Overview of the 2005 U.S. and World Outlook

The Macroeconomic Environment

FAPRI baseline projections depend on two major external factors: macroeconomic assumptions and agricultural and trade policy assumptions. Macroeconomic projections used in the 2005 FAPRI baseline were obtained from Global Insight. The major macroeconomic drivers of this baseline are solid global economic growth, including in the EU-15 and Japan, and continuing currency movements against the U.S. dollar, including appreciation of OECD currencies and depreciation of most Latin American currencies. World economic activity grew by 3.9% in real terms in 2004. The world economy is expected to grow at an annual average rate of 3.1% over the baseline.

In 2004, NAFTA economies grew at a solid pace, with growth of 2.7% for Canada, 4.1% for Mexico, and 4.4% for the United States. Their growth is projected to continue in the coming decade, with average annual growth rates of 2.9%, 4.2%, and 3.2%, respectively. Price inflation in the three countries is expected to remain moderate during the outlook period.

The outlook for the Asian economies is unchanged, with an average annual real growth rate of 3.6%, and with highest growth rates (5% to 7%) predicted for China, Vietnam, Thailand, and India for the decade. East Asia is growing strongly as well. Japan’s economy grew 2.9% in 2004 and is projected to grow just below 2% for the outlook period. Price deflation in Japan ends in 2006 and inflation remains low in the rest of Asia.

Argentina boomed in 2004, with a 7.7% growth rate, and growth continues at around 3.5% annually until 2014. Brazil’s economy grew strongly (5.4%) in 2004 and is expected to continue to grow at about 4% per year during the coming decade. The Latin America region grows at a 4% average annual rate during the outlook period. Price inflation is expected to be moderate in most of the Latin America region.

The EU-15 region’s recovery consolidated in 2004, with a 2% growth rate. Aggregate annual growth hovers around 2% for the outlook period. The EU NMS in aggregate grew at 4.9% in 2004. The NMS converge with the EU-15, with an annual aggregate growth rate above 4%.

The Brazilian and Colombian currencies appreciated against the U.S. dollar in 2004. This is expected again in 2005, and for Uruguay’s currency as well. With these exceptions, all Latin American countries continue to devalue their currency relative to the U.S. dollar from 2005 on, with variable average annual nominal devaluation rates. For most countries, high inflation rates relative to the United States erode their nominal devaluation.

The currencies of most industrialized countries strongly appreciated relative to the U.S. dollar in 2004. These appreciations continue in 2005 and then progressively taper off; eventually some reverse themselves slightly during the outlook period. The appreciation of the euro and Australian dollar ends in 2008. New Zealand’s currency follows a similar pattern, with appreciation ending in 2007. The yen continues to appreciate against the U.S. dollar for the whole outlook period but at a decreasing rate.

Agricultural and Trade Policy Assumptions

The 2004 policy environment was dominated by European reforms (CAP reforms and enlargement with 10 EU NMS) and SPS shocks and trade restrictions in meat and livestock markets associated with BSE and AI.

The first notable policy change incorporated in the 2005 baseline is associated with EU enlargement with 10 NMS, and the EU CAP reform from the 2003 midterm review of the CAP. These policy provisions were described in detail in last year’s FAPRI outlook book, and the major policy assumptions are presented in the policy tables in the next section. The 2003 EU CAP reform aims to further decouple farm support from production decisions, a policy initiated in 1992. Decoupling implementation is to be completed by 2007, taking the form of a Single Farm Payment (SFP). Since limited coupled elements may be maintained and because the SFP creates wealth effects, the FAPRI baseline assumes that the SFP has a small supply-inducing effect.

In the EU NMS, a single area payment reform begins at the time of entry. There is a reduction in direct payments for bigger farms until support reaches 100%, which occurs in 2013. The top-up payment (additional payments) rates are 30% throughout the
projection period. The CAP reform also includes commodity-specific measures presented in the policy tables in the next section.

Trade policies are harmonized between the EU-15 and NMS. Market price convergence between the EU-15 and NMS is assumed to occur within three or four years, except for sugar, for which prices are equalized upon accession. EBA commitments to allow more duty-free sugar imports into the EU start in mid-2009 and imply a concurrent decrease in sugar production quotas on a one-for-one basis.

SPS policy developments in 2004 have affected major meat markets with the occurrence of BSE and AI cases (see Box 1, page 6, on these SPS outbreaks). Borders of major export destinations were closed after a BSE case was confirmed in the United States, and beef exports dropped by 83%. Canadian borders also closed following the Canadian BSE crisis. FAPRI assumes that quick measures taken to restore consumer confidence in the safety of U.S. beef reopen these markets beginning in 2005 and trade reaches pre-crisis levels after three years. Poultry trade has also been interrupted by AI outbreaks, especially in Asia, where imports to Japan and exports from Thailand are particularly impacted.

Under the Uruguay Round Agreement on Agriculture, the commitment schedules of developed countries for export subsidy limits, TRQ expansion, import duty reduction, and domestic support reduction are fixed at 2000 levels. Developing countries had their last reform installment implemented in 2004. These commitments are held fixed through 2014.

The 2005 outlook includes new policy tables covering border tariffs and TRQ, export subsidies, and domestic policy interventions used in the FAPRI model. An extended policy database is also available on our Web site (www.fapri.iastate.edu/tools/).

The Outlook for U.S. Agriculture

Crops

The short-run outlook for U.S. crop markets is dominated by the effects of record-setting 2004 production levels. U.S. corn and upland cotton yields broke records set just one year earlier by more than 12%, and soybean and rice yields also reached new highs. The result has been lower prices for most crops during the 2004/05 marketing year.

The negative effect of the huge 2004 crop on U.S. corn prices is mitigated by large increases in the amount of corn used by domestic livestock feeders and ethanol producers. Continued strong growth in ethanol demand and a projected expansion in U.S. corn exports could lead to a reduction in stocks and higher corn prices during the 2005/06 marketing year, provided yields return to more normal levels. If demand continues to grow at the projected pace, steady growth in yields and some expansion in corn area will be required in subsequent years to satisfy all users of U.S. corn.

In contrast to corn, 2004 U.S. wheat yields actually fell slightly below the record 2003 level. However, a sharp increase in global wheat production has contributed to a reduction in U.S. wheat exports, and the net effect has been to leave average 2004/05 U.S. wheat prices near previous year levels. The actual decline in U.S. wheat exports in 2004/05 may be moderated because below-average quality of the Canadian wheat crop has limited Canadian exports. For 2005/06, large world carry-in stocks contribute to a further contraction in U.S. wheat exports and marginally lower prices. Slight increases in wheat prices in later years are insufficient to push U.S. wheat area above the 2004 level.

An increase in prices and producer returns contributed to an increase in U.S. rice area and production in 2004. Strength in world rice prices in 2004/05 has actually reduced U.S. rice producer returns, as loan program benefits have been reduced more than market returns have increased. The projected result is a reduction in 2005 U.S. rice area and production. Domestic rice consumption grows with the U.S. population, and strength in world rice markets sustains U.S. rice exports and results in steady increases in U.S. rice prices after 2006/07.

After a short crop led to tight stocks and high soybean prices in 2003/04, a record 2004 U.S. soybean crop allows stocks to rebuild and prices to fall. Final soybean price estimates for 2004/05 may well differ from the levels reported here, depending in part on final yields for the South American crop harvested after these projections were prepared in January 2005. Under normal conditions, U.S. soybean area and yields are both likely to decline in 2005, but prices could remain under pressure from large carry-over stocks. In
the longer run, most of the growth in export demand for soybeans and products is likely to be captured by South American producers; modest growth in U.S. production is likely to be absorbed by increases in crush to supply growing domestic soybean meal and oil demand.

Record U.S. and world cotton yields have led to sharply lower cotton prices in 2004/05. In spite of lower cotton market prices, higher yields and increased payments under the marketing loan program mean per acre returns to cotton producers are above year-ago levels, contributing to a small projected increase in 2005 cotton area planted. With declining domestic mill use in the face of increased textile imports, the U.S. cotton industry is increasingly reliant on export markets. Projected cotton prices increase only slowly, as exports expand at a modest pace and stocks remain large for years to come.

The U.S. sugar outlook depends in large part on policy developments and consumer demand for sugar and other sweeteners. In this current-policy baseline, allotments are used to control supplies, and imports from non-NAFTA countries are limited by a fixed TRQ. Only a modest decline in domestic per capita sugar consumption is projected, so total sugar consumption increases slowly with population growth. Stocks increase and prices fall in FY 2008, when provisions of NAFTA result in an end to current restrictions on sugar imports from Mexico.

A after a modest recovery in the near term, the area planted to sorghum, barley, and oats is projected to resume its long-term decline. Strong prices could lead to an increase in 2005 U.S. sunflower area, but the persistent drought in the Northern Plains could limit the recovery in sunflower area. Under average weather and market conditions, peanut area and prices remain relatively stable throughout the baseline period. Hay prices could increase slowly over time if the effect of rising cattle inventories on hay demand outweighs modest yield growth. Under current law, more area could be enrolled in the conservation reserve, but it is assumed that the statutory maximum of 39.2 million acres (15.9 mha) is never achieved.

Livestock, Poultry, and Dairy

U.S. market prices for livestock, poultry, and dairy were all higher than anticipated in 2004, largely because of very strong consumer demand. Per capita meat consumption increased in spite of higher retail meat prices. While trade and other factors are also very important to the short- and long-term outlook for animal product markets, a critical assumption underlying the baseline is that U.S. consumer demand will remain relatively strong.

Because of BSE cases, the United States was closed to imports of Canadian cattle in 2004, and Japan, South Korea, and several other countries were closed to exports of U.S. beef. The baseline assumes a partial resumption in trade in both live animals and beef in 2005 but does not assume that trade immediately returns to pre-BSE levels. January 2005 USDA reports indicate that cattle numbers increased for the first time in years, signaling the start of a long-delayed expansionary phase of the cattle cycle. Increased production is likely to result in lower cattle prices over the next several years.

Strength in both export and domestic demand for pork resulted in a sharp increase in 2004 hog prices, in spite of an increase in pork production. Further growth in pork production is projected over the next 10 years, with some cyclical movements in both production and prices. The breeding herd is expected to continue its long-term decline, so the increase in pork production depends on further increases in productivity and in hog imports from Canada. The baseline assumes that the duty levied on imports of Canadian hogs will not significantly affect import volumes but will increase the share of feeder pigs in total hog imports from Canada.

U.S. broiler production resumed rapid growth in 2004 in response to strong prices. The sharp increase in prices was particularly surprising given a slight reduction in exports and resulted from both strong consumer demand and reduced wholesale-retail margins. Broiler exports are expected to recover, but domestic consumption accounts for most of the projected growth in broiler demand. Production continues to expand throughout the projection period, and broiler wholesale prices return to a more normal long-term level of just over 60¢ per pound. Turkey production and egg production also grow steadily, and prices for both commodities fall from 2004 levels.

U.S. milk prices were much higher than anticipated in 2004, as production stagnated for the second straight year in the face of strong demand for dairy products. Lower feed costs and renewed availability of
Among major factors that shaped the world meat market in the last five years, outbreaks of animal diseases ranks high on the list. In particular, the recent BSE cases in North America and the highly pathogenic AI in Asia have disrupted the market and caused adjustments in affected countries that may have repercussions on trade volumes and flows in the coming years. In 2004, total meat trade grew by only 1.5%, primarily because of the 0.6% decline in total beef trade and a weak 0.9% growth in poultry trade. Benefiting from these SPS shocks, pork trade grew by 5.8%. This outlook assumes that affected countries will take three years to recover to their pre-crisis levels of trade.

**Bovine Spongiform Encephalopathy**

The BSE crisis has received widespread media coverage. In the OIE classification, BSE is a list B disease, defined as “transmissible, of socio-economic and/or public health importance within countries, and that are significant in the international trade of animals and animal products.” The main transmission mechanism is primarily through dietary exposure to feedstuffs containing infected meat and bone meal. The incubation period is five years, and there is no effective treatment.

BSE cases were first recognized in 1986, and the number of confirmed cases started to climb from then on. However, the outbreak became a market crisis in 1996 with the conjecture made by a Japanese Ministerial Advisory Committee on BSE on a likely link between Creutzfeldt-Jackob Disease (CJD) and exposure to BSE before the introduction of the Specified Bovine Offal ban in 1989. Then, exports from the UK and other affected member states were banned within the EU, and many beef importers also unilaterally imposed a ban of beef imports from affected EU member countries. Per capita consumption of beef in the EU dropped by more than 10%. The EU introduced various supply management measures to maintain market prices, including removing 5.2 million animals from the food chain. Private Storage Aid Scheme and Intervention Purchases were also allowed, and intervention stocks, empty in 1995, ballooned to 454 tmt in 1996.

The second wave of BSE cases in Europe was in 2000 and 2001, establishing for the first time that BSE cases were more widespread in continental Europe than initially suspected, with cases confirmed in Austria, Denmark, Finland, Germany, and Italy, and also in former Eastern and Central Europe, including the Czech Republic, Poland, Slovakia, and Slovenia. Impacts during this second crisis were even more significant, with per capita consumption dropping by nearly 15% and beef exports declining by 35% from the previous year’s level, which was nearly 22% below the maximum subsidized export limit.

The next BSE crisis began with the discovery of the first case outside Europe—in Japan in 2001. Even though the dairy cow with BSE was domestic in origin, the consumption of imported beef suffered the most, declining by almost 26%, which translated into a 33% reduction in imports. The most recent BSE cases have been in North America: in Canada beginning in 2003 and in the U.S. in 2004. In contrast to the impacts in other countries, prices dropped enough in Canada to actually encourage an increase in per capita beef consumption by nearly 7%. Live export dropped by 70% while beef export declined by 37%. The impact on U.S. consumption was relatively smaller; consumption declined by 4% in 2003 but was primarily driven by a price spike of 26% when the border with Canada was closed. In 2004, per capita consumption actually increased by more than 1%.

Right after the confirmation of a BSE case in Canada, the U.S. suspended entry of all live cattle and beef from that country. The former ban is still in effect, but imports of muscle meat from animals 30 months or younger were allowed in 2003, raising the U.S. cattle price by 26%, while prices in Canada dropped by 18%. However, when a U.S BSE case was confirmed, major beef export destinations such as Japan, South Korea, and Mexico closed their borders, drastically reducing their imports, and U.S. beef exports declined by 82%.

Affected countries have quickly put into place measures to assure consumers on the safety of their beef products to win their confidence. These measures include a feed ban to control the main mechanism of transmission; slaughter of animals younger than 30 months old, which are less likely to contain high levels of BSE infectivity, if any; and removal of specified risk material, including central and peripheral nervous system tissues containing 90% of the infectivity and distal ileum.

U.S. negotiations for resumption of normal trade to export markets are sensitive since Canada could use the same arguments to open the U.S. border. At present the
U.S. is positioning itself to be declared “BSE Provisionally Free” on the grounds that risk analysis showed no significant BSE risk; its only case was from a cow imported from Canada, and measures are in place to minimize the introduction and spread of BSE. Japan has technically agreed to allow resumption of imports of U.S. muscle meat from animals 20 months or younger. It is believed that other countries will follow Japan’s lead.

The U.S. is in the process of recognizing Canada as a “Minimal Risk Region” given measures introduced by Canada to lower BSE risk, particularly the feed ban. This should allow entry of live cattle 30 months or younger and beef muscle imports of any age from Canada. USDA’s risk analysis suggests that even if the elements comprising each barrier allowed as much as 20 percent of the infectivity to pass, it would translate to only a 0.03% potential infectivity introduced into the U.S. cattle herd. Despite these assurances, stakeholders in the U.S. have so far been successful in convincing courts to issue orders to restrain the USDA from opening the border, and in rallying senators to issue a resolution to the same effect. The final shape, form, and timing of the rules governing the border are unresolved.

However, a clear, unavoidable consequence of these SPS shocks is a move toward product traceability. This change is driven by both the demand and supply sides of the market. Japan, the leading meat importer in the world, passed legislation mandating implementation of a farm-to-table traceability system for domestic beef. A similar bill, “The Bill Concerning Information Disclosure Related to Quality Assurance of Imported Beef,” will require labeling of imported beef with a traceability system in source countries.

The only major beef exporters with no reported cases of BSE are in Oceana and South America. Producers in these regions are proactive in meeting the new market requirements. Australia now has the National Livestock Identification Scheme of permanent animal identification to track cattle from birth to slaughter at an individual level. Brazil has the Brazilian System of Identification and Certification of Bovine and Buffalo Origin to monitor all bovine animals born in Brazil or imported.

**Highly Pathogenic Avian Influenza**

Highly pathogenic AI is a list A disease because of its high potential for serious and rapid spread, irrespective of national borders. Its main transmission mechanism is by exposure and direct contact with contaminated feed, waters, feces, and respiratory secretions. It has been shown to affect humans and could pose a serious health threat. The incubation period is believed to be three to five days, and the virus can remain viable for long periods in tissues, feces, and also in water. Although vaccination has been considered in the past, because of its suspect effectiveness in eradicating the virus, slaughter of all affected birds is recommended in an outbreak.

Highly pathogenic AI outbreaks were observed in Hong Kong in 2002 and 2003. The disease’s spread in many countries has raised its impact on trade in 2004 in Asia (Thailand, Japan, and China) and beyond, in Europe (Germany and Netherlands) and in North America (U.S. and Canada).

In particular, Thailand’s export was cut in half (51.6%), while China’s export dropped by 35.6% and its import declined by 51.4%. Since Thailand and China together supply more than half, 33.5% and 24.4%, respectively, of Japan’s broiler imports, the highly pathogenic AI also dropped Japan’s imports by 28.1%. Also, with more than 20 countries imposing a ban on U.S. broiler exports after cases in the East and Texas were confirmed, U.S. exports declined by 6.4%. However, in an August 2004 report to the OIE, the U.S. claimed that the virus has been completely stamped out, and in accordance with Article 2.1.14.2 of the Terrestrial Animal Health Code, the U.S. considers itself free from highly pathogenic AI. As a result, many countries have lifted their trade bans on U.S. poultry.

In the long run, with the long viability of the virus, the possibility of wild avian species including migrating birds acting as hosts, and limited checks on cross-border contamination, the control and eradication of highly pathogenic AI will be a challenge that cannot be effectively answered within national borders only. A more comprehensive, multi-country approach is needed and is being tried in Asia. In the short run, with possible inactivation of the virus at temperatures of 56°C for 3 hours and 60°C for 30 minutes, both importers and exporters have shifted some of their trade to cooked poultry meats to overcome trade bans.

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1 OIE is the initialism for the World Organisation for Animal Health, the former Organisation Internationale des Epizooties.
Posilac (bovine somatotropin) should contribute to increased production and lower prices, even though milk prices continue stronger than expected in the first months of 2005. Over the next 10 years, milk production is expected to grow by approximately 1% per year, consistent with expected growth in the U.S. population. Projected cheese consumption continues to increase, but per capita fluid milk consumption continues its downward trend.

Farm Income and Other Aggregate Indicators

U.S. nominal net farm income shattered previous records in 2004. Compared to FAPRI projections prepared in early 2004, most of the unexpected strength in net farm income resulted from far greater livestock and dairy receipts than anticipated. In 2005, lower prices for many commodities, reduced crop production under an assumed return to trend yields, and a slight increase in production costs all contribute to lower projected levels of net farm income. However, 2005 farm income still remains above the average level of 1994-2003, even after correcting for inflation. In subsequent years, projected nominal net farm income varies in a relatively narrow range, as farm receipts and costs grow at roughly the same pace.

Relatively high commodity prices in 2002 and 2003 led to a sharp reduction in the taxpayer cost of federal farm programs in FY 2004. Lower commodity prices during the 2004/05 marketing year lead to sharp increases in loan program benefits and countercyclical payments. The result is a doubling of projected outlays by the CCC in FY 2005. In later years, generally increasing prices result in declining levels of projected government program expenditures.

Higher prices for meats and many other food products led to an increase in U.S. consumer food price inflation in 2004. With lower prices for many commodities projected, the rate of inflation in the food CPI slows significantly in 2005 and remains below 2% per year until 2012.

The U.S. projections reported here represent FAPRI’s deterministic baseline, assuming average weather and demand conditions, as well as all the other assumptions described earlier. FAPRI also prepares a set of stochastic baseline projections that represent 500 alternative futures for the U.S. agricultural sector, based on random draws on crop yields and a variety of other factors affecting supply and demand. Given the manner in which the stochastic projections are developed, the average of the 500 alternative futures is generally similar to the deterministic projections reported here.

Given the nature of U.S. farm programs, however, there are often large differences between deterministic and stochastic projections of indicators such as government costs and net farm income. In general, average levels of government costs and net farm income are greater in the stochastic analysis than in the deterministic analysis reported here. The principal reason is that the U.S. loan and countercyclical payment programs are asymmetric in their effects: payments can be very large when prices are lower than average, but they can never be negative when prices are above average levels.

More about FAPRI's stochastic analysis and stochastic results for government costs and net farm income can be found in the FAPRI 2005 U.S. Briefing Book at www.fapri.missouri.edu.

The Outlook for World Agriculture

Wheat

The world wheat price is projected to decrease to $145.7 per mt in 2005/06. Although production is lower in 2005/06, higher available stocks increase the supply in the world market, causing a drop in the price. With an annual average growth rate of 0.8%, the Gulf FOB wheat price reaches $164.3 per mt in 2014/15.

In 2004/05, world wheat area recovered from unfavorable weather conditions of the previous year. In 2005/06, area is projected to increase further, with the main sources of this increase coming from CIS, Latin America, and Australia. As the area decreases slightly in later years, the production increase comes from yield growth.

Although both feed and food use increases over the next 10 years, the major source of the demand increase comes from food demand. Per capita consumption of wheat decreases over the next 10 years, but because of population growth, food demand increases by 44.8 mmt.

In 2005/06, world wheat net trade increases to 92.8 mmt because of the lower price, which increases food demand. As consumption grows more than production, world wheat net trade increases more than 20% over the next 10 years. The main source of this demand
increase comes from Asian, Middle Eastern, and African countries that have limited potential to increase production. In these countries, per capita consumption continues its downward trend, so the increase in food demand comes from population growth.

In 2004/05, China’s wheat net imports increased to 7 mmt. In 2005/06, both area and yield growth are projected to increase production. However, this increase in production reduces net imports only slightly, as the persistent decline in available stocks has decreased the supply considerably in recent years. Consequently, regardless of the decreasing per capita consumption, China is projected to remain a net wheat importer over the next 10 years.

In 2004/05, the EU-15’s wheat production recovered with the return to normal weather conditions, higher-than-average yields, and lower set-aside rate. In 2005/06, a return to average yield levels decreases production. In the remaining years, the main source of the production increase is yield growth, as wheat area decreases slightly because of decoupling. Net exports reach only 9.4 mmt in 2014/15 because of the strong euro.

Wheat production in Argentina is projected to continue its upward trend, with continuing increases in both area and yield. Production reaches 18.1 mmt in 2005/06 and 21 mmt in 2014/15. This production growth, combined with a meager consumption increase and devaluation of the peso, increases Argentine net exports to 15.1 mmt in 2014/15, increasing the country’s market share at the same time.

In 2005/06, wheat area in Canada is projected to recover from the unfavorable weather conditions of the previous year, increasing production. In the remaining years, with relatively stable area, production growth comes from yield growth.

Production of wheat was low in 2004/05 in Australia because of adverse weather conditions that affected both yield and area. Production recovers in 2005/06, increasing net exports to 19.5 mmt. As production grows more than consumption, net exports increase to 22.1 mmt in 2014/15.

Coarse Grains

The world coarse grain area is projected to decrease to 239.2 mha in 2005/06 because of reductions in barley and sorghum area, which experience lower relative returns. Corn area increases in 2005/06 with the increase in area in Latin American countries as corn enjoys a higher return with respect to soybeans. Over the next decade, falling real prices and competition from wheat and oilseeds decrease the world coarse grain area. Therefore, yield growth is the source of the increase in production. Higher growth in consumption relative to production increases world net trade of coarse grains over the next 10 years.

In 2004/05, corn production increased, decreasing the corn price to $96.4 per mt. A return to average yield levels in 2005/06 decreases the corn production and increases the Gulf FOB corn price to $105.2 per mt. The stocks-to-use ratio was 17.4% in 2004/05; it decreases to 16.2% in 2005/06 with the decrease in Chinese and U.S. stocks.

Consumption increases by more than 83 mmt over the next 10 years. The main source of this demand increase is feed use. Growth in the livestock sector, especially in Asian and Latin American countries, is the reason for this increase. Growth in both per capita consumption and population contributes to the increase in food demand.

In 2004/05, lower corn prices increased consumption, leading to higher world corn trade. Over the next 10 years, corn trade is projected to continue its increase, reaching 95.2 mmt in 2014/15. The largest demand increase comes from Asian countries, which increase their net imports by 12 mmt over the next decade.

Corn area is projected to increase in Argentina in 2005/06 because of higher corn returns relative to those of soybeans. The upward trend in area continues until 2006/07; afterwards, area is relatively stable. Thus, the increase in corn production in later years comes from yield growth. Net exports increase to 15.8 mmt in 2014/15.

In 2004/05, corn area increased in the EU NMS which benefited from higher corn prices. Combined with the higher yield levels, this increased production in 2004/05. In 2005/06, the yield level is projected to return to its average level, so production decreases slightly. With the introduction of a set-aside policy in 2009/10 that limits area expansion, net exports reach only 1.9 mmt in 2014/15.
Once a large net exporter of corn, China is projected to become a net importer by 2006/07. Growth in the livestock sector, which increases feed use, is the main driver of this demand increase. As production growth can meet only part of this demand increase, net imports reach 4 mmt in 2014/15.

World sorghum trade decreased in 2004/05 to 5.2 mmt because of lower consumption. This lower demand also decreased the world price to $94.3 per mt. In 2005/06, production is lower, as area is projected to decrease. Thus, the Gulf FOB sorghum price increases to $103.6 per mt. Net trade increases to 6.3 mmt in 2014/15.

The barley supply increased in world markets in 2004/05 with the recovery in production in the EU and CIS. This decreased the barley price to $84 per mt. Lower area and a return to average yield levels in 2005/06 decrease the barley production and increase the price to $84.9 per mt. Net trade reaches 17.4 mmt in 2014/15. The main demand increase comes from China, Africa, and the EU NMS.

Rice

Tight exportable supplies across Asia have resulted in sharply higher world prices in 2004/05. The Thai 100% B price is expected to be $309 per mt. World production increased in 2004/05 to 400 mmt, 11 mmt higher than in the previous year. However, in the major Asian rice exporting countries of India, Thailand, and Vietnam, production in 2004/05 did not increase. Global consumption is projected at 412 mmt in 2004/05, down slightly from the previous year. World stocks have continued to decline to a level of 85 mmt, and the stocks-to-use ratio has declined to 17.7%.

In 2005/06, world production is projected to increase by 19.7 mmt to meet growth in world rice consumption. World prices are expected to decline to $254 per mt. Over the projection period, export prices increase by 3.6% annually, reaching $341 per mt by 2014. The baseline projection of prices reflects annual growth in global rice consumption of 0.8%, net rice trade expansion by 3.7% annually, and only a modest rebuilding of global stocks. While total world rice consumption rises, average world per capita rice consumption declines from 64.9 kg in 2005/06 to 63.0 kg by 2014/15.

World rice area does not expand over the baseline, indicating that yield growth is the only source of production growth. Development and adoption of higher-yielding rice varieties in many countries keep average rice yields rising at 1.1% annually.

Supported by global trade liberalization efforts, world rice trade increased by 4.9% during the last 10 years. As the baseline projection assumes no policy changes, rice trade is expected to continue to increase but at a slower rate of 3.7% per year. Total trade is projected to reach 36.3 mmt by 2014/15. Rice remains thinly traded, with the ratio of global trade to consumption increasing to only 8.1%.

Over the projection period, Bangladesh, Indonesia, the Philippines, Nigeria, Iran, Iraq, and Saudi Arabia combined account for 66% of the total growth in global rice imports, with almost 28% attributable to Indonesia alone. Thailand, Vietnam, and India are expected to dominate global rice exports. These three countries accounted for 66% of global exports in 2004/05, and their combined share increases to 70% by 2014/15. U.S. baseline net exports increase to 3.4 mmt by 2006/07 but decline and stabilize over the remaining baseline period, ending at 3.2 mmt.

Oilseeds

The soybean price, along with all other oilseed prices, weakened in 2004/05 under the pressure of record supplies. For 2005/06, another price decline is expected despite the production adjustment. This supply correction leads to a modest price recovery in the middle years of the projection. In the outer years, prices are expected to stagnate and fall slightly because of weakening demand and falling product prices. In the long run, all oilseed prices are expected to remain within their established relationships.

Driven by last year’s strong oilseed prices, world oilseed area expanded 3% in 2004/05 but is expected to fall 1% next season in response to the current decrease in prices. Total area is expected to increase by 8% until 2014/15. The expected expansion of the oilseed area is caused by increased worldwide demand for protein meals for livestock feed and vegetable oils for human consumption and industrial uses. Total oilseed production reaches 399 mmt in 2014/15, with the increase driven by growth in both area and yields. Oilseed crush increases 26% to meet the rising de-
mand for oilseed meal and oil. Strong income growth in developing countries increases the demand for vegetable oils and livestock products, which increases the demand for oilseeds and oilseed products are imported. Considering these factors, world oilseed trade is projected to increase by 42%, while meal trade and oil trade increase 31% and 40%, respectively.

World soybean production reaches 273 mmt by 2014/15, an increase of 18% over the current year. The expectation of falling prices, combined with rising soybean production costs and Asian soybean rust problems, caused Argentina and Brazil to slow their soybean area expansion in 2004/05 to only 1.4% and 7.1%, respectively. Soybean area increases further in both countries but at a lower rate than in the previous decade because of declining profitability. Over the course of the baseline, Argentina and Brazil combined are expected to bring an additional 12.6 mha into production, while areas in the United States, China, and India fall by a total of 2.2 mha.

Soybeans account for the bulk of the growth in import demand, followed by rapeseed and sunflower seed. The majority of the increase in soybean imports occurs in China and in numerous smaller importing countries in the Middle East and North Africa. China strengthens its position as the largest importer of soybeans because of strong per capita oil demand, demand for meal from the livestock sector, and Chinese grain policies. Chinese soybean net imports almost double over the baseline, rising from 22 mmt in 2004/05 to 42 mmt in 2014/15. EU imports are stable at around 16 mmt. Brazil captures the largest share of the trade expansion, Argentina captures most of the remaining trade expansion, while U.S. soybean exports fall by 9% during the outlook period. After two years of strong recovery, world rapeseed trade levels off in 2005/06 and expands at 2% annually throughout the outlook period. Canada clearly dominates the market: about 60% of world exports originate there. China and Japan account for about 60% of rapeseed imports.

Oilseed meal consumption increases sharply, from 183 mmt to nearly 234 mmt by the end of the projection period. The highest absolute increase is expected in soy meal consumption, which grows by 45 mmt. China’s consumption increases 5.5% annually. By 2013/14, China surpasses the EU-15 as the largest soybean meal consumer in the world. U.S. consumption increases 1.6% annually, but the U.S. share of world consumption falls slightly. Soy meal also accounts for the majority of the growth in oilseed meal trade. The EU is the largest importer of soy meal, and its imports increase from 26 mmt in 2004/05 to 30 mmt in 2014/15. Driven by strong expansion in its livestock sector, China consumes an additional 17 mmt by 2013/14. U.S. consumption increases 2% annually, but the U.S. share of world consumption falls slightly.

Increasing incomes in developing countries play a crucial role in the more than 27 mmt increase in vegetable oil consumption by 2014/14. On a per capita basis, world vegetable oil consumption is expected to increase by an average of 0.2 kg per person annually over the baseline. Annual world soybean oil consumption grows by 3.1%, while rapeseed and sunflower oil consumption grow only 1.0% and 1.7%, respectively. Palm and palm kernel oil demands also expand strongly, on average at around 3.4% and 2.8% annually. Despite its focus on domestic production of meal and oil, China is expected to increase vegetable oil imports by 74% because of strong per capita consumption growth over the baseline. India remains the largest soybean oil importer, with its imports reaching 1.8 mmt. India used to be the world’s largest importer of palm oil but was recently overtaken by China in import volume. In 2004/05 India imported 3.8 mmt of palm oil. Population and income growth cause palm oil consumption in India to expand, driving imports up to 5.0 mmt by 2014/15.

Cotton

The 2004/05 world crop can be characterized simply as record breaking. A record 35.8 mha of cotton were harvested, producing a record crop of 25.2 mmt of cotton. In such an instance one might expect record low prices; however, record consumption of 22.8 mmt in 2004/05 has kept the year’s anticipated A-index price at $1,146 per mt.

Chinese cotton production, while a record, was not at unprecedented levels in 2004/05. However, the next closest production year in 1984/85 took more than 20% additional hectares to achieve. That exceptional 2004/05 crop of 6.3 mmt is still well short of the
anticipated 2004/05 consumption of 8.0 mmt. Chinese consumption of fibers has moved sharply higher in the last several years with the phasing out of textile quotas under WTO agreements. Quota elimination has benefitted Chinese textile producers. Consumption, while slowing in the long run, is expected to grow significantly, reaching 10.3 mmt by 2014/15. The Chinese have significantly reduced cotton stocks over the last decade, leaving much of the increase in consumption to be met by imports. Net imports were 1.9 mmt in 2004/05; they reach 3.4 mmt in 2014/15.

The increase in demand by China is expected to be met in part by increased area in Brazil. Area in Brazil, estimated at 1.1 mha in 2004/05, expands to 1.7 mha by 2014/15. Yields in Brazil are also above the world average, at 1,190 kg per ha, and are expected to expand to 1,231 kg per ha by 2014/15. The additional area, coupled with impressive yields, results in production that reaches 2.1 mmt by the end of the forecast period. Net exports of 1.1 mmt are more than two and a half times the volume in 2004/05.

Canada, Mexico, Japan, Taiwan, and South Korea, among others, are expected to see declining mill use under pressure from textile production in China. As a group, these five countries’ consumption falls from 1.2 mmt in 2004/05 to 0.9 mmt in 2014/15. India and Pakistan are expected to expand mill use, both for domestic consumption as well as for textile good exports, with utilization reaching 3.9 mmt and 2.6 mmt, respectively, by 2014/15. These two south Asian countries are in a better competitive situation and may also specialize in the production of semi-manufactured products to feed China’s final assembly sector.

Sugar

World sugar production, consumption, and net trade in raw sugar equivalence increase by 20.6%, 21.6%, and 16.5%, respectively, between 2004/05 and 2014/15. The world raw sugar price reached 8.1¢ per pound in 2004/05 as a result of strong demand from China, India, and Russia and production shortfalls in Cuba, India, and Thailand. The raw sugar price is expected to increase by 9.5% in 2009 as the EU opens its markets to increased sugar imports from EBA countries and consequently further reduces its beet production. Sugar price reaches 10.6¢ per pound by 2014/15.

Brazil remains a dominant force in the world sugar market, given continued record sugar production and the country’s potential for expansion. Brazilian net exports reach 21.9 mmt by 2014/15. Australian sugar production recovered from last year’s drought conditions, increasing by 10% in 2004/05. With the recent increase in government financial support to the sugar industry and favorable domestic prices, sugar production and net exports in Australia are projected to increase by 20.8% and 27.6%, respectively, between 2004/05 and 2014/15.

Despite its restructuring program, Cuba experienced another decline in sugar production in 2004/05 as a result of unfavorable weather conditions. Production is expected to increase from 2 mmt in 2004/05 to 2.8 mmt by 2014/15. EU-15 sugar net exports are expected to decline by 81.8% between 2004/05 and 2014/15 as EBA imports increase from 2009 onward. Drought conditions reduced Thailand’s sugarcane production by 7% in 2004/05. Thai sugar production and net exports are projected to increase by 24.6% and 17.7%, respectively, between 2004/05 and 2014/15.

Russia and Ukraine combined are projected to lower sugar imports in the coming decade, as domestic production increases by 35% while consumption increases by 3% by 2014/15. In India, a combination of poor sugar production resulting from adverse weather conditions, the government’s strategy to reduce its massive sugar stocks, and a structural crisis in the sugar industry converted the country into a significant net importer in 2004/05. Sugar net imports rose from 0.2 mmt to 1.8 mmt between 2003/04 and 2004/05 and are expected to reach 5.4 mmt by 2014/15. Mexico is a net importer of sugar for the third consecutive year, a result of the additional demand for sugar by the soft drink industry. Because the current HFCS-sugar dispute between the United States and Mexico remains unresolved, Mexico’s net exports are not expected to increase significantly until 2008 when the country gains complete access to U.S. sugar markets.

Livestock and Poultry

SPS issues, particularly BSE in North America and AI in Asia, affected the world meat market in 2004 (see Box 1). Major meat importers, such as Japan, Mexico, and South Korea, closed their borders,
slowing total meat trade, which grew by only 1.5%. Following the lead of Japan, which concluded an agreement with the United States on October 2004 for the resumption of trade after a 10-month ban, several countries are opening their borders. Hence, the outlook for the world meat sector in the next decade shows recovery, with increases in consumption, production, and trade, and strengthening of world meat prices. The main driver on the demand side is solid economic growth in many regions as reported previously. Per capita consumption of beef, pork, and poultry increases by 6.11 kg between 2004 and 2014. Meat production capacity also continues to expand. Structural transformation has raised productivity and efficiency and several policy and institutional changes around the globe have improved the functioning of world markets.

Rising meat demand fuels a 20.7% growth in total meat production over the next decade. Income and population growth and various production constraints enable consumption to rise faster than production in many countries, prompting these countries to satisfy their excess demand with low-cost imports. Total meat trade increases by 36.6% in the next decade.

The BSE case in Canada drove the U.S. beef price to record highs in 2003, and prices remained high in 2004 at $84.8/cwt despite a U.S. case of BSE. Demand adjustments also drove pork and broiler prices higher in 2004 by 33.1% and 19.6%, respectively. Meat prices drop in the short run and recover later in the decade.

Beef

This outlook assumes that it will take three years to recover from the BSE crisis. The weak meat trade in 2004 was primarily due to the 0.6% decline in beef trade. Over the rest of the decade, beef trade recovers and grows by an average rate of 4.4%, ending at 7.5 mmt in 2014. Beef production grows by 1.7%, reaching 60.4 mmt in 2014.

The excess beef demand in the outlook comes from three sources. First is the demand recovery from BSE in the short run, such as in Japan and South Korea. Second is the income- and population-driven demand expansion in countries such as Egypt, Indonesia, Mexico, the Philippines, and Russia. Third is demand from trade reversals—changing from an exporter to an importer—such as happened in China, the EU-15, and the 10 EU NMS.

The U.S. BSE case in 2004 drove Japan’s net imports to their lowest level in the last decade. With the agreement to resume trade finalized, Japan’s continuing decline in production and growth in consumption fuel a net import expansion of 4.0%. South Korea’s beef net imports also dropped in 2004 because of BSE and it is not expected to open its market before Japan. South Korea’s net imports recover to pre-crisis level in three years and then slow in the later period as domestic cattle numbers begin to turn around.

China traditionally has been a net exporter of beef, with declining exports but small imports. With severe constraint of improved grazing area and poor animal genetics, production growth falls behind consumption. As a result, China becomes a net importer of beef, at 452 tmt, in 2014.

Mexico’s net imports in 2004 were 45.7% lower than the pre-BSE level in 2002. Despite the country’s shrinking cattle inventory, domestic production responded to the crisis with a 10.3% increase to fill the supply deficit in 2004. But growth in disposable income and population continue to drive an expansion of beef demand. After the pre-BSE net import level is exceeded in 2007, net imports continue to grow at 3.7%. Mexico’s feeder cattle export to the United States declines slightly in the medium term as the border with Canada is opened and the cattle price in the United States is lower.
Russia introduced a new beef quota, with an in-quota rate of 15% and an out-quota rate of 60%. Despite the quota, a continuing deficit due to faster growth in consumption fuels expansion of net imports. A slower decline and eventual turn-around in the dairy sector slightly lowers imports in the end.

The EU-15 was already a small net importer in 2002 and continues in this position for the rest of the decade. Beef production declines over the baseline by 1.0%, driven by lower dairy cattle production. After maximum decoupling of support in the beef sector beginning in 2007, production declines even faster, at a rate of 1.2%. For the 10 EU NMS, a binding dairy quota limits their beef surplus.

Resumption of Canada’s boneless meat exports from animals less than 30 months of age and a 68.9% decline in imports resulted in a net export in 2004 that was actually 50% higher than before the BSE crisis. The abnormal animal inventory build-up allows meat exports to expand further in the short run. After the impact of the BSE case wanes, exports grow at a normal pace of 3.8% for the rest of the decade.

Producers in Oceana and South America benefitted from the ban of North American beef in many importing countries. After declining by 7.6%, exports recover in 2004 as Australia exploits markets closed to U.S. beef; they continue to grow at 2.4% annually for the rest of the decade. Exports of live animals grow by 8.0% annually, reaching 1.1 million head in 2014. Australia loses 7.7 points of market share as North American exporters recover their markets. The timing of recovery from droughts in the early 2000s allowed New Zealand exports to expand in 2003/04 by 10.6%. Exports continue to grow over the rest of the decade at 1.1% annually, reaching 657 tmt in 2014.

Argentine exports jumped by 43.6% in 2004. Herd rebuilding thereafter softens short-term exports but expands exports in the outer years. Currency devaluation throughout the next decade improves Argentina’s competitiveness and the country gains another 4 points of market share. Improvement in productivity (breeding and feeding programs), favorable domestic policies (credit, infrastructure, and fiscal incentives), aggressive promotion, and weakening currency enhance Brazil’s competitiveness. Brazil’s beef exports grow in the next seven years by 8.0%, improving that country’s market share by 9.5 points.

**Pork**

Benefiting from trade shocks from BSE and AI in the beef and broiler industries, pork trade grows the strongest in 2004 at 5.8%. Pork trade grows by 2.6% annually over the projection period, reaching 4.24 mmt in 2014. Pork production increases at a rate of 1.8%, reaching 110.20 mmt in 2014.

With both beef and broiler imports restricted because of BSE and AI, respectively, Japanese pork imports increased by 8.1% in 2004. Over the rest of the decade, net imports grow by 2.4%. Taiwan’s WTO accession dampens production increases while imports expand by 4.9%. For China, with the reduction of duties from 20% to 12% and with the opening of distribution businesses to foreign firms, the slight edge in the growth of consumption over production is met by more imports, which are expected to peak at 142 tmt in 2012. South Korea’s consumption growth is supplied by more net imports, which grow at 5.9%.

Improved consumer purchasing power and population growth caused pork consumption in Mexico to increase by 3.5% in 2004. Despite some industry integration, a limited supply of cheap feeds and credit problems keep growth in domestic production lagging behind consumption, increasing pork imports by 3.9%.

Russia introduced a new pork quota with an in-quota rate of 15% and an out-quota rate of 80%. Russia attracts more investments in swine production, causing pork production to expand by 2.3% annually. With a weak recovery in consumption, pork imports decline by 1.3%.

Canada’s pork sector grows by 2.9%, with net exports growing by 4.6% annually, translating into a 0.6 point gain in market share. Also, Canada matched the growing demand for feeder pigs by U.S. midwestern producers with increased investment in weaner pig operations. Canada’s export of live hogs to the United States reaches 11.2 million head in 2014, more than 66% of which is feeder pigs.

The EU-15’s pork net exports increased in 2004 by 2.8% as exports of beef and broiler from other countries were restricted because of SPS concerns. Environmental regulations and animal welfare require-
ments limit the EU’s (especially the EU-15’s) long-term capacity, and production grows by only 0.7% annually. As a result, the EU’s market share drops by 12.2 points. Hungary is the major net exporter of pork to third countries among the 10 EU NMS. Aggregate EU NMS net exports are stable to slightly increasing.

Strong domestic and export demand fuels a 3.3% annual expansion in Brazil’s pork sector. Improvement in productivity (breeding and feeding programs), favorable domestic policies (credit, infrastructure, fiscal), and a weakening currency improve Brazil’s competitiveness in the world pork market. Brazil’s market share expands by 9.3 points.

**Poultry**

The AI outbreak, particularly in Asia, has caused the poultry market to post a weak growth in trade of only 0.9% in 2004. Recovery from AI allows poultry trade to grow at a rate of 3.6% over the rest of the decade.

The two countries hit hardest by the AI outbreak were China and Taiwan. China’s broiler imports and exports dropped by 51.4% and 35.6%, respectively. In the next decade, as growth in production falls short of consumption, China’s net imports reach 416 tmt in 2014. In Thailand, poultry exports were reduced by half in 2004. A focus on cooked and higher-valued products allows Thailand to recover 1.7 points of market share in the outer period.

With its border closed to Chinese and Thai broiler exports, Japan saw net imports decline by 28.0% in 2004, but the country’s import level recovers in the outer period. Also, modest economic growth raises combined broiler net imports in South Korea, Indonesia, and the Philippines from 40 tmt to 279 tmt.

Policy changes in Taiwan, Russia, and Mexico also affected the poultry market. WTO accession eliminates Taiwan’s quota in 2005 and replaces it with a tariff of 20%. As a result, poultry imports increase 17.9%. Russia introduced a new poultry import quota of 1.05 mmt, with nothing in excess allowed. As a result, net imports fell by 10.5% in 2003 and by another 13.8% in 2004 as confusion in the quota implementation rules impeded entry of products. It is only in 2006 when imports reach the quota level and remain there for the rest of the decade. Despite a new TRQ under NAFTA, Mexico continues to fill its shortfall in domestic production through net imports, which increase by 2.1% annually.

With the EU’s limited long-term prospects and with Thailand’s SPS challenges, Brazil is poised to gain 9.2 points additional market share in the next decade. Strong exports and domestic demand drive the growth in Brazil’s poultry sector. Large investments in broiler production in the grain-rich Center-West region have been encouraged by fiscal incentives and subsidies from local governments. As a result, production increases by 3.0%. Devaluation of the Brazilian currency and export market promotion enable Brazil to increase its poultry net exports by 3.0%.

**Dairy**

World milk production grows 1.3% annually over the next decade, with the most rapid growth occurring in Argentina, Brazil, China, India, Australia, and New Zealand. Despite rising availability of milk in many importing countries, dairy product trade expands substantially in the next decade, especially cheese trade. Implementation of CAP reforms and increased intra-EU trade in the enlarged EU lead to a decline in EU butter and NFD exports. Exports from Argentina, Australia, and New Zealand expand to compensate for the reduction in international supplies from the EU. Strong demand along with weaker EU exports put upward pressure on prices over the baseline.

North American milk production increases 10.4% in the next decade, reaching 105 mmt by 2014. About 84% of the growth occurs in the United States, and Mexico accounts for the remainder. Canadian milk production grows less than 300 tmt because of supply controls.

Recovery in Argentina’s dairy sector started in 2004. Milk production exceeds the 1999 historical peak level in 2007 and finishes at a record 12.7 mmt in 2014. Aided by the weaker peso, Argentina steadily increases its dairy exports, especially of cheese and WMP. Brazilian milk production is also stimulated by improved domestic economic conditions and favorable government policies. More abundant milk supplies enable Brazil to generate substantial exportable surpluses of WMP and cheese, causing Brazil to switch from an importer to a net exporter early in the baseline period.
The accession of 10 EU NMS and associated CAP reforms lead to rapid changes in EU dairy markets. EU domestic prices of all four dairy products decline quickly until 2007/08, as CAP reforms are implemented that reduce butter and NFD intervention prices. A decrease in market support for butter and NFD causes production of these products to fall initially. Once relative prices realign to the new market conditions, butter and NFD production in the EU-15 rises slightly, pulling the export levels up slightly from the low levels reached in 2008. The milk quota restriction prevents milk output from expanding in the EU. During the baseline, fluid milk consumption declines in both the EU-15 and the EU NMS. Most of the milk freed from fluid use is diverted to cheese production because of higher returns. The enlargement increases intra-EU trade significantly, reducing shipments to international markets.

A 33.7% increase in Russia’s NFD production prompts NFD net imports to decline 76%. Income growth associated with economic recovery stimulates growth in consumption of all dairy products, especially cheese consumption. Russian cheese imports rise 17.8% over the baseline period, supplied primarily by the Ukraine. As the most profitable dairy business, production of cheese in the Ukraine continues to increase. Growing domestic demand and weaker Russian import demand for butter and milk powders hamper growth in Ukrainian dairy product exports over the medium term.

As leading exporters in world dairy markets, Australia and New Zealand enjoy continued export growth in the long run. Relief from the drought conditions experienced in 2004 prompts Australian milk output to start recovering in 2005 and to reach pre-drought levels in 2007. More abundant milk supplies enable butter, cheese, NFD, and WMP production to increase significantly over the projection period. Australian dairy product exports grow 40% to 66% over the baseline. Similarly, New Zealand continues to expand its dairy production and exports. As in Australia, New Zealand milk powder exports are mainly destined for Asian markets.

Strong economic growth, changing diets, and population growth all contribute to a steady expansion in Asian dairy consumption. To meet domestic demands for dairy products, China and India significantly increase milk production. Rising yields combined with a steady expansion of China’s dairy herd result in a 4.5% annual increase in Chinese milk production. More than 50% of the raw milk output is directed to fluid use, and nearly 28% is processed into WMP. As domestic WMP becomes more abundant and as consumers substitute fluid consumption for milk powder, China’s WMP imports decrease over the baseline. WTO tariff reductions stimulate increased imports of other dairy products. Indian cow milk production grows 1.6% and buffalo milk grows 2.6% annually. Roughly 40% of raw milk is directed toward fluid use in India, and the remainder is processed into butter and other fresh products. Despite the rapid growth in production, the demand for butter in India exceeds supplies, leading to limited butter imports throughout the baseline. As a by-product of butter production, Indian NFD output increases 57% during the projection period, and India’s NFD exports grow 17% annually.

Southeast Asia (Indonesia, Malaysia, and the Philippines) increases its share of total NFD imports from 23% in 2004 to 34% in 2014. China and Japan combined account for about 9% of the NFD import market by the end of the baseline. Together, these five countries generate virtually all of the growth in NFD trade. While Chinese WMP imports decline, Southeast Asia increases its imports 4.4% annually. Steady growth also occurs in Asian cheese imports. China, Southeast Asia, and South Korea combined increase their cheese imports 4.9% annually. Driven largely by population growth, butter imports into these five countries increase 3.8% annually over the baseline.