Macroeconomic Assumptions

Macroeconomic projections underlying the USDA baseline were completed in October 2001. The projections are characterized by a significant U.S. and global slowdown in the short term, followed by a return to sustained growth at historical levels. The transition economies and Africa continue to generate significant positive growth in GDP which, if sustained, will result in substantial increases in per capita income. Although this is a significant improvement for these countries, the global outlook will only be affected marginally since they are such a small part of the global economy.

During the last decade (1991-2000), the U.S. and world economies became increasingly interdependent. Trade expanded and trade increased as a share of income in most countries of the world. This was most pronounced during 1996-2000. The U.S. economy grew faster than the rest of the world during every year from 1996 to 2000, and faster than any other major developed economy, except Canada. The domestic economy absorbed large trade deficits in raw materials and manufactured products during this period. Rising foreign portfolio and direct real investment in the United States, a trade surplus in farm products, and exports of specialized capital equipment and software financed the trade deficit in consumer goods (such as automobiles) and raw materials (such as oil). The NAFTA resulted in a dramatic rise in food exports to Mexico and Canada, even as the more efficient U.S. food processing industry built factories in Mexico and Canada.

U.S. manufactured exports grew rapidly in the 1996-2000 period, stimulating strong growth in rural employment and providing increased off-farm employment to farm households. The expanded trade volume, coupled with strong growth in the U.S. information and telecommunications sectors, boosted overall productivity growth. The stellar growth in productivity was accompanied by the addition of more than 23.5 million jobs to the U.S. economy. As a result, economic growth in the United States was faster than in the rest of the world for more than five years in a row, despite never having grown faster than the rest of the world for more than 3 years in a row any time in 1960-1990.

During the 1990s, and especially in 1996-2000, U.S. stock market prices had the most rapid growth since the 1920s. The five-year annualized rate of appreciation in the stock market in 1995-1999 was 21.2 percent, an appreciation rate last seen in the five years ending in 1929. The domestic economic and equity market growth was so robust that the 1997-1998 world financial crisis hardly mattered to most of the U.S. economy. The perception of the invulnerability of the U.S. economy on Main Street and Wall Street resulted in a strong U.S. dollar through the second half of the 1990s. The world economy's quick recovery from the 1997-1998 crisis was in large part dependent on the robust U.S. economy.

The global financial crisis that took place in 1997-98 changed trade policies, trade patterns, and interest rates, and led to a major exchange rate realignment, including an appreciation of the U.S. dollar. The U.S. dollar is a reserve currency in many countries. Further, because of the critical role of the U.S. economy and capital markets in the world, the global slowdown of 2001 has resulted in continued inflows of capital into the United States and thus a continued strong dollar. Beginning in 1998 and continuing through 2001, currencies of our agricultural competitors

Exchange Rates and Agricultural Baseline Projections

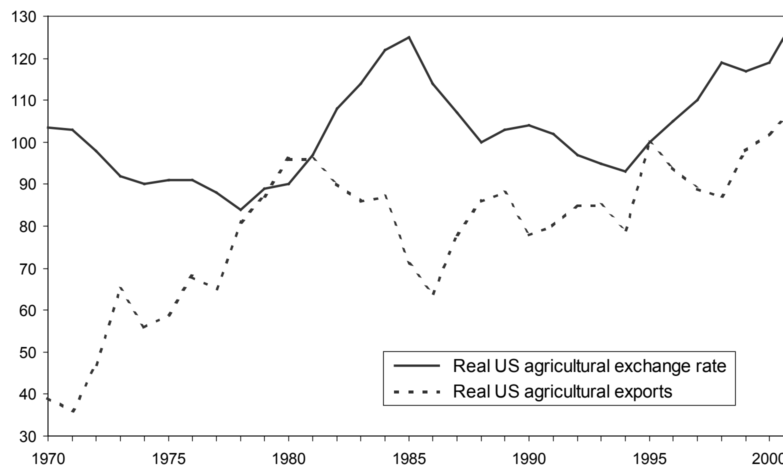
Exchange rate changes are a major factor in explaining the long-term outlook for U.S. agricultural trade. A high value of the U.S. dollar tends to erode U.S. agricultural competitiveness and result in periods of relatively low exports, while periods of low U.S. exchange rates tend to be associated with relatively high export performance (fig. 1). For instance, the peak export performance in both 1980 and 1995 followed low points in the U.S. agricultural exchange rate, while the low point in agricultural exports in 1986 followed the high exchange rate of 1985.

Currently, the dollar is stronger than at any time since the early 1980s. The international financial crisis of 1997-98 resulted in large currency devaluations in some major agricultural markets. The current economic slowdown in the United States and much of the world is leading

Figure 1

U.S. agricultural exports are sensitive to changes in exchange rates

Index (1995=100)



Source: USDA, ERS
Note: 2001 estimated based on partial year data.

--continued

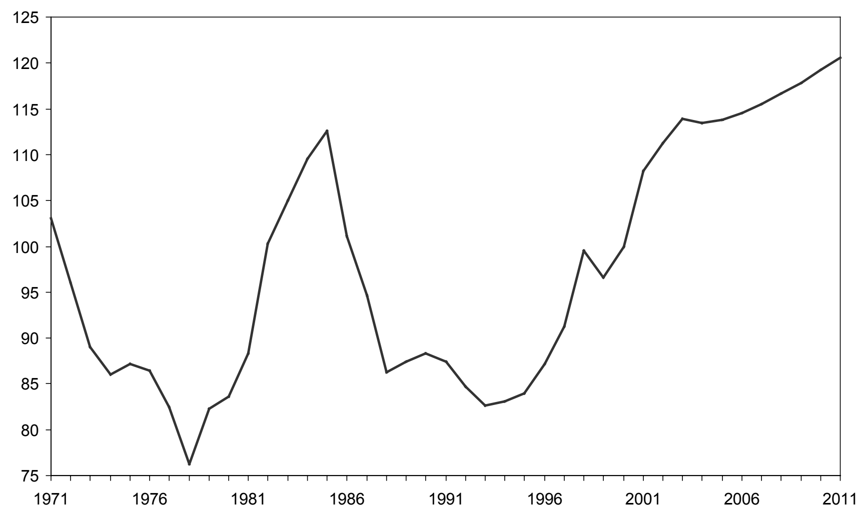
depreciated relative to the dollar more than did currencies in our major export markets. The overall impact was U.S. agricultural exports below levels that otherwise would have been realized. Baseline assumptions do not anticipate any significant change in relative exchange rates, a continued negative factor for U.S. agricultural exports. In the intermediate to longer term, sustained increases in worldwide economic growth should be a positive factor for import demand for agricultural products.

Exchange Rates and Agricultural Baseline Projections--continued

to further appreciation of the dollar. In uncertain economic times, money flows into the United States as a safe haven, pushing the dollar up. This pressure on the dollar has been particularly strong over the last several years and has led to a forecast for a strengthening U.S. dollar in the baseline (fig. 2).

A strong dollar is anticipated to persist through the projections period, constraining growth in U.S. agricultural exports. Bulk commodity and horticultural exports tend to be more sensitive to exchange rate changes compared with high value processed products.

Figure 2
U.S. agricultural trade-weighted exchange rate*
Index of foreign currencies per U.S. dollar (2000=100)



*Weights based on baseline countries from Table 2.

Domestic Macroeconomic Projections

U.S. economic conditions are vital to U.S. agricultural prospects, despite a very low income-elasticity of domestic demand for most farm products. U.S. GDP growth spurs world growth since the United States is the largest single market for foreign goods as well as the largest economy. The dependence of the world on U.S. growth has increased in the last ten years. U.S. capital markets are the most important in the world. A reflection of the dominance of U.S. capital markets is that German stock market prices have moved in line with the U.S. stock market during the last decade.

The growth of developing economies and the relative strength of the dollar strongly influence farm export demand and prices. Further, U.S. inflation, energy prices, and interest rates directly influence U.S. agricultural production costs as well as indirectly influence agricultural competitors' costs.

Review of 1991-2000: Productivity Growth Reborn

Annual productivity growth in 1970-1990 was far below that in the previous two decades. In the early 1990s, most analysts expected the slower productivity growth of the 1970-1990 period to continue for the 1990s. However, productivity growth increased during 1991-2000, setting the stage for the long-term baseline projection.

In many ways the U.S. economic performance in 1991-2000 was reminiscent of the 1960s. The decline in real defense spending following the end of the Cold War and low commodity price inflation provided a strong supply underpinning for the economy. As a result, monetary policy was accommodating without major inflationary consequences, so short-term interest rates were low. Toward the end of the decade, the Federal budget moved into strong surplus, due to policy changes in the late 1980s and early 1990s, the decline in real defense spending, fast GDP growth, and low inflation. The decline in the U.S. public debt-to-GDP ratio during the decade made more funds available for private sector investment. Of the G-7 countries, only Canada had a smaller public debt-to-GDP ratio as of 2000.

The most dramatic indicator setting this decade apart was the stock market, which appreciated at an annual rate of 14.2 percent, the highest growth since the 1920s. Monetary policy brought the economy out of recession in 1991, despite tight fiscal policy, and helped keep inflation in check. Low inflation, superior productivity growth, and sound long-term fiscal policy kept the U.S. economy out of recession for 10 years.

A significant portion of the decade's prosperity can be attributed to the "new" economy. The "new" economy is the effect on overall economic productivity and growth of technological innovation in telecommunications and information management reflected in the growth of the Internet. While there were excesses, such as the rapid run up of prices of NASDAQ technology stocks that had no earnings or prospect of earnings in the foreseeable future, the five-year boom in computer-based equipment investment in the late 1990s resulted in a revolutionary change in basic business practices, in which the use of software, the Internet, and telecommunications technology lowered business transaction costs associated with inventory control and input purchases.

The rapid investment growth of the 1990s gave rise to extraordinary productivity gains which, while concentrated in technology-related sectors, had enormous impact on the cost structure of the American economy from manufacturing to services to Government. The high-tech revolution relied on new software and hardware. The result was large productivity-enhancing changes in business practices, saving labor and material costs and rapid capital cost recovery.

Structural changes created a tremendous environment for productivity growth. In the 1990s, dramatic U.S. management practice improvements, just-in-time inventory control, managed

healthcare, weak world commodity market inflation, and the Internet provided the backdrop for productivity improvement. Most analysts attributed an important role to the Internet as an every day tool of the information age.

The U.S. labor market became more flexible due in part to improved information technology. Deregulation in transportation and telecommunications and increasingly free trade and increased domestic industrial competitiveness provided an economic environment for technological change to be reflected in rising labor productivity.

The extraordinary productivity growth in the 1990s was faster than in any other ten-year period since the 1960s. The downturn in productivity growth in the 1970-1990 period was worldwide among developed countries, afflicting Japan, Europe, and Canada, as well as the United States. The upturn seen in 1991-2000 was largely limited to the United States and Canada, with only a modest rise in productivity in Europe. With sluggish growth in Japan and only modest growth in Europe, the United States again became the growth locomotive of the world, as in the early 1980s.

Both wages and profits grew more rapidly in the 1990s than they had in the 1970s and 1980s. In 1997, the ten-year average growth in real compensation had dropped to a post World War II low, despite a rapidly falling unemployment rate. One of the biggest questions in labor economics is why real compensation growth remained low for so long into a vigorous economic expansion. Yet by 2000, the ten-year average growth in real compensation rose to a rate not seen since 1979, reflecting a substantial rise in real compensation financed by rising labor force productivity. Real corporate profits in 1990-2000 had an average growth rate of 4.9 percent per year, well above the average of 2.6 percent per year in the previous decade.

Short-run Downturn Reflects Imbalances

The longest economic expansion in U.S. history ended in 2001 as the U.S. economy went into a recession. The events triggering the recession started in 2000. The crash of the NASDAQ from a peak in March of 2000 precipitated a broad scale stock market decline later in 2000 and 2001. Investors had come to realize that for a large number of companies, implied earnings growth would not and could not ever materialize. The world and domestic manufacturing sectors faced declining demand growth, as the technology-related business and consumer goods spending surge collapsed in late 2000, at the same time that global production capacity rapidly expanded. The 1995-2000 double-digit equipment investment growth collapsed in 2001, as the over-expansion in computer and telecommunications equipment resulted in large excess overall telecommunications capacity. Further, energy prices surged, cutting into the consumer and business budgets for non-energy goods and services. Only extraordinary consumer spending growth, in excess of growth in disposable income, prevented a recession in 2000.

Financial intermediaries and markets, seeing the weakness in manufacturing, tightened credit conditions. The tightening was reflected in more restrictive lending standards and higher spreads between corporate and U.S. Treasury bonds. The aggressive easing of monetary policy beginning in December 2000 could not overcome the overall tightness of the credit markets and weak stock market. The rest of the world slowed partly due to declining U.S. import demand,

despite a strong dollar. Slower world growth slowed U.S. export demand. A combination of a slide in investment spending, slightly weaker consumer spending growth, and sluggish exports brought a drop in GDP in the third quarter of 2001.

Near-term U.S. Macroeconomic Outlook

In 2001, the unemployment rate is expected to average almost 5 percent for the year, up sharply from the 4.0 percent of 2000. In 2001, GDP growth is estimated to be 1.2 percent, the lowest rate since 1991.

Bottlenecks in specific labor markets have eased, greatly lowering the chance of re-igniting higher inflation. The baseline assumes short-term interest rates will continue to be low in 2002 to help stimulate growth. The expected sluggish world growth, lower oil prices, and lower inflation will lead to lower long-term interest rates.

Most industry analysts expect auto demand growth to slow from the rapid pace of recent years as record per capita levels of car ownership have been reached. The saturation in auto demand will make it harder for low interest rates, low oil prices, and the continued fiscal stimulus to boost consumer spending enough to get positive GDP growth overall until well into 2002.

Moreover, the surge in car sales at the end of 2001, due to manufacturers' subsidized 0-percent interest rate car loans, will likely be followed by diminished car sales in early 2002. But low energy prices, the 2001 tax cut, government spending increases, and the lagged impact of easy monetary policy on other consumer durable spending and construction will boost consumer and business spending enough to bring the economy out of recession by the second quarter of 2002. So growth just above 1 percent is expected in 2002. Nevertheless, stronger U.S. economic growth expected in the second half of 2002 will boost the world economy in 2003.

Nothing in the short-term outlook gives any reason to expect poor long-term prospects for the domestic economy. While the very strong economic conditions of the last part of the 1990s could return, a more moderate average growth similar to that of the 1990s as a whole is more likely beyond 2002. Long-term world economic prospects are supported by this U.S. growth outlook.

The U.S. Economy: 2003 to 2011 Projections Overview

Longer-term macroeconomic projections are based on trend GDP growth assumptions for 2004-2011, with 2003 used as a transition year from the short-term forecasts. U.S. GDP growth in 2002 is forecasted at 1.4 percent, but growth returns to a long-term sustainable rate of 3.2 percent per year in 2003 through 2007, slowing to 3.1 percent per year in 2008 to 2011 as baby boomers retire in large numbers.

Oil Prices to Rise Modestly. Current oil prices reflect weak global economic growth for 2001 and 2002. Crude oil inventories are assumed in the baseline to be restored to normal levels by 2004. Then, with renewed world economic activity, oil demand growth will have a modest upward impact on prices for the remainder of the baseline.

Financial Markets in 2004-2011 Similar to 1997. Projected financial market variables such as interest rates reflect a balance of supply and demand for loanable funds consistent with world and U.S. growth assumptions. Moody's AAA bond rates are assumed to average 7.4 percent in 2004-2011. Core inflation in the CPI is projected to be 2.6 percent. An unemployment rate of 4.9 percent is assumed, reflecting effective full employment. Projected real labor compensation grows about 1 percent annually, reflecting the historical labor share of productivity growth.

Underlying Policy and Aggregate Supply Assumptions for 2004-2011

- Fiscal policy results in small structural Federal budget surpluses.

- Monetary policy will be relatively stringent, as the Federal Reserve will tighten when significant inflationary pressures return, keeping GDP deflator inflation at 2.5 percent. The three-month Treasury bill yield, reflecting Fed policy, is assumed to average 4.3 percent, consistent with relatively low inflation.

- Trend labor productivity growth will average from 1.9 to 2.2 percent between 2002 and 2011.

- Starting in 2004, real crude oil prices rise 0.3 percent per year, roughly consistent with the Energy Information Administration's January 2001 *Annual Long Term Outlook* and the more recent long-term projections of the International Energy Agency.

- Employment growth is expected to average 1.1 to 1.2 percent a year through 2011, which is broadly consistent with Bureau of Labor Statistics projections. This projection is consistent with the tightened welfare and disability qualifications now in place, expected immigration, the age structure of the working population, and continuing retirement prior to social security eligibility.

World GDP growth is expected to be about 3.3 percent from 2006 to 2011. Since the U.S. is about 25 percent of the world economy, world growth and U.S. GDP growth are interdependent.

Domestic Macroeconomic Projection Highlights

- The trend baseline assumptions avoid introducing macroeconomic-related cycles into the agricultural sector projections. These trend assumptions are consistent with standard macroeconomic relationships, such as an increasing capital-to-labor ratio and high total factor productivity raising labor productivity.

- Long-term trend GDP growth is projected at 3.2 percent. Disposable income and consumer spending are expected to grow at a trend rate of 2.9 percent per year. Disposable income gains will be partly the result of growth in real compensation in a labor market that has the unemployment rate at 4.9 percent. A pickup in the personal savings rate relative to the low savings rates of 2000 and 2001 is expected. Negative personal savings rates are not

sustainable in the medium term and are not expected to continue even as GDP growth picks up in 2003.

- The financial investment required to achieve continued high productivity growth implies augmenting domestic savings with a net inflow of foreign funds. This will result in continued trade deficits and will prevent a significant drop in real long-term interest rates despite modest budget surpluses and modest increases in the personal savings rate. A continuing trade deficit and accompanying inflow of funds is consistent with a strong real value of the dollar in the long term. While likely to shrink from recent high levels, the trade deficit will continue to be substantial.

- The dollar is expected to continue to be strong. Japan's growth is expected to continue to be weak. The EU, especially in the near-term, will show less robust growth than the United States. The dollar will stay strong despite large trade deficits, as capital flows into the United States are attracted by relatively high financial returns.

- Inflation as measured by the annual GDP deflator is projected to average 2.5 percent from 2004 to 2011, almost as low as that in the early 1960s. The sharp fall in oil prices seen recently is expected to pick up in late 2002, with the average price still below 2001's average. The market is assumed to stabilize in 2004 consistent with trend projections for the other macroeconomic variables. The trend growth in oil prices thereafter is expected to result in average real crude oil prices comparable to those of 1996 by the end of the projection horizon.

International Macroeconomic Assumptions

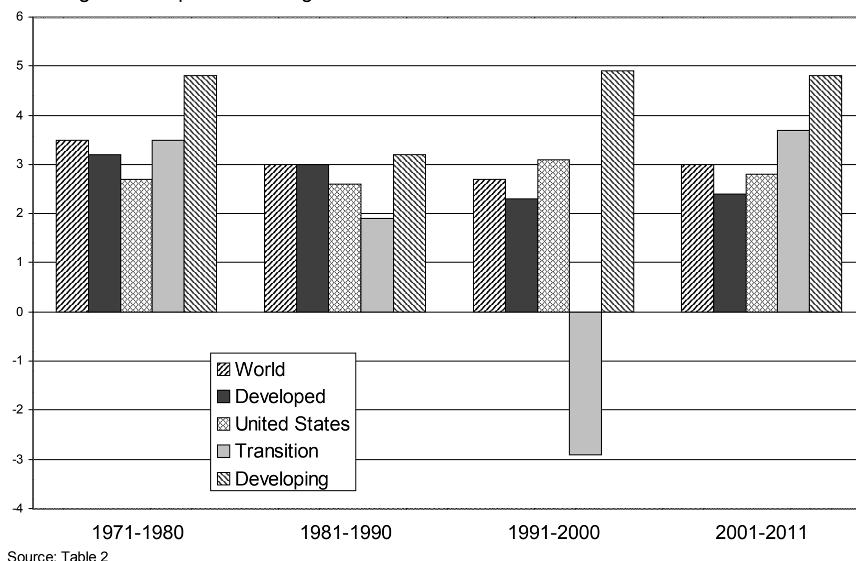
The outlook for the world economy over the next 10 years is characterized by a short-term slowdown followed by a resumption of sustained growth without major imbalances across countries. Although long-run growth rates in the Asian crisis countries are lower than they were before the crisis, significantly high real GDP growth rates of about 5 percent per year are forecast for these countries. Significant sustained positive growth is forecast for Africa and for Russia, continuing the pattern that began in 2000. In both cases, positive per capita income growth is foreseen, reversing income declines of the 1990s. Although positive GDP growth resumes in Japan in 2003, the outlook for continued sluggish growth there is an important negative feature of the longer-term global outlook.

There are two distinct phases of the world economic forecast. In the near to midterm, the slowdown and recovery dominates the outcome. In the longer-term, the spreading impact of new technology leads to renewed sustained economic growth in a broad band of countries around the world. There is a convergence of growth rates with lower (but still high) growth in Asia and higher growth in Africa and Latin America. Growth in the decade 2002-2011 will mirror the pattern of the 1970s (fig. 3). Given the underlying increase in productivity growth both in the United States and abroad, the outlook is for sustained high growth without significant inflationary pressures.

Figure 3

World GDP growth rates, decade averages

Average annual percent change



World real GDP is projected to grow an average of 2.7 percent between 2001 and 2005, the same rate as during 1991-2000 (table 2), before increasing to 3.3 percent between 2006 and 2011. The EU countries begin to benefit from their monetary union. Although unemployment in the EU is still high compared with the United States and Japan, it is likely to fall consistently below 10 percent over the projections period. Prospects for Europe are better than they have been for a long time. Rigidities still remain and average growth in the European Union is likely to be almost 1 percent below that in the United States.

The crisis countries of Asia recovered much more rapidly than at first anticipated. However, the structural reforms that would provide the fundamentals for long-term sustained high-level growth still need to be implemented, particularly in banking. These structural problems and the overall high dependence on trade with the United States has made them vulnerable to the current U.S. slowdown. Consequently, projected growth for these countries is not as high as before the crisis. Growth for the next decade of 6 percent is projected to be somewhat slower in East and Southeast Asia than the 7.3 percent annual rate of the 1990s. Nonetheless, the countries of the region, particularly China, are still going to be among the highest growth countries in the world.

Latin American growth is projected to increase to an average of 3.6 percent between 2002 and 2011. However, the 4.3 percent projected growth in 2006-2011 is significantly higher than the 3.3 percent growth of the 1990s. Africa and the transition economies of Eastern Europe and the former Soviet Union are projected to experience even higher growth relative to the historical period. For Africa, growth is projected to increase from 2.6 to 4.2 percent. The transition economies are projected to experience growth of 3.7 percent compared with an economic contraction in the 1990s at a rate of 2.9 percent per year. In both cases, significant per capita income growth is expected.

U.S. Food Sector Prosperity Tied to Global Consumers

The world's population, estimated at 6.2 billion people in 2001, is expected to increase by another 737 million persons by 2011, almost all of which will be in developing countries. During the 1990s, inflation-adjusted global per capita GDP grew by about 1.3 percent, with developing countries registering higher growth (3.3 percent). Increased purchasing power, accompanied by faster rates of population growth, has led to greater demand for food by consumers in developing countries. This pattern is expected to strengthen during the projection period as world GDP per capita grows about 2 percent per year, but developing country per capita GDP increases by 3.5 percent annually.

At low income levels, consumer demand for food is driven by the need to meet an individual's basic caloric requirement, leading to a diet mainly comprised of carbohydrate-rich products such as cereals, roots and tubers. At higher income levels, when consumers can readily meet their caloric needs, the demand for food is often shaped by taste, cultural trends, and other social factors such as an increasing number of women working outside their homes. Middle-income countries such as Thailand and Mexico fall into this category. Income growth among consumers in these countries usually leads to substitution away from staple foods and towards more expensive sources of calories such as meat and fruit and vegetables, and processed products popularized by cultures in developed countries.

Urbanization has been particularly important in changing food consumption patterns in developing countries. In general, urbanization is associated with sharp increases in the diversity of calorie sources in diets. In 1960, developing countries accounted for slightly over half of the global urban population. By 1998, these countries accounted for about three-fourths of the world's 3 billion urban dwellers. Assuming the growth rates of the 1990s continue, the urban population in developing countries is expected to double to nearly 4 billion by 2020. The effect of this urbanization will lead to further changes in food consumption patterns in developing countries, with the demand for meat and other higher value food products increasing.

--continued

The developed economies are projected to grow an average of 2.4 percent annually, a rate comparable with that of the 1991-2000 period. Inflation is expected to continue at low levels in both the developed and developing countries.

Overall, projected world growth between 2001 and 2011 is stronger than in any period since the 1960s and 1970s, with most regions of the world expected to have growth above long-term averages. The narrowing of the differential between the high growth regions such as Asia and the lower growth regions of Latin America, Africa, and the transition economies implies a broader base to economic growth worldwide.

U.S. Food Sector Prosperity Tied to Global Consumers--continued

Data in the accompanying table for the marginal propensity to consume food indicate that for every dollar increase in income, consumers in low-income countries spend a relatively large amount on additional food purchases (about 54 cents in Tanzania, for example), while consumers in high-income countries like Japan and the United States spend less than 10 cents on food. Similarly, the income elasticity for food expenditures—another measure of the responsiveness of food purchases to a change in income—is also higher for poorer countries. For either measure, when income rises in both low- and high-income countries, poorer countries increase their expenditures on food by a relatively larger amount than wealthier countries do.

Furthermore, when incomes rise, expenditures on higher value products such as meat typically increase relatively more than expenditures on cheaper products such as cereals (Regmi *et al.*, 2001). As a result, meat expenditures increase as a share of total food expenditures, a phenomenon that persists in nearly all countries. For example, for a 1-percent increase in income, consumers in Tanzania increase their spending on food by 0.80 percent, but increase their expenditures on meat by 0.86 percent. For Mexico, the expenditure rate changes are 0.59 percent for food and 0.63 percent for meat. These compare with the United States where a 1-percent increase in income is associated with only a 0.12-percent increase in food expenditures and a 0.13-percent rise in meat expenditures.

Based on expected population and income growth, developing countries will account for most of the increase in global food demand over the next couple of decades. Yet, food availability in developing countries (although increasing), remains far below that of developed countries. For example, in 1999, only about 2,200 calories were available per person in Bangladesh, while food availability in the United States was about 3,700 calories per person (FAOSTAT, 2001).

Although domestic production may expand to meet part of the growing food demand, it is likely that food production in many developing countries will be constrained by limited resources. Unless agricultural productivity accelerates, it is likely that developing countries will have to rely on imports to satisfy part of their growing food needs. Agricultural exporters with the potential to expand production, such as the United States, are likely to reap the benefits.

--continued

Oil prices are assumed to decline in 2001-2003 from the high levels reached in 2000, and then to rise slightly more than the general inflation rate for the remainder of the baseline. This near-term decline in oil prices followed by moderate gains is predicated on the assumptions that new oil discoveries, such as those in Kazakhstan, along with new technologies for both finding and extracting oil, will allow for substantial growth in demand without significant energy inflation. Also, economic growth itself has changed from a process of producing goods to a process much more dependent on information and communication technologies. This transformation, which is particularly evident in North America and Western Europe, has reduced the direct growth dependence on energy and is expected to have widespread impacts throughout the world.

U.S. Food Sector Prosperity Tied to Global Consumers--continued

Poorer countries spend more of additional income on food, with a greater share spent for meat

Country	Marginal propensity to consume food[1]	Income elasticity for food[2]	Income elasticity for meat[3]
	Cents	*Percent*	
Tanzania	54	0.80	0.86
Vietnam	39	0.74	0.80
Bangladesh	38	0.74	0.79
Pakistan	35	0.72	0.78
Indonesia	31	0.70	0.74
Philippines	27	0.67	0.71
Thailand	26	0.66	0.71
Ukraine	26	0.66	0.70
Morocco	25	0.65	0.69
Egypt	25	0.65	0.69
Brazil	22	0.62	0.66
Iran	21	0.61	0.66
Turkey	21	0.61	0.65
Mexico	20	0.59	0.63
Poland	19	0.58	0.62
Tunisia	18	0.57	0.60
Hungary	16	0.54	0.58
Argentina	15	0.52	0.55
South Korea	13	0.48	0.51
Greece	11	0.45	0.48
France	7	0.34	0.36
Australia	6	0.30	0.32
Japan	6	0.29	0.31
Canada	5	0.28	0.29
United States	2	0.12	0.13

1/ Amount spent on food from an additional dollar of income.
2/ Percentage change in food expenditures resulting from a 1-percent increase in income.
3/ Percentage change in meat expenditures resulting from a 1-percent increase in income.
Source: ERS calculations based on 1996 International Comparison Project data, World Bank.

References

Regmi, Anita, M.S. Deepak, James L. Seale, Jr., and Jason Bernstein, “Cross-Country Analysis of Food Consumption Patterns,” Chapter 2 in *Changing Structure of Global Food Consumption and Trade*, WRS-01-1, ERS-USDA, May 2001.

FAOSTAT, Food and Agriculture Organization, United Nations, 2001.

Developed Economies

In the coming decade, real GDP growth in the developed economies will increase from the relatively low rates at the beginning of the decade. The structural adjustments undertaken throughout the second part of the 1980s and into the 1990s combined with increasing underlying productivity growth from the new technology revolution provide a solid foundation for long-term growth. Low inflation and interest rates will help countries produce output close to potential levels. Government budgets, except in Japan, will be largely balanced. However, external imbalances may persist, particularly the large U.S. trade deficits with Japan and China. Among the major economies, only the United States will continue to carry a large current account deficit, although it is expected to decline somewhat over the projections period. The continued large trade deficits for the United States are predicated on the assumption that countries around the world will still want to accumulate dollars as a reserve currency. If the euro begins to challenge the dollar's role as an alternative reserve currency, then a significant relative depreciation of the dollar would be expected and the competitive outlook for U.S. trade would improve.

European Union. Monetary union between qualified EU members and introduction of a single currency enhances the efficiency of cross-border trade and investment within the EU. More uniform fiscal policies, as well as disciplined monetary policy guided by the German-based European Central Bank, should lead to more stable growth prospects in the baseline. The European economy is projected to expand by 2.2 percent on average between 2001 and 2005 and 2.4 percent from 2005 to 2011. Population will stabilize so that virtually all income growth will translate into per capita gains.

Unemployment will remain high relative to the United States, but should gradually fall from near 10 percent to 8 percent as more flexible wage and employment policies are adopted. This is a significant change from the very persistent double-digit unemployment rate over the 1990s. Inflation should be well controlled as a strong unified currency, the euro, acts as an anchor for price stability. Fiscal consolidation by member countries will reduce inflationary expectations and lower long-term interest rates. The euro is projected to appreciate in real terms over the next several years, and then depreciate slowly for the rest of the projections period. Because of the monetary union, national differences in real interest rates will disappear, at least for the countries in the union--financial markets will encompass the whole region, and thus investment opportunities will be less dependent on the relative availability of capital in each country.

Greater intra-European trade should encourage price arbitrage of homogeneous products and services, providing comparable prices across countries for both producers and consumers. As capital moves freely across borders, investors and producers would be able to compete on more equal terms across countries, despite the lack of transnational mobility of workers. Even without formal eastward enlargement, closer integration with Eastern Europe also opens more trade and investment opportunities in the transition economies, particularly the countries of the former Soviet Union. As the transition economies gain higher per capita incomes, imports from the EU should rise accordingly.

Japan. Japan's economy continues to face significant structural problems, including a large fiscal deficit, sluggish consumer spending, and very large non-performing loans that burden the

banking system. The country has been in a recession that is expected to last well into 2002 in spite of nearly zero interest rates and substantial government deficit spending, particularly on public works projects. The government hopes to induce self-sustaining economic growth by restoring consumer confidence and reviving financial activity and investments by addressing private-sector debt problems. Projected slow growth after 2002 assumes some success in these efforts, but also reflects the difficulty of the task. Added to the current economic difficulties is the anticipated decline in size of the labor force in the last part of the projection period, which could lead to lower output unless labor productivity improves. Japan's share of world GDP is projected to decline from a peak of almost 13 percent in 1991 to about 9.25 percent by 2011.

A major issue for Japan's economy is the excess of savings over investment, as manifested in its sizable current account surplus. This fundamental imbalance, together with non-tariff barriers that restrict imports and foreign investment, keeps the domestic economy isolated from global competition. High internal costs in the non-manufacturing industries, such as farming, housing, and electric power generation, have held back investors as well as consumers. More deregulation will encourage domestic demand, specifically private consumption and investment, as well as boost imports.

The yen is expected to depreciate in real terms over the next several years, reflecting the relative weakness in the economy, and then stabilize. Japan's domestic interest rates will remain among the lowest in the world. Opening Japan's retail and insurance markets to foreign competition will lower prices of goods and services, continuing the pattern of very low inflation or even deflation.

Canada. Canada's economic growth pattern in the 1990s roughly tracked that of the United States. Because of the close integration of trade and investment, projections over the next 10 years have Canada growing at about the same rate as the United States. NAFTA has reinforced the integration of the two economies. In the 1990s, Canada consistently had a trade surplus with the United States, the destination for 82 percent of its exports. A competitive Canadian dollar significantly influenced this pattern. A steady depreciation against the U.S. dollar since 1990, averaging 3.9 percent a year, has helped boost the Canadian currency's real exchange rate competitiveness. The baseline assumes a continuation of the depreciation of the Canadian dollar.

The future growth path for Canada depends to a large extent on the pace of U.S. economic activity, augmented by growing trade with Asia and Mexico. Already considerable, Canadian trade with Asia should expand further. Canadian trade with Mexico has been stimulated by NAFTA. The country's trade surplus is projected to continue growing.

The overhaul of Canada's fiscal policy from large deficit to surplus is principally responsible for the country's bright growth prospects. Less government spending and more funds available for private investment and consumption allowed market forces to revive previously anemic growth as interest rates fell significantly. Low inflation and interest rates are expected to carry healthy GDP expansion through the next decade. Also, foreign debt as a percentage of GDP will fall over the next 10 years. Domestic demand in the short- and long-term will be led by fixed capital formation. Gross national savings as a share of GDP will increase.

Transition Economies

Among the transition economies, countries that are further along in the transformation to market economies are experiencing higher growth than those that have only recently carried out reforms. The first group includes Poland, the Baltic countries, the Czech Republic, Hungary, the Slovak Republic, Croatia, and Slovenia. The second group includes Bulgaria, Romania, Russia, Ukraine, and other countries of the former Soviet Union.

The principal measure of the success of reform, which also coincides with higher GDP growth, is the degree of integration into the global economy--trade flows, investment flows, and currency convertibility. More liberalized trade arrangements, foreign direct investment, and portfolio inflows indicate the integration and relative competitiveness with the world at large, particularly with Europe and the other advanced economies. Russia and the Ukraine are completing the adjustment associated with the transition from centrally planned to market economies. Significant growth occurred in 2000 and 2001, and the baseline assumes that growth will continue throughout the next decade. However, important problems still persist in defining the social infrastructure for a free market economy and growth is projected to be slower than in the more progressive Central European countries.

Central and Eastern Europe. Poland and Hungary had significant growth in the second half of the 1990s, exceeding 4 percent on average, after undertaking market reforms and increasing openness to trade and competition. A reorientation of trade from the former Soviet Union to the West has contributed to their strong performance. But in some countries, like Bulgaria, reforms have only recently begun. Romania, which recently shed heavy state intervention in the economy, should soon expand in pace with its more advanced neighbors. The growth outlook for this region is relatively optimistic at rates approaching 5 percent annually over the next 10 years. For some of these economies, such as Poland and Hungary, it may be time to stop referring to them as "transition economies," since the transition is largely completed. A crucial advantage these countries have over the former Soviet Union is proximity and closer integration with the European Union. Foreign direct investment will increase the region's capacity to export. Integration into the EU will further stimulate technical transfer and productivity growth. As the crossroads between the East and the West, the region should benefit as trade increasingly flows through its countries.

Former Soviet Union. After a decade of economic retrenchments and setbacks, Russia and Ukraine have shown signs of benefiting from their transition to a market economy. The smaller countries of the region have been growing since 1996, with growth of about 1.5 percent in 1999. Overall GDP growth for the region is anticipated to average 3.5 percent between 2001-2005 and 3.4 percent from 2005 to 2011. This is a substantial increase from the significant economic contraction of the 1990s.

The financial crisis in 1998 seems to have led to a more serious view in Russia of the importance of macroeconomic stability. A properly managed economy with a stronger legal system and other public institutions could lay the groundwork for sustained growth in Russia. The depreciation of the ruble following Russia's economic crisis in 1998 has improved the price competitiveness of domestic producers vis-à-vis the world market. As a major energy exporter,

Russia is favorably impacted by high oil prices. GDP is assumed in the baseline to grow at over 4 percent annually over the next decade in Russia.

Ukraine also has bounced back from the financial crisis. Significantly increased trade with Russia and the other former Soviet republics is critical to Ukraine's transition to a higher income country. Some opening and increased trade with Western Europe should also help. The turnaround in Ukraine is even more substantial than in Russia. After experiencing a negative 7.7 percent growth in real GDP in 1991-2000, growth is projected to average more than 4 percent in the projections period. The smaller countries of the FSU are expected to average higher growth rates because of increasing trade and production of agricultural products and natural resources, particularly crude oil and natural gas. With adequate definition of a more reliable legal system, significant inflows of foreign investments can lift growth prospects. This is particularly the case for energy rich republics such as Kazakhstan.

Developing Countries

Overall, the developing countries will continue to maintain strong growth, averaging 4.7 percent over the next decade. Emerging markets in Latin America will continue to attract investment funds as long as they maintain well-managed macroeconomic policies resulting in relatively low inflation rates. Adoption of more flexible exchange rates in Southeast Asia will help prevent overvalued currencies and act to discourage inflows of speculative funds or excessive borrowing of foreign money. Continued structural adjustments should lead to stronger financial systems and stricter banking regulations. The risks of excessive lending will be reduced, resulting in more stable growth paths in the longer run.

Mexico. The Mexican economy has been hurt by the current slowdown in the United States, but will bounce back with renewed U.S. growth in 2002 and beyond. Long-term growth at rates above 4 percent a year is likely. The inflow of foreign capital and expanded trade with the United States because of NAFTA have boosted Mexico's production and export capacity. The real peso is again tending towards overvaluation and a period of depreciation will increase Mexican competitiveness.

Starting in 1996, the peso has appreciated in real terms against the U.S. dollar, largely because of Mexico's success in attracting foreign investment funds. Despite a floating exchange rate and inflation higher than in the United States, confidence in holding pesos and in the Mexican economy, in general, has been strong. But these gains in purchasing power have fueled Mexican imports, generating a trade deficit and a higher current account deficit. The long-term growth outlook of 4.7 percent reflects a continuing improvement in infrastructure and a buildup of competitive export industries in Mexico. These developments entail imports of capital and intermediate inputs that would raise the current account deficit beyond 2000.

China. The baseline assumes no accession to the World Trade Organization by China. China's economic growth has been consistently the strongest in Asia, although growth is expected to level off from double-digit gains in the early 1990s to a rate of 7.8 percent over the next decade. With population growth of less than 1 percent per year, per capita GDP gains will be about 7 percent annually. These gains will penetrate China's poor inner provinces and likely improve

productivity in the agricultural sector as more capital-intensive farming and food processing is undertaken. But real output gains are expected to be slowed by adjustment problems of unemployment, as privatization of state-owned enterprises accelerates, and by competition from foreign firms. Competition for lower-value export markets should intensify as other developing countries, including Vietnam and India, increasingly enter those markets.

Inflation has subsided to single digits and is assumed to remain in that range for the baseline. Credit supply will be directed less by the government and more by independent banks, and thus access to credit will increasingly be market-based. However, severe debt problems in China's largest banks have the potential to destabilize credit markets. The movement toward convertibility of the yuan in the capital account, which should attract more foreign equity funds, also will permit the outflow of domestic funds for foreign investments. Real wages will rise as worker productivity grows. The country's high savings rate will keep interest rates relatively low in spite of increasing demand for capital, especially to finance infrastructure projects.

East and Southeast Asia. Output growth in East and Southeast Asia is projected to come down somewhat over the next 5 years to 5.6 percent and recover to 6.4 percent in the following 5 years. Economic growth has resumed in these countries, but not at rates as high as before the Asia financial crisis. Long-term growth is projected to be about 2 percentage points lower than historical rates, excluding crisis years. Exports, buoyed by increased exchange rate competitiveness, and domestic demand, cushioned by high domestic savings, will lead the recovery.

Japan provides a market for about 13 percent of developing Asia's exports, and Japan's economy is expected to show only sluggish growth. Another 30 percent of exports go to the United States. About 40 percent of developing Asia's exports are typically destined for Asian markets other than Japan. Thus there is an internally supported dynamic to their high growth. A key to long-term growth is whether the appropriate structural reforms are undertaken in both the financial and manufacturing sectors. Although some structural reforms have been undertaken over the past several years, the pace of reforms is slower than was expected, limiting the potential for stronger economic growth.

Hong Kong, Taiwan, Malaysia, and Singapore are the most affected by the current world slowdown. China, based on it own internal dynamics, is only modestly affected by it. The return to strong growth in North America and Europe should help East Asian economies. China's continued strong GDP growth will remain a source of import demand for other East Asian exports. In addition, Indonesia is expected to benefit from trade liberalization and steps to increase competition in domestic markets that were undertaken during the financial crisis.

South Asia. South Asia continues its impressive growth over the projections period. Economic growth rates in South Asia are now projected to be almost equal to those in Southeast and East Asia over the longer term. India, which produces 82 percent of the area's output, is projected to grow, on average, by 5.6 percent annually. Pakistan is projected to grow more slowly, at around 4 percent per year. Bangladesh is projected to grow at 5 percent, representing per capita income growth of more than 3 percent. Like China, India's large and increasingly liberalized domestic market will provide the bulk of the impetus for growth. India should also be capable of

producing more diversified manufactured exports. Investment policy is increasingly liberalized and the inflow of foreign capital will boost the region's production capacity.

The proximity to energy sources in the Middle East and, in the future, to energy from Central Asia, should likewise be beneficial. Potentially in the long run, exports of higher-technology products and services, especially from India, will generate hard currency earnings needed to finance improvements in the region's infrastructure and industrial capacity. Competitive gains will depend on the region's low-cost labor, more open trade and investment policies, and real exchange rates that are not distorted by restrictions on capital flows.

Africa and the Middle East. Economic performance in the Middle East remains strongly tied to the outlook for petroleum export earnings. The region is projected to grow at a rate of about 3.5 percent in the baseline as macroeconomic performance strengthens with the global economy and oil prices increase in real terms. With population growth still around 2 percent, however, annual per capita GDP growth averages only about 1.5 percent over the decade.

In Africa, potential growth hinges on the performance of Egypt, Nigeria, and South Africa, the continent's largest countries. Whereas GDP growth in Egypt is projected to be relatively strong in the 5-percent range over the next 10 years, Nigeria and South Africa are not expected to grow as fast. Nigeria, because of continued political instability, corruption, and a largely unskilled labor force, will be unable to attract enough foreign investment and take advantage of its abundant oil resources. In South Africa, a large labor force of unskilled workers, high interest rates because of budget problems, and continued social discontent will pose risks for investors and limit growth. South Africa is also greatly affected by the AIDS pandemic, which will present some serious economic and health system challenges. Nonetheless, growth will move toward a 3-percent rate, a considerable improvement over the 1.5 percent growth rate of the 1990s. The politically troubled countries of Algeria, Sudan, and Congo will drag overall growth down in North Africa and in Sub-Saharan Africa. Nevertheless, increased North African trade with Europe and market reforms in some East and West African countries are generating relatively faster growth. For the first time in many decades, the more optimistic growth scenarios translate into significant per capita income increases. Africa's population growth has been slowing, resulting in positive per capita income growth of about 2.5 percent a year.

South America. Solid economic growth is projected for South America for the next decade, led by Brazil. However, Argentina is currently in a recession that has been partly caused by the peg of the peso to the dollar. This currency peg is assumed to continue in the baseline which does not reflect the devaluation of the Argentine peso in early 2002. In the out years, Argentina is projected to recover to a rate of 3.6 percent a year. South America has projected growth of 3.6 percent over the decade with the out years at 4.2 percent. Behind the strong growth is reduced debt, less government intervention in the private sector, growing intra-regional trade, and heavier foreign direct investment. The past environment of overvalued currencies, large trade deficits, fiscal deficits, and low internal investment due to low savings is not expected to return. New economic policies now generate less inflation and more competitive industries as import barriers fall. Savings as a share of GDP are projected to rise, but levels will remain lower than in East

and Southeast Asia. Because of this, the region's general dependence on foreign capital introduces the risk of capital flight in response to external shocks such as higher U.S. interest rates.

World Population Growth

Population assumptions were updated in October 2001 using data obtained from the U.S. Bureau of the Census.

Population growth rates have been declining consistently over the past few decades. Overall, population growth rates for Africa decline from 2.1 percent a year in the 1990s to a projected 1.5 percent rate in the out years of the baseline. Population growth projections have also declined markedly in some Asian countries. In particular, population growth rates for India have fallen from 1.8 percent in the 1990s to 1.4 percent projected for the next decade. This pattern of decelerating population growth rates has important implications for economic growth and wealth creation. Slowing population growth implies increasing aging of the population and also increasing dependence ratios (the ratio of workers to nonworkers in the population).

Overall world population growth is projected to increase at only 1.2 percent a year over the projections period, a 0.2 percent decline from the previous decade. Almost all population growth is occurring in developing countries. Growth in developed countries is less than 0.4 percent per year. The highest growth rates are for the Middle East and Sub-Saharan Africa at around 2 percent per year. These are also the countries with the lowest per capita incomes and, historically, the lowest growth in per capita income.

In some countries, the slowdown of population growth rates has been quite dramatic. For example, South Africa saw its population growth rate decline from an average of 2.7 percent in the 1980s to 1.3 percent in the 1990s. Population in South Africa is projected to decline in the next decade due to the AIDS pandemic. The lowest population growth rates have occurred and are projected to continue to be in the transition economies. In some countries in this region, populations have been declining consistently since the 1980s. Hungary in particular has been losing population at a rate of about 0.3 percent per year. Russia has also had declining population since the 1990s. Overall, the transition economies are projected to have virtually no population growth over the next decade.

Populations in the developed economies are projected to grow by less than 0.5 percent per year, with the slowest rates in Japan and the European Union. Overall, the number of people in the world is projected to increase at a declining rate, to 6.9 billion in 2011 and almost 8 billion by 2025. Less than 13 percent will live in developed countries.

Because of differing rates of population growth, GDP gains translate into per capita income growth at differing rates (the rate of per capita income growth equals the GDP growth rate minus the population growth rate). The highest growth rate in per capita income is in China, which has both very high GDP growth rates and low population growth rates. The lowest per capita income growth rates are in Africa and the Middle East where GDP growth rates are relatively modest and population growth rates are high. The pattern toward slowing population growth

rates and increasing per capita income growth rates will have profound impacts on agricultural trade over the coming decade as rising income leads to demand for more high value products and less basic products. This compositional change in agricultural demand and trade should continue and even accelerate during the projections period.

Table 1. Domestic macroeconomic baseline assumptions

Item	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
GDP, billion dollars												
Nominal	9,873	10,212	10,541	11,117	11,760	12,440	13,159	13,919	14,710	15,545	16,427	17,360
Real 1996 chained dollars	9,224	9,335	9,465	9,787	10,100	10,424	10,757	11,101	11,446	11,800	12,166	12,543
percent change	4.1	1.2	1.4	3.4	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1
Disposable personal income												
Nominal (billions)	7,031	7,390	7,641	8,076	8,537	9,006	9,502	10,024	10,575	11,147	11,748	12,371
percent change	6.2	5.1	3.4	5.7	5.7	5.5	5.5	5.5	5.5	5.4	5.4	5.3
Nominal per capita, dollars	25,528	26,581	27,240	28,536	29,922	31,317	32,777	34,305	35,902	37,536	39,242	40,986
percent change	5.3	4.1	2.5	4.8	4.9	4.7	4.7	4.7	4.7	4.6	4.5	4.4
Real (billion 1996 chained)	6,539	6,755	6,877	7,124	7,359	7,580	7,807	8,042	8,283	8,523	8,770	9,016
percent change	3.5	3.3	1.8	3.6	3.3	3.0	3.0	3.0	3.0	2.9	2.9	2.8
Real per capita, 96 dollars	23,742	24,299	24,515	25,171	25,795	26,358	26,933	27,520	28,119	28,701	29,295	29,870
percent change	2.6	2.3	0.9	2.7	2.5	2.2	2.2	2.2	2.2	2.1	2.1	2.0
Consumer spending												
Real (billion 1996 chained)	6,258	6,442	6,538	6,741	6,937	7,138	7,345	7,558	7,777	8,002	8,235	8,473
percent change	4.8	2.9	1.5	3.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Inflation measures												
GDP price index, chained	107.0	109.4	111.4	113.6	116.4	119.3	122.3	125.4	128.5	131.7	135.0	138.4
percent change	2.3	2.2	1.8	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
CPI-U, 82-84=100	172.2	177.4	181.1	185.4	190.3	195.2	200.3	205.5	210.8	216.3	221.9	227.7
percent change	3.4	3.0	2.1	2.4	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PPI, finished goods 82=100	138.0	141.5	143.4	146.0	149.1	152.2	155.4	158.7	162.0	165.4	168.9	172.4
percent change	3.7	2.5	1.4	1.8	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
PPI, crude goods 82=100	120.6	124.1	120.1	117.7	119.2	120.7	122.2	123.7	125.3	126.8	128.4	130.0
percent change	22.8	2.9	-3.2	-2.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Crude oil price, $/barrel												
Refiner acq. cost, imports	28.2	24.3	23.0	22.3	23.0	23.6	24.3	24.9	25.6	26.4	27.1	27.9
percent change	63.5	-13.8	-5.3	-3.1	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Real cost, 1996 chained dollars	26.4	22.3	20.7	19.7	19.7	19.8	19.8	19.9	20.0	20.0	20.1	20.1
percent change	59.8	-15.6	-7.0	-5.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Labor compensation per hour												
nonfarm business, 92=100	132.0	139.8	145.7	152.4	158.3	164.5	170.9	177.6	184.5	191.7	199.1	206.9
percent change	6.1	5.9	4.2	4.6	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Interest rates, percent												
3-month T-bills	5.8	3.5	2.6	3.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
6-month commercial paper	6.3	3.8	2.8	3.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Bank prime rate	9.2	7.0	5.6	6.4	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Treasury bonds (10-year)	6.0	4.9	4.8	5.2	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Moody's Aaa bonds	7.6	7.2	6.2	6.5	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Civilian unemployment												
rate, percent	4.0	4.8	5.3	5.1	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Nonfarm payroll emp., millions	131.9	131.8	132.5	134.1	135.7	137.3	138.9	140.6	142.1	143.7	145.3	146.9
percent change	1.3	-0.1	0.5	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1
Total population, million	275.4	278.0	280.5	283.0	285.3	287.6	289.9	292.2	294.6	297.0	299.4	301.8
percent change	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Domestic macroeconomic assumptions were completed in September 2001.

Table 2. Global real GDP baseline growth assumptions

Region/country	Share of world GDP 1996-2000	1999	2000	2001	2002	2003	2004	2005	Average 1991-2000	2001-2005	2006-2011
	Percent					*Percent change*					
World	100.0	3.1	3.9	1.6	2.0	3.3	3.3	3.3	2.7	2.7	3.3
less United States	75.7	2.8	3.9	1.7	2.2	3.2	3.3	3.3	2.6	2.7	3.4
Developed economies	75.7	2.9	3.4	1.2	1.5	2.7	2.6	2.6	2.3	2.1	2.6
United States	24.3	4.1	4.1	1.2	1.4	3.4	3.2	3.2	3.1	2.5	3.1
Canada	2.4	5.1	4.4	1.8	2.0	2.9	3.0	3.0	2.7	2.5	3.0
Japan	11.6	0.8	1.5	-1.0	0.0	1.5	1.9	1.9	1.2	0.9	1.9
Australia	1.4	4.7	3.7	2.0	2.4	3.5	4.0	4.0	3.6	3.2	4.0
European Union-15	34.5	2.5	3.4	1.8	1.9	2.6	2.4	2.4	2.2	2.2	2.4
Other Western Europe	1.4	1.6	3.0	1.8	1.9	2.4	2.4	2.4	1.8	2.2	2.4
Transition economies	2.2	3.2	5.1	3.4	3.5	3.9	3.9	3.8	-2.9	3.7	3.7
Eastern Europe	0.7	2.7	3.7	3.1	3.7	4.7	4.6	4.5	1.3	4.1	4.4
Czech Republic	0.1	-0.4	3.1	3.5	3.8	4.9	4.8	4.7	-0.6	4.3	4.6
Hungary	0.1	4.2	5.2	3.7	3.9	4.9	4.9	4.9	0.9	4.5	4.9
Poland	0.3	4.1	4.1	1.9	2.8	4.6	4.6	4.6	3.8	3.7	4.6
Former Soviet Union	1.5	3.4	5.9	3.5	3.5	3.5	3.5	3.5	-4.4	3.5	3.4
Russia	0.8	5.4	8.3	4.5	4.2	4.1	4.1	4.1	-3.9	4.2	4.1
Ukraine	0.1	-0.4	6.0	4.0	4.1	4.7	4.4	3.9	-7.7	4.2	3.9
Other	0.5	1.5	2.0	1.8	2.0	2.2	2.2	2.2	-4.1	2.1	1.9
Developing countries	22.1	3.8	5.6	2.6	3.5	4.9	5.1	5.1	4.9	4.2	5.2
Asia	10.0	6.3	6.8	4.2	4.9	6.0	6.2	6.2	6.9	5.5	6.2
East & Southeast Asia	7.6	6.6	7.4	4.2	4.9	6.2	6.3	6.3	7.3	5.6	6.4
China	3.1	7.1	8.0	7.5	7.3	7.8	7.8	7.8	10.1	7.6	7.8
Hong Kong	0.4	2.9	10.5	2.5	4.0	4.8	5.0	5.0	4.5	4.3	5.0
Korea	1.5	10.9	8.8	2.5	3.5	5.4	5.2	5.0	6.3	4.3	5.0
Taiwan	1.0	5.7	6.0	0.5	2.0	4.8	5.2	5.2	7.4	3.5	5.2
Indonesia	0.6	0.8	4.8	2.0	2.5	4.0	5.0	5.0	4.4	3.7	5.0
Malaysia	0.3	6.1	8.3	0.0	3.5	5.6	5.4	5.2	6.7	3.9	5.2
Philippines	0.2	3.2	4.0	1.5	2.0	3.5	4.5	4.5	2.9	3.2	4.5
Thailand	0.5	4.2	4.3	1.2	3.0	4.0	4.9	5.3	4.6	3.7	5.6
Vietnam	0.0	4.8	6.8	4.5	5.0	5.8	5.8	5.8	7.7	5.4	5.8
South Asia	2.0	6.0	5.2	4.4	5.1	5.7	5.8	5.8	5.5	5.4	5.8
India	1.7	6.4	5.2	4.6	5.3	6.0	6.0	6.0	5.7	5.6	6.0
Pakistan	0.2	2.7	4.8	2.5	3.0	3.7	3.8	4.0	4.0	3.4	4.2
Bangladesh	0.1	5.2	6.0	5.0	5.0	5.3	5.2	5.1	5.0	5.1	4.9
Latin America	5.2	1.0	3.9	0.7	1.4	3.6	4.3	4.3	3.3	2.9	4.3
Caribbean & Central America	0.4	3.8	3.9	1.8	2.0	4.2	4.1	3.5	3.2	3.1	3.4
Mexico	1.2	3.9	6.9	0.0	1.5	4.7	4.7	4.7	3.6	3.1	4.7
South America	3.7	-0.2	2.9	0.8	1.3	3.2	4.1	4.2	3.2	2.7	4.2
Argentina	0.7	-3.4	-0.5	-1.5	-1.5	1.0	3.3	3.3	4.3	0.9	3.6
Brazil	2.0	0.8	4.5	1.2	2.0	3.8	4.4	4.5	2.7	3.2	4.5
Other	0.9	0.2	2.0	1.8	2.0	3.5	4.2	4.1	3.4	3.1	4.0
Middle East	5.0	2.3	6.0	1.0	2.6	3.7	3.9	4.0	4.1	3.0	4.0
Iran	2.6	2.5	5.0	3.0	2.5	3.5	3.6	3.7	4.0	3.3	3.8
Iraq	0.2	25.0	25.0	-5.7	7.0	6.0	5.5	5.5	8.4	3.7	5.2
Saudi Arabia	0.4	0.4	4.5	4.1	3.0	3.5	3.7	3.7	2.0	3.6	3.7
Turkey	0.7	-5.1	7.5	-7.3	1.0	3.0	4.0	5.0	3.7	1.1	4.3
Other	1.0	4.2	4.2	2.0	2.5	4.2	4.1	4.0	6.1	3.4	4.0
Africa	2.0	2.8	3.5	3.5	3.7	4.6	4.6	4.4	2.6	4.2	4.2
North Africa	0.7	4.1	3.4	3.5	3.7	5.2	5.1	5.0	3.0	4.5	4.7
Algeria	0.2	3.5	2.4	3.0	3.2	4.4	4.3	4.3	1.6	3.8	4.1
Egypt	0.3	6.0	4.7	3.5	3.8	5.8	5.7	5.6	4.3	4.9	5.3
Morocco	0.1	-0.7	0.9	4.0	4.2	5.0	4.9	4.8	2.2	4.6	4.7
Tunisia	0.1	6.2	5.0	4.0	4.2	5.3	5.0	4.9	4.8	4.7	4.6
Sub-Saharan Africa	0.9	2.1	3.8	4.1	4.2	4.9	5.0	4.6	2.8	4.6	4.4
South Africa	0.4	1.9	3.1	2.6	2.8	2.7	3.2	3.0	1.5	2.9	2.8

Global macroeconomic assumptions were completed in October 2001.

Table 3. Baseline population growth assumptions

Region/country	Population in 2000	1999	2000	2001	2002	2003	2004	2005	Average 1991-2000	Average 2001-2005	Average 2006-2011
	Millions					*Percent change*					
World[1]	6,080	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.4	1.2	1.1
less United States	5,805	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.4	1.2	1.1
Developed economies	847	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.6	0.5	0.4
United States	276	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	0.9	0.8
Canada	31	1.1	1.0	1.0	1.0	1.0	0.9	0.9	1.2	1.0	0.9
Japan	127	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.0
Australia	19	1.1	1.0	1.0	1.0	0.9	0.9	0.9	1.2	0.9	0.8
European Union-15	378	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.1
Transition economies	416	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1
Eastern Europe	126	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	-0.1
Czech Republic	10	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	-0.2
Hungary	10	-0.4	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.3	-0.3
Poland	39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Former Soviet Union	291	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.1	0.0	0.2
Russia	146	-0.3	-0.4	-0.4	-0.3	-0.3	-0.3	-0.3	-0.1	-0.3	-0.2
Ukraine	49	-0.8	-0.8	-0.8	-0.7	-0.7	-0.7	-0.6	-0.5	-0.7	-0.5
Other	95	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.7	0.7	1.0
Developing countries	4,480	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.6	1.3	1.2
Asia	3,301	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.5	1.3	1.1
East & Southeast Asia	1,848	1.1	1.1	1.1	1.0	1.0	1.0	0.9	1.2	1.0	0.8
China	1,262	0.9	0.9	0.9	0.9	0.9	0.8	0.8	1.0	0.8	0.6
Hong Kong	7	2.6	1.8	1.3	1.3	1.2	1.2	1.2	2.3	1.2	1.1
Korea	47	1.0	0.9	0.9	0.9	0.8	0.8	0.8	1.0	0.8	0.6
Taiwan	22	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.8	0.7
Indonesia	225	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.8	1.6	1.3
Malaysia	22	2.1	2.1	2.0	1.9	1.9	1.9	1.8	2.2	1.9	1.8
Philippines	81	2.1	2.1	2.1	2.0	2.0	2.0	1.9	2.2	2.0	1.8
Thailand	61	1.0	1.0	0.9	0.9	0.9	0.8	0.8	1.1	0.9	0.7
Vietnam	79	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.7	1.4	1.3
South Asia	1,285	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.8	1.6	1.4
India	1,014	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.8	1.5	1.3
Pakistan	142	2.2	2.2	2.2	2.1	2.1	2.0	1.9	2.2	2.1	1.8
Bangladesh	129	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5
Latin America	521	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.6	1.3	1.1
Caribbean & Central America	74	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.7	1.5	1.4
Mexico	100	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.7	1.5	1.3
South America	347	1.4	1.3	1.2	1.2	1.2	1.1	1.1	1.6	1.2	1.0
Argentina	37	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.3	1.1	1.0
Brazil	173	1.1	1.0	0.9	0.9	0.9	0.8	0.8	1.4	0.9	0.7
Other	137	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.9	1.6	1.4
Middle East	242	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.2	1.9	2.0
Iran	66	1.1	0.9	0.8	0.7	0.8	1.1	1.3	1.7	0.9	1.4
Iraq	23	3.0	2.9	2.9	2.9	2.8	2.8	2.8	2.3	2.8	2.6
Saudi Arabia	22	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Turkey	66	1.4	1.3	1.3	1.2	1.2	1.2	1.1	1.6	1.2	1.0
Other	66	2.8	2.8	2.7	2.7	2.7	2.7	2.6	3.0	2.7	2.6
Africa	415	1.9	1.8	1.8	1.7	1.7	1.6	1.6	2.1	1.7	1.5
North Africa	139	1.8	1.7	1.7	1.7	1.6	1.6	1.5	2.0	1.6	1.5
Algeria	31	1.9	1.8	1.7	1.7	1.7	1.6	1.6	2.1	1.7	1.5
Egypt	68	1.8	1.8	1.7	1.7	1.7	1.6	1.6	2.0	1.6	1.5
Morocco	30	1.8	1.8	1.7	1.7	1.7	1.6	1.6	2.0	1.7	1.5
Tunisia	10	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.6	1.1	1.0
Sub-Saharan Africa	233	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.3	2.0	1.9
South Africa	43	0.7	0.6	0.4	0.1	-0.1	-0.3	-0.6	1.3	-0.1	-1.0

Source: U.S. Department of Commerce, Bureau of the Census. The population assumptions were completed in October 2001.

1/ Totals for the world and world less United States include countries not otherwise included in the table.