Egypt	5.5	5.0	4.0	4.5	4.5	4.5	4.5	4.4	4.5	4.5
Morocco	-2.0	6.0	-3.0	5.0	5.0	5.1	5.1	1.5	3.9	5.1
Tunisia	5.4	5.0	5.1	5.5	5.5	5.5	5.5	4.7	5.4	5.5
Sub-Saharan Africa	2.7	2.5	2.7	2.8	3.1	3.0	3.0	3.0	2.8	3.0
South Africa	1.7	0.1	1.3	2.2	3.1	3.1	3.1	1.7	2.1	3.1

Table 4. Baseline population growth assumptions

Region/country	1997	1998	1999	2000	2001	2002	2003	Average 1992-1997	Average 1998-2003	Average 2004-2009
					Percent change					
World	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.5	1.3	1.2
less U.S.	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.5	1.4	1.3
Developed economies	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.6	0.4	0.3
United States	0.9	0.9	0.9	0.8	0.8	0.8	0.8	1.0	0.8	0.8
Canada	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.3	1.0	0.9
Japan	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.0
Australia	1.0	0.9	0.9	0.9	0.9	0.8	0.8	1.1	0.9	0.7
European Union-15	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.0
Other Western Europe	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.7	0.3	0.1
Transition economies	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
Eastern Europe	0.0	0.0	0.0	0.1	0.1	0.2	0.2	-0.1	0.1	0.2
Czech Republic	-0.1	-0.1	-0.1	0.0	0.1	0.2	0.3	0.0	0.1	0.2
Hungary	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Poland	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.2	0.1	0.4
Former Soviet Union	-0.1	0.0	-0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.2
Russia	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.1	-0.3	-0.1
Ukraine	-0.6	0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.4	-0.1	-0.1
Other	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.5	0.7
Developing countries	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.8	1.6	1.5
Asia	1.5	1.4	1.4	1.3	1.3	1.3	1.2	1.5	1.3	1.2
East & Southeast Asia	1.1	1.1	1.0	1.0	0.9	0.9	0.9	1.2	1.0	0.8
China	0.9	0.9	0.8	0.7	0.7	0.7	0.6	1.0	0.7	0.6
Hong Kong	2.6	2.4	2.1	1.7	1.5	1.4	1.3	2.2	1.8	0.9
Korea	1.0	1.0	1.0	1.0	1.0	0.9	0.9	1.0	1.0	0.8
Taiwan	1.0	0.9	0.9	0.9	0.9	0.9	0.9	1.0	0.9	0.8
Indonesia	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.6	1.4	1.3
Malaysia	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.3	2.1	1.9
Philippines	2.2	2.1	2.1	2.0	2.0	2.0	1.9	2.3	2.0	1.8
Thailand	1.0	1.0	1.0	0.9	0.9	0.9	0.8	1.1	0.9	0.8
Vietnam	1.6	1.5	1.4	1.3	1.3	1.3	1.3	1.8	1.3	1.2
South Asia	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.9	1.8	1.6
India	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.8	1.7	1.5
Pakistan	2.8	2.8	2.8	2.7	2.7	2.7	2.6	2.7	2.7	2.5
Bangladesh	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.9	1.7	1.5
Latin America	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.7	1.5	1.3
Caribbean & Central America	1.7	1.6	1.6	1.6	1.6	1.6	1.5	1.7	1.6	1.5
Mexico	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.9	1.7	1.5
South America	1.6	1.5	1.4	1.4	1.3	1.3	1.3	1.7	1.4	1.2
Argentina	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2
Brazil	1.4	1.3	1.2	1.1	1.1	1.0	1.0	1.5	1.1	0.9
Other	1.9	1.8	1.8	1.8	1.7	1.7	1.6	2.0	1.7	1.5
Middle East	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.4	2.4	2.2
Iran	2.2	2.1	2.0	2.2	2.3	2.3	2.2	2.3	2.2	2.0
Iraq	2.8	2.9	3.0	3.0	2.9	2.9	2.9	2.3	2.9	2.8
Saudi Arabia	3.5	3.7	3.6	3.5	3.3	3.2	3.1	2.8	3.4	3.0
Turkey	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.6	1.5	1.2
Other	3.0	3.0	3.0	3.0	3.0	2.9	2.9	3.4	3.0	2.8
Africa	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.6	2.5
North Africa	2.0	1.9	1.9	1.9	1.8	1.8	1.8	2.1	1.8	1.7
Algeria	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.3	2.1	1.9
Egypt	1.9	1.9	1.9	1.8	1.8	1.8	1.7	2.0	1.8	1.6
Morocco	2.0	1.9	1.9	1.8	1.8	1.8	1.7	2.1	1.8	1.6
Tunisia	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.7	1.4	1.3
Sub-Saharan Africa	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.7
South Africa	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.3	2.2	2.0

Agricultural Policy Assumptions

Baseline projections assume a continuation of current agricultural legislation and reflect policy decisions as of mid-November 1999. Most of the policy features assumed reflect provisions of the Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Act). The baseline also reflects applicable provisions of the Agricultural Adjustment Act of 1938, the Agricultural Act of 1949, the Omnibus Budget Reconciliation Act of 1990, the Omnibus Budget Reconciliation Act of 1993, the Emergency Farm Financial Relief Act, and the Omnibus Consolidated and Emergency Supplemental Appropriations Act of Fiscal Year 1999 (1999 Appropriations Act), and the FY 2000 Agricultural Appropriations Act (2000 Appropriations Act).

Programs for Contract Crops and Oilseeds

Key policy assumptions for "contract crops" (wheat, corn, grain sorghum, barley, oats, rice, and upland cotton) and oilseeds are summarized in this section.

Planting Flexibility

Nearly complete planting flexibility is permitted, with limitations on fruits and vegetables, as long as the producer complies with conservation and wetland provisions.

Production Flexibility Contracts

The 1996 Farm Act provides decoupled income support payments over 7 years that are not related to market prices or most farm-level production decisions. To receive payments and be eligible for loans on contract commodities, a producer had to enter into a production flexibility contract (PFC) for 1996-2002 during the one-time enrollment period held in 1996. Eligible land leaving the Conservation Reserve Program (CRP) may be added to an existing PFC or enrolled in a new PFC at the beginning of a fiscal year.

Farmers receive production flexibility contract payments for 7 years, 1996-2002. Payments are based on enrolled contract acreage and generally are not related to current plantings. Cumulative outlays for contract payments for fiscal 1996-2002 are capped at slightly over $36 billion. Total PFC payments will be lower, reflecting payment limitations. Production flexibility contracts are assumed to continue beyond 2002 in the baseline, with funding for contract payments remaining at the fiscal 2002 level of $4.008 billion.

Payment levels are allocated among contract commodities according to percentages specified in the 1996 Farm Act (see table 5). Adjustments were made in 1996 and 1997 for payments of previous years' deficiency payments that occur in those years and repayments of unearned deficiency payments that were due in those years. A further adjustment of $8.5 million annually is added to rice payments starting in fiscal 1997. This rice payment adjustment is also assumed in the baseline to continue beyond 2002.

Payment rates for each commodity are derived by dividing the commodity's total annual contract payments (before payment limitation reductions) by the corresponding total payment quantity on all enrolled acreage for the commodity (see table 6). Production flexibility contract payments to individual farmers are then based on the derived payment rate times the payment quantity on the farm. The payment quantity equals 0.85 times the payment yield times the contract acreage.

Annual production flexibility contract payments are made on a fiscal year basis. Through fiscal year 1998, a 50-percent advance payment could be made on either December 15 or January 15 of the fiscal year, at the option of the owner or producer. The Emergency Farm Financial Relief Act, enacted in August 1998, allowed farmers to receive fiscal year 1999 PFC payments earlier--at the producer's option, 1999 PFC payments could be received in one payment or in two equal payments at any time during the fiscal year. This payment timing option was extended through fiscal 2002 in the 2000 Appropriations Act, and is assumed in the baseline to continue in subsequent years.

Annual contract payments under the 1996 Farm Act are limited to $40,000 per person (except for additional payments that result from repayment of prior-year advanced deficiency payments). The payment limit on marketing loan gains and loan deficiency payments was $75,000 per person, per crop year, through the 1998 crops, and the three-entity rule was retained. The 2000 Appropriations Act raised this limit to $150,000 for 1999 crops. The baseline assumes that this payment limit returns to $75,000 for subsequent years.

The 1999 Appropriations Act provided $2.857 billion for market loss assistance (MLA-99) payments to be paid in fiscal 1999 to farmers who were eligible for PFC payments in fiscal 1998. MLA-99 payment rates are shown in the footnote of table 6. The 2000 Appropriations Act provides $5.544 billion for market loss assistance (MLA-00) payments to be paid in fiscal 2000 to farmers who were eligible for PFC payments in fiscal 1999. MLA-00 payment rates will be approximately equal to the 1999 PFC rates shown in table 6. The 2000 Appropriations Act also provides $475 million to 1999 producers of oilseeds.

The 1999 Appropriations Act additionally provided $2.375 billion for crop loss assistance and the 2000 Appropriations Act provides $1.2 billion for crop loss assistance.

Marketing Assistance Loans

The baseline assumes that marketing assistance loan rates for corn, wheat, upland cotton, and oilseeds will be determined based on formulas in the 1996 Farm Act, subject to the maximum levels specified in the law and minimum levels specified for upland cotton and oilseeds (see table 6). However, for crop year 2000/01, loan rates are assumed to remain at $5.26 a bushel for soybeans, and $0.5192 per pound for upland cotton. Loan rates for sorghum, barley, and oats are set each year in relation to the corn loan rate, taking into account their feed values relative to corn as measured by ratios of 5-year lagged moving average prices relative to corn prices. The rice loan rate is set at $6.50 per hundredweight.

Marketing loan provisions allow the repayment of commodity loans at less than the loan rate when posted county prices (wheat, feed grains, and oilseeds) or world prices (upland cotton and rice) are below the loan rate. Also, loan deficiency payments may instead be made to eligible

producers of wheat, feed grains, upland cotton, rice, and oilseeds who agree to forgo obtaining a loan.

Cotton User Marketing Payments

The 1996 Farm Act capped total expenditures for cotton user marketing certificates during fiscal years 1996-2002 at $701 million, which was used by mid-December 1998. The 2000 Appropriations Act removed the program's expenditure cap starting in fiscal 2000, and the program was reinstated in October 1999.

For fiscal year 2000 and subsequent years, cotton user marketing payments are made to domestic users and exporters of upland cotton when the lowest-priced U.S. growth of upland cotton quoted for delivery in Northern Europe exceeds the Northern Europe price by more than 1.25 cents per pound for 4 consecutive weeks, and if during the same 4-week period, the adjusted world price (AWP) does not exceed 134 percent of the base U.S. loan rate. Payments will be made in cash or certificates to domestic users on documented raw cotton consumption and to exporters on documented export shipments during the fifth week at a payment rate equal to the difference between the U.S. price and the Northern Europe price, minus 1.25 cents per pound during the fourth week of the period.

Program Assumptions for Other Commodities

Baseline policy assumptions for selected other commodities--dairy, sugar, and tobacco--are discussed in this section. Dairy and sugar assumptions are largely based on provisions from the 1996 Farm Act and the 2000 Appropriations Act. Policy assumptions for tobacco reflect earlier legislation because the tobacco program was not included in the 1996 Farm Act.

Dairy

Dairy price supports were phased down to $9.90 per hundredweight in 1999. The 2000 Appropriations Act extended the price support program to December 31, 2000, leaving support at $9.90. Starting January 1, 2001, a recourse loan program, in which loans must be repaid with interest, is implemented for butter, nonfat dry milk, and cheddar cheese at loan rates equivalent to $9.90 per hundredweight for milk.

Sugar

The 1996 Farm Act set the raw cane sugar loan rate at 18 cents per pound and the refined beet sugar loan rate at 22.9 cents per pound. These levels are assumed in the baseline to continue through the projections.

Nonrecourse loans are available when the tariff-rate quota for sugar imports exceeds 1.5 million short tons. Sugar program loans are recourse in years when the tariff-rate quota is at or below 1.5 million short tons, but such loans convert to nonrecourse loans if the tariff-rate quota is increased above 1.5 million short tons. Processors must pay a 1-cent fee on each pound of raw cane sugar and 1.07 cents on each pound of refined beet sugar forfeited to the CCC under a nonrecourse loan.

Sugar marketing assessments were paid on all processed, domestically-grown sugar for fiscal 1997 through 1999, but were suspended through fiscal 2001 by the 2000 Appropriations Act. The baseline assumes sugar assessments will resume in fiscal 2002. Assessments on raw cane sugar marketings equal 1.375 percent of the 18 cent loan rate, 0.2475 cents per pound. Assessments on refined beet sugar marketings equal 1.47425 percent of 18 cents, 0.2654 cents per pound.

Tobacco

The major provisions of the tobacco program are included in the Agricultural Adjustment Act of 1938, as amended; the No-Net-Cost Tobacco Program Act of 1982; and the Omnibus Budget Reconciliation Act of 1993. The tobacco program was not included in the 1996 Farm Act.

Tobacco marketing quotas and allotments continue, in accordance with the Agricultural Adjustment Act of 1938. Support for flue-cured and burley tobacco is based on statutory formulas that include a 5-year moving average of market prices and a cost-of-production index. The baseline assumes a continuation of the no-net-cost assessment paid by growers and buyers to cover costs of the tobacco price support programs.

Imports of flue-cured, burley, and certain other tobaccos are covered by a tariff rate quota as authorized by GATT implementing legislation. The baseline assumes that tobacco marketing assessments on domestic producers and purchasers and on importers, which ended after crop year 1998, do not resume.

Conservation Reserve Program

The baseline assumes that the Conservation Reserve Program (CRP) will gradually build from an estimated recent level of about 32.5 million acres in fiscal 2000 to its maximum authorized level of 36.4 million acres by 2003 (see table 7). Authority to sign up and enroll acreage in the CRP is assumed to be extended after 2002 to maintain CRP acreage at 36.4 million acres. The cropping history allocation of the CRP to specific crops provided in table 7 reflects crops grown in 1998 on farms with CRP acreage. New enrollments in the CRP reflect periodic regular signups and continuous signups.

Major Trade Program Assumptions

The following assumptions are made for major U.S. trade programs.

Export Enhancement Program (EEP)

The EEP program is not currently being used, so the baseline assumes that no EEP expenditures occur in FY 2000. However, EEP expenditures are assumed to resume in the baseline starting in FY 2001. Annual quantity and expenditure levels for EEP for the remainder of the baseline are assumed to be within the limits set in the Uruguay Round Agreement on Agriculture and enacted in the 1996 Farm Act.

Dairy Export Incentive Program (DEIP)

Estimates of the quantity of dairy products exported under the DEIP and associated expenditures are formulated in the baseline within the maximum allowable expenditure and quantity levels of the Uruguay Round Agreement on Agriculture. The maximum annual expenditures for U.S. dairy product export subsidies are $144.2 million in FY 1999, $130.4 million in FY 2000, and $116.6 million in FY 2001. The baseline assumes that DEIP funding then continues at $116.6 million for subsequent years.

Export Credit Guarantee Programs

Annual program levels assumed in the baseline for GSM-102 and GSM-103 credit guarantee programs are based on forecast economic and market conditions and the expected supply/demand conditions of the countries to which GSM credit guarantees will be made available. The baseline assumes program levels of $3.792 billion in FY 2000 and subsequent years.

P.L. 480 Program

P.L. 480 program levels in the baseline for FY 2000 reflect the 2000 Appropriations Act--$155 million for Title I Credit, $21 million for Title I Ocean Freight Differential, $800 million for Title II, and no funding for Title III. These FY 1999 funding levels are then adjusted for unobligated funds from prior years and Farmer-to-Farmer Program transfers. For FY 2001, Title I Credit and Title I Ocean Freight Differential program levels are assumed at $159.678 million and $20.322 million, respectively. The Title II program level is at $837 million for FY 2001 and Title III is assumed to remain unfunded. Program levels for the rest of the baseline are assumed to increase at the general inflation rate.

Food Security Commodity Reserve

The Food Security Commodity Reserve (now the Bill Emerson Humanitarian Trust) is assumed to remain near its current level of about 2.5 million metric tons (about 93 million bushels) of wheat through the baseline. The reserve is authorized for up to 4 million metric tons of grain (wheat, rice, corn, and sorghum) to meet humanitarian food aid needs. The existing 300,000 ton release authority for urgent humanitarian relief in disasters is raised to 500,000 metric tons in the case of unanticipated need, with release of an additional 500,000 metric tons of eligible commodities allowed that could have been released but were not released in previous years. The Secretary is authorized to release eligible commodities from the reserve when supplies are so limited that eligible commodities cannot be made available for programming under P.L. 480. The 1996 Farm Act authorizes replenishment of the reserve, but does not set a specific time for replenishment. Also, funds for any commodity purchases for replenishment must be authorized in an appropriations act. The baseline assumes that funds for replenishment of the reserve through commodity purchases will not be appropriated.

Beginning in FY 2000, the Africa: Seeds of Hope Act of 1998 allows the retention and use of funds from P.L. 480 reimbursements to purchase grain to replace supplies released from the reserve. The purchases would be limited to no more than $20 million per fiscal year. CCC also

is authorized to hold money as well as commodities in the reserve. However, the baseline assumes no release of grain from the reserve.

Other Agricultural Policy Assumptions

- *Ethanol*. The federal tax credit for ethanol use is assumed in the baseline, reflecting its extension through 2007 in the Building Efficiency Surface Transportation Equity Act. Additionally, a domestic commodity industrial usage program is assumed in the baseline which increases the use of agricultural commodities in the production of ethanol.

- *Bilateral and Multilateral Agreements.* The baseline assumes full compliance with all bilateral and multilateral agreements affecting agriculture and agricultural trade. Examples include full compliance with internal support, market access, and export subsidy provisions of the Uruguay Round (UR) Agreement on Agriculture.

- *World Trade Organization (WTO)*. The baseline assumes no accession to the WTO by the former Soviet Union, China, Taiwan, or any other country not formally admitted as of November 1999.

- *EU Enlargement*. The baseline assumes no enlargement of the EU-15 to add countries of Central and Eastern Europe.

- *Asia-Pacific Economic Cooperation (APEC).* No implementation of more liberalized trade among the APEC countries is assumed.

- *North American Free Trade Agreement (NAFTA).* No expansion of NAFTA to include additional countries is assumed.

- *Export Subsidy Carryover Credit.* Beyond the current year, the baseline assumes no additional carryover to later years of unused UR agreement export subsidies.

- *Other Agricultural Policy Trends*. Agricultural and trade policies in individual foreign countries are assumed to continue to evolve along their current paths. In particular, the process of liberalizing economic and trade policies underway in many developing countries will continue.

Table 5. Production flexibility contract payments under the 1996 Farm Act

Commodity	Commodity share	1996	1997	1998	1999	2000	2001	2002
	Percent				*Million dollars*			
1996 Farm Act gross contract payments								
Wheat	26.26	1,463	1,414	1,523	1,471	1,347	1,085	1,053
Corn	46.22	2,574	2,489	2,681	2,590	2,371	1,909	1,852
Sorghum	5.11	285	275	296	286	262	211	205
Barley	2.16	120	116	125	121	111	89	87
Oats	0.15	8	8	9	8	8	6	6
Upland cotton	11.63	648	626	675	652	597	480	466
Rice	8.47	472	456	491	475	435	350	339
Total payments, unadjusted		5,570	5,385	5,800	5,603	5,130	4,130	4,008
Adjusted contract payments, before payment limitations 1/								
Wheat		1,976	1,426	1,534	1,483	1,362	1,097	1,065
Corn		1,771	3,434	2,695	2,603	2,389	1,924	1,868
Sorghum		206	347	298	288	265	213	207
Barley		140	117	126	122	112	90	88
Oats		9	8	9	8	8	6	6
Upland cotton		746	639	689	665	616	496	482
Rice 2/		472	461	498	480	442	356	346
Total adjusted payments		5,321	6,433	5,848	5,650	5,195	4,183	4,061
Projected contract payments after payment limitations and other adjustments								
Wheat		1,941	1,397	1,496	1,447	1,330	1,068	1,037
Corn		1,745	3,384	2,633	2,547	2,345	1,886	1,830
Sorghum		201	338	287	277	257	206	200
Barley		137	113	120	115	108	86	84
Oats		9	8	9	8	8	6	6
Upland cotton		699	597	637	616	571	457	443
Rice		455	448	478	466	431	348	338
Total payments		5,186	6,286	5,660	5,477	5,049	4,057	3,937

1/ Adjusted for prior-year earned deficiency payments paid in these years, repayments of unearned 1995 deficiency payments, and repayments of prior-year PFC payments. These adjusted contract payments are used for payment rate calculations.

2/ 1996 Farm Act includes additional rice payments of $8.5 million annually, FY 1997 through FY 2002.

Note: FY-1999 appropriations for agriculture provided $3.057 billion for market loss assistance, with $2.857 billion paid to farmers eligible for production flexibility payments in the previous year. FY-2000 appropriations for agriculture provided $5.544 billion for market loss assistance paid to farmers eligible for production flexibility payments in the previous year.

Table 6. Summary baseline policy variables

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Marketing assistance loan rates (Dollars per unit)												
Corn	1.89	1.89	1.89	1.77	1.63	1.63	1.70	1.83	1.89	1.89	1.89	1.89
Sorghum	1.74	1.74	1.71	1.56	1.44	1.45	1.52	1.66	1.72	1.73	1.73	1.73
Barley	1.56	1.59	1.60	1.51	1.34	1.34	1.41	1.51	1.56	1.57	1.56	1.56
Oats	1.11	1.13	1.16	1.13	0.99	0.96	1.02	1.10	1.15	1.16	1.16	1.16
Wheat	2.58	2.58	2.58	2.41	2.18	2.18	2.21	2.36	2.58	2.58	2.58	2.58
Rice	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Upland cotton	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192
Soybeans	5.26	5.26	5.26	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	5.09
Production flexibility contract payment rates (Dollars per unit)												
Corn	0.38	0.36	0.33	0.27	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Sorghum	0.45	0.44	0.40	0.32	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
Barley	0.28	0.27	0.25	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Oats	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Wheat	0.66	0.64	0.59	0.47	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
Rice	2.92	2.83	2.60	2.10	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03
Upland cotton	0.082	0.079	0.073	0.059	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057
Production flexibility contract payments (Dollars per PFC acre, average)												
Corn	32.85	31.78	29.14	23.46	22.78	22.78	22.78	22.78	22.78	22.78	22.78	22.78
Sorghum	21.87	21.09	19.34	15.55	15.10	15.10	15.10	15.10	15.10	15.10	15.10	15.10
Barley	11.28	10.83	9.95	7.99	7.76	7.76	7.76	7.76	7.76	7.76	7.76	7.76
Oats	1.36	1.30	1.20	0.96	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Wheat	19.44	18.76	17.25	13.89	13.48	13.48	13.48	13.48	13.48	13.48	13.48	13.48
Rice	119.62	115.70	106.35	85.77	83.28	83.28	83.28	83.28	83.28	83.28	83.28	83.28
Upland cotton	41.96	40.61	37.59	30.25	29.39	29.39	29.39	29.39	29.39	29.39	29.39	29.39

Note: Units for marketing assistance loan rates and production flexibility payment rates are dollars per bushel except for upland cotton (per pound) and rice (per hundredweight).

Market loss assistance payment rates, paid in FY-1999 to farmers eligible for production flexibility payments in the previous year, are: wheat, $0.33; corn, $0.187; sorghum, $0.225; barley, $0.141; oats, $0.016; rice, $1.45; and upland cotton, $0.041. Market loss assistance payment rates, paid in FY-2000 to farmers eligible for production flexibility payments in the previous year, are equal to FY-1999 production flexibility rates.

Table 7. Conservation Reserve Program acreage assumptions

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
						Million acres						
Cropping History 1/												
Corn	5.1	5.2	5.7	6.1	6.3	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Sorghum	1.2	1.2	1.3	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Barley	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Oats	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Wheat	7.6	7.5	8.0	8.5	8.8	8.9	8.9	8.9	8.9	8.9	8.9	8.9
Upland cotton	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Soybeans	4.3	4.4	4.8	5.1	5.3	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Subtotal	20.2	20.4	22.0	23.5	24.2	24.7	24.7	24.7	24.7	24.7	24.7	24.7
Fallow	2.5	2.5	2.7	2.8	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Other	7.6	7.4	7.8	8.4	8.6	8.7	8.7	8.7	8.7	8.7	8.7	8.7
Total	30.2	30.3	32.5	34.7	35.8	36.4	36.4	36.4	36.4	36.4	36.4	36.4

1/ The cropping history allocation is based on 1998 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.

Crops

Baseline projections are made in a setting in which producers of the major U.S. field crops receive some safety net assistance when prices are low--marketing loan benefits--as provided by the 1996 Farm Act. Producers of program crops, including wheat, feed grains, soybeans, rice, and upland cotton, are projected to receive these benefits for much of the first half of the baseline. In the initial years of the projections, many crops are adjusting to a number of years of large global production combined with near-term weakness in international demand associated with the global financial crisis, before moving back to a longer-term growth trend. In the longer run, more favorable global economic growth supports increases in trade and U.S. agricultural exports, although gains are somewhat muted by continued strong export competition and only moderate growth in import demand in some markets, particularly China.

The 1996 Farm Act provides producers nearly full planting flexibility to adjust supply in response to changes in returns per acre. However, marketing loan benefits also enter into acreage response decisions in the baseline projections, especially for soybeans. Marketing loan provisions of the 1996 Farm Act provide a minimum revenue per unit of production when market prices are below the loan rate. Consequently, these provisions affect planting decisions when market prices are near or below marketing assistance loan rates. The baseline assumes that loan rates for corn, wheat, soybeans, and upland cotton are based on the formula specified in the 1996 Farm Act, except loan rates for soybeans and upland cotton remain at their legislative maximums for the 2000/01 crops.

Production flexibility contract payments continue to decline over the next 3 years, 2000 through 2002. The remainder of the baseline assumes a constant level for each contract crop. Because these payments are not linked to production, they are deemed "decoupled" and considered to have minimal effects on acreage decisions.

Land Use

Land use decisions for the baseline reflect the 1996 Farm Act's nearly complete planting flexibility based on market prices, supplemented by benefits from the marketing loan provisions in years of depressed prices. Because prices for many commodities remain below their loan rate early in the baseline, marketing loan benefits influence planting decisions during those years.

Area planted to the eight major U.S. field crops (corn, sorghum, barley, oats, wheat, rice, upland cotton, and soybeans) is expected to rise to 257 million acres in 2009 (table 8), slightly less than the recent high level of plantings attained in 1996. Compared to 1996, fewer acres are planted to wheat and feed grains, but soybean plantings are larger. Aggregate crop area declines in the early years of the baseline because of lower per-acre returns (including marketing loan benefits) caused by weaker demand and larger global supplies, and does not begin to grow until 2003. Then strengthening returns lead to increasing acreage planted through the remainder of the baseline. Harvested acreage for the major crops mirrors total area planted, generally declining in the next several years before rising for the rest of the baseline.

Total feed grain area initially declines in the baseline and then increases modestly over the remainder of the projection period. Corn plantings fall for a few years in response to continued low returns, reflecting strong foreign competition and weak exports due in part to reduced Asian demand. Soybean planted area begins the baseline with record plantings of 74 to 75 million acres, as marketing loan benefits are expected to support soybean net returns (and thereby acreage) that are still comparatively better than other commodities in many areas. Then strengthening corn and wheat prices are expected to limit U.S. soybean plantings. Wheat plantings decline through 2002 as gains in yield and reductions in stocks accommodate demand growth, but additional acreage is required thereafter. Rice area is projected to decline to 3.2 million acres, as returns per acre are not sufficient to maintain acreage at the 1999 level of 3.6 million acres. Upland cotton area is projected to range from 13 to 14 million acres for 2001-2009 with competing crops anticipated to attract some acreage away from cotton through 2003.

The Conservation Reserve Program (CRP) is projected to increase from 32.5 million acres in 2000 to 36.4 million acres in 2003 and beyond, the maximum specified by the 1996 Farm Act (see CRP discussion, page 35 and table 7, page 39). Slightly over half of this increase comes from land with wheat, corn, and soybean planting history.

Crop Supply and Demand Overview

During the first 3 to 5 years of the baseline, many of the major crops adjust to a near-term weak price outlook. Even with marketing loan benefits, cropland plantings initially decline in response to low producer returns, which reflect large global supplies and strong foreign competition for many crops along with near-term weakness in world demand associated with the global financial crisis. Later in the projection period, acreage returns to production in response to growing world demand, with strengthening prices and producer returns. However, with strong export competition and moderate import demand growth in some markets tempering trade pressures, yield gains for many crops are sufficient to provide much of the needed production growth, thereby mitigating pressure on total land use.

Export markets continue to be important in projected consumption growth for many U.S. field crops. Gains in disappearance for U.S. wheat and cotton are driven by exports, with U.S. trade showing larger absolute gains and growth rates than domestic demand. Increases in use for feed grains and soybean oil also have growth rates for exports higher than for domestic markets, although absolute increases in domestic use are larger than trade gains, reflecting the relative sizes of the utilization categories. In contrast, projected consumption increases of U.S. soybeans, soybean meal, and rice are primarily driven by domestic demand. Domestic use for these crops registers larger absolute increases and growth rates than exports. Stocks-to-use ratios decline for corn, wheat, soybeans, and rice, with nominal prices rising.

Feed grain area declines through 2002, with yields accounting for most gains in production. Low feed grain prices are projected for the initial baseline years due to abundant feed grain supplies relative to use. Although domestic use continues to grow, exports recover slowly in the early years from recent low levels. In the later years of the baseline, feed grain plantings rise in response to higher producer returns resulting from growth in exports and steady gains in the domestic market. Larger livestock and poultry inventories boost feed use, while food, seed, and

industrial (FSI) use increases mainly due to higher corn sweetener and ethanol use. U.S. export gains are expected to be larger in the middle of the baseline, as competitors' stocks are reduced early in the baseline and competitors' production and competition increases later in the baseline. By the end of the baseline, stocks-to-use ratios are low and prices strengthen.

U.S. soybean planted area is expected to reach a record level of 75 million acres in 2000. The marketing assistance loan rate is assumed to remain unchanged at $5.26 per bushel for the 2000/01 crop, with marketing loan benefits supporting soybean net returns per acre that are comparably better than many other commodities. Later in the projections, strengthening corn and wheat prices are expected to limit soybean plantings and restore the stocks-to-use ratio to a more typical level. By 2009, soybean production is expected to exceed 3.1 billion bushels on 70.5 million acres harvested. U.S. soybean farm prices are projected to rise to $6.55 by the end of the baseline as supplies come into closer balance with demand. In the early part of the baseline, lower world market prices are expected to discourage foreign soybean production and the U.S. is expected to capture a larger market share of the world soybean market. Later, as U.S. soybean prices once again increase, foreign soybean output is expected to resume growth and the U.S. market share contracts. Ample soybean supplies and low soybean prices accelerate domestic crushing from 2000 to 2003, with soybean meal exports rising as high as 9.5 million tons; then a resurgence in foreign meal output scales U.S. exports back to 9 million tons by 2009. U.S. soybean oil prices are anticipated to decline from 2000 to 2002 but thereafter gradually recover as domestic supplies and demand begin to converge.

Less wheat area is needed in the early years of the baseline as reductions in stocks and gains in yield initially are sufficient to accommodate demand growth. Wheat area expands later in the baseline in response to increased demand, higher prices, and higher producer returns. Wheat acreage is expected to rise to 69 million acres by 2009. Total demand for U.S. wheat rises throughout the projection period. Per capita food use continues to rise, but at a declining rate. Feed and residual use decreases late in the baseline period as wheat prices rise relative to other feed grain prices. U.S. wheat exports rise steadily over the projection period but face greater competition from the European Union (EU) starting in 2004/05, as stronger international wheat prices and lower internal EU prices allow the EU to export wheat without subsidies.

U.S. rice plantings are projected to decline through 2007 and then expand slightly, as domestic prices are not sufficient to maintain acreage at recent levels. Contraction in U.S. rice area, coupled with small increases in yields, is expected to maintain rice production at 192 to 197 million hundredweight over the baseline. Steady growth in domestic use of rice is projected in the baseline, driven by food use, although gains will be substantially slower than in recent years. U.S. rice exports are expected to decline slowly throughout the baseline as rising domestic use accounts for a larger share of production. The U.S. exports mostly to high-quality markets, and U.S. prices are projected to rise faster than world prices, making U.S. rice exports less competitive in some markets. Slow, but steady growth in the domestic market with steady production levels is expected to cause the U.S. farm price for rice to rise from its low of $5.60 per hundredweight in 2000/01 to $8.54 per hundredweight in 2009/10.

Upland cotton area is projected to drop from about 14 million acres to about 13 million acres in the early years of the baseline, before rising gradually through the end of the projections.

Domestic mill use declines by 7 percent over the baseline due, in part, to the phase-out of the MFA quotas scheduled for 2005. In contrast, cotton exports are expected to increase 16 percent over the baseline, aided by Step 2 payments, with market share rising in the second half of the projections. Ending stocks of upland cotton initially decline but the stocks-to-use ratio remains fairly stable at 21 to 22 percent from 2002/03 to 2009/10.

Feed Grains

After an initial decline in 2000/01, feed grain production increases through the remainder of the baseline. Yield gains account for most of the increase in production, particularly in the early years. Corn is expected to continue increasing its share of total feed grain production and use. After declining in the initial years of the baseline through 2002, corn acres then slowly increase over the remainder of the projection period. However, no significant turnaround in plantings of the other feed grains is foreseen. Net returns of the other feed grains improve from the low levels in 1998/99, but continue low relative to corn through the remainder of the baseline.

Feed grain exports in the baseline are expected to grow faster than during the 1980s and 1990s, but return to the 1979 record level only by the end of the projections. Despite improved growth in global imports, the United States is projected to face strong competition throughout the baseline. Given the strength of domestic demand and the assumed new industrial usage program, total feed grain use is projected to be record high over the entire baseline.

U.S. ending stocks are projected to drop throughout the baseline period to around 20 million tons. This is below the average ending stocks of the 1990s, which was 41 million tons and much less than the 85.1 million average of the 1980s when much higher stockholding was common due to government programs. The decline in the stocks-to-use ratio increases corn prices throughout the baseline, and prices exceed $3 per bushel by 2009/10. Without a major shock from exports, increases in productivity are expected to account for about 60 percent of demand growth, with the remaining increase in supply coming from increased plantings.

Corn

The corn sector starts the baseline in a low price environment, reflecting large supplies relative to demand. At the onset of the baseline, domestic corn use is already at record high levels, and continues growing throughout the period. For many importers, the favorable impact of low prices is overwhelmed by economic hardships, so a resumption of growth for U.S. exports will largely hinge on improved economic prospects and an easing of competition from other exporters.

Corn area is projected to be fairly stable in the baseline and remain relatively large. Planted area initially declines in response to continued low prices, but as demand strengthens and prices improve, corn plantings increase later in the baseline. Corn primarily competes with soybeans for land, and is also used extensively in rotations with soybeans. Relative net returns are expected to favor soybeans over corn in the early part of the baseline. Although prices for both crops are projected to be low in the next few years, the loan rate for soybeans is relatively more favorable than that of corn. Marketing loan benefits make soybeans more attractive in some

areas as a decline in total corn plantings is initially projected with an increase in soybean acres. Most reductions in corn area are likely in more marginal producing areas, such as the South, where production risks are greater. Increasing prices are expected to bolster corn plantings beginning in 2003.

Strong yield gains for corn are projected to continue over the entire period, led by improvements in genetics as well as gains from farming practices, such as timely planting and effective input use. Corn production is projected to increase from 2000 through the end of the baseline, surpassing the previous record of 10.1 billion bushels by 2003.

Feed and residual use grows throughout the projection period, reflecting record meat production and a record number of grain-consuming animal units in the U.S. livestock sector. No significant contraction is apparent as steadily increasing production of broilers and moderate gains in hog output outweigh cyclical movements in cattle numbers. In addition, feed and residual use of the other grains, including wheat, remains low relative to earlier periods, reinforcing corn's dominant role as the leading feed grain.

Food, seed, and industrial (FSI) use of corn, which starts at a record high, increases sharply in the initial years of the projections to reflect an industrial usage program assumed for the baseline. FSI continues to grow over the entire baseline, rising at an average pace of 2 percent a year. For the two largest components, high fructose corn syrup (HFCS) and ethanol, expansion is projected to be slower than in most of the previous decade. Policies remain a critical determinant for the volume of corn used for ethanol and other proposals could drastically change the use of ethanol in fuels. Other segments of FSI use, such as food and starch use, are fairly mature and gains are largely related to population growth.

Projected exports show strong growth compared with the 1980s and 1990s, but remain below earlier peaks until the end of the baseline. Competing countries' exports are expected to keep U.S. corn exports steady the first year and allow only a modest rise in the second year of the baseline, despite lower prices. As competitors' corn stocks are reduced early in the baseline, U.S. exports recover from recent depressed levels. Annual gains are larger in the middle years and then generally increase more slowly toward the end of the baseline as foreign competitors increase corn production.

Ending stocks of corn gradually decline to around 600 million bushels. Given rising use, this results in progressively lower stocks-to-use ratios. Prices strengthen from recent lows to over $3 by the end of the projections.

Sorghum

Sorghum production is projected to grow to 635 million by 2009. This reflects an increase in plantings from 9.0 million acres to 9.7 million acres, and trend yield growth of 0.6 bushels per year. Low prices in the beginning of the baseline are expected to reduce planted acreage. By 2006, sorghum yields exceed the current record of 72.7 bushels per acre.

Since growth in both supply and demand are about equal, ending stocks are projected to remain about the same throughout the projection period. Steady gains occur in exports, largely fueled by projected increases in shipments to Mexico. Only modest increases in feed and residual use are projected, keeping it lower than most earlier periods. An increase in ethanol use because of the industrial usage program pushes food, seed and industrial use up early in the baseline. Steady increases in the industrial use of sorghum, stemming from more use for ethanol, are projected to keep this category record high. Prices for sorghum are projected to stay in line with historical price relationships, within 89 to 93 percent of the corn price.

Barley

Barley production increases modestly over the baseline, reaching 355 million bushels by 2009. Planted acreage remains close to its historical lows, increasing 6 percent over the period, but with no major turnaround in barley's ability to compete for land. Yields per acre are expected to increase 9 percent over the period, in line with trend increases.

In contrast to sorghum, most of the increase in barley supply goes to feed and residual use. Food and industrial use, dominated by malting for brewing beer, is expected to show no growth. Barley exports are projected at a relatively high 70 million bushels per year, around the maximum quantity of subsidized feed grain exports permitted under the UR agreement. Imports are expected to grow to 55 million bushels and remain constant. The average barley price is projected to rise through the baseline, reaching $2.80 per bushel by 2009/10.

Oats

The declining long-term trend in oat acreage is projected to bottom out after 3 years and then stabilize. The crop will remain important in some rotations, and as a cover crop. Production is projected to range from 145 to 150 million bushels over most of the period, while total use starts at 254 million bushels, increasing to 273 million. Imports rise from 105 million bushels to 125 million, making up the difference between production and use. Imported oats are particularly important to food and specialty feed use. Food use grows very slowly in line with population increases. Feed and residual use ranges from 155 million bushels to 165 million. Again, reflecting the general level of corn prices, oat prices begin the projection period at low levels and then increase to $1.80 per bushel by 2009/10.

Wheat

For the first several years in the baseline less wheat area is needed as burdensome stocks are reduced, but growth of wheat demand is greater than gains in yields for the rest of the projections, requiring additional area to be planted to wheat. During the early years of the baseline, stocks-to-use ratios are expected to exceed 40 percent but prices strengthen as these ratios decline throughout the remainder of the baseline. Once supplies are brought into balance with disappearance, prices received by farmers are expected to strengthen and result in higher market net returns for wheat producers in 2003/04 and later years. Farmers are expected to respond to increasing prices by moving more land into wheat production. Acreage seeded to wheat is projected to increase to 69 million acres by 2009.

Domestic use of wheat is projected to increase gradually through most of the baseline. Food use is the domestic use component with growth potential. Consumption of wheat for food is expected to increase about 10 million bushels each year because of population growth and small increases in per capita food use of wheat products as personal incomes rise during the baseline period. Feed and residual use is expected to remain stable at about 225 million bushels annually until 2007/08. Rising wheat prices, relative to competing feed grains, beyond that point will reduce wheat feed and residual use to about 200 million bushels.

Global wheat import demand and U.S. exports are projected to grow faster than in the 1980s and 1990s. Marketing opportunities for the United States increase early in the baseline as competition from the EU declines because of limits on the amount of subsidized wheat it can export. By 2004/05, however, the combination of higher global wheat prices and declining internal EU prices will allow the EU to export wheat without subsidies. This, together with tighter supplies and rising prices, limits growth in U.S. exports for a few years. Then, U.S. wheat exports strengthen again in the last years of the baseline reflecting, in part, an assumption that the EU raises their set-aside rate to limit the buildup of coarse grain stocks. World wheat trade will benefit from improved economic conditions in Asian importing nations during the baseline period.

Rice

U.S. rice plantings are projected to decline moderately through most of the baseline, as domestic prices will not be high enough to maintain acreage at 1999 levels. The bulk of the contraction is expected to occur on the Gulf Coast where rice acreage has declined for two decades due to high costs and urban sprawl. Some shifting from rice to soybeans in the Delta is projected as well. After 2007, U.S. plantings are expected to expand slightly, primarily in the Delta. From 1997 to 1999, U.S. rice acreage expanded to near-historic levels with the Delta accounting for the bulk of the expansion.

Contraction in U.S. rice area coupled with small increases in yields will maintain rice production between 192 million to 197 million hundredweight over the baseline period, well below the 1999 record of more than 210 million. U.S. yield growth is projected to be about 0.5 percent annually due to better farm management practices and some improvements in rice varieties. This growth is less than achieved in the 1980s and early 1990s when modern high-yielding varieties were being adopted.

U.S. rice imports are projected to expand 3 percent annually in the baseline, reaching 14.4 million hundredweight by 2009/10. Imports' share of domestic use is expected to fractionally expand over the decade. This is a significant slowdown from growth rates of the 1980s and most of the 1990s. U.S. rice imports are predominantly high quality, specialty varieties not currently grown in the United States--mostly Thai Jasmine as well as Basmati from India and Pakistan.

Exports are projected to slowly decline as rising domestic use accounts for a larger share of production. The export share of total use is projected to drop from 42 percent in 1999/2000 to 33 percent in 2009/10. Total domestic use is projected to rise about 2.2 percent a year, reaching

almost 135 million hundredweight by 2009/10. Food use will account for virtually all of the growth in domestic use, exceeding 114 million hundredweight by 2009/10. A growing share of the U.S. population from Asia and Latin America, a greater emphasis on healthier life styles, and greater use of rice in processed foods account for most of the expansion in domestic food use of rice.

The pace of food use expansion is projected at about 2.5 percent, slower than the growth of more than 4 percent annually achieved during the 1980s and the first half of the 1990s. A larger share of meals eaten away from home, increasing popularity of precooked meals, a premium on minimal preparation time, competition from other side dishes at restaurants, and the growing popularity of meals that can be eaten on the run are behind the modest slowdown in expansion in food use of rice.

Brewers' use of rice, which has been virtually stagnant since the late 1980s, is projected to expand only fractionally over the next decade, reaching 16.3 million hundredweight by 2009/10. Stronger expansion in brewers' use of rice is unlikely because growth in per capita beer consumption is not foreseen and the greater popularity of light beers use less rice than regular beers. Seed use, essentially a function of planted area, will slowly decline through 2007 as rice plantings contract.

U.S. rice exports are projected to slowly decline over the baseline. With U.S. rice production essentially steady, expanding domestic use reduces supplies available for export. U.S. prices are projected to rise faster than world prices, making U.S. rice exports less competitive in some international markets.

The United States exports mostly to high-quality markets, rarely competing with the low cost Asian exporters in lower quality milled rice markets. However, Thailand and India compete with the United States in certain high quality, indica markets such as the Middle East and South Africa. And China competes with the U.S. for japonica sales to Japan. Australia, Egypt, and the EU also compete in the international japonica market. In addition, 20 to 30 percent of U.S. rice exports are rough rice, mostly going to Latin America.

Domestic prices are expected to slowly rise over the next decade as international prices recover and U.S. ending stocks contract. International prices are expected to rise due to expanding world rice trade and some shifting to higher quality rice by importers. Ending stocks slowly decline from 57 million hundredweight in 2001/02 to 30.5 million in 2009/10. This allows the stocks-to-use ratio to drop from 27.7 percent in 2001/02 to 14.4 percent in 2009/10, about equal to the average for the past 5 years.

Steady demand growth in the domestic market with a nearly constant level of production will cause season-average U.S. rice farm prices to rise annually, from a projected $5.60 per hundredweight to $8.54 per hundredweight. Rice producers' net returns are projected to decline an average of about 9 percent a year through 2005/06, falling to $42 per acre. Returns are then projected to rise through the end of the baseline, primarily driven by higher prices, although they remain well below levels achieved in 1996/97 to 1998/99.

Upland Cotton

With the continuation of planting flexibility as established in the 1996 farm legislation, upland cotton area will remain responsive to price and income signals. In 2000, upland planted area is expected to remain near last season's level in response to cotton's expected favorable returns relative to other commodities. Production is expected to range between 17 and 18 million bales, assuming a yield of 640 pounds per harvested acre and normal acreage abandonment.

Demand for upland cotton in 2000/01 is expected to expand more than 10 percent as the world rebounds further from the recent financial crisis, with demand for raw cotton and cotton textile products improving. U.S. upland cotton demand is projected to increase to 17 million bales, but remain below the historically high levels of the mid-1990s.

Ending stocks for upland cotton in 2000/01 are projected to rise modestly from the beginning level to 4.9 million, the highest since 1988/89, as production more than offsets expected demand. Market returns over variable costs are expected to rebound from the low levels of 1999/2000, but will likely remain below those of the two preceding seasons.

For crop years 2001 through 2009, upland area is projected to range between 12.8 million and 13.8 million acres as competing crops are anticipated to attract some acreage away from cotton that has moved to cotton over the previous two seasons. Increases in productivity are expected to nearly keep pace with growth in use. Projected area incorporates average abandonment of about 7.5 percent per year and average yield increases of 4 pounds per year. Upland cotton yields reach 676 pounds per harvested acre by 2009, below the 705-pound record produced in 1994. With yields rising modestly, projected production during crop years 2001 through 2009 ranges from 16 to 17.5 million bales. Growth in production and demand are projected to about offset each other.

Demand for U.S. upland cotton is projected to decline slightly during the first several years of the baseline. However, with decreases in U.S. production, stocks are worked down to more normal levels. By 2005/06, steady growth of 1 percent annually pushes demand for U.S. upland cotton back to 17.4 million bales by the end of the baseline period.

Upland mill use is expected to remain fairly stable, near 10 million bales, during the first half of the baseline as structural adjustments in the U.S. textile and apparel industry continue in preparation for the full phase-out of the MFA quotas scheduled for 2005. By 2005/06, the liberalization of restrictions on cotton textile import quotas is likely to result in larger imports, primarily apparel, from lower-wage developing countries. Increases in cotton textile imports are projected to more than offset larger textile exports. As a result, U.S. upland mill use is projected to decline about 1 percent per year beginning in 2005/06, declining to 9.4 million bales by the end of the baseline.

Exports of upland cotton are projected to range between 6.5 and 8 million bales during the baseline. Modest declines in exports are projected during the first several years. After stabilizing in 2004/05, however, upland exports increase over 4 percent annually for the remainder of the projections. More than offsetting the decline in mill use, U.S. exports are

projected to supply a large share of the long-term growth expected in foreign consumption. World trade is projected to expand, averaging about 2 percent annually over the baseline period. U.S. market share falls to about 24 percent in 2004/05 before rising steadily to reach 27 percent by 2009/10. Step 2 payments--reauthorized in October 1999--are assumed to continue throughout the baseline period, aiding the increase in U.S. cotton exports.

Ending stocks of upland cotton decline from the 4.8 million bales projected at the end of 2001/02, falling to 3.4 million bales by 2003/04 before rising slightly during the last half of the baseline to 3.9 million. As a result, the stocks-to-use ratio after 2001/02 ranges from 20 to 22 percent.

Soybeans

U.S. soybean planted area is expected to set a new record level in 2000 of 75 million acres, somewhat above the 1999 record of 74 million acres. Marketing loan benefits are expected to support soybean net returns (and thereby acreage) that are comparatively better than other commodities in many areas. Then, strengthening corn and wheat prices limit U.S. soybean plantings. This reduction in soybean plantings restores the stocks-to-use balance to a more typical level, allowing for subsequent increases in area planted consistent with demand growth. By 2009, soybean production is expected to exceed 3.1 billion bushels on 70.5 million acres harvested.

Projected declines in soybean prices through 2001/02 assume normal trend growth in soybean yields by U.S. and foreign producers. Continued expansion of narrow-row seeding practices and soybean variety improvements will promote annual yield growth of 0.4 to 0.5 bushels per acre in the United States. Total demand does not increase enough to prevent stocks accumulating to over 600 million bushels. After falling to a low of $4.15 per bushel in 2001/02, prices do not exceed the loan rate again until 2004/05. U.S. soybean farm prices are projected to rise to $6.55 by the end of the baseline as supplies come into closer balance with demand. For the next few years, loan deficiency payments or marketing loan gains (which cover the deficit between the posted county price and the CCC loan rate) will supplement soybean revenue from farm marketings. However, soybean net returns are not expected to match the 1997/98 level until about 2006/07.

Early in the baseline, lower world market prices discourage foreign soybean production. Projected U.S. soybean exports increase to a record 1.05 billion bushels, helping the United States capture a larger share of the world soybean market. When prices firm, foreign soybean output should resume growth, with U.S. exports slipping to near 1 billion bushels by the end of the baseline.

Similarly, ample soybean supplies and low soybean prices substantially accelerate domestic crushing from 2000/01 to 2003/04. Subsequent yearly increases are expected to moderate. The crush pace will be largely determined by world demand for soybean meal and the livestock that consume it. The average price for soybean meal is projected to decline in 2000/01 and remain relatively low for several years. Consequently, U.S. soybean meal exports should gain at the expense of foreign competition, climbing to about 9.5 million short tons in 2003/04. In ensuing

years, U.S. soybean meal prices are anticipated to strengthen because of slowing supply growth and continued growth in domestic soybean meal consumption (particularly spurred by rising poultry and pork exports). A resurgence in foreign meal output scales back U.S. exports to 9 million tons by 2009/10.

Soybean prices are pressured early in the baseline by the lowest values for soybean oil since 1971. U.S. soybean oil prices are anticipated to decline to 15.3 cents per pound in 2002/03. As domestic supplies and demand begin converging again, oil prices gradually recover. Domestic disappearance of soybean oil is expected to rise at a relatively steady rate, reaching approximately 19.5 billion pounds by 2009/10. U.S. exports are expected to peak near at 3 billion pounds in the middle years of the baseline, but then decline as moderating crush and domestic needs begin to tighten U.S. soybean oil supplies available for export and world palm oil production strengthens.

Sugar

The U.S. sugar baseline through FY 2010 is affected by 7 major factors: (1) larger sugar crop acreage due to low producer prices in the short-to-medium term for alternative crops to both sugar beets and sugarcane; (2) productivity growth in producing refined beet sugar and raw cane sugar; (3) moderating sweetener consumption growth in the next few years; (4) the minimum level of the sugar tariff-rate quota mandated by the World Trade Organization (WTO); (5) the increase of duty-free imports from Mexico as specified in the side-letter agreement to the North American Free Trade Agreement (NAFTA); (6) high-tier tariff imports of sugar from Mexico; and (7) the U.S. sugar program as set out in the 1996 Farm Act.

Low Prices for Alternative Crops to Sugar Beets and Sugarcane

Low prices for soybeans, corn, wheat, barley, and rice, as well as cattle have reduced producer returns for these alternatives commodities which compete with sugar crops for land use, leading to increases in acreage for the sugar crops for the fiscal year (FY) 2000. Beet sugar production is forecast at a record high and raw cane sugar production is projected to increase over 7 percent from the previous year.

Low prices for alternative crops are expected to persist through FY 2000 and will likely influence sugar beet and sugarcane acreage in FY 2001. It is expected that total sugar beet acreage will be slightly above the total for FY 2000. Sugarcane acreage is expected to increase in Louisiana and in Florida.

Sugar Productivity Increases

Well-established trend growth patterns in sugar per harvested acre are expected to continue throughout the baseline. For sugar beets, it is projected that sugar per acre will grow at about 0.015 ton per year. The yield in FY 2010 is projected to be 3.26 tons per acre, or about 6.9 percent higher than the realized 3.05 tons per acre in FY 1999. Sugar from desugared molasses is expected to constitute about 7.6 percent of total beet sugar in FY 2010, up from the 5 to 6 percent range projected in the earlier years of the baseline.

Louisiana sugarcane yields are expected to continue climbing at least through FY 2003. Yields have been climbing steadily since the mid-1990s, as a greater portion of crop has been constituted by the high-yielding variety LCP85-384. It is estimated that LCP85-384 constitutes about 60 percent of the crop in FY 2000. This portion should continue to climb, eventually producing an anticipated yield of 38 tons an acre, an increase of over 8 tons per acre since FY 1999.

Sugar per acre is projected to increase in both Louisiana and Florida. The increase in the Louisiana sugarcane yield produces a direct increase to sugar yield per acre. Continuing improvements in other growing and milling operations produce a growth of 0.027 tons per acre each year. The projected sugar yield in FY 2010 is 4.55 tons per acre, an increase of over 20 percent from that projected for FY 2000. The Florida sugar yield is expected to grow about 0.026 tons a year. However, Florida sugarcane yields are not likely to increase much as acreage shifts from the rich muck area to acreage on lower-yielding sandy soils.

Moderating Sugar Deliveries

Sugar deliveries have grown about 11.8 percent since FY 1992 for a compounded yearly growth rate of over 1.6 percent. This rate is expected to steadily decline throughout the projection period, converging to slightly over 1.3 percent 2010. Sugar deliveries are projected to be 11.805 million short tons, raw value (STRV) by FY 2010. Although the rate of increase is declining, refined sugar consumption per capita in FY 2010 is projected at about 74 pounds, an increase of over 5 pounds from 68.9 pounds per capita in FY 1999.

WTO Minimum Access TRQ for Sugar

For FY 2000, estimated sugar import needs covered by the WTO are less than the minimum access requirement (see box, page 53). During the remainder of the baseline period, U.S. sugar production is projected sufficiently high to make the 14.5 percent ending stocks-to-use ratio target difficult to attain, given the minimum access requirement. Also, additional imports from Mexico (described below) make target attainment even less likely. Therefore, for FY 2001 through FY 2010, it is assumed in the baseline that the sugar TRQ will be at the minimum access quantity of 1.256 million STRV.

Low-Duty Sugar from Mexico

For the first 6 years of NAFTA, Mexico is entitled to duty-free access for sugar exports to the United States in the amount of its projected net surplus production, up to a maximum of 25,000 metric tons, raw value (MTRV). Under the terms of a side-letter agreement to the NAFTA, Mexico will have duty-free access to the U.S. market from FY 2001 to FY 2007 for the amount of its surplus, up to a maximum of 250,000 MTRV. Mexico can ship its sugar in either raw or refined form. In FY 2008, Mexico will have duty-free access with no quantitative restrictions.

On October 1, 1999, USTR allocated 27,558 STRV (25,000 MTRV) of the refined sugar TRQ for FY 2000 to Mexico to fulfill obligations under the NAFTA. Separate from NAFTA, an

additional 3,256 STRV of refined sugar were allocated to Mexico as part of its refined sugar allocation under the WTO minimum access.

Beyond FY 2000, the baseline assumes that Mexico will be a net surplus producer in excess of 250,000 MTRV from FY 2000 through FY 2007. It is projected that Mexico will export the 250,000 MTRV (276,000 STRV) in each year. In FY 2008 Mexico will be entitled to ship sugar in the United States duty-free without quantitative restriction. It is projected that Mexico will ship all its available exportable sugar to the United States in quantities above 1 million short tons.

High-tier Tariff Sugar from Mexico

The NAFTA specifies a declining high-tier tariff schedule for raw and refined sugar over the transition period to duty-free sugar trade in 2008. For FY 2000 the raw sugar tariff is 12.09 cents a pound, and the refined sugar tariff is 12.81 cents a pound. The raw sugar tariff drops about 1.5 cents each year, and the refined sugar tariff drops about 1.6 cents a year. Both rates reach zero in FY 2008.

The economic incentive for Mexico to export high-tier tariff sugar exists if a price threshold (defined below) is less than or equal to the U.S. sugar price. The threshold is equal to the sum of the world price of sugar (No.11 New York Contract), the high-tier NAFTA tariff rate, unit marketing costs (about 1.1 cents a pound for raw sugar), plus any marketing premium deemed desirable by the Mexican Government as a precondition for its issuing "certificates of origin" which are necessary for the entry of the sugar into the United States. The idea behind the marketing premium concept is that the Mexican Government does not want sugar exports to undermine the U.S. sugar market to the longer-term detriment of Mexican sugar interests. It is projected that the marketing premium is equal to $30 a metric ton, or 1.36 cents a pound. This premium is assumed to hold through FY 2007.

The threshold price is compared to the U.S. price for entry in Gulf ports. This U.S. price runs about 1 cent lower than the No. 14 New York contract price. If the threshold is below the U.S. Gulf price, then Mexico is presumed to export sugar to the United States up to that point where the marginal returns from exporting to the U.S. and the world markets are equalized. If the return to exporting to the United States is, at all levels, higher than shipping to the rest of the world, then Mexico ships all exportable sugar to the U.S. market.

The world price is presumed to equal 6.5 cents a pound in FY 2000, 7.5 cents a pound in FY 2001, 8.0 cents a pound in FY 2002, and then at 8.5 cents a pound for the remainder of the baseline. As the NAFTA high-tier tariff decreases over the course of the baseline, the incentive to ship to the United States becomes greater, especially after FY 2003 when the world price is assumed to stabilize at 8.5 cents a pound.

An important concern for projecting high-tier tariff imports is the amount of sugar available in Mexico for export. If the supply of exportable sugar is sufficiently high, then Mexican sugar enters until the U.S. sugar price is the same as (or very close to) the threshold price. The result is that U.S. price is only separated from the world price by Mexican marketing costs, the price

The FY 2000 Minimum Access Sugar TRQ

As part of the Uruguay Round Agreement on Agriculture (URAA) negotiated in the General Agreement on Tariffs and Trade (GATT)**,** the United States agreed to maintain or bind a minimum annual low-duty import level of 1.256 million STRV. Of the total, 24,251 STRV are reserved for refined sugar. The minimum access requirement became part of the framework of the World Trade Organization that replaced the GATT under terms set out in the URAA.

The administrative approach for setting the sugar TRQ during FY 1997 through FY 1999 used supply and utilization projections published in USDA's September *World Agricultural Supply and Demand Estimates* (*WASDE*) report to determine the level of the sugar TRQ for the fiscal year set to begin in the following October. The TRQ level was set so that the projected ending stocks-to-use ratio would match a target level of about 14.5 percent. The raw and refined sugar TRQs, however, would have to be at least equal to, or greater than, a minimum level of 1.256 million STRV.

FY 2000 projections complicated implementing of the administrative approach. With total use projected at 10.425 million STRV, ending stocks would have to equal 1.512 million STRV in order to achieve an ending stocks-to-use ratio of 14.5 percent. Total supply excluding the TRQ is projected at 11.096 million STRV (the sum of projected beginning stocks, production, and non-TRQ imports), which is 671,000 STRV above projected total use. The difference between target ending stocks of 1.512 million STRV and 671,000 STRV would be the level of the sugar TRQ at 841,000 STRV, which is below the GATT minimum of 1.256 million STRV.

The raw sugar TRQ for FY 2000 was announced on November 2, 1999. It was set at 1,501,348 STRV, but only 1,251,123 STRV were made available to the U.S. Trade Representative (USTR) for entry into the U.S. Customs Territory. The unallocated TRQ quantity of 250,225 STRV is being held in reserve to be made available to USTR for allocation if the USDA determines that it is needed. It is not anticipated that it will be needed. The refined sugar TRQ for FY 2000 was announced on October 1, 1999, and set at 66,139 STRV.

premium, and a declining NAFTA high-tier tariff rate. If Mexican export potential is limited and the threshold price is initially below the U.S. price, then the additional imports from Mexico may not reduce the U.S. price enough to equal the threshold price.

Export potential can be limited on both the supply and demand sides in Mexico. It is currently projected that Mexican sugarcane acreage will increase about 1 percent a year, and that Mexican sugar yield per hectare will continue its upward trend growth of about 1.3 percent a year. Lower than projected growth is possible given that several large sugar concerns in Mexico are heavily indebted and a significant number of sugar factories operate at high costs.

A larger area of concern is the degree to which the Mexican soft drink and food processing industries shift from using sugar to high fructose corn syrup (HFCS). The baseline assumes that restrictions (i.e., countervailing duties) on HFCS imports into Mexico from the United States will

continue. It is projected that HFCS will constitute 25 percent of the sweetener demand by the soft drink industry, and 20 percent by the food processing sector. However, these shares could increase dramatically in a very short period of time. The resulting reductions in sugar demand could lead to more sugar being available for export on a one-to-one basis.

U.S. Sugar Loan Program

Under the 1996 Farm Act, the U.S. sugar program provides for USDA to make loans available to processors of domestically grown sugarcane at a rate of 18 cents per pound and to processors of domestically grown sugarbeets at a rate of 22.9 cents per pound for refined beet sugar. Sugar loans are issued as nonrecourse loans as long as the raw sugar TRQ is set higher than 1.5 million STRV. The nonrecourse aspect means that when the loan matures, the USDA must accept sugar pledged as collateral as payment in full in lieu of cash repayment of the loan, at the discretion of the processor. Sugar beet and sugarcane processors who receive loans are required to make minimum payments at levels established by USDA for all sugar beets and sugarcane received from growers.

As discussed in the box (page 53), the raw sugar TRQ for FY 2000 was established at 1.502 million STRV, above the nonrecourse trigger. On November 5, 1999 the USDA announced that nonrecourse loans will be available in FY 2000 for eligible sugar beet and sugarcane processors. For FY 2001 through 2010, it is projected that the raw sugar TRQ that includes the duty-free sugar from Mexico under NAFTA will be higher than the 1.5 million STRV trigger, implying that the USDA will make nonrecourse loans available for eligible sugar beet and sugarcane processors.

Tobacco

Tobacco leaf grown in the United States is primarily used for domestic manufacture of cigarettes and for exports to other countries for cigarette production abroad. As U.S. cigarette output declined in recent years, manufacturers have needed less leaf and their purchase intentions have plummeted. Additionally, exports of leaf have declined slightly and loan stocks have accumulated. The result has been lower marketing quotas for flue-cured and burley tobacco. This trend is likely to continue. Cigarette consumption is expected to decline and expenses associated with litigation and settlement will push prices up. In the next 2 years, Federal excise taxes will increase 15 cents per pack, putting additional pressure on prices. Manufacturers are shifting cigarette production overseas for markets in other countries, instead of producing the cigarettes domestically. In addition, greater use of imported tobacco leaf in U.S. cigarette production could compound the erosion in demand for U.S. tobacco.

Significant stocks of flue-cured and burley tobacco, along with stagnant exports and declining purchase intentions will continue to force quotas down. Marketing quotas for flue-cured and burley are set by totaling (1) intended purchases by domestic cigarette manufacturers from the previous crop; (2) average exports for the most recent 3 marketing years; and (3) an adjustment to maintain loan stocks at the specified reserve-stock level of 15 percent of basic quota, or a minimum of 100 million pounds of flue-cured or 50 million pounds of burley. This amount may be adjusted by up or down by a maximum of 3 percent by the Secretary of Agriculture.

In the near-term, the combination of reduced manufacturer purchase intentions and high stocks will dampen quotas for both flue-cured and burley. Cigarette consumption is likely to continue declining for the next decade, further eroding demand for leaf. Quotas will continue to fall. Imports are expected to remain steady for 4 years and then increase annually through 2009. Export markets for both flue-cured and burley are expected to tighten as quality and competitiveness of foreign-produced tobacco rises and global cigarette consumption falls.

Tobacco yields remain constant throughout the baseline. Poundage quotas reduce incentives to raise production per acre. Prices for U.S. grown tobacco rise in correspondence with increases in the support price which is based in part on changes in production costs.

Horticulture

The farm value of U.S. horticultural production is projected to reach $40 billion in 2000, up an estimated 1 percent from 1999 and 9 percent above 1998. Increases are expected in many industries with the major exception of the nut sector, where value will likely decline significantly in 2000 following a record year in 1999. The value of horticultural production is projected to increase between about $1.2 billion and $1.6 billion annually during 2001-2009. This is annual growth rate of between 2 to 4 percent.

Export markets continue to be an important component to the success of the U.S. horticultural sector. For many of the individual fruit and vegetable industries, the growth in per capita domestic consumption appears to have slowed somewhat in the past few years, adding to the importance of export demand in realizing increased production and revenues in the future. Export sales are projected to generate an average of 23 percent of U.S. horticultural production value during 2000-2009, up from the 1990-99 average of 21 percent. Calendar-year exports for 1999 are forecast down less than 1 percent from 1998, but are expected to rebound in 2000, approaching $9 billion. Export growth is projected at about 4 percent per year from 2001-09. At that pace, U.S. horticultural exports would be about $13.1 billion by 2009. However, the U.S. will remain a net importer of horticultural products, with total import value increasing an average of 4 percent annually through 2009.

Growth in exports will largely be tied to continuing overall world economic growth. As countries become wealthier and average incomes rise, demand for high-valued commodities including fruits and vegetables are expected to increase. The effect of income growth is even more pronounced in developing countries, where individuals and families are more likely to spend larger shares of their new income on food items. Generally, as this income expands, so too does the variety of food items that are purchased. During the baseline period, per capita income is expected to grow at an even faster rate in transition and developing economies than in the U.S. and other developed economies. In addition, many Western-style food service industries that feature various produce commodities on their menus are expected to continue expanding in several developing areas--particularly the Pacific Rim and South America. This will likely mean an increasing share of horticultural exports will be destined for these regions over the next decade.

Potato production for 1999 is forecast up 1 percent from a year earlier, and 3 percent above 1997. Despite the larger crop, prices are expected to improve somewhat in the coming year as demand for potatoes for processing remains strong and the overall quality of the crop is improved from a year ago. Improving economies in Asian-Pacific Rim countries should also help boost processed potato exports in the year 2000 and beyond. Domestic demand for potatoes and potato products is expected to increase by 1.9 percent annually through 2009, while domestic production is expected to increase an average of 2 percent a year. Despite the similar projected growth rates in domestic consumption and production, exports are expected to continue to increase as are imports of frozen french fries from Canada.

Domestic demand for other fresh-market vegetables is expected to increase an average of 2.4 percent annually during 2000-2009. Per capita consumption is projected to increase about 1.6 percent a year, while annual population growth is projected at slightly less than 1 percent. Increasing consumer awareness of the importance of fresh produce in a healthy diet, combined with increasing product diversity and availability, should help boost domestic consumption. During this 10-year period, U.S. production of fresh vegetables is expected to increase an average 2.1 percent per year. Exports should continue to increase, but will likely be outpaced by imports. Imports will continue to play an increasingly important role in domestic supply of fresh vegetables.

Fruit and nut production in 2000 is expected to increase by nearly 8 percent from 1999, led primarily by a recovery in the orange crop, which is 23 percent above a year earlier when excessive rains and heat hit Florida and a December freeze damaged the California crop. For the remainder of the baseline (2001-2009), however, fruit and nut production is expected to increase an average of about 2 percent per year. Growth in citrus production may slightly outpace growth for non-citrus fruits. On the demand side, domestic per capita consumption of fresh fruits and nuts is expected to increase by less than 1 percent per year. This points to the importance of continuing growth in fruit and nut exports, which are projected to increase about 5 percent annually during 2000-2009. However, despite increased exports, the U.S. will remain a net importer of fresh fruits.

The domestic use of fruits and vegetables for processing (excluding potatoes, sweet potatoes, pulses, and mushrooms) is projected to increase during 2000-2009 by an average of 1.4 percent a year, with processed fruit consumption gaining at a slightly faster pace than processed vegetables. The processed fruit category includes juices and wine, which account for a little over 50 percent of total fruit production. Processed fruit and vegetable exports are likely to continue to increase between 5 and 7 percent annually for the next decade. Export potential for virtually all processed fruit and vegetable categories looks strong with perhaps the best prospects for wine and processing tomatoes. Although production for processing tomatoes is projected to decline in 2000, this is due primarily to record-shattering production in 1999 and a likely accumulation of stocks on hand at planting in the spring of 2000. Production of processing tomatoes may decrease slightly again in 2001, but this is not certain. Strong domestic demand and surging export demand will likely spur increased production for the remainder of the baseline period (2002-2009), and may boost processed tomato production above current baseline forecasts.

Table 8. Planted and harvested acreage for major field crops, baseline projections

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
						Million acres						
Planted acreage, 8 major crops												
Corn	80.2	77.6	77.0	76.5	76.0	78.5	79.0	79.5	79.5	79.5	80.0	80.0
Sorghum	9.6	9.3	9.0	9.0	9.3	9.3	9.3	9.4	9.5	9.6	9.6	9.7
Barley	6.3	5.2	5.4	5.4	5.4	5.4	5.5	5.5	5.6	5.6	5.7	5.7
Oats	4.9	4.7	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Wheat	65.8	63.0	62.0	62.0	61.0	61.5	63.0	64.0	65.0	66.5	68.0	69.0
Rice	3.3	3.6	3.4	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2
Upland cotton	13.1	14.3	14.4	13.8	12.8	12.9	13.0	13.1	13.2	13.3	13.4	13.4
Soybeans	72.0	74.1	75.0	74.0	72.8	71.5	70.5	70.3	70.8	71.3	71.8	71.5
Total	255.2	251.8	250.8	248.6	245.2	246.9	248.1	249.5	251.3	253.5	256.2	257.0
Harvested acreage , 8 major crops												
Corn	72.6	70.9	70.3	69.9	69.4	71.9	72.4	72.9	72.9	72.9	73.4	73.4
Sorghum	7.7	8.5	7.8	7.8	8.1	8.1	8.1	8.2	8.3	8.4	8.4	8.5
Barley	5.9	4.8	5.0	5.0	5.0	5.0	5.1	5.1	5.2	5.2	5.3	5.3
Oats	2.8	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Wheat	59.0	54.1	54.1	54.1	53.3	53.7	55.0	55.9	56.7	58.2	59.5	60.4
Rice	3.3	3.6	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.1	3.1	3.2
Upland cotton	10.4	13.1	13.2	12.8	11.8	11.9	12.0	12.1	12.2	12.3	12.4	12.4
Soybeans	70.4	72.8	74.0	73.0	71.8	70.5	69.5	69.3	69.8	70.3	70.8	70.5
Total	232.1	230.3	230.2	228.4	225.2	226.8	227.7	229.1	230.7	232.8	235.3	236.1

Table 9. Selected supply, use, and price variables for major field crops, baseline projections

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Yields 1/												
Corn	134.4	134.5	135.5	137.2	138.9	140.6	142.3	144.0	145.7	147.4	149.1	150.8
Sorghum	67.3	70.1	69.5	70.1	70.7	71.3	71.9	72.5	73.1	73.7	74.3	74.9
Barley	60.0	59.2	61.2	61.8	62.4	63.0	63.6	64.2	64.8	65.4	66.0	66.6
Oats	60.2	59.7	59.9	60.2	60.5	60.8	61.1	61.4	61.7	62.0	62.3	62.6
Wheat	43.2	42.7	41.8	42.1	42.4	42.7	43.0	43.3	43.6	43.9	44.2	44.5
Rice	5,669	5,929	5,920	5,951	5,983	6,016	6,048	6,081	6,116	6,150	6,180	6,209
Upland cotton	619	581	640	644	648	652	656	660	664	668	672	676
Soybeans	38.9	36.7	40.0	40.5	41.0	41.5	42.0	42.5	43.0	43.4	43.8	44.2
Production 2/												
Corn	9,761	9,537	9,525	9,590	9,640	10,110	10,305	10,500	10,620	10,745	10,945	11,070
Sorghum	520	596	540	545	575	580	580	595	605	620	625	635
Barley	352	282	305	310	310	315	325	325	335	340	350	355
Oats	166	147	150	150	150	145	145	145	150	150	150	150
Wheat	2,547	2,308	2,260	2,278	2,260	2,293	2,365	2,420	2,472	2,555	2,630	2,688
Rice	188.1	211.7	196.7	196.9	196.2	195.8	195.3	195.1	193.5	192.2	193.4	195.9
Upland cotton	13,476	15,846	17,600	17,200	15,900	16,200	16,400	16,600	16,900	17,100	17,400	17,500
Soybeans	2,741	2,673	2,960	2,955	2,940	2,925	2,920	2,945	3,000	3,050	3,100	3,115
Exports 2/												
Corn	1,981	1,925	1,925	1,950	2,025	2,100	2,175	2,250	2,300	2,350	2,400	2,475
Sorghum	197	200	215	215	215	220	220	220	225	230	235	240
Barley	28	30	70	70	70	70	70	70	70	70	70	70
Oats	2	2	2	2	2	2	2	2	2	2	2	2
Wheat	1,042	1,100	1,125	1,150	1,200	1,250	1,300	1,325	1,375	1,425	1,475	1,525
Rice	83.6	82.0	87.0	87.0	87.5	87.0	85.0	82.0	79.0	76.0	73.0	71.0
Upland cotton	4,056	5,325	6,900	7,300	7,000	6,500	6,500	6,800	7,100	7,400	7,700	8,000
Soybeans	801	865	1,005	1,025	1,040	1,050	1,050	1,040	1,030	1,015	1,005	1,015
Soybean meal	7,200	7,400	7,900	8,700	9,100	9,500	9,400	9,300	9,200	9,125	9,050	9,000
Ending stocks 2/												
Corn	1,796	2,039	2,029	1,854	1,449	1,324	1,204	1,089	954	804	714	584
Sorghum	65	81	71	66	71	66	61	66	66	66	66	66
Barley	142	127	110	108	111	114	117	115	118	116	114	112
Oats	81	65	66	66	65	63	60	61	61	65	63	65
Wheat	946	1,002	1,007	1,002	923	815	718	639	550	507	478	445
Rice	22.0	49.4	54.2	56.9	56.1	53.1	49.2	45.8	41.3	36.0	32.3	30.5
Upland cotton	3,836	4,327	4,900	4,750	3,650	3,400	3,400	3,400	3,500	3,600	3,800	3,900
Soybeans	348	395	540	605	595	520	415	320	260	245	265	265
Prices 3/												
Corn	1.95	1.80	1.85	1.95	2.20	2.30	2.40	2.45	2.60	2.75	2.85	3.10
Sorghum	1.70	1.55	1.65	1.75	2.00	2.10	2.20	2.25	2.40	2.50	2.60	2.80
Barley	1.98	2.00	1.90	1.90	2.10	2.25	2.30	2.35	2.45	2.55	2.65	2.80
Oats	1.10	1.10	1.10	1.15	1.30	1.40	1.50	1.55	1.60	1.65	1.70	1.80
Wheat	2.65	2.50	2.50	2.55	2.75	3.05	3.30	3.50	3.75	4.00	4.20	4.35
Rice	8.83	5.75	5.60	5.67	5.88	6.15	6.52	6.90	7.35	7.81	8.25	8.54
Soybeans	5.00	4.90	4.25	4.15	4.35	4.65	5.10	5.55	6.05	6.40	6.35	6.55
Soybean oil	0.199	0.168	0.160	0.153	0.153	0.160	0.175	0.198	0.215	0.233	0.250	0.263
Soybean meal	138.5	152.5	145.0	150.0	157.5	165.0	176.5	185.0	197.5	202.5	192.5	192.5

1/ Bushels per acre except for upland cotton and rice (pounds per acre).
2/ Million bushels except for upland cotton (thousand bales), rice (million hundredweight), and soybean meal (thousand tons).
3/ Dollars per bushel except for soybean oil (per pound), rice (per hundredweight), and soybean meal (per ton).

Table 10. Corn baseline

Item	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Acreage (million acres):												
CRP acres:												
Cropping history 1/	5.1	5.2	5.7	6.1	6.3	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Planted acres	80.2	77.6	77.0	76.5	76.0	78.5	79.0	79.5	79.5	79.5	80.0	80.0
Harvested acres	72.6	70.9	70.3	69.9	69.4	71.9	72.4	72.9	72.9	72.9	73.4	73.4
Yields (bushels per acre):												
Yield/harvested acre	134.4	134.5	135.5	137.2	138.9	140.6	142.3	144.0	145.7	147.4	149.1	150.8
Supply and use (million bushels):												
Beginning stocks	1,308	1,796	2,039	2,029	1,854	1,449	1,324	1,204	1,089	954	804	714
Production	9,761	9,537	9,525	9,590	9,640	10,110	10,305	10,500	10,620	10,745	10,945	11,070
Imports	19	10	10	10	10	10	10	10	10	10	10	10
Supply	11,088	11,344	11,574	11,629	11,504	11,569	11,639	11,714	11,719	11,709	11,759	11,794
Feed & residual	5,489	5,500	5,650	5,800	5,925	6,000	6,075	6,150	6,200	6,250	6,300	6,350
Food, seed, & industrial	1,822	1,880	1,970	2,025	2,105	2,145	2,185	2,225	2,265	2,305	2,345	2,385
Domestic	7,311	7,380	7,620	7,825	8,030	8,145	8,260	8,375	8,465	8,555	8,645	8,735
Exports	1,981	1,925	1,925	1,950	2,025	2,100	2,175	2,250	2,300	2,350	2,400	2,475
Total use	9,292	9,305	9,545	9,775	10,055	10,245	10,435	10,625	10,765	10,905	11,045	11,210
Ending stocks	1,796	2,039	2,029	1,854	1,449	1,324	1,204	1,089	954	804	714	584
Stocks/use ratio, percent	19.3	21.9	21.3	19.0	14.4	12.9	11.5	10.2	8.9	7.4	6.5	5.2
Prices (dollars per bushel):												
Farm price	1.95	1.80	1.85	1.95	2.20	2.30	2.40	2.45	2.60	2.75	2.85	3.10
Loan rate	1.89	1.89	1.89	1.77	1.63	1.63	1.70	1.83	1.89	1.89	1.89	1.89
Variable costs of production (dollars):												
Per acre	153.89	154.38	157.64	159.30	162.09	165.17	168.19	171.35	174.47	177.63	180.85	184.24
Per bushel	1.15	1.15	1.16	1.16	1.17	1.17	1.18	1.19	1.20	1.21	1.21	1.22
Returns over variable costs (dollars per acre):												
Net returns 2/	127.01	133.45	132.33	117.85	143.49	158.21	173.33	181.45	204.35	227.72	244.08	283.24

1/ The cropping history allocation is based on 1998 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.
2/ Net returns include estimates of marketing loan benefits.

Table 11. Sorghum baseline

Item	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Acreage (million acres):												
CRP acres:												
Cropping history 1/	1.2	1.2	1.3	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Planted acres	9.6	9.3	9.0	9.0	9.3	9.3	9.3	9.4	9.5	9.6	9.6	9.7
Harvested acres	7.7	8.5	7.8	7.8	8.1	8.1	8.1	8.2	8.3	8.4	8.4	8.5
Yields (bushels per acre):												
Yield/harvested acre	67.3	70.1	69.5	70.1	70.7	71.3	71.9	72.5	73.1	73.7	74.3	74.9
Supply and use (million bushels):												
Beginning stocks	49	65	81	71	66	71	66	61	66	66	66	66
Production	520	596	540	545	575	580	580	595	605	620	625	635
Imports	0	0	0	0	0	0	0	0	0	0	0	0
Supply	569	661	621	616	641	651	646	656	671	686	691	701
Feed & residual	262	325	270	260	280	285	285	290	300	305	305	310
Food, seed, & industrial	45	55	65	75	75	80	80	80	80	85	85	85
Domestic	307	380	335	335	355	365	365	370	380	390	390	395
Exports	197	200	215	215	215	220	220	220	225	230	235	240
Total use	504	580	550	550	570	585	585	590	605	620	625	635
Ending stocks	65	81	71	66	71	66	61	66	66	66	66	66
Stocks/use ratio, percent	12.9	14.0	12.9	12.0	12.5	11.3	10.4	11.2	10.9	10.6	10.6	10.4
Prices (dollars per bushel):												
Farm price	1.70	1.55	1.65	1.75	2.00	2.10	2.20	2.25	2.40	2.50	2.60	2.80
Loan rate	1.74	1.74	1.71	1.56	1.44	1.45	1.52	1.66	1.72	1.73	1.73	1.73
Variable costs of production (dollars):												
Per acre	73.46	74.20	75.87	76.57	77.87	79.33	80.77	82.26	83.73	85.21	86.73	88.33
Per bushel	1.09	1.06	1.09	1.09	1.10	1.11	1.12	1.13	1.15	1.16	1.17	1.18
Returns over variable costs (dollars per acre):												
Net returns 2/	49.03	54.79	49.92	46.10	63.53	70.40	77.41	80.87	91.71	99.04	106.45	121.39

1/ The cropping history allocation is based on 1998 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.
2/ Net returns include estimates of marketing loan benefits.

Table 12. Barley baseline

Item	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Acreage (million acres):												
CRP acres:												
Cropping history 1/	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Planted acres	6.3	5.2	5.4	5.4	5.4	5.4	5.5	5.5	5.6	5.6	5.7	5.7
Harvested acres	5.9	4.8	5.0	5.0	5.0	5.0	5.1	5.1	5.2	5.2	5.3	5.3
Yields (bushels per acre):												
Yield/harvested acre	60.0	59.2	61.2	61.8	62.4	63.0	63.6	64.2	64.8	65.4	66.0	66.6
Supply and use (million bushels):												
Beginning stocks	119	142	127	110	108	111	114	117	115	118	116	114
Production	352	282	305	310	310	315	325	325	335	340	350	355
Imports	30	30	35	45	50	55	55	55	55	55	55	55
Supply	501	454	467	465	468	481	494	497	505	513	521	524
Feed & residual	161	125	115	115	115	125	135	140	145	155	165	170
Food, seed, & industrial	170	172	172	172	172	172	172	172	172	172	172	172
Domestic	331	297	287	287	287	297	307	312	317	327	337	342
Exports	28	30	70	70	70	70	70	70	70	70	70	70
Total use	360	327	357	357	357	367	377	382	387	397	407	412
Ending stocks	142	127	110	108	111	114	117	115	118	116	114	112
Stocks/use ratio, percent	39.4	38.8	30.8	30.3	31.1	31.1	31.0	30.1	30.5	29.2	28.0	27.2
Prices (dollars per bushel):												
Farm price	1.98	2.00	1.90	1.90	2.10	2.25	2.30	2.35	2.45	2.55	2.65	2.80
Loan rate	1.56	1.59	1.60	1.51	1.34	1.34	1.41	1.51	1.56	1.57	1.56	1.56
Variable costs of production (dollars):												
Per acre	77.84	78.35	80.06	80.86	82.27	83.84	85.38	86.98	88.55	90.14	91.77	93.48
Per bushel	1.30	1.32	1.31	1.31	1.32	1.33	1.34	1.35	1.37	1.38	1.39	1.40
Returns over variable costs (dollars per acre):												
Net returns 2/	54.76	57.22	60.70	55.72	48.77	57.91	60.90	63.89	70.21	76.63	83.13	93.00

1/ The cropping history allocation is based on 1998 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.
2/ Net returns include estimates of marketing loan benefits.

Table 13. Oats baseline

Item	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Acreage (million acres):												
CRP acres:												
Cropping history 1/	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Planted acres	4.9	4.7	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Harvested acres	2.8	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Yields (bushels per acre):												
Yield/harvested acre	60.2	59.7	59.9	60.2	60.5	60.8	61.1	61.4	61.7	62.0	62.3	62.6
Supply and use (million bushels):												
Beginning stocks	74	81	65	66	66	65	63	60	61	61	65	63
Production	166	147	150	150	150	145	145	145	150	150	150	150
Imports	108	100	105	105	105	110	110	115	115	120	120	125
Supply	348	328	320	321	321	320	318	320	326	331	335	338
Feed & residual	170	165	155	155	155	155	155	155	160	160	165	165
Food, seed, & industrial	95	96	97	98	99	100	101	102	103	104	105	106
Domestic	265	261	252	253	254	255	256	257	263	264	270	271
Exports	2	2	2	2	2	2	2	2	2	2	2	2
Total use	267	263	254	255	256	257	258	259	265	266	272	273
Ending stocks	81	65	66	66	65	63	60	61	61	65	63	65
Stocks/use ratio, percent	30.3	24.7	26.0	25.9	25.4	24.5	23.3	23.6	23.0	24.4	23.2	23.8
Prices (dollars per bushel):												
Farm price	1.10	1.10	1.10	1.15	1.30	1.40	1.50	1.55	1.60	1.65	1.70	1.80
Loan rate	1.11	1.13	1.16	1.13	0.99	0.96	1.02	1.10	1.15	1.16	1.16	1.16
Variable costs of production (dollars):												
Per acre	50.53	50.61	51.88	52.41	53.33	54.32	55.28	56.30	57.29	58.30	59.33	60.42
Per bushel	0.84	0.85	0.87	0.87	0.88	0.89	0.90	0.92	0.93	0.94	0.95	0.97
Returns over variable costs (dollars per acre):												
Net returns 2/	22.91	25.80	26.59	24.64	25.32	30.80	36.37	38.87	41.43	44.00	46.58	52.26

1/ The cropping history allocation is based on 1998 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.
2/ Net returns include estimates of marketing loan benefits.

Table 14. Wheat baseline

Item	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Acreage (million acres):												
CRP acres:												
Cropping history 1/	7.6	7.5	8.0	8.5	8.8	8.9	8.9	8.9	8.9	8.9	8.9	8.9
Planted acres	65.8	63.0	62.0	62.0	61.0	61.5	63.0	64.0	65.0	66.5	68.0	69.0
Harvested acres	59.0	54.1	54.1	54.1	53.3	53.7	55.0	55.9	56.7	58.2	59.5	60.4
Yields (bushels per acre):												
Yield/harvested acre	43.2	42.7	41.8	42.1	42.4	42.7	43.0	43.3	43.6	43.9	44.2	44.5
Supply and use (million bushels):												
Beginning stocks	722	946	1,002	1,007	1,002	923	815	718	639	550	507	478
Production	2,547	2,308	2,260	2,278	2,260	2,293	2,365	2,420	2,472	2,555	2,630	2,688
Imports	103	105	105	110	115	115	115	115	115	115	115	115
Supply	3,373	3,359	3,367	3,395	3,377	3,331	3,295	3,253	3,226	3,220	3,252	3,281
Food	903	915	925	935	945	955	965	975	985	995	1,005	1,015
Seed	81	92	85	83	84	86	87	89	91	93	94	96
Feed & residual	401	250	225	225	225	225	225	225	225	200	200	200
Domestic	1,385	1,257	1,235	1,243	1,254	1,266	1,277	1,289	1,301	1,288	1,299	1,311
Exports	1,042	1,100	1,125	1,150	1,200	1,250	1,300	1,325	1,375	1,425	1,475	1,525
Total use	2,427	2,357	2,360	2,393	2,454	2,516	2,577	2,614	2,676	2,713	2,774	2,836
Ending stocks	946	1,002	1,007	1,002	923	815	718	639	550	507	478	445
Stocks/use ratio, percent	39.0	42.5	42.7	41.9	37.6	32.4	27.9	24.4	20.6	18.7	17.2	15.7
Prices (dollars per bushel):												
Farm price	2.65	2.50	2.50	2.55	2.75	3.05	3.30	3.50	3.75	4.00	4.20	4.35
Loan rate	2.58	2.58	2.58	2.41	2.18	2.18	2.21	2.36	2.58	2.58	2.58	2.58
Variable costs of production (dollars):												
Per acre	67.59	67.87	69.36	70.09	71.33	72.70	74.04	75.44	76.81	78.20	79.62	81.10
Per bushel	1.56	1.59	1.66	1.66	1.68	1.70	1.72	1.74	1.76	1.78	1.80	1.82
Returns over variable costs (dollars per acre):												
Net returns 2/	55.10	55.11	51.02	44.00	45.27	57.53	67.86	76.11	86.69	97.40	106.02	112.47

1/ The cropping history allocation is based on 1998 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.
2/ Net returns include estimates of marketing loan benefits.

Table 15. Rice baseline

Item	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Acreage (thousand acres):												
Planted	3,345	3,600	3,350	3,335	3,305	3,280	3,255	3,235	3,190	3,150	3,155	3,180
Harvested	3,317	3,571	3,323	3,308	3,279	3,254	3,229	3,209	3,164	3,125	3,130	3,155
Yields (pounds per acre):												
Yield/harvested acre	5,669	5,929	5,920	5,951	5,983	6,016	6,048	6,081	6,116	6,150	6,180	6,209
Supply and use (million cwt):												
Beginning stocks	27.9	22.0	49.4	54.2	56.9	56.1	53.1	49.2	45.8	41.3	36.0	32.3
Production	188.1	211.7	196.7	196.9	196.2	195.8	195.3	195.1	193.5	192.2	193.4	195.9
Imports	10.5	10.8	11.1	11.4	11.7	12.1	12.5	12.8	13.2	13.6	14.0	14.4
Total supply	226.5	244.4	257.2	262.5	264.8	264.0	260.8	257.2	252.5	247.1	243.4	242.6
Domestic use	103.9	106.5	109.5	112.1	114.7	117.4	120.1	122.9	125.7	128.6	131.6	134.6
Exports	83.6	82.0	87.0	87.0	87.5	87.0	85.0	82.0	79.0	76.0	73.0	71.0
Residual	17.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Total use	204.5	195.0	203.0	205.6	208.7	210.9	211.6	211.4	211.2	211.1	211.1	212.1
Ending stocks (million cwt.)	22.0	49.4	54.2	56.9	56.1	53.1	49.2	45.8	41.3	36.0	32.3	30.5
Stocks/use ratio, percent	10.7	25.3	26.7	27.7	26.9	25.2	23.3	21.6	19.5	17.0	15.3	14.4
Milling rate, percent	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0
Prices (dollars per cwt.):												
World price	7.37	5.00	5.00	5.10	5.25	5.41	5.63	5.86	6.09	6.27	6.46	6.59
Average market price	8.83	5.75	5.60	5.67	5.88	6.15	6.52	6.90	7.35	7.81	8.25	8.54
Loan rate	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Variable costs of production (dollars):												
Per acre	350	357	366	370	377	384	391	399	407	414	422	431
Per cwt.	6.17	6.02	6.19	6.22	6.29	6.38	6.47	6.56	6.65	6.74	6.83	6.94
Returns over variable costs (dollars per acre):												
Net returns 1/	151	73	63	61	57	52	47	42	43	66	88	100

1/ Net returns include estimates of marketing loan benefits.

Table 16. Upland cotton baseline

Item	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Acreage (million acres):												
CRP acres:												
Cropping history 1/	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Planted acres	13.1	14.3	14.4	13.8	12.8	12.9	13.0	13.1	13.2	13.3	13.4	13.4
Harvested acres	10.4	13.1	13.2	12.8	11.8	11.9	12.0	12.1	12.2	12.3	12.4	12.4
Yields (pounds per acre):												
Yield/harvested acre	619	581	640	644	648	652	656	660	664	668	672	676
Supply and use (thousand bales):												
Beginning stocks	3,822	3,836	4,327	4,900	4,750	3,650	3,400	3,400	3,400	3,500	3,600	3,800
Production	13,476	15,846	17,600	17,200	15,900	16,200	16,400	16,600	16,900	17,100	17,400	17,500
Imports	431	65	5	5	5	5	5	5	5	5	5	5
Supply	17,729	19,747	21,932	22,105	20,655	19,855	19,805	20,005	20,305	20,605	21,005	21,305
Domestic use	10,254	10,040	10,100	10,050	10,000	9,950	9,900	9,800	9,700	9,600	9,500	9,400
Exports	4,056	5,325	6,900	7,300	7,000	6,500	6,500	6,800	7,100	7,400	7,700	8,000
Total use	14,310	15,365	17,000	17,350	17,000	16,450	16,400	16,600	16,800	17,000	17,200	17,400
Ending stocks	3,836	4,327	4,900	4,750	3,650	3,400	3,400	3,400	3,500	3,600	3,800	3,900
Stocks/use ratio, percent	26.8	28.2	28.8	27.4	21.5	20.7	20.7	20.5	20.8	21.2	22.1	22.4
Prices (dollars per pound): 2/												
Loan rate	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192	0.5192
Variable costs of production (dollars):												
Per acre	274.49	281.27	292.55	296.91	303.30	310.53	317.67	324.97	332.36	339.75	347.30	355.08
Per pound	0.44	0.48	0.46	0.46	0.47	0.48	0.48	0.49	0.50	0.51	0.52	0.53
Returns over variable costs (dollars per acre):												
Net returns 3/	217.00	156.16	174.97	187.45	185.68	177.04	175.58	174.19	174.61	171.41	168.53	163.81

1/ The cropping history allocation is based on 1998 plantings on farms with CRP acreage, and is used as a general indicator influencing land available for plantings.
2/ USDA is prohibited from publishing cotton price projections.
3/ Net returns include estimates of marketing loan benefits.

Table 17. Soybean and products baseline

Item	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Soybeans												
Acreage (million acres)												
Planted	72.0	74.1	75.0	74.0	72.8	71.5	70.5	70.3	70.8	71.3	71.8	71.5
Harvested	70.4	72.8	74.0	73.0	71.8	70.5	69.5	69.3	69.8	70.3	70.8	70.5
Yield/harvested acre (bushels)	38.9	36.7	40.0	40.5	41.0	41.5	42.0	42.5	43.0	43.4	43.8	44.2
Supply (million bushels)												
Beginning stocks, Sep. 1	200	348	395	540	605	595	520	415	320	260	245	265
Production	2,741	2,673	2,960	2,955	2,940	2,925	2,920	2,945	3,000	3,050	3,100	3,115
Imports	3	3	4	8	6	10	10	11	8	10	11	11
Total supply	2,944	3,024	3,359	3,503	3,551	3,530	3,450	3,371	3,328	3,320	3,356	3,391
Disposition (million bushels)												
Crush	1,590	1,610	1,655	1,715	1,760	1,805	1,830	1,855	1,880	1,900	1,925	1,950
Seed and residual	205	154	159	158	156	155	155	156	158	160	161	161
Exports	801	865	1,005	1,025	1,040	1,050	1,050	1,040	1,030	1,015	1,005	1,015
Total disposition	2,596	2,629	2,819	2,898	2,956	3,010	3,035	3,051	3,068	3,075	3,091	3,126
Carryover stocks, Aug. 31												
Total ending stocks	348	395	540	605	595	520	415	320	260	245	265	265
Stocks/use ratio, percent	13.4	15.0	19.2	20.9	20.1	17.3	13.7	10.5	8.5	8.0	8.6	8.5
Prices (dollars per bushel)												
Loan rate	5.26	5.26	5.26	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	5.09
Soybean price, farm	5.00	4.90	4.25	4.15	4.35	4.65	5.10	5.55	6.05	6.40	6.35	6.55
Variable costs of production (dollars):												
Per acre	79.44	79.51	79.76	80.65	82.00	83.61	85.19	86.80	88.42	90.01	91.63	93.29
Per bushel	2.04	2.17	1.99	1.99	2.00	2.01	2.03	2.04	2.06	2.07	2.09	2.11
Returns over variable costs (dollars per acre):												
Net returns 1/	132.18	122.71	140.64	128.73	129.97	130.94	131.95	149.07	171.73	187.75	186.50	196.22
Soybean oil (million pounds)												
Beginning stocks, Oct. 1	1,382	1,526	2,020	2,130	2,335	2,470	2,575	2,475	2,305	2,100	1,905	1,750
Production	18,081	18,115	18,620	19,295	19,800	20,315	20,605	20,905	21,215	21,470	21,780	22,095
Imports	83	79	65	60	60	65	70	75	80	85	90	95
Total supply	19,547	19,720	20,705	21,485	22,195	22,850	23,250	23,455	23,600	23,655	23,775	23,940
Domestic disappearance	15,600	15,900	16,275	16,700	17,075	17,450	17,775	18,150	18,500	18,825	19,150	19,475
Exports	2,421	1,800	2,300	2,450	2,650	2,825	3,000	3,000	3,000	2,925	2,875	2,800
Total demand	18,021	17,700	18,575	19,150	19,725	20,275	20,775	21,150	21,500	21,750	22,025	22,275
Ending stocks, Sep. 30	1,526	2,020	2,130	2,335	2,470	2,575	2,475	2,305	2,100	1,905	1,750	1,665
Soybean oil price (dollars per lb)	0.199	0.168	0.160	0.153	0.153	0.160	0.175	0.198	0.215	0.233	0.250	0.263
Soybean meal (thousand short tons)												
Beginning stocks, Oct. 1	218	330	250	250	250	250	250	225	225	225	225	225
Production	37,792	38,270	39,335	40,725	41,825	42,900	43,475	44,050	44,600	45,175	45,750	46,350
Imports	100	50	65	75	75	100	100	100	100	100	100	100
Total supply	38,110	38,650	39,650	41,050	42,150	43,250	43,825	44,375	44,925	45,500	46,075	46,675
Domestic disappearance	30,580	31,000	31,500	32,100	32,800	33,500	34,200	34,850	35,500	36,150	36,800	37,450
Exports	7,200	7,400	7,900	8,700	9,100	9,500	9,400	9,300	9,200	9,125	9,050	9,000
Total demand	37,780	38,400	39,400	40,800	41,900	43,000	43,600	44,150	44,700	45,275	45,850	46,450
Ending stocks, Sep. 30	330	250	250	250	250	250	225	225	225	225	225	225
Soybean meal price (dollars per ton)	138.50	152.50	145.00	150.00	157.50	165.00	176.50	185.00	197.50	202.50	192.50	192.50
Crushing yields (pounds per bushel)												
Soybean oil	11.37	11.25	11.25	11.25	11.25	11.26	11.26	11.27	11.29	11.30	11.32	11.33
Soybean meal	47.54	47.54	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
Crush margin (dollars per bushel)	0.56	0.61	0.99	1.13	1.11	1.07	1.06	1.07	1.07	1.04	1.05	1.00

1/ Net returns include estimates of marketing loan benefits.

Table 18. U.S. Sugar: Supply, disappearance, and prices, fiscal years 1/

Item	Units	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sugarbeets													
Planted area	1,000 acres	1,499	1,560	1,565	1,490	1,504	1,506	1,495	1,484	1,487	1,487	1,485	1,485
Harvested area	1,000 acres	1,452	1,525	1,531	1,458	1,471	1,473	1,463	1,452	1,455	1,455	1,453	1,453
Yield	Tons/acre	22.5	21.9	21.4	21.6	21.7	21.8	21.9	22.0	22.1	22.2	22.3	22.4
Production	Mil. s. tons	32.6	33.4	32.8	31.4	31.9	32.1	32.0	31.9	32.1	32.3	32.4	32.6
Sugarcane													
Harvested area	1,000 acres	896	951	963	941	941	938	931	930	930	930	930	930
Yield	Tons/acre	36.7	37.7	36.2	37.0	37.8	37.7	37.5	37.5	37.5	37.5	37.5	37.5
Production	Mil. s. tons	32.8	35.8	34.9	34.8	35.5	35.4	34.9	34.9	34.9	34.9	34.9	34.9
Supply:													
Beginning stocks	1,000 s. tons	1,679	1,638	1,837	2,193	2,189	2,326	2,826	3,253	3,553	3,769	3,906	3,960
Production	1,000 s. tons	8,375	8,905	8,903	8,698	8,869	8,908	8,872	8,889	8,953	9,005	9,052	9,104
Beet sugar	1,000 s. tons	4,423	4,650	4,698	4,506	4,579	4,616	4,613	4,611	4,651	4,682	4,708	4,736
Cane sugar	1,000 s. tons	3,952	4,255	4,205	4,192	4,290	4,292	4,259	4,277	4,301	4,323	4,344	4,368
Total imports	1,000 s. tons	1,805	1,720	2,017	2,027	2,158	2,645	2,771	2,790	2,805	2,837	2,870	2,899
TRQ less Mexico	1,000 s. tons	1,222	1,197	1,256	1,256	1,256	1,256	1,256	1,256	1,256	1,256	1,256	1,256
Duty-free NAFTA 2/	1,000 s. tons	31	28	276	276	276	276	276	276	276	1,096	1,124	1,153
High-tier NAFTA tariff	1,000 s. tons	67	5	0	0	121	609	744	768	794	0	0	0
Other imports	1,000 s. tons	486	490	485	495	505	505	495	490	480	485	490	490
Total supply	1,000 s. tons	11,857	12,262	12,757	12,917	13,217	13,879	14,469	14,932	15,311	15,611	15,828	15,964
Use:													
Domestic disappearance	1,000 s. tons	10,066	10,250	10,385	10,542	10,700	10,858	11,016	11,174	11,332	11,490	11,647	11,805
Exports	1,000 s. tons	230	175	180	185	190	195	200	205	210	215	220	220
Miscellaneous	1,000 s. tons	(77)	0	0	0	0	0	0	0	0	0	0	0
Total use	1,000 s. tons	10,219	10,425	10,565	10,727	10,890	11,053	11,216	11,379	11,542	11,705	11,867	12,025
Ending stocks	1,000 s. tons	1,638	1,837	2,193	2,189	2,326	2,826	3,253	3,553	3,769	3,906	3,960	3,939
Stocks/use ratio	Percent	16.0	17.6	20.8	20.4	21.4	25.6	29.0	31.2	32.7	33.4	33.4	32.8
Raw sugar prices:													
N.Y. (No. 14)	Cents/lb.	22.07	20.82	19.73	19.85	19.51	17.98	16.73	15.92	15.40	15.14	15.14	15.37
Raw sugar loan rate	Cents/lb.	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00
Beet sugar loan rate	Cents/lb.	22.90	22.90	22.90	22.90	22.90	22.90	22.90	22.90	22.90	22.90	22.90	22.90
Grower prices:													
Sugarbeets	Dol./ton	35.50	37.86	35.87	36.10	35.47	34.55	34.55	34.55	34.55	34.55	34.55	34.55
Sugarcane	Dol./ton	28.20	28.39	26.90	27.07	26.60	25.91	25.91	25.91	25.91	25.91	25.91	25.91

1/ Fiscal year is October 1 through September 30.
2/ Starting in FY 2008 under NAFTA, Mexico can ship duty-free sugar to the United States with no quantitiative limit.

Table 19. Flue-cured tobacco baseline

Item	Unit	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Acreage, yield, and production:													
Planted area	1,000 acres	385	304	222	311	307	298	289	278	267	256	244	233
Harvested area	1,000 acres	385	304	222	311	307	298	289	278	267	256	244	233
Yield	lbs./acre	2,144	2,164	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250
Production	Mil. lbs.	825	658	500	700	690	670	650	625	600	575	550	525
Supply:													
Beg. stocks	Mil. lbs.	1,253	1,234	1,118	863	828	803	778	753	723	673	613	533
Marketings	Mil. lbs.	815	658	500	700	690	670	650	625	600	575	550	525
Total 1/	Mil. lbs.	2,068	1,893	1,618	1,563	1,518	1,473	1,428	1,378	1,323	1,248	1,163	1,058
Imports	Mil. lbs.	(200)	(200)	(200)	(200)	(220)	(240)	(260)	(280)	(300)	(300)	(310)	(320)
Use:													
Domestic	Mil. lbs.	492	450	435	420	405	390	375	360	360	350	350	345
Exports	Mil. lbs.	341	325	320	315	310	305	300	295	290	285	280	275
Total 1/	Mil. lbs.	834	775	755	735	715	695	675	655	650	635	630	620
Ending stocks:													
Total	Mil. lbs.	1,234	1,118	863	828	803	778	753	723	673	613	533	438
Price:													
Avg. to growers	$/cwt	175.5	173.6	179.0	182	185	188	191	194	196	198	201	204
Support	$/cwt	163.0	163.0	165.0	167	170	173	176	179	190	193	196	199

1/ Domestic tobacco only.

Table 20 Burley tobacco baseline

Item	Unit	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Acreage, yield, and production:													
Planted area	1,000 acres	307	305	171	143	155	183	186	179	170	160	160	160
Harvested area	1,000 acres	307	305	171	143	155	183	186	179	170	160	160	160
Yield	lbs./acre	1,895	1,750	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100
Production	Mil. lbs.	582	535	300	300	325	385	390	375	357	336	336	336
Supply:													
Beg. stocks	Mil. lbs.	832	894	959	840	694	579	539	519	499	476	437	408
Marketings	Mil. lbs.	582	535	360	300	325	385	390	375	357	336	336	336
Total 1/	Mil. lbs.	1,414	1,429	1,319	1,140	1,019	964	929	894	856	812	773	744
Imports	Mil. lbs.	(160)	(165)	(175)	(175)	(175)	(185)	(195)	(205)	(210)	(215)	(220)	(220)
Use:													
Domestic	Mil. lbs.	351	330	320	310	300	290	280	270	260	260	250	250
Exports	Mil. lbs.	169	140	150	145	140	135	130	125	120	115	115	115
Total 1/	Mil. lbs.	520	470	470	455	440	425	410	395	380	375	365	365
Ending stocks:													
Total	Mil. lbs.	894	959	849	694	579	539	519	499	476	437	408	379
Price:													
Avg. to growers	$/cwt	190	190	193	196	200	203	205	209	212	216	219	223
Support	$/cwt	178	179	182	185	188	191	194	197	200	203	206	209

1/ Domestic tobacco only.

Table 21. Fruit, vegetable, and greenhouse/nursery baseline, production and prices

Item	Unit	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Production value:													
Fruits													
Fruits and nuts													
Citrus	$ Mil.	2,600	2,566	2,713	2,840	2,897	2,956	3,013	3,085	3,152	3,228	3,302	3,369
Noncitrus	$ Mil.	7,238	8,053	8,225	8,557	8,817	9,122	9,431	9,748	10,070	10,397	10,729	11,067
Nuts	$ Mil.	1,351	2,666	1,794	2,005	2,007	2,137	2,169	2,334	2,275	2,528	2,380	2,692
Total	$ Mil.	11,189	13,284	12,732	13,403	13,722	14,215	14,612	15,167	15,496	16,153	16,411	17,128
Vegetables													
Fresh 1/	$ Mil.	7,925	7,766	8,311	8,582	8,883	9,272	9,814	10,296	10,692	11,034	11,372	11,741
Processed 2/	$ Mil.	1,380	1,620	1,433	1,470	1,550	1,571	1,601	1,627	1,652	1,678	1,703	1,727
Potatoes	$ Mil.	2,633	2,841	2,956	2,935	2,970	3,034	3,105	3,167	3,217	3,258	3,297	3,335
Sweet potatoes	$ Mil.	187	202	213	216	221	226	231	236	241	246	251	256
Pulses	$ Mil.	670	629	769	759	785	799	814	828	843	857	871	885
Mushrooms	$ Mil.	802	867	916	939	961	982	1,002	1,020	1,038	1,055	1,071	1,086
Total	$ Mil.	13,598	13,925	14,597	14,901	15,370	15,885	16,566	17,174	17,683	18,129	18,565	19,031
Greenhouse/Nursery	$ Mil.	12,115	12,565	13,015	13,465	13,915	14,365	14,815	15,265	15,715	16,165	16,615	17,065
Production:													
Fruits													
Citrus	1,000 MT	16,121	12,430	14,636	15,785	15,963	16,150	16,231	16,501	16,633	16,881	17,057	17,120
Noncitrus	1,000 MT	14,954	15,976	16,032	16,298	16,505	16,710	16,926	17,135	17,343	17,555	17,767	17,978
Nuts	1,000 MT	416	558	506	494	574	508	573	538	525	605	539	603
Total	1,000 MT	31,491	28,965	31,174	32,576	33,041	33,368	33,730	34,174	34,501	35,042	35,362	35,701
Vegetables													
Fresh 1/	1,000 MT	18,516	18,816	19,483	19,832	20,253	20,685	21,117	21,535	21,937	22,327	22,715	23,101
Processed 2/	1,000 MT	14,174	17,149	15,126	15,267	15,732	15,918	16,129	16,332	16,541	16,762	16,981	17,196
Potatoes	1,000 MT	21,581	21,840	22,262	23,070	23,592	23,982	24,347	24,752	25,206	25,693	26,188	26,682
Sweet potatoes	1,000 MT	562	567	618	611	616	619	622	625	629	632	636	640
Pulses	1,000 MT	1,791	1,807	1,768	1,958	1,946	1,987	2,025	2,063	2,102	2,140	2,180	2,220
Mushrooms	1,000 MT	371	391	404	416	427	438	449	460	470	481	491	502
Total	1,000 MT	56,995	60,569	59,660	61,152	62,565	63,628	64,690	65,767	66,885	68,036	69,192	70,340
Prices:													
Grower													
Fruits and nuts	1990-92=100	110	118	120	122	125	127	130	132	135	137	140	142
Vegetables	1990-92=100	119	111	123	130	132	134	137	139	141	143	146	148
Potatoes	$/MT	123	130	133	127	126	127	128	128	128	127	126	125
Dry beans	$/MT	437	386	498	432	453	451	449	449	448	447	445	443
Retail													
Fruits and vegetables	1982-84=100	198	203	209	216	223	229	235	242	249	254	261	268
Fresh fruit	1982-84=100	247	266	269	276	284	292	300	309	318	327	336	345
Fresh vegetables	1982-84=100	216	209	217	225	233	240	248	255	262	269	276	283
Processed fruits & veg.	Dec 1997=100	102	104	109	114	117	120	123	126	129	131	134	137

1/ Includes artichokes, asparagus, snap beans, broccoli, brussels sprouts, cabbage, carrots, cauliflower, celery, sweet corn, eggplant, escarole-endive, garlic, lettuce, bell peppers, onions, spinach, tomatoes, and melons.

2/ Includes asparagus, lima beans, snap beans, broccoli, beets, cabbage, carrots, cauliflower, sweet corn, cucumbers, green peas, spinach, and tomatoes.

Table 22. Fruit, vegetable, and greenhouse/nursery baseline, trade

Item	Unit	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Imports													
Fruit and nuts 1/													
Fresh	$ Mil.	2,792	3,173	2,949	3,084	3,196	3,307	3,419	3,532	3,644	3,756	3,868	3,980
Processed	$ Mil.	3,138	3,638	3,684	3,824	3,979	4,136	4,295	4,454	4,616	4,781	4,950	5,125
Nuts	$ Mil.	630	624	649	675	682	681	740	762	789	797	797	856
Total	$ Mil.	6,559	7,435	7,282	7,584	7,857	8,125	8,454	8,748	9,049	9,333	9,615	9,961
Vegetables 2/													
Fresh	$ Mil.	2,191	2,074	2,266	2,370	2,492	2,615	2,738	2,863	2,993	3,128	3,266	3,403
Processed	$ Mil.	958	1,054	978	1,007	1,055	1,111	1,155	1,196	1,245	1,285	1,326	1,376
Potatoes	$ Mil.	369	377	374	388	405	428	453	480	506	532	558	584
Sweet potatoes	$ Mil.	29	26	26	26	26	27	27	27	27	27	28	28
Pulses	$ Mil.	72	66	71	74	78	81	85	89	92	96	100	104
Mushrooms	$ Mil.	151	153	172	174	176	177	179	181	182	184	186	188
Total	$ Mil.	3,770	3,751	3,887	4,040	4,232	4,439	4,637	4,836	5,046	5,253	5,463	5,683
Greenhouse/Nursery	$ Mil.	1,079	1,155	1,236	1,322	1,415	1,514	1,620	1,733	1,855	1,984	2,123	2,272
Exports													
Fruit and nuts 1/													
Fresh	$ Mil.	1,756	1,826	2,001	2,260	2,348	2,435	2,523	2,610	2,698	2,786	2,874	2,962
Processed	$ Mil.	1,873	1,930	2,036	2,149	2,281	2,425	2,581	2,751	2,938	3,143	3,369	3,618
Nuts	$ Mil.	1,168	1,145	1,203	1,247	1,291	1,335	1,379	1,423	1,467	1,511	1,554	1,598
Total	$ Mil.	4,797	4,900	5,240	5,656	5,920	6,195	6,482	6,784	7,103	7,440	7,797	8,179
Vegetables 2/													
Fresh	$ Mil.	1,019	1,007	1,112	1,064	1,141	1,124	1,195	1,191	1,252	1,256	1,308	1,318
Processed	$ Mil.	1,081	1,047	1,130	1,159	1,214	1,272	1,329	1,387	1,447	1,507	1,568	1,630
Potatoes	$ Mil.	757	764	784	812	852	888	922	956	992	1,028	1,065	1,102
Sweet potatoes	$ Mil.	11	10	10	11	11	12	13	14	14	15	16	17
Pulses	$ Mil.	385	294	307	383	383	393	402	411	420	430	439	448
Mushrooms	$ Mil.	15	22	25	26	28	29	30	32	33	34	36	37
Total	$ Mil.	3,268	3,144	3,368	3,455	3,628	3,719	3,891	3,992	4,158	4,270	4,432	4,553
Greenhouse/Nursery	$ Mil.	284	301	310	319	329	338	349	359	370	381	392	404

1/ Fresh fruit includes bananas, excludes melons. Processed fruit includes juices and wine.
2/ Fresh vegetables includes melons. Processed includes seed and juices.

Livestock

Changes in the U.S. meat complex in the near term reflect the continuing low grain and soybean meal prices after the sharp decline from the very high levels of the 1995/96 crop year. Both the poultry and pork sectors expanded in response to higher meat prices and lower feed costs. Expanded pork production began to pressure hog and pork prices in late 1997 and, despite lower grain prices, producer returns above cash costs are forecast to remain negative through 1999. Lower pork production in 2000 is expected to bring positive returns. The cattle inventory is expected to continue to decline over the next several years, reflecting producers' response to drought, poor returns, and the longer biological lags inherent in beef production.

Over much of the baseline, moderate feed prices and replenishment of forage supplies should provide favorable production costs in the meat sector. Continued low inflation, domestic demand strength from steady income growth, and gains in export sales are expected to contribute to producer returns that encourage higher pork and poultry output. However, as feed costs increase beyond 2000, beef and poultry production gains slow, especially near the end of the baseline. Pork production declines in 2000 and 2001 due to low hog prices in 1998 and 1999, but expands for the rest of the baseline.

Decreases in real prices of meats combined with increases in real disposable income allow consumers to purchase more total meat with a smaller proportion of disposable income, continuing a long-term trend. Consumption gains exceed population growth, with per capita meat consumption reaching about 223 pounds (retail weight) by 2009, 1.6 pounds more than in 1999. The meats will vie for domestic market share through product development, advertising, and promotion. Poultry gains a larger proportion of both total meat consumption and total meat expenditures. On a retail weight basis, total poultry consumption is projected to exceed total red meat consumption by the end of the baseline.

Total egg production expands slightly in the baseline in part to support larger broiler production. Per capita consumption of shell eggs declines slowly, but increasing use in processed foods results in moderate growth in total egg use per person. Real egg prices continue to fall.

High milk-feed price ratios and dairy productivity gains push milk output per cow higher and real costs lower. Milk production grows despite slowly declining cow numbers throughout the period. Sales of cheese and dairy ingredients for processed foods lead expansion in commercial use of dairy products, while fluid milk sales are stagnant.

Beef

Lower feeder cattle prices due to record grain prices in 1995/96 were compounded by poor forage supplies in 1996 through 1999. Large beef cow slaughter in 1996-1998 reflected adjustments to low cow-calf returns during this period and, combined with the length of the biological lag, is likely to prevent beef cow herd expansion before 2002. Returns above cash costs per cow were near break-even in 1997 but were under drought-induced pressure since then and more heifers were placed in feedlots rather than retained for calving. Increased returns in

1999-2000 encourage only a moderate expansion in the next cattle cycle. The cattle herd builds from a cyclical low of about 95 million head in 2002, reaching 96.3 million head at the peak in 2004. Shifts toward higher-grading, larger-framed cattle that result in heavier slaughter weights partly offset the need for expanding cattle inventories to previous levels.

Drawing from a smaller inventory, beef production declines through 2001 as heifers are retained for the breeding herd, with output increasing only gradually through the rest of the baseline. Coupled with larger exports and declining imports after 2001, per capita beef consumption in 2009 is down about 12 pounds, retail weight, from the cyclical peak in 1999. The beef production mix continues to shift toward a larger proportion of fed beef as nearly all steers and heifers are fed in feedlots. Calf slaughter will continue at relatively low levels as most are placed on feed.

Feeder cattle will remain on grass longer and will be marketed at heavier weights. Cattle will remain in feedlots for 120 to 140 days to grade Select or low-Choice, with dressed slaughter weights growing slowly during the baseline. Heavier placement weights coupled with fewer days on feed required to reach grade will hold down feed grain use and feed fed per pound of fed beef produced. The strongest prices will be received for cattle that grade Choice or higher for the growing export and domestic hotel-restaurant markets. The price spread between Choice and Select beef is likely to remain wide.

Adequate land resources will remain available to the cattle and crop sectors into the next decade. In addition, the 1996 Farm Act further expands the forage base by allowing haying and grazing at any time on land enrolled in production flexibility contracts. Conservation Reserve Program acreage will remain over 30 million acres. Grazing and haying on CRP acreage will continue to be allowed under restricted conditions during emergencies such as drought and floods. This increased availability of forage for the reduced cattle sector, combined with a shift toward cow-calf-yearling operations, allows flexibility in the use of forage and the marketing of feeder cattle. In the event of poor forage conditions, for example, feeder cattle can be marketed early, allowing the cow herd to be maintained.

Veal production falls through 2009. A larger share of veal production will come from higher valued formula-fed calves marketed at heavier weights. Declining dairy cow numbers reduce the supply of dairy calves. High stocker and feeder cattle prices will encourage more of these dairy calves to move into feedlot channels rather than being slaughtered as young calves.

The United States becomes a net beef exporter near the end of the baseline. Adjustments in world beef trade will continue as market access is opened under the UR agreement. Beef exports will rise from about 9 percent to 12 percent of production. The United States remains the primary source of high-quality fed beef for export, including exports for the hotel-restaurant trade. High-quality beef exports continue to increase through the baseline, primarily to Pacific Rim nations. Australia and New Zealand will also increase exports to Pacific Rim nations, although their beef will be mostly lower quality, grass-fed beef. However, the United States will remain an important market for Oceania, especially while the beef cow inventory remains low.

U.S. emphasis on fed beef production and the smaller cattle inventory will result in relatively high beef imports of processing beef. Most processing beef will be used in higher valued hamburger as large supplies of low priced, processing-quality poultry and pork are used in lower valued manufactured products.

Pork

The pork sector will continue to transform into a more vertically coordinated industry with a mix of production and marketing contracts. Increasing productivity of the breeding herd continues to reduce costs. Larger, more efficient pork producers will market a greater percentage of the hogs over the next 10 years. These larger operations are able to spread fixed costs across more animals and purchase feed in large quantities, resulting in greater economic efficiency. In addition, the larger operations offer packers a reliable supply of hogs at consistent weights and high quality, leading to more market coordination. Increased producer/packer coordination results in fewer sales at public markets. Breeding inventories are low relative to pork production and will likely fall further as the number of pigs per litter increases and production efficiencies continue to improve.

Pork production falls to under 19 billion pounds in 2000 and 2001 as producers adjust to unfavorable returns in 1998 and early 1999. Expansion begins in 2002 and continues for the remainder of the baseline, reaching 20.6 billion pounds by 2009. The lack of any supply or demand shocks in the baseline, combined with the more vertically coordinated industry structure, dampens the hog cycle. Pork production growth remains slow as higher grain prices and competition from beef and poultry moderate returns throughout the baseline.

Per capita pork consumption on a retail basis remains in a range of 50 to 52 pounds per person during 2000-2009. Nominal hog prices slowly rise after 2003 to about $40 per hundredweight at the end of the baseline.

The United States becomes an increasingly important net pork exporter, although projected gains are somewhat muted by reduced growth prospects for exports to Russia. Nonetheless, exports will continue to expand while pork imports remain steady. Longer term gains in pork exports reflect in part environmental constraints in a number of competitor countries that limit their production growth. The major long-term growth markets for U.S. pork exports will remain Pacific Rim nations, Mexico, and Russia. Yearly trade variations will depend upon major foreign suppliers such as Canada and Denmark, as well as exchange rate fluctuations.

Poultry and Eggs

Poultry production expands as broiler meat gains an increasing share of total meat consumption. Poultry meat will be less expensive than other meats so consumers can purchase more poultry meat per dollar. Poultry firms will continue aggressive market development and promote poultry's image of providing lean, convenient products. Further processed products including those seasoned, marinated, and packaged with other food products for easy meal preparation are continuing trends. Production gains for turkeys reflect projected growth in the further-processed market and exports.

Poultry production gains rebounded in 1999 from a slowdown in 1997-1998 caused by high feed costs in 1995/96, hatching egg shortages for broilers, and low profitability for turkey producers. Increases in chicken production slow after 2001 to a more sustainable long-term growth near 2 percent annually. Poultry meat prices in the baseline decline in real terms.

The broiler and turkey industries have kept the cost of production from increasing at the full rate of inflation through technological advancements and improved production management practices, including taking advantage of economies of size through increasing horizontal and vertical integration. While some further technological improvement and continued vertical integration occur during the baseline, these factors will not affect production costs as significantly as in the past 10 years.

Turkey production will expand slowly, with per capita consumption at about 17.5 to 18 pounds (retail weight). Low returns in recent years slowed product development and larger pork production will provide more competition in the marketplace later in the baseline.

Continued competition in world poultry meat markets holds U.S. poultry exports to moderate gains. No growth in export volume from 1997 through 2000 for broilers reflects slower growth in sales to Asia and the sharp reduction in exports to Russia. Asian imports are projected to expand through the rest of the baseline, despite the short-term setbacks in some markets in 1997-1999 due to the financial crisis. Russian imports, however, are projected to have only a slow and gradual recovery. Increases are also expected in exports of broiler parts (especially dark meat) to other markets, including Mexico, Central America, and the Caribbean. U.S. turkey exports were reduced in 1998 because of declines in sales to Hong Kong, Korea, and Japan. Russia's turkey imports also fell in late-1998 and again in 1999. Slow growth in U.S. turkey exports is expected starting in 2000 as sales to Hong Kong and Korea recover.

Table egg producers expand production slowly through the baseline in response to lower industry net returns. A larger expansion in total U.S. egg production reflects increased broiler hatching egg production to accommodate broiler sector expansion.

Shell egg consumption per person falls more slowly than the long-term historical trend of 1 to 3 eggs a year. Per capita consumption of total eggs grows slowly throughout the baseline from 255 eggs in 1999 to 263 eggs in 2009. Processed egg products are an increasing part of the egg market as ingredients in many prepared foods, so as consumers opt for more convenience foods, consumption of egg products will continue to increase.

Wholesale egg prices trend upward after 2000, with increases near the inflation rate. A competitive market with little product differentiation will result in supplies that keep prices near the cost of production.

U.S. egg exports grow slowly over the baseline, as many countries will likely continue to experience surpluses of eggs. World import demand will remain relatively static, as domestic production will generally meet increased domestic demands in most countries.

Dairy

Relatively high milk prices and strong returns during most of the 1996-99 period unleashed a milk production expansion that is expected to depress milk prices during the current and next marketing years. Stronger producers have accelerated their individual expansion plans, while weaker farmers have been able to delay their exit from dairying. Although dairy demand is expected to remain strong, the gains in output are expected to result in substantial declines in milk prices in the near term.

Lower milk prices are expected to renew income pressures on weaker producers and to build momentum in commercial use of dairy products. Milk prices are projected to recover during 2001/02 and 2002/03 as these supply-demand corrections occur.

In the longer run, demand is expected to grow at about the same, or slightly faster, rate than population. Demand for cheese is projected to continue to rise more than population, as is use of milk solids in processed foods. On the other hand, per-person sales of fluid milk and many perishable manufactured products are expected to decline slowly.

Better management, greater genetic potential, and inexpensive concentrate feeds will result in continued strong growth in milk per cow. However, the trend may not quite match the rate that similar milk-feed price ratios would have generated in the past. Producers today do not have as much flexibility to boost milk per cow with heavier grain feeding because of past increases in the starch content of rations and changes in feeding practices. In addition, differences between the milk per cow levels of expanding and exiting producers may be narrower than in the past.

Milk cow numbers are projected to decline slowly, as traditional farms continue to be replaced with larger farms based on highly specialized labor. Growth in the West may be somewhat slower than in the past because of more limiting forage supplies, fewer new areas for dairy development, and environmental constraints. Even so, new western farms will be established and most existing operations will expand. The number of "new style" northern farms, similar in most ways to western farms, will increase substantially through both construction of totally new operations and dramatic expansion of existing farms. Some of this development will be in areas that have not had much local dairying in recent decades. Many existing northern farms probably will not generate enough family income to be viable and will exit dairying, resulting in land taken out of agriculture entirely in some marginal areas. Losses in milk cow numbers also may be substantial in the South, as productivity gains might be insufficient to meet the competition of milk shipped from the North.

International dairy markets are not expected to have major impacts on domestic markets under current WTO rules. International market prices are projected to rise slowly once the current demand weakness in some key economies begins to ease. However, domestic prices are expected to run between those needed to be a major exporter of most products and those that would allow large imports beyond the tariff-rate quotas. Subsidized exports will be held to small amounts. Although exports of whey products will grow and niche markets for cheese will continue to develop, commercial exports likely will be a minor component of demand for U.S. dairy products in most years.

Following some recovery during 2001/02 and 2002/03, farm-level milk prices are projected to rise slightly slower than prices generally from 2003/04 through the end of the baseline. Although shifts in supply are not expected to be as strong as during the 1980s and early-1990s, they probably will tend to outpace increases in demand, underlying the moderate decline in real (inflation-adjusted) prices for milk. In addition, the price volatility that has characterized recent years may well continue, in part because of increasing concentration of buyers and sellers at all levels.

Table 23. Per capita meat consumption, retail and boneless weight

Item	Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Retail weight:													
Total beef	Pounds	68.1	68.8	65.3	61.9	61.0	61.0	60.6	59.7	59.0	58.2	57.8	57.1
Total veal	Pounds	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.5
Total pork	Pounds	52.6	53.9	51.6	50.4	51.1	51.7	51.7	51.6	51.5	51.4	51.4	51.0
Lamb and mutton	Pounds	1.1	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8
Total red meat	Pounds	122.5	124.5	118.6	113.9	113.8	114.2	113.8	112.8	112.0	111.1	110.5	109.5
Broilers	Pounds	73.4	78.2	82.9	86.6	86.8	87.5	88.3	89.5	90.8	92.3	93.9	95.4
Other chicken	Pounds	0.4	0.5	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Turkeys	Pounds	17.9	18.0	17.8	17.5	18.0	17.9	17.7	17.7	17.7	17.7	17.7	17.6
Total poultry	Pounds	91.7	96.7	101.0	104.6	105.2	105.7	106.3	107.5	108.8	110.3	111.8	113.3
Red meat & poultry	Pounds	214.3	221.2	219.6	218.4	219.0	219.9	220.1	220.3	220.8	221.3	222.4	222.8
Boneless weight:													
Total beef	Pounds	64.5	65.2	61.9	58.6	57.8	57.7	57.3	56.6	55.9	55.2	54.7	54.1
Total veal	Pounds	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4
Total pork	Pounds	49.4	50.7	48.5	47.3	48.0	48.5	48.6	48.5	48.4	48.3	48.3	47.9
Lamb & mutton	Pounds	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6
Total red meat	Pounds	115.3	117.2	111.7	107.2	107.1	107.5	107.1	106.2	105.4	104.5	104.1	103.0
Broilers	Pounds	52.0	55.4	58.7	61.3	61.4	61.9	62.5	63.3	64.3	65.3	66.4	67.5
Other chicken	Pounds	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Turkeys	Pounds	14.1	14.2	14.0	13.8	14.2	14.1	14.0	14.0	14.0	14.0	14.0	13.9
Total poultry	Pounds	66.4	69.9	72.9	75.4	75.9	76.3	76.7	77.5	78.5	79.5	80.6	81.6
Red meat and poultry	Pounds	181.7	187.1	184.6	182.6	183.0	183.8	183.8	183.7	183.9	184.0	184.6	184.7

Table 24. Consumer expenditures for meats

Item	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Beef, dollars per person	188.66	196.11	189.09	179.54	177.64	178.54	180.50	181.90	183.40	184.52	185.75	187.05
Percent of income	0.84	0.84	0.78	0.71	0.67	0.64	0.62	0.60	0.58	0.55	0.53	0.51
Percent of meat expenditures	42.19	42.20	41.10	39.64	39.28	39.37	39.39	39.31	39.27	39.19	39.17	39.20
Pork, dollars per person	127.72	129.99	127.08	125.58	125.81	124.83	125.57	125.96	126.27	126.56	127.04	127.64
Percent of income	0.57	0.56	0.53	0.49	0.47	0.45	0.43	0.41	0.40	0.38	0.36	0.35
Percent of meat expenditures	28.56	27.97	27.62	27.73	27.82	27.53	27.40	27.22	27.03	26.88	26.79	26.75
Broilers, dollars per person	112.94	120.68	126.43	131.15	131.91	133.35	135.48	138.17	140.48	142.75	144.44	145.57
Percent of income	0.50	0.52	0.52	0.52	0.50	0.48	0.46	0.45	0.44	0.43	0.41	0.40
Percent of meat expenditures	25.26	25.97	27.48	28.96	29.17	29.41	29.56	29.86	30.08	30.32	30.46	30.50
Turkeys, dollars per person	17.81	17.91	17.48	16.65	16.89	16.74	16.74	16.76	16.91	16.96	16.95	16.97
Percent of income	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05
Percent of meat expenditures	3.98	3.85	3.80	3.68	3.73	3.69	3.65	3.62	3.62	3.60	3.57	3.56
Total meat, dollars per person	447.13	464.69	460.08	452.91	452.24	453.46	458.29	462.80	467.06	470.79	474.18	477.23
Percent of income	2.00	1.99	1.90	1.78	1.70	1.63	1.57	1.52	1.46	1.41	1.36	1.31

Table 25. Beef baseline

Item	Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Beginning stocks	Mil. lbs.	465	393	370	365	350	375	400	425	450	475	475	475
Commercial production	Mil. lbs.	25,653	26,240	24,875	23,642	23,692	23,995	24,135	24,123	24,133	24,160	24,228	24,328
Change	Percent	1.1	2.3	-5.2	-5.0	0.2	1.3	0.6	-0.1	0.0	0.1	0.3	0.4
Farm production	Mil. lbs.	106	106	106	106	106	106	106	106	106	106	106	106
Total production	Mil. lbs.	25,759	26,346	24,981	23,748	23,798	24,101	24,241	24,229	24,239	24,266	24,334	24,434
Imports	Mil. lbs.	2,642	2,820	3,015	3,025	2,950	2,900	2,850	2,800	2,750	2,700	2,650	2,600
Total supply	Mil. lbs.	28,866	29,559	28,366	27,138	27,098	27,376	27,491	27,454	27,439	27,441	27,459	27,509
Exports	Mil. lbs.	2,171	2,376	2,310	2,250	2,325	2,400	2,475	2,550	2,625	2,725	2,775	2,875
Ending stocks	Mil. lbs.	393	370	365	350	375	400	425	450	475	475	475	475
Total consumption	Mil. lbs.	26,302	26,813	25,691	24,538	24,398	24,576	24,591	24,454	24,339	24,241	24,209	24,159
Per capita, carcass weight	Pounds	97.3	98.3	93.3	88.4	87.2	87.1	86.5	85.3	84.3	83.2	82.5	81.6
Per capita, retail weight	Pounds	68.1	68.8	65.3	61.9	61.0	61.0	60.6	59.7	59.0	58.2	57.8	57.1
Change	Percent	1.8	1.0	-5.1	-5.3	-1.4	-0.1	-0.7	-1.4	-1.2	-1.3	-0.8	-1.1
Prices:													
Beef cattle, farm	$/cwt	59.73	62.83	67.50	67.52	67.27	68.58	70.46	72.53	74.47	76.57	78.49	80.59
Calves, farm	$/cwt	82.29	88.49	90.25	87.10	85.25	85.35	88.00	90.79	93.11	94.80	96.29	99.07
Choice steers, Nebraska	$/cwt	61.48	65.15	69.50	69.52	69.26	70.61	72.54	74.67	76.68	78.83	80.81	82.97
Deflated price	$/cwt	37.67	39.11	40.78	39.84	38.61	38.29	38.26	38.31	38.28	38.29	38.17	38.13
Yearling steers, Okla. City	$/cwt	71.80	75.42	81.25	78.41	76.75	76.84	79.23	81.74	83.82	85.35	86.69	89.19
Deflated price	$/cwt	44.00	45.27	47.68	44.93	42.78	41.67	41.79	41.94	41.85	41.45	40.95	40.99
Retail: Beef and veal	1982-84=100	136.5	139.2	142.0	142.3	142.7	143.6	146.2	149.4	152.4	155.4	157.8	160.6
Retail: Other meats	1982-84=100	146.8	148.2	152.0	152.3	152.8	153.7	156.5	159.9	163.1	166.3	168.8	171.9
ERS retail beef	$/lb.	2.77	2.85	2.90	2.90	2.91	2.93	2.98	3.05	3.11	3.17	3.22	3.27
Costs and returns, cow-calf enterprise:													
Variable expenses	$/cow	207.90	189.77	189.33	194.05	200.22	209.92	216.65	223.90	229.95	238.44	246.08	251.07
Fixed expenses	$/cow	118.58	119.21	123.29	124.90	124.82	126.61	129.20	131.91	134.69	137.53	140.45	143.47
Total cash expenses	$/cow	326.48	308.98	312.62	318.95	325.04	336.52	345.85	355.81	364.64	375.97	386.53	394.54
Returns above cash costs	$/cow	-16.80	18.45	45.58	34.23	25.76	19.24	25.79	32.63	38.98	40.46	42.05	52.22
Cattle inventory	1,000 head	99,744	97,972	95,730	95,329	95,176	96,099	96,320	96,184	96,123	96,095	96,140	96,213
Beef cow inventory	1,000 head	33,885	33,472	32,825	32,175	32,279	32,365	32,306	32,170	32,062	31,997	31,941	31,865

Table 26. Pork baseline

Item	Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Beginning stocks	Mil. lbs.	408	586	550	500	500	500	500	500	500	500	500	450
Commercial production	Mil. lbs.	18,981	19,368	18,625	18,499	18,993	19,439	19,700	19,908	20,105	20,323	20,495	20,599
Change	Percent	10.1	2.0	-3.8	-0.7	2.7	2.3	1.3	1.1	1.0	1.1	0.8	0.5
Farm production	Mil. lbs.	30	30	30	30	30	30	30	30	30	30	30	30
Total production	Mil. lbs.	19,011	19,398	18,655	18,529	19,023	19,469	19,730	19,938	20,135	20,353	20,525	20,629
Imports	Mil. lbs.	704	826	800	760	735	735	750	750	760	765	770	770
Total supply	Mil. lbs.	20,123	20,810	20,005	19,789	20,258	20,704	20,980	21,188	21,395	21,618	21,795	21,849
Exports	Mil. lbs.	1,229	1,291	1,200	1,275	1,325	1,425	1,525	1,625	1,725	1,825	1,900	2,000
Ending stocks	Mil. lbs.	586	550	500	500	500	500	500	500	500	500	450	400
Total consumption	Mil. lbs.	18,308	18,969	18,305	18,014	18,433	18,779	18,955	19,063	19,170	19,293	19,445	19,449
Per capita, carcass weight	Pounds	67.7	69.5	66.5	64.9	65.9	66.6	66.6	66.5	66.4	66.2	66.2	65.7
Per capita, retail weight	Pounds	52.6	53.9	51.6	50.4	51.1	51.7	51.7	51.6	51.5	51.4	51.4	51.0
Change	Percent	7.9	2.6	-4.3	-2.4	1.5	1.0	0.1	-0.2	-0.2	-0.2	0.0	-0.8
Prices:													
Hogs, farm	$/cwt	32.39	30.52	33.62	36.54	36.21	35.63	36.23	36.79	37.18	37.33	37.35	37.73
Iowa, So. Minn. market	$/cwt	34.72	32.43	35.75	38.87	38.52	37.90	38.54	39.14	39.56	39.71	39.74	40.14
Deflated price	$/cwt	21.27	19.47	20.98	22.27	21.47	20.55	20.33	20.08	19.75	19.29	18.77	18.45
Retail: pork	1982-84=100	148.5	145.9	149.0	150.9	148.9	146.2	146.9	147.6	148.3	149.0	149.5	151.4
ERS retail pork	$/lb.	2.43	2.41	2.46	2.49	2.46	2.42	2.43	2.44	2.45	2.46	2.47	2.50
Costs and returns, farrow to finish:													
Variable expenses	$/cwt	35.36	28.49	26.61	25.59	26.59	27.62	28.80	30.18	31.13	32.87	34.27	34.65
Fixed expenses	$/cwt	5.10	4.85	4.86	4.77	4.64	4.59	4.57	4.57	4.57	4.58	4.60	4.62
Total cash expenses	$/cwt	40.47	33.34	31.47	30.36	31.22	32.21	33.37	34.75	35.70	36.45	36.86	36.28
Returns above cash costs	$/cwt	-5.75	-0.91	4.28	8.51	7.30	5.69	5.17	4.39	3.86	3.26	2.88	3.86
Hog inventory, Dec. 1, previous year	1,000 head	61,158	62,206	59,600	59,223	60,698	62,030	62,811	63,432	64,022	64,671	65,185	65,494

Table 27. Young chicken baseline

Item	Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Beginning stocks	Mil. lbs.	607	711	950	990	990	990	990	990	990	990	990	990
Federally inspected slaughter	Mil. lbs.	27,863	29,774	31,250	32,776	33,264	33,851	34,517	35,275	36,113	37,011	37,938	38,906
Change	Percent	2.2	6.9	5.0	4.9	1.5	1.8	2.0	2.2	2.4	2.5	2.5	2.5
Production	Mil. lbs.	27,612	29,402	30,968	32,481	32,965	33,546	34,207	34,957	35,788	36,677	37,597	38,555
Total supply	Mil. lbs.	28,219	30,113	31,918	33,471	33,955	34,536	35,197	35,947	36,778	37,667	38,587	39,545
Change	Percent	1.9	6.7	6.0	4.9	1.4	1.7	1.9	2.1	2.3	2.4	2.4	2.5
Exports	Mil. lbs.	4,673	4,606	4,675	4,800	5,000	5,150	5,300	5,450	5,600	5,750	5,900	6,050
Ending stocks	Mil. lbs.	711	950	990	990	990	990	990	990	990	990	990	990
Consumption	Mil. lbs.	22,835	24,557	26,253	27,681	27,965	28,396	28,907	29,507	30,188	30,927	31,697	32,505
Per capita, carcass weight	Pounds	84.5	90.0	95.4	99.7	99.9	100.7	101.6	103.0	104.5	106.2	108.0	109.8
Per capita, retail weight	Pounds	73.4	78.2	82.9	86.6	86.8	87.5	88.3	89.5	90.8	92.3	93.9	95.4
Change	Percent	1.0	6.5	6.0	4.5	0.2	0.8	0.9	1.4	1.5	1.6	1.7	1.7
Prices:													
Broilers, farm	Cents/lb.	39.9	37.0	37.2	35.3	36.4	37.4	38.6	39.6	40.3	40.7	40.7	40.6
12-city market price	Cents/lb.	63.1	58.0	56.0	55.7	57.3	58.9	60.7	62.3	63.4	64.1	64.2	64.0
Deflated wholesale price	Cents/lb.	38.7	34.8	32.9	31.3	31.9	32.0	32.0	32.0	31.7	31.1	30.3	29.4
Change	Percent	5.6	-10.0	-5.6	-4.7	1.9	0.1	0.2	-0.2	-1.0	-1.7	-2.6	-3.0
Composite retail broiler price	Cents/lb.	153.8	154.3	152.5	151.4	151.9	152.4	153.5	154.4	154.7	154.7	153.9	152.6
Costs and returns:													
Total costs	Cents/lb.	52.50	46.26	47.03	49.04	47.98	48.51	47.45	46.55	48.19	50.93	53.18	54.06
Net returns	Cents/lb.	10.60	11.74	8.97	6.62	9.29	10.42	13.29	15.75	15.20	13.17	10.97	9.90

Table 28. Turkey baseline

Item	Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Beginning stocks	Mil. lbs.	415	304	250	300	375	375	375	375	375	350	350	350
Federally inspected slaughter	Mil. lbs.	5,281	5,304	5,400	5,450	5,595	5,718	5,815	5,907	5,991	6,069	6,135	6,187
Change	Percent	-3.6	0.4	1.8	0.9	2.6	2.2	1.7	1.6	1.4	1.3	1.1	0.9
Production	Mil. lbs.	5,173	5,241	5,336	5,386	5,529	5,651	5,746	5,838	5,920	5,998	6,062	6,114
Total supply	Mil. lbs.	5,588	5,545	5,586	5,686	5,904	6,026	6,121	6,213	6,295	6,348	6,412	6,464
Change	Percent	-2.6	-0.8	0.7	1.8	3.8	2.1	1.6	1.5	1.3	0.8	1.0	0.8
Exports	Mil. lbs.	446	378	390	450	500	600	700	775	825	850	875	900
Ending stocks	Mil. lbs.	304	250	300	375	375	375	375	375	350	350	350	350
Consumption	Mil. lbs.	4,838	4,917	4,896	4,861	5,029	5,051	5,046	5,063	5,120	5,148	5,187	5,214
Per capita	Pounds	17.9	18.0	17.8	17.5	18.0	17.9	17.7	17.7	17.7	17.7	17.7	17.6
Change	Percent	1.6	0.7	-1.3	-1.5	2.6	-0.4	-0.9	-0.4	0.3	-0.3	0.0	-0.3
Prices:													
Turkey, farm	Cents/lb.	37.9	41.3	41.2	40.0	39.6	39.4	39.7	40.0	40.2	40.4	40.4	40.6
Hen turkey (whsle.) East	Cents/lb.	62.2	69.3	69.0	66.7	66.0	65.6	66.2	66.6	67.0	67.4	67.3	67.6
Deflated hen turkey	Cents/lb.	37.9	41.6	40.5	38.2	36.8	35.6	34.9	34.2	33.4	32.7	31.8	31.1
Retail frozen turkey	Cents/lb.	99.5	99.4	98.3	95.1	94.0	93.5	94.3	94.9	95.4	96.0	95.9	96.3
Retail: poultry	1982-84=100	157.1	157.9	158.0	156.0	156.1	156.3	157.5	158.4	158.8	159.0	158.4	157.4
Costs and returns:													
Total costs	Cents/lb.	65.50	59.50	64.24	65.28	68.09	69.34	68.12	68.27	67.70	68.50	68.04	67.01
Net returns	Cents/lb.	-3.30	9.80	4.76	1.45	-2.13	-3.70	-1.90	-1.66	-0.73	-1.14	-0.70	0.61

Table 29. Egg baseline

Item	Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Beginning stocks	Mil. doz.	7	8	5	5	5	5	5	5	5	5	5	5
Production	Mil. doz.	6,659	6,886	7,030	7,171	7,278	7,387	7,498	7,611	7,687	7,764	7,880	7,959
Change	Percent	3.1	3.4	2.1	2.0	1.5	1.5	1.5	1.5	1.0	1.0	1.5	1.0
Imports	Mil. doz.	6	8	4	5	5	5	5	5	5	5	5	5
Total supply	Mil. doz.	6,672	6,902	7,039	7,181	7,288	7,397	7,508	7,621	7,697	7,774	7,890	7,969
Change	Percent	3.0	3.4	2.0	2.0	1.5	1.5	1.5	1.5	1.0	1.0	1.5	1.0
Hatching use	Mil. doz.	922	946	1,005	1,054	1,070	1,089	1,110	1,134	1,161	1,190	1,220	1,251
Exports	Mil. doz.	219	157	170	180	185	190	195	200	205	210	215	220
Ending stocks	Mil. doz.	8	5	5	5	5	5	5	5	5	5	5	5
Consumption	Mil. doz.	5,523	5,794	5,859	5,942	6,028	6,114	6,198	6,281	6,325	6,368	6,450	6,493
Per capita	Number	245.2	254.8	255.4	256.8	258.5	260.1	261.5	263.0	262.7	262.3	263.6	263.2
Change	Percent	2.4	3.9	0.2	0.6	0.7	0.6	0.6	0.6	-0.1	-0.1	0.5	-0.2
Prices:													
Eggs, farm	Cents/doz.	65.6	61.1	57.9	57.5	56.7	60.6	62.3	64.9	66.6	68.3	70.1	71.8
New York, Grade A large	Cents/doz.	75.8	67.3	63.5	66.5	65.5	70.0	72.0	75.0	77.0	79.0	81.0	83.0
Deflated wholesale prices	Cents/doz.	46.4	40.4	37.3	38.1	36.5	38.0	38.0	38.5	38.4	38.4	38.3	38.1
Retail, Grade A, large	Cents/doz.	104	98	93	93	92	97	99	103	105	108	110	113
Retail: Eggs	1982-84=100	135.4	128.1	126.0	126.3	126.6	134.3	138.7	144.9	149.3	153.8	158.3	162.9
Costs and returns:													
Total costs	Cents/doz.	65.65	62.00	61.61	59.92	62.65	70.66	70.92	74.50	77.14	78.52	78.99	80.29
Net returns	Cents/doz.	10.15	5.30	1.89	6.58	2.85	-0.66	1.08	0.50	-0.14	0.48	2.01	2.71

Table 30. Dairy baseline

Item	Units	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production data:													
Milk production	Bil. lbs.	161.3	164.8	166.8	168.5	170.5	172.9	174.5	176.5	178.5	181.0	182.5	184.5
Number of cows	1,000	9,148	9,164	9,110	9,035	8,960	8,880	8,805	8,730	8,655	8,585	8,505	8,430
Milk per cow	Pounds	17,629	17,980	18,305	18,650	19,025	19,475	19,815	20,215	20,625	21,085	21,455	21,885
Commercial use:													
Milkfat basis	Bil. lbs.	162.9	167.5	169.2	170.0	171.8	174.5	176.0	178.2	180.1	182.8	184.2	186.4
Skim solids	Bil. lbs.	157.9	162.9	166.9	170.1	171.1	174.0	175.5	177.8	179.7	182.5	183.9	186.2
Net removals:													
Milkfat basis	Bil. lbs.	0.3	0.5	0.3	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Skim solids	Bil. lbs.	5.4	4.2	2.2	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Prices:													
Basic Formula Price/Class III	$/cwt	14.04	11.10	11.15	12.10	12.65	12.95	13.25	13.55	13.85	14.15	14.40	14.70
All milk	$/cwt	15.37	12.75	12.75	13.50	14.00	14.30	14.60	14.90	15.20	15.50	15.80	16.10
Retail, all dairy products	1982-84=100	157.7	157.0	154.0	157.5	161.5	165.0	168.0	171.5	175.0	178.5	182.0	185.5
Costs and returns:													
Ration value	$/cwt	7.15	7.00	6.95	7.25	7.40	7.75	7.90	8.15	8.35	8.55	8.80	8.80
Returns above concentrate costs	$/cwt	12.41	9.85	9.83	10.46	10.89	11.05	11.28	11.48	11.69	11.91	12.10	12.40
Milk-feed ratio	ratio	2.15	1.82	1.83	1.86	1.89	1.85	1.85	1.83	1.82	1.81	1.80	1.83

Farm Income and Farm Financial Conditions

Farm income conditions in the U.S. agricultural sector begin the new millennium at a low ebb. However, earnings are expected to bottom out in 2001 and then be on an upward trend for the rest of the decade. Despite the near-term cash flow difficulties facing the sector, a strong basic financial position achieved during the 1990s will help farmers weather the lows in major crop prices while exports and prices recover.

Net Farm Income and Government Payments

Net farm income prospects for the next decade are expected to be lower than for the decade of the 1990s. With the production, prices, and government payments currently projected, farm income will be notably lower for 2001 than has been forecast for 2000. Based upon these projections, net farm income for 2001 could fall below $35 billion, significantly lower than 1999's forecast of $48 billion and the 2000 forecast of $40 billion. From 2001 forward net farm income is expected to gradually recover as farm prices strengthen over the decade. The average net farm income for the decade 2000-2009 is projected to be about $44.6 billion compared with $45.8 billion average for 1990-1999. A record net farm income of $54.9 billion was set in 1996, a year of both exceptional harvests and market opportunities. In the baseline, income of this level is not reached until near the end of the first decade of the new millennium.

Total cash receipts from farm sales are expected to be very similar for 1999, 2000, and 2001. But government payments, which bolstered farm revenues in 1999 and will do so again in 2000, can be expected to be considerably less in 2001 and beyond. Total government payments, now forecast at $22.7 billion for 1999 and $17.2 billion for 2000, are projected fall to $10 billion in 2001 and continue trending downward through the first half of the decade. Under existing farm legislation, government payments should be expected to decline. Production flexibility payments, established in the 1996 Farm Act, were mandated to trend downward according to a declining fixed allocation budgeted for each successive year of the program. The reduction in production flexibility contract payments from calendar year 2000 to 2001 is expected to be about $900 million. Since these payments are decoupled, current commodity prices will have no impact upon the decline dictated by the provisions of the Act. Production flexibility contract payments are assumed to continue at the 2002 level through the remainder of the baseline.

Loan deficiency payments, which are intended to be countercyclical with commodity prices, also will have reduced importance as a component of government assistance. Because the CCC loan rates for many commodities are based upon a moving average of market prices, the lower prices experienced in recent years will reduce the applicable loan rate. The combination of lower loan rates and increasing market prices results in a smaller amount of the crop that will be eligible for benefits, and a smaller payment per each unit of the commodity produced. Lower loan rates are expected to have an impact beginning with 2001. As a result of modestly higher prices for several commodities and the lower loan rates offered, loan deficiency payments are expected to fall by more than $3 billion from 2000 to 2001.

The "emergency" provisions of the Omnibus Consolidated and Emergency Supplemental Appropriations Act for Fiscal Year 1999 and the Agricultural Appropriations Act of 2000

provided supplemental assistance in the form of market loss and crop loss payments, adding to gross income in 1998, 1999, and 2000. On a calendar-year basis these programs added $2.8 billion to farm revenues in 1998, and are forecast to provide $8.7 billion in 1999 and $2.4 billion in 2000.

In total, direct government payments to the farm sector will be down about $7 billion in 2001 from 2000, about the same as the projected decline in net farm income. Government payments then continue to be a less important component of farm sector income through the rest of the decade.

Farm Cash Receipts

Record net farm income in 1996 coincided with record U.S. agricultural export values of almost $60 billion. By 1999, exports had fallen to $49 billion, largely prompted by the economic crisis in previously rapid-growing Asian economies as well as by abundant worldwide supplies of most crops and livestock products. While U.S. exports have regained some of the lost ground in quantities exported, increased competition for export markets from other nations has provided continued pressure on export prices. Baseline projections indicate that exports will return to a period of steady growth throughout the decade. Prices and cash receipts are expected to rise as exports expand.

Total cash receipts from sales of farm commodities can be expected to grow at more than 3.0 percent from 2000 onward. This rate of growth will be more rapid than the rate of expansion in cash receipts from 1990 to 1996. Expected growth will bring projected cash receipts from $190 billion in 2000 to $254 billion by 2009.

Reductions in acreage devoted to corn and wheat, occurring in response to low prices in 1999 and the early-2000s, will reverse direction by the middle of the next decade. Increasing acreage for corn and wheat will put total plantings near the 1997-98 levels by the end of the baseline. By contrast, soybean acreage is projected to reach a high in 2000 and is then expected to decline to levels approximating 1997-98 within first few years. Overall, total crop output expands through the baseline. Additionally, recovering crop prices will be important to expanding crop receipts over the next decade. By 2009, crop cash receipts are projected to be $137 billion as compared with the $93 billion forecast for 2000.

Livestock receipts, in contrast to crops, are forecast at a near-record level of $96 billion for 2000, and from there will continue to grow to $114 billion by 2009. The magnitude of increase in livestock receipts is projected to be less than half of the gain in crop receipts. Cattle and calf returns represent 30 percent of the increased livestock receipts; pork, 7 percent; broilers, 15 percent; and dairy, 38 percent.

Cattle production for the 1990s reached a high in 1999, due in part to a sustained liquidation of the beef herd (primarily heifers), which also led to weak producer prices. In 2000, however, sharply lower supplies of feeder cattle and a comparable drop in beef production are expected. Cattle production is expected to be below the 1999 output through the remainder of the baseline. Lower beef supplies, in turn, are expected to lead to stronger prices and ultimately to expanded

cash receipts. Cash receipts are expected to be 16 percent higher in 2009 than 2000, even without an increase in production.

Changes in the structure of the pork industry have ushered in production and marketing changes that will result in annual output averaging about 13 percent more during 2000-09 than the average for 1990-99, and prices averaging about 16 percent less. In the midst of rapid restructuring, 1998-99 hog prices fell significantly. Annual average hog prices are expected at about $36 a hundredweight in 2000, up from 1999's low of $32, and are projected to reach $40 a hundredweight by 2009, which is well below the $47 average price for the 1988-1997. Both hog production and prices are expected to increase only marginally throughout the baseline. In all, hog cash receipts will increase by 16 percent from 2000 to 2009, growing at only a little more than 1.5 percent a year. The structural changes that have been occurring in recent years have lowered the cost of production and may have lengthened the producers' planning horizon. For large operations and for producers under contracts to processors with substantial investments in existing plants, production plans may be based more on the outlook for prospects over several years rather than several months. Earnings of the producers under contract are determined by fee schedules established in the contract and less tied to cash market prices. These changes can cause output and prices to be more stable in the next decade, but total annual revenue from hog production is likely to remain very close to the average for the previous decade.

Broiler output has been steadily rising over the last decade, and shows no indication of changing course. Production is projected to continue to rise steadily between 2000 and 2009, resulting in a 24-percent increase in output by the end of the decade. Cash receipts for poultry are expected to rise at about 2 percent annually, reflecting output increases which average about 2 percent per year and moderate price increases.

Farm Production Expenses

Farm production expenses are expected to grow modestly over the entire baseline. In the next few years farmers will try to adjust their costs in the face of lower income prospects, but these efforts will be somewhat hampered by price increases. Feed purchases will be lower in 1999-2001, reflecting lower cattle numbers and crop prices, but cattle numbers will recover and feed crop prices will rise. Seed expenditures will grow slowly as crop acreage recovers.

Prices of fuel and oil, which were low in 1998 and early 1999, grew dramatically in the second half of 1999 as OPEC agreed to enforce production quotas. Even with larger equipment and machinery-saving field crop practices, overall costs of fuel and oil are expected to increase over the decade. Fertilizer and pesticide expenses also are expected to increase, reflecting higher prices and recovery in area planted.

Hired labor expenses, about 12 percent of total production costs, are expected to increase an average of 2.4 percent annually, also reflecting, in part, increased sector output.

While anxiety over inflationary pressures prompted Federal Reserve actions to boost rates for 2000, interest rates from 2001 to 2009 period are expected to be stable at slightly lower rates. At the same time, current low prices and expected receipts will prompt farmers to manage debt

carefully and lenders to be cautious in offering credit. In the short term the cautious behavior of both farmers and borrowers should result in a decline in debt in 2001 and 2002. The combination of lower debt levels and retreating interest rates are expected to reduce interest expenses in 2001 and 2002. The conservative behavior of borrowers is expected to result in a low rate of increase in debt as prices and farm cash receipts recover. Consequently, debt and interest expenditures are expected to be very stable for the remainder of the baseline. As a share of production costs, interest payments, which averaged 13 percent in the 1980s and 7.3 percent in the 1990s, are expected to decline slightly to about 6.9 percent over the next decade.

Rental payments to non-operator landlords are expected to fall in 2000 and 2001, paralleling the lower expected crop earnings. In recent experience, share rents have been more downwardly responsive than cash rents. Rents are most likely to rise again as crop receipts begin rising and area planted increases. The projection is for rental expenditures to rise by about 38 percent from 2000 to the 2009 while crop cash receipts are rising 47 percent

Farm Balance Sheet

With reduced farm income and cash flow over the next few years, debt management will be crucial to the financial condition of the agricultural sector. Even with the near-term cash flow difficulties facing the sector, a strong basic financial position achieved during the 1990s will help farmers weather the lows in major crop prices until exports and prices recover. In the longer run, increasing farm incomes and relatively low interest rates will contribute to asset accumulation and assist in debt management, thus leading to an improving balance sheet.

The value of farm real estate, the largest component of farm assets, is expected to stagnate in the next few years. Average farmland values per acre are not currently forecast to fall on a nationwide basis. In the past the value of farmland has been slow to respond to decreases in farm income. Cash receipts for crops for 2000, an important variable in assessing land values, are very close to the 1990-99 average. Additionally, the value of farmland also is affected by pressures from non-agricultural sources such housing and recreational uses. Assuming that farmland maintains its value in the near term with growth again as cash receipts recover and that farm debt remains stable, the financial balance sheet of the aggregate farm sector should weather the current decline in cash income and end of the baseline period in a strong position.

Table 31. Farm receipts, expenses, and incomes in nominal dollars

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
						Billion dollars						
Cash receipts:												
Crops	102.2	95.1	93.3	96.6	100.4	105.5	110.7	115.5	120.9	126.9	132.0	136.9
Livestock and products	94.5	96.9	96.5	95.3	97.0	100.0	103.1	105.9	108.7	111.4	114.1	117.0
All commodities	196.8	191.9	189.9	191.9	197.5	205.5	213.8	221.5	229.6	238.3	246.2	253.9
Farm-related income	13.8	14.4	14.1	14.3	14.6	14.9	15.2	15.5	15.8	16.1	16.4	16.7
Government payments	12.2	22.7	17.2	9.9	8.1	7.3	6.2	6.1	6.0	6.0	6.0	6.0
Gross cash income	222.8	229.1	221.1	216.2	220.1	227.7	235.1	243.0	251.4	260.3	268.5	276.5
Cash expenses	167.8	170.0	171.5	172.4	174.8	180.1	185.2	190.1	195.2	200.5	206.0	210.9
Net cash income	55.0	59.1	49.7	43.8	45.4	47.5	49.9	52.8	56.2	59.9	62.5	65.6
Value of inventory change	-1.0	-1.4	-0.1	0.2	0.5	1.1	0.5	0.6	0.6	0.7	0.9	0.6
Non-money income	11.3	11.5	11.6	11.6	11.8	12.0	12.2	12.4	12.6	12.8	13.1	13.3
Gross farm income	233.1	239.1	232.7	228.0	232.3	240.8	247.8	256.0	264.6	273.8	282.5	290.5
Noncash expenses	15.8	15.6	15.3	15.7	16.0	16.3	16.4	16.4	16.3	16.3	16.3	16.3
Operator dwelling expenses	5.4	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.6	5.6	5.6	5.6
Total production expenses	189.0	191.1	192.3	193.6	196.2	202.0	207.1	212.1	217.1	222.3	227.8	232.8
Net farm income	44.1	48.1	40.4	34.4	36.1	38.8	40.7	43.9	47.6	51.5	54.7	57.7
Farm assets	1,064.3	1,067.2	1,072.8	1,075.8	1,088.1	1,119.5	1,160.4	1,200.8	1,245.0	1,293.7	1,347.3	1,402.9
Farm debt	172.9	172.8	172.5	166.8	168.2	170.4	172.3	174.0	175.6	177.1	179.1	180.8
Farm equity	891.4	894.4	900.4	909.0	919.9	949.2	988.1	1,026.8	1,069.4	1,116.6	1,168.2	1,222.2
						Percent						
Debt/equity ratio	19.4	19.3	19.2	18.3	18.3	17.9	17.4	16.9	16.4	15.9	15.3	14.8
Debt/assets ratio	16.2	16.2	16.1	15.5	15.5	15.2	14.8	14.5	14.1	13.7	13.3	12.9

Table 32. Farm receipts, expenses, and incomes in 1992 dollars

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
						Billion 1992 dollars 1/						
Cash receipts:												
Crops	90.7	83.2	80.4	81.2	82.2	84.1	85.9	87.3	88.9	90.9	92.1	92.9
Livestock and products	83.9	84.7	83.1	80.1	79.4	79.6	79.9	80.0	79.9	79.8	79.6	79.5
All commodities	174.6	167.9	163.5	161.2	161.6	163.7	165.9	167.3	168.9	170.7	171.7	172.4
Farm-related income	12.2	12.6	12.1	12.0	11.9	11.9	11.8	11.7	11.6	11.5	11.4	11.3
Government payments	10.8	19.9	14.8	8.3	6.6	5.8	4.8	4.6	4.4	4.3	4.2	4.1
Gross cash income	197.7	200.4	190.5	181.6	180.1	181.4	182.4	183.5	184.9	186.4	187.2	187.8
Cash expenses	148.9	148.7	147.7	144.9	143.0	143.5	143.7	143.6	143.6	143.6	143.6	143.2
Net cash income	48.8	51.7	42.7	36.8	37.1	37.9	38.7	39.9	41.3	42.9	43.6	44.5
Value of inventory change	-0.9	-1.2	-0.1	0.2	0.4	0.9	0.4	0.4	0.5	0.5	0.6	0.4
Non-money income	10.0	10.1	10.0	9.8	9.6	9.6	9.5	9.4	9.3	9.2	9.1	9.1
Gross farm income	206.8	209.2	200.4	191.6	190.1	191.8	192.3	193.4	194.6	196.1	197.0	197.3
Noncash expenses	14.0	13.6	13.2	13.2	13.1	13.0	12.7	12.4	12.0	11.7	11.3	11.1
Operator dwelling expenses	4.8	4.8	4.8	4.6	4.5	4.4	4.3	4.2	4.1	4.0	3.9	3.8
Total expenses	167.7	167.2	165.6	162.7	160.6	160.9	160.7	160.2	159.7	159.2	158.9	158.1
Net farm income	39.1	42.1	34.8	28.9	29.5	30.9	31.6	33.2	35.0	36.9	38.1	39.2
Farm assets	944.2	933.7	924.1	904.0	890.3	891.9	900.2	907.0	915.7	926.5	939.6	952.6
Farm debt	153.4	151.2	148.5	140.2	137.6	135.7	133.7	131.4	129.1	126.8	124.9	122.7
Farm equity	790.8	782.5	775.5	763.9	752.7	756.2	766.5	775.6	786.6	799.7	814.6	829.9

1/ Nominal dollar values divided by the GDP deflator.

Food Prices and Expenditures

The Consumer Price Index (CPI) for food is projected to rise moderately in the baseline, increasing at an average rate of about 2.1 percent from 1999 to 2009. This compares to a 2.7-percent average rise expected in the CPI for all items, continuing a long-term trend of food prices increasing at slightly less than the general inflation rate. Moderate but steady economic growth, with sustained increases in disposable personal income, will have a positive impact on consumer demand for food.

Increases for prices for food away from home, which contain a large service component, are being held down by competition in the food industry. As a result, away-from-home prices rise at a moderate annual average rate of about 2.2 percent from 1999 to 2009. Prices for food at home increase about 2.1 percent per year. For foods purchased for consumption at home, the strongest price increases generally occur among the more highly processed foods such as cereals and bakery products. Prices for these foods are related more to the costs of processing and marketing than to the costs of farm commodities and, therefore, rise at a rate closer to the general inflation rate.

Total food expenditures rise at a 3.6-percent average annual rate in the baseline. Expenditures for meals eaten away from home account for a growing share of food spending, reaching almost half of total food expenditures by 2009. Growth in expenditures for food eaten away from home will average 4.2 percent a year while expenditures for food at home will rise 3.1 percent annually.

Table 33. Consumer food price indexes and food expenditures baseline

CPI category	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Consumer price indexes:						*1982-84=100*							
All food	157.3	160.7	164.1	167.4	170.3	173.9	177.6	181.7	185.8	190.0	194.3	198.6	203.0
Food away from home	157.0	161.1	165.1	168.9	172.2	176.1	180.0	184.1	188.2	192.4	196.7	201.1	205.6
Food at home	158.1	161.1	164.2	167.2	169.8	173.2	176.8	180.9	185.1	189.4	193.6	197.8	202.3
Meats	144.4	141.6	142.3	145.8	146.6	146.3	146.2	148.2	150.7	153.1	155.5	157.3	159.9
Beef and veal	136.8	136.5	139.2	142.0	142.3	142.7	143.6	146.2	149.4	152.4	155.4	157.8	160.6
Pork	155.9	148.5	145.9	149.0	150.9	148.9	146.2	146.9	147.6	148.3	149.0	149.5	151.4
Other meats	148.1	146.8	148.2	152.0	152.3	152.8	153.7	156.5	159.9	163.1	166.3	168.8	171.9
Poultry	156.6	157.1	157.9	158.0	156.0	156.1	156.3	157.5	158.4	158.8	159.0	158.4	157.4
Fish and seafood	177.1	181.7	185.3	190.3	195.2	200.1	205.1	210.2	215.5	220.9	226.4	232.1	237.9
Eggs	140.0	135.4	128.1	126.0	126.3	126.6	134.3	138.7	144.9	149.3	153.8	158.3	162.9
Dairy products	145.5	150.8	159.6	157.0	154.0	157.5	161.5	165.0	168.0	171.5	175.0	178.5	182.0
Fats and oils	141.7	146.9	148.3	152.5	154.1	158.2	162.5	166.8	171.0	175.4	179.9	184.5	189.2
Fruits and vegetables	187.5	198.2	203.1	208.8	216.2	222.7	229.0	235.5	242.0	248.5	254.5	261.0	267.5
Sugar and sweets	147.8	150.2	152.3	155.1	156.9	159.9	162.3	165.1	168.5	172.0	175.6	179.3	183.0
Cereals and bakery products	177.6	181.1	185.0	189.8	195.3	200.8	206.3	211.9	217.4	223.1	229.3	236.0	242.8
Nonalcoholic beverages	133.4	133.0	134.3	135.6	139.0	142.5	146.1	149.8	153.5	157.3	161.2	165.2	169.3
Other foods	161.2	165.5	168.9	172.6	176.6	181.4	186.3	191.4	196.6	201.9	207.3	212.9	218.6
Food expenditures:						*Billion dollars*							
All food	730.6	756.2	787.4	812.8	837.5	868.7	900.9	935.4	970.3	1006.3	1,044.4	1,083.3	1123.1
Food at home	391.7	401.8	417.2	426.6	436.1	450.1	464.7	480.5	496.2	512.2	529.3	546.4	563.5
Food away from home	338.9	354.4	370.2	386.2	401.4	418.6	436.2	454.9	474.1	494.1	515.1	536.9	559.6

Table 34. Changes in consumer food prices, baseline

CPI category	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
							Percent						
All food	2.6	2.2	2.1	2.0	1.7	2.1	2.1	2.3	2.3	2.3	2.3	2.2	2.2
Food away from home	2.8	2.6	2.5	2.3	2.0	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.2
Food at home	2.5	1.9	1.9	1.8	1.6	2.0	2.1	2.3	2.3	2.3	2.2	2.2	2.3
Meats	3.0	-1.9	0.5	2.5	0.5	-0.2	-0.1	1.4	1.7	1.6	1.6	1.2	1.7
Beef and veal	1.7	-0.2	2.0	2.0	0.2	0.3	0.6	1.8	2.2	2.0	2.0	1.5	1.8
Pork	5.2	-4.7	-1.8	2.1	1.3	-1.3	-1.8	0.5	0.5	0.5	0.5	0.3	1.3
Other meats	2.8	-0.9	1.0	2.6	0.2	0.3	0.6	1.8	2.2	2.0	2.0	1.5	1.8
Poultry	2.8	0.3	0.5	0.1	-1.3	0.1	0.1	0.8	0.6	0.3	0.1	-0.4	-0.6
Fish and seafood	2.3	2.6	2.0	2.7	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Eggs	-1.5	-3.3	-5.4	-1.6	0.2	0.2	6.1	3.3	4.5	3.0	3.0	2.9	2.9
Dairy products	2.4	3.6	5.8	-1.6	-1.9	2.3	2.5	2.2	1.8	2.1	2.0	2.0	2.0
Fats and oils	0.9	3.7	1.0	2.8	1.0	2.7	2.7	2.6	2.5	2.6	2.6	2.6	2.5
Fruits and vegetables	2.0	5.7	2.5	2.8	3.5	3.0	2.8	2.8	2.8	2.7	2.4	2.6	2.5
Sugar and sweets	2.9	1.6	1.4	1.8	1.2	1.9	1.5	1.7	2.1	2.1	2.1	2.1	2.1
Cereals and bakery products	2.1	2.0	2.2	2.6	2.9	2.8	2.7	2.7	2.6	2.6	2.8	2.9	2.9
Nonalcoholic beverages	3.7	-0.3	1.0	1.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Other foods	3.2	2.7	2.1	2.2	2.3	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7

Agricultural Trade

Growth in the volume of global and U.S. agricultural trade is projected to be relatively strong during the next 10 years, aided by ample global supplies and steady demand growth. Demand prospects are supported by the outlook for healthy economic growth in most of Asia, Latin America, North Africa, and the Middle East, moderate gains in developed countries, and continued progress towards freer trade through ongoing unilateral policy reforms and existing multilateral agreements. The solid prospects for trade expansion in these regions are expected to more than offset relatively weak growth in parts of Asia, Africa, and the former Soviet Union.

Despite robust demand, global and U.S. commodity prices and trade value are expected to remain weak over the first half of the baseline because of large stocks and continued farm output and productivity gains in exporting countries. Commodity prices and export earnings are projected to strengthen during the last half of the baseline because of steady growth in import demand and reduced stocks. Prospects for realizing the projected long-term recovery in commodity prices may, however, be dampened by continued strides in crop and livestock sector productivity in exporting countries.

Future trends in China's agricultural trade are key in the global outlook for commodity trade and prices. The baseline includes only modest growth in China's imports of wheat, coarse grains, cotton, and meats, but continued strong growth in import demand for soybeans and soybean oil. However, significant uncertainties exist regarding basic data and future policies in China, with the size of the country's agricultural economy increasing the potential significance of these issues for trade.

The projections (table 35) show improved growth in trade in several bulk commodities during 2000-09, compared with the 1980s and 1990s. Projected growth in wheat, coarse grain, and cotton trade is particularly strong compared with recent performance. The expansion of grain trade is broad-based, driven by rising incomes in developing regions, diet diversification, and increased demand for livestock products and feeds. Developing country demand, boosted by the phase-out of the Multi-Fiber Agreement by 2005, is also key to the outlook for stronger growth in global raw cotton demand and trade.

Global trade in soybeans and products is, by contrast, projected to slow significantly compared with the rapid growth of the 1990s. Continued strong gains in developing country demand for feed protein is projected to be mostly offset by reduced demand in the EU resulting from slowed livestock output and increased substitution of grain for protein feeds following Agenda 2000 reforms. Growth in soybean oil trade is projected slower than the very high rate achieved in the 1990s due to somewhat slower growth in developing country imports and competition from other oils, particularly palm oil.

U.S. export volume is projected to strengthen for wheat, coarse grains, and cotton, but to slow for rice and soybeans and products. U.S. wheat and coarse grain exports expand along with world trade, although competition is expected to increase in both markets. By the middle of the projection period, U.S. wheat export growth is slowed when price conditions permit unsubsidized EU wheat to enter the market. Argentina and China are expected to remain strong

competitors for coarse grain market share, but EU exports will remain capped by limits on subsidized exports. U.S. raw cotton exports strengthen throughout the baseline, benefiting from both rising demand and reduced competition. U.S. rice exports are expected to fall during 2000-09 as domestic demand outpaces U.S. production. U.S. exports of soybeans and products slow sharply compared with the 1990s, reflecting projected trends in world trade, coupled with strong competition from Argentina and Brazil.

Table 35. International trade summary, by decade or indicated period 1/

Years	Wheat	Rice	Coarse grains	Soybeans	Soybean meal	Soybean oil	Cotton
World trade growth, annual percent 2/							
1960 to 1970 3/	1.1	2.2	4.9	11.4	14.4	11.3	0.8
1970 to 1980	4.7	4.9	8.7	8.2	11.7	12.8	1.2
1980 to 1990	-0.3	0.6	-1.0	-0.4	2.9	0.5	2.5
1990 to 2000	-0.5	7.5	0.5	5.6	4.4	7.4	-1.2
2000 to 2009	2.2	2.2	2.3	0.7	1.7	1.7	1.9
U.S. export growth, annual percent							
1960 to 1970 3/	-0.8	6.3	3.8	12.6	13.0	5.3	-5.4
1970 to 1980	6.4	6.8	12.7	7.2	5.8	5.4	6.1
1980 to 1990	-3.3	-0.5	-0.7	-3.7	-1.8	-5.5	2.3
1990 to 2000	-1.4	2.2	0.9	4.5	3.4	7.9	-1.6
2000 to 2009	3.5	-2.4	2.7	-0.1	0.8	2.2	1.4
U.S. share of world trade, average percent 2/							
1960 to 1970 3/	37.6	19.0	50.0	90.6	65.6	66.6	18.3
1970 to 1980	43.0	22.1	59.4	82.6	43.5	37.5	19.8
1980 to 1990	37.3	20.2	59.4	72.6	23.7	19.3	21.5
1990 to 2000	30.5	14.0	56.8	63.7	18.6	14.5	25.3
2000 to 2009	31.8	9.9	57.4	64.6	19.2	16.0	26.0

1/ Years refer to the first year of the commodity marketing year.

2/ Trade and trade shares include intra-FSU trade for periods starting in 1990 and later; intra-FSU trade for cotton also is included in the 1980 to 1990 and the 1970 to 1980 periods.

3/ Data for soybeans, soybean meal, and soybean oil begin in 1964.

Global meat demand and trade and U.S. meat exports are projected to recover from the recent slowdown in East Asian and FSU demand to show strong and steady growth during 2000-09. Growth in meat trade is supported by the economic rebound in the key Asian markets, and by already negotiated reductions in trade barriers. However, FSU imports are projected to recover only gradually and remain below the record levels reached in the late 1990s.

U.S. Agricultural Trade Value

The total value of U.S. agricultural exports is projected to remain flat in fiscal year 2000, but then grow for the rest of the baseline, reaching $75.9 billion by fiscal year 2009. U.S. agricultural imports show steady annual growth to $50.7 billion in 2009. The resulting agricultural trade surplus rises from a low of $11.0 billion in 2000 to $25.2 billion in 2009.

Continued low bulk commodity prices, large world supplies and foreign export competition, and a strong U.S. dollar led to lower export value in fiscal 1999, with exports of both bulk and high-value products (HVPs) declining. Fiscal 2000 U.S. export value is expected to remain about unchanged from fiscal 1999, at $49 billion, as the value of HVPs begin to recover, but bulk export value remains depressed. Starting in 2001, growth in both bulk and HVP exports is expected to rebound for the remainder of the baseline. Averaging 5.6 percent per year during 1999-2009, projected bulk commodity value growth exceeds growth in both the 1980s and the 1990s, lending strength to total export earnings. Cotton and grain exports rebound significantly from the recession of the previous decade. HVP export growth is projected to average 3.8 percent annually during 1999-2009, slower than in the 1990s. The share of bulk products in agricultural exports rises slightly in the baseline.

Table 36. U.S. agricultural trade values, baseline projections, fiscal years

	1998	1999	2000 1/	2001	2002	2003	2004	2005	2006	2007	2008	2009	1999-2009 growth rate
						Billion dollars							*Percent*
Agricultural exports:													
Animals and products	11.2	10.1	10.8	9.8	10.5	10.8	11.2	11.7	12.0	12.5	12.8	13.3	2.8
Grains, feeds, and products	14.1	14.4	13.4	14.4	15.1	16.7	18.1	19.4	20.5	23.3	23.6	25.0	5.7
Oilseeds and products	11.1	8.7	8.6	8.6	8.8	9.3	10.0	10.7	11.4	12.1	12.6	12.5	3.7
Horticultural products	10.3	10.3	10.5	11.8	12.4	12.9	13.5	14.1	14.7	15.3	15.9	16.5	4.9
Tobacco, unmanufactured	1.4	1.4	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	-1.6
Cotton and linters	2.5	1.3	1.5	2.2	2.6	2.8	2.6	2.6	2.7	2.9	3.0	3.1	8.9
Other exports	2.9	2.8	2.9	3.2	3.3	3.4	3.6	3.7	3.9	4.0	4.2	4.3	4.3
Total agricultural exports	53.6	49.0	49.0	51.2	53.9	57.2	60.3	63.5	66.4	71.2	73.3	75.9	4.5
Bulk commodities exports	20.1	17.8	16.8	18.1	19.0	21.0	22.5	24.2	25.7	28.9	29.6	30.8	5.6
High-value product exports	33.6	31.2	32.2	33.1	34.9	36.3	37.8	39.3	40.7	42.3	43.7	45.1	3.8
High-value product share	62.6%	63.7%	65.7%	64.7%	64.7%	63.4%	62.8%	61.9%	61.3%	59.4%	59.7%	59.5%	
Agricultural imports:													
Animals and products	6.8	7.1	7.2	7.5	7.5	7.6	7.8	7.9	8.1	8.2	8.3	8.5	1.9
Grains, feeds, and products	2.9	2.9	2.8	2.9	3.0	3.1	3.3	3.4	3.6	3.7	3.8	4.0	3.0
Oilseeds and products	2.2	2.0	1.9	1.8	1.7	1.6	1.6	1.8	2.0	2.3	2.6	2.9	3.7
Horticultural products	13.9	15.3	15.7	16.4	17.1	17.9	18.7	19.5	20.3	21.1	21.9	22.8	4.1
Tobacco, unmanufactured	0.8	0.7	0.7	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.2	4.5
Sugar and related products	1.7	1.6	1.6	1.8	1.8	1.9	2.1	2.1	2.0	1.9	1.9	1.9	2.1
Coffee, cocoa, and rubber	6.3	5.2	5.4	5.5	5.5	5.6	5.6	5.7	5.7	5.8	5.8	5.9	1.2
Other imports	2.4	2.6	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.3
Total agricultural imports	37.0	37.4	38.0	39.3	40.2	41.4	43.0	44.4	45.8	47.4	49.0	50.7	3.1
Net agricultural trade balance	16.6	11.6	11.0	11.9	13.7	15.9	17.3	19.1	20.6	23.9	24.3	25.2	8.1
						Million metric tons							
Agricultural exports (volume):													
Bulk commodity exports	98.5	113.7	109.4	115.5	117.6	121.1	124.5	127.4	129.8	132.1	134.3	136.6	1.9

1/ The projections were completed in November 1999 based on policy decisions and other information known at that time. For updates of the nearby year forecasts, see USDA's *Outlook for U.S. Agricultural Trade* report, published in February, May, August, and December.

Note: Other exports consists of seeds, sugar and tropical products, and beverages and preparations. Essential oils are included in horticultural products. Bulk commodities include wheat, rice, feed grains, soybeans, cotton, and tobacco. High-value products (HVP's) is calculated as total exports less the bulk commodities. HVP's include semi-processed and processed grains and oilseeds, animals and products, horticultural products, and sugar and tropical products. Other imports includes seeds, beverages except beer and wine, and miscellaneous commodities.

U.S. imports are projected to grow from $37 billion in fiscal 1999 to $51 billion in 2009, a 3.1-percent average annual increase. From 1995 to 1999, agricultural imports increased 7 percent on average per year, driven in large part by the robust U.S. economy and the strong dollar. The long-term import outlook is expected to be more in line with U.S. GDP growth over the coming decade. Imports of horticultural products, the largest component of U.S. agricultural imports, expanded by 10 percent annually from 1995 to 1999. Horticultural imports are expected to slow

to 4 percent growth from 2000 to 2009. Beverages, fruits, juices, and vegetables will be supplied largely by Mexico, Canada, Chile, and the European Union.

Foreign Agricultural Policy Assumptions and Highlights

Policy assumptions underlying both U.S. and foreign projections are based on full compliance with all bilateral and multilateral agreements affecting agriculture and agricultural trade as of November 1999. Bilateral agreements affecting agricultural trade between the United States and Canada, the United States and Mexico, the United States and Japan (beef and citrus), and the United States and South Korea (beef) are examples of agreements for which full compliance is assumed. In contrast, no compliance is assumed for any agreements not formally ratified by November 1999.

For multilateral agreements, the projections assume full compliance with the internal support, market access, and export subsidy provisions of the Uruguay Round Agreement on Agriculture by all parties to the agreement. Several potential multilateral agreements that could have a significant impact on agricultural trade are now under consideration, but are assumed *not* to occur in these projections. These include:

- No accession to the World Trade Organization (WTO) by the FSU, China, or Taiwan;
- No enlargement of the EU-15 to add one or more Central or East European countries;
- No implementation of more liberalized trade among the Asia-Pacific Economic Cooperation (APEC) countries;
- No expansion of NAFTA to include additional countries, and;
- No implementation of any reforms under consideration in current round of WTO negotiations.

Domestic agricultural and trade policies in individual foreign countries are assumed to continue to evolve along their current path, based on the consensus judgment of regional and commodity analysts. In particular, economic and trade reform underway in many developing countries is assumed to continue. Similarly, the development and use of agricultural technology and changes in consumer preferences are assumed to continue to evolve based on past performance and analyst judgment regarding future developments. Key assumptions underlying the projections for major foreign countries are summarized below.

European Union

The baseline projections for the EU continue to incorporate EU commitments under the Uruguay Round Agreement that limit subsidized exports and improve access to the EU market. Also incorporated are the Agenda 2000 financial and agricultural policy reforms that were adopted in early 1999. However, impacts of the anticipated accession of the Central and Eastern European (CEE) countries to the EU are not included in the projections. Although eastward enlargement

of the EU is likely to have significant implications for agriculture, it is not incorporated into the baseline because of the high degree of uncertainty regarding the final terms and timing of enlargement.

The baseline projections assume that the EU's Uruguay Round commitment to reduce domestic support is not a binding constraint, since many EU domestic support policies meet WTO "production limiting" criteria and are thereby exempt from reduction commitments. Tariffication of nontariff barriers and tariff reductions are expected to have little impact because the high tariffs established for most products are unlikely to permit significant additional imports. Continued high levels of import protection mean that price transmission from the world market will be negligible for all baseline commodities except oilseeds and products and, in the later years, wheat. The most important Uruguay Round commitments for the baseline are the limits on subsidized exports and the minimum import levels agreed under the market access provisions. Even with the Agenda 2000 reforms, there is uncertainty about the measures the EU will use to meet these commitments. It is assumed that the EU will use existing policy mechanisms to comply with WTO commitments without excessive stock accumulation.

Agenda 2000 includes reforms of the grains, oilseeds, dairy, and beef sectors for the period 2000-2006 (see box, page 94). The reforms shift more intervention from price supports to direct payments and modify supply control measures. The principal reforms and assumptions affecting the baseline are:

- The default land set-aside requirement is reduced from 17.5 percent to 10 percent for 2000/01-2006/07. A 10-percent set-aside rate is assumed in the baseline for 1999/2000-2007/08, increasing to 15 percent in 2008/09 because of rising coarse grain surpluses (see below).

- A 15-percent reduction in the cereal intervention price, phased in over 2000/01-2001/02, partially offset by an increase in direct area payments.

- For oilseeds, the area payment is reduced by 33 percent over 3 years, equaling the cereal payment by 2002/03.

- A 20-percent reduction in the intervention price of beef, phased in over 2000-2002, partially offset by increased headage payments.

- Dairy reform is delayed until 2005/06. The dairy quota is increased 1.2 percent for 2000/01-2001/02 and another 1.2 percent for 2005/06-2007/08. Though not specified in the package, dairy prices are assumed to be cut by 15 percent over 3 years starting in 2005/06.

For the baseline, basic support prices are set at Agenda 2000 nominal levels for most commodities, and the land set-aside is initially set at the new default rate of 10 percent. However, any commodity supplies in excess of intervention purchases and on-farm use that cannot be exported are assumed to depress internal market prices below intervention prices to clear domestic markets. For example, when Uruguay Round limits on subsidized exports of

European Union: Impacts of Agenda 2000

In March 1999, the European Union (EU) enacted Agenda 2000, a policy reform package including agricultural reforms, structural policies, a reinforced pre-enlargement strategy, and a financial framework for the 2000-2006 period. EU representatives have stated that Agenda 2000 will be the EU position in the upcoming WTO round on agriculture.

The Agenda 2000 agricultural reforms further shift the EU from price supports to direct payments in order to increase the competitiveness of EU agriculture, appease farmers, and avoid the buildup of intervention stocks. However, the baseline analysis indicates that the EU will continue to need subsidies to export most agricultural products. With export subsidies already restricted by Uruguay Round limits, this means that Agenda 2000 will have little impact on most world agricultural markets.

Agenda 2000 Package

The Agenda 2000 package includes reforms in the arable-crop (grains and oilseeds), dairy, and beef sectors:

- **Reduced intervention prices:** A 15-percent drop in the cereal intervention price over two years (2000/01-2001/02), a 20-percent drop in beef support price over 3 years (2000-2002), and a 15-percent decrease in dairy support prices to be phased in over 3 years starting in 2005/06.
- **Modified direct income support:** An increase of 9 euros/ton for cereal producers to compensate for half of the drop in the intervention price. Direct payments for oilseeds to be aligned to cereal aid (33-percent drop) over 3 years (2000/01-2002/03). An increase in per-animal beef payments in 3 steps starting in 2000 and a new payment per quantity of milk produced starting in 2005/06.
- **Reduced default land set-aside rate:** The default rate is reduced from 17.5 percent to 10 percent. The set-aside rate is to be set at the default rate unless all member states agree on a different rate.
- **Dairy reform delayed:** Dairy quotas are retained for the duration of Agenda 2000 and increased by 2.4 percent. Half of the quota increase is allocated to "deficit" regions for 2000/01 and 2001/02, and the other 1.2-percent increase will be spread over the remaining regions from 2005/06 to 2007/08.

Agenda 2000 Impacts

Arable Crops. The impact of Agenda 2000 reforms on cereals is contingent on world price developments. In the EU, all cereals receive the same intervention (support) price. With current baseline price projections, the 15-percent cut in the intervention price allows EU wheat to compete at world prices in 2004/05, allowing wheat exports to exceed the limit on subsidized

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European Union: Impacts of Agenda 2000--continued

exports set in the Uruguay Round. Without Agenda 2000, the EU wheat price would have been uncompetitive through more years of the baseline and exports would be constrained by the subsidized export limits.

For coarse grains, however, even the reduced intervention prices remain above projected world prices for the duration of the baseline and exports will remain constrained by the ceiling on subsidized exports. With these projections, Agenda 2000 is unlikely to help reduce the large current EU stocks of coarse grains.

There are uncertainties in assessing the impacts of the reforms on EU wheat exports. In particular, because EU wheat farmers have been insulated from world prices, it is unclear how they will react to market signals when wheat can be exported without subsidy. When the world wheat price rises above the intervention price, it will become the new price floor for EU producers. It unclear how farmers will adjust wheat area relative to other crops in response to higher world and domestic market prices. It is also unclear to what extent farmers will opt to produce more food-quality wheat for export, at the expense of the higher yielding feed wheat. Significant changes in feed-wheat supplies would also affect feed rations and exportable supplies of coarse grains, such as barley.

The reduction in EU oilseed payments is expected to result in lower yields, but only a slight shift out of oilseed production. Over the longer term, a modest recovery in world oilseed prices is expected to partially offset the decline in producer support.

Dairy. Dairy reform has been postponed until 2005/06. Milk production will increase by 2.4 percent during the baseline due to the increased dairy quota, but it is unlikely that exports can also increase. Currently, all EU butter exports and nearly all skim milk powder exports are subsidized (see table 37). Analysis of EU export subsidy notifications to the WTO suggests that dairy prices are too high to allow unsubsidized EU exports; the 15-percent price reduction is far smaller than the subsidy for both butter and powder. Additionally, the EU subsidizes over 80 percent of its cheese exports, and has met its subsidized volume binding in the first two years of the UR implementation.

Table 37. EU dairy product export subsidies

	1995/96		1996/97		15-percent
Product	Average subsidy	Share of exports	Average subsidy	Share of exports	reduction in price
	ecu/ton	*percent*	*ecu/ton*	*percent*	*ecu/ton*
Butter	1,750	100.0	1,999	100.0	492
SMP	584	97.3	631	98.7	308

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European Union: Impacts of Agenda 2000--continued

Beef. Because the EU market price for beef is so far above world market prices, all EU beef exports are subsidized. Agenda 2000 reduces the support price by 20 percent (or 556 euros/ton), to a basic price of 2,224 euros/ton. The average export subsidy was 1,478 ecu/ton in 1995/96, 1,297 ecu/ton in 1996/97, and 888 ecu/ton in 1997/98 (note: 1 euro = 1 ecu). Thus, the proposed beef reforms will do little to help the EU increase beef exports. Additionally, much EU beef is a byproduct of the dairy herd. With the proposed increase in the dairy quota, beef production will not drop off significantly. This analysis assumes that the full producer price cut will not be transferred to consumers; rather they will experience less than a 5-percent cut in price. Therefore, Agenda 2000 is expected to do little to reduce beef surpluses through increased consumption.

Pork and Poultry. The decline in internal prices of cereals under Agenda 2000 will lead to lower feed costs. These lower costs are expected to lead to small increases in pork and poultry production. Most of the increase will likely be consumed in the domestic market, where these meats are preferred. A portion of EU pork and poultry output is also exportable on world markets without subsidy.

wheat and coarse grains are binding, excess supplies have to be absorbed on the internal market and drive internal market prices down.

Projected domestic and world wheat prices indicate that EU wheat can be exported without subsidy beginning in 2004/05. Coarse grain exports, however, continue to be constrained by the Uruguay Round subsidized export limits. By 2008, even with internal market prices falling well below intervention prices, coarse grain stocks accumulate to unsustainable levels. To prevent further stock buildups, it is assumed that the arable crop land set-aside will be increased to 15 percent. Imports of coarse grains reflect the EU's market access commitments for corn, while imports of other coarse grains are minimal. Beef exports are projected to remain at WTO-mandated limits on subsidized exports. Subsidized exports of pork and poultry are dictated by WTO commitments, while unsubsidized exports are projected to increase slightly.

Asia and Oceania

Australia. Production for export dominates Australian agriculture. Australian producers are expected to continue to adjust cropping patterns, and to switch between crop and livestock enterprises, to maximize returns. With increasing populations and incomes forecast globally, exports and production of the major commodities are forecast to continue to expand. Key issues in the outlook for production are the response of producers to uncertainties regarding price variability and the availability of water. Until more irrigated area is available, area expansion will be slow for some crops. Several new dams are in the planning stage.

While little growth in wheat area is expected, growth in wheat yields is projected to support increases in both exports and domestic feeding of wheat. Australia ships much of its rice to the

high-priced Japanese market, and is developing varieties specifically for that market. However, further growth in rice exports will be very limited due to constraints on increasing both area and yield. Increases in barley output will depend primarily on yield gains, with the share of barley area and exports devoted to malting barley continuing to rise. Cotton yield, production, and export growth remain heavily dependent on the availability of irrigation water and are projected to show only moderate gains. Although low prices and more favorable returns for other enterprises may limit growth of the cattle herd in the short run, beef production and exports are projected to increase in the medium term.

China. While China's growth has consistently been the strongest in Asia for some time, it is expected to level off from the double-digit pace of the early 1990s to a more sustainable annual rate of 7.4 percent over the next decade. With population growth averaging about 0.6 percent per year, per capita GDP gains will average an impressive 6.7 percent annually. However, future real income gains will be slowed by adjustment problems, particularly rising unemployment as privatization of state-owned enterprises accelerates, and by increasing competition from foreign firms. Credit supply will be directed less by government fiat and more by independent banks, so credit access will be increasingly market based. The country's high savings rate will keep interest rates relatively low in spite of increasing demand for investment. Competition for lower-value export markets should intensify as other developing countries, including Thailand, Vietnam, and India, increasingly enter those markets.

China's agricultural policy has been in a state of flux as government priorities have shifted and reform initiatives have been adjusted. After pushing responsibility for insuring adequate grain supplies down to the provinces (the "Governor's Grain Bag" System) in the mid-1990s, a "Grain Reform" policy was initiated in 1998 reversing several years of liberalization by severely restricting private grain marketing. These two policy initiatives, combined with excellent weather and a slowdown in consumer demand, resulted in rapid growth in government expenditures and burgeoning agricultural commodity stocks. As a result, agricultural imports have fallen dramatically and exports have risen.

In 1999, the government responded to the problems in agriculture by announcing strict new quality standards on government grain purchases, the gradual elimination of purchases of the lowest quality grains, and abolition of the government-set price for cotton and mandatory cotton sales to the government. Despite the negative impacts these changes may have on grain and cotton output in the near term, stocks are more than sufficient to forestall the need to significantly increase grain or cotton imports (see box on page 98).

In late 1999, China's National Bureau of Statistics released revised estimates for total cropped area in the country. The new data have no implications for the baseline projections because the official release reflects information already widely available for several years. The NBS estimates place total cropped area in 1996 at 130 million hectares, 37 percent higher than the previous estimate of about 95 million hectares. Crop production estimates for China are generally believed to be accurate, so the larger area estimate implies that official (and USDA) estimates of crop yields are overstated by an average of about 37 percent. Since the NBS has not released area estimates by crop, or for historical years, it is not possible at this time to revise the USDA area and yield series for individual crops. However, because the new larger area estimate

China: High Grain Stocks Outweigh Impact of New Price Policy

Beginning in late 1994, China's "Governor's Grain Bag Responsibility System" policy encouraged local administrators and farmers to boost grain output, increase grain stocks, and reduce dependence on imports (see table 38). However, the success of this policy introduced a new set of problems for China's leadership. Huge sums of capital have been spent to purchase and store grain. Farmers responded to the lack of quality differentiation in grain purchase pricing by increasing yields at the expense of quality, which produced growing stocks of undesirable low-quality wheat and rice. As stocks soared and production continued to rise, free market grain prices fell, which in turn affected the government's plan to bolster farm income.

Table 38. China: Summary of grain bag policy objectives and accomplishments, 1995-98

Grain bag policy objective	Results in 1995	Results in 1996	Results in 1997	Results in 1998
1. Increase grain area	110.1 mil. ha +0.5 %	112.5 mil. ha +2.3 %	112.9 mil. ha +0.3 %	113.8 mil. ha +0.8 %
2. Increase fertilizer output	25.5 mmt +12.1 %	28.1 mmt +10.2 %	28.2 mmt +0.4 %	30.1 mmt +6.7 %
3. Raise grain yields	4.66 mt/ha +3.53 %	4.89 mt/ha +5.04 %	4.82 mt/ha -1.45 %	4.95 mt/ha +2.70 %
4. Increase grain output	467 mmt +4.8 %	505 mmt +8.1 %	494 mmt -2.1 %	512 mmt +3.7 %
5. Guarantee grain stocks	+25 mmt	+52 mmt	Reported as "record high"	Reported as "record high" of 250+ mmt
On-farm grain stocks	+21 %	+33 %	+20 %	NA
6. Enforce grain transfers 1/	Partial	Partial	Partial	Partial
7. Stabilize urban supplies	Yes	Yes	Yes	Yes
8. Stabilize grain prices 2/				
Monthly average price range (RMB/kg):				
Low month	2.61	2.70	2.22	2.26
High month	2.93	2.92	2.70	2.90
Percent difference	12.3%	8.1%	21.6%	28.3%
9. Raise government share of commercial grain sales 3/	Probably	Probably	Probably	Probably
10. Government control over grain imports and exports	Yes	Yes	Yes	Yes
11. Increase grain self-sufficiency	97 %	99 %	100 %	100 %

Source: USDA, Economic Research Service.

1/ Some provinces erected formal and informal barriers to grain transfers.

2/ Monthly average urban retail prices for milled indica rice.

3/ The protection price mechanism came into play in 1996 - 1998 for various grains, which means that the government was required to purchase more grain than usual. Also, the 1998 grain reform would theoretically place more food grains under government control.

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China: High Grain Stocks Outweigh Impact of New Price Policy--continued

In response to the problems caused by the "Grain Bag" policy, the government announced new grain regulations beginning in the year 2000. The plan reduces government support and purchase prices for lower-quality rice, wheat, and corn procured under fixed quotas, although the new quality standards have yet to be announced. Beginning in 2000, government support prices and fixed quota purchases will be eliminated for spring wheat produced in Inner Mongolia, northern Hebei, Heilongjiang, Jilin, and Liaoning provinces, for low-quality winter wheat produced in some provinces south of the Yangzi River, and for low-quality early indica rice.

Reduced government purchases, and elimination of low-quality purchases, imply reduced grain supply, higher domestic free market prices and, consequently, larger imports. However, the new policy is not expected to boost imports compared with earlier projections for three reasons:

- First, the central reason for the new policy is China's enormous stockpile of grain and the consequent financial burden on central and provincial budgets. A gradual drawdown of those stocks is expected to more than offset any decline in grain output, moderate consumer prices, and prevent significant impacts on import demand. However, this scenario hinges on the assumption that the central government allows the sale of grain stores at current prices, which are significantly lower than the original purchase prices. There is a great deal of resistance on the part of the central government to incurring these financial losses. However, opposition to releasing stocks at prices below cost is weakening as the present value of the carrying costs grows relative to the one-time cost of selling off stocks at a loss. The principle effects of drawing down stocks are reduced imports of wheat, rice, and corn and an increase in corn exports, particularly sales from Northeast China to South Korea and Southeast Asia.

- Second, the economic growth forecast for China is now less optimistic than in previous projections. A sustained slowdown in domestic demand, combined with intractable structural problems in the financial and state-owned industry sectors, are expected to slow growth in income and agricultural product demand compared with earlier projections.

- Third, China increased government investment in agricultural research, development, and infrastructure during the mid- and late-1990s. Although there is a significant time lag before increases in investment have an impact on crop yields, this new investment is expected to boost China's long-term crop yield growth higher than in earlier projections.

was first made available in 1993, the impacts have been accounted for in USDA projections by assuming that China's unmet yield potential is greater than implied by the official data, raising future yield growth rates accordingly.

With respect to trade policy, the government recently resumed value-added taxes on oil meal imports and clamped down on edible oil import smuggling. Over the long-term, this policy shift is expected to result in sharply lower levels of meal imports, modestly lower edible oil imports, and much higher levels of soybean and rapeseed imports.

The net result of the recent agricultural policy changes, combined with slower growth in domestic demand and rising yields, is a reduction in China's projected imports of key agricultural commodities. Wheat, corn, cotton, soybean meal, and soybean oil imports are all lower than previous baseline projections. The projections also show comparatively higher exports of corn and cotton, particularly in the near term.

Although grain and cotton area are expected to decline in the short term, over the longer term area and yield gains and production growth are expected to be modest but steady. More government investment in agricultural research and development and in agriculture infrastructure, such as irrigation and flood control, will be driving forces in reducing costs and increasing returns to farmers. In addition, production of most major crops is expected to rise as yields are boosted by more use of improved varieties, fertilizer, pesticide, and better management.

The long-term trend, however, is for China's agricultural trade system to gradually liberalize as the government attempts to reduce swelling financial outlays supporting the inefficient government-owned agricultural marketing and distribution system. The central government will maintain quotas for trade in key commodities, including wheat, rice, corn, and cotton. The share of trade handled by private, quasi-private, or even joint public-private trade companies is expected to expand gradually. Trade in other agricultural commodities will also be strongly influenced by government policy, but generally only through measures such as licensing, tariffs, and taxes.

The baseline projections assume that China is not a member of WTO during the projections period. However, the November 1999 agreement between the United States and China on China's accession to WTO suggests that China could become a member in the near future. A preliminary assessment of implications of the accession agreement relative to the baseline projections is discussed in the adjoining China WTO accession box.

East Asia. South Korea and Japan are projected to remain large net importers of livestock products. As dictated by the Uruguay Round agreement, barriers to imports continue to fall through 2004 in South Korea and through 2000 in Japan. Deficiency payments to assist the beef cattle sector and dairy import quotas will support cattle production at about present levels, but growing demand will be met through imported beef. Pork and poultry meat production in both countries has been strengthened by structural change and, in South Korea, encouraged by the weakness of the won. South Korea's exports of pork to Japan are expected to continue, but growing imports of pork cuts after the 1997 liberalization of trade will limit South Korean farmers' ability to expand production. Japan is expected to make maximum use of the pork and beef safeguard mechanisms negotiated in the Uruguay Round, which permit temporary hikes in tariffs and levies in order to limit imports. Feed imports will not grow, reflecting stable or declining livestock production in Japan and South Korea.

Taiwan's livestock sector has been deeply affected by liberalization accompanying its WTO membership application, and by the lingering effects of the 1997 outbreak of foot-and-mouth disease (FMD) on its huge hog farms. Taiwan's import ban on offal, chicken meat, and pork cuts (other than hams, loins, and shoulders) was lifted slightly and a quota instituted after the February 1998 agreement with the United States about WTO accession. The outbreak of FMD in March 1997 has completely shut down Taiwan's pork exports. Exports of uncooked pork are not expected to resume for a few years, and even then they will show only gradual growth.

All three East Asian economies are assumed to maintain tight state control over rice trade. Japan and South Korea will continue to meet their minimum access commitments, but will not import

China WTO Accession: Implications for Agricultural Trade

The potential impacts of China's future accession to the WTO are not included in the baseline projections because negotiations on the terms of accession are incomplete, and the timing of formal ratification remains uncertain. It is, however, likely that China will join the WTO during the projection period, and that the terms of accession will result in significant impacts on global agricultural trade. The assumptions used in the following analysis are based on the terms of the U.S.-China accord negotiated in November 1999, and provide a general assessment of its potential trade impacts. There is no assurance that any final China accession agreement will follow the terms or timing of these accords, but the results are useful to illustrate possible outcomes.

Overview of Terms of Accession

- **Trading Rights:** For many goods, the right to import is assumed to be expanded beyond the government to include any non-government entity. China has agreed to phase in these trading rights over three years. Trade in some goods, including wheat, corn, rice, cotton and soybean oil, will continue to be channeled through state trading enterprises (STEs). But, there will be commitments to end STE monopolies by allocating minimum amounts of the import quotas to non-STEs.

- **Tariff Bindings:** China commits to elimination of all non-tariff barriers, leaving tariffs as the only measure affecting imports. Other measures, such as inspection, testing, and domestic taxes will comply with WTO rules. All tariffs are bound at current levels, with reduced tariffs for many products. There will be annual tariff reductions starting in 2000 and continuing, for most commodities, through 2004, when the average agricultural tariff will fall to 17 percent.

- **Tariff Rate Quota Administration:** Tariff-rate quotas (TRQs) are established for major bulk commodities, including wheat, corn, rice, cotton, and soybean oil. For these goods, a specified quantity of imports will enter at a low duty (not to exceed 10 percent), with additional imports assessed a higher duty. The TRQ quantities are assumed to begin in 2000 and increased annually through 2004. There is no minimum purchase requirement, but the TRQs are subject to specific disciplines that base import decisions on commercial, not political, factors. A share of the TRQ is reserved for import by non-STEs.

- **Export Subsidies:** China commits not to use export subsidies for farm products.

- **Domestic Support:** China commits to cap and reduce trade-distorting domestic subsidies.

Implications for Agricultural Trade

The agreed TRQ levels for wheat, rice, corn, cotton, and soybean oil are significantly higher than the baseline projections. The gap between current projections and the TRQ amounts may be viewed as

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China WTO Accession: Implications for Agricultural Trade --continued

an upper bound on the potential increase in China's imports. High over-quota tariffs of 40-80 percent, although declining during the implementation period, limit the potential for over-quota imports.

Wheat: The TRQ amount is 7.3 million tons in 2000, rising to 9.6 million in 2004. However, several factors suggest actual trade gains will be below the TRQ amount. Key factors are high current Chinese wheat stocks that are likely to depress domestic prices and dampen import demand, continued government incentives for wheat producers, and slowing growth in domestic wheat use.

Rice: The TRQ amount is 2.7 million tons in 2000, rising to 5.3 million in 2004, with the quota split evenly between short- and long-grain rice. However, potential for short-grain rice imports is very limited because of large stocks and low domestic prices relative to world prices. There is more scope for imports of long-grain rice, but high stocks, relatively low internal prices, and government incentives for producers should constrain imports to below the TRQ level.

Corn: The TRQ amount is 4.5 million tons in 2000, rising to 7.2 million in 2004. In the near term, imports may not reach the TRQ level because high stocks and a weakening livestock sector are likely to reduce import demand. Also, farmers in Northeast China, the most important corn-producing region, are unlikely to reduce production significantly in the near future. Prospects for filling the quota improve in the longer term because of rapid projected growth in meat consumption and feed demand.

Soybeans and meal: No TRQ is established for soybeans or soybean meal. Both goods continue to be imported freely under relatively low tariffs.

Soybean oil: The TRQ commitment is 1.7 million tons in the year 2000, rising to 3.3 million in 2005, after which the TRQ is eliminated and imports are subject to tariff only. There is significant potential for the soybean oil quota to be filled under the new tariffs and trading rules because of strong domestic demand and high internal prices relative to world prices.

Cotton: The TRQ amount is 743,000 tons in the year 2000, rising to 894,000 in 2004. Imports may remain below the quota due to several factors, including a shrinking gap between domestic and world prices and the potential release of large domestic stocks into the market. In the longer term, once stocks have adjusted, imports may be driven upward by a growing gap between consumption and production, but remain below TRQ levels under ordinary crop conditions.

Meats: No TRQs are established, but China commits to significant cuts in many of its highest meat tariffs. Tariff reductions are likely to increase meat imports from currently very low levels. The agreement also lifts current bans on imports, assures acceptance of products certified by USDA's Food Safety and Inspection Service, and liberalizes distribution services for farm products, including meats. It is difficult to assess the impact of these regulatory changes, but they are likely to boost imports for urban consumption over the longer term.

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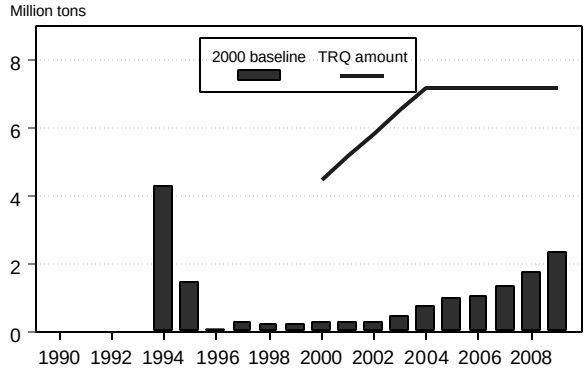
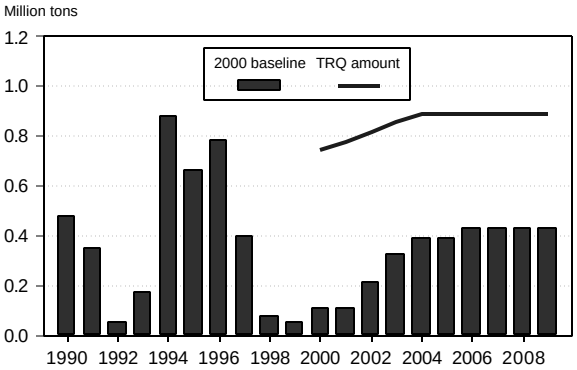
Figure 5. China's Baseline Imports and Proposed TRQs under WTO Accession

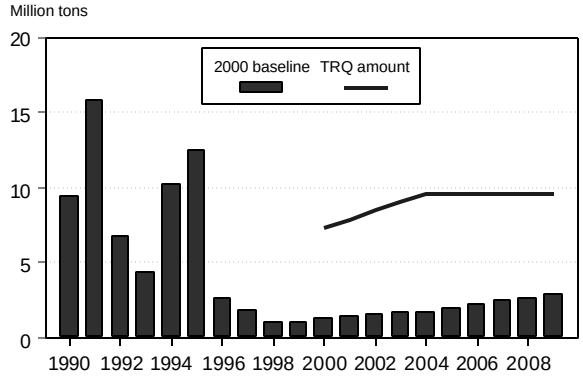
China: Corn Imports



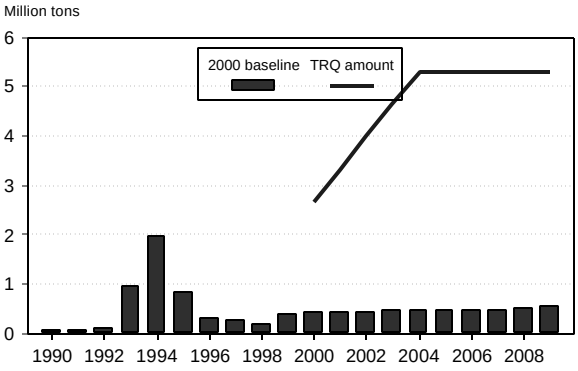
China: Cotton Imports



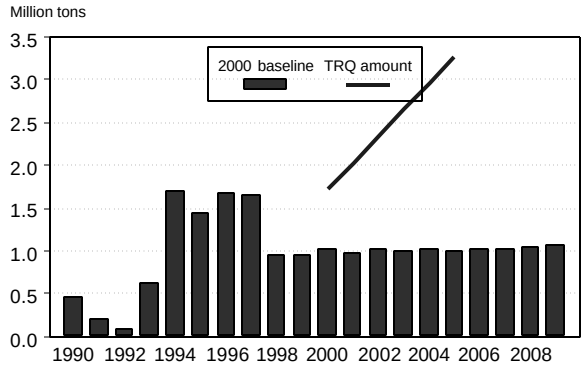
China: Wheat Imports



China: Rice Imports



China: Soybean Oil Imports



above those levels. The tariff levels for over-quota rice imports announced by Japan prohibit significant additional trade.

Wheat, barley, and soybean production in Japan, and barley and soybean production in South Korea, are maintained through border protection and government subsidies. Soybean crushing in South Korea has been put under pressure by the lowering of tariffs on vegetable oil imports, which will continue. The economic crisis in 1997/98 severely weakened the financial position of South Korea's crushing firms, and growing imports of soymeal and soyoil, at the expense of soybeans, are anticipated. The quota for corn for new industrial uses introduced during the Uruguay Round should expand Japan's non-feed imports of corn.

The projections assume that East Asian governments will continue enormous expenditures to help domestic agriculture restructure itself. A continued outflow of labor from farming will help full-time farmers achieve larger operations and economies of size.

Southeast Asia. The Asian financial crisis resulted in exchange rate instability and slowed economic growth throughout Southeast Asia during 1997-1999. Although positive GDP growth rates are expected to return to the region by 2000, average growth rates during the baseline period are expected to remain 2-4 percentage points below historical averages for several countries, including Indonesia, Malaysia, and Thailand.

Indonesia's economic and political stability was the most severely affected by the crisis, and prospects for recovery there remain the most uncertain. Indonesia is assumed to return to modest positive growth in 2000 and achieve 5-percent average growth for 2003-2009, 3 percent below historical performance. Agricultural policy is expected to evolve under the framework agreed to with the IMF, involving reduced government intervention, more privatization, and more open trade. Under the IMF agreement, the Indonesian agricultural state trading agency, BULOG, gave up its monopoly trade rights for rice, wheat, and soybeans, although it retains a key role in domestic rice purchasing, distribution, and inventory management.

Growth in production and consumption of livestock products in the region was dealt a severe setback by the financial crisis. Meat demand and output have now begun to recover from, in some cases, sharply reduced levels. Consumption and imports of feed grains and proteins have also suffered sharp reductions, but are now also beginning to recover.

Rice imports in the region are expected to continue to expand, as production in importing countries such as Indonesia, the Philippines, and Malaysia, remains handicapped by land constraints and slow increases in yields. Although wheat import demand in the region has been slowed in the near term by smaller incomes, higher local currency prices, and Indonesia's elimination of its consumer subsidy, longer-term prospects are still for strong import growth as wheat continues to account for a growing share of diets in the region.

The region's feed-livestock sectors contracted sharply during the financial crisis, but are expected to resume strong growth fueled by rising consumer demand over the longer term. Although local feed production is likely to respond to rising demand, most of the region's economies have limited capacities to produce feed energy and protein. Indonesia, Malaysia, the

Philippines, and Thailand are all projected to show strong long-term growth in import demand for coarse grain and feed protein.

The impacts of the crisis on the region's agricultural exports, including rice, palm oil, and poultry, are mixed. With their devalued currencies, Thailand and Vietnam are expected to remain large and very competitive rice exporters, and Thailand's exports of poultry continue to receive a competitive boost from devaluation of the baht. The financial and political instability in Indonesia have resulted in reductions in palm oil plantings; this is expected to slow long-term growth in exportable supplies.

South Asia. India's farm sector has benefited from improving terms of trade as agricultural price incentives have been maintained and liberalizing reforms have steadily reduced protection in non-farm sectors. The agricultural sector is also responding to the reduction of quantitative restrictions on agricultural imports and exports in response to WTO rulings, as well as the increased emphasis on export expansion as a source of growth. The pace of reforms is likely to be hastened by the strong government installed after the recent election. More emphasis is expected on improving domestic market institutions and competitiveness in the world market, as well as on trade liberalization and incentives for private sector participation.

India's food grain production has received a boost from government price incentives, and is also likely to benefit from the reduced protection of oilseeds resulting from the recent tariffication of vegetable oil imports. Surpluses of rice are projected to continue in the baseline, with India's relatively low-quality rice maintaining its price competitiveness and a significant global market share. The current large domestic surpluses of wheat, created in part by large increases in administered prices, however, are not exportable without subsidy under current world market conditions. Despite the surpluses held in northern areas, the high administered prices are permitting wheat imports to flow into southern ports. While some wheat imports are projected to continue, it is assumed that the government will gradually adjust administered prices to balance domestic supply and demand.

With the tariffication of vegetable oil trade remaining in place, India's vegetable oil imports are projected to resume rapid growth. Import demand will be boosted by lower domestic consumer prices for vegetable oil, as well as slowed growth in domestic oilseed production. India's exports of soymeal are expected to continue to grow, as soybean producer incentives are less affected than other oilseeds by lower internal oil prices, but export growth will be slowed by area constraints and rising domestic feed demand. Price incentives and productivity gains are expected to sustain strong growth in cotton production, with most production consumed domestically to meet domestic and export demand for cotton-based products.

Economic growth projections for Pakistan have been reduced because of declining capital inflows and continued low rates of domestic savings and investment. Agricultural policy is expected to continue to support gains in cotton area and yields. As a result, wheat yields are likely to remain well below potential due to late planting on double-cropped land. Dependence on imported wheat is projected to continue to rise.

Pakistan's cotton yields are expected to recover gradually from recent pest-related problems. As with India, most cotton production is likely to be processed domestically, contributing to strong growth in exports of cotton-based products. Small increases in rice area will allow rice exports to slowly expand. Relatively liberal import policies, combined with limited production potential, will likely lead to continued growth in vegetable oil imports. Growing livestock product demand is expected to result in growing soybean meal imports and, possibly, the emergence of feed corn imports during the baseline.

Africa and the Middle East

Sub-Saharan Africa. Growth in Sub-Saharan Africa's food grain production is projected at about 2.7 percent annually, just short of anticipated annual population growth. The region's food grain imports are linked to the global availability of food aid and its chronically limited capacity to import commercially. Food grain imports are projected to grow about 1.1 percent per year, rising from their current level of roughly 10 million tons to about 12 million tons in 2009/10. With these supply projections, total food grain consumption will rise at an annual rate of about 2.4 percent, implying a 0.3-percent annual decline in per capita consumption.

The global food aid assumptions underlying the projections (see box on page 107) call for the United States and other donors to maintain recent normal budget allocations to food aid, and imply that the volume of global food grain aid will decline about 2 percent annually. Food grain aid availability for Sub-Saharan Africa is, however, expected to remain roughly constant as an increasing share of available aid is allocated to the region's highly food-insecure countries.

Despite the importance of food aid to the region, food aid imports remain a small share of total grain imports. Commercial purchases currently account for about 75 percent of Sub-Saharan Africa's food grain imports, and this share is projected to rise to near 80 percent over the projection period. Commercial imports are constrained by the region's limited capacity to earn foreign exchange, and are projected to grow only about 1.2 percent per year.

North Africa. Growth in import demand for grains and feeds is projected to strengthen during 1999-2009, based on the outlook for improved economic growth, limited production potential in some countries, and more open trade policies.

In Egypt, progress has been made in expanding the role of the private sector, liberalizing the treatment of trade and investment, simplifying the tax regime, and reducing bureaucratic impediments and structural distortions. Egypt has overcome a series of exogenous shocks, including lower world oil prices, lower revenues from the tourist sector, lower volume of exports, and increasing flows of imports. Egypt's growth rate has held up relatively well, inflation has fallen to 3.4 percent, and its net international reserves remained on the whole strong during 1999. As a result, the economy is now more flexible, efficient, and open than it was few years ago. However, Egypt has a long way to go to complete the structural transformation of its economy. In particular, further progress is needed in raising national savings and investment to sustain the higher economic growth, reduce unemployment, and improve gains in living standards. Egypt has signed an Association Agreement with the European Union to open its

Projections for U.S. and World Grain Food Aid

Because food aid can significantly influence U.S. and world grain markets, donations of grain are included in the baseline projections. Globally, grain food aid averaged 10.8 million metric tons during the last 30 years, and accounted for 5 percent of total world grain exports. U.S. grain aid averaged about 6 million tons and accounted for nearly 8 percent of U.S. grain exports. U.S. and foreign grain aid have declined in the last decade, but are still important for some commodity and regional markets. Wheat tends to dominate world donations of food aid. In low-income food deficit countries, receipts of grain food aid can affect both consumers and producers.

Donations of food aid will be influenced by the intersection of food aid availabilities in donor countries and food aid needs in recipient countries. The major factors affecting food aid shipments are donor countries' funding for food aid and the price of the products that will be purchased with the budgeted funds. Projections for the volume of grain food aid depend on future grain prices, determined by changes in the world supply and demand for grains, and on assumptions about future food aid budgets.

For the United States, the majority of grain food aid is provided through P.L. 480 and Section 416 (b). P.L. 480 is subdivided into Title I (concessional sales, administered by USDA), and Titles II and III (grant aid, administered by the Agency for International Development). Donations under Section 416 are from stocks accumulated by, or products purchased by USDA's Commodity Credit Corporation. Grain donations under P.L. 480 and Section 416, including the Russian aid package, rose sharply in FY 1997/98 and 1998/99 (see figure 6).

Budget projections for the U.S. food aid programs are part of OMB's budget planning process. These budget projections show a drop in 1999/2000 because of sharply lower aid to Russia and smaller declines through 2004/05, followed by stable, inflation-adjusted levels for the remainder of the baseline. The projected volume of U.S. grain aid declines significantly for several years and then stabilizes, with subsequent small changes in donations changing inversely to real price changes.

The major foreign food aid donors are the EU-15, Japan, Canada, and Australia. Other donors include Switzerland, Norway, India, Saudi Arabia, Argentina, Turkey, New Zealand, and the U.N.'s World Food Program. To project grain food aid for these donors, it is assumed that, on average, these countries will maintain a constant real budget that is allocated to the purchase of grain. The volume of projected grain aid responds inversely to changes in the real price of grain. As a result, the volume of non-U.S. grain aid is very stable, declining slightly during the early part of the projection period and rising somewhat towards the end of the period.

Historically, there have been significant year-to-year variations in the value and volume of U.S. and foreign grain aid. The fluctuations have occurred in response to changing budgets, volumes of available products, or prices. On a volume basis, grain aid from the United States and the EU, the world's largest donors, have experienced greater year-to-year changes than aid from other donors. However, measured in terms of year-to-year percentage changes in the volume of aid, the donors

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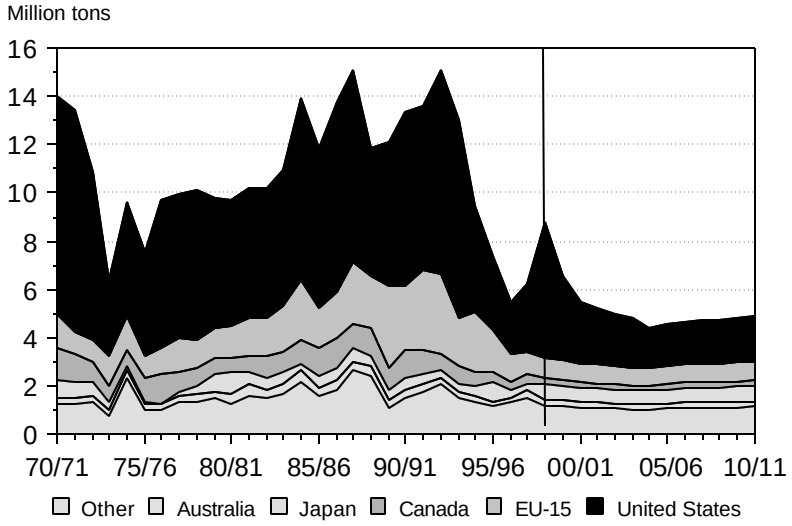
Projections for U.S. and World Grain Food Aid -- continued

with the least volatility have been Australia, the United States, Canada, and the EU. Some of the smaller donors have demonstrated erratic year-to-year donations, but their impact on total food aid and on world markets is negligible.

The United States has dominated world food aid donations. During the 1970s and 1980s, U.S. grain aid generally accounted for 55 to 70 percent of the world total. In 1994/95, the U.S. share dropped below 50 percent for the first time, although the United States was still the largest single donor. The U.S. share of world grain aid is projected to decline further during the next several years to about 42 percent. The projections for total world grain food aid decline slightly during the next decade to about 5 million tons a year, down from more than 10 million tons during most of the 1980s. As this occurs, food aid's share of rising global grain trade declines from more than 5 percent during most of the 1980s to less than 2 percent by 2010. As a result of the declines in the volume of grain aid and of aid's share of total world grain trade, food aid is expected to have a reduced affect on world grain markets.

Figure 6. Grain Food Aid Donations



However, in Sub-Saharan Africa (SSA), the region with the greatest food aid needs, food aid will continue to be important. Per capita caloric consumption and consumption of grain is lower that any other region. The share of the population that is undernourished is also relatively high. Baseline projections for agricultural production in SSA suggests that growth in output will not fill the gap between food needs and availability. The financial capacity to increase commercial imports is also projected to be insufficient to fill the gap. As a result, an increasing share of global food aid is projected to be allocated to SSA, rising from 25 percent in the early 1990s and 30-35 percent in recent years, to about 45 percent by 2010. The volume of grain aid for SSA will remain about 2.0 to 2.5 million tons a year, as SSA's increasing share of global food aid is offset by a gradually declining level of world food aid. Other non-SSA traditional food aid recipient countries are projected to obtain an increasing share of grain import needs from commercial channels, rather than from food aid donations.

market to EU producers, eliminating tariffs on raw material and intermediate capital goods within 5 years, and on industrial goods by 2010. In return, Egypt will benefit from expanded EU quotas for agricultural and textile exports.

Egypt's real GDP growth is projected at 4-5 percent annually during the baseline. Rising consumer demand and recent policy reforms are expected to generate more growth in wheat, corn, and soybean imports. Corn imports have increased considerably in response to the booming poultry and livestock sectors, and to demand for starch and sweeteners. Soybean imports are expected to expand rapidly due to the recent development of crushing capacity in private sector. Consequently, growth in imports of soybean meal is expected to slow. Rice area has increased, mostly due to a shift out of cotton, boosting rice exports to more than 300,000 tons early in the baseline.

In Algeria, reform measures continue to stabilize and restructure the economy, which improved during 1999 due to increase in oil prices and near-record agricultural production. In late 1998, Algeria moved to a flexible exchange rate, resulting in depreciation of the overvalued currency, improved local producer incentives, and more capital inflows and investments. However, both wheat and corn imports are projected to rise, as growth in demand for food grain and feed grain continues to outpace local production gains.

Morocco has continued its structural reform and policy liberalization by phasing out food subsidies and replacing them with direct financial support to domestic producers to improve social conditions in rural areas. Reforms have led to more privatization, freer labor markets, a more flexible exchange regime, improved international reserves, and lower inflation (under 3 percent). Real GDP growth, forecast between 4 and 5 percent annually, coupled with a continuation of government reforms and recent steps to liberalize trade, sparks stronger growth in imports of grains, oilseeds, and sugar.

Tunisia is expected to continue its strong economic growth performance during the baseline period, backed by strong investment, decelerated inflation (down to 3.1 percent), increasing privatization to open the economy for foreign competition, and continuing reforms in banking, telecommunications, and transport sectors. Tunisia, which began liberalizing its domestic markets and trade in 1992, is projected to have annual real GDP growth of 5 to 6 percent a year and is expected to boost import demand for wheat, feed grains, soybean oil, sunflower oil, refined sugar, and livestock products. A member of the WTO, Tunisia has also signed a Free Trade Zone agreement with the EU, to gradually eliminate tariffs by 2008.

Middle East. Macroeconomic performance in the region improved in 1999, as the global economy strengthened and oil prices rose from 1997/98 lows. In part due to prospects for oil prices to remain relatively strong, the region's economies are projected to experience moderate economic growth during 1999-2009, somewhat higher than occurred during the 1980s. With annual population growth rates still above 2 percent, annual per capita GDP growth in the region is expected to average about 1.7 percent during 2000-2009. The region's economic performance will, however, remain strongly tied to the typically uncertain outlook for petroleum export earnings.

Prospects for Iran's economy remain highly dependent on both oil prices and the implementation of structural reforms. Livestock and dairy development will increase demand for corn and soybean meal imports, as domestic production potential is limited. Although per capita wheat consumption is likely to decline with higher incomes, import demand will continue to rise because of strong population growth and constraints on domestic production.

The political and economic outlook for Iraq remains very uncertain. Recent increases in oil export revenues have led to rising imports of wheat, rice, and other foodstuffs. The economy is assumed to maintain a moderate recovery path with 5-6 percent annual GDP growth. With a continued rebound in consumer demand and petroleum export revenues, food consumption is projected to expand from the lows of the early 1990s toward the higher levels achieved in the mid-1980s. Although the livestock sector has yet to begin its recovery, in part due to 1999 drought, expansion of poultry production is projected to stimulate rising imports of corn and feed protein, neither of which Iraq produces in sufficient quantities.

Saudi Arabia's economy continues to be heavily dependent on the performance of the petroleum export sector. The recent recovery in oil prices has again postponed structural reforms and privatization. The Kingdom's economy will, however, continue to be adversely affected by revenue shortfalls and under pressure to reform its policies. With population growth continuing to average more than 3 percent per year, per capita income growth is projected to remain modest, though stronger than the early 1990s. Concern with the depletion of water resources is expected to constrain grain output during the projection period. Imports of wheat and rice are projected to rise, as demand growth outpaces production. Continued strong expansion of the livestock and poultry sectors is also projected to boost imports of feed grains and oil meals.

Turkey's economy continues to struggle with high inflation and rising debt. The collapse of the Russian economy led to significant trade losses, and textile exports have suffered from increased competition. While Turkey's population growth rate is declining, its population is becoming increasingly urbanized, raising demand for livestock and poultry products. Per capita GDP is expected to be relatively sluggish in the near term, but average a robust 3 percent during 2001-2009.

Expanding urban areas are encroaching on agricultural land and raising environmental concerns in Turkey. The lack of a strong commitment to privatization and restructuring of the farm sector is expected to affect both agricultural trade and overall economic performance during the projection period. Lack of a coordinated livestock development program portends continued high meat prices. High grain price supports and import tariffs result in relatively high domestic grain prices. For the projections, it is assumed that there will be moderate reductions in producer supports and import tariffs for grains, more transmission of world prices into the domestic market, slowed growth in area and production, and rising net grain imports. Gains in cotton production have been tempered by slow area expansion in the Southeastern Anatolian Project (GAP), and reduced domestic and export demand. Cotton imports are expected to rise in the near term, but slow as the GAP cotton area comes on stream later in the projection period.

Western Hemisphere

Canada. The Canadian economy has weathered the international financial crisis well due to massive restructuring of both the external and internal sectors. With that, it is assumed that the Canadian dollar will appreciate gradually during the next few years, before returning to the longer-term pattern of depreciation against the U.S. dollar through the remainder of the baseline period.

Canada's farm sector is currently facing low commodity prices, which has led to government support through disaster assistance programs. Other domestic agricultural support programs are the Net Income Stabilization Account (NISA), Crop Insurance, Companion Programs, Advance Payments Program, and the Price Pooling Program for wheat and barley under the Canadian Wheat Board. In addition, Canada maintains supply management programs for dairy, eggs, and poultry products. Although disaster assistance is assumed to be limited to the current crop year, it is assumed that other programs remain near current levels of support during the baseline.

Canada is reviewing its transportation system. The new Canadian railway system is expected to be more "commercially oriented," likely lowering costs and improving the grain marketing system in the long run. The removal of transport subsidies in 1995 contributed to a number of important structural changes now shaping the outlook for Canadian agriculture and trade. These include the expansion of canola production and processing and more recently, the rapid expansion of hog operations, primarily in Manitoba.

Crop production patterns continue to favor canola in Western Canada, as has been the case in the past several years. Feed and industrial use are projected to grow as the livestock industry expands. Favorable world and U.S. economic prospects over the baseline period will bolster Canada's export prospects. Canadian exports depend heavily on the U.S. market, which accounted for about 57 percent of Canada's agricultural and food product exports in 1998. Asia as a whole bought nearly 19 percent of Canadian exports, declining from a 22 percent share in 1997. Strengthened economies in Asia during the baseline lead to improved export prospects for Canadian wheat and pork. This also implies higher feed demand and higher demand for feed imports from the United States.

Mexico. Mexico is expected to show the fastest economic and population growth in North America over the next decade. Relatively fast growth, along with trade liberalization and domestic policy reform, will be the key factors shaping the outlook for Mexican agriculture during 1999-2009. Mexico is expected to be a progressively larger importer of grains, oilseed products, and meats during the projection period. Production capacity will remain limited by scarce water and land and low levels of technology, while rising incomes drive up demand for livestock products and feeds.

Over the next year (1999/2000) Mexico will face increasing domestic pressure to limit imports because of the continued low internal prices for most agricultural commodities and upcoming Mexican presidential election in the summer of 2000. However, over the long run, agricultural policy is expected to continue to be driven by the Alianza para el Campo, of which the PROCAMPO program is a major component, and by NAFTA. Under PROCAMPO, the

government continues to reduce its role in supporting grain prices. With lower import duties on corn, sorghum, and wheat, there will be more price transmission between the world and the Mexican domestic grain markets. Stiff competition from imports is expected to reduce area planted to coarse grains and limit wheat area. PROCAMPO direct payments, which require planting but are otherwise decoupled, will continue to be phased out. Mexico is also expected to continue to reduce consumer subsidies.

Under NAFTA, tariffs on all baseline commodities are to be eliminated by 2008. Because of the price-competitiveness and quality of U.S. corn, pork, poultry, and eggs, it is assumed that Mexico will import at least the tariff-rate quota quantities. In the case of poultry, it is assumed that Mexico will continue to not enforce the TRQ, leading to steady, modest growth in imports.

New programs aimed at improving agricultural productivity are assumed to have a small impact on farm output during the projection period. The new programs include initiatives for water distribution and irrigation investment, improved genetic material and equipment for livestock producers, technology transfer for the cattle and oilseed sectors, certified seed exchange, and an extension initiative for corn. The objective is to provide producers with the tools to operate in an environment largely free of government intervention but, until there is concrete progress in implementing the programs, it is assumed that impacts will be relatively small.

South America. Although recent economic performance in South America has been slowed somewhat by financial and trade impacts of the Asia crisis, most of the region's economies are expected to register strong economic growth rates during the next decade. Growth prospects are led by the two largest economies in the region, Brazil and Argentina. Like many countries in South America, they are expected to continue to benefit from their successful evolution from semi-authoritarian political systems and managed economies to political pluralism and market-oriented economies.

Brazil's agricultural production prospects are extremely favorable in the long-term, despite near-term constraints on investment in processing facilities and other infrastructure stemming from recent austerity measures. Domestic producers face strong price incentives in local currency terms due to the recent depreciation of the Brazilian currency. In the states of Maranhao and Tocantins in north-central Brazil, for example, the potential exists to increase soybean area from only 0.2 million hectares in 1998 to about 3 million hectares. Such growth would put these areas on a par with the main traditional soybean producing areas of Rio Grande do Sul and Mato Grosso.

In Brazil, waterway and railroad transportation are expected to gradually improve, making more agricultural production accessible to terminals and more competitive in international markets. The conversion of undeveloped land to arable land is expected to gain momentum in the next decade, leading to further gains in soybean area and, particularly, in cultivated pastures to support livestock expansion. Area planted to wheat and corn is expected to show little or no growth, however, because of competition from more efficient producing areas in neighboring Argentina.

Argentine production potential will continue to expand rapidly over the course of the baseline projection period, although this expansion may be tempered somewhat if global demand and commodity prices remain weak. In Argentina, future growth will likely manifest itself in the form of higher yields, rather than area expansion. Yields of wheat, and especially corn and soybeans, are still considerably lower than in the United States. However, with continued adoption of higher-yielding plant varieties and more intensive input use, Argentina may rapidly close this gap.

Argentina's transportation infrastructure, which has largely been privatized, continues to be upgraded to handle the expanding supply of products more efficiently and at lower costs. The livestock sector, which has recently been suffering through a period of depressed cattle prices, is poised to rebound. Argentina has been declared free of foot-and-mouth disease, opening new markets for Argentine fresh and frozen beef.

Transition Economies

Former Soviet Union. The economic crisis that hit Russia in August 1998 affected not only that country, but also the other countries of the FSU, in two main ways. The first was through capital flight contagion effects, and the second through disruption of trade with Russia. In the next few years, GDP growth in Russia and Ukraine is expected to be either negative or only slightly positive. By 2002, growth in both countries is expected rebound modestly to exceed 2 percent annually. After severe depreciation in 1998 and 1999, the Russian ruble and Ukrainian hrivna are expected to stabilize in value, and then begin to gradually appreciate in real terms after 2000, thereby reversing some of the recent depreciation. Agricultural productivity throughout the FSU region is expected to rise only slightly throughout the projection period. This reflects pessimism that Russia and its FSU neighbors will not enact the institutional reforms in agriculture necessary to promote productivity growth.

Economic and agricultural policy could change in Russia in the near term, as new elections for the legislature (Duma) were held in December 1999, and will be held for President in March 2000. The limited success of reform policies during the Yeltsin period, and particularly the hardships accompanying Russia's recent economic crisis, will probably produce a government that will not substantially accelerate the current slow pace of economic reform. This assumption underlies the baseline's cautious projections for growth in GDP and agricultural productivity.

The main effect of Russia's crisis on Russian and FSU agricultural trade is that the depreciation in FSU currencies significantly reduced the region's imports by raising the prices of imports relative to domestic output. Since the currencies are not expected to begin to appreciate for a few years, agricultural imports are expected to remain depressed in the short- to medium term. However, as currencies begin to appreciate in real terms and growth picks up in the next decade, imports are expected to rise. The main U.S. agricultural export to the FSU region during the reform period has been poultry, with most going to Russia. By the end of the projection period, U.S. poultry exports to the FSU are projected to rebound to about two-thirds the pre-crisis level.

Central and Eastern Europe. The CEE region suffered macroeconomic setbacks in 1999 brought on by fallout from financial crisis in Russia and, in the case of the Balkan countries, by

the war in Kosovo. Growth slowed in all CEE countries in 1999 and, as a result, near-term growth rates are expected to be somewhat lower than projected previously. Nevertheless, growth is still expected to be positive, averaging 2-3 percent per year in the early years of the baseline, and returning to a rate of 4-5 percent annually by around 2002.

Despite these setbacks, it is assumed that progress will continue towards market reform. As the economic transition proceeds, it is assumed that most of the rigidities inherited from the Communist period of central planning will be removed, leading to fuller transmission of world market prices to internal markets. The projections are based on the assumption that most world agricultural commodity prices will be fully transmitted to domestic markets and that import tariffs in most cases will not exceed 30 percent. In the short term, policies throughout the region have kept domestic producer prices near world levels. These measures have tended to counter the downward pressures on prices coming from lingering bottlenecks in the downstream sectors. As a result, it is assumed that domestic producer prices will not differ greatly from world market prices. Pressure to keep state budgets in balance is expected to remain the principal constraint on agricultural policy.

The projections also incorporate an assumption of a steady increase in efficiency in the agricultural sector, reflected in moderate gains in crop yields and greater feeding efficiency in the livestock sector. These productivity increases are expected to come about as a result of continuing progress toward market reform in all the CEE countries. Rising incomes and lower interest rates will bring badly needed investment to both agriculture and food processing. There will likely be some consolidation of the small fragmented farms that currently dominate much of the landscape. It is anticipated that land tenure will become more permanent, bottlenecks in issuing titles will be resolved, and true land markets will develop as capital markets improve.

The baseline assumes that none of the CEE countries will join the EU during the projection period. The EU has now agreed to open negotiations for accession with all the CEE nations. Although some CEE countries may join the EU by 2003, the timing and terms of accession are uncertain. When CEE countries do accede to the EU, significant changes in domestic and trade policies from those assumed here are likely.

Commodity Trade Highlights

Growth in the volume of global trade and U.S. exports of wheat, coarse grain, and cotton is projected to be stronger than the 1980s or 1990s due to ample world supplies and strong, broad-based demand growth in developing countries. Meat trade is also expected to show solid long-term expansion, particularly in Asian markets, but not to match the rapid growth achieved in the 1980s and 1990s. World rice trade is projected to continue to rise, but U.S. exportable supplies are expected to fall. In contrast to the gains anticipated for other commodities, global trade and U.S. exports of soybeans and products are projected to slow significantly during 2000-09, as a slowdown in EU demand offsets steady growth in most other regions.

Growth in import demand in developing country markets in Asia, Latin America, North Africa, and the Middle East is key to the baseline projections. In these regions, import demand prospects are linked closely to the outlook for improved rates of income growth, and associated

increases in food and feed consumption, as well as the ongoing process of unilateral liberalization of domestic and trade policy in many countries. However, the projection that China's imports of grains will show little increase, despite continued strong income growth, is key to the baseline. Also, the previously large markets in the FSU are projected to achieve only a modest recovery in economic growth and import demand for farm goods, including grains, meats, and fibers.

The United States is expected to continue to face strong competition for market share in most commodities. In the near term, the recent sharp currency devaluations in countries such as Brazil, the FSU, Indonesia, and Malaysia will stiffen competition oilseed, grain, and vegetable oil markets. Over the longer term, the competitiveness of South American exporters, particularly Argentina and Brazil, is expected to be strengthened by continued internal price stability, an improved environment for agricultural investment, and more adoption of available technology. China is also expected to remain a significant competitor in corn markets. With the exception of wheat, adoption of Agenda 2000 reforms is not expected to affect EU competitiveness. EU exports of coarse grain and meats remain constrained by export subsidy limits, but competition from unsubsidized EU exports of wheat is projected to emerge by the middle of the baseline. U.S. meat products are expected to remain highly competitive in world markets although other suppliers, including Argentina, Canada, Brazil, and Australia, are also projected to significantly expand exports.

Coarse Grains

Demand for coarse grains is expected to grow robustly over the next decade. World consumption of coarse grains is expected to increase 1.8 percent annually, significantly stronger than the 0.8 percent annual growth of the 1990s or the 1.2 percent rate of the 1980s. Projected growth is, however, well below the 7.6-percent annual gain of the 1970s. A key factor that weakened global coarse grain demand over the past decade was the drop in livestock numbers and feeding that occurred in the former Soviet Union and Eastern Europe as these economies experienced structural reform. With that structural shift now complete, these transition economies are expected to be a source of growth in grain feeding in the next decade.

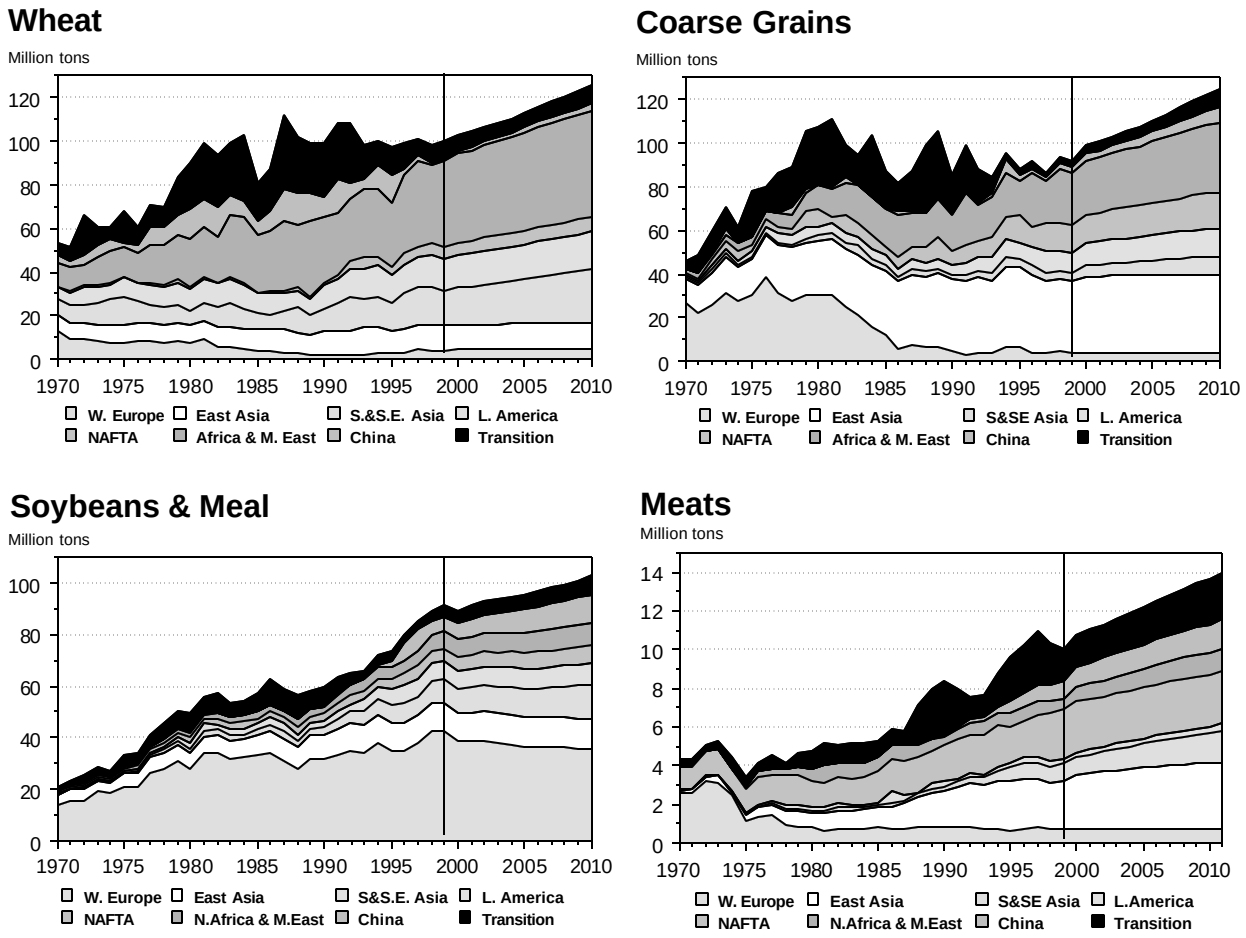
About two-thirds of global coarse grain supplies are used as animal feed, and coarse grain that is traded is primarily used as feed. Rising incomes and associated gains in per capita meat consumption, particularly in developing countries, are a key driver of projected gains in coarse grain use and trade. Despite some weakness in demand in the early years of the baseline associated with economic problems in some countries, the developing countries of Asia, Latin America, North Africa, and the Middle East are expected to lead world growth in feed grain consumption and trade over the next decade. Industrial uses, such as starch production, ethanol, and malting, are relatively small but growing. Food use of coarse grains is concentrated in parts of Latin America, Africa, and Asia, and has generally declined over time as consumers tend to shift consumption toward wheat, rice, or other foods as their incomes rise.

Foreign coarse grain production is projected to rise much more rapidly through 2009 than during recent decades. Except for corn, coarse grain area has been falling for decades in most countries, as producers turned to higher priority or more profitable crops. The baseline indicates that

Regional Commodity Trade Patterns

The charts in figure 7 show regional pattern of global commodity imports and highlight key sources of historical and projected growth in import demand. Global trade in both wheat and coarse grain was unstable with no overall growth during the 1980s and early 1990s. The major source of instability and weak growth in the wheat market has been the behavior of the transition economies of the former Soviet Union, as well as China. Similarly for coarse grains, instability and weak overall growth since 1980 has been primarily due to developments in the FSU, the drop in EU imports in the early 1980s and, to a lesser extent, the recent drop in China's imports. For both wheat and coarse grains, however, underlying growth in other regions, particularly the developing regions, has been relatively strong and stable. For the 2000-2009 period, both markets appear poised for growth even without significant contributions from the past sources of instability.

Figure 7. Imports by region, selected agricultural commodities



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Regional Commodity Trade Patterns -- continued

In contrast to grains, the market for soybeans and meal (in soybean equivalents) has been more stable and has grown steadily, particularly since the late 1980s. Growth in the dominant EU market, as well as the other major developed and developing region markets, has been relatively steady. For 2000-2009, however, declining EU import demand is projected to slow overall trade growth somewhat despite continued expansion in other regions, particularly China.

Trade in meats (beef, pork, and poultry) has shown strong growth since the mid-1970s, with fluctuating demand by the transition economies of the FSU accounting for the bulk of any instability in trade volume. The East Asian markets have provided most of the impetus for growth, but there has also been steady expansion in other markets, including China, and Southeast Asia. Trade growth is projected to remain strong for 2000-2009 but, more than for other commodities, this outcome will depend on developments in the volatile FSU market.

foreign coarse grain area will stop declining. Foreign corn area is expected to continue to increase at the strong pace of recent decades and, with corn yield growth much stronger than for other coarse grains, corn will increasingly dominate feed grain markets. Sorghum area is also projected to increase, with other coarse grain area increasing slowly. Growing demand and attractive prices for malting barley supports barley area, but low returns for feed barley result in a small decline in area.

Reversing a decline that began in the early 1980s, world import demand for coarse grains is projected to strengthen, with trade expanding 2.3 percent, or about 2.5 million tons, annually from 1999 to 2009. Global coarse grain trade is projected to exceed the 1980/81 record of 108 million tons in 2003/4 and reach 121 million tons by 2009. Strong economic growth is expected to fuel higher coarse grain imports in China, North Africa, Southeast Asia, and Latin America. East Asian imports are projected to remain mostly steady, despite near-term macroeconomic problems, as these countries tend to maintain domestic livestock and poultry production, while imports satisfy more of the growth in meat demand. Taiwan's feed imports are expected to recover somewhat as hog numbers rebound and poultry production continues to expand. Southeast Asian feed grain imports are expected to be slowed during recovery from the effects of the financial crisis, but show strong longer term growth. The FSU, one of the world's largest importers during the 1980s, is expected to be a modest net exporter of coarse grains, mostly barley, as animal numbers increase only gradually.

U.S. exports of coarse grains are projected to expand throughout the baseline. U.S. corn exports grow an average of 1.3 million tons per year, reaching 62.2 million by 2009. Total U.S. coarse grain export growth is projected at 2.7 percent per year, reaching 70 million tons in 2009, but remaining below the 1979/80 record of 71 million. The U.S. share of world coarse grain trade is projected to grow to 58 percent in 2005, but stabilize in the last few years of the baseline. Toward the end of the projection period, growth in U.S. market share is expected to slow as stronger prices boost foreign production and U.S. area expansion is increasingly limited by the CRP and crop competition.

Competitor coarse grain exports are also expected to increase, with Argentina gaining market share due to strong increases in productivity and infrastructure. Early in the baseline, Argentina offsets reduced competition from Eastern Europe. For the first 3 years of the baseline, China's exports are projected to exceed 6 million tons in order to dispose of burdensome corn stocks. China's exports are then projected to slow, with the country becoming a net importer of coarse grains by 2006, but significant corn exports out of the northern China are expected to be sustained throughout the baseline.

World corn trade is expected to expand rapidly, passing the 1989 record of 80 million tons in 2004/05, and reaching 91 million tons by 2008. The largest gains in corn imports are expected to occur in China, Southeast Asia, Latin America, North Africa, and the Middle East, where demand for livestock feed is expected expand steadily, but production potential is limited. With China reducing corn exports during most of the period, Argentina and the United States will be the major beneficiaries of increasing import demand for corn.

For barley, much of the demand growth will occur in China and other malting barley markets. Feed barley imports by Saudi Arabia are expected to expand but, in most other markets, growth in feed barley imports is expected to be slower due to constrained supplies and substitution of other feeds. Canada and Australia are expected to expand area of wheat, canola, and malting barley at the expense of feed barley. Uruguay Round Agreement limits on subsidized EU coarse grain exports will constrain combined exports of barley, rye, and oats throughout the baseline. Future responses by other barley exporters to expected higher relative prices for competing crops (wheat and canola), and by barley importers to tight barley supplies, are important uncertainties in the outlook for coarse grain trade.

Sorghum trade is projected to increase gradually through the baseline as prices are attractive for Mexico and Japan. Trade in other coarse grains is projected to grow, but remain below 1995 levels throughout the baseline as EU has difficulty finding markets for rye.

Wheat

World use of wheat is projected to rise 1.4 percent annually between 1999 and 2009, significantly faster than the 0.8-percent annual growth achieved in the 1990s, but still slower than the 1970s or 1980s. Developing countries account for most of the projected increase in global use, but the transition economies of the former Soviet Union (FSU) and Central and Eastern Europe are expected to account for almost 20 percent, in sharp contrast with the last decade when consumption in the region contracted. Developed countries contribute about 13 percent of expected growth in wheat use. In the United States, total use of wheat is fairly stagnant as small increases in food use demanded by a slowly expanding population are partly offset by declining feed use. The very slow growth in U.S. domestic use underscores the importance of global trade for future U.S. wheat production and prices.

World per capita use of wheat and flour is projected to climb slowly from 98 kgs per year in 1999 to about 100 kgs by 2009. World per capita use peaked at 106 kgs in 1990, but then fell to 96 kgs in 1995 due to the sharp decline in consumption in the former Soviet Union and Central and Eastern Europe. Global food use of wheat is expected to increase at about the same pace as

population growth. Global wheat feed use, by contrast, is projected to grow at almost twice the rate for food use. Substantial increases in wheat feed use are expected in the FSU, China, and the EU-15, all regions where wheat prices and competing feed grain prices are not closely linked to world prices.

World wheat production is also projected to grow 1.4 percent annually during 1999-2009. Increases in wheat area, in part due to somewhat higher projected prices for wheat relative to competing crops, are expected to account for about one-third of production growth. However, world area is not expected to exceed the 1996 level until 2009, remaining almost 8 million hectares below the 1981 record of 239 million hectares. The global average wheat yield declined slightly in 1998 and 1999 from the record of 2.67 tons/hectare set in 1997, but is projected to climb about 1 percent annually during the 2000-2009 projection period. Trend growth in world wheat yields has been slowing for the last 3 decades, in part due to lower quality soils being brought into production, and to reduced budgets for research and development.

World wheat trade (including the wheat equivalent of wheat flour) is projected to grow 2.2 percent, or 2.1 million tons, annually during 1999-2009. Projected growth is sharply higher than in the 1980s or 1990s. Growth in imports is concentrated in the developing countries, primarily North Africa, the Middle East, China, Indonesia and Pakistan. Imports by the transition economies of the FSU and Eastern Europe are expected to continue to decline during the first half of the projections, but these declines will not be as globally significant as during the previous two decades.

Although nominal wheat prices are expected to increase over the next 10 years, real wheat prices are projected to continue to decline, limiting the incentives to grow wheat for export. The share of world exports supplied by Argentina, Canada, and Australia is projected to decline somewhat, while Eastern European exports expand. The United States is projected to increase its share of world wheat trade from 29 percent in 1999 to 34 percent in 2009.

Limits on export subsidies included in the Uruguay Round agreement, as well as budgetary pressures, are expected to make export subsidies less important in the future than they have been in the past for determining wheat market shares. However, a portion of budgeted U.S. EEP funds are assumed to be used for wheat starting in 2000/01, so targeted countries receive larger exporter subsidies than in recent years. However, exporter market shares are likely to be determined by the cost effectiveness of wheat production, transportation, and marketing. Wheat production and exports in the United States are expected to be limited by the slow growth in wheat yields compared with other crops, and by the amount of area in the Conservation Reserve Program. In Canada, increased transportation costs may encourage higher-valued oilseeds, limiting wheat area. In Australia, increasing wool prices, and limited areas with enough rainfall, will limit expansion. Argentina is expected to shift area between wheat, corn and oilseeds, depending on which has the most attractive world price, but total area is limited.

The EU is expected to lose market share during the next several years as exports are constrained by subsidy limits, and policies that concentrate on stable internal prices. Other exporters, including the United States, are expected to gain market share until nominal world prices rise sufficiently for the EU to be able to export wheat without subsidies. The baseline indicates that

unsubsidized EU wheat exports will be possible by 2004, leading to a recovery in EU market share during 2004-07. After 2007, however, the baseline assumes the EU increases its arable crop land set-aside in order to limit the buildup of coarse grain stocks. The higher set-aside also reduces wheat supplies, with EU competition in the wheat market subsiding during 2008-09.

Rice

Global rice trade is projected to grow more than 2 percent annually from 2000/01 through 2009/10. By 2009, global trade is projected to reach 28.5 tons, more than 9 percent above the current record of 26.2 million set in 1998. Projected trade growth is faster than in the 1980s, but slower than in the 1970s and early 1990s.

Trade is expected to continue to consist predominantly of long-grain (indica) varieties, despite the gains achieved in medium-grain (japonica) rice imports by Japan and South Korea under the Uruguay Round Agreement. Nominal prices are expected to rise throughout the projection period, while real prices are expected to fall, although less rapidly than in the past. Global medium-grain prices are expected to remain above long-grain prices due to limited world exportable supplies of high-quality japonica rice and rising import demand.

Foreign production is projected to rise gradually, growing about 1 percent per year. Projected growth is slower than in the 1970s and 1980s, when irrigation expanded more rapidly in Asia and Green Revolution technology was widely adopted. Expectations of slower production growth stem primarily from a slowdown in yield increases. Expansion in global acreage is expected to remain extremely small, as it has since 1975.

Foreign consumption is projected to rise slightly more than 1 percent annually, markedly slower than during the 1980s and early 1990s. Per capita rice consumption in higher income Asian countries has been declining, and is expected to continue to decline, as larger portions of the population achieve middle-class incomes and consumption of rice declines in favor of other foods, such as wheat products, fruits and vegetables, and meat. Per capita rice consumption in other key countries, such as China, is projected to decline during the coming decade, as consumers continue to diversify their diets away from rice in response to rising incomes.

These developments are expected to almost offset gains in total consumption in other regions where per capita consumption is projected to continue rising. These are primarily lower income rice producing countries--such as India, Bangladesh, Indonesia, and the Philippines--and higher income non-Asian countries--such as Canada, the EU, and the United States. Per capita consumption is projected to expand fractionally in the Middle East as well. Total rice consumption is projected to continue increasing in Central and Eastern Europe, even though per capita consumption has leveled off in both regions.

The U.S. export market share for rice varied from nearly 15 percent to just over 18 percent between 1991 and 1995, and averaged 12.6 percent from 1996 to 1999. It is projected to be 12 percent in 2001 and then slowly decline to a little more than 9 percent by 2009. No growth in U.S. production, continued expansion in domestic use, and high U.S. prices relative to Asian competitors are expected to prevent any increase in the volume of U.S.

rice exports over the baseline period. By 2009, total U.S. exports are projected at 2.4 million tons, while total imports are expected to rise to 0.46 million tons, leaving the United States a net exporter of 1.9 million tons of rice.

Historically, rice trade and prices have exhibited greater volatility than those of other cereals. This volatility stems from the dependence of many large producers and traders, including Indonesia, the Philippines, Bangladesh, Thailand, Vietnam, and India on the timing and amount of rainfall during the Asian monsoon season. In addition, only a small share (around 6 percent annually) of world rice production is traded. These factors will continue to affect the world rice market during the next 10 years, with the potential to create dramatic annual swings in trade and prices that could deviate significantly from the trends projected in this baseline.

Cotton

Growth in foreign consumption and production of cotton both slowed to negligible rates during the last 10 years but, until the Asia crisis, both had begun to rebound. Growth is expected to resume, but to remain slower than the long-term average growth rate of 1.8 percent throughout the projection period. World cotton consumption is projected to expand approximately 1.2 percent annually during much of 2000-2009, accelerating slightly after 2005 when the apparel import quotas established by developed countries through the Multi-Fiber Arrangement (MFA) are scheduled to end.

The MFA import quotas are scheduled for expansion and progressive elimination through January 1, 2005, and the long-run impact on cotton demand is highly uncertain. The removal of import restrictions should reduce the cost of imported apparel, raise its consumption, and indirectly increase fiber use. Another key uncertainty in the projections is the extent to which earlier gains in cotton consumption, associated with a shift in consumer fiber preference toward cotton and away from synthetics, can be sustained. Sustained Asian investment in polyester capacity up to the onset of the region's financial reversals suggests vigorous competition for fiber share in coming years, particularly during the early portion of the projection period.

Foreign production has shown little upward trend during the 1990s, as smaller harvests in China and the FSU have offset gains elsewhere. High levels of input use and poor water management have rendered useless much of the area abandoned in Central Asia during the 1990s, and this area is expected to remain out of production during the projection period. Pesticide resistance and competition from other crops helped drive China's cotton area down 43 percent between 1992 and 1999. Although yields have been improving, China's future production--like Central Asia's--is likely to remain well below peak levels.

World cotton trade is expected to average 2-percent annual growth during 2000-2009, reversing much of the decline suffered during the previous 10 years. World cotton trade fell from a peak of 33.5 million bales in 1988 to as low as 25.5 million in 1992, in large part due to a decline in Russian imports. Trade again slipped to about 25 million bales in 1998 as financial crises again cut Russia's imports, as well as purchases by some Asian importers. China also switched from large importer to exporter in 1998, and remained an exporter in 1999. Import growth is foreseen

in Russia, China, and elsewhere after 1999, and, by 2009, world exports are projected at 31.5 million bales.

World trade contracted beginning in the late 1980s for two reasons: the virtual collapse of Russia as a consumer and importer of cotton, and the continued shift of spinning from traditional importers to cotton-producing countries. Neither factor is expected to be as important in the future. Russia's cotton consumption fell more than 80 percent between 1989 and 1996 during the restructuring of Russia's political, economic, and foreign trade systems. Elsewhere, other traditional cotton-importing countries found it less expensive to purchase cotton yarn and fabric for their textile industries as inexpensive textile imports flooded their markets, particularly from Pakistan through the early 1990s. These imports took the place of imported raw cotton.

With Russian and Central and East European consumption beginning to rebound after 1999, world cotton trade is likely to grow during the next 10 years. Also, since the mid-1990s, pest and disease control problems have constrained Pakistan's ability to maintain its earlier growth rates in cotton production, cotton consumption, and textile exports. This strengthened raw cotton demand by some cotton-importing textile exporters, and world imports excluding the FSU trended upwards during the 1990s. Finally, several countries that were net suppliers to world markets as late as 1990 have become importers instead. Earlier, increasing consumption in Mexico, Brazil, and Turkey in part represented shifts in consumption from importing countries to non-importing producers. As consumption gains have consistently outpaced production in all three countries, they have begun to steadily import, driving world trade higher.

Foreign export growth is expected to recover during 2000-2009, but to remain below peak levels. By 2009, foreign exports are expected to total 23 million bales. Foreign export growth will be supported by some resumption of trade relations between countries of the FSU, and by growing import demand from China, Latin America, and Southeast Asia. Exports from the Franc Zone countries of West Africa are expected to grow rapidly, as are exports from Australia.

U.S. exports are also expected to trend up during 2000-2009, growing to 8.5 million bales by 2009. The U.S. share of world trade is likely to average about 27 percent, slightly above its average share during 1990-1999. Structural change in the U.S. textile industry is expected to mean an increasing share of U.S. cotton production is exported rather than consumed at home. Globally, U.S. cotton will account for about the same share of total consumption as it did during the 1990s, but exports will account for a larger portion of that share as the consumption occurs outside the United States. U.S. exports are expected to rise 1.1 percent annually during 2000-2009, slower than world trade, as foreign exports rebound a few years into the forecast period.

The rapid consumption growth of the 1980s, spurred by prolonged economic expansion and sharp share gains by cotton versus other fibers in some markets, is not expected to resume. In the short term, consumption growth by several cotton importers is likely to be constrained by relatively sluggish economic performance and economic restructuring. In the long term, the liberalization of textile trade under the Uruguay Round Agreement will also constrain cotton imports by the most developed traditional importers, such as the EU and Japan. In contrast, rapid consumption growth is expected in many developing countries and steady growth is expected to continue in major cotton-producing countries such as India. However, the pace of

this structural shift will depend on how the phase-out of MFA quotas is implemented. Also, while trade liberalization creates incentives to more rapidly shift the location of garment production from developed to developing countries, the incentives for shifting production of yarn and fabric are not as compelling. In this analysis, yarn and fabric industries are expected to shift as well as garment industries, albeit to a lesser extent.

Soybeans and Products

World trade in both total oilseeds and soybeans is projected to increase faster during 1999-2009 than during the 1980s, but much more slowly than the early 1990s. The global financial crisis will limit trade growth for oilmeals (including soybean meal) over the short term but is projected to strengthen as affected economies recover. During 1999-2009, global exports of soybeans and meal are projected to rise at annual rates of 1.0 and 2.0 percent, reaching 45.2 and 46.5 million tons, respectively, by 2009. Combined exports of soybeans and meal, on a soybean-equivalent basis, are projected to grow from 70.3 million tons in 1999 to 82.2 million tons by 2009.

World vegetable oil trade is projected to grow 2.9 percent annually during 1999-2009, compared to 5-percent growth achieved in the 1980s and 1990s. Although both world and U.S. exports of soybean oil are projected to grow faster than soybean exports during 1999-2009, they are projected to slow compared with trade in other vegetable oils. With the outlook for growth in oil trade to continue to outpace meal, incentives to produce high-oil content oilseeds and palm oil are expected to strengthen.

Soybeans and Soybean Meal. U.S. exports of soybeans and meal are projected at 27.6 million tons and 8.2 million tons, respectively, by 2009. The U.S. soybean market share is projected to cycle higher to 66 percent by 2003 as domestic supplies grow relative to foreign supplies. But once prices of competing crops strengthen relative to soybeans, cutting domestic soybean returns and production, the U.S. export share of soybeans is projected to drop back to 61 percent by 2009. Similarly, the U.S. market share of soybean meal trade also edges up to 21 percent by 2003 but contracts to 18 percent again by 2009 as foreign supplies rebound. These projected U.S. market shares contrast with significantly higher shares for soybeans (73 percent) and soybean meal (24 percent) achieved in the 1980s, when U.S. production was a greater proportion of the world total. Limited expansion of U.S. acreage and slowing crush rates eventually constrict exportable supplies of soybeans and soybean meal. Another factor slowing U.S. soybean exports in the longer term is thriving exports of meat, especially poultry. This trend will boost the livestock population and boost the share of protein feed supplies consumed within U.S. borders compared with the past.

Sharply lower prices are expected to slow foreign supply growth from rapid annual increases of the 1970s (9 percent), 1980s (6 percent), and 1990s (5 percent). Foreign soybean production is projected to climb just 2 percent annually from 1999, nearly reaching 100 million tons by 2009. Foreign soybean yields are forecast to rise at a modest 1.2 percent annually. In the near term, low prices and tight credit will reduce area harvested and application of inputs in these countries. A stronger soybean price situation by 2004 should improve returns and output by foreign producers. In Brazil, steadily expanding domestic meal consumption and exports will support crush demand. However, for several years Brazilian soybean exports are likely to suffer from

tight domestic supplies and the surge in U.S. exports. Argentina's small consumption base and substantial crush capacity assure long term growth in exports of soybean meal, but slower production growth should flatten soybean exports.

Gains in world soybean meal consumption from 1999 to 2009 are projected at 1.7 percent annually, compared to growth of 4.6 percent in the 1990s. Binding constraints on subsidized EU coarse grain exports, plus Agenda 2000 reforms that reduce the land set-aside and intervention prices, are projected to swell EU grain supplies and drive down internal prices. Despite declining protein meal prices, lower internal EU prices for grain feeds are expected to cut EU soybean meal consumption. Consequently, EU imports of soybeans and soybean meal are projected to decline.

Stronger economies in China and other Asian countries should reinvigorate protein meal consumption in the next few years. China's policy shift toward maximizing domestic crushing capacity instead of importing protein meal and vegetable oil will, however, significantly alter the composition of world trade. With a smaller Chinese soybean meal market, supplies from the major soybean meal exporters should worsen crush margins for importers, curtailing their soybean imports in favor of low-priced products. In the case of Mexico, however, low prices are expected to continue to encourage robust soybean imports.

Soybean Oil. Foreign soybean oil production is projected to rise 2.2 percent annually and reach 19.3 million tons by 2009. Growth in soybean processing in Mexico, Brazil, Argentina, India, and China accounts for most of the projected gains in foreign soybean oil production. World use of soybean oil is projected to expand at a 2.1-percent annual rate from 1999 to 2009, well below the nearly 5-percent rate of growth of the 1990s. Projected consumption gains are concentrated in the developing nations of Asia and Latin America, with less growth anticipated in western Europe, the FSU, Japan, and the United States.

Growth in soybean oil trade is projected to slow to 2.1 percent during 1999-2009, compared with about 8 percent in the 1990s when developing countries made sharp import gains. Future growth in soybean oil trade will be curbed by increased domestic vegetable oil output in China. Higher relative prices, particularly against Southeast Asian palm oil, will shift soybean oil demand toward competing oils.

The U.S. share of global trade soybean oil is projected to rise to 17 percent by 2005, peaking at 1.4 million tons. Slower growth in domestic soybean oil production, greater South American competition, and global output gains for other vegetable oils will pare the U.S. market share back to about 15 percent, or 1.3 million tons, in 2009.

Beef

World beef production and consumption are projected to increase about 2 percent annually between 1999 and 2009. The largest increase in production is expected to be in China. Other major beef-producing regions in which production growth is expected to exceed 1 percent annually are countries of the former Soviet Union (FSU), Mexico, Canada and Brazil. U.S. beef production will increase, and an increasing share will be higher quality hotel-restaurant-export

beef. Production and consumption in the EU are expected to continue gradually declining, with trade remaining constant at the permitted level of subsidized exports and stocks high.

About 60 percent of the growth in world beef consumption is expected to occur in Asia, as economic growth in that region returns to normal after the crisis of 1998. With feed production capacity limited in many Asian countries, a growing share of consumption is expected to be satisfied by imports. Nevertheless, growth in demand for beef in some Asian markets such as Japan may not match the rapid pace of the late-1980s and early-1990s because of the higher level of per capita consumption already achieved. While trade barriers have been lowered in recent years, tariffs in many Asian countries remain high. In China, increased consumption is expected to be met by domestic supplies because of import restrictions.

Other regions where significant increases in consumption are projected to occur include Brazil and Mexico, which may consume an additional 1.0 million tons and 0.7 million tons of beef, respectively, by 2009. Less significant increases in consumption are anticipated to occur in the countries of Central and Eastern Europe, and will depend upon the degree to which economic liberalization boosts incomes and maintains consumer price stability. While beef consumption in Russia is likely to rise above the current low levels associated with the economic crisis in that country, gains in meat consumption will be limited by weak income growth, the very slow recovery of domestic production, and strong competition from relatively cheap pork and poultry.

The major exporters are likely to put about 17 percent more beef on world markets by 2009. Subsidized exports by the EU are expected to decline according to the levels of subsidized exports committed to in the Uruguay Round. Australian exports are expected to remain steady at around 1.1-1.2 million tons, and the United States is projected to become the world's largest exporter of beef, largely due to a pickup in import demand in the Pacific Rim. Mexico also continues to become a major market for U.S. beef exports. However, the United States and other beef suppliers may face increasing competition from both Brazil and Argentina in Pacific Rim markets. Exports from New Zealand are not expected to increase significantly.

Pork

World pork production in the next 10 years is projected to increase at a slower rate than in previous decades. Moderate production growth is the primary consequence of lower pork prices. Some of the factors that contribute to lower pork prices include moderate growth in consumer income, and adequate supplies of meats that substitute for pork. World pork production growth is expected to average almost 2 percent during the 2000-2009 projection period. China is expected to be the primary growth area for pork production, with more modest increases projected for the United States, Canada, the EU, and Brazil.

Growth in pork consumption is projected to slow in developed economies, including the United States, Canada, the EU-15, and Japan, due to moderate income gains and competitively priced pork substitutes. Slower demand growth in developed countries is expected to be partially offset by stronger growth in Asia and Latin America. Consumer demand for pork is expected to grow significantly in China, Mexico, and Brazil.

Meat Imports by Japan and South Korea Projected Higher

Japan's beef and pork imports are the largest of any country (on a value basis), and Japan is a leading poultry meat importer as well. South Korea became a major beef-importing country in the 1990's, and is in the midst of a transition to importing a broad range of meat cuts and qualities that will boost world trade in the next decade. The United States has gained from the growing meat trade with East Asia. In 1997, U.S. exports of meat and offal to the two countries reached $2.9 billion, 5 percent of total U.S. agricultural exports.

In 1998 U.S. trade value fell, affected by low meat prices and economic problems in East Asia. Confidence in the long-term economic health of South Korea and Japan was shaken, dampening expectations for future trade. However, 1999 has seen a fast recovery of growth in South Korea, and the return of a strong yen and some economic growth to Japan. Trade policy changes in South Korea, and economic shocks in both countries, have raised questions about future meat trade.

The long-term outlook for East Asia calls for higher imports than the 1999 baseline, although still somewhat lower than pre-crisis projections. Japan's total meat imports are projected about 6 percent higher than last year, mostly reflecting meat consumption projections that are about 3 percent higher. The production outlook continues to call for a modest decline, so consumption growth implies higher imports, which now supply about half of Japan's meat. Stronger growth in meat demand is tied to faster assumed growth in per capita income, and to lower import prices resulting from stable or declining international prices and the outlook for gradual appreciation of the yen. However, the economic outlook for Japan is key to the projections and is highly uncertain. Private bank and government debt are high, and sustained economic growth based on private consumption growth has yet to emerge. Thus, there is considerable downside uncertainty to the economic assumptions used here.

For South Korea, per capita income projections are also higher than in the 1999 baseline. In addition, the real value of the won is projected to be significantly stronger, lowering the price of imported meats to consumers. As a result, meat consumption is projected 4.5-5.5 percent higher than in last year's projections. South Korean production is also projected about 3 percent higher, but does not match the higher demand. Total meat imports are projected about 20 percent above the 1999 baseline, but still below pre-crisis projections.

Key assumptions and uncertainties involved in the projections include:

- **Demographics:** Populations in East Asia are aging. Japan's population growth has virtually ended, and the population is projected to decline beginning in 2007. As Japan's people age, somewhat reduced caloric intake and a more stable pattern of food consumption are likely. In South Korea, population growth continues, although more slowly than in the past, and the population is younger than in Japan--factors associated with higher meat consumption.

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Meat Imports by Japan and South Korea Projected Higher--continued

- **Meat production:** Throughout East Asia, farming is undergoing profound, rapid change. The size of farm operations is increasing while the number of farms is decreasing. Between 1991 and 1999, two-thirds of Japan's hog farms disappeared, along with over 40 percent of beef farms and one-third of broiler operations. Meat output declined only modestly, and the remaining farms are larger and generally more competitive than those that disappeared. In South Korea, most broiler and pork production is now tied into integrated supply chains and farms have achieved economies of size as they have grown larger.

- **Meat preferences**: Strong meat preferences have emerged that differentiate meat both by cut and by quality. The positioning of the wagyu beef breed as the source of premium, highly-marbled beef in Japan has thus far reserved a valuable niche for Japan's farms. Increasingly, the dairy herd is being used to generate higher-quality beef through cross-breeding with wagyu. In South Korea, a major effort is being made to position the traditional Hanwoo breed as a premium source of beef. The pronounced Korean preference for beef and pork ribs means that prices of these cuts are high, and lower-cost imports are attractive.

  Both in South Korea and Japan consumers prefer chicken legs and dark meat, and assign a low value to chicken breasts. This fosters U.S. exports, since preferences in the United States are for white, rather than dark meat. In Japan, there is a preference for chilled or fresh meat, as opposed to frozen meat, for many uses. While chilled beef and pork imports arrive in large volumes, the shorter shelf life of poultry meat has protected domestic broiler production. Recently, imports of chilled poultry meat have arrived by ship from China. If this trade increases, broiler production in Japan will face new competition. Korea's livestock cooperatives, meat producers, and supermarkets are transforming the delivery of meat to consumers. Chilled meat, wrapped, graded, and differentiated by cut is replacing the old system of retail sales of frozen, undifferentiated meat.

- **Trade barriers**: Japan lowered its poultry meat and beef trade barriers in the 1980s. Broiler production has been protected only by tariffs since 1985, with tariffs falling to 8.5 or 11.9 percent, depending on the cut. Beef imports have faced only tariffs since 1991. The tariff rate cut on beef (to 38.5 percent) and the gate price reduction for pork (to 524 yen, or about $4.65, per kg) in 2000 represent the final implementation of the Uruguay Round Agreement. After 2000, no further reductions are scheduled under existing agreements.

In contrast, South Korea's trade is likely to change significantly because of recent policy changes. After July 1997, when South Korea gave up nontariff barriers against pork and poultry meat imports, significant import growth was expected. But the economic crisis that hit South Korea in late 1997 caused imports to fall, rather than to grow. Domestic demand dropped, affected by the loss of income and consumer confidence. Domestic meat output benefited from the lower value of the won, which made imported meat more expensive within South Korea. The global decline of feed prices counteracted the effects of the fall of the won on feed imports. However, given the strong economic recovery in 1999, meat imports have resumed their growth. Even though meat producers benefit from the depreciated won, some imported cuts are still attractively priced and trade is expected to rise. The end of the beef quota on December 31, 2000, provides an important opportunity to expand beef trade with South Korea. The current projections assume only tariff protection, declining to 40 percent by 2004.

World pork trade is projected to continue to expand, induced particularly by the resumption of strong growth in Asian demand. Income growth in developing countries where consumers demonstrate a preference for pork--such as Mexico--contribute to trade growth, as well. Declining domestic production will continue to drive imports in both Japan and Hong Kong.

The U.S. role as a major pork exporting country is expected to continue to develop over the next decade, with U.S. exports rising almost 5 percent per year between 2000 and 2009. Factors contributing to robust U.S. growth include competitive prices and an increasingly export-oriented pork production industry. The seven largest exporters (the United States, Canada, China, the EU, Central and Eastern Europe, South Korea, and Brazil) together account for over 90 percent of world pork exports. Canadian exports are projected to expand rapidly, with growing sales to the United States, and an increasing share of Asian markets.

Poultry

During the 2000-2009 period, poultry meat production, consumption, and trade are all expected to continue to expand on a worldwide basis. The expansion will be driven by poultry's ability to efficiently convert feed to meat, its low cost relative to both beef and pork, increasingly western diets in developing countries, rising populations, and the opportunity for poultry processors to take advantage of differing regional preferences for specific poultry parts.

Higher global poultry output is expected to be marked by producers moving towards similar levels of production technology. With relatively standard technology, large-scale poultry production will increase in countries that have low-cost labor for production and processing, good access to low-cost feed components, and a domestic market sufficiently large to support an efficient poultry industry without sole dependence on exports.

Rising poultry consumption will reflect the cost advantage that poultry products have over beef and pork in most regions. Increasing incomes and the encroachment of western lifestyles are expected to raise per capita meat consumption. However, incomes in many developing economies will still be at levels where the lowest cost meat products are likely to garner the bulk of the increase. Much of this growth is expected to come from the expanding economies of Asia, especially China. Poultry consumption in Russia and the rest of the FSU is expected increase slowly over the 2000 to 2009 period, as economic conditions gradually improve. While domestic poultry production is forecast to gradually expand in Russia and other FSU countries, this area is expected to be a large market for imported poultry products throughout the baseline.

Differing consumer preferences for the various white and dark meat poultry products is expected to be a prime factor in the growth of international poultry trade during the beginning years of the 21st century. Large-production regions can export their surpluses of less desired poultry products to areas with a stronger preference for those products. This trend is expected to be aided by developing countries following the western example and marketing more poultry in the form of parts rather than whole birds.

Even with expectation of increased global trade in poultry meat and parts over the next decade, there are a number of possible issues that may adversely affect the growth in poultry trade.

Restructuring Drives Expansion of Canadian Pork Sector

Canada's pork industry is expanding rapidly due to significant restructuring of production, marketing and processing. The most important long-term impact of the expansion will likely be increased exports of Canadian pork compared with previous projections. Industry restructuring has been driven largely by a series of federal and provincial policy changes that have improved price incentives for producers and processors, and increased sector competitiveness.

- **Changes in hog pricing:** Prior to 1989, hog prices were negotiated between individual producers and processors, and concentration in the processing sector caused price distortions among large and small hog producers. Since 1989, marketing policies have changed. In the largest producing province of Quebec, for example, the government created a marketing board with an electronic auction to facilitate live hog marketing. Hogs are now marketed through a combination of negotiated contracts and auction.

- **Removal of grain transport subsidy:** Perhaps the key factor that ignited restructuring was the abolition, in August 1995, of the Crow Rate Pass program under the Western Grain Transportation Act. The Crow Rate Pass program subsidized the movement of grain and oilseeds from primary production points in western Canada to major ports in the west, and to major consumption and export points in eastern Canada. The loss of the transport subsidy pushed down grain prices in western and central Canada, lowering costs and boosting profitability for livestock enterprises in those regions.

- **Lower U.S. hog import duties:** Lower government support for Canadian agriculture led to a reduction in the countervailing duty (CVD) imposed by the United States on imported Canadian hogs. The CVD was imposed in 1985 to offset the cost advantage accorded to Canadian hog producers by Canadian government support measures. The CVD was reduced to zero in 1997, and revoked altogether in November 1999 after U.S. government review determined that Canadian subsidies were unlikely to reoccur. The lower CVD increased the competitiveness of Canadian hogs in the U.S. market, precipitating significant flows of Canadian hogs into the U.S. market since 1995. In the last several years, the lower value of the Canadian dollar relative to the U.S. dollar has also boosted Canadian competitiveness in the U.S. market.

- **Cost reduction in the processing sector:** Live sales to U.S. packers provided a valuable marketing option for Canadian hog producers, but presented Canadian packers with narrowing slaughter margins. The deterioration of slaughter margins in Canada became particularly acute in 1994/95, necessitating aggressive efforts to lower slaughter costs. Labor costs were an obvious target for cost reduction efforts because wages in Canadian facilities tended to exceed those in U.S. operations by almost 30 percent. Although labor unions resisted efforts to lower wages and labor stoppages have troubled the sector since 1997, most renegotiated compensation packages have included 30 to 40 percent wage reductions.

Lower costs and a larger supply of hogs, increasingly produced under contract, in very large, newly constructed facilities in western Canada, have induced expansion by the Canadian slaughter industry. A new, large facility opened in Manitoba in 1999. Expansions of existing facilities are scheduled to go on-line in 2000. With further expansion of the slaughter industry anticipated, Canada is expected to export more high-quality pork cuts to the United States and to challenge U.S. and European market shares in Asian markets as well.

Safety issues, either in the area of animal health or food safety, are key areas of concern. While governments and consumers can have legitimate concerns, countries may also establish import regulations that impede trade. The presence of multinational trade agreements is expected to lower the number of these disagreements. The baseline assumes an overall trend towards freer trade, although the lack of a common set of health regulations and procedures could restrict market opening and trade growth.

Table 39. Coarse grains trade baseline projections

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
						Million metric tons						
Importers												
Former Soviet Union 1/	1.6	1.6	1.8	1.8	1.9	2.3	2.6	3.0	3.4	3.8	4.2	4.6
Eastern Europe	1.6	1.3	1.7	1.7	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.3
Japan	20.6	20.3	20.7	20.7	20.6	20.6	20.6	20.5	20.4	20.3	20.2	20.1
South Korea	7.7	8.7	8.8	9.0	9.5	9.4	9.4	9.4	9.3	9.3	9.4	9.5
Taiwan	4.7	4.4	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.3	6.4
China	2.9	3.1	3.2	3.2	3.3	3.5	3.8	4.2	4.3	4.6	5.1	5.8
Mexico	8.9	8.2	8.8	9.3	9.7	10.5	10.5	10.4	10.6	11.0	11.4	11.6
European Union 2/	3.5	2.6	2.5	2.8	2.7	2.8	2.7	2.8	2.8	2.8	2.8	2.8
Latin America 3/	9.5	9.3	10.2	10.6	10.8	11.1	11.4	11.7	12.0	12.2	12.4	12.7
N. Africa & Middle East	22.2	22.7	22.8	23.2	23.8	24.4	25.1	25.9	26.3	27.1	27.8	28.7
Other Asia & Oceania	3.7	3.8	4.9	5.2	5.7	6.0	6.4	6.8	7.3	7.7	8.0	8.2
Sub-Saharan Africa 4/	2.5	1.4	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2
Other foreign 5/	2.4	6.3	3.6	2.7	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.9
United States	3.1	2.7	2.9	3.1	3.3	3.5	3.5	3.5	3.5	3.6	3.6	3.6
Total trade	95.0	96.4	98.8	100.3	103.0	106.1	108.3	110.7	112.9	115.8	118.6	121.5
Exporters												
European Union 2/	10.7	11.5	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
China	3.4	5.1	6.3	6.5	6.0	5.5	5.0	4.5	4.0	3.5	3.5	3.2
Argentina	8.7	9.9	11.4	12.0	12.8	13.6	14.1	14.7	15.4	16.3	16.9	17.5
Australia	4.7	3.1	3.5	3.7	3.8	4.0	4.1	4.3	4.5	4.7	4.9	5.1
Canada	3.2	3.5	3.9	4.3	4.4	4.6	4.7	5.0	5.1	5.3	5.6	5.6
Rep. of South Africa	0.7	1.1	1.3	1.3	1.5	1.6	1.7	1.7	1.8	1.8	1.9	1.9
Eastern Europe	3.0	3.3	2.7	2.6	2.4	2.4	2.4	2.3	2.4	2.9	3.0	3.1
Former Soviet Union 1/	1.9	2.3	2.9	2.7	2.8	3.3	3.3	3.4	3.6	3.8	3.9	4.2
Other foreign	2.8	2.1	1.8	1.7	1.7	1.7	1.6	1.6	1.5	1.4	1.4	1.3
United States	55.9	54.7	55.9	56.5	58.5	60.5	62.4	64.3	65.7	67.1	68.5	70.5
						Percent						
U.S. trade share	58.9	56.7	56.6	56.4	56.8	57.0	57.6	58.1	58.2	57.9	57.7	58.1

1/ Includes intra-FSU trade.

2/ Excludes intra-EU trade, covers EU-15.

3/ Excludes Mexico.

4/ Includes South Africa.

5/ Includes unaccounted.

The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 40. Corn trade baseline projections

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
						Million metric tons						
Importers												
Former Soviet Union 1/	0.8	0.6	0.3	0.3	0.4	0.6	0.7	0.8	0.9	1.0	1.1	1.2
Japan	16.3	16.3	16.6	16.7	16.7	16.7	16.7	16.6	16.6	16.5	16.5	16.4
South Korea	7.5	8.3	8.6	8.8	9.0	9.1	9.0	9.0	9.0	9.0	9.1	9.2
Taiwan	4.5	4.2	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.0	6.1
China	0.3	0.3	0.3	0.3	0.3	0.5	0.8	1.0	1.1	1.4	1.8	2.4
Mexico	5.5	4.7	5.4	5.8	6.2	6.6	6.7	6.6	6.8	7.1	7.3	7.5
European Union 2/	2.9	2.1	2.0	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Latin America 3/	9.0	8.8	9.7	10.0	10.2	10.5	10.8	11.1	11.3	11.6	11.8	12.1
North Africa & Middle East	12.0	12.7	12.9	13.3	13.8	14.3	14.9	15.5	15.8	16.4	17.0	17.7
Other Asia & Oceania	3.7	3.8	4.8	5.2	5.6	5.9	6.3	6.7	7.2	7.6	7.9	8.1
Sub-Saharan Africa 4/	2.3	1.1	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9
Other 5/	2.0	6.2	3.8	2.9	3.0	3.1	3.2	3.3	3.4	3.4	3.5	3.6
United States	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total trade	67.2	69.1	71.0	72.3	74.4	76.7	78.6	80.5	82.1	84.3	86.4	88.7
Exporters												
European Union 2/	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
China	3.3	5.0	6.3	6.5	6.0	5.5	5.0	4.5	4.0	3.5	3.5	3.2
Argentina	8.0	9.0	10.4	11.0	11.8	12.5	13.0	13.7	14.5	15.3	16.0	16.6
Republic of South Africa	0.7	1.1	1.3	1.3	1.5	1.6	1.7	1.7	1.8	1.8	1.9	1.9
Eastern Europe	2.5	2.9	2.4	2.2	2.0	2.0	2.0	1.8	1.8	2.3	2.4	2.4
Former Soviet Union 1/	0.4	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Other foreign	1.6	1.3	0.7	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
United States	50.3	48.9	48.9	49.5	51.4	53.3	55.2	57.2	58.4	59.7	61.0	62.9
						Percent						
U.S. trade share	74.9	70.8	68.9	68.5	69.1	69.6	70.3	71.0	71.2	70.8	70.6	70.9

1/ Includes intra-FSU trade.
2/ Excludes intra-EU trade, covers EU-15.
3/ Excludes Mexico.
4/ Includes South Africa.
5/ Includes unaccounted.
The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 41. Sorghum trade baseline projections

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
						Million metric tons						
Importers												
Japan	2.5	2.2	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Mexico	3.2	3.3	3.3	3.4	3.3	3.7	3.7	3.6	3.6	3.7	3.9	3.9
Other N. Africa & M. East	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other S. America	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sub-Saharan Africa	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Taiwan	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other 1/	0.4	0.5	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6
Total trade	6.5	6.4	6.7	6.7	6.8	7.0	7.0	6.9	6.9	7.0	7.1	7.1
Exporters												
Argentina	0.6	0.8	0.8	0.8	0.8	0.9	0.9	0.8	0.7	0.6	0.6	0.6
Australia	0.5	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Sub-Saharan Africa	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other foreign	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
United States	5.0	5.1	5.5	5.5	5.5	5.6	5.6	5.6	5.7	5.8	6.0	6.1
						Percent						
U.S. trade share	77.0	79.4	81.3	81.2	80.6	79.9	80.0	81.5	83.4	83.9	84.4	85.5

1/ Includes unaccounted.
The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 42. Barley trade baseline projections

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
						Million metric tons						
Importers												
Former Soviet Union 1/	0.5	0.3	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.2	2.4	2.6
Japan	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
South Korea	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Taiwan	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
China	2.1	2.3	2.4	2.4	2.4	2.5	2.6	2.6	2.7	2.7	2.8	2.8
European Union 2/	0.1	0.2	0.2	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3
Latin America 3/	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5
Algeria	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
Saudi Arabia	4.8	4.5	4.8	4.8	4.9	4.9	5.0	5.1	5.1	5.2	5.3	5.4
Morocco	1.0	0.9	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9
Tunisia	0.4	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Iran	0.6	1.0	0.8	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.0
Iraq	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Turkey	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other N. Africa/M. East	2.3	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4
Other foreign 4/	1.7	1.7	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.7	1.6	1.6
United States	0.6	0.7	0.8	1.0	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Total trade	17.0	16.9	17.7	18.0	18.4	19.0	19.3	19.7	20.1	20.5	20.9	21.3
Exporters												
European Union 2/	7.9	9.0	7.3	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Australia	4.0	2.7	3.3	3.4	3.5	3.6	3.8	3.9	4.1	4.3	4.4	4.7
Canada	1.1	1.7	2.4	2.7	2.8	2.9	2.9	3.1	3.1	3.2	3.4	3.3
Former Soviet Union 1/	1.4	1.7	1.9	1.7	1.7	2.1	2.2	2.3	2.5	2.7	2.7	3.0
Eastern Europe	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.6
Turkey	1.2	0.5	0.7	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3
Other foreign	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
United States	0.6	0.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
						Percent						
U.S. trade share	3.7	3.9	8.6	8.4	8.3	8.0	7.9	7.8	7.6	7.4	7.3	7.1

1/ Includes intra-FSU trade.
2/ Excludes intra-EU trade, covers EU-15.
3/ Includes Mexico.
4/ Includes unaccounted.
The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 43. Wheat trade baseline projections

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
						Million metric tons						
Importers												
Former Soviet Union 1/	6.2	6.5	5.0	4.9	4.9	4.8	4.8	4.8	5.1	5.5	5.6	6.1
China	1.0	1.0	1.3	1.5	1.6	1.7	1.8	2.0	2.2	2.5	2.6	3.0
Egypt	7.3	6.7	7.2	7.4	7.6	7.8	8.0	8.2	8.3	8.5	8.6	8.7
Other North Africa	19.7	19.5	19.8	20.4	20.9	21.5	22.0	22.6	23.1	23.6	24.0	24.5
Sub-Saharan Africa 2/	6.5	6.2	6.5	6.6	6.6	6.7	6.8	6.9	6.9	7.0	7.1	7.1
Japan	5.9	5.9	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.9	5.9
South Korea	4.7	4.5	4.1	4.1	4.1	4.1	4.2	4.4	4.5	4.7	4.7	4.7
Iran	2.1	6.5	5.8	6.0	6.3	6.6	6.9	7.2	7.4	7.6	7.7	7.9
Brazil	7.0	7.0	6.8	6.7	6.8	6.9	7.0	7.1	7.3	7.4	7.4	7.5
Indonesia	3.0	2.5	3.0	3.3	3.5	3.7	3.8	4.0	4.1	4.3	4.5	4.7
Pakistan	3.2	3.0	3.3	3.6	4.2	4.4	4.6	4.8	5.0	5.3	5.5	5.7
Mexico	2.5	2.5	2.6	2.7	2.7	2.8	2.9	2.9	3.0	3.1	3.2	3.2
Other	29.7	30.3	31.1	30.7	31.2	31.5	32.0	32.4	33.2	33.6	34.1	34.7
Total trade	98.7	102.1	102.4	103.8	106.4	108.3	110.7	113.3	116.3	119.0	120.8	123.7
Exporters												
European Union 3/	16.2	16.0	16.5	16.4	16.6	16.6	17.0	18.7	19.2	19.5	16.7	17.6
Canada	14.7	17.5	17.5	17.2	17.5	17.6	17.6	17.6	17.7	17.8	17.8	17.9
Australia	16.0	18.0	17.5	17.4	17.7	18.0	18.2	18.3	18.5	18.7	19.2	19.3
Argentina	7.5	9.5	8.8	8.9	9.5	9.8	10.0	10.1	10.4	10.6	11.1	11.2
Former Soviet Union 1/	6.7	5.6	6.1	6.3	6.4	6.0	6.0	5.9	6.2	6.7	8.0	8.4
Eastern Europe	3.9	1.5	2.0	2.1	2.5	2.7	3.0	3.3	3.5	3.7	4.4	4.5
Other foreign	5.4	4.0	3.4	4.1	3.4	3.5	3.4	3.4	3.4	3.4	3.4	3.4
United States	28.4	29.9	30.6	31.3	32.7	34.0	35.4	36.1	37.4	38.8	40.1	41.5
						Percent						
U.S. trade share	28.7	29.3	29.9	30.2	30.7	31.4	32.0	31.8	32.2	32.6	33.2	33.5

1/ Includes intra-FSU trade.
2/ Includes South Africa.
3/ Excludes intra-EU trade, covers EU-15.
The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 44. Rice trade baseline projections

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
						Million metric tons						
Importers												
Canada	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Mexico	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4
Central America/Caribbean	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.5
Brazil	0.9	1.2	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4
Other South America	0.6	0.5	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
European Union 1/	0.8	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Former Soviet Union 2/	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
Other Europe 3/	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
China	0.2	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Japan	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
South Korea	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Indonesia	3.9	3.0	3.8	4.0	4.2	4.3	4.4	4.4	4.5	4.6	4.6	4.7
Malaysia	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9
Philippines	2.0	1.1	1.1	1.2	1.3	1.4	1.4	1.5	1.5	1.6	1.7	1.8
Other Asia & Oceania	4.0	2.9	2.8	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.2	3.2
Iraq	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0
Iran	0.7	0.9	1.1	1.1	1.2	1.3	1.3	1.3	1.4	1.4	1.5	1.5
Saudia Arabia	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.1
Turkey	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Other N. Africa & M. East	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4
Sub-Saharan Africa	3.8	3.7	3.5	3.5	3.5	3.6	3.6	3.7	3.7	3.8	3.8	3.9
Republic of South Africa	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
Unaccounted	0.8	0.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
United States	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5
Total imports	24.9	22.9	24.2	25.0	25.7	26.3	26.9	27.4	27.9	28.5	29.1	29.7
Exporters												
Australia	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Argentina	0.6	0.5	0.6	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.2	1.2
Other South America	1.4	1.4	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6
European Union 1/	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
China	2.5	2.8	2.2	2.2	2.4	2.5	2.7	2.8	2.9	3.1	3.2	3.4
India	3.4	1.5	2.9	3.1	3.2	3.2	3.2	3.3	3.3	3.3	3.4	3.4
Pakistan	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2
Thailand	6.1	5.8	6.6	6.9	7.2	7.4	7.6	7.8	8.0	8.2	8.5	8.7
Vietnam	4.2	4.1	4.2	4.3	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.3
Other foreign	1.0	1.2	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6
United States	2.7	2.7	2.8	2.8	2.9	2.8	2.8	2.7	2.6	2.5	2.4	2.3
Total exports	24.9	22.9	24.2	25.0	25.7	26.3	26.9	27.4	27.9	28.5	29.1	29.7
						Percent						
U.S. trade share	11.0	11.7	11.7	11.3	11.1	10.8	10.3	9.8	9.2	8.7	8.2	7.8

1/ Excludes intra-EU trade, covers EU-15.
2/ Includes intra-FSU trade.
3/ Other Western Europe and Central and Eastern Europe.
The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 45. All cotton trade baseline projections

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
						Million bales						
Importers												
European Union 1/	4.3	4.3	4.8	4.8	4.6	4.6	4.5	4.6	4.5	4.5	4.5	4.4
Former Soviet Union 2/	1.5	1.6	1.8	1.9	1.9	2.0	2.1	2.3	2.3	2.4	2.5	2.5
Indonesia	2.2	2.4	2.4	2.5	2.6	2.7	2.7	2.8	2.9	3.0	3.1	3.2
Thailand	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2
Brazil	1.4	1.6	1.9	2.0	2.1	2.1	2.2	2.3	2.4	2.5	2.7	2.8
Eastern Europe	1.2	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.7	1.7
Other Asia & Oceania	5.0	4.4	4.5	4.6	4.7	4.7	4.8	5.0	5.0	5.2	5.3	5.5
Japan	1.3	1.2	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	0.9
South Korea	1.5	1.6	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.9
China	0.4	0.2	0.5	0.5	1.0	1.5	1.8	1.8	2.0	2.0	2.0	2.0
Mexico	1.5	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.4	2.5	2.6	2.6
Other foreign	2.0	3.7	3.6	3.6	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.8
United States	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total imports	23.6	25.8	26.7	27.1	27.8	28.6	29.1	29.8	30.2	30.6	31.2	31.5
Exporters												
Former Soviet Union 2/	5.7	6.1	5.9	5.8	6.0	6.0	6.1	6.1	6.2	6.2	6.3	6.3
Australia	2.9	2.8	2.8	2.9	3.2	3.5	3.6	3.7	3.7	3.8	3.9	4.0
Argentina	0.7	0.6	0.6	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Pakistan	0.0	0.5	0.2	0.2	0.3	0.4	0.5	0.5	0.5	0.4	0.4	0.3
India	0.2	0.3	0.4	0.6	0.7	0.9	1.0	1.1	1.1	1.2	1.2	1.2
China	0.7	1.2	0.8	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Turkey	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Egypt	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4
Other Latin America	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5
Other Sub-Saharan Africa 3/	4.6	4.8	5.0	5.0	5.4	5.8	5.9	6.1	6.1	6.1	6.2	6.3
Other foreign	3.1	2.7	2.8	2.7	2.9	3.0	2.9	2.9	2.9	2.9	2.9	2.8
United States	4.3	5.7	7.4	7.8	7.5	7.0	7.0	7.3	7.6	7.9	8.2	8.5
Total exports	23.7	25.7	26.7	27.1	27.8	28.6	29.1	29.8	30.2	30.6	31.2	31.5
						Percent						
U.S. trade share	18.4	22.2	27.5	28.6	26.9	24.4	24.1	24.5	25.2	25.8	26.4	27.0

1/ Includes intra-EU trade, covers EU-15.
2/ Includes intra-FSU trade.
3/ Includes Republic of South Africa.
Note: The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 46. Soybean trade baseline projections

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
						Million metric tons						
Importers												
European Union 1/	16.1	16.0	15.6	15.6	15.5	15.5	14.8	14.0	13.1	12.8	12.9	13.5
Japan	4.7	4.6	4.5	4.5	4.5	4.5	4.4	4.4	4.4	4.3	4.3	4.3
South Korea	1.5	1.5	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.1	1.0	1.0
Taiwan	2.2	2.3	2.5	2.5	2.6	2.6	2.7	2.8	2.8	2.9	2.9	3.0
Mexico	3.6	3.7	3.9	4.0	4.1	4.2	4.3	4.5	4.6	4.7	4.8	5.0
Former Soviet Union 2/	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7
Eastern Europe	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
China	3.9	4.3	4.5	4.7	5.0	5.3	5.7	6.0	6.4	6.7	7.0	7.3
Malaysia	0.5	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.0
Indonesia	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1
Other	5.6	6.1	6.7	7.0	7.2	7.4	7.6	7.6	7.8	8.1	8.2	8.2
Total imports	39.6	40.9	41.6	42.3	42.9	43.6	43.5	43.3	43.1	43.5	44.2	45.2
Exporters												
Argentina	3.3	2.8	1.0	1.0	1.0	0.9	0.9	0.9	0.9	1.1	1.1	1.2
Brazil	9.3	9.3	8.4	8.7	8.8	9.2	9.0	9.0	8.9	9.6	10.3	11.0
China	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other foreign	5.0	5.2	4.7	4.6	4.7	4.8	4.8	4.9	5.0	5.1	5.2	5.3
United States	21.8	23.5	27.4	27.9	28.3	28.6	28.6	28.3	28.0	27.6	27.4	27.6
Total exports	39.6	40.9	41.6	42.3	42.9	43.6	43.5	43.3	43.1	43.5	44.2	45.2
						Percent						
U.S. trade share	55.1	57.5	65.8	65.9	66.0	65.6	65.7	65.4	65.1	63.4	61.9	61.1

1/ Includes intra-EU trade, covers EU-15.

2/ Includes intra-FSU trade.

The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 47. Soybean meal trade baseline projections

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
						Million metric tons						
Importers												
European Union 1/	20.2	20.0	19.3	19.3	19.2	18.8	18.7	18.4	18.3	18.4	19.1	18.6
Former Soviet Union 2/	0.7	0.8	0.7	0.8	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
Eastern Europe	2.1	2.2	2.2	2.3	2.4	2.5	2.6	2.6	2.7	2.8	2.9	3.0
Canada	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Japan	1.0	1.0	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0
China	1.4	1.1	1.3	1.3	1.3	1.3	1.3	1.4	1.5	1.7	1.8	2.0
Southeast Asia	3.8	3.7	3.8	4.0	4.2	4.5	4.7	5.0	5.2	5.5	5.8	6.0
Latin America	3.6	3.7	3.9	4.0	4.0	4.0	4.1	4.1	4.2	4.3	4.3	4.4
North Africa & Middle East	3.6	3.7	3.9	4.0	4.1	4.2	4.4	4.5	4.7	4.8	5.0	5.1
Other	1.4	1.2	3.1	3.1	3.2	3.3	3.4	3.5	3.6	3.8	3.9	4.0
Total imports	38.6	38.1	39.8	40.4	40.9	41.2	42.0	42.5	43.1	44.2	45.9	46.5
Exporters												
Argentina	13.2	12.4	13.7	13.3	13.3	13.7	13.8	13.9	14.4	15.3	16.4	16.7
Brazil	9.8	9.9	9.6	9.8	9.9	9.4	10.0	10.3	10.5	10.6	11.2	11.5
India	2.8	2.6	2.9	3.0	3.0	3.1	3.2	3.2	3.3	3.4	3.4	3.5
European Union 1/	5.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Other foreign	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6
United States	6.5	6.7	7.2	7.9	8.3	8.6	8.5	8.4	8.3	8.3	8.2	8.2
Total exports	38.6	38.1	39.8	40.4	40.9	41.2	42.0	42.5	43.1	44.2	45.9	46.5
						Percent						
U.S. trade share	16.9	17.6	18.0	19.6	20.2	20.9	20.3	19.9	19.3	18.7	17.9	17.6

1/ Includes intra-EU trade, covers EU-15.
2/ Includes intra-FSU trade.
The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 48. Soybean oil trade baseline projections

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
						Million metric tons						
Importers												
European Union 1/	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
China	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1
Other Asia	2.3	2.1	2.0	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.6	2.7
Latin America	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.6
North Africa & Middle East	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.9	1.9	1.9
Former Soviet Union & Eastern Europe 2/	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Other	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7
Total imports	7.5	7.0	7.3	7.4	7.6	7.7	7.8	7.9	8.1	8.2	8.4	8.6
Exporters												
Argentina	2.8	2.6	2.9	2.8	2.8	2.9	2.9	2.9	3.0	3.2	3.4	3.6
Brazil	1.4	1.4	1.3	1.4	1.5	1.4	1.5	1.8	1.9	2.1	2.1	1.9
European Union 1/	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.2	1.0	0.9	0.9	1.0
Other foreign	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8
United States	1.1	0.8	1.0	1.1	1.2	1.3	1.4	1.4	1.4	1.3	1.3	1.3
Total exports	7.5	7.0	7.3	7.4	7.6	7.7	7.8	7.9	8.1	8.2	8.4	8.6
						Percent						
U.S. trade share	14.7	11.7	14.4	15.1	15.9	16.7	17.4	17.2	16.9	16.1	15.5	14.7

1/ Includes intra-EU trade, covers EU-15.
2/ Includes intra-FSU trade.
The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 49. Beef trade baseline projections

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
						Thousand metric tons, carcass weight						
Importers												
United States	1,198	1,279	1,368	1,372	1,338	1,315	1,293	1,270	1,247	1,225	1,202	1,179
Japan	951	972	985	1,029	1,061	1,088	1,114	1,137	1,156	1,173	1,188	1,199
South Korea	107	180	240	214	230	246	263	280	297	313	328	343
Taiwan	82	88	88	88	94	100	106	113	120	128	135	143
European Union 1/	313	306	270	350	350	350	350	350	350	350	350	350
Russia	485	500	500	344	361	382	409	438	470	500	529	559
Easten Europe	64	55	51	87	80	78	77	75	71	66	60	53
Mexico	202	228	237	249	253	259	271	284	298	310	321	330
Canada	240	250	275	223	219	214	210	206	202	198	194	190
Major importers	3,642	3,858	4,014	3,957	3,986	4,033	4,093	4,153	4,211	4,262	4,307	4,346
Exporters												
United States	985	1,078	1,048	1,021	1,055	1,089	1,123	1,157	1,191	1,236	1,259	1,304
Australia	1,262	1,220	1,235	1,177	1,125	1,107	1,089	1,102	1,126	1,146	1,164	1,184
New Zealand	519	420	450	465	462	463	466	470	474	476	477	478
European Union 1/	681	666	771	822	822	822	822	822	822	822	822	822
Eastern Europe	162	100	96	157	154	151	146	140	134	131	128	126
Ukraine	96	80	60	121	128	134	139	145	150	157	165	173
Argentina	291	340	350	344	369	383	400	413	429	446	466	486
Brazil	375	485	525	482	472	475	482	497	519	543	570	600
Canada	416	465	480	459	473	486	497	508	517	531	546	560
Major exporters	4,787	4,854	5,015	5,047	5,061	5,110	5,163	5,254	5,363	5,489	5,597	5,733

1/ Excludes intra-EU trade, covers EU-15

The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 50. Pork trade baseline projections

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
						Thousand metric tons, carcass weight						
Importers												
United States	319	375	363	345	333	333	340	340	345	347	349	349
Japan	721	814	814	865	887	909	931	952	973	993	1,012	1,029
Hong Kong	252	221	235	283	295	308	320	332	344	356	367	378
South Korea	66	124	130	88	85	88	93	98	102	106	109	114
Russia	375	350	350	308	315	325	338	351	365	380	394	410
Mexico	97	110	120	129	135	142	151	161	170	179	186	193
Canada	63	45	40	57	58	59	59	59	60	60	60	60
Major importers	1,893	2,039	2,052	2,074	2,109	2,163	2,232	2,294	2,357	2,419	2,477	2,533
Exporters												
Canada	432	550	610	395	429	451	458	467	475	482	492	494
European Union 1/	1,095	1,096	1,118	894	896	896	896	896	896	895	895	893
Eastern Europe	344	221	256	426	448	454	457	465	475	479	482	477
Taiwan	3	5	5	5	5	5	25	50	75	100	125	150
China	164	100	100	148	149	148	146	143	140	137	135	132
United States	557	586	544	578	601	646	692	737	782	828	862	907
Major exporters	2,595	2,558	2,633	2,447	2,528	2,599	2,672	2,758	2,843	2,922	2,991	3,054

1/ Excludes intra-EU trade, covers EU-15.

The projections were completed in November 1999 based on policy decisions and other information known at that time.

Table 51. Poultry trade baseline projections

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
						Thousand metric tons, ready to cook						
Importers												
Russia	820	600	600	572	603	631	660	688	717	748	780	813
European Union 1/	276	273	258	300	300	300	300	300	300	300	300	300
Japan	509	543	545	643	672	698	723	746	768	790	810	828
Hong Kong	915	1,150	1,260	1,032	1,081	1,132	1,183	1,237	1,292	1,351	1,412	1,475
China	804	850	870	1,065	1,123	1,162	1,197	1,228	1,257	1,291	1,325	1,359
South Korea	19	49	57	45	48	50	53	56	58	60	62	64
Saudi Arabia	279	265	260	292	300	306	311	316	320	323	327	330
Egypt	2	2	2	10	20	27	38	45	55	62	69	77
Mexico	231	238	242	243	246	252	259	266	275	277	279	282
Canada	136	130	131	161	165	168	171	175	178	181	185	188
Major importers	3,991	4,100	4,225	4,362	4,557	4,727	4,895	5,056	5,220	5,383	5,548	5,716
Exporters												
Brazil	631	724	840	794	812	837	860	879	897	914	936	961
European Union 1/	973	937	779	929	928	918	919	917	916	911	902	889
Hungary	125	130	130	70	62	59	59	59	59	58	58	56
China	355	400	410	269	270	280	292	307	324	340	356	374
Hong Kong	609	823	926	715	754	796	840	886	935	986	1,040	1,098
Thailand	285	285	290	274	276	277	278	280	282	284	286	288
Saudi Arabia	20	20	20	20	20	21	21	22	22	23	24	24
United States	2,515	2,444	2,486	2,595	2,713	2,830	2,948	3,055	3,150	3,234	3,318	3,402
Major exporters	5,513	5,763	5,881	5,666	5,835	6,017	6,216	6,405	6,585	6,750	6,920	7,092

1/ Excludes intra-EU trade, covers EU-15.

The projections were completed in November 1999 based on policy decisions and other information known at that time.

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