International Agricultural Baseline Projections to 2005

Commercial Agriculture Division
Economic Research Service

Introduction

This publication of long-term projections for international agriculture is a companion to *Agricultural Baseline Projections to 2005, Reflecting the 1996 Farm Act* (WAOB-97-1) released in February 1997. It is intended to provide users of USDA projections with the detailed foreign supply, use, and trade projections that support the baseline outlook for U.S. agriculture and trade. Accordingly, this report includes a review of macroeconomic and major country policy assumptions, along with tables and analysis of the supply, demand, and trade projections for major countries for wheat, rice, coarse grains, oilseeds and products, cotton, beef, pork, and poultry. These commodities account for about 59 percent of U.S. agricultural export value.

As is the case with the domestic component of USDA's baseline projections, the non-U.S. projections presented in this report should not be interpreted as forecasts of future events. Rather, they indicate the expected outcomes, given specific assumptions on future macroeconomic, climatic, and policy assumptions. All assumptions are designed to provide a neutral backdrop to the projections, making them useful for the analysis of the impacts of shocks or alternate assumptions.

Macroeconomic assumptions represent expected future trends in key variables, but exclude any variations due to business cycles. Supply projections assume average weather conditions in each year. Foreign country economic and agricultural policies are assumed to continue to evolve along recent trends, based on analyst judgment. U.S. domestic farm policy assumptions are based on the continuation of the 1996 Farm Act, continued through 2005. Assumptions on bilateral and multilateral policies affecting agriculture and trade are based on formal agreements as of January 1997.

The non-U.S. supply, use, and trade projections in this report are the product of model output and analyst judgment. The principal model used in the foreign projections is the multi-region, multi-commodity, Country-Link System maintained and used by regional and commodity trade analysts in the Commercial Agriculture Division of the Economic Research Service. Analyst judgment is provided by ERS regional and commodity analysts, as well as by analysts from the World Agricultural Outlook Board and the Foreign Agricultural Service.

Summary of Trade Projections

World trade in most major bulk agricultural commodities is projected to expand more rapidly during 1995-2005 than during the 1980's or early 1990's. Trade in grains, particularly coarse grains, is projected to grow the fastest among bulk commodities. These gains are driven largely by projections of stronger economic growth in developing regions, including China, Asia, Latin America, North Africa, and the Middle East. In these regions, rising incomes are leading to diet diversification, rising meat demand, expanding livestock sectors, and higher demand for feed. Wheat trade is also projected to increase, due to strong global demand growth. Combined trade in soybeans and meal will strengthen, a result of the same expansion of developing country feed-livestock sectors that will push up coarse grain trade. Growth in soybean oil trade is also projected to be faster than in the 1980's, but will remain slower than some competing oils because of its high relative price. Raw cotton demand and trade is projected to be stronger than in the early 1990's, but not match the 1980's when there was increased substitution of cotton for synthetic fibers.

U.S. export growth is projected to strengthen for most bulk commodities. U.S. exports of wheat and coarse

Table 1—Summary of U.S. and global export growth[1]

Years	Wheat	Rice	Coarse grains	Soybeans	Soybean meal	Soybean oil	Cotton
				Percent			
World trade growth[2]							
1960 to 1970[3]	1.1	2.2	4.9	11.4	14.4	11.3	0.8
1970 to 1980	4.7	4.9	8.7	8.2	11.7	12.8	1.2
1980 to 1990	-0.3	0.6	-1.0	-0.4	2.9	0.5	2.5
1990 to 2000	-0.3	3.5	1.3	2.8	2.0	3.9	-0.3
1995 to 2000	3.4	-0.4	4.3	1.3	0.4	1.2	0.7
2000 to 2005	2.4	2.6	3.2	2.0	2.2	2.5	1.4
1995 to 2005	2.7	1.4	3.6	1.7	1.5	2.1	1.2
U.S. export growth							
1960 to 1970[3]	-0.8	6.3	3.8	12.6	13.0	5.3	-5.4
1970 to 1980	6.4	6.8	12.7	7.2	5.8	5.4	6.1
1980 to 1990	-3.3	-0.5	-0.7	-3.7	-1.8	-5.5	2.3
1990 to 2000	0.6	-2.0	4.6	4.3	0.7	7.7	0.2
1995 to 2000	4.6	-5.1	6.0	1.0	1.2	16.1	0.7
2000 to 2005	2.2	0.0	2.5	1.1	0.7	-0.9	1.2
1995 to 2005	3.6	-1.8	4.0	1.1	0.7	5.4	1.1
U.S. share of world trade, average[2]							
1960 to 1970[3]	37.6	19.0	50.0	90.6	65.6	66.6	18.3
1970 to 1980	43.0	22.1	59.4	82.6	43.5	37.5	19.8
1980 to 1990	37.3	20.2	59.4	72.6	23.7	19.3	21.5
1990 to 2000	32.4	14.0	62.5	69.1	18.5	15.5	25.6
1995 to 2000	32.9	12.0	68.0	72.2	17.7	15.8	25.4
2000 to 2005	34.3	10.2	68.7	70.0	16.8	17.1	25.2
1995 to 2005	33.5	11.1	68.2	71.1	17.2	16.3	25.3

[1]Years refer to the first year of the commodity marketing year.
[2]Trade and trade shares include intra-FSU trade for periods starting in 1990 and later; intra-FSU trade for cotton also is included in the 1980 to 1990 and the 1970 to 1980 periods.
[3]Data for soybeans, soybean meal, and soybean oil begin in 1964.

grains are projected to expand the fastest, with particularly strong gains in 1995 to 2000. After 2000, U.S. wheat export growth is projected to slow because of anticipated unsubsidized competition from the European Union (EU) as world wheat prices rise. U.S. rice export volume will decline because provisions of the 1996 Farm Act will lead to reduced U.S. rice plantings, and U.S. demand is increasing steadily. Exports of U.S. soybeans and products are projected to rise faster than in the 1980's, but foreign competition and slowing U.S. acreage gains are likely to constrain export growth relative to that of competitors after 2000. In contrast, U.S. raw cotton exports are projected to strengthen throughout the 1995-2005 period, benefiting from rising demand and reduced competition in some countries.

U.S. wheat is projected to gain a rising share of world trade during 1997-2000, with the U.S. share then stabilizing because of anticipated unsubsidized EU competition. For other crops, projected U.S. market shares will generally follow historical trends. Reduced competition will lead to a continued rise in the U.S. share of world coarse grain trade, although the emergence of competitors such as Eastern Europe will limit U.S. gains in coarse grains trade after 2000. U.S. rice market share is projected to decline because of minimal domestic rice production gains and strong domestic use. U.S. market share for soybeans and products is projected to hold relatively steady through 2000, then continue to decline gradually because of South American competition, as well as anticipated U.S. acreage constraints. The U.S. share of world cotton trade is projected at about 25 percent through

the baseline, as many foreign producers reduce raw cotton exports by channeling production toward consumption and value-added textile products.

The generally favorable world economic outlook is expected to spur growth in meat demand and trade. Additional impetus is expected from already negotiated reductions in trade barriers, primarily in East Asia. Meat demand growth is projected in several countries in the Pacific Rim and Latin America, with the Pacific Rim providing the most growth in both consumption and import demand. Rapidly increasing incomes in China, Taiwan, South Korea, and a number of other countries in the region stimulate demand for meat. The United States is well positioned to provide a variety of meat products to these markets.

Growth in meat import demand in the Former Soviet Union (FSU) is projected to slow. Although declines in meat consumption will slow and demand will turn upward after 2000, domestic FSU production of meat is also projected to begin increasing. This could reduce the region's dependence on imported meat, although the United States is expected to continue to supply low-priced parts and trimmings to that market.

The value of U.S. meat exports is projected to grow an average of about 4 percent annually during 1997 to 2005, somewhat slower than the rapid ascent of the past several years. Although export volume will rise, the increasing share of low-valued meat products may slow the growth in total value.

Agricultural Price Projections

Along with relatively strong growth in trade, the baseline projections indicate tightening markets for the major bulk commodities. Projected prices for the major commodities will continue to decline in real terms through 2005, but at a slower rate than long-term trends. Strengthening U.S. and global crop prices stem from the projected growth in demand, combined with the outlook for somewhat slower growth in yields. Although crop area is expected to rise along with price incentives, yield gains tended to slow for major crops in a number of regions during 1985-95. Although yields are expected to show some response to price incentives, the extent to which global supplies will respond in an environment of firmer prices is a key uncertainty in the outlook.

While firmer real crop prices are projected, meat prices are expected to continue to decline roughly consistent with their long-term trend. Particularly in the United States, the impacts of higher feed prices are expected to be offset by continued efficiency gains associated with improved feeding practices and vertical coordination in the meat industry.

U.S. Agricultural Trade Projections

The total value of U.S. agricultural exports is projected to rise from a record $59.8 billion in fiscal 1996 to $62.7 billion (current dollars) in fiscal year 2000, and approach $80 billion in 2005. U.S. imports are projected to rise from $32.4 billion in fiscal 1996 to $44.4 billion in 2005, resulting in the agricultural trade surplus rising from $27.4 billion in 1996 to more than $35 billion in 2005.

Much of the record fiscal 1996 export value reflected high bulk commodity prices for grains and oilseeds. With lower prices projected for bulk commodities, bulk export value will initially fall in the baseline. As a result, total agricultural export value will decline in fiscal 1997, but then begin a steady rise in 1998. For fiscal 1998 to 2005, export growth will be about 5 percent annually. Throughout these years, high-value product (HVP) exports are projected to account for about 60 percent of total

Figure 1
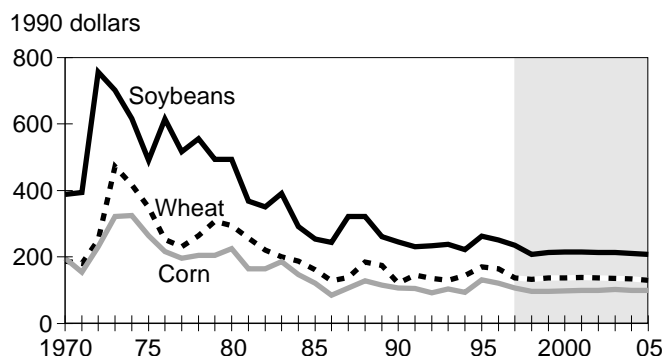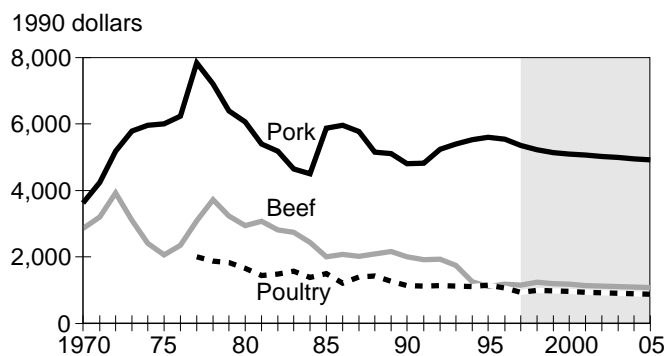**Real international crop reference prices**

1990 dollars

Figure 2
Real international meat reference prices

1990 dollars

Table 2—Summary of U.S. and international reference price projections (marketing years)

Commodity	Description	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
U.S. internal prices; nominal $/ton:															
Beef	Canner & cutter; whlsl	1,442	1,984	1,896	1,653	1,808	1,801	2,035	1,995	2,020	2,007	2,016	2,060	2,085	2,101
Pork	Cut-out, 175lb carcass #2	1,371	1,322	1,321	1,668	1,653	1,478	1,367	1,317	1,313	1,324	1,340	1,348	1,352	1,365
Broilers	12 city	1,217	1,228	1,243	1,332	1,246	1,134	1,238	1,247	1,274	1,277	1,291	1,317	1,342	1,357
Wheat	U.S. farm	119	120	127	167	158	138	141	145	151	158	162	171	176	176
Rice	U.S. farm, rough	130	176	149	200	204	214	217	220	224	227	231	234	238	242
Corn	U.S. farm	81	98	89	128	106	96	96	100	106	110	110	114	118	122
Sorghum	U.S. farm	74	91	84	126	94	87	87	89	96	98	98	104	110	114
Barley	U.S. farm	94	91	93	133	119	103	106	108	115	119	119	122	126	129
Soybeans	U.S. farm	204	235	201	249	239	224	217	217	226	237	246	259	265	266
Soymeal	48% protein, Decatur	214	213	179	260	240	223	213	212	222	231	237	245	245	241
Soyoil	Crude, Decatur	472	597	608	546	503	492	492	496	503	518	547	580	613	639
International reference prices; nominal $/ton:															
Beef	NY	2,060	1,912	1,787	1,275	1,392	1,399	1,532	1,523	1,549	1,557	1,576	1,614	1,643	1,672
Pork	Japan, cif	5,606	5,927	6,206	6,433	6,526	6,466	6,477	6,562	6,707	6,882	7,067	7,250	7,433	7,621
Broilers	12 city	1,217	1,228	1,243	1,332	1,246	1,134	1,238	1,247	1,274	1,277	1,291	1,317	1,342	1,357
Wheat	U.S. Gulf, fob	144	140	154	209	184	164	167	171	176	184	187	197	202	202
Rice	Houston, fob	322	439	303	407	382	408	410	419	428	437	447	457	467	477
Rice	Bangkok, 5% brokens	235	271	260	329	308	314	321	327	334	340	347	354	361	369
Corn	U.S. Gulf, fob	98	112	109	169	127	114	116	120	127	130	130	134	138	142
Sorghum	U.S. Gulf, fob	96	110	108	162	119	107	110	111	120	121	121	128	134	138
Barley	Duluth	97	94	93	123	108	96	98	101	107	110	110	113	117	120
Soybeans	Rotterdam	246	259	248	304	274	259	252	252	261	272	281	294	300	301
Soymeal	Rotterdam	207	202	184	255	238	221	210	209	219	228	234	242	242	239
Soyoil	Dutch fob, ex-mill	453	581	642	575	523	492	482	481	496	518	557	595	638	669
U.S. internal prices; constant 1990 $/ton:															
Beef	Canner & cutter; whlsl	1,350	1,177	1,249	1,110	1,182	1,158	1,234	1,193	1,177	1,145	1,122	1,112	1,096	1,080
Pork	Cut-out, 175lb carcass #2	1,283	1,206	1,178	1,452	1,404	1,223	1,102	1,031	997	973	954	929	902	876
Broilers	12 city	1,139	1,120	1,108	1,159	1,058	939	998	977	968	939	919	908	895	876
Wheat	U.S. farm	113	111	115	148	136	116	116	116	116	118	117	120	120	116
Rice	U.S. farm, rough	123	162	135	176	175	179	177	175	172	169	167	164	161	158
Corn	U.S. farm	77	91	80	112	91	81	78	79	82	82	79	80	80	80
Sorghum	U.S. farm	70	84	75	110	81	72	70	70	74	73	71	73	74	75
Barley	U.S. farm	89	85	84	117	103	87	86	86	89	89	87	85	86	85
Soybeans	U.S. farm	193	216	181	218	205	187	176	171	173	176	177	180	178	174
Soymeal	48% protein, Decatur	201	195	161	228	205	185	173	167	170	172	170	170	165	157
Soyoil	Crude, Decatur	445	549	545	478	430	409	399	391	385	384	392	403	412	416
International reference prices; constant 1990 $/ton:															
Beef	NY	1,928	1,744	1,249	1,110	1,182	1,158	1,234	1,193	1,177	1,145	1,122	1,112	1,096	1,080
Pork	Japan, cif	5,247	5,407	5,532	5,601	5,543	5,351	5,219	5,139	5,095	5,060	5,031	4,996	4,958	4,920
Broilers	12 city	1,139	1,120	1,108	1,159	1,058	939	998	977	968	939	919	908	895	876
Wheat	U.S. Gulf, fob	137	130	139	185	158	137	137	136	136	138	136	138	137	133
Rice	Houston, fob	305	405	273	358	328	341	334	332	329	326	323	319	316	312
Rice	Bangkok, 5% brokens	222	249	234	289	265	263	261	259	257	254	250	247	244	241
Corn	U.S. Gulf, fob	92	103	98	134	109	95	95	95	97	97	94	93	93	93
Sorghum	U.S. Gulf, fob	91	101	97	136	102	89	89	88	92	90	87	89	90	90
Barley	Duluth	92	87	84	108	93	81	80	81	83	82	80	79	79	79
Soybeans	Rotterdam	233	238	222	266	235	216	205	199	200	202	202	205	202	197
Soymeal	Rotterdam	195	185	165	223	203	184	171	165	168	169	168	168	163	156
Soyoil	Dutch fob, ex-mill	427	533	575	504	447	409	391	379	379	384	399	413	429	436

Source: U.S. internal prices are USDA baseline projections; international reference prices are ERS projections.

Notes: Beef, pork, and broiler prices are for calendar years; calendar year 1997 data assigned to marketing year 1996. Constant 1990$ prices deflated by U.S. GDP deflator; deflator varies by marketing year. USDA is prohibited from publishing cotton price projections.

Table 3—Summary of U.S. agricultural trade projections, fiscal years

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
						Billion dollars						
Agricultural exports:												
Animals and products	8.8	10.8	11.5	12.4	12.4	13.3	13.8	14.4	15.0	15.6	16.3	17.1
Grains, feeds, and products	13.1	17.3	21.3	16.2	16.1	17.7	18.9	20.4	21.5	22.1	23.5	24.8
Oilseeds and products	6.9	9.1	9.7	9.8	9.3	9.3	9.6	10.2	10.8	11.4	12.2	12.7
Horticultural products	8.7	9.9	10.2	10.7	11.7	12.4	13.2	13.9	14.7	15.4	16.2	17.0
Tobacco, unmanufactured	1.3	1.3	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3
Cotton and linters	2.3	3.5	3.0	2.1	2.6	2.7	2.8	2.8	2.8	2.9	3.0	3.1
Other exports	2.8	2.7	2.7	2.9	2.9	3.0	3.1	3.2	3.3	3.5	3.6	3.7
Total agricultural exports	43.9	54.7	59.8	55.5	56.3	59.8	62.7	66.2	69.4	72.2	76.1	79.7
Bulk commodities exports	17.2	23.5	27.9	22.0	22.0	23.4	24.6	26.2	27.5	28.3	30.0	31.4
High-value product exports	26.6	31.2	31.9	33.5	34.3	36.4	38.1	40.0	41.9	43.9	46.0	48.3
Agricultural imports:												
Animals and products	5.8	5.9	5.9	6.2	7.1	7.6	7.9	8.1	8.3	8.6	8.9	9.2
Grains, feeds, and products	2.3	2.3	2.6	2.7	2.7	3.0	3.2	3.4	3.6	3.7	3.7	3.6
Oilseeds and products	1.5	1.8	2.1	1.9	2.2	2.4	2.5	2.7	3.0	3.1	3.3	3.4
Horticultural products	9.1	9.9	11.3	12.5	12.6	12.9	13.4	14.0	14.5	15.1	15.7	16.4
Tobacco, unmanufactured	0.9	0.6	0.8	0.8	0.8	0.9	0.9	0.9	0.9	1.1	1.2	1.3
Sugar and related products	1.1	1.2	1.8	1.9	1.8	1.9	2.1	2.1	2.3	2.4	2.5	2.6
Coffee, cocoa, and rubber	4.0	6.0	5.7	5.8	5.4	5.3	5.4	5.5	5.5	5.6	5.7	5.8
Other imports	1.7	1.8	2.2	2.2	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2
Total agricultural imports	26.4	29.5	32.4	34.0	34.7	36.0	37.6	38.8	40.3	41.6	43.1	44.4
Net agricultural trade balance	17.5	25.2	27.4	21.5	21.7	23.8	25.2	27.3	29.1	30.6	33.0	35.3

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

U.S. agricultural exports. Much of the HVP gain will be in horticultural products, which are projected to rise 5.5 percent annually from 1998 to 2005. Animal product exports, led by beef, pork, and poultry, will grow about 4.7 percent annually over this period. Bulk exports will decline in 1997 and 1998, and then begin to increase in 1999. Between fiscal 1998 and 2005, bulk exports will grow at about 5 percent annually.

U.S. imports are projected to rise about 3.5 percent annually from 1996 to 2005. Horticultural imports, the largest import category, will grow at about 4 percent annually. Growth in animal product imports will slow from over 7 percent in fiscal 1996 to 2000, to about 3 percent in 2000 to 2005.

Major Uncertainties

The trade projections are sensitive to the assumptions for continued strong economic growth in developing Asian countries, combined with strengthening growth in Latin America, North Africa, and the Middle East. The price and trade projections are closely linked to projected gains in crop productivity. The responsiveness of yields to an environment of firmer prices and increasingly market-oriented policies, as well as improved investment conditions in many developing countries, is uncertain. More specifically, the projections are sensitive to the uncertain outlook for supply, demand, and policy developments in China, the EU, and the transition economies of the FSU and Central and Eastern Europe (CEE). Prospects for the huge China market are uncertain because rapid

growth and reform have greatly complicated assessment of future policies and technical supply and demand coefficients. The EU trade projections depend on assumptions regarding the nature of policy adjustments that may be undertaken to comply with the Uruguay Round Agreement, and on future supply response. And, although the FSU is projected to have a reduced role in world grain trade, it is inherently difficult to accurately assess future policies and economic relationships in the transition economies of the FSU and CEE.

Macroeconomic and Population Assumptions

Estimates for macroeconomic variables through 1997 were the most likely short-term forecasts of economic growth, inflation, and financial market behavior at the time the macroeconomic assumptions were prepared in October 1996. The forecast for 1998 is a transition between the short-term forecast and the long-term projections. The long-term projections for the macroeconomy for 1999-2005 reflect trend assumptions for some indicators combined with standard relationships between major macroeconomic variables. The absence of business cycles beyond the first or second year of the forecast reflects a conviction that business cycles, as well as shocks to the macroeconomy like large oil price increases, cannot be accurately forecast. This macroeconomic setting avoids distorting the long-term baseline for agriculture that would result from introducing unpredictable swings in macroeconomic variables.

U.S. Macroeconomic Assumptions

The U.S. economy is in the mature phase of the economic recovery that began in 1991. GDP (gross domestic product) growth was a modest 2 percent in 1995. In 1996, GDP expanded by about 2.5 percent, with unemployment averaging 5.4 percent, down 0.2 percent from 1995's rate. Consumer prices in 1996 rose 3 percent, only slightly faster than in 1995 despite near-full employment and a sharp rise in the price of crude oil. Imported crude oil prices went from $17 per barrel in 1995 to over $22 by early November 1996, but could fall below $20 per barrel in 1997.

The tight labor market at this stage of the business cycle ordinarily would mean sharply higher wage-induced inflation in 1997. However, CPI inflation in 1997 is expected to be only modestly higher than 1996's 3 percent. GDP and employment growth will slow from the rapid pace of the second quarter of 1996 largely because of slowing real personal income growth and tighter credit conditions. This slowdown in growth will prevent labor market and production bottlenecks and insure relatively stable inflation through 1998.

Consumer and producer equipment spending will rise in 1997, offsetting sluggish government spending and a higher trade deficit. Despite improved economic prospects in Canada, Japan, and Europe in 1997, the stronger dollar in 1996 will dampen 1997 exports, encourage imports, and leave the trade deficit between $110 and $120 billion.

In the long term, the baseline macroeconomic projections show a recovery from the below-trend growth of the late 1980s and early 1990s. From 1998 to 2005, the economy will grow by 2.6 percent annually. However, real compensation and disposable income growth will fall somewhat below recent history as real wages rise less than productivity. Modestly higher state and local tax revenues to make up for lost Federal transfers will leave disposable income growing at about the same rate as GDP.

Assumptions underlying the long-term U.S. macroeconomic projections are:

- Fiscal policy will be tight, in line with a path to a balanced Federal budget by 2002. Even with higher local government spending picking up some of the Federal cuts, overall government spending growth will average only 0.5 percent per year from 1999 through 2005. By 2005, government purchases of goods and services will have slipped from second to third place among the components of GDP, behind consumption and investment.

- The Federal Reserve will remain committed to containing inflation even as the government deficits shrink. Money supply will expand 5.3 percent annually between 1998 and 2005, reflecting moderately tight monetary policy and trend GDP growth.

- Real crude oil prices will rise by 2.2 percent per year from 2001 to 2005, consistent with medium-term Department of Energy projections in January 1996.

- Labor productivity growth will be in the 1.1- to 1.2-percent range from 1998 to 2005. This represents a modest improvement in productivity over the previous 15 years, largely attributed to a higher investment share in GDP and lower real interest rates than there would have been without deficit reduction.

Trade liberalization from the North American Free Trade Area (NAFTA) agreement and the Uruguay Round agreement will also enhance productivity growth in the baseline.

• Employment will grow about 1.3 to 1.4 percent per year, which is broadly consistent with Bureau of Labor Statistics projections, the tightened welfare and disability qualifications now in place, and expected immigration.

• Real GDP in the OECD, minus the United States, will grow at about 2.4 percent through 2001 and slow to 2.2 percent thereafter.

• Federal deficit reduction and lower inflation expectations will mean smaller interest rate differentials relative to U.S. trading partners. U.S. inflation will remain higher than in Canada and Japan, but close to that of the EU-4 countries of Germany, France, Italy, and the U.K. The inflation differential will drive the modest decline in the real value of the dollar from 2000 to 2005.

In the absence of commodity price shocks or abrupt changes in macroeconomic policy, stable growth generally implies stable inflation. Consumer price inflation is projected to average 3 percent over the next decade. This moderate inflation outlook assumes that monetary policy is primarily aimed at containing inflation. Real short-term Treasury-bill rates will average 3 percent, reflecting relatively tight Federal Reserve policy as well as beneficial effects of fiscal deficit reduction. Real long-term Treasury-bond rates of about 4 percent will reflect lower demand for long-term credit, with reduced government debt relative to private debt.

Revised Macroeconomic Data. For the current baseline, the National Income and Product Accounts (NIPA) data used to measure macroeconomic activity were revised to reflect a methodological change to chain-weighted output and price measures and a rebenchmarking to 1992 as the base year. These changes resulted in revised historical growth rates for the NIPA series. Revised macroeconomic data also necessitated the re-estimation of parts of the model used for baseline projections. Near-term implications are lower GDP growth for 1996 to 1998, largely reflecting revised 1994 and 1995 growth being sharply reduced from earlier estimates.

International Macroeconomic Assumptions: Developed Countries

The world macroeconomic outlook continues to be favorable over the next decade, with global real GDP growth averaging about 3.0 percent, well above growth during the first half of the 1990's. In the developed countries, macroeconomic growth is projected to average about 2.5 percent through 2005.

Europe. Over the next 2 years, Germany, France, Italy, and the United Kingdom, along with the other countries of Western Europe, will consolidate their recoveries from 1996's growth recession and will show faster growth. From then through about 2000, they will be in a more mature phase of their business cycle recovery, with slowing growth, but no recession. This growth will take place in a low-inflation environment (German inflation is currently 1.5 percent), since growth will be modest, and expected labor market conditions (unemployment around 10 percent) will retard wage growth. Through 2000, fiscal spending will be restrained, driven by the Maastricht Treaty's deficit-to-GDP requirements. Monetary policy over the same time period keeps short-term interest rates only modestly higher (about 50 basis points) than their current levels.

During 2000-2005, European economic growth is expected to settle into the mid-2 percent range, while inflation stays around 3.0 to 3.5 percent. Unemployment will remain at or near double digits in many countries, holding down wage growth and consumption spending. Additionally, higher taxes to reduce fiscal deficits to acceptable levels for monetary union will further dampen consumption growth. Investment growth looks to be the strength of many European economies, but will not reach levels of the late 1980's. In part, this is due to uncertainties regarding monetary union as it conflicts with domestic needs.

The baseline projections assume that at least limited monetary union will occur in Europe on schedule, but the actual pace of unification is the principal source of uncertainty. There is a gathering momentum for monetary union to occur on schedule with more countries participating in the first wave. Spain, Portugal, and Italy are pressing to be included in this group, even though they will not strictly meet all requirements. Early entry of these countries changes prospects for the U.S. dollar's value. Currently the baseline has the U.S. dollar showing near-term strength, with slight weakness after 2000. If participation in monetary union is widespread, then European monetary policy would have to be more accommodative, and the dollar would appreciate throughout the forecast period.

Table 4—Foreign real GDP growth assumptions

Region/country	1994	1995	1996	1997	1998	1999	2000	Average 1990-1995	1996-2000	2001-2005
						Percent change				
World	2.6	2.3	2.6	2.9	3.1	3.1	3.1	1.9	3.0	3.2
less U.S.	2.3	2.5	2.7	3.2	3.3	3.3	3.4	2.0	3.2	3.3
Developed economies	2.7	1.9	2.1	2.4	2.5	2.4	2.5	1.9	2.4	2.5
United States	3.5	2.0	2.4	2.2	2.6	2.6	2.6	1.8	2.5	2.5
Canada	4.5	2.3	1.5	2.8	3.0	3.1	3.1	1.3	2.7	2.9
Japan	0.7	0.7	2.5	2.2	2.0	2.1	2.1	1.9	2.1	2.1
Australia	5.4	3.5	3.3	2.7	2.9	2.6	2.5	2.6	2.8	2.3
European Union-15	2.8	2.5	1.3	2.5	2.5	2.3	2.6	2.1	2.2	2.3
France	2.7	2.4	1.1	2.7	2.6	2.3	2.7	1.4	2.3	2.4
Germany	2.3	1.8	1.2	2.8	2.4	2.3	2.4	4.0	2.2	2.5
Italy	2.2	3.0	1.6	2.0	2.7	2.3	2.4	1.4	2.2	2.2
Spain	2.0	3.0	2.6	3.0	3.0	2.5	2.7	1.8	2.8	2.5
United Kingdom	3.8	2.4	2.2	2.7	2.1	2.2	2.2	1.0	2.3	2.2
Transition economies	-11.9	-2.0	-1.1	0.5	1.8	2.6	3.3	-7.0	1.4	3.9
Eastern Europe	3.2	5.0	5.0	5.0	5.0	4.5	4.7	-1.6	4.9	4.7
Czech Republic	2.6	4.8	5.9	5.2	4.9	4.5	4.1	-2.5	4.9	4.1
Hungary	2.1	1.5	2.5	5.5	5.4	5.4	5.2	-1.7	4.8	5.7
Poland	5.5	7.1	6.1	5.3	5.1	4.0	4.5	2.4	5.0	4.5
Former Soviet Union	-17.8	-5.4	-4.4	-2.2	-0.2	1.3	2.3	-11.6	-0.6	3.2
Russia	-15.0	-3.7	-4.0	-2.0	0.0	1.5	2.5	-10.9	-0.4	3.3
Ukraine	-26.7	-12.3	-7.0	-4.0	-2.0	0.0	1.0	-12.5	-2.4	2.9
Developing countries	5.4	4.6	5.3	5.6	5.5	5.5	5.6	4.7	5.5	5.5
Asia	8.0	7.7	7.4	7.1	6.9	6.9	6.8	7.3	7.0	6.6
East & Southeast Asia	9.1	8.2	8.0	7.4	7.3	7.2	7.2	8.1	7.4	7.0
China	12.4	10.2	10.0	9.0	8.9	8.8	8.7	10.6	9.1	8.4
Korea	8.0	9.0	6.8	6.6	6.4	6.1	6.0	7.7	6.4	5.6
Taiwan	6.1	6.1	5.7	5.8	5.4	5.7	5.7	6.4	5.7	5.6
Indonesia	7.1	4.3	6.8	6.0	6.8	6.7	6.8	6.3	6.6	6.8
Malaysia	8.7	9.3	8.5	8.0	7.6	7.6	7.6	8.8	7.9	7.5
Philippines	4.3	5.3	6.5	6.8	4.2	4.2	4.3	2.4	5.2	4.3
Thailand	8.6	8.5	7.4	6.1	6.9	6.7	6.6	8.9	6.7	6.3
Vietnam	8.8	8.0	9.7	9.7	9.7	9.5	9.5	7.3	9.6	9.3
South Asia	4.9	6.0	5.5	6.1	5.6	5.6	5.5	4.4	5.7	5.5
India	5.2	6.2	5.6	6.3	5.7	5.7	5.6	4.3	5.8	5.5
Pakistan	4.1	5.1	5.6	5.7	5.8	5.8	5.8	4.8	5.8	5.8
Bangladesh	4.5	5.1	5.0	5.0	4.3	4.3	4.3	4.7	4.6	4.3
Latin America	4.3	0.8	2.9	4.1	4.3	4.3	4.6	2.5	4.0	4.8
Caribbean & Central America	2.4	2.8	3.0	3.0	3.1	3.2	3.3	2.8	3.1	3.3
Mexico	3.8	-6.9	3.2	4.1	4.2	4.6	5.1	1.4	4.2	5.5
South America	4.5	2.5	2.8	4.3	4.5	4.4	4.7	2.7	4.1	4.8
Argentina	7.4	-4.4	2.0	4.0	4.6	4.7	4.7	4.4	4.0	5.1
Brazil	4.1	4.1	2.5	4.6	4.5	4.3	4.8	1.4	4.1	5.1
Middle East	-0.1	1.6	2.5	4.2	3.7	3.6	3.7	2.9	3.6	3.8
Iran	-4.0	1.8	2.7	2.9	3.1	3.3	3.6	4.6	3.1	4.4
Iraq	14.9	1.5	6.0	11.0	4.3	4.4	4.4	-9.2	6.0	4.4
Saudi Arabia	-1.7	-2.4	-0.1	4.6	3.8	3.5	3.2	3.0	3.0	3.2
Turkey	-5.3	6.8	3.0	3.8	4.8	4.8	4.5	4.3	4.2	4.4
Africa	1.9	3.1	3.4	3.3	3.2	3.3	3.3	1.3	3.3	3.2
North Africa	1.5	2.5	4.6	3.8	3.9	3.9	3.9	1.1	4.0	3.8
Algeria	-0.2	4.3	4.6	2.8	2.8	2.8	2.8	0.2	3.2	2.8
Egypt	2.0	4.2	5.2	5.0	5.3	5.1	5.1	1.9	5.1	4.6
Morocco	11.2	-5.0	5.0	4.8	5.0	5.1	5.1	1.9	5.0	5.1
Tunisia	3.5	3.2	6.1	5.6	5.6	5.6	5.6	4.8	5.7	5.6
Sub-Saharan Africa	2.0	3.5	2.0	2.9	2.7	3.0	3.0	3.1	2.7	3.0
South Africa	2.4	3.5	4.2	3.5	3.3	3.0	2.6	0.4	3.3	2.3

Sources: DRI; Project LINK; Economic Research Service, U.S. Department of Agriculture.
Note: The macroeconomic assumptions were completed in October 1996.

With monetary union increasingly likely to occur on schedule, governments will have to install fiscal and tax policies that move government deficits toward the Maastricht limits earlier than some have expected. For the marginal countries, this could lower growth expectations significantly. Monetary decisions by central banks will continue focusing on stabilizing currency values against the German Mark, but marginal countries intent on being among those initially included in the union will have to pursue stricter policies. Again, this could result in slower growth than assumed in the forecast.

Japan. Japan's near-term prospects have improved somewhat. Overall, economic signals are mixed for the near term, although the weakened Yen, low interest rates, and improved consumer sentiment will help lead Japan's economy out of recession and help maintain modest 2.0-2.5 percent annual growth in the medium term. Japan's banking crisis is expected to hold lending and investment spending below historic levels. Unemployment will be at historic high levels, with companies yet to expand hiring. Labor markets will only slowly improve, and therefore personal savings will remain high.

Recent fiscal policy has been stimulatory, but the government will soon show restraint as it seeks to lower the recession-era deficit. Low inflation expectations, though, will allow long-term monetary policy to be accommodating, with real interest rates in the 1 to 2 percent range. Overall, fiscal and monetary policy will be slightly stimulative, but Japanese trend growth of about 2 percent will still be lower than previously seen.

The lower growth is partly due to Japan's rapidly aging population and the resulting impact on labor force growth. Investment growth will also be slower than previously, reflecting low capacity utilization—a remnant of the investment boom of the late 1980's and early 1990's—higher costs of investment, and lower corporate profits. Also, high unit labor costs, caused in part by lifetime employment policies, will push more investment offshore. With an inflation outlook that is low relative to other major economies, the Yen should strengthen slightly, with import growth outstripping export growth, toward the end of the forecast period.

Canada. Canadian fiscal policy will be tight for the next several years as the Federal budget moves to balance and Provincial budgets run modest surpluses. In 1995, Canada had the highest debt-to-GDP ratio in the G-7.

Yet, in 1995 and 1996, Canada made better progress in reducing its structural budget deficit than any other G-7 country. Short-term interest rates have been 1 percent below comparable U.S. rates, and Canada registered a current account surplus in the second quarter of 1996—both events not seen since the 1970s. Uncertainty about the Canadian dollar has subsided as Quebec postponed the next secession vote to past 2000. Because of a good inflationary environment, and the favorable political and fiscal policy climate, the Bank of Canada (BOC) will continue to keep short-term rates low.

GDP growth in 1996 will be less than 2.0 percent, largely due to a weak first half. But, Canada should see above-trend growth for the next 4 years. This is despite expected moderate U.S. growth over the same period. Continuing recovery in real wages and low short-term interest rates will bring low double-digit construction spending growth. These factors also result in more consumer durable spending, particularly since Canada has an aging fleet of cars. The expected strong equipment spending stimulated by low interest rates will largely offset the negative impacts of lower government spending on domestic growth.

As the Canadian economy has substantial slack, inflation should be below 2.0 percent for the next 2 years, and then accelerate slightly. Low inflation and continued political stability will allow a gradual appreciation of the Canadian dollar. That movement, however, will be slowed by the low interest rate policy of the BOC. With the second lowest unit labor costs among the G-7, and expected moderate growth in its trading partners, net exports will be strong. With GDP growth the strongest of all developed economies, unemployment will move well below its current rate of 10.0 percent.

Over the longer term, NAFTA and declining long-term interest rates should stimulate investment spending and exports. Additionally, the competitiveness of the Canadian dollar (remaining below the U.S. dollar in value), will further support export expansion. Unemployment and wage growth will also improve as productive capacity and capacity utilization rise. With the steady improvement in Canada's economic environment, growth is expected to be nearly 3.0 percent in 2001 to 2005, giving it the best long-term outlook among industrialized countries.

International Macroeconomic Assumptions: Transition Economies

After 5 years of economic decline, gains in real output have lifted per capita GDP over levels before market

Income Growth and Dietary Change

Per capita income and income growth are principal determinants of the pattern of import demand across countries and commodities. While other factors, such as variations in trade or price policies, consumer preferences, and comparative advantage in production, are also important, there is often a strong correspondence between national per capita income and import demand for food grains, feeds, and meats in the long run. Further, projections of global trade across commodities are often shaped by the pattern of expected income growth across higher and lower income countries.

Four stages in the development of agricultural import demand can be identified for descriptive purposes. Because other factors—such as those noted above—also affect imports, the income ranges for each category are not tightly defined, but are instead representative of the pattern of agricultural demand. Definition of the stages is also hampered by inability to precisely measure the purchasing power associated with per capita income, and by sometimes sharp differences across countries in the distribution of income. Thus, the ranges used are generalizations that may not hold in all cases.

Stage 1: Lowest Income Countries. In the lowest income countries, with per capita incomes of less than about $500, national average per capita use of food staples—food grains or tubers—is generally still rising. There is typically very limited effective demand for higher-valued goods, notably livestock products. In this and higher stages, as incomes and urbanization increase, consumer preferences are likely to begin shifting toward preferred staples, such as wheat and higher quality rice, and away from less preferred traditional staples, such as tubers or coarse grains.

In the lowest income countries, food staples often account for a relatively large share of consumer expenditure. If the price of food staples—or so-called "wage goods"—rises faster than wages, then nutrition and consumer welfare can deteriorate quickly. As a result, the governments of these countries often give priority to any food staple import needs when allocating scarce foreign exchange. Examples of countries at this stage of demand are Bangladesh, India, and many Sub-Saharan African countries.

Stage 2: Moderate-Income Countries. As national per capita income rises through a range of roughly $500-$1,000, an important transition in food demand often begins. Demand for staples generally slows, and may begin to decline, although the shift toward preferred staples continues. In addition, the number of higher income consumers becomes sufficient to stimulate growth in demand for livestock and other higher valued products at the national level. The emergence of significant effective demand for meats and other livestock products generates derived demand for feed grains and proteins—demand that can expand rapidly because it typically takes 2-4 units of feed to produce 1 unit of product.

A country's "takeoff" point for meat demand is complicated by the role of factors such as income distribution, dietary customs, local production costs, and marketing infrastructure. The type of meat preferred is affected by cultural preferences, with pork and beef facing limited acceptance in some societies. It is, however, common for poultry meat and egg demand to show the fastest initial growth because of relatively widespread acceptance and low production costs. The takeoff point for feed import demand is affected not only by meat demand, but by local supply potential for both commercial and residual feeds, feeding efficiency, and trade policies. Major countries at this stage of demand are China, Egypt, Indonesia, Pakistan, and the Philippines.

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reforms began in most of the CEE region, particularly in the northern tier countries. Lagging reforms in the FSU have stalled its long-awaited recovery until 1999. Regaining former per capita GDP levels in the FSU is further in the future. Reducing inflation was critical in halting and reversing the output contractions that initially characterize transitions from central planning. While mid-term prospects reach up to 5 percent average GDP growth, the long-term economic outlook is somewhat slower. Stagnant population growth and a rapidly aging labor force mean lower long-term growth than in other emerging market countries.

Former Soviet Union. Market reforms are continuing to transform these formerly centrally planned economies, but at varied speeds and extent. The largest economy, Russia, will be among the first to post positive economic growth, but not until late in the decade. The transition to a market system has been slow and protracted. The

financial sector, such as the stock and bond markets in these countries, had to be created practically from scratch. The allocation of domestic saving into private investment is limited by slow development of a modern capital market. The banking system had to be restructured, particularly in those countries that introduced new national currencies. After almost a decade of reforms, market-based pricing, and continuing privatization, the economies of the FSU will begin to grow again by the end of the decade.
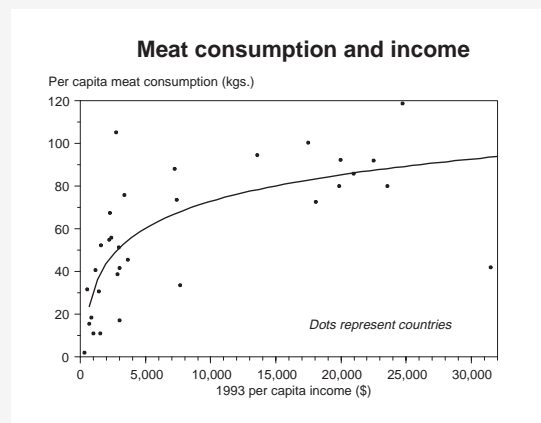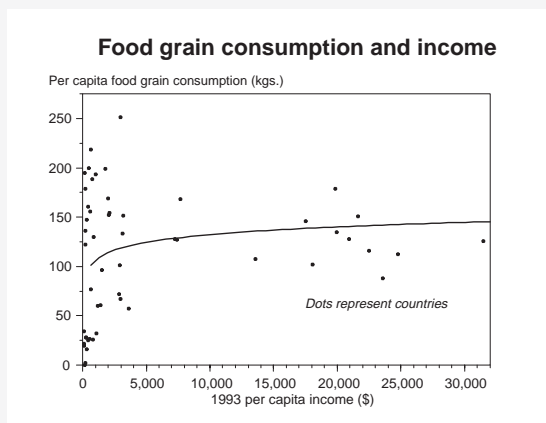
Over the next decade, aggregate growth of about 3 percent is projected for the FSU. A more optimistic outlook will depend on the extent of privatization and foreign ownership, how much current fiscal imbalances are reduced, and how soon exchange rates stabilize. Inflation will remain in double digits but on a downward trend. The expected strong demand for capital imports will bring the current account into deficit. The region's comparative advantage

Stage 3: Moderate- to High-Income Countries. When per capita income is in the range of roughly $1,000-$10,000, per capita demand for food staples is generally declining. The strongest consumption growth occurs in livestock products and feeds, and other higher-valued food products. In addition to rising effective demand for more diverse diets, urbanization, higher labor force participation, and higher incomes spur demand for more processed and more convenience foods.

At this stage, the takeoff point for feed grain and protein imports has likely been reached, unless there is capacity for sufficient local feed production, or financial or trade policy constraints curb both feed trade and meat output. Although most countries at this stage choose to produce meat locally, meat rather than feed may be imported if the conditions do not exist for efficient local meat production. In a similar fashion, rising demand is likely to lead to the emergence of imports of other high-valued foods, depending on local production capacity, financial conditions, and trade policies.

A large number of countries, including many in North Africa, the Middle East, Southeast Asia, Central Europe, and Central and South America, are at this stage of demand and typically show the fastest growth in agricultural import demand.

Stage 4: High-Income Countries. Countries with per capita incomes above roughly $10,000 typically are "mature" markets that may exhibit high levels of agricultural import demand, but relatively slow growth. Per capita use of food staples is normally stable or declining, while demand for livestock and other high-valued goods is growing at a moderate, but steady, rate. Per capita meat demand can continue growing up to average income levels of about $15,000 before stabilizing. At this stage, demand for higher quality goods may increasingly affect the choice of goods and supplier, and demand for environmental quality may begin to limit intensive local production of meats and other products. All the major developed countries, including Australia, Canada, Japan, the EU and the United States are at this stage of demand.

Food grain consumption and income

Per capita food grain consumption (kgs.)

Dots represent countries

1993 per capita income ($)

Meat consumption and income

Per capita meat consumption (kgs.)

Dots represent countries

1993 per capita income ($)

in natural resource-based exports will provide much of the earnings needed to finance the capital imports. More foreign investment should be forthcoming to develop these resources.

Central and East Europe. This group of transition economies initiated market reforms earlier and to a greater extent than the former Soviet Union and are now reaping the economic rewards of fast growth. Average GDP expansion of 5 percent is expected over the next few years, and 4.5 percent from 2001 to 2005. Like other developing countries, gross fixed investment will be the fastest growing component of total domestic demand. Inflation will remain relatively high in the mid-term before falling to single digits after the year 2000. More stable exchange rates and improved terms of trade are projected over the coming decade. Direct foreign investment into the region will continue to be strong as these

countries become more economically and politically integrated with the European Union.

As in Asia, the key to sustained high growth of 5 percent or more is trade—within the region and with the EU and the FSU. Direct foreign investments follow naturally from open trade, as it has in the northern tier countries of Poland, Hungary, and the Czech Republic. This cycle of trade and investment will lift per capita GDP in the area, which currently approximates that of South America. Compared with 1990, the year after market reforms generally started, Central and East Europe has recovered output lost during the recession years in the early 1990's. By year 2000, per capita GDP will be 17 percent higher than when the transition began.

In the southern tier countries—Bulgaria and Romania— market reforms were initiated more slowly or much later.

As a result, foreign direct investment has been minimal. As in the FSU, privatization has lagged that in Poland, Hungary, the Czech Republic, and the Baltic republics. Exchange rates have continued to depreciate, undermined by low foreign exchange reserves. Financial conditions will only slowly improve. As a result, output growth is lagging behind rates in Poland, Hungary, and the Czech Republic. However, because output was initially low, output growth in the next few years will be able to catch up with current growth rates of those northern tier neighbors.

International Macroeconomic Assumptions: Developing Countries

As markets and competitors for U.S. agricultural exports, the growth of developing countries significantly influences global agricultural trade. Led by Asia, aggregate growth over the next 10 years is projected to average about 5.5 percent, somewhat faster than over the past decade. While Asian growth may slow somewhat, growth prospects in other developing regions are improving. Freer markets characterized by less price control and fewer trade barriers, more stringent fiscal and monetary policies, and the phase-out of artificially controlled exchange rates are assumed for many of these economies.

Mexico. A growth recovery in 1996 after 1995's deep recession is expected to put Mexico on a path of 4.2-percent average annual growth over the mid-term. Longer-run growth prospects are brighter at 5.5 percent as the economy returns to full employment and to the consumption and investment patterns that held before the December 1994 peso devaluation. This means a gradual appreciation of the real exchange rate, moderate inflation rates of less than 10 percent, and domestic investment growing at more than twice the pace of private consumption. NAFTA will generate or enhance the chances for expanded trade volume, the return of previous levels of foreign direct investment, and restored purchasing power in Mexico.

Beyond 2000, the projections assume sustaining previous gains, with exports of goods and services growing slightly faster than imports. The terms of trade for the projections are favorable, although the current account balance remains in deficit, reflecting the continued importation of foreign financial capital. The gradual appreciation of the real exchange rate (in pesos per dollar) means that the nominal pace of depreciation will not keep up with the domestic rate of inflation. This is largely the reason for the slowly increasing trade deficit through the forecast period. Thus,

Mexico will likely run a trade deficit with the United States, its largest trading partner.

A great deal will be required for this scenario to be realized. The economy's basic problem is a low savings rate. The previous dependence on foreign capital left the peso and interest rates vulnerable and volatile. Growth and increasing productive capacity will be difficult in this situation because the government will have to run a budget surplus to help raise national savings, and keep monetary policy tight to keep inflation down and to discourage an outflow of funds. Prudent macroeconomic policies will be required for Mexico to avoid currency crises that push up the cost of foreign debt service, raise capital import costs, and slow economic growth.

South America. Strong growth is projected for South America, led by the MERCOSUR core countries of Brazil and Argentina. Freer trade will further integrate the economies of these countries as they move toward eventual hemispheric free trade with NAFTA countries. Behind the strong output expansion is intra-regional trade as well as heavier foreign direct investment in anticipation of trade integration with the United States, the world's largest market. Recent market-oriented reforms and larger private sectors are also behind the region's better prospects. The past environment of overvalued currencies, large trade deficits, fiscal deficits, and low internal savings and investment is expected to improve. New macroeconomic policies now permit lower inflation and more competitive industries as import barriers fall.

China. The Chinese economy will maintain the strongest growth in Asia over the next 10 years, averaging almost 9 percent in the next 5 years and 8 percent in 2001-2005. With population growth slowing to an average 0.8 percent annually, per capita GDP growth will be at least 7 percent per year. Consumer price inflation will remain in double digits throughout the period, and because the nominal exchange rate will depreciate at a slower pace, the real exchange rate will appreciate. Inefficient state-owned enterprises will continue to burden the government's fiscal well-being. However, the country's high savings rate limits the impact on private investment. Trade volume and investment flows are likely to grow even more as the Yuan becomes fully convertible before the end of the century. Trade competition with its fast-developing neighbors also implies a broadening of industrial technology and less dependence on labor-intensive industries.

Asian Growth Prospects Remain Bright

Growth in import demand is expected to remain strong in East and Southeast Asia during 1997-2005. Higher incomes, along with appreciating currencies, high savings and investment rates, and ample foreign exchange reserves, will likely continue to drive strong import demand growth. Incomes in developing East and Southeast Asia, as measured by average per capita real GDP, will expand about 80 percent between 1995 and 2005, compared with about 56 in Central and Eastern Europe, and 35 percent in Latin America. Even as current growth rates in Asia begin to taper off in the long run, the gains in purchasing power far exceed those in other regions of the world.

Export-oriented policies were at the heart of Asia's initial development effort. Export competitiveness was supported by undervalued currencies, and domestic demand was subordinated to supplying export markets. High national savings rates were assured by restrictive import barriers, undervalued exchange rates, and tight fiscal and monetary policies. Success in raising real incomes in Asia has now come full circle with respect to trade. From net exporters, many countries have now become net importers. High savings, direct investment from Japan and elsewhere, and production shifts to higher-value products and exports underlie the region's ability and capacity to import.

Asian purchasing power has also been boosted by appreciating currencies that lower the cost of many imports. In developing East and Southeast Asia, the real effective exchange rate against the U.S. dollar appreciated 7 percent during 1991-96. In contrast, the currencies of Western Europe depreciated by 5.5 percent against the dollar during 1994-96. Currencies in developing Asia have appreciated because higher inflation rates relative to the United States have not been accompanied by corresponding nominal exchange rate depreciations. The negative impact of real appreciation on Asian competitiveness has been manifested in the trade and current account deficits of many Asian countries. However, the need to import goods, services, and capital in the push to industrialize and improve infrastructure is well supported by large foreign reserves and higher real exchange rates.

Asia: Real GDP growth rates
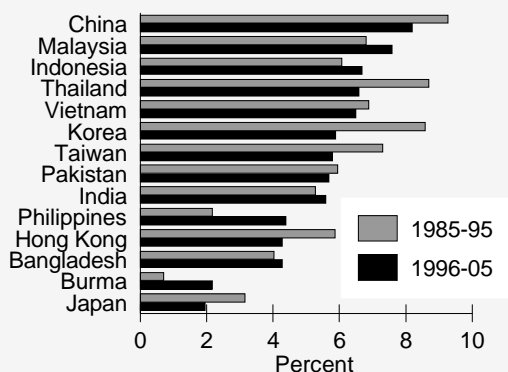
East and Southeast Asia. Although growth in South Korea and Taiwan is expected to be somewhat slower than during the last 10 years, these and neighboring Southeast Asian economies are expected to maintain relatively high rates of income growth during 1997-2005. The economies of this region are the most integrated among the developing countries—by trade and intra-regional investment. In particular, driven partly by direct investments from Japan, industrial development is fast approaching that of the developed economies as measured in per capita GDP. Overall output growth will settle down to a more sustainable pace as domestic investment decelerates. The level of trade competition and invested technology in the area is such that graduation to higher-value products appears to be essential in maintaining trade competitiveness. Trade relationships promoted through the Association of Southeast Asian Nations (ASEAN) and Asia-Pacific Economic Cooperation (APEC), as well as appreciating currencies, are increasingly important factors in longer term prospects for trade and growth.

South Asia. While projected growth is not as impressive as in East and Southeast Asia, output expansion will nonetheless result in overall per capita gains of about 3.6 percent in South Asia through the next decade. Per capita GDP in year 2000 will be a third higher than in 1990. Greater trade and investment inflows will fuel the region's growth and, because of the region's sizable population, internal demand will sustain healthy economic activity, much like China's growth pattern. While India's growth is strong, double-digit growth like China's is unlikely. Nevertheless, given the size of potential market demand among India's neighbors, as well as its proximity to the oil producers of the Middle East, the outlook for India's export growth is bright.

Africa and the Middle East. Countries in this region are projected to start achieving positive per capita GDP growth, after contracting in the first half of the 1990's. Increases in the real price of crude oil help the Middle East and North Africa. Per capita real GDP gains in Sub-Saharan Africa, however, will be close to zero as economic growth strains to keep up with population growth. The two largest economies in Sub-Saharan Africa, Nigeria and South Africa, will have contrasting per capita growth paths—negative and positive, respectively.

Population Growth Assumptions

Population assumptions for the United States and the rest of the world are based on unpublished projections made

Table 5—Population growth assumptions

Region/country	1994	1995	1996	1997	1998	1999	2000	Average 1990-1995	Average 1996-2000	Average 2001-2005
					Percent change					
World	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.5	1.4	1.2
less U.S.	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.6	1.4	1.3
Developed economies	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.7	0.5	0.5
United States	1.0	0.9	1.0	0.9	0.9	0.9	0.8	1.0	0.9	0.8
Canada	1.3	1.2	1.1	1.0	1.0	1.0	0.9	1.3	1.0	0.9
Japan	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2
Australia	1.1	1.0	1.0	1.0	0.9	0.9	0.9	1.2	0.9	0.8
European Union-15	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.3
France	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.5	0.3	0.4
Germany	1.0	0.8	0.7	0.6	0.6	0.6	0.7	0.9	0.7	0.5
Italy	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.1	0.1
Spain	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3
United Kingdom	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.2	0.1
Transition economies	-0.1	0.0	0.0	0.0	0.1	0.2	0.3	0.2	0.1	0.3
Eastern Europe	-0.3	-0.2	-0.2	-0.1	0.0	0.1	0.2	-0.3	0.0	0.2
Czech Republic	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.2
Hungary	-0.6	-0.7	-0.7	-0.7	-0.6	-0.5	-0.4	-0.5	-0.6	-0.3
Poland	0.2	0.2	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.4
Former Soviet Union	0.0	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.4
Russia	-0.1	0.0	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.0	0.1
Ukraine	-0.4	-0.5	-0.4	-0.4	-0.3	-0.2	-0.1	-0.1	-0.3	-0.1
Developing economies	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.8	1.6	1.5
Asia	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.6	1.4	1.2
East & Southeast Asia	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.8	1.6	1.4
China	1.1	1.0	1.0	1.0	0.9	0.9	0.8	1.2	0.9	0.7
Korea	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.8	1.0	0.9
Taiwan	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.9	0.9	0.8
Indonesia	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.9	1.6	1.4
Malaysia	2.2	2.2	2.1	2.1	2.0	2.0	1.9	2.2	2.0	1.8
Philippines	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.3	2.1	1.9
Thailand	1.1	1.1	1.0	1.0	1.0	1.0	0.9	1.2	1.0	0.8
Vietnam	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.9	1.5	1.3
South Asia	1.9	1.9	1.8	1.8	1.7	1.7	1.6	2.0	1.7	1.5
India	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.9	1.6	1.4
Pakistan	2.3	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.0
Bangladesh	1.9	1.9	1.9	1.9	1.8	1.8	1.7	1.9	1.8	1.6
Latin America	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.7	1.4	1.3
Caribbean & Central America	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.9	1.6	1.5
Mexico	2.0	1.9	1.9	1.9	1.8	1.8	1.8	2.0	1.8	1.6
South America	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.6	1.3	1.1
Argentina	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.1	1.0
Brazil	1.3	1.3	1.2	1.1	1.1	1.0	0.9	1.4	1.1	0.9
Middle East	2.6	2.7	2.7	2.6	2.5	2.5	2.5	2.7	2.6	2.4
Iran	1.8	2.4	2.3	2.2	2.1	2.0	2.2	2.8	2.2	2.2
Iraq	3.8	3.8	3.8	3.7	3.7	3.6	3.6	2.6	3.7	3.5
Saudi Arabia	3.8	3.8	3.6	3.5	3.5	3.5	3.4	3.0	3.5	3.4
Turkey	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.8	1.6	1.5
Africa	2.5	2.7	2.6	2.6	2.5	2.5	2.4	2.7	2.5	2.3
North Africa	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.3	2.0	1.9
Algeria	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.4	2.2	2.0
Egypt	2.0	2.0	1.9	1.9	1.9	1.8	1.8	2.2	1.9	1.7
Morocco	2.2	2.1	2.1	2.1	2.0	2.0	1.9	2.2	2.0	1.8
Tunisia	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.9	1.8	1.6
Sub-Saharan Africa	2.7	2.9	2.8	2.7	2.7	2.7	2.6	2.9	2.7	2.5
South Africa	1.7	1.8	1.8	1.7	1.6	1.5	1.5	2.0	1.6	1.2

Source: U.S. Dept. of Commerce, Bureau of the Census.

International Agricultural Baseline Projections to 2005 / AER-750

available to USDA by the U.S. Department of Commerce, Bureau of the Census. These projections are updated periodically, with the projections used for this report based on the update available in July 1996. The projections show slowing population growth rates in virtually all countries and regions over the 1996-2005 projection period. The highest rates of population growth are in North Africa, the Middle East, and Sub-Saharan Africa. Population growth is slowest in the relatively developed regions of Europe, North America, the former Soviet Union, and East Asia. These assumptions are used to estimate per capita GDP growth in all countries as a measure of comparative wealth gain over time.

U.S. Agricultural Policy Assumptions

This baseline reflects provisions of the Federal Agriculture Improvement and Reform Act of 1996 (1996 Act), which was signed into law on April 4, 1996. The 1996 Act is a milestone in the evolution of U.S. agricultural policy because it fundamentally redesigns income support programs and discontinues supply management programs for producers of wheat, corn, grain sorghum, barley, oats, rice, and upland cotton. The 1996 Act replaces a system of *deficiency payments*, based on the difference between a pre-set target price and the higher of the market price or the loan rate, with a system of fixed *production flexibility contract payments* that are largely decoupled, since there is virtually no link between payments and current plantings. The 1996 Act expands planting flexibility and lets authority expire for Acreage Reduction Programs (ARPs) and 0,50/85-92 provisions.

The 1996 Act encompasses a wide range of issues related to agriculture, including commodities, trade, conservation, nutrition assistance, agricultural promotion, credit, rural development, and research, extension, and education. Major changes related to production agriculture are in the commodity provisions (Title I), the agricultural trade provisions (Title II), and the conservation provisions (Title III) of the 1996 Act. The most important impacts result from policy changes in four main areas covering income-supported crops, price-supported commodities, agricultural trade, and conservation, and are summarized in the box ("Four Areas of Policy Change in the 1996 Farm Act"). For more detail on the U.S. policy assumptions, see *Agricultural Baseline Projections to 2005, Reflecting the 1996 Farm Act* (WAOB-97-1).

A crucial factor affecting land availability in the United States is the assumption regarding the Conservation Reserve Program (CRP). Over 20 million acres of CRP contracts expire in 1997. CRP enrollments in 1997 are assumed to keep the CRP from falling below 30 million acres. Enrollments in subsequent years are assumed to gradually increase the CRP to over 36 million acres by 2001. Most land enrolled in the CRP is in areas traditionally planted to major field crops, thus limiting the response of planted acreage to rising prices and net returns.

Foreign Agricultural Policy Assumptions and Highlights

Policy assumptions underlying both U.S. and foreign projections are based on full compliance with all bilateral and multilateral agreements affecting agriculture and agricultural trade as of January 1997. Bilateral agreements affecting agricultural trade between the United States and Canada, the United States and Mexico, the United States and Japan, and the United States and Korea are examples of recent agreements for which full compliance is assumed. In contrast, no compliance is assumed for any agreements under discussion or not formally ratified by January 1997. In the multilateral sphere, the projections assume full compliance with the internal support, market access, and export subsidy provisions of the Uruguay Round Agreement on Agriculture by all parties to the agreement. Several potential multilateral agreements that could have a significant impact on agricultural trade are now under consideration, but are assumed not to occur in these projections. These include:

• No accession to the World Trade Organization (WTO) by the FSU, China, or Taiwan;

• No enlargement of the EU-15 to add one or more Central or East European countries;

• No implementation of more liberalized trade among the Asia-Pacific Economic Cooperation (APEC) countries, and;

• No expansion of NAFTA to include additional countries.

Domestic agricultural and trade policies in individual foreign countries are assumed to continue to evolve along their current path, based on the consensus judgment of regional and commodity analysts. In particular,

the process of liberalizing economic and trade reform underway in many developing countries is assumed to continue. Similarly, the development and use of agricultural technology and changes in consumer preferences are assumed to continue to evolve based on past performance and analyst judgment regarding future developments. Key assumptions underlying the projections for major foreign countries are summarized below.

European Union-15

The baseline projections for the European Union (EU) incorporate policy changes adopted as part of the 1992-93 reform of the EU's Common Agricultural Policy (CAP), as well as EU commitments under the Uruguay Round agreement that limit subsidized exports and improve market access. The final step of planned price cuts under CAP reform took place during 1995/96. Basic support prices are assumed to remain at 1995/96 nominal levels for most commodities, but internal market prices may be driven below support levels in order to clear domestic markets. If Uruguay Round limits on subsidized exports are binding, excess supplies will have to be absorbed on the internal market, driving market prices down. The annual set-aside program instituted for grains, oilseeds, and protein crops is assumed to remain in effect, with the set-aside rate being used as a policy instrument to adjust production to market conditions.

The baseline assumes that the EU's Uruguay Round commitment on internal support is not a binding constraint, since many policies resulting from CAP reform meet the World Trade Organization (WTO) "production-limiting" criteria and are exempt from reduction commitments. Tariffication of nontariff barriers and tariff reductions are assumed to have little impact because the high tariff equivalents established for most products are unlikely to permit significant additional imports. Continued high levels of import protection mean that price transmission from the world market will be negligible for all baseline commodities except oilseeds and products and, in the later years, wheat, rye, and oats. The most important Uruguay Round commitments for the baseline are the limits on subsidized exports and the minimum import levels agreed under the market access provisions. Major uncertainties include what measures the EU will use to meet its subsidized export and minimum import commitments within the limits of the Uruguay Round, and what measures the Commission will adopt to deal with the projected imbalance between beef production and consumption in the wake of the bovine spongiform

encephalopathy (BSE) crisis. The baseline assumes that the EU will use current policy mechanisms to meet its Uruguay Round limits on subsidized exports. For grains, it is assumed that any production in excess of domestic use that cannot be exported will depress the internal market price and dampen output. The EU will use the set-aside rate to constrain surplus production. The set-aside rate is 5 percent for 1997/98, and is assumed to move up to 15 percent in 1998/99 and then remain at 12 percent for the rest of the baseline. In the longer term, the baseline assumes that the EU will not increase intervention purchases and accumulate stocks beyond the historical average level—accumulation of intervention stocks is viewed as a short-term strategy for dealing with excess grain supplies. The baseline assumes that the EU will export grain without subsidy only when the world price is equal to or greater than the average EU price.

For pork and poultry, the baseline assumes that market prices adjust to clear the internal market. The effect of the herd liquidation program because of the "mad cow" crisis is included. Continued limited intervention for beef, a shrinking dairy herd, and measures to encourage less intensive production methods are also assumed to limit beef production. To prevent surpluses from accumulating in the face of lower consumption, it is assumed that revisions to the CAP will further reduce beef producer incentives.

The baseline assumes that there is no enlargement of the EU-15 to add one or more Central or East European countries. Accession of the large agricultural-producing Central and East European (CEE) countries could cause serious problems for the CAP in its current form and would likely require changes in that policy.

Asia and Oceania

Australia. Australia exports the majority of its crop and livestock output; this continues in the future. The Australian Wheat Board (AWB) is being reorganized so that it will be more along the lines of a commercial business with grower ownership and control. The AWB will retain single-desk status for exports, at least for the next 5 years. Australia is periodically subjected to drought, so adequate water availability is crucial to attaining the output levels projected. Crops are once again being planted in the Ord River project in Western Australia and several new dams are being planned, but it is still too early to factor in the full extent of the additional area for irrigated crops such as cotton and sugar.

With the return of better weather after several years of drought, cattle herds are being rebuilt. Any dependence on imported feed during periods of shortages has been ruled out for the time being, which is dampening growth expectations for fed-beef. More favorable returns for other enterprises and low export prices are also limiting fed beef growth. Continued growth in exports of live cattle is projected, reducing the availability of suitable cattle for feedlots.

China. China's economy is assumed to continue to grow at a rapid, but declining, rate in the baseline. Average real GDP growth is forecast to slow from more than 10 percent in recent years to 8.4 percent in 2001 to 2005. This projection assumes China will continue its gradual reform of the remaining areas of the economy where there continues to be a substantial degree of government intervention and control. Major reform initiatives will focus on the industrial sector and the political, social, and economic difficulties involved in reducing and restructuring the state-owned sector. Continued rapid growth in domestic and foreign investment allows the development of port, rail, road, and power generation infrastructure to keep pace with increased trade flows and energy demand.

Agricultural policy continues to move gradually and incrementally toward greater liberalization, increasing the role of market forces in China's production, consumption, prices, and trade. Central government planning is assumed to decline for most crops, with a growing share of farm gate and retail purchases occurring at market prices rather than at government-set prices. Intermittent government intervention to stabilize markets occurs, but with declining frequency.

Agricultural trade is assumed to continue its recent course, becoming more liberalized as tariffs are gradually reduced and non-state trade companies become more important. While central government control over trade in key commodities will likely continue, the share of trade handled by private or joint private-public trade companies is assumed to grow. In the baseline, it is assumed that China will not become a member of the World Trade Organization (WTO). China has applied for WTO membership, but negotiations are ongoing, with timing of possible entry and provisions of the final agreement uncertain.

Production of all major crops (except rice) is projected to increase as rising domestic prices raise yields through increased use of improved varieties and fertilizer and

China Food Demand Elasticities

The responsiveness of food demand in China to changes in income (income elasticities) and changes in own prices (own price elasticities) are critical variables in the projections for China. The elasticities used in the USDA projections were estimated using data from the Urban and Rural Household Consumption and Expenditure Surveys conducted by China's State Statistical Bureau. These data permit estimates that capture the difference in consumer behavior between urban and rural households for a range of food commodities, including rice, wheat, coarse grain, beef and lamb (combined), poultry meat, pork, eggs, fruit, vegetables, sugar, and edible vegetable oil. Estimates for these commodities were then used to derive estimates for commodities for which no data were available (soybeans, beef and veal, and lamb and mutton (individually), fish, and other food).

Because consumers tend to adjust food spending behavior as incomes rise, it is appropriate to adjust income elasticities over time in long-term projections. For China, these adjustments were based on analyst judgment. For higher-income urban consumers, most income elasticities of food demand are expected to decline over time as a rising share of new income is spent on nonfood items. For generally lower income rural consumers, while income elasticities for food staples are expected to decline, those for animal products, fruits, and vegetable products are expected to remain high, or even rise.

The elasticity estimates used in the China projections are summarized in the table below. They show relatively low income and price responsiveness for food staples, but relatively high income and price-responsiveness for animal products, fish, fruits, and vegetables. It should be noted, however, that the data used for the estimation procedure were not always complete, sometimes necessitating estimation of missing values and/or instances where the amount of data was not sufficient to insure robust results.

China: Estimates of income and own-price elasticities for food demand

Commodity	Urban			Rural		
	Income			Income		
	Starting	Ending	Own-price	Starting	Ending	Own-price
Rice	-0.10	-0.20	-0.30	0.05	-0.10	-0.20
Wheat	-0.05	-0.20	-0.30	0.20	0.05	-0.12
Coarse grains	-0.14	-0.20	-0.30	-0.10	-0.20	-0.05
Soybeans	-0.10	-0.20	-0.50	0.05	-0.10	-0.45
Sugar	0.46	0.20	-1.05	0.90	0.90	-1.25
Beef & veal	1.75	1.60	-1.70	1.80	2.00	-1.40
Lamb & mutton	1.75	1.60	-1.75	1.80	1.50	-1.33
Pork	0.50	0.45	-0.96	0.80	0.70	-0.65
Poultry meat	0.99	0.80	-1.16	1.10	1.00	-0.80
Fish	0.93	0.85	-0.96	0.93	1.00	-0.75
Eggs	0.31	0.27	-0.80	0.52	0.45	-0.55
Edible vegetable oil	0.51	0.45	-0.85	0.70	0.55	-0.80
Fruits	0.76	0.80	-1.10	0.90	1.15	-0.75
Vegetables	0.45	0.40	-0.49	0.70	0.85	-0.60
Other food	0.35	0.50	-0.70	0.70	0.70	-0.39

Source: ERS estimates.

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better farm management practices. Reduced state investment in agriculture during the 1980's produced a slowdown in the rate of yield growth toward the end of the baseline. Total land in agriculture will continue its current decline under pressure from nonagricultural uses, but the rate of decline will slow in response to a continuation of the government's more effective land management policies of the 1990's.

Income growth that will drive demand for meats and edible oils will be the key factor in China's future agricultural trade patterns. Relatively small changes in assumptions affecting income growth, meat production trends, or feed demand can result in relatively large changes in trade projections for a country with 1.2 billion people.

East Asia. South Korea and Japan continue to open their livestock sectors to foreign competition as dictated in the Uruguay Round, using deficiency payments to assist the beef cattle sector and encouraging pork and poultry production with indirect subsidies. Japan will also make maximum use of the pork and beef safeguard mechanisms negotiated in the Uruguay Round, which raise tariffs and levies on those meats on a quarterly basis. South Korea, Japan, and Taiwan will retain bans on livestock imports from areas with foot-and-mouth disease.

All three East Asian economies are assumed to maintain tight state control over the trade in rice. Rice production in South Korea will continue to be insufficient to meet domestic needs, so it will have to import at levels above Uruguay Round mandates in some years to replenish stocks. Japan will continue to meet its minimum access commitment, but will not import above those levels. Rice imports of Japan and South Korea are projected to remain at the final levels set by the Uruguay Round for the years after 2000 and 2004, respectively.

Japan's wheat, barley, and soybean production, and South Korea's barley and soybean production are maintained through border protection and the use of domestic products by processors in response to government mandates or subsidies. The new quota for corn for new industrial uses should expand Japan's nonfeed market for corn.

The East Asian governments will continue enormous expenditures designed to help domestic agriculture re-structure itself. A continued steady outflow of labor from farming will help full- time farmers achieve larger operations and economies of size. Despite the restructuring, production of some key commodities will decline in some countries, including rice in South Korea and pork and poultry in Japan. In South Korea, declining rice consumption will mean that production declines may not lead to increased imports; in Japan, however, greater pork and poultry imports will be needed to offset the production decline.

Southeast Asia. Rising incomes and the changing diets that follow are turning Southeast Asia into an expanding market for wheat and feedstuffs. This trend has been boosted as several countries have liberalized controls on imports of agricultural products. This trade liberalization trend will continue.

Improved economic conditions in Vietnam and Burma will help the region regain its former prominence as a net exporter of rice. Rice imports by several countries, including Indonesia, the Philippines, and Malaysia, will rise as policy goals gradually shift away from full self-sufficiency. The Southeast Asian region has abundant land resources well suited to rice production. Demand for wheat-based products will be increasing, but because the region's tropical climate is not suited to wheat production, rising demand will be supplied through wheat imports.

With the region's economies continuing to boom, a key driver of agricultural import demand will be the expan-sion of livestock production, especially poultry. Most growth in livestock product demand will be met by local production that is increasingly dependent on imported feeds. Thailand, the only significant corn exporter in the past, has recently become a net importer, with net imports projected to continue to rise. Low corn yields in the region limit corn's competitiveness with other crops, so corn production will not expand as rapidly as demand. The region's imports of soybeans and soybean meal will also show strong growth to meet feed demand, as soybeans are not generally well suited for production in the region's tropical climate.

South Asia. India's farm sector will continue to benefit from improving terms of trade as agricultural price incentives are maintained and liberalizing reforms steadily reduce protection in nonfarm sectors. Food grain production will also be given a boost by reduced protection of oilseeds resulting from the recent tariffication of vege-table oil imports. Domestic surpluses of rice continue in the baseline, with India's relatively low-quality rice maintaining a significant global market share. While some wheat exports are projected, India's surpluses of relatively low-quality wheat are more likely to be disposed of in the domestic market. With the reform of vegetable oil trade remaining in place, vegetable oil imports will grow rapidly. Price incentives and productivity gains will sustain strong growth in cotton production, with most production consumed domestically to meet domestic and export demand for cotton-based products.

Producer incentives in Pakistan will continue to support gains in cotton acreage, leading to continued stagnation of wheat yields due to late planting. Trade policy permits rising dependence on imported wheat. Cotton yields will recover gradually from current pest-related problems. As with India, most cotton production is processed domestically, with strong growth in exports of cotton-based products. Continued, relatively liberal import policies will permit continued growth in vegetable oil imports. Growing livestock product demand may lead to emergence of significant corn and soybean meal imports.

Africa and the Middle East

Sub-Saharan Africa. Little or no growth is expected in per capita incomes and, with slow growth in production, constrained import capacity, and strong population growth, per capita food grain consumption is projected to continue to decline. Capacity to import food commercially will grow slowly, consistent with gains in total export

earnings and real declines in food prices. The region is projected to receive a growing share of available global food aid. However, with global food aid budgets assumed to be fixed at current levels, food aid to the region will not be sufficient to maintain per capita consumption.

North Africa. Stronger growth in import demand for grains and feeds is projected in most of North Africa, based on the outlook for improved economic growth in most countries, limited production potential and, for some countries, more open trade policies. Political unrest will constrain economic growth in Algeria, but wheat and corn imports are projected to rise as crop production is hampered by high input prices, input shortages, and lack of credit. In Egypt, average real GDP growth of 4 to 5 percent annually and recent policy reforms will generate more growth in wheat and corn imports. Since joining the WTO in 1995, Egypt has been reducing producer and consumer subsidies in agriculture and has opened up trade to the private sector for some grains, cotton, and other commodities. Morocco's real GDP growth of about 5 percent annually, coupled with a continuation of recent steps to liberalize trade in grains, oilseeds, and sugar, will spark stronger growth in import demand. In Tunisia, which began liberalizing its domestic markets and trade in 1992, real GDP growth of 5 to 6 percent a year will lead to rising import demand for wheat and livestock products.

Middle East. Many Middle Eastern economies will also experience stronger economic growth during 1997-2005, in large part due to the outlook for rising oil prices. Prospects for Iran are highly dependent on both oil prices and the implementation of structural reform. Moderate economic growth, together with limited success in improving yields, and an ambitious livestock/dairy development program, lead to the projected growth in rice, corn, and barley imports. The situation in Iraq, both economic and political, is extremely uncertain. Under the assumption of 3.5 to 4 percent annual real GDP growth, food consumption is projected to gradually recover from the sharp drop following the Persian Gulf War in 1991, driving moderate growth in imports of food and feed grains.

In Saudi Arabia, economic growth will also improve because of stronger oil prices, while agricultural output will continue to decline as budget constraints force the government to cut subsidies and there is rising concern about depleting water resources. Rising imports of rice, wheat, and feed grains are projected. Turkey's many difficulties, including high population growth, large external

debt, and no strong commitment to privatization, will affect its economic performance well into the projection period. Steady growth in rice imports is likely, reduced producer subsidies are expected to push up wheat imports, and livestock and poultry development efforts should strengthen feed import demand.

Western Hemisphere

Canada. A major factor affecting baseline production projections for Canadian crops is the shift over the past several years into the production of canola. Encouraged by development of new varieties, canola acreage rose from a range of 2.5 to 3.7 million hectares during 1984-92, to a range of 5.3 to 5.75 million hectares during 1994-95. Canola plantings significantly affect area and production of other crops, particularly wheat and barley. Wheat acreage, for example, was below 11.3 million hectares in 1994 and 1995 after remaining well above 13 million hectares over the 1984-92 period. In 1996, prices strongly favored a return to grains, but the tendency to substitute canola for wheat acreage is projected to reemerge in the near future. However, rotational constraints on canola plantings are assumed to limit canola acreage.

Canada's 1995/96 and 1996/97 budgets projected a reduction in annual domestic support programs for agriculture from C$854 million to C$600 million over 3 years. In redesigning agricultural support programs to meet the new budget restrictions, emphasis is being placed on providing whole-farm insurance (such as the recently developed whole-farm savings plan program—the Net Income Stabilization Account), rather than crop-specific and production-distorting subsidies. The baseline assumes that government subsidies to crop and revenue insurance programs will be "production neutral" and that Canadian grains and oilseed production will fully respond to market forces.

Canada's 1995/96 budget also eliminated the C$561 million Western Grain Transportation Act (WGTA) freight subsidy for prairie grains and oilseeds, effective August 1, 1995. The elimination of the WGTA freight subsidy meets Canada's commitment under the Uruguay Round export subsidy reduction requirements. Elimination of the subsidy means that the cost of transportation of prairie province crops (such as wheat, barley, and canola) to export positions has increased by about C$17 per metric ton. This increase in transportation costs will reduce farmers' incentives to plant grains and oilseeds and will reduce production. At the same time, prairie processing and livestock sectors will benefit from reductions in

local prices. The WGTA subsidy removal has reinforced recent trends toward more value-added processing in the Canadian prairie region. Substantial increases in livestock feeding and canola crushing are projected to continue in the baseline.

Increases in Canada's wheat exports to the United States over the 1990-94 period led to the negotiation of a bilateral agreement to govern wheat trade with a tariff-rate quota for 1 year, from September 12, 1994, to September 11, 1995. The agreement also established a joint commission to study all aspects of U.S. and Canadian grain marketing systems. With expiration of the tariff rate quota (TRQ) in September of 1995, USTR and USDA announced that the United States now planned to "monitor" imports of Canadian wheat using the expired TRQ as a benchmark for comparison, and to ask for consultations with the Canadian government if there is a surge in imports. The baseline assumes that these provisions will prove sufficient and that no new restrictions on U.S. grain imports from Canada will be imposed.

Several commodities grown in Canada have unique characteristics that are likely to guarantee certain export markets for the future. Canadian canola is preferred by Japanese importers. Canadian oats are an indispensable import for U.S. processors. Canadian and Australian barley malt are positioned to benefit from increasing demand from importers in China and Latin America. Because of these market "niches," projections for Canadian production of these three commodities is favored in the later years of the baseline.

Mexico. The economic crisis in Mexico triggered by the peso devaluation in December 1994 did not fundamentally change the long-term outlook for Mexican agriculture. The economy is expected to bounce back relatively quickly, with annual real GDP growth exceeding 4 percent in 1997 and averaging more than 5 percent through 2005. Mexico will be a progressively larger importer of grains, oilseed products, and meats over the next decade. Mexico's productive capacity will be limited by scarce water, land, and low levels of technology. Growing demand for meats will spur domestic meat production and demand for imported feed ingredients. Trade liberalization provides opportunities for greater imports of meats, almost entirely from the United States.

Agricultural policy continues to be driven by the PROCAMPO program and NAFTA. Under PROCAMPO, the government

will continue to reduce its role in supporting grain prices. Intervention in domestic corn and wheat prices will end and, with lower import duties on corn, sorghum, and wheat, there will be more price transmission between the world and domestic grain markets. PROCAMPO direct payments, which require planting but are otherwise decoupled, will continue to be phased out. Under NAFTA, all tariffs on baseline commodities will be eliminated by 2008. In light of the price-competitiveness and quality of U.S. corn, pork, poultry, and eggs, particularly to the border areas, it is assumed that Mexico will import at least the quantity specified by the tariff-rate quota. Mexico continues to reduce consumer subsidies, and the main subsidies that continue will be those on tortillas and milk. Feed compounders will now procure corn directly from farmers, thus eliminating CONASUPO subsidies for animal feed.

South America. Strong overall economic growth is expected in South America, led by the two largest economies in the region, Brazil and Argentina. Many countries in the region will continue to benefit from their successful evolution from semi-authoritarian political systems and market-managed economies to political pluralism and market-oriented economies.

For Argentina, the key assumptions are on the supply side and involve the availability of land for crop production and the level of yields obtainable. Before 1996, the most area that Argentine producers had devoted to grains, oilseeds, and cotton was 18.3 million hectares in 1983. Until recently, it was considered unlikely that this record could be exceeded without significant investment in improving the marketing infrastructure. In 1996, however, planted area will surpass the record by more than 2 million hectares. As a result, the baseline assumes that cropped area can expand significantly beyond 18.3 million hectares when market conditions provide adequate incentives. Crop yield response in 1996 also indicated stronger response to prices than in the past, with the use of inputs increasing sharply. Consequently, the baseline assumes faster growth in use of fertilizer and other inputs than has been the case historically. Finally, it is assumed that Argentina will not complete the process of attaining hoof-and-mouth-free status in the baseline, thus preventing expansion of beef exports to hoof-and-mouth free areas.

In Brazil, the economic stabilization program begun in July 1994 has used tight monetary policies to bring inflation down to about 9 percent, the lowest level in 39 years. The Central Bank will continue to manage a gradual

devaluation in the real exchange rate in an effort to keep inflation and the growing trade deficit under control. With gradual real depreciation of the exchange rate, Brazilian producers will face stronger price incentives in local currency terms. Finally, in August 1996, the Brazilian Government eliminated the value-added state tax on exports of raw and semi-manufactured agricultural products. This change will have a significant positive impact on price incentives in the soybean sector, increasing the quantity of soybeans produced, as well as the volume of soybeans, meal, and oil that is exported.

Transition Economies

Former Soviet Union. Between 1997 and 2000, real GDP growth for the countries of the FSU will be very sluggish, and currencies will appreciate in real terms. After 2000, real GDP growth across the region is assumed to be 3 to 4 percent per year, with the exchange value of the region's currencies remaining roughly constant in real terms. The projections assume that liberalization of the markets and restructuring of agricultural enterprises of the FSU will continue at its current slow pace. Commodity-specific trade policies will remain mostly unchanged, with tariffs remaining at relatively low levels, and no quotas imposed. Price transmission between world and domestic markets for major commodities is assumed to be about 50 percent, meaning that a 1-percent change in the world price will result in about a 0.5-percent change in the domestic price.

The primary policy uncertainty in the outlook concerns the possibility of more protectionist trade measures for agricultural commodities. Higher tariffs and/or tariff-rate quotas or quotas may be announced in Russia for livestock products. Significantly higher tariffs, or imposition of quotas, could drastically change the meat import projections. Tariffs will probably be raised, but more drastic changes that could affect meat imports, such as quotas, will probably be avoided.

Crop productivity gains in the FSU will be small. Progress in land reform that could lead to major productivity gains is not anticipated. FSU livestock production is assumed to recover very slowly, at least until the process of economic reform reduces production costs and increases the competitiveness of the sector. The current high cost of meat production in the FSU suggests that livestock inventory

declines of recent years will not be fully recouped in the foreseeable future and some meat demand will continue to be satisfied by imports. It is also anticipated that grain imports will be minimal in the baseline because continued livestock declines will limit demand. The Central Asian countries of the FSU will meet their grain needs primarily from Kazakhstan and Ukraine, rather than from imports from abroad.

Central and Eastern Europe. The baseline assumes that none of the CEE countries will join the EU during the projections period. Although some CEE countries may join the EU by 2005, the timing of accession is uncertain. The baseline also assumes that most world prices are fully transmitted to domestic markets and that import tariffs in most cases will not exceed 30 percent. In the short term, the impact of protectionist policies in the Visegrad Four (Poland, Hungary, the Czech Republic, and Slovakia) has mainly been to keep domestic producer prices at world levels. These measures have tended to counter the downward pressures on prices coming from the lingering bottlenecks in the downstream sectors. Of the Visegrad Four countries, only Hungary seeks to be a major grain exporter. Others aim for self-sufficiency. The baseline assumes that domestic producer prices will not differ greatly from world market prices. The principal constraint will be continued pressure to keep state budgets in balance.

The baseline also assumes a steady increase in efficiency in the agricultural sector, which will be reflected in rising yields and greater feeding efficiency in the livestock sector. These productivity increases will come about as a result of continuing progress toward market reform in all the CEE's. It is assumed that most of the rigidities inherited from the Communist period will be removed, allowing fuller transmission of world market prices to domestic producers. In addition, the forecast assumes continued positive income growth and falling inflation. Rising incomes and lower interest rates will bring badly needed investment to both agriculture and food processing. There will likely be some consolidation of the small fragmented farms that currently dominate much of the landscape. Land tenure will become more permanent, bottlenecks in issuing titles will be resolved, and true land markets will develop as capital markets improve.