Macroeconomic Assumptions

This section presents the macroeconomic projections underlying the USDA baseline. Factors affecting the domestic macroeconomic projections are presented first, followed by a discussion of the conditions determining the international projections. The projections presented this year are characterized by recovery from the global financial crisis, with the global economy now moving into a period of sustained growth.

The global financial crisis that took place in the late 1990s changed trade policies, trade patterns, and interest rates, and led to major exchange rate depreciations in dollar terms. These changes have had the expected consequence of reducing foreign demand for U.S. farm products at a time of worldwide agricultural surpluses. Although the dramatic changes that took place during the crisis are largely behind us, the lingering impact both in the United States and abroad will continue for years to come.

Domestic Macroeconomic Projections

Despite the very low income elasticity of demand for most farm products, U.S. economic conditions are crucial to U.S. agricultural prospects. U.S. GDP growth spurs world growth, since the United States is the largest single market for foreign goods. U.S. financial markets dominate world financial markets. The growth of developing economies and the relative strength of the dollar strongly influence farm export demand and prices. Further, U.S. inflation and interest rates directly influence farm and farm program costs.[1]

The United States experienced comparatively high growth and low inflation between 1996 and 1999. Productivity growth has been a key component of the low-inflation, high-growth economy. Average GDP growth was about 3.8 percent, with inflation staying below 2 percent. Short-term Treasury bill rates averaged below 5 percent, and 10-year Treasury bond yields averaged 6 percent during this period. In 1999, the unemployment rate fell to an estimated 4.3 percent, the lowest since 1969.

The turbulence in world financial markets, the world growth slowdown in 1998, and subsequent world recovery in 1999 had positive impacts on the U.S. economy. The strong dollar and weak world growth during most of 1998 and 1999 resulted in large U.S. trade deficits. U.S. agriculture and manufacturing, being very dependent on world trade, were hurt by the larger trade deficits of 1998 and 1999. Nevertheless, the large capital inflows from trade-deficit countries resulted in low long-term U.S. interest rates and slow world growth caused oil prices to fall precipitously. Low interest rates and low oil prices for much of 1999 helped support strong GDP growth and low inflation.

While the baseline domestic macroeconomic growth assumption is lower than an extrapolation of the past 5 years, it is more optimistic than would be expected from trend extrapolation of the last 10 or 20 years. Not since the 1970s has growth averaged 2.6 percent a year as assumed here for 1999 to 2009.

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[1] Forecasts are based on data available through August 1999.

Underlying Policy and Aggregate Supply Assumptions

- Fiscal policy will result in structural Federal budget surpluses for the forecast horizon.

- Monetary policy will be relatively stringent as the Federal Reserve policy will tighten when significant inflationary pressures are expected, keeping inflation below 3 percent.

- Trend labor productivity growth will average from 1.5 to 1.8 percent in 1999 to 2009.

- Energy markets will be balanced in 2001. Thereafter crude oil prices will rise 0.8 percent per annum consistent with the Energy Information Administration s January 1999 *Annual Long Term Outlook*.

- Employment growth is expected to average 1.1 to 1.2 percent a year through 2009, which is broadly consistent with Bureau of Labor Statistics projections. This projection is consistent with the tightened welfare and disability qualifications now in place, and expected immigration.

- World GDP growth is expected to be about 3.2 percent from 2004-2009. Since the U.S. is 25 percent of the world economy, world growth is jointly determined with U.S. GDP growth. If growth outside of the United States were to slow below 2 percent or increase above 4 percent, the projected U.S. scenario would be unlikely.

Major Domestic Macroeconomic Projections

- The trend assumptions employed smooth over the impact of unpredictable events, such as recessions three or more years from now, to avoid introducing spurious cycles in forecasts dependent on these projections. The trends here are consistent with standard macroeconomic stylized facts, such as an increasing capital-to-labor ratio tends to raise labor productivity.

- Trend GDP growth is 2.6 percent. Disposable income and consumer spending growth are expected to grow at a trend 2.5 percent per year. Disposable income growth will be partly the result of growth in real compensation in a labor market which sees the unemployment rate averaging 5.0 percent. A pickup in the personal savings relative to the negative savings rates of 1999 is expected. Such low personal savings rates are not sustainable in the medium term and the increase in savings will be a major force slowing GDP growth in 2000 and 2001.

- The investment required to achieve 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 continued budget surpluses and modest increases in the personal savings rate. The secular trade deficit will cause some modest fall in the value of the dollar. However, the growth in imports should moderate as the real value of the dollar falls modestly over the

forecast period. The lower valued dollar is expected to shrink the aggregate trade deficit over time.

- The sharp runup in oil prices seen in the second half of 1999 is expected to turn around by the second quarter of 2000. A colder than average U.S. winter could postpone this adjustment just as a milder than average winter could speed it up. The trend growth in oil prices is expected to result in average real crude oil prices lower than those of 1996 even by the end of the projection horizon. Inflation is expected to be almost as low as that in the early 1960s. Inflation, measured by the annual GDP deflator, is projected to average 2.7 percent from 2002 to 2009.

Projected trend GDP productivity growth for 2000 to 2009 of 1.7 percent annually is faster than has occurred in any decade since the 1970s, although it represents a slowdown from productivity gains of the last 4 years (see table 1). Some of this change in productivity reflects revised GDP and CPI measurement to overcome previous measurement failures. These changes boost measured GDP growth by 0.2 to 0.3 percent per year, while reducing GDP deflator inflation by the same amount. However, the majority of the rise in projected productivity growth is due to real structural changes in the U.S. economy reflected in aggregate supply and demand changes of the last decade.

Table 1. U.S. GDP and Productivity Growth

Selected time periods	Real GDP	Productivity	Working age population
	Average annual percentage change		
Business cycles: 1/			
1960I - 1969III	4.3	2.7	1.5
1969III - 1973IV	3.5	2.6	2.3
1973IV - 1980I	2.8	1.3	1.9
1981III - 1990II	3.0	1.2	1.2
1990II - present	2.6	1.4	1.0
Recent history			
1995II - 1999II	3.8	2.1	1.1

1/ Business cycles are measured from peak to peak of respective expansions.

Prospects for U.S. Long-term GDP Growth

During the current economic expansion, which began in the second quarter of 1990, real economic growth has averaged 2.8 percent. This 2.8 percent economic growth can be decomposed into average growth of 1.1 percent in working age population, 1.4 percent growth in productivity, and 0.1 percent average growth respectively in labor force participation of the

working age population, the rate of employment of the labor force, and in average hours worked per worker. Productivity growth in this expansion has contributed a greater share to overall economic growth than in recent business cycles.

Productivity has increased sharply over the previous 4 years. From the second quarter of 1995 through the second quarter of 1999, productivity has grown 2.1 percent per year after growing at an annual rate of 0.9 percent in the first 5 years of 1990s. The last 4 years of high productivity growth reflects more intense resource utilization, especially for labor, as well as extremely strong business investment, a more efficient price sensitive management structure, and increased foreign competition.

Potential productivity growth in the 1.6 to 1.8 range is expected over the baseline projection. This is above the 1.4 percent average growth for nonfarm business productivity over the last 30 years. Productivity will remain high because of the rising shares of business fixed investment and world trade in GDP. The shares of business fixed investment and foreign trade (the sum of U.S. exports and imports of goods and services) in GDP have risen from 9.5 percent and 19.4 percent in 1990 to 13.3 and 30.2 percent in the second quarter of 1999, respectively. The investment of the 1990s has improved both the quantity and quality of the Nation's capital stock. Increased trade has facilitated higher growth and productivity by opening markets. This has stimulated increased investment spending, the achievement of greater economies of scale in production, and greater economic specialization in areas of U.S. comparative advantage.

Over the next 10 years the shares of business fixed investment and foreign trade in GDP are expected to continue to rise, but at a slower pace than in the 1990s. Business fixed investment is expected to remain strong due to continuing tight labor markets, strong foreign competition, relatively low capital costs, and the continued expected strong profitability of business fixed investment. A common measure of expected business profitability is the market value of business capital relative to replacement cost. This measure is currently at a record high indicating an excellent business capital investment outlook. Export growth is expected to improve due to increasing world GDP growth and a lower valued dollar.

The consumer savings rate is expected to rise over the forecast horizon while remaining low by historical standards. Continued strong business investment demand will absorb the increased savings of consumers caused by the moderate increase in the consumer savings rate, with only modest impacts on real GDP growth and interest rates over the forecast period, as foreign investors fill the shortfall in aggregate domestic savings. The net result will be a continuing but smaller trade deficit.

Overall labor demographics point toward a slight slowing in employment growth. In the current economic expansion, employment and working age population have grown at a seasonally adjusted annual rates 1.3 and 1.0 percent, respectively. Overall U.S. population growth is expected to slow to 0.8 percent over the forecast horizon, with the working age population growth rate not declining significantly until 2010 or so. Growth in employment will be held down by a growing proportion of retirees in the general population and a slight upward

Macroeconomic Linkages to Agriculture

In many circumstances, factors external to agriculture can have very important influences on the farm sector. This is particularly true during periods of significant macroeconomic turmoil such as has occurred in some parts of the world since the middle of 1997.

Four macroeconomic factors have been particularly important in explaining the consequences for agriculture of the 1997-98 global financial crisis.

- income growth,
- exchange rate movement,
- terms of trade changes, and
- changing interest rates and credit availability.

These factors have tended to work in opposite directions in developing countries and in the United States during the current global crisis.

Developing Country Effects--A major driving force behind U.S. agricultural growth in the middle 1990's was the rapid pace of economic growth in developing countries. At relatively low levels of income, a high percent of the growth in income is used to purchase more food and agricultural products. Thus, high economic growth in developing countries translates into high demand for agricultural products and U.S. agricultural exports, while low growth tends to reduce demand for imported agricultural products. Thus, reduced economic activity in the crisis countries has contributed to lower U.S. agricultural exports. With agriculture a heavily trade-dependent sector, depreciations of foreign currencies against the U.S. dollar reduce the competitiveness of U.S. agricultural exports. The price of U.S. agricultural exports goes up in local currency terms in importing countries, thereby reducing U.S. exports. Changing "terms of trade" for agricultural commodities also can influence the demand for U.S. exports. A currency depreciation tends to raise prices of imported agricultural goods relative to domestically-produced nontraded goods, resulting in higher supplies of agricultural commodities produced domestically. This tends to reinforce the impacts of a depreciation and further reduce demand for imported agricultural products. Lastly, interest rates and credit availability are important determinants of agricultural supply. When interest rates are high and credit availability low, as occurred in the crisis countries, the cost of borrowing money for production goes up, thereby constraining domestic supply.

For developing countries in general, and especially the crisis-affected countries, Thailand, Korea, Indonesia, Malaysia, the Philippines, Russia, and Brazil, the crisis led to dramatic currency depreciations. Rapid growth in GDP stopped, then declined. The depreciation raised agricultural prices domestically against other products, a favorable terms-of-trade effect, while interest rates rose and credit availability declined. These factors led to declines in agricultural imports by some crisis-affected countries.

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Macroeconomic Linkages to Agriculture--continued

Effects in the United States--The crisis abroad led to somewhat higher income growth in the United States, in part because investment capital shifted to the United States from developing economies, which reduced interest rates. However, higher U.S. income provides only a small amount of additional domestic demand for food and agriculture because the U.S. is a high income country and food expenditures are a small share of total U.S. incomes. U.S. agriculture was more affected by appreciation of the U.S. dollar due to the crisis, which reduced the competitiveness of U.S. agricultural exports and supported the forces driving U.S. dollar-denominated prices of agricultural goods down. Further, to the extent that our competitors' currencies also depreciated against the dollar, their competitiveness was enhanced.

The appreciation of the U.S. dollar resulted in reduced terms of trade for agricultural products in the United States. That is, the price of agricultural products fell relative to other traded products. As a consequence, agricultural income fell relative to nonagricultural income. Low interest rates and ready credit availability in the United States reduced agricultural costs, but only marginally. The relatively lower cost of credit had only a small effect on profits because U.S. agriculture is a relatively low credit user with low debt-to-asset ratios. Overall, the rural economy sustained minor losses due to the financial crisis, as losses in exports of agricultural and manufactured goods were mostly offset by growth in other sectors. Despite negative impacts on manufacturing and agriculture, wage compensation in the rural economy grew almost as fast as for the overall U.S. economy during the crisis.

movement in the unemployment rate. Offsetting these trends is a continued rise in participation rates due to welfare reform and tighter requirements for disability benefits as well as a continued modest addition of workers over age 65. These factors are expected to generate net employment growth between 1.1 and 1.2 percent.

Adding the employment and potential productivity growth together gives a rise in potential GDP of between 2.7 and 3.0 percent per year. Due to inevitable recessions and/or supply shocks, the average projected annual GDP growth of 2.6 percent reflects some unused capacity in the economy in most years.

International Macroeconomic Assumptions[2]

The outlook for the world economy over the next 10 years is characterized by recovery from the global crisis and structural adjustments in Asia, the transition economies, and Latin America, and the secondary impacts of that crisis on the rest of the world. The return of Japanese GDP growth in 1999, because of its significance in world trade, is particularly important in the near term recovery. However, Japan's continued outlook for sluggish growth in the longer term is an important negative feature of the longer-term global outlook.

[2]The international macroeconomic assumptions used in the baseline were completed in October 1999.

There are two distinct phases of the world economic forecast. In the near to midterm, crisis recovery dominates the outcome, while in the longer-term structural reform leads to renewed sustained economic growth in the crisis countries but at a lower rate than previously recorded. Driving the Asia forecast is a restructuring of currency values in crisis countries, with a resulting reduction in import demand.

The outlook for the crisis countries is for moderate growth in the next few years, moving back to sustainable levels by 2002. OECD countries are experiencing better than average growth. The Third World debt crisis of the 1980s resulted in recessions in both developed and developing countries along with high inflation. The global crisis of 1997-98 was focused on developing countries with structural imbalances and resulted in deflationary pressures on global markets. Thus with the crisis moderating, world real GDP is projected to have average growth of about 3.2 percent annually between 2004 and 2009, compared with 2.5 percent during 1992-97, and 2.8 percent between 1998 and 2003.

Growth in Asia, while still strong, is significantly affected by the crisis and its aftermath. Growth between 1998 and 2003 is projected to be 4.7 percent, increasing to 6.1 percent in 2004-2009. This is a reduction in the underlying growth rate for the region of almost 2 percent, from the 8 percent GDP growth rate experience between 1992-1997. While the growth projection for Asia has been reduced, that of Latin America has been increased in the out years. Latin American growth is projected at 3.3 percent between 1998 and 2003 and 4.6 percent between 2004 and 2009, compared with an historical growth rate of 3.6 percent between 1992-1997. Growth is also projected to increase in Africa and the transition economies of Eastern Europe and the former Soviet Union, although not at rates which will translate into significant per capita income increases.[3] The developed economies, including the United States, are projected to grow at higher rates than in the 1992-1997 period, 2.5 compared with 2.1 percent. Inflation is expected to continue at unusually low levels in the developed economies and is potentially negative in the developing countries. The real price of oil is expected to remain low during the baseline.

Developed Economies

In the coming decade, real GDP growth will increase in the developed economies from the low rates of the first half of the 1990s. The structural adjustments undertaken throughout the second part of the 1980s and early 1990s has created a solid foundation for future 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 slightly over the projections period. The continued large trade deficits for the United States is 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 the outlook for the competitive position of the United States

[3]Russia is currently one of the most seriously affected crisis countries. The growth cost of the transition between communist and capitalist systems resulted in substantial negative growth in the base period.

would change substantially. The United States will continue to bear the major burden for export-led growth of the crisis countries in the near term.

European Union. The monetary union between qualified EU members and introduction of a single currency enhances the efficiency of cross-border trade and investment within Western Europe. More uniform fiscal policies, as well as disciplined monetary policy guided by the German-based central bank, should lead to more stable growth prospects early in the baseline. The European economy is projected to expand by 2.4 percent on average between 1998 and 2003 and 2.5 percent from 2004 to 2009. Population growth will decline to virtually zero.

Unemployment will remain high relative to the United States, in the 10-percent range, but should gradually fall to 8 percent as more flexible wage and employment policies are adopted. 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 as the currency becomes widely used for world trade and for international reserves. Because of monetary union, national differences in real interest rates will disappear--financial markets will encompass the whole region, and thus investment opportunities will depend less 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 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 former Soviet Union. As the transition economies gain higher per capita incomes, imports from the EU should rise accordingly.

Japan. The Japanese economy continues to be faced with significant structural problems, including a large fiscal deficit and approximately $1 trillion of nonperforming loans that are stifling the banking system. The acceptance of the role of Japan as a mature economy necessitates a reevaluation of their growth strategy. The rigidity in cultural values is the biggest constraint to current and future growth in Japan. Once the necessary structural adjustments are undertaken, growth at a modest rate will resume, but such adjustments will take some time. The slow, 1.2 percent growth between 1998 and 2003 is a reflection of this. The projection of 2.3 percent growth in the out years (2004 to 2009) is consistent with the overall projection of growth for the developed economies and only slightly below what is projected for the United States. Domestic demand will revive as Japanese banks slowly strengthen their capital base after writing off their significant bad loans and as the property and stock markets rebound. Manufacturing production should lead the way toward more vigorous economic activity, led prominently by exports of high-value products. In the longer run, recovery of Southeast Asian economies will provide additional demand for Japan's capital exports and manufactured goods.

The yen is expected to appreciate as the Japanese economy revives and then depreciates back to just above current levels as interest rates finally rise, but the current account surplus will remain

large. Deregulation of Japan's financial market is also likely to boost the yen as foreign capital funds are attracted. Opening Japan's retail and insurance markets to foreign competition will lower prices of goods and services. Opening the air transport market to more U.S. carriers will help boost Japanese tourism in the United States as airfares fall.

A structural problem of 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, keep 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, not unlike that in the financial sector, will help sustain domestic demand, specifically private consumption and investment, as well as boost imports.

Canada. Canada's growth pattern in the 1990s has roughly tracked the U.S. GDP path because of the close integration of trade and investment. Projections over the next 10 years have Canada growing somewhat faster than the United States, 2.8 percent against 2.6 percent in the out years. NAFTA has reinforced the growing integration of the two economies. Canada has consistently had a trade surplus with the United States in the 1990s, 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, plus a lower inflation rate relative to the United States, has helped boost the Canadian currency's real exchange rate competitiveness.

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 further expand as APEC relationships become closer. Although Asian growth is currently constrained by the aftermath of the crisis, as a region, Asia will still continue to grow faster than any other. Trade with Mexico is already on the rise as stimulated by NAFTA. The country's trade surplus is projected to continue growing beyond 2000.

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 significantly fell. 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 by 35 percent over the next 10 years. Domestic demand in the short- and long-term is to be led by fixed capital formation. Gross national savings (as a share of GDP) will increase to around 22 percent as compared to 19 percent for the United States.

Transition Economies

Countries that are ahead in the transformation to market economies are experiencing higher growth than those who 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, and 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 with more countries and the amount of foreign direct investment and portfolio inflows indicate the linkage level and relative competitiveness with the world at large, particularly with Europe and the other advanced economies.

Central and Eastern Europe. Transition economies in this region, except Bulgaria, posted relatively fast growth between 1996 and 1998 after severe contractions in the early 1990s associated with the switch from central planning. Poland, Hungary, and the Czech Republic had significant growth in the second half of the 1990s 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 over 4 percent in the next 10 years. A crucial advantage over the former Soviet Union is proximity and closer integration with the European Union. Foreign direct investment, particularly from high-cost countries like Germany, will increase the region's capacity to export. As the crossroads between the East and the West, the region should benefit as trade increasingly flows through its countries.

Former Soviet Union. After almost a decade of economic retrenchments and setbacks, the major countries of the former Soviet Union, including Russia and Ukraine, are once again faced with little or no growth in the near term and only modest growth toward the end of the projection period. The smaller countries of the region have been growing since 1996, with growth projected to be 1.5 percent in 1999. Overall GDP for the region is anticipated to average a modest 2.0 percent from 2004 to 2009. Although the fruits of privatization and market-based pricing were finally contributing to production gains and more widespread consumption, the crisis set progress back by several years. Capital flight has again become a problem. Failures in the banking system and overall policy environment have become ever more evident.

Prospects for mid-term growth in Ukraine are also affected by the crisis. Some improvement should occur after the crisis subsides. Significantly increased trade with Russia and the other former Soviet republics is critical in the Ukraine's transition to a higher income country. 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. Nevertheless, only large inflows of foreign investments can lift their relatively slow growth prospects.

Developing Countries

Overall, the developing countries will maintain close to 4.5 percent average growth over the next decade, compared to around 5 percent during 1990-96. Emerging markets in Latin America will continue to attract investment funds as long as the developed economies maintain their healthy growth and if real interest rates in the United States, Europe, and Japan do not rise significantly. The currency devaluations in Southeast Asia will encourage more flexible exchange rates, which prevent overvalued currencies and act to discourage inflows of speculative funds or excessive borrowing of foreign money. The structural adjustments under way should lead to a stronger financial systems and stricter banking regulation. This will be reinforced by the development of

timely and transparent statistics. The risks of excessive lending will be reduced resulting in more stable growth paths in the longer run.

Mexico. The Mexican economy has recovered from its deep recession in 1995 that was precipitated by the peso's devaluation in late 1994. While the domestic sector has not fully bounced back in terms of real wages and former consumption levels, business investment and export growth are healthy again. Mid-term growth moves toward potential GDP of 5.0 percent. However, political problems still exist which should constrain growth slightly. The inflow of foreign capital and expanded trade with the United States because of NAFTA have boosted Mexico's production and export capacity. The devaluation of the peso by about 50 percent in 1994-95 made Mexican exports more price competitive.

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. That is, despite a floating exchange rate and inflation higher than in the United States, confidence in holding pesos, and in the Mexican economy in general, is 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 4.5 percent reflects the need to continue modernizing infrastructure and build up competitive export industries in Mexico. These entail imports of capital and intermediate inputs that would raise the current account deficit beyond 2000.

China. While China's growth has been consistently the strongest in Asia, it is expected to level off from double digits in the early 1990s to a more sustainable pace of around 7.4 percent over the next decade. With population growth of less than 1 percent per year, per capita GDP gains will remain impressive at near 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 are undertaken. Inflation has now subsided to single digits, 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. Credit supply will be directed less by the government and more by independent banks, and thus access to credit will increasingly be market-based. The eventual convertibility of the yuan in the capital account, which should attract more foreign equity funds, will also 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. Competition for lower-value export markets should intensify as other developing countries, including Vietnam and India, increasingly enter those markets.

East and Southeast Asia. Output growth in East and Southeast Asia is projected to come down substantially over the next 5 years and recover slightly in the following 5 years. Growth is projected at 6.4 percent in the out years, down from 8.5 percent during 1992-1997. In the near term, growth is slowed by currency devaluation and deflation of asset prices, especially in Thailand, Indonesia, and Malaysia. Economic growth in these countries is assumed to begin to recover over the next 5 years, but long-term growth is projected to be about 2 percent lower than historical rates of recent years. Exports, buoyed by increased exchange rate competitiveness, and domestic demand, cushioned by high domestic savings, are expected to lead the recovery.

Impacts of Developing Country Income Growth and Exchange Rates on Agricultural Trade

Macroeconomic trends in developing countries are key factors in both short- and long-term projections of global agricultural trade and prices. Developing countries account for a significant share of world imports of major farm commodities, and most of the projected long-term growth in import demand. Since developing country consumers allocate a larger share of their budget to food, they generally make larger adjustments in consumption in response to changes in income and prices than do consumers in developed countries. Thus, except when border policies or financial constraints intervene, developing country imports are responsive to changes in macroeconomic variables that affect consumer budgets and food prices. Developing countries are also important exporters of farm goods, and export supplies respond to economic variables that affect local demand or producer incentives.

The economic assumptions underlying the baseline are consistent with many independent forecasts, calling for robust economic growth in developing regions, including Asia, Latin America, North Africa, and the Middle East. Prospects for the economies of Central and Eastern Europe (CEE) and the Former Soviet Union (FSU) are more cautious, but anticipate a gradual recovery to modest, positive rates of growth. However, the recent economic shocks to countries in Asia, Latin America, and the FSU, featuring significant adjustments to exchange rates, real prices, and incomes, triggered significant changes in global farm trade and prices. These events underscored the uncertainty involved in making projections of variables such as agricultural trade and prices that are sensitive to assumptions on economic activity in these regions.

The scenario results shown here illustrate the sensitivity of world trade and price levels for selected commodities to changes in the economic assumptions for major developing and transition regions. Sensitivity to two key variables is analyzed:

- change in the rate of income growth (measured by real gross domestic product), and
- change in local exchange rates (measured by real exchange rates with the U.S. dollar).

In the “slower income growth” scenario, the baseline income growth rate for all countries in the region is reduced by 1 percentage point during each year of the projections (1999-2009). In the “greater depreciation vs. dollar” scenario, the baseline rate of change in the real exchange rate is adjusted by 1 percent for all countries in the region for each year of the projections. Thus, the scenarios reveal the estimated impact of gradual and sustained changes in income or exchange rates, rather than the potential impact of relatively large or short-term shocks. The regions analyzed are developing Asia (includes China and excludes Japan); Africa and the Middle East; Latin America (includes Mexico); and the transition economies (FSU and CEE).

Results

The graphs in figures 1 and 2 show the impacts on selected variables in 2009, at the end of the 10-year simulation period. The results show significant impacts to global trade and prices due to alternate assumptions on income growth and exchange rates in developing regions. The differences in impacts across regions and commodities reflect variations in a region’s importance to global demand in particular commodities, and in the responsiveness of local consumption and production.

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Impacts of Developing Country Income Growth and Exchange Rates on Agricultural Trade -- continued

Developing Asia: Developing Asia shows relatively large global impacts in both scenarios. The results partly reflect the region's important share of global trade volume for the commodities studied, particularly soyoil and meats. The impacts are also driven by the relative openness to imports of some goods by at least some importers, including soybeans and meal (China and much of Southeast Asia), corn and wheat (much of East and Southeast Asia) and soyoil (China, India, Pakistan). The impacts of the scenarios on this region, however, would likely have been substantially higher if the region's large economies, including China, India, and Indonesia, were more open to trade in such commodities as wheat, coarse grains, and meats.

Africa and the Middle East: This region shows generally small impacts relative to the other regions. In the case of soybean products and meats, the results largely reflect the region's small share of global trade. For wheat and coarse grains, however, the region accounts for a larger share of world trade than any of the other three regions studied. Impacts on wheat trade are relatively small because per capita use is already high and relatively unresponsive to changes in income or price, and because a number of markets remain regulated by border measures or state trading. For corn, although the region's feed-livestock sectors are expanding, responses are muted partially by trade restrictions, but also by competition with other feed grains, particularly barley. For wheat, coarse grains and other crops, trade responses to exchange rate movements are also affected by the limited capacity of the region's rain-fed production systems to respond to price signals.

Latin America: For Latin America, responses in both scenarios reflect the region's role as a major producer and net exporter of some of the commodities studied. For soy products, slowed growth in incomes increases exportable supplies, pushing down world prices and increasing world trade volume. For wheat, corn, and meats, lower incomes reduce both world trade and prices, as export gains by some countries are more than offset by lower import demand in others. The result show significant response to the depreciation of the region's exchange rates, with increases in regional exports leading to lower world prices, but increased trade volume, for soy products and meats.

Transition Economies: The transition countries, and particularly the FSU, account for a smaller share of world trade than during the 1980s, but alternate assumptions on future income growth and exchange rates still yield significant implications for world trade. Demand for wheat, feed grains, and meats is responsive to changes in income and prices. With slowed income growth, reduced demand in the region pushes down world prices, both by reducing imports and boosting exportable supplies. Reflecting the region's now large role in meat trade and high income elasticities of demand for meat, the largest impacts are on world meat prices. The responses to exchange rate depreciation are similar, with lower imports of meat and increased net exports of wheat and coarse grains, in each case leading to significantly lower world prices.

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Impacts of Developing Country Income Growth and Exchange Rates on Agricultural Trade -- continued

Figure 1. Impacts of Slower Income Growth, 2009

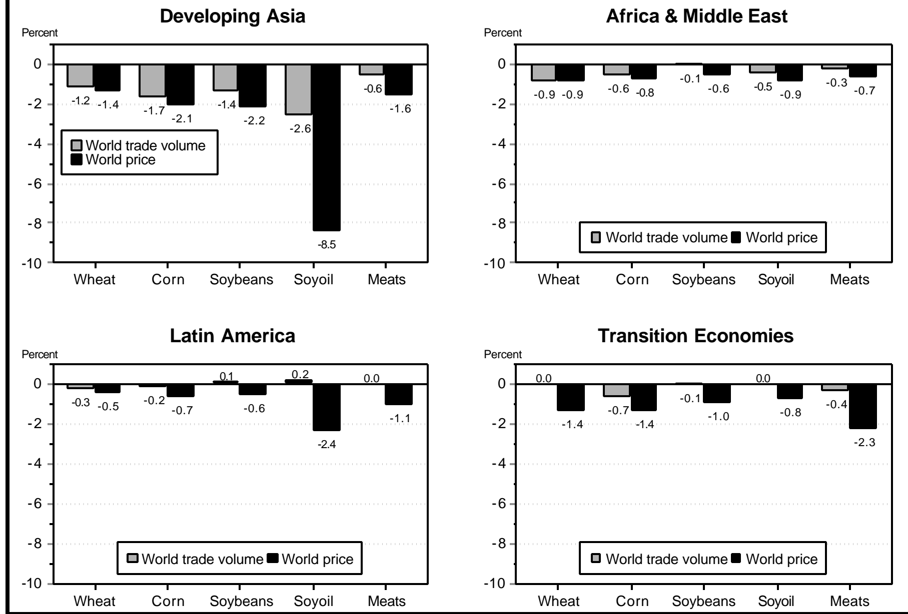
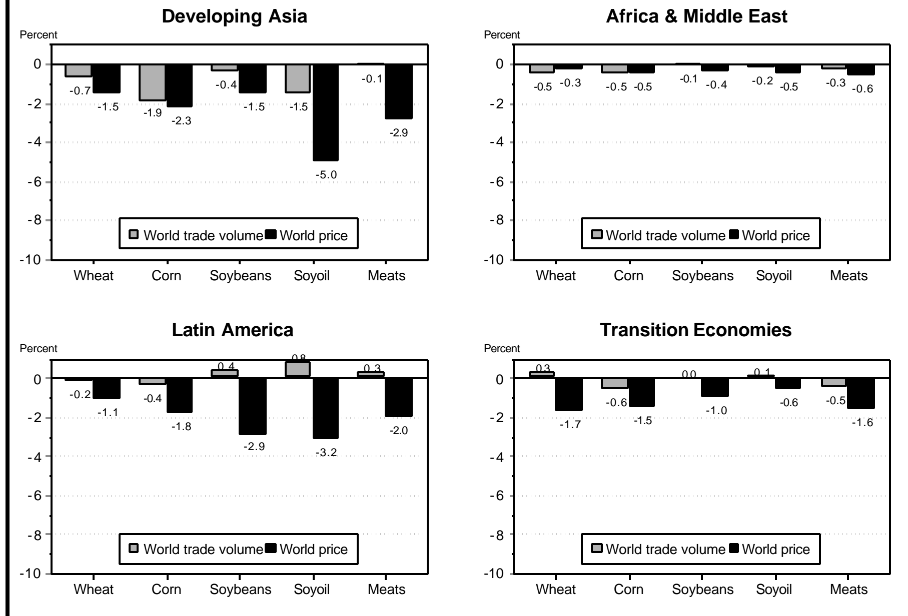


Figure 2. Impacts of Greater Depreciation vs. the Dollar, 2009



Japan provides a market for about 13 percent of developing Asia's exports, and Japan's economy is expected to show only sluggish near-term growth. About 40 percent of developing Asia's exports are typically destined for Asian markets other than Japan. Thus, the region-wide slowdown will be a significant drag on recovery. Recovery will also be affected by the fact that intra-regional investment, particularly from Japan, accounts for a large share of trans-border investment in the region. As a result, domestic savings performance and expansion of extra-regional trade will be important factors in the pace of recovery.

Indonesia, Thailand, Korea, and Malaysia are the most affected by the crisis, with Taiwan and China having only minor impacts. Healthy expansion in North America and Europe over the mid-term will help buoy growth in East Asia. China's continued GDP growth of over 7 percent per year will remain a source of strong import demand for other East Asian exports.

South Asia. South Asia continues its impressive growth over the projections period. Growth rates in South Asia are now projected to about equal those in Southeast and East Asia over the longer term. India, which produces 82 percent of the area's output, will grow on average by 5.5 percent annually, followed closely by Pakistan. 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 a more diversified set of export products, both manufactured and agricultural. 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 a boon. Potentially in the long run, exports of higher-technology products, especially from India, will generate currency reserves needed to help improve 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. The plentiful supply of fossil fuel, particularly oil, that will be produced in Central Asia after the turn of the century is a key factor moderating future energy price growth. This expectation, as well as the region's continued fast population growth, will hamper real per capita output gains, especially in the oil-exporting countries of the Middle East. Despite uncertainty in Iraq and Iran, future growth of 5.6 and 3.8 percent, respectively, is based on an assumption of a return to more market orientation. Combined with similar GDP expansion in Turkey, growth in the Middle East region is projected at a steady rate of 4.0 percent.

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, 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

Asia's Food System Infrastructure Important for Agricultural Trade

One important effect of the 1997-98 Asian financial crisis on the region's food system has been the scaling back of private and public investment in infrastructure in the financially distressed economies of Indonesia, Malaysia, the Philippines, South Korea, and Thailand. The level of infrastructure development in Asia is significant for U.S. agricultural trade. More than 40 percent of U.S. agricultural exports goes to the entire Asian region, with over 10 percent accounted for by the five financially distressed economies.

According to the World Bank, there is a strong relationship between infrastructure investment and economic growth, with every 1-percent increase in infrastructure stock associated with a 1-percent increase in GDP. Infrastructure development spurs a country's economic growth and thus its demand for food, and it reduces marketing costs for both domestic and foreign food products, lowering consumer prices and raising consumption. The level of infrastructure development can enhance the competitiveness of imported food products in large urban areas where international links via air and ocean shipping may be cheaper than links between rural and urban areas within the same economy. Infrastructure development can also increase the potential for economic diversification in rural areas and reduce post-harvest crop losses. Underinvestment in infrastructure can leave rural areas isolated, limiting the economic potential of the economy as a whole. Sizable investments are needed to maintain and expand infrastructure across Asia to sustain economic growth and facilitate trade, both within and among these economies.

With a large rural population and the world's most rapidly growing urban populations (figure 3), Asia faces large challenges in sustaining economic growth. Developing countries in the region have long underinvested in infrastructure. While sea and air links are well developed (Asia has the world's three busiest container ports: Hong Kong, China; Singapore; and Kaohsiung, Taiwan), road and rail service are less developed in China, South Asia, and Southeast Asia than in more developed parts of Asia (figure 4). The fragmented nature of its geography presents a unique challenge for road and rail development in Southeast Asia, particularly in Indonesia and the Philippines, both large archipelagos.

Infrastructure programs are often the first to be cut when fortunes fall in developing countries. As a result of the financial crisis, the Indonesian government currently has no plans to enhance agricultural infrastructure. Plans to build better harbor and cold storage facilities in Indonesia are being put on hold. The high price of spare parts and other materials is impinging on the government's ability to maintain and repair roads and bridges, further raising the cost of transporting food products to and from the countryside. In Malaysia, investment has been heavy in infrastructure development over the past decade, including major improvements in interstate highways, public transit, and port facilities; a new international airport; and improved electrical power generation. The financial crisis has led to the cancellation of one planned highway project and the cessation of work on the Bakun Hydroelectric Dam in Sarawak. In Korea, where government outlays for rural infrastructure have been at relatively low levels, the financial crisis has imposed greater budget constraints on rural infrastructure investment.

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Asia's Food System Infrastructure Important for Agricultural Trade--continued

Comprehensive data on infrastructure investment in Asia are difficult to find. According to one source, combined public and private sector investment in physical infrastructure before the financial crisis in developing Asia probably exceeded 5 percent of GDP, or about $80 billion a year (reference 1). But since the boom year of 1996, private investment in East and Southeast Asia has declined sharply, more than halving, because investors perceived increased risk and uncertainty in many of the region's economies. Public finance also declined. Economic contractions and slowdowns reduced tax and tariff revenue and diverted public funds to underwrite failing banking systems and to provide safety net programs for the swelling numbers of poor (Commonwealth of Australia, 1998).

International financial institutions also emphasize infrastructure in their development programs. The World Bank targets a significant share of its lending in the Asia Pacific region for infrastructure development. While total commitments to the region increased in 1998 to support banking reform and safety net programs, allocations to infrastructure declined. Asia Development Bank allocations for transportation and communication projects were relatively stable during 1995-98.

The lack of public and private funds in the short term means that existing infrastructure in the economically distressed parts of Asia will not be well maintained and new projects will be delayed. Any cutback or delay can have disproportionate consequences because of the frequently large size of, and long lead times needed for, many infrastructure projects.

However, the scaling back of infrastructure investment is expected to be transitory. With economic expansion accelerating in the region in 1999 and 2000 and with interest rates and inflation under better control, public and private infrastructure funds should become increasingly available to the crisis economies, which should benefit agricultural trade in the long run.

References

1. Commonwealth of Australia, Department of Foreign Affairs and Trade (East Asia Analytical Unit) and Tasman Asia Pacific, *Asia's Infrastructure in the Crisis: Harnessing Private Enterprise*, 1998.
2. Coyle, William T. "Financial Woes Threaten Infrastructure Investment in APEC Region," *Agricultural Outlook*, Economic Research Service/USDA, October 1999, pp. 26-30.
3. Pacific Economic Cooperation Council, *Pacific Food Outlook, 1999-2000*, 1999.

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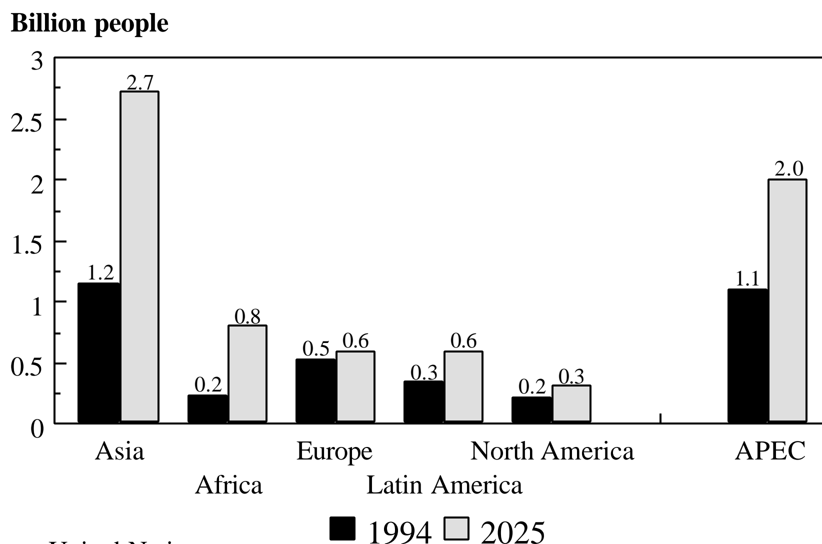
Figure 3--Urban Population Growth Trends

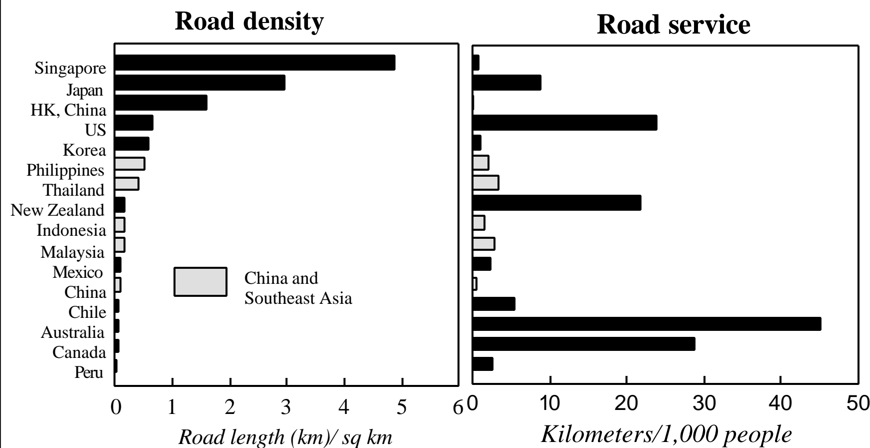
Asia's urban population projected to more than double by 2025.



Source: United Nations.

Figure 4--Road Density and Service

Roads are far less developed in China and Southeast Asia than in other parts of the world..



Note: Most data are for 1993; population numbers are for 1996.

Sources: Pacific Food Outlook, 1999-2000; David Canning, "A Database of World Infrastructure Stocks, 1950-95," The World Bank, 1998.

general social discontent will pose risks for investors and limit growth. 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. The multilateral proposal by developed countries to partially forgive foreign debts of the poorest countries that have initiated reforms should help sustain early gains and may encourage further reforms. However, the more optimistic growth scenarios still do not translate into significant per capita income increases as Africa's population growth remains the highest in the world at near 3 percent. Even so, positive per capita income growth is an improvement on declining per capita incomes over the past 20 years.

South America. The crisis in Brazil is assumed to be short lived and no other significant crisis is assumed to emerge in South America over the projection period. Strong growth is projected for the area, particularly in the out years, led by the MERCOSUR core countries of Brazil and Argentina. Freer trade will further integrate these countries' economies as they gear up for eventual hemispheric free trade with NAFTA countries. 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. Still, double-digit inflation in many countries (except Argentina and Chile) will carry through the next decade. Savings as a share of GDP are projected to rise only slowly and levels will remain substantially 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 or another Mexican-type financial crisis.

World Population Growth

Population assumptions were updated in August 1999 using data obtained from the U.S. Bureau of the Census and the United Nations.

Africa and the Middle East will continue to have the fastest growing population over the next decade, averaging 2.2 to 2.5 percent per year. The next fastest regions are Asia and Latin America, averaging 1.3 to 1.5 percent per year. These assumptions indicate that per capita GDP gains in Asia and Latin America will outpace those of Africa and the Middle East by a bigger margin than their GDP growth differentials.

Populations in the developed and transition economies are projected to grow by less than 0.5 percent per year, with the slowest rates in Russia, Eastern Europe, Japan, and the European Union. Overall, the number of people in the world will increase at a declining rate. By 2009, the world's population will total nearly 6.8 billion, with over 80 percent living in developing countries.

Table 2. Domestic macroeconomic baseline assumptions

Item	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
GDP, billion dollars												
Nominal	8,511	8,899	9,173	9,801	10,327	10,882	11,466	12,082	12,731	13,414	14,135	14,894
Real 1992 chained dollars	7,552	7,844	8,035	8,236	8,450	8,670	8,895	9,126	9,364	9,607	9,857	10,113
percent change	3.9	3.9	3.1	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Disposable personal income												
Nominal (billions)	6,028	6,321	6,632	6,982	7,349	7,736	8,144	8,573	9,025	9,500	10,000	10,527
percent change	4.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Nominal per capita, dollars	22,304	23,158	24,093	25,153	26,263	27,424	28,638	29,908	31,233	32,617	34,060	35,565
percent change	3.1	3.8	4.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Real (billion 1992 chained)	5,348	5,530	5,712	5,867	6,013	6,164	6,318	6,476	6,638	6,804	6,974	7,148
percent change	3.2	3.4	3.3	2.7	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Real per capita, 92 dollars	19,790	20,260	20,752	21,137	21,489	21,849	22,217	22,592	22,973	23,359	23,752	24,150
percent change	2.3	2.4	2.4	1.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Consumer spending												
Real (billion 1992 chained)	5,153	5,387	5,540	5,662	5,802	5,948	6,096	6,247	6,404	6,564	6,728	6,896
percent change	4.9	4.4	2.8	2.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Inflation measures												
GDP price index, chained	112.7	114.3	116.1	119.0	122.2	125.5	128.9	132.4	136.0	139.6	143.4	147.3
percent change	1.0	1.4	1.6	2.5	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
CPI-U, 82-84=100	163.2	166.6	170.4	174.5	179.4	184.4	189.6	194.9	200.3	205.9	211.7	217.6
percent change	1.6	2.1	2.3	2.4	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
PPI, finished goods 82=100	130.7	132.6	134.7	137.7	141.0	144.4	147.8	151.4	155.0	158.7	162.5	166.4
percent change	-0.9	1.5	1.6	2.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PPI, crude goods 82=100	96.8	99.0	101.1	102.6	104.1	105.7	107.3	108.9	110.5	112.2	113.9	115.6
percent change	-12.9	2.3	2.1	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Crude oil price, $/barrel												
Refiner acq. cost, imports	12.1	17.6	21.5	20.5	21.2	21.9	22.7	23.5	24.3	25.1	26.0	26.9
percent change	-34.6	45.1	21.9	-4.7	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Real cost, 92 chained dollars	10.8	15.4	18.5	17.2	17.3	17.5	17.6	17.7	17.9	18.0	18.1	18.3
percent change	-35.2	43.1	20.0	-7.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Labor compensation per hour												
nonfarm business, 92=100	119.7	124.8	129.8	134.9	140.1	145.6	151.3	157.2	163.3	169.7	176.3	183.1
percent change	4.5	4.3	4.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Interest rates, percent												
3 month T-bills	4.8	4.6	5.3	5.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
6 month commercial paper	5.2	5.2	5.8	5.7	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Bank prime rate	8.4	7.9	8.8	8.4	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Treasury bonds (10-year)	5.3	5.6	6.2	5.9	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Moody's Aaa bonds	6.6	6.9	7.2	6.7	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Civilian unemployment												
rate, percent	4.5	4.3	4.2	4.5	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Nonfarm payroll emp., millions	125.8	128.4	130.0	131.5	133.1	134.7	136.3	138.0	139.6	141.3	142.8	144.4
percent change	2.6	2.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1
Total population, million	270.3	272.9	275.3	277.6	279.8	282.1	284.4	286.6	288.9	291.3	293.6	296.0
percent change	0.9	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Macroeconomic assumptions were completed in September 1999.

Table 3. Foreign real GDP baseline growth assumptions

Region/country	1997	1998	1999	2000	2001	2002	2003	Average 1992-1997	1998-2003	2004-2009
	Percent change									
World	3.2	1.6	2.8	2.9	3.0	3.1	3.1	2.5	2.8	3.2
less U.S.	3.0	0.9	2.5	2.9	3.1	3.3	3.3	2.3	2.7	3.3
Developed economies	2.7	1.8	2.9	2.6	2.5	2.5	2.5	2.1	2.5	2.5
United States	3.9	3.9	3.9	3.1	2.5	2.6	2.6	3.1	3.1	2.6
Canada	5.4	3.5	3.0	2.8	2.8	2.8	2.8	2.7	3.0	2.8
Japan	0.8	-2.9	2.0	1.5	1.8	2.3	2.3	1.4	1.2	2.3
Australia	1.7	4.0	2.7	2.5	2.5	2.5	2.5	3.6	2.8	2.5
European Union-15	2.5	1.7	2.6	2.7	2.6	2.5	2.5	1.7	2.4	2.5
Other Western Europe	2.5	2.8	2.1	2.6	2.8	2.8	2.8	1.6	2.7	2.8
Transition economies	2.0	-0.2	0.7	1.4	2.6	2.9	2.9	-5.7	1.7	2.7
Eastern Europe	3.9	3.1	2.7	3.9	4.5	4.6	4.5	2.2	3.9	4.2
Czech Republic	1.0	-2.1	1.0	3.3	3.9	5.2	5.2	1.1	2.8	5.2
Hungary	4.6	5.2	3.8	3.9	3.8	3.8	3.8	1.1	4.1	3.8
Poland	6.9	4.5	3.5	4.9	5.5	5.4	5.0	5.3	4.8	4.4
Former Soviet Union	1.3	-1.5	-0.1	0.3	1.7	2.1	2.1	-7.8	0.8	2.0
Russia	0.8	-4.6	-1.5	-1.0	1.4	2.4	2.4	-7.1	-0.2	2.4
Ukraine	-3.2	-1.7	-2.0	-1.0	2.5	2.5	2.5	-12.1	0.5	2.5
Other	2.5	1.5	1.5	1.6	1.8	1.8	1.8	-7.6	1.7	1.6
Developing countries	5.0	1.4	2.7	4.1	4.8	5.0	5.1	5.5	3.8	5.1
Asia	6.1	1.3	4.1	5.0	5.7	6.0	6.1	7.9	4.7	6.1
East & Southeast Asia	6.5	0.4	4.1	5.0	5.9	6.3	6.4	8.5	4.7	6.4
China	8.8	7.7	6.5	6.5	7.0	7.5	7.6	11.5	7.1	7.6
Hong Kong	5.2	-5.1	2.3	2.5	3.8	3.8	3.8	5.3	1.9	3.8
Korea	5.5	-5.7	4.5	5.0	6.0	6.0	6.0	6.8	3.6	6.0
Taiwan	6.8	4.8	5.0	5.5	5.6	5.6	5.6	7.6	5.4	5.6
Indonesia	4.9	-13.5	-4.0	1.5	3.0	5.0	5.0	7.2	-0.5	5.0
Malaysia	7.8	-6.7	1.6	3.5	4.5	5.0	5.0	8.5	2.2	5.0
Philippines	5.2	-0.5	1.5	3.5	4.5	4.8	4.8	3.8	3.1	4.8
Thailand	-0.4	-8.0	1.5	3.0	5.0	5.0	5.0	6.6	1.9	5.0
Vietnam	8.8	5.8	2.3	2.3	4.1	5.3	6.2	8.9	4.3	6.2
South Asia	4.7	4.5	4.3	5.2	5.3	5.3	5.3	6.0	5.0	5.3
India	5.2	4.5	4.5	5.5	5.5	5.5	5.5	6.4	5.2	5.5
Pakistan	-0.4	3.4	3.5	3.8	3.8	3.8	3.8	3.8	3.7	3.8
Bangladesh	5.9	5.6	2.5	4.1	4.8	4.8	4.8	5.0	4.4	4.8
Latin America	4.9	2.6	0.6	3.3	4.3	4.6	4.6	3.6	3.3	4.6
Caribbean & Central America	3.0	4.0	3.1	2.3	4.5	3.7	3.0	3.1	3.4	3.0
Mexico	7.0	4.6	2.7	3.8	4.0	4.5	4.5	2.7	4.0	4.5
South America	4.4	1.8	-0.3	3.3	4.4	4.7	4.7	4.0	3.1	4.8
Argentina	8.6	4.3	-2.0	3.1	4.5	5.0	5.0	5.4	3.3	5.0
Brazil	3.2	0.2	-1.6	3.0	4.5	5.0	5.0	3.4	2.7	5.0
Other	3.8	3.5	4.0	4.0	4.0	4.0	4.0	4.1	3.9	4.0
Middle East	4.0	-0.1	2.3	3.4	4.0	4.0	4.0	4.4	2.9	4.0
Iran	3.2	-2.5	1.5	2.8	3.8	3.8	3.8	3.3	2.2	3.8
Iraq	10.0	4.0	4.0	5.6	5.6	5.6	5.6	13.0	5.1	5.6
Saudi Arabia	1.9	-2.4	3.5	3.2	3.2	3.2	3.2	1.1	2.3	3.2
Turkey	7.7	2.9	1.5	4.0	4.4	4.4	4.4	5.0	3.6	4.4
Other	3.4	4.2	4.2	4.2	4.3	4.4	4.2	8.0	4.3	4.1
Africa	2.5	2.4	2.2	3.2	3.4	3.4	3.4	2.6	3.0	3.5
North Africa	2.8	3.7	2.1	4.2	4.1	4.1	4.2	2.8	3.7	4.2
Algeria	1.3	0.8	1.2	3.0	2.8	2.8	2.8	1.2	2.2	2.8
Egypt	5.5	5.0	4.0	4.5	4.5	4.5	4.5	4.4	4.5	4.5
Morocco	-2.0	6.0	-3.0	5.0	5.0	5.1	5.1	1.5	3.9	5.1
Tunisia	5.4	5.0	5.1	5.5	5.5	5.5	5.5	4.7	5.4	5.5
Sub-Saharan Africa	2.7	2.5	2.7	2.8	3.1	3.0	3.0	3.0	2.8	3.0
South Africa	1.7	0.1	1.3	2.2	3.1	3.1	3.1	1.7	2.1	3.1

Table 4. Baseline population growth assumptions

Region/country	1997	1998	1999	2000	2001	2002	2003	Average 1992-1997	Average 1998-2003	Average 2004-2009
						Percent change				
World	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.5	1.3	1.2
less U.S.	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.5	1.4	1.3
Developed economies	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.6	0.4	0.3
United States	0.9	0.9	0.9	0.8	0.8	0.8	0.8	1.0	0.8	0.8
Canada	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.3	1.0	0.9
Japan	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.0
Australia	1.0	0.9	0.9	0.9	0.9	0.8	0.8	1.1	0.9	0.7
European Union-15	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.0
Other Western Europe	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.7	0.3	0.1
Transition economies	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
Eastern Europe	0.0	0.0	0.0	0.1	0.1	0.2	0.2	-0.1	0.1	0.2
Czech Republic	-0.1	-0.1	-0.1	0.0	0.1	0.2	0.3	0.0	0.1	0.2
Hungary	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Poland	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.2	0.1	0.4
Former Soviet Union	-0.1	0.0	-0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.2
Russia	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.1	-0.3	-0.1
Ukraine	-0.6	0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.4	-0.1	-0.1
Other	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.5	0.7
Developing countries	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.8	1.6	1.5
Asia	1.5	1.4	1.4	1.3	1.3	1.3	1.2	1.5	1.3	1.2
East & Southeast Asia	1.1	1.1	1.0	1.0	0.9	0.9	0.9	1.2	1.0	0.8
China	0.9	0.9	0.8	0.7	0.7	0.7	0.6	1.0	0.7	0.6
Hong Kong	2.6	2.4	2.1	1.7	1.5	1.4	1.3	2.2	1.8	0.9
Korea	1.0	1.0	1.0	1.0	1.0	0.9	0.9	1.0	1.0	0.8
Taiwan	1.0	0.9	0.9	0.9	0.9	0.9	0.9	1.0	0.9	0.8
Indonesia	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.6	1.4	1.3
Malaysia	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.3	2.1	1.9
Philippines	2.2	2.1	2.1	2.0	2.0	2.0	1.9	2.3	2.0	1.8
Thailand	1.0	1.0	1.0	0.9	0.9	0.9	0.8	1.1	0.9	0.8
Vietnam	1.6	1.5	1.4	1.3	1.3	1.3	1.3	1.8	1.3	1.2
South Asia	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.9	1.8	1.6
India	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.8	1.7	1.5
Pakistan	2.8	2.8	2.8	2.7	2.7	2.7	2.6	2.7	2.7	2.5
Bangladesh	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.9	1.7	1.5
Latin America	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.7	1.5	1.3
Caribbean & Central America	1.7	1.6	1.6	1.6	1.6	1.6	1.5	1.7	1.6	1.5
Mexico	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.9	1.7	1.5
South America	1.6	1.5	1.4	1.4	1.3	1.3	1.3	1.7	1.4	1.2
Argentina	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2
Brazil	1.4	1.3	1.2	1.1	1.1	1.0	1.0	1.5	1.1	0.9
Other	1.9	1.8	1.8	1.8	1.7	1.7	1.6	2.0	1.7	1.5
Middle East	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.4	2.4	2.2
Iran	2.2	2.1	2.0	2.2	2.3	2.3	2.2	2.3	2.2	2.0
Iraq	2.8	2.9	3.0	3.0	2.9	2.9	2.9	2.3	2.9	2.8
Saudi Arabia	3.5	3.7	3.6	3.5	3.3	3.2	3.1	2.8	3.4	3.0
Turkey	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.6	1.5	1.2
Other	3.0	3.0	3.0	3.0	3.0	2.9	2.9	3.4	3.0	2.8
Africa	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.6	2.5
North Africa	2.0	1.9	1.9	1.9	1.8	1.8	1.8	2.1	1.8	1.7
Algeria	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.3	2.1	1.9
Egypt	1.9	1.9	1.9	1.8	1.8	1.8	1.7	2.0	1.8	1.6
Morocco	2.0	1.9	1.9	1.8	1.8	1.8	1.7	2.1	1.8	1.6
Tunisia	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.7	1.4	1.3
Sub-Saharan Africa	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.7
South Africa	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.3	2.2	2.0