

USDA Agricultural Projections to 2017

Interagency Agricultural Projections Committee

Introduction

This report provides longrun projections for the agricultural sector through 2017. Major forces and uncertainties affecting future agricultural markets are discussed, such as prospects for long-term global economic growth and population trends. Projections cover production and consumption for agricultural commodities, global agricultural trade and U.S. exports, commodity prices, 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 and trade policies, the weather, and international developments. The report assumes that the Farm Security and Rural Investment Act of 2002 (the 2002 Farm Act), the Energy Policy Act of 2005, and the Agricultural Reconciliation Act of 2005 remain in effect through the projection period. Projections do not reflect the Energy Independence and Security Act of 2007. The projections are not intended to be a Departmental forecast of what the future will be, but instead are a description of what would be expected to happen under a continuation of current farm legislation, with very specific external circumstances. Thus, the projections provide a neutral backdrop, reference scenario that 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 2007 and reflect a composite of model results and judgment-based analyses. Normal weather is assumed. Also, the projections assume no further outbreaks of plant or animal diseases. Short-term projections used as a starting point in this report are from the November 2007 *World Agricultural Supply and Demand Estimates* report.

Long-term Projections and the President's Budget Baseline

Projections in this report assume that biofuel blending tax credits and the 54-cent-per-gallon tariff on imported ethanol used as fuel are extended beyond their currently legislated expiration dates. This is in contrast to President's Budget baseline that assumes those tax credits and the tariff are not extended.

Overview of Assumptions and Results

Key assumptions underlying the projections include:

Economic growth

- World economic growth is projected to increase at a 3.5-percent average annual rate between 2008 and 2017, after averaging 2.9 percent annually in 2001-07. U.S. gross domestic product (GDP) increases from the 2007 slowdown toward a sustainable rate of about 3 percent over the longer term. Strong economic growth in developing countries, particularly important for growth in global food demand, is projected at 5.8 percent annually for 2008-17.

Population

- Growth in global population is assumed to continue to slow to an average of about 1.1 percent per year over the projection period compared with an annual rate of 1.7 percent in the 1980s. Although slowing, population growth rates in most developing countries remain above those in the rest of the world. As a consequence, the share of world population accounted for by developing countries increases to nearly 84 percent by 2017, up from 79 percent in the 1980s.

The value of the U.S. dollar

- The U.S. dollar continues to depreciate through 2011, with a drop in value of about 14 percent from 2002. Over the rest of the projection period, the dollar is assumed to show a small appreciation. Strong economic growth in the United States relative to the European Union (EU) and Japan will mitigate continuing pressure for the euro to appreciate relative to the dollar and will offset much of the trade-driven appreciation of the yen. In addition, capital continues to move into the United States to benefit from well-functioning and diverse financial markets.

Oil prices

- Large increases in oil prices over the past several years reflected strong demand for crude oil resulting from world economic recovery and rapid manufacturing growth in China and India. Following a continuation of increases through 2009, crude oil prices are expected to drop modestly in 2010 through 2013 as new crude supplies help offset the rise in demand from Asia. After 2013, oil prices are projected to rise slightly faster than the general inflation rate.
- Underlying these longer term price increases, world oil demand is expected to rise due to strong global economic growth, particularly in highly energy-dependent economies in Asia. Factors expected to constrain longer run oil price increases include new oil discoveries, new technologies for finding and extracting oil, the ability to switch to non-oil energy sources, the ability to increase energy efficiency by substituting nonenergy inputs for energy, and continued expansion and improvement in renewable energy.

U.S. agricultural policy

- The 2002 Farm Act, as amended, and the Agricultural Reconciliation Act of 2005 are assumed to continue through the projection period.
- Area enrolled in the Conservation Reserve Program (CRP) is assumed to decline through 2009 as high prices encourage the return of some land to production when CRP contracts expire. CRP acreage is then assumed to gradually rise toward its legislated maximum of 39.2 million acres, reaching 37 million acres by the end of the projections.

U.S. biofuels

- The projections in this report were completed prior to enactment of the Energy Independence and Security Act of 2007. Thus, provisions of that legislation are not reflected in these projections, which are based on the Energy Policy Act of 2005.
- The projections also assume that the tax credits available to blenders of biofuels (ethanol and biodiesel) and the 54-cent-per-gallon tariff on imported ethanol used as fuel remain in effect. Combined with the Energy Policy Act of 2005, State programs, high oil prices, and other factors, returns for ethanol production provide economic incentives for a continued expansion in the production capacity of the ethanol industry over the next several years. As a result, over 12 billion gallons of ethanol are assumed to be produced by 2010. Although more moderate growth is projected in subsequent years, over 14 billion gallons of ethanol are produced annually by the end of the projection period. Corn starch is expected to remain the primary feedstock for ethanol production during the projection period. Cellulosic-based production of renewable fuels is assumed to meet the minimum specified in the Energy Policy Act of 2005 of 250 million gallons in 2013 and subsequent years. Biodiesel production is assumed to increase to near 600 million gallons by 2013.

Cattle and beef trade

- The projections assume a gradual rebuilding of U.S. beef exports to Japan and South Korea. Due to recent changes in U.S. regulations, the projections assume Canadian cattle and beef from cattle over 30 months of age can be exported to the United States under the conditions that they are age-verifiable and born after March 1, 1999.

International policy

- Trade projections assume that countries comply with existing bilateral and multilateral agreements affecting agriculture and agricultural trade. The report incorporates effects of trade agreements and domestic policy reforms in place in November 2007.
- 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 USDA's regional and commodity analysts. In particular, economic and trade reforms underway in many developing countries are assumed to continue.

International biofuels

- The production of biofuels is experiencing rapid growth in a number of countries. The projections assume that the most significant increases in foreign biofuel production over the next decade will be in the EU, Brazil, Argentina, and Canada. In particular, the projections assume that the EU biofuel target of 5.75 percent of total transportation fuel use by 2010 is only partially met by that date, and is still not fully reached by 2017. Nonetheless, growth in biodiesel demand in the EU is a key factor underlying gains in global vegetable oils and oilseeds demand.

Key results in the projections include:

Steady domestic and international economic growth in the projection period supports gains in consumption, trade, and prices of agricultural products. Additionally, the projections reflect continued high crude oil prices and increased demand for biofuels, particularly in the United States and the EU.

U.S. aggregate indicators

- Although net farm income initially declines from high levels of 2007 and 2008, it is projected to remain historically strong throughout the projection period, and reach record levels beyond 2011. Growth in export demand contributes to increases in agricultural commodity prices and gains in farm cash receipts. Increases in corn-based ethanol production also provide a major impetus for this strong income projection. Higher commodity prices lower government payments for price-dependent program benefits, although annual CRP payments increase. With lower government payments, the agriculture sector relies increasingly on the market for its income. Cash receipts represent more than 90 percent of gross cash income in the projections, up from about 85 percent in 2005.
- The value of U.S. agricultural exports rises in the projections as steady global economic growth and stronger world trade lead to gains for U.S. agricultural export volumes and higher commodity prices. The lower value U.S. dollar is also an important factor underlying recent export gains and the projected growth. Additionally, higher commodity prices due to expansion of global biofuel demand contribute to the projected gains in export values. Increases in U.S. consumer income and demand for a large variety of foods underlie continued strong growth in U.S. agricultural imports.
- For most of the projections period, consumer food prices increase less than the general inflation rate. However, adjustments in retail prices due to higher energy and agricultural commodity prices lead to food price increases somewhat larger than general inflation in 2008 and 2009. Relatively large price increases are expected in 2008 for fats and oils and for cereals and bakery products, reflecting higher prices for vegetable oils and wheat. Consumer prices for red meats, poultry, and eggs exceed the general inflation rate in 2009 as the livestock sector adjusts to higher feed costs. Consumer expenditures for food away from home continue to grow in importance and account for more than half of overall food spending during most of the projection period.

U.S. agricultural commodities

- Strong expansion of corn-based ethanol production in the United States affects virtually every aspect of the field crops sector, ranging from domestic demand and exports to prices and the allocation of acreage among crops. A higher portion of overall plantings is allocated to corn. Higher feed costs also affect the livestock sector, mitigated somewhat by the increased availability of distillers grains.
- Ethanol production in the United States continues its strong expansion through 2009/10, with slower growth in subsequent years. By the end of the projections, ethanol production exceeds 14 billion gallons per year, using almost 5 billion bushels of corn. The projected large increase in ethanol production reflects the Energy Policy Act of 2005, State programs, ongoing ethanol plant construction, and economic incentives provided by continued high oil prices. Feed use of corn declines in the initial years of the projections and then rises only moderately as increased feeding of distillers grains helps meet livestock feed demand, particularly for beef cattle.
- Growth in the food use of wheat is projected to match the rate of population increase. Feed use of wheat rebounds from the low levels of 2006/07 and 2007/08 as higher corn prices encourage increases in wheat feeding. Wheat feeding then levels off as wheat prices relative to corn stabilize.
- Soybean acreage falls in the projections after 2008 due to more favorable returns to corn production. Longrun growth in domestic soybean crush is mostly driven by increasing demand for domestic soybean meal for livestock feed. Some gains in crush also reflect increasing domestic soybean oil demand for biodiesel production.
- Moderate expansion of domestic food use of rice is projected. Although growth is somewhat faster than population growth, it is well below the rates of growth in the 1980s and 1990s when per capita use rose rapidly. Imports of rice account for a growing share of domestic use in the projections.
- Mill use of upland cotton in the United States falls in the projections as U.S imports of apparel continue to increase, reducing domestic apparel production and lowering the apparel industry's demand for fabric and yarn produced in the United States.
- Duties and quantitative restraints on sugar and high fructose corn syrup (HFCS) trade between the United States and Mexico ended on January 1, 2008. This results in increased use of HFCS by Mexico's beverage industry and, consequently, larger sugar exports from Mexico to the United States.
- The production value of U.S. horticultural crops is projected to grow by more than 3 percent annually over the next decade, with consumption of horticultural products continuing to rise. Imports play an important role in domestic supply during the winter and, increasingly, during other times of the year, providing U.S. consumers with a larger variety of horticultural products.

- Production of all meats slows or declines in the first half of the projections, largely reflecting higher feed costs and lower producer returns as more corn is used in the production of ethanol. After those production adjustments, strong domestic demand and some strengthening in meat exports result in higher prices and higher returns, providing economic incentives for expansion in the sector.
- Per capita meat consumption declines through 2012-14 as the livestock sector lowers overall production and retail prices rise. Meat consumption per person then rises again at the end of the projections period. Rising incomes facilitate gains in consumer spending on meat. Nonetheless, overall meat expenditures represent a declining proportion of disposable income.
- Strong domestic and international demand for dairy products contributed to high U.S. dairy prices in 2007. Despite higher feed costs, strong farm-level milk prices are projected to encourage further increases in milk cow numbers through 2009. Combined with an upward trend in output per cow, the results are relatively strong gains in milk production in 2008 and 2009 and decreases in milk prices. Smaller production gains are projected on average over the rest of the projection period because milk cow numbers decline after 2009. Milk prices rise after 2009.

Agricultural trade

- World consumption of many grain, oilseed, and meat commodities has exceeded world production in the past several years, reducing global stocks. As a result, global stocks-to-use ratios have dropped sharply and prices have risen. Tight market conditions are projected to persist for many commodities over most of the coming decade, keeping agricultural commodity prices high.
- Broad-based global economic growth provides a foundation for robust gains in world demand for agricultural products. Economic growth in developing countries is especially important because food consumption and feed use are particularly responsive to income growth in those countries, with movement away from staple foods and increased diversification of diets. Rapid expansion of ethanol and biodiesel production in some countries also adds to global agricultural demand growth.
- Population growth rates are slowing in most countries but rates in developing countries remain nearly double those of developed countries. Many developing countries are also projected to achieve rapid economic growth rates.
- The United States will remain competitive in global agricultural markets, although trade competition will continue to be strong. Expanding production in a number of countries, including Brazil, Argentina, Canada, Ukraine, and Russia, provides competition to U.S. exports for some agricultural commodities. The lower-valued U.S. dollar assumed in the first half of the projection period boosts U.S. agricultural competitiveness and export growth. Even as the U.S. dollar strengthens later in the projection period, export gains continue to contribute to gains in cash receipts for U.S. farmers.

- Continuing growth in the livestock sectors of developing countries in Asia, Latin America, North Africa, and the Middle East accounts for most of the growth in world coarse grain imports projected during the next decade. The United States is the major corn exporter in the world. However, with increasing use of corn for U.S. ethanol production, U.S. corn exports show very little growth through 2012/13. In response, corn production and exports are assumed to increase for Argentina, Ukraine, Republic of South Africa, and Brazil. China is also assumed to increase corn production, which changes its net corn trade by slowing the decline in its exports and the increase in its imports. Nonetheless, China is projected to become a net importer of corn in the longer run, reflecting declining stocks of grain and increasing demand for feed for its growing livestock sector.
- Vegetable oil prices rise in response to rapidly increasing demand for food use in low- and middle-income countries. Vegetable oil prices also rise relative to prices for oilseeds and protein meals because of expanding biodiesel production in a number of countries. Brazil's rapidly increasing soybean area enables it to gain a larger share of world soybean and soybean meal exports, despite increasing domestic feed use. Argentina is the leading exporter of soybean meal and soybean oil, reflecting the country's large and growing crush capacity, its small domestic market for soybean products, and an export tax structure that favors exports of soybean products and biodiesel rather than soybeans. The former Soviet Union, Eastern Europe, and Southeast Asia increase rapeseed and palm oil production for use as biodiesel feedstocks.
- The United States, Australia, the EU, Canada, and Argentina have historically been the primary exporters of wheat, although exports from the Black Sea region have grown in the past 10 years. Over the next decade, Russia and Ukraine are projected to have a growing importance in world wheat trade, reflecting low costs of production and continued investments in their agricultural sectors. However, high year-to-year volatility in these countries' production and trade can be expected due to typical weather-related variation in yields.
- Cotton consumption and textile production are projected to increase in countries where labor and other costs are low, such as China, India, and Pakistan. China is the largest importer of cotton in the world. Although China's cotton imports are expected to grow more slowly than the rapid gains since 2001, these increases account for most of the gains in global cotton trade in the projections. The United States continues as the world's leading cotton exporter, reflecting its large production capacity and its reduced domestic mill use of cotton as apparel imports continue to grow.
- Long-grain varieties of rice account for around three-fourths of global rice trade and are expected to account for the bulk of trade growth over the next decade. Indonesia, the Philippines, and Bangladesh become the three largest rice-importing countries and account for about 30 percent of the increase in global rice trade over the next decade. Sub-Saharan Africa, a large importing region, accounts for more than a fourth of the increase in trade, with the Middle East also contributing to rice trade gains. Thailand, Vietnam, the United States, India, and Pakistan remain the world's largest rice-exporting countries.
- U.S. meat exports benefit from strong foreign economic growth. However, even with U.S. beef exports to Japan and South Korea assumed to gradually rebuild, total U.S. beef exports do not return to levels of 2000-03 until late in the projection period.

- Pacific Rim nations and Mexico are key markets for long-term growth of U.S. pork exports. Higher income countries of East Asia increase pork imports as their domestic hog sectors are constrained by environmental concerns. Mexican pork imports rise rapidly, driven by increases in income and population. Brazil is constrained in its pork trade by the presence of foot-and-mouth disease, but continues to be a major pork exporter to markets such as Russia, Argentina, and Asian markets other than Japan and South Korea.
- Brazil remains a leading poultry exporter as low production costs allow the Brazilian poultry sector to remain competitive in global trade. Poultry exports from countries affected by avian influenza, such as Thailand and China, are expected to be mostly fully cooked products destined for higher income markets.