

USDA Agricultural Projections to 2024

Interagency Agricultural Projections Committee

Introduction and Projections Overview

This report provides longrun projections for the agricultural sector to 2024. 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.

The projections are a conditional scenario based on specific assumptions about the macroeconomy, agricultural and trade policies, the weather, and international developments. The report assumes that there are no domestic or external shocks that would affect global agricultural markets. Normal weather with trend crop production yields is generally assumed. Provisions of the Agricultural Act of 2014 are assumed to remain in effect through the projection period. Thus, the projections are not intended to be a forecast of what the future will be, but instead are a description of what would be expected to happen under these very specific assumptions and circumstances. As such, the projections provide a neutral reference scenario that can serve as a point of departure for discussion of alternative farm-sector outcomes that could result under different domestic or international conditions.

The projections in this report were prepared during October through December 2014 and reflect a composite of model results and judgment-based analyses. Short-term projections used as a starting point in this report are from the November 2014 *World Agricultural Supply and Demand Estimates* report. The macroeconomic assumptions were completed in October 2014.

Over the next several years, the agricultural sector will adjust to lower prices for most farm commodities. For crops, production response to lower prices will result in reduced acreage planted. In the livestock sector, lower feed costs will provide economic incentives for expansion, although the timing of expansion for beef will be delayed by the building of beef cow inventories and biological lags. Following those near-term adjustments, longrun developments for global agriculture reflect steady world economic growth and continued global demand for biofuel feedstocks. Those factors combine to support longer run increases in consumption, trade, and prices of agricultural products. Reflecting these market adjustments and price projections, export values decline in 2015 and farm cash receipts fall in 2015-16 before both grow over the rest of the projection period. Farm production expenses also increase after 2016, so net farm income declines from recent record highs.

Key Assumptions and Implications

Major assumptions underlying the projections and selected implications include:

Economic Growth

- Global real economic growth is assumed to average 3.5 percent annually over the next decade. The strongest growth is assumed in developing countries. India and China are expected to remain among the world's fastest growing economies. Robust economic growth is also anticipated across developing regions, including Latin America, the Middle East, Africa, and other countries in Asia. As a result, developing countries become a larger part of the world economy.
- In contrast, developed countries are assumed to have relatively weak longrun real growth, especially in Japan and the European Union (EU). Japan's economy continues the slow growth the country has had since the 1990s. Growth in the EU will be constrained structural rigidities, including inflexible labor laws and an expensive social security system.
- The U.S. economy is projected to grow at an average rate of about 2.7 percent in real terms over the next decade. The U.S. share of global gross domestic product (GDP) falls from about 23 percent in 2015 to less than 21 percent at the end of the projection period.
- Steady global economic growth supports longer term gains in world food demand, global agricultural trade, and U.S. agricultural exports. 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 traditional staple foods and increased diversification of diets.

Population

- Economic growth over the next decade contributes to the continued slowing of population gains around the world as birth rates decline. Growth in global population is projected to average about 1.0 percent per year compared with an average annual rate of 1.2 percent in 2001-10.
- Population growth rates in most developing countries are projected to slow, although they remain above those in the rest of the world. As a consequence, the share of world population accounted for by developing countries continues to rise, accounting for 83 percent in 2024.
- Population gains in developing countries, along with increased urbanization and expansion of the middle class, are particularly important for the projected growth in global food demand. Populations in developing countries, in contrast to those in more-developed countries, tend to be both younger and undergoing more rapid urbanization, factors that generally lead to the expansion and diversification of food consumption.

Value of the U.S. Dollar

- Following a 10-year depreciation of the U.S. dollar from 2002 to 2011, a moderate appreciation occurred in 2012 and 2013. Although further appreciation is projected for the next decade, the dollar is assumed to remain relatively weak compared to the past two decades.
- Continued weakness of the dollar will be a facilitating factor for gains in U.S. agricultural exports. Although trade competition will continue to be strong, the United States is projected to remain competitive in global agricultural markets, with export gains contributing to long-term increases in cash receipts for U.S. farmers.

Oil Prices

- Nominal crude oil prices are projected to fall through 2016 reflecting global crude oil production outstripping consumption. Beyond 2016, nominal crude oil prices are assumed to increase as global economic activity improves. Increases are faster than the general inflation rate in the second half of the projection period. By 2024, the nominal refiner acquisition cost for crude oil imports is projected to be close to \$120 per barrel.
- Increases in crude oil prices raise production costs in the agricultural sector.

U.S. Agricultural Policy

- The Agricultural Act of 2014 is assumed to be in effect through the projection period.
- Acreage enrolled in the Conservation Reserve Program (CRP) is assumed to fall slightly below its legislated maximum under the 2014 Farm Act of 24 million acres.
- Lower crop prices projected over the next several years lead to higher direct Government payments to farmers in 2015 through 2017, mostly reflecting payments under the Agriculture Risk Coverage (ARC) and Price Loss Coverage (PLC) programs of the 2014 Farm Act. Beyond 2017, direct Government payments are lower and below the average of 2001-10. Payments under the CRP, ARC, and PLC programs are the largest Government payments to the U.S. agricultural sector over the projection period.

U.S. Biofuels

- Ethanol production in the United States is projected to be relatively flat over the next decade, with most production using corn as the feedstock. About 35 percent of total corn use is projected to go to ethanol production.
- The 10-percent ethanol “blend wall” and projected declines in overall gasoline consumption in the United States are assumed to constrain domestic ethanol production over the next decade. Most gasoline in the United States continues to be a 10-percent ethanol blend (E10). Infrastructural and other constraints severely limit growth in the E15 (15-percent ethanol blend) market. The E85 (85-percent ethanol blend) market, while growing, remains very small. Only moderate gains are projected for U.S. ethanol exports.
- The \$1-per-gallon tax credit for blending biodiesel, which was extended through 2014 in December 2014, is assumed to be unavailable in the projections.

- The biomass-based diesel use mandate, as administered by the U.S. Environmental Protection Agency (EPA), rose to 1.28 billion gallons for 2013 and is assumed to remain at that level throughout the projection period. Some production of biodiesel and renewable diesel above the biomass-based diesel mandate is assumed to meet a portion of the nonspecific advanced biofuel mandate.
- Soybean oil is assumed to account for about half of total biodiesel production made from methyl esters. Other feedstocks used to produce biodiesel include corn oil extracted from distillers grains, other first-use vegetable oils, animal fats, and recycled vegetable oils.

International Policy

- Agricultural trade projections assume trade agreements, sanitary and phytosanitary restrictions, and domestic policies in place in November 2014.
- The projections assume that the current geopolitical crisis involving Russia and Ukraine is short run in nature and does not lead to longrun consequences for economic and agricultural development and policymaking for those countries.
- The ban Russia has imposed on agricultural imports from Western countries (such as the EU, United States, and Canada) is assumed to last only the stated year from August 2014 to August 2015. However, the projections assume that Russia will continue to use policies to stimulate its domestic pork and poultry production and to limit its reliance on imports.

International Biofuels

- Global expansion of biofuel production is projected to continue during the next decade, although at a slower pace than over the last half decade. As a result, demand for biofuel feedstocks also grows more slowly.
- The largest biofuels producers include the United States, Brazil, the EU, Argentina, and Indonesia. The EU remains the world's largest importer of biofuels throughout the projection period. Argentina, Brazil, and the United States are the largest biofuel exporters.

Prices

- Prices for many major crops have generally fallen over the last two years as U.S. and global production responded to relatively high prices. As markets adjust to these lower prices, the projections indicate that prices will bottom out and then rise again, reflecting long-term growth in global demand for agricultural products, a relatively low-valued dollar, and continued biofuel feedstock demand. As a result, despite declining from recent highs, crop prices remain above pre-2007 levels.
- Prices in the livestock sector initially reflect production responses to reduced feed costs as improved livestock-sector net returns provide economic incentives for expansion. Additionally, pork prices reflect a rebound in U.S. pork production from 2014 reductions that were largely due to effects of the Porcine Epidemic Diarrhea virus (PEDv). Thus,

prices for hog and broilers decline through most of the projection period as production levels for those meats rise. In contrast, beef cattle prices initially rise as beef production continues to decline while beef cow inventories are built. Beef cattle prices then fall for several years starting in 2018 when beef production increases. Nominal farm-level milk prices decline in 2015-18 as lower feed costs encourage increased production. Milk prices remain flat in 2019 and 2020 and then are projected to gradually rise over the rest of the projection period, with increases less than the overall rate of inflation largely reflecting efficiency gains in production.

- Lower prices for most major crops, hogs, poultry, and milk over the next several years result in declines in export values for 2015 and farm cash receipts through 2016. Export values and cash receipts then grow over the rest of the projection period as prices increase. Although farm production expenses also increase beyond 2016, net farm income remains above its 2001-10 average.