

USDA Agricultural Baseline Projections to 2010

Interagency Agricultural Projections Committee

Introduction

This report provides long-run baseline projections for the agricultural sector through 2010. 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 September through November 2000 in conjunction with fiscal year 2002 budget analysis. Projections reflect a composite of model results and judgmental analysis. Normal weather is assumed. The baseline includes short-term projections from the October 2000 *World Agricultural Supply and Demand Estimates* report.

Summary of Projections

In the initial years of the baseline projections, the agricultural sector continues to recover from the market situation of late 1990s that resulted in generally weak agricultural commodity prices. Large crops had been produced both in the United States and abroad for a number of years and world agricultural demand was weakened by the global financial crisis. Strong foreign competition in a weakened global trade setting reduced the value of U.S. agricultural exports and market cash receipts to U.S. farmers. Net farm income was maintained at levels near the average of the 1990s only through large marketing loan benefits and additional funds provided to the sector through emergency and disaster assistance legislation.

Although there remain some lingering effects of the global crisis in the world economy, the general recovery in crisis countries strengthens global demand and trade early in the baseline and U.S. agricultural exports rise. The buildup of global supplies keeps 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 the high levels of the past several years.

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 world 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, growth in trade leads to rising market prices, increases in farm income, and improvement 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. The trend in consumer food expenditures towards a larger share for meals eaten away from home is expected to continue.

Macroeconomic Assumptions

The outlook for the world economy over the next 10 years is characterized by strong growth in almost all regions of the world. World real GDP growth is projected to average about 3.5 percent annually in 2001-2010, compared with 2.6 percent in the previous decade. The aftermath of the Asian financial crisis is a world that is structurally more sound and poised for significant growth without major imbalances. Global economic growth is driven by a recovery from the Asia financial crisis as well as strong and sustained growth in the former Soviet Union, Africa, and Latin America. There is also a significant narrowing of the differential between the high growth regions such as Asia and the lower growth regions of Latin America, Africa, and the transition economies.

Overall, economic growth in developing countries is projected at 5.5 percent for the next decade, up from 4.8 percent during 1990-2000. This pickup 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, and where consumption and imports of food and feed are particularly responsive to income changes. Although lower than previously recorded, real GDP in the crisis countries of Asia is projected to grow at 5 percent per year. Significant sustained positive growth is forecast for Africa for the first time since the 1950s. A strengthening of economic growth in Latin America is also projected. The strong growth projected for South America reflects reduced debt, less government intervention in the private sector, growing intra-regional trade, and heavier foreign direct investment.

Projected growth in transition economies (countries of the former Soviet Union and Central and Eastern Europe) of about 3.5 percent over 2000-2010 is significant in comparison to the economic contraction of the previous decade. 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 such as Poland, Hungary, and the Czech Republic are expected to show relatively strong growth, largely due to successful integration into the global economy. Russia and Ukraine are beginning to show benefits of their transition to a market economy, with GDP gains of 3.5 to 4 percent projected for the next decade.

Economic growth in developed countries strengthens in the baseline as well, to 2.8 percent in the projections from 2.3 percent of 1991-2000. Structural adjustments undertaken in many

developed countries throughout the second part of the 1980s and early 1990s created a foundation for growth. Low inflation and interest rates also characterize the outlook for developed economies. Relatively sluggish growth of 1.9 percent is projected for Japan, however, which continues to face significant structural problems in its economy and financial sector.

The United States is the largest economy in the world with about 25 percent of global economic activity and is the largest market for foreign goods. The U.S. also has a dominant role in global financial markets. Thus, despite a very low income elasticity of domestic demand for most farm products in the United States, the U.S. economy is crucial for U.S. agricultural prospects through its role in spurring world growth, global agricultural demand and trade, and U.S. agricultural exports. Following gains of over 4 percent each year during 1997-2000, the U.S. economy is expected to slow through 2002 as higher world growth and inflation boost interest rates and tighten credit. U.S. GDP growth then is expected at 3.1 to 3.2 percent for the rest of the baseline, reflecting growth of the labor force and strong gains in productivity. U.S. productivity will remain high because of continued improvements in telecommunications- and information-related technology crucial to the “new economy.” Inflation is projected at under 3 percent as monetary policy is assumed to be relatively stringent, tightening when significant inflationary pressures are expected. The appreciation of dollar in the late 1990s during the Asia financial crisis and the dollar’s continued strength through the baseline will continue to be a negative factor for U.S. agricultural exports.

Oil prices in the near term are expected to reflect a relatively tight market for petroleum products into 2002, but as inventories are restored to normal operating levels over the next several years, oil prices are assumed to decline somewhat from the high levels reached in 2000. From 2003 through the remainder of the baseline, oil prices are projected to rise slightly more than the general inflation rate. This pattern of near-term decline in oil prices followed by moderate gains is predicated on the assumptions that new oil discoveries along with new technologies for both finding and extracting oil will allow for substantial growth in demand without significant energy inflation. Also, economic growth has become less directly dependent on energy as the economy has changed from producing goods to a process much more dependent on information and communication technologies, particularly in North America and Europe. Thus, the projected growth of real world oil prices should not notably hinder global GDP growth. However, the agricultural sector is more negatively affected by higher fuel prices. Fuel costs are a relatively large share of non-farm input costs. Further, fertilizer prices will likely be up in 2001 even as oil prices fall modestly, due to continued high prices for natural gas, the major feedstock and boiler fuel in the production of nitrogen based fertilizer.

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. Also included are agricultural provisions of appropriations acts for fiscal years 1999-2001 and provisions of the Agricultural Risk Protection Act of 2000.

Production flexibility contract payments are provided to the sector through fiscal year 2002 under provisions of the 1996 Farm Act. These predetermined aggregate payments are then

assumed to continue through the remainder of the baseline at a funding level equal to that in fiscal 2002 of \$4.008 billion. Production flexibility contract payments are generally not related to current plantings or to market prices.

Nearly complete planting flexibility is provided under the 1996 Farm Act, allowing producers to respond to market prices and net returns, augmented by marketing loan benefits in low price years. Marketing loan and loan deficiency payment provisions of the 1996 Farm Act have enabled farmers to realize per-unit revenues that exceed loan rates—many farmers use a two-step marketing procedure in which they receive program benefits when prices are seasonally low (and marketing loan benefits high) and then sell their crop later in the marketing year when prices have risen. This policy effect also raises producers' expected net returns for these crops, thereby affecting planting decisions and acreage allocation. Marketing loan benefits and acreage effects 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 remain at their legislated maximum levels through crop year 2001/02. Then loan rates for these crops are assumed to be based on formulas in the 1996 Farm Act, subject to minimum and maximum levels specified in the law. The rice loan rate is assumed to remain at \$6.50 per hundredweight through the baseline.

Additional emergency and disaster assistance funds have been provided to the farm sector in recent years, including market loss assistance for contract crops, oilseed payments, and crop loss assistance payments. No further ad hoc assistance such as these is assumed in the baseline.

The 2000 Appropriations Act reinstated funding for cotton user marketing certificates (the Step 2 program). The dairy price support program has been extended through the end of calendar 2001.

The baseline assumes that the Conservation Reserve Program (CRP) will gradually build from its recent level of about 33.8 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 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 Agreement on Agriculture. The baseline assumes no accession to the World Trade Organization (WTO) by China or Taiwan; no enlargement of the European Union (EU) 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. Commodity projections in the baseline assume small EEP expenditures in fiscal 2001 (for poultry, only), with the program then assumed to be fully used starting in fiscal year 2002. The baseline assumes some growth in the

total P.L. 480 program level through fiscal year 2006 with no change assumed for later years. Program levels projected for GSM-102 and GSM-103 credit guarantee programs increase in fiscal year 2002 and then are constant in nominal dollars for the rest of the baseline.

Crops

In the initial years of the baseline, many crops continue to adjust to a period of low prices of the past several years. Marketing loan benefits provide some safety net assistance to producers in these years, augmenting market returns. In the longer run, more favorable global economic growth supports increases in trade and U.S. agricultural exports, although strong export competition continues.

Planted acreage for the eight major U.S. field crops (corn, sorghum, barley, oats, wheat, rice, upland cotton, and soybeans) declines over the next two years before turning upward for the remainder of the baseline. By 2010, total planted area for these crops reaches 259 million acres, approaching the 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 as world demand grows. Yield gains for many crops mitigate some of the need for increasing total land use.

Export markets continue to increase in importance for many U.S. field crops. Gains in disappearance for U.S. wheat, sorghum, 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 competition from the EU, which is projected to be able to export wheat without subsidies throughout the baseline. Cotton exports benefit from Step 2 payments, with exports strengthening in the latter part of the baseline following the phaseout of the Multi-Fiber Arrangement's import quotas. Sorghum export gains reflect increasing trade to Mexico. Corn and soybean oil exports also grow at faster rates than domestic use, although absolute increases in domestic use are larger than trade gains, reflecting the relative sizes of the utilization categories. The corn sector faces strong competition in global trade from Argentina, muting U.S. corn export gains somewhat. Projected utilization gains 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, with U.S. producers receiving marketing loan benefits. Later in the baseline when prices strengthen, foreign production rises and increased competition lead to declines in U.S. soybean exports. U.S. rice exports are expected to fall 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

the U.S. population of Asian and Latin American descent. Gains in corn used for ethanol and corn sweeteners 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 rises gradually, mainly reflecting gains in food use. Additionally, increases in cotton textile imports in the second half of the baseline after liberalization of restrictions on cotton textile import quotas lead to declining domestic mill use of cotton.

The ratios of ending stocks to use are declining over the baseline for corn, wheat, and soybeans, with nominal prices rising. For rice, ending stocks-to-use ratios are projected to be relatively constant throughout the projections. Stocks-to-use ratios for cotton increase initially and then are relatively stable for the rest of the baseline.

Livestock

Relatively low grain and soybean meal prices in the initial years of the baseline encourage livestock sector expansion, although biological lags in the production process delay higher output for beef in the near term. In the longer run, moderate feed price increases 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.

Beef cattle inventories have continued to be held down by droughts and poor forage conditions over the past several years, which have encouraged more heifers to be placed in feedlots rather than retained for calving even as cattle returns have improved. The length of the biological lag is likely to prevent beef cow herd expansion before 2003-2004. Beef cow numbers then rise through the remainder of the baseline, pushing the cattle herd up to more than 106 million head by the end of the projections. 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 higher-quality 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. The United States remains the primary source of high quality, fed beef for export, including exports for hotel-restaurant trade, largely to Pacific Rim nations. 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. Pork production rebounds through 2002 with a moderate contraction in 2003-2004, before rising gradually through the rest of the baseline. The United States is an important net pork exporter, in part reflecting environmental constraints in a number of competing countries that limit their production gains. Prospects for long-term growth markets for U.S. pork exports remain focused

on Pacific Rim nations and Mexico. Canada will increasingly compete for trade in these markets.

The broiler and turkey industries have kept production costs 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. Further technological improvements are expected to occur during the baseline, although efficiency gains are likely to be smaller than in the past. Broiler production grows steadily throughout the projections, with gains slowing to about 2 percent annually at the end of the baseline. Processed products and fast food markets are important sources of domestic growth for the poultry sector. Competition in global poultry markets holds U.S. poultry exports to moderate gains. Asian imports are projected to expand through the baseline, even with growing domestic broiler production in China. Increasing exports are also expected to Russia, Mexico, Central America, and the Caribbean.

Decreases in real prices of meats combined with increases in real disposable income allow U.S. consumers to purchase more total meat with a smaller proportion of disposable income. Although small reductions in per capita consumption are projected for beef and pork, significant increases in per capita consumption of relatively lower priced poultry will continue. Thus, poultry gains a larger proportion of both total meat consumption and total meat expenditures. On a retail weight basis, poultry consumption is projected to be nearly as large as 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 products offsets declining shell egg use per person.

Milk production grows despite slowly declining cow numbers as strengthening milk-feed price ratios, improved management, and dairy productivity gains push milk output per cow higher. Productivity gains in the dairy sector will reflect the continued structural shift to larger-sized operations as many traditional dairy farms, particularly smaller operations, will experience income stress caused by lower real milk prices and will exit the industry. Domestic dairy demand is expected to show slow growth in the baseline.

Farm Income and Farm Financial Conditions

Over the last few years, net farm income has been maintained at levels near the average of the 1990s mostly because of large marketing loan benefits and additional funds provided to the sector in emergency and disaster assistance legislation. These government payments balanced lower farm cash receipts during this period of generally low commodity prices. Large crops had been produced both in the United States and abroad for a number of years, and world agricultural demand was weakened by the global financial crisis. With the baseline assuming no further ad hoc government assistance and with production flexibility contract payments scheduled to decline, farm income is initially lower as gains in commodity prices and cash receipts in the sector do not match the reduction in government payments. Further, production expenses for energy-related inputs, such as fuels and fertilizer, have been boosted due to price increases for oil

and natural gas. Despite some cash flow difficulties in the sector, 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 global commodity supplies are reduced, agricultural demand and exports strengthen, and prices rise, leading to gains in farm income and greater stability in aggregate financial conditions. Beyond 2002, net farm income gradually moves upward for the rest of the baseline to more than \$56 billion by the end 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 about 9 percent of gross cash income in 1999 and 2000, account for only about 2 percent of gross cash income in the latter part 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 rise only moderately in the initial years of the projections before strengthening more rapidly through the rest of the baseline in response to improving farm income prospects. Farm debt rises less rapidly than asset values. As a result, after 2003, 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 14 percent by the end of the baseline. With asset values increasing more than debt, farm equity rises significantly. Increasing farm income in the baseline and rising farm equity lead to improvement 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 nearly 50 percent of total food spending by 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 the relatively weak growth in parts of Asia, Africa, and the former Soviet Union.

Global and U.S. commodity prices and trade value have been weak in recent years because of large stocks resulting from weakened global demand and large production in the late 1990s. Even with continued output and productivity gains in exporting countries, commodity prices and export earnings are projected to strengthen in the baseline because of steady growth in import demand and reduced U.S. and foreign stocks.

Future trends in China's agricultural trade are key in the global outlook for commodity trade and prices. The baseline includes steady growth in China's imports of most commodities. However, policy rather than market forces determine much of China's trade in agricultural commodities and significant uncertainties exist regarding future policies in China. The size of China's agricultural economy increases the potential significance of these issues for world trade.

The baseline shows improved trade growth for several bulk commodities during 2000-10, compared with the 1980s and 1990s. Projected growth in wheat and coarse grains trade is particularly strong compared with recent performance, and cotton trade is projected to improve from the contraction of the 1990s. 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. The phase out of the Multi-Fiber Arrangement (MFA) by 2005 is expected to boost demand for raw cotton in developing countries, while gradually shifting demand in developed countries from raw cotton to processed cotton products (textiles and apparel).

Global trade in soybeans and products is projected to continue growing, but at a much slower rate than 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 increased crushing in developing countries and competition from other oils, particularly palm oil.

U.S. export volume is projected to strengthen for wheat, coarse grains, and soybeans and products, rise gradually for raw cotton, and decline for rice. U.S. wheat, coarse grain, and soybean and soybean product exports expand along with world trade, although continued strong competition is expected in these markets. U.S. wheat and coarse grain exports compete with unsubsidized EU wheat and barley throughout the projection period. Argentina is expected to remain a strong competitor for coarse grain market share. Eastern Europe also begins to make its presence felt as an exporter in world corn markets early in the projection period. U.S. raw cotton exports remain strong through the baseline, increasing gradually in the second half of the decade due to rising global demand following the MFA phase out. U.S. rice exports are expected to fall during 2000-10 as domestic demand outpaces U.S. production. U.S. exports of soybeans and products continue to grow, albeit at a much slower pace compared with the 1990s, reflecting projected trends in world trade and increasing 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 Russian demand, showing strong and steady growth during 2000-10. Prospects for meat trade are supported by the economic rebound in key Asian markets, and by already-negotiated reductions in trade barriers. However, Russian imports are projected to increase gradually and surpass the record levels reached in the late 1990s by the end of the projection period.

The total value of U.S. agricultural exports is projected to rise to \$76 billion by 2010, up from about \$51 billion in 2000. Both bulk and high-valued products are expected to show strong export growth. Their shares in total U.S. exports remain stable, with high-valued products continuing to account for the larger share, about 63 percent of the total. The growth expected in bulk-export value lends strength to total export earnings, in contrast to the average annual decline in bulk commodity export value in the 1990s. U.S. agricultural imports are forecast to grow from \$38.9 billion in fiscal year 2000 to \$53.4 billion in 2010, reflecting the expansion of the domestic economy and the dollar's exchange value. The resulting agricultural trade surplus rises to \$22.6 billion in fiscal year 2010, up from \$12 billion in 2000 but still well below the record export surplus of 1996.