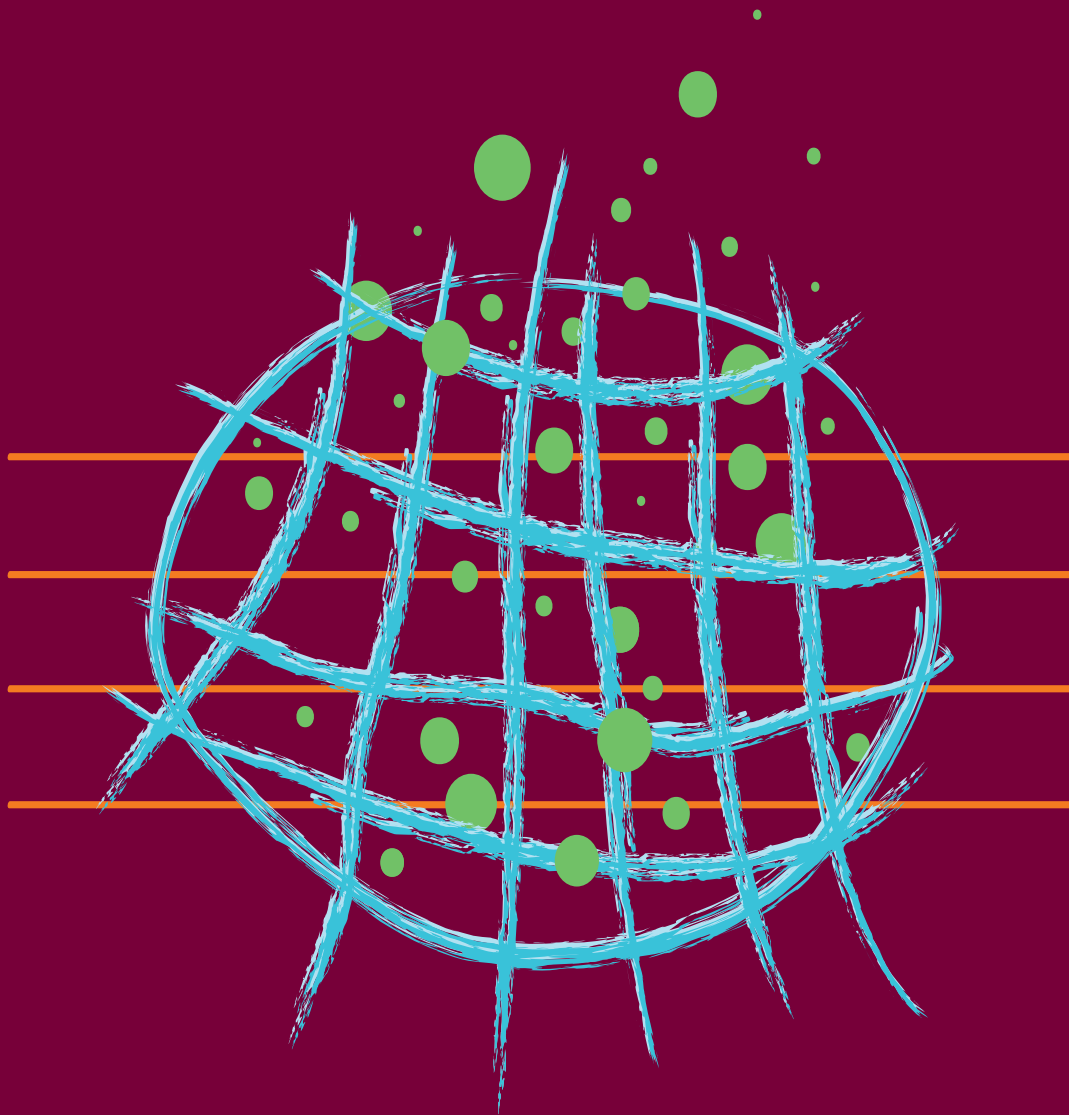




World Economic Situation and Prospects as of mid-2006



United Nations

Global economic prospects

Macroeconomic trends

The world economy started 2006 on a strong note. As a number of major developed economies managed to rebound from the notable slowdown in late 2005, many developing countries maintained the momentum of broad and solid growth. A measurable moderation is expected, however, in the second half of 2006, with the annual growth of world gross product (WGP) for 2006 as a whole at about 3.6 per cent (see table 1),¹ the same pace as in 2005 and marginally

Table 1.

Growth of world output, 2001-2006

Annual percentage change							
	2001	2002	2003	2004	2005 ^a	2006 ^b	2006 ^c
World output ^d	1.6	1.9	2.8	4.1	3.6	3.6	3.3
<i>of which:</i>							
Developed economies	1.2	1.3	2.0	3.2	2.7	2.7	2.5
Northern America	0.8	1.7	2.7	4.2	3.5	3.1	3.1
Western Europe ^e	1.9	1.2	1.2	2.4	1.6	2.3	2.1
Asia and Oceania ^f	0.7	0.4	2.0	2.3	2.7	2.8	1.9
Economies in transition	5.7	5.0	7.0	7.6	6.3	6.0	5.9
Southern and Eastern Europe	4.8	4.8	4.6	6.6	4.6	4.8	4.4
Commonwealth of Independent States	6.0	5.1	7.6	7.8	6.8	6.3	6.2
Developing economies	2.7	3.9	5.2	6.9	6.1	6.2	5.6
Africa	3.6	3.3	4.7	5.0	5.3	5.9	5.5
East Asia	4.5	6.9	6.8	7.9	7.3	7.3	6.5
South Asia	4.1	5.6	7.0	7.0	6.7	6.3	6.4
Western Asia	-0.3	3.0	4.7	6.5	5.1	5.2	5.1
Latin America and the Caribbean	0.3	-0.8	2.0	5.8	4.5	4.6	3.9
Other groupings							
Landlocked countries	5.6	4.5	4.6	6.1	7.2	6.8	—
Least developed countries	6.5	6.3	6.7	6.7	6.9	7.3	6.6
Small island developing States	0.5	3.4	2.8	5.7	5.9	5.5	—
Sub-Saharan Africa ^g	4.8	3.9	3.4	5.7	5.5	6.6	5.3

Source: Department of Economic and Social Affairs of the United Nations Secretariat.

^a Partly estimated.

^b Updated forecast in May 2006, based in part on Project LINK, an international collaborative research group for econometric modelling, coordinated jointly by the Economic Monitoring and Assessment Unit of the United Nations Secretariat and the University of Toronto.

^c Forecast released in January 2006 in World Economic Situation and Prospects 2006.

^d Calculated as a weighted average of individual-country growth rates of gross domestic product (GDP), where weights are based on GDP in 2000 prices and exchange rates.

^e EU-15, EU-10, Iceland, Norway and Switzerland.

^f Japan, Australia and New Zealand.

^g Excluding Nigeria and South Africa.

¹ The global projections are based on the weighted average of projected individual-country growth rates using the gross domestic product (GDP) valued in 2000 dollar prices for each country. Other global projections tend to use GDP valued in purchasing power parity (PPP) dollars. When using those weights, the United Nations global forecast for world economic growth would be 4.8 per cent for 2006.

higher than what was projected at the beginning of the year in *World Economic Situation and Prospects 2006*.² A number of downside risks have heightened most recently and they will weigh on the world economy in the near to medium future. The large global imbalances remain the primary source of uncertainty for the stability of the world economy, but there are other sources of uncertainties that are not negligible, such as the persistence of higher oil prices, the cooling off in the housing sector in a number of economies, the risk of avian influenza's turning into a pandemic, and the rising interest rates worldwide, as well as some geopolitical uncertainties.

One salient feature of the global economic expansion of the past two years has been the improvement in the breadth of growth performance among developing countries: a large number of developing countries have registered solid growth.³ As shown in table 2, during 2004-2005 about half of the 107 developing countries for which data were available had managed to register GDP per capita growth above 3 per cent, which by a rule of thumb is considered to be the threshold of the growth needed in order for a developing country to reduce poverty meaningfully. Meanwhile, only about a dozen developing countries experienced a decline in per capita GDP during 2004-2005, the smallest number in decades. Such a trend is expected to continue in 2006.

The *employment situation* worldwide is improving, but is far from satisfactory. Employment creation has lagged behind output growth in the global recovery of the past few years. Despite some noticeable improvement, most recently in 2006, unemployment rates in a large number of countries are still higher than their levels prior to the global downturn of 2000-2001. Many developing countries are also facing high levels of structural unemployment and underemployment, limiting the effectiveness of growth in reducing poverty.

A gradual recovery in employment continues in most developed countries. In the United States of America, the average monthly increase in wage employment has strengthened in 2006, with the unemployment rate dropping below 5 per cent. In Western Europe, unemployment rates are still about 1 percentage point above their low levels of 2001, but a gradual improvement is discernible. The unemployment rate in Japan has been declining steadily, and labour markets in Australia, Canada and New Zealand are exceptionally strong.

The unemployment situation in developing countries and economies in transition is more pressing, in both cyclical and structural terms. Official unemployment data, which often cover only urban areas, in general, underestimate by a large margin the severity of unemployment and, particularly, the underemployment situation in most developing countries. Nonetheless, even by this measure, only a small number of countries in Asia, in Latin America and in the group of economies in transition registered a notable reduction in unemployment rates in 2005. Unemployment rates for most Asian economies are still above their levels prior to the Asian financial crisis of the late 1990s. In China and many Asian economies, where people in rural areas still account for a large share of the population, surplus labour and high rates of underemployment in the rural areas remain a long-term policy concern. In South Asia, for example, the formal sector is unable to absorb a rapidly growing workforce and unemployment is highest among the young — which is also the case for many other developing countries. Despite some improvement, unemployment rates in most Latin American countries and economies in transition are still high — near 10 per cent. Structural unemployment and underemployment problems are particularly acute in Africa despite its recent growth recovery. Official rates of unemployment are at 10 per cent or higher in some of these economies.

² United Nations publication, Sales No. E.06.II.C2.

³ See *World Economic and Social Survey 2006* (United Nations publication, Sales No. E.06.II.C1) for a comprehensive analysis of the growth divergence among the world economies in the past four decades.

Table 2.
Frequency of high and low growth of per capita output, 2003-2006

	Number of countries monitored	Decline in GDP per capita				Growth of GDP per capita exceeding 3 per cent			
		2003	2004	2005 ^a	2006 ^b	2003	2004	2005 ^a	2006 ^b
		Number of countries							
World	159	27	16	14	6	64	85	88	84
<i>of which</i>									
Developed economies	33	5	1	2	0	9	16	12	13
Economies in transition	19	0	0	1	0	16	18	18	19
Developing countries	107	22	15	11	6	39	51	58	52
<i>of which</i>									
Africa	51	12	10	10	5	20	19	25	19
East Asia	13	0	1	0	0	6	11	11	11
South Asia	6	0	0	0	0	5	5	5	5
Western Asia	13	4	2	0	1	5	6	6	6
Latin America	24	6	2	1	0	3	10	11	11
<i>Memorandum items</i>									
Least developed countries	41	10	11	7	5	18	15	19	15
Sub-Saharan Africa ^c	44	12	10	9	5	15	15	19	13
Landlocked developing countries	26	4	4	5	1	12	10	13	12
Small island developing States	17	4	4	3	1	2	6	7	6
	Shares^d	Percentage of world population							
Developed economies	15.4	1.9	0.0	1.1	0.0	1.3	6.8	1.5	1.6
Economies in transition	5.6	0.0	0.0	0.1	0.0	4.7	4.8	5.1	5.1
Developing countries	79.0	7.1	2.0	1.6	0.8	60.1	66.4	68.0	65.2
<i>of which</i>									
Africa	13.5	2.3	1.1	1.6	0.4	6.8	6.2	9.9	6.8
East Asia	30.8	0.0	0.0	0.0	0.0	27.8	30.3	30.2	30.1
South Asia	23.3	0.0	0.0	0.0	0.0	23.2	23.3	23.4	23.5
Western Asia	2.9	0.8	0.6	0.0	0.3	1.6	1.8	1.7	2.1
Latin America	8.6	3.9	0.2	0.0	0.0	0.7	5.0	2.9	2.9
<i>Memorandum items</i>									
Least developed countries	10.7	1.9	1.4	0.6	0.6	6.8	7.5	8.0	6.6
Sub-Saharan Africa ^c	8.4	2.3	1.1	1.1	0.4	3.5	4.7	5.2	3.6
Landlocked developing countries	5.1	1.6	0.7	0.6	0.2	1.3	2.1	2.9	1.6
Small island developing States	0.8	0.2	0.2	0.0	0.0	0.0	0.1	0.3	0.3

Source: Department of Economic and Social Affairs of the United Nations Secretariat, including population estimates and projections from *World Population Prospects: The 2004 Revision, vol. I, Comprehensive Tables* (United Nations publication, Sales No. E.05.XIII.5).

- a** Partly estimated.
- b** Forecast, based in part on Project LINK.
- c** Excluding Nigeria and South Africa.
- d** Percentage of world population for 2000.

Headline *inflation* rates have edged up markedly in a majority of countries, driven mainly by higher oil prices. Core inflation rates, excluding such highly volatile components as the prices of energy and food, have been much more stable, indicating that the pass-through of higher oil prices into overall inflation has been limited. Inflation expectations, as measured by various surveys and market indicators, remain tame.

Core inflation rates in most developed countries range between 1 and 3 per cent, within the bound of inflation targets set by those countries, although in some the rates are near the upper bound of the targets. A long period of deflation in Japan is expected to come to an end in 2006. Inflation is accelerating in some economies in transition, and more inflation pressures are building up in many developing countries, particularly the oil-importing countries. Inflation has decelerated in Latin America and in Africa inflation rates have also fallen in most countries, except in the case of those few where high inflation has more to do with structural problems than with the increase in oil prices.

A number of developing economies have contained the rise in domestic oil prices relative to the increase in international oil prices through various measures, including subsidies, at the cost of putting pressure on fiscal balances. Such measures to smooth spikes in global oil prices can be only temporary, given the magnitude of the oil price increases and the difficulties in sustaining large fiscal deficits. As these countries reduce these measures, a stronger direct impact of higher oil prices on inflation is expected, as is already the case in Indonesia and a few other economies.

A favourable international economic environment for developing countries and economies in transition

Measured by such indicators as the international prices of commodities, the costs of external financing, capital flows and trade flows, many developing countries and economies in transition are still facing a generally auspicious international economic environment (see table 3). In the outlook, however, such an environment will deteriorate somewhat: the fact that monetary conditions in major economies are tightening, real interest rates in global capital markets are rising, and the global imbalances are still widening, may lead to a disorderly adjustment and instability for global currency and financial markets.

The growth of world *merchandise trade* has stabilized at a moderate annual pace since 2005, but is still at 7-8 per cent. The exports of developing countries continue to grow faster than those of developed countries, thereby increasing their share in the world market. This increase is particularly evident for some of the most dynamic developing countries, such as China and India, whose exports are growing at an annual rate of 20 per cent or more. An expected rebound of business investment in many countries from the weakness of the past few years may lead to increases in global demand for capital goods, thereby raising the exports of major developed countries such as the United States and Germany. Meanwhile, continued robust growth in a few large developing countries should sustain strong international trade flows of energy and primary commodities.

The momentum of international trade in the future will depend in part on the progress in *multilateral trade negotiations*. The Sixth Ministerial Conference of the World Trade Organization held in Hong Kong Special Administrative Region (SAR) of China in December 2005 achieved modest results. An agreement was reached to eliminate all forms of agricultural export

Table 3.
Indicators of the international economic environment, 2000-2006

	2000	2001	2002	2003	2004	2005 ^a	2006 ^b
World trade merchandise							
Growth of volume of world exports (percentage)	10.8	-0.9	3.0	6.4	11.0	7.1	7.0
Value of exports from developing countries (billions of dollars)	1 913.6	1 797.5	1 938.4	2 285.5	2 876.9	3 524.8	3 911
United States trade deficit (billions of dollars)	378	362	421	496	516	726	752
World prices							
Oil (Brent) (dollars per barrel)	28.3	24.4	25	28.9	38.3	54.43	63
Non-fuel commodities (index: 2000=100)	100	96	97	105	126	141	—
Manufactures (index: 2000=100)	100	98	98	107	115	118	—
Real prices of non-fuel commodities (index: 2000=100)	100	98	99	98	110	119	—
Exchange rate of the United States dollar							
Nominal trade-weighted index (January 1997=100)	119.4	125.9	126.7	123.2	113.6	111.56	—
Euros per dollar	1.09	1.12	1.06	0.89	0.81	0.80	0.78
Yen per dollar	107.8	121.5	125.4	115.9	108.2	110.2	110.0
Financial flows to developing countries (billions of dollars)							
Net transfer of resources	-192.4	-163.6	-215.6	-302.1	-374.0	-483.4	—
Official development assistance	53.8	52.4	58.3	69.1	79.6	106.5	—
Net direct investment	140.8	152.8	114.4	134.4	153.7	172.1	—
Global interest rates (percentage)							
LIBOR ^c interest rate	6.6	3.7	1.9	1.2	1.8	3.8	—
Spread on developing-country bonds (percentage)	7.5	8.4	7.8	5.6	4.4	3.0	—

Source: Department of Economic and Social Affairs of the United Nations Secretariat, based on Project LINK and international sources.

^a Partly estimated.

^b Forecast, based in part on Project LINK.

^c London Interbank Offered Rate.

subsidies by the end of 2013, in a progressive manner. Developed countries agreed to provide duty- and quota-free market access for products originating from the least developed countries by 2008. This would apply to all products, except that the preference-giving countries will have the option to exclude up to 3 per cent of the number of products originating from least developed countries. Another decision was made to eliminate all forms of export subsidies for cotton by developed countries in 2006 and to grant duty- and quota-free access for cotton exports from the least developed countries. The Conference also recognized the importance of “aid for trade” to help developing countries, particularly the least developed countries, improve supply-side capacity and trade-related infrastructure in order to implement and benefit from World Trade Organization agreements and cope with short-term adjustment costs associated with trade liberalization. A more concrete agenda was set for further negotiations in order that consideration of all the items in the Doha agenda might be completed by the end of 2006. Progress in the early part of 2006 however, has been disappointing: the negotiations at the World Trade Organization failed to meet the deadline of 30 April for establishing modalities for agricultural and non-agricultural market access, as a result of persistent disagreement among the member countries.

The *terms of trade* continue to improve for many commodity-exporting developing countries. Oil prices, which had more than doubled over the past two years, climbed further during the early part of 2006, surging to \$75 per barrel in mid-April. While the prices of precious metals have approached their highest levels in decades, the prices of base metals and minerals have also continued on the up trend of the past few years. Only the prices of a few beverage and food commodities have experienced some moderation. At issue is the sustainability of the upward trend in the prices of most commodities. A strong demand for primary commodities stemming from the robust growth in China, India and some other developing countries and the tight supply capacity in some commodities have been the key factors behind the increase in these prices over recent years, but there have also been other factors beyond the economic fundamentals, such as heightened geopolitical uncertainties and market speculation. These non-economic factors have made the prices more volatile than otherwise and have led to an inefficient allocation of resources for both the producers and the users of primary commodities. In view of the past history of high volatility in commodity markets, primary commodity exporting countries should be vigilant about the risk of a sharp reversal in prices.

Private capital flows to emerging market economies had been strong in 2005, and the momentum continued in the early part of 2006, but a certain degree of moderation is expected in the outlook, particularly in non-foreign direct investment (FDI) flows, as most of the favourable conditions that bolstered capital flows over the past two years seem to be phasing out. Despite buoyant private capital markets, the net transfer of financial resources to developing countries is becoming increasingly negative; there is a rising flow of capital — net of interest and other investment income — moving from developing to developed countries. Net transfers are still positive, but declining, for sub-Saharan Africa. This flow of resources from poor to rich countries has increased over the past 10 years and the widening external deficit of the United States is absorbing the major share of those transfers.

The *external financing costs* for emerging market economies remain low: the spreads in the Emerging Markets Bond Index (EMBI) reached all-time lows in the first quarter of 2006. The current level of spreads, however, may not be sustainable, as debt ratios in some countries are high. More importantly, a noticeable spike in the benchmark long-term rates of the United States Treasuries in March-April 2006 may be worth noting. During the past two years, when the United States Federal Reserve Board had raised the policy interest rates by about 400 basis points, long-term interest rates stayed unusually low, leading to a flattened yield curve, which was considered a “conundrum” by some analysts. In March-April 2006, however, interest rates of the long-term United States Treasuries moved up by about 50 basis points, to push the rates to the highest level in four years. The factors behind the recent increases in the long-term interest rates seem to extend far beyond the concerns about higher inflation. For example, a comparison of 10-year yields on Treasuries and 10-year Treasury Inflation-Protected Securities has shown that only one third of the recent rise in long-term interest rates could be attributed to a higher inflation expectation, while the rest reflected an upward adjustment in investors’ assessment of other risks in the future. One of these possible risks is an abrupt adjustment in the global imbalances. The current levels of long-term interest rates are still not high by historical standards, but the recent move indicates once again that international investors’ risk-aversion can change quickly.

Official development assistance (ODA) has recently increased in nominal terms, but the amount of aid received by the least developed countries in recent years, excluding resource flows for emergency assistance, debt relief and reconstruction, was only marginally higher than that of a decade ago. In 2005, some progress was made in official development cooperation. The

international community reiterated that improving the quality of aid was as important as mobilizing more aid. Meanwhile, developing countries, particularly in Africa, have continued their efforts to forge a multi-actor and multidimensional partnership with the developed countries, focusing on efforts towards capacity-building, establishing and maintaining peace and security, and building an enabling climate for business investment. Yet, many more efforts are needed for donor countries to live up to the commitments made at the 2005 World Summit.

A few more countries reached the completion point in 2005 under the Heavily Indebted Poor Countries (HIPC) Initiative, with its implementation continuing to progress slowly. As a result of debt relief under the HIPC Initiative, most debt indicators of developing countries have improved, including the debt-service ratios.

Downside risks

Further deterioration in global imbalances

Global imbalances have continued to widen in 2006. The current-account deficit of the United States surpassed \$800 billion in 2005 and is expected to exceed \$900 billion in 2006. On the other hand, oil-exporting countries continue to experience increases in their surpluses, Asian economies as a whole appear to have stabilized their large surplus at the level of 2005, the euro area's external account is in balance, and the rest of the European developed countries still have some surplus as a group.

According to some analysts, global imbalances reflect a worldwide "savings glut", as is evident from two concurrent trends: a number of countries with high savings rates, mainly in Asia, seem to have enlarged their positive saving-investment gaps over the past few years, and long-term interest rates worldwide have been at exceptionally low levels.⁴

However, both global savings and investment rates have been persistently on the decline since the 1970s, reaching an historical low point in 2002 and rebounding only slightly since. The increased saving-investment gaps in most countries running current-account surplus are primarily due to a weakening of investment growth. Declining or stagnant investment rates also characterize recent trends in the dynamic Asian economies as well as other developing countries, with China being the only exception. Business investment, relative to GDP, is clearly below historical averages in the major economies, such as Germany, Japan and the United States, despite low interest rates and remarkably buoyant corporate profits and savings. Thus, instead of a global glut in savings associated with the global imbalances, there is a global "anaemia" in investment.

Meanwhile, the sustainability of the present global imbalances should be judged not only from the savings-investment and current-account positions but also, and more importantly, from the net foreign asset positions of the major economies. Net foreign liabilities of the United States have increased to over \$3 trillion, representing about 25 per cent of its GDP. Normally, increases in the net debt ratio could trigger expectations of exchange-rate depreciation, and cause foreign investors to be less interested in holding assets of the debtor country, unless compensated through a higher interest rate. The case of the United States is not normal, however, owing to the fact that the United States dollar is the international reserve currency. Despite the fact that the United States is the world's largest net debtor country, income earned on foreign assets held by United States agents is higher than what the country pays on its foreign liabilities. Rates of re-

⁴ See *World Economic Situation and Prospects 2006* for a more detailed discussion on the issue of global imbalances.

turn on United States direct investment abroad appear to be substantially higher than on United States-based assets. In addition, the depreciation of the dollar against other major currencies has increased the value of United States foreign holdings and contained the rise in the value of its liabilities. In the outlook, the net investment income balance of the United States may turn into a deficit in 2006 as a result of the rising interest rates and more accumulation of foreign debt.

A large devaluation of the dollar would be the prelude to a disorderly adjustment of global imbalances, as it would undermine confidence in the dollar and likely trigger a swift retreat from dollar assets. A substantial devaluation of the United States dollar would also lead to significant negative wealth effects for many other developed and developing countries holding dollar-denominated assets, and depress aggregate demand in those countries and in the world economy as a whole. Therefore, restoring the global imbalances solely through major exchange-rate realignment seems neither an adequate nor an efficient path. After a rebound in 2005, the exchange rates of the United States dollar vis-à-vis other major currencies have resumed the depreciation trend in 2006. At the same time, the dollar has also continued to depreciate against the currencies in many developing countries.

While the baseline outlook assumes no abrupt adjustment of the global imbalances in 2006, there does loom the risk of a disorderly adjustment of global imbalances leading to a worldwide recession and destabilization of global financial markets. The worst-case scenario would be an abrupt retrenchment in the spending of households and businesses in the major deficit country, the United States, triggered by a sharp erosion of the willingness of the surplus countries to hold dollar-denominated assets and thereby continue financing the deficits of the United States. In such a scenario, the rebalancing would generate a substantial contraction, not only in the United States, but in the world economy as a whole, accompanied by a precipitous change in exchange rates and a detrimental shock to financial markets.

Risks associated with oil prices

Oil prices, in terms of the price of Brent oil, surged to \$75 per barrel in mid-April 2006, the highest level in nominal terms, although still about 10 per cent below the peak of 1980 when measured in comparable (real) dollar prices. While the increases in oil prices in the past few years, since 2003, could be attributed mainly to a stronger-than-anticipated growth in global oil demand, the further rise in oil prices since the second half of 2005 has largely been driven by factors associated with the uncertainties on the supply side. After an exceptionally strong increase in 2003-2004, growth of global oil demand since 2005 has slowed to the average pace of the past three decades. On the supply side, excess capacity in most oil-producing countries remains limited. As a result, oil prices have been highly sensitive to any perceptible risks of possible disruptions in oil production. While the spikes in oil prices during the fourth quarter of 2005 were caused by the hurricane damages in the United States, the recent price surge in 2006 has been associated with the heightened geopolitical concerns about the situation in the Islamic Republic of Iran, Iraq and Nigeria. The impact of these concerns on oil prices was also exacerbated by speculation in the oil futures market.

Thus far, world economic growth has not been visibly affected by the higher oil prices because their recent upward trend has not been accompanied by major curtailment in oil supply. Negative welfare effects from higher costs for producers and consumers have been offset by the continued growth in income. Should the push no longer come from the demand side, but rather from restrictions on the supply side — as was the case with the oil shocks of the 1970s and early 1980s — world output growth could be substantially hurt. The risk of such a supply-side

shock to oil prices is certainly present, given the current tightness in global oil production capacity, a result of under-investment in the energy sector over the past two decades. New investment plans and policy incentives to redress this situation have been announced in several oil-exporting countries, but these solutions will raise production capacity only in the medium term. Shortages in drilling equipment, technical personnel and service company capacity may impede capacity growth over the next two to three years. The significant upward movement in the prices of long-run oil futures reflects the expectation in the market that existing production capacity will remain constrained for some time to come. In the short run, major supply disruptions could well be caused by various unforeseen factors, including geopolitical tensions and natural disasters. Should such disruptions occur, a combination of much higher oil prices and the shortage in the oil supply would choke off world economic growth.

Bursting of the housing market bubble

A number of economies have experienced substantial appreciation in house prices over the past decades. Various housing indicators in those countries, such as the affordability ratio, the price-to-rent ratio, the mortgage loans-to-GDP ratio, and the ownership ratio, are at historical highs, suggesting a peak in the value of houses relative to the underlying economic fundamentals. Moreover, indications of possible bubbles in house prices, at least in some countries, are also visible from the increase in speculative activities. For example, in the United States, turnover in housing markets has increased, the share of investment-oriented house purchases has risen and novel mortgage products such as interest-only loans, innovative forms of adjustable rate mortgages and the allowance for a limited amount of negative amortization have been proliferating, thus enabling many marginally qualified and highly leveraged borrowers to purchase homes at inflated prices.

Part of the housing boom in recent years can be attributed to various country-specific features, but low interest rates and easier access to mortgage loans seem to be the common factors for most of the countries concerned. Therefore, an increase in interest rates can lead to a flattening or reversal in the growth of house prices, turning the positive growth contributions of the housing sector into negative ones. As an example, the recent notable growth moderation in Australia and the United Kingdom of Great Britain and Northern Ireland was unambiguously attributable to a cooling down of the housing sector. Various leading indicators in early 2006 have also shown a slowdown in the housing sector in the United States. In the best case, a cooling off in the housing sector will lead to only a moderation in private consumption. Should there be a significant drop in house prices, however, combined with a subsequent bank crisis (mortgage loans account for a sizeable proportion of total bank loans in some countries), as was the case in a number of countries in the past, the adverse impact on overall economic growth would be much larger.

For the global economy, the risks associated with the housing sector are serious, not only because of the large size of the economies concerned, but also because of an inextricable linkage between the increase in house prices and global imbalances. A number of economies that have seen substantial appreciation in house prices are also running large external deficits (relative to their GDP) and experiencing a decline in household savings to very low levels. In that regard, the housing boom in those countries has been to some extent financed by borrowing from the high-saving countries running external surpluses. Therefore, a burst in house prices is likely to lead to an abrupt and contractionary adjustment of the global imbalances.

Risks of a global influenza pandemic

In the first four months of 2006, 63 new cases of human infections with avian influenza were reported, 39 of them fatal. Total mortality has thus risen to 122 since the first recorded outbreak of infection with the A (H5N1) strain of the virus in Hong Kong SAR in 1997.⁵ In addition to the increased number of human infections, there has also been a geographical spread of the incidence of the virus in animals reaching South and Central Asia, as well as Europe and Africa.

If avian influenza remains in essence a bird disease, the economic impact will be limited to the poultry sector, as well as to upstream and downstream industries. A larger risk, however, is that the virus could so mutate as to become efficiently transmissible through human-to-human contact, resulting in large social and economic costs on a global scale. According to the World Health Organization (WHO), the world is closer to a pandemic now than it has been at any time since 1968.⁶

To assess the potential economic impact, several studies have drawn on past experiences with severe acute respiratory syndrome (SARS) in 2003 and with the three influenza pandemics of the twentieth century (in 1918-1919, 1957-1958 and 1968-1969). These estimates of economic costs vary in a large range between 0.1 and 10 per cent of GDP in the year of the pandemic, depending on underlying assumptions and types of models (see table 4). One general perception, however, is that any economic downturn will be of only short duration, as production, consumption and investment are likely to rebound quickly after the pandemic.

While no country will be spared in the case of a pandemic outbreak, countries with higher population density and lower levels of development are likely to be hit the hardest (relative to GDP). The level of integration into global trade and financial flows and the sectoral composition of an economy also play an important role, as more open economies stand to lose more from possible interruptions of trade and financial flows, and certain sectors (mostly services) are likely to be more vulnerable to behavioural changes than others.

On the supply side, absenteeism — owing to illness, the need to care for relatives, and/or the fear of being infected — in combination with reduced labour productivity,⁷ is likely to have a sharp, but temporary impact on economic activity. Only to a limited extent will this be mitigated by the possibility of telecommuting. The absolute number of possible deaths, which it has been estimated would lie between 5 million and 150 million worldwide, might also affect GDP in the longer term, through the effects of those deaths on the labour force and dependency ratios.

Demand-side factors, while also temporary, are even harder to estimate, as they are largely subject to psychological responses. Drawing on the experiences with SARS, most studies assume that the demand-side effects can also be severe, as households would hold back consumption, either for lack of income or for fear of contagion in public spaces. Investment is also likely to be postponed until the end of the pandemic.

⁵ World Health Organization data, available from http://www.who.int/csr/disease/avian_influenza/en/ (accessed 9 May 2006).

⁶ World Health Organization, "Avian influenza: assessing the pandemic threat" (WHO/CDS/2005.29) (Geneva, January 2005), available from <http://www.who.int/csr/disease/influenza/H5N1-9reduit.pdf> (accessed 9 May 2006).

⁷ Labour productivity is expected to decrease because of a likely reduction in other essential production inputs.

Table 4.
**Percentage points of GDP growth decline
 in the year of an avian flu pandemic**

Study	Region	Scenario	Demand-side effect	Supply-side effect	Total effect
ADB ^a	Asia	Mild	2.3	0.3	2.6
		Severe	6.5	0.3	6.8
CBO ^b	United States	Mild	0.5	1.0	1.5
		Severe	2.0	3.0	5.0
CDF ^c	Canada	Mild	0.0	0.1	0.1
		Moderate	0.1	0.2	0.3
		Severe	0.4	0.3	0.7
		Ultra	0.4	0.5	0.9
Brookings ^d	United States (and other countries not reported here)	Mild	0.0	0.6	0.6
		Moderate	0.2	1.2	1.4
		Severe	0.4	2.7	3.0
		Ultra	0.8	4.8	5.5
BMO NB ^e	Global	Mild	0.5	1.0	1.5
		Severe	2.0	3.0	5.0
Gf ^f	Global	Mild			1-2
		Moderate			3-4
		Severe			4-5
		Ultra			6-10

Sources: BMO Nesbitt Burns and United Nations staff research.

- a** Asian Development Bank: Erik Bloom, Vincent de Wit and Mary Jane Carangal-San Jose, "Potential economic impact of an avian flu pandemic", *ERD Policy Brief*, No. 42 (Manila, Asian Development Bank, November 2005).
- b** Congressional Budget Office, "A potential influenza pandemic: possible macroeconomic effects and policy issues" (Washington, D.C., Congressional Budget Office, December 2005).
- c** Canadian Department of Finance, Economic Analysis and Forecasting Division, "The economic impact of an influenza pandemic", mimeo (Ottawa, February 2006).
- d** Brookings Institution: Warwick McKibbin and Alexandra Sidorenko, "Global macroeconomic consequences of pandemic influenza" (Washington, D.C., and Sydney, Australia, The Brookings Institution and Lowy Institute for International Policy, February 2006).
- e** BMO Nesbitt Burns: Sherry Cooper, "The avian flu crisis: an economic update", BMO Nesbitt Burns special report (March 2006).
- f** Global Insight, "World overview: first quarter 2006", pp. 16-19, available from <http://www.globalinsight.com/>.

Policy stance and policy implications

Current macroeconomic policy stance

Among the developed countries, the United States, through its Federal Reserve Board, has continued monetary tightening. The Federal Funds Rate, after having risen to 5 per cent by mid-2006 from 1 per cent two years ago, is expected to remain unchanged for the rest of the year. Despite the lacklustre economic growth and generally fragile domestic demand in the euro area, the European Central Bank has also raised interest rates therein, indicating that the Bank's main policy concern has been focused on the inflation pressures from higher energy prices and/or that its estimate of the potential growth for the region is only near 2 per cent. The Bank of Japan has

abandoned the policy framework of quantitative easing, as deflation in the economy has ended, but short-term interest rates will likely stay very close to zero for the rest of 2006.

In most developing countries and economies in transition, further monetary tightening is expected, although in measured steps. This strategy holds in particular for most Asian economies, along with continued intervention in foreign-exchange markets and sterilization. In contrast, in Latin America, there remains room for easing in several countries with high interest rates and relatively low growth, such as Brazil and Mexico, as inflation has been contained within the target range. Authorities of other economies in that region, including those facing appreciation pressures, are expected to adopt a policy mix of tightening, foreign-exchange intervention and sterilization. While most African countries will maintain a cautious monetary policy stance, many economies in Western Asia are likely to raise interest rates. Meanwhile, despite some tightening, the monetary policy stance in most economies in transition will remain accommodative.

Fiscal policies are more country-specific. Fiscal policy in the United States is expected to remain slightly expansionary because of the expected increase in government spending on post-hurricane reconstruction. Fiscal policies in the countries of the euro area will likely remain restrictive because of the need to reach the targets established by the Stability and Growth Pact. Other European countries can maintain a neutral to mildly expansionary stance, while Japan is expected to continue its fiscal consolidation. Among the developing countries and economies in transition, most countries in Latin America, Africa and East Asia are likely to adopt more restrictive or cautious fiscal policies.

Policy coordination for global rebalancing

The current macroeconomic policy-setting in the world economy lacks concerted actions to redress the global imbalances. Coordinated global adjustment will require measures that will stimulate savings in the deficit countries and domestic demand in the surplus countries. The United States will need to stimulate household savings and reduce public dissaving, which may come at the cost of lower growth in the short run as the fiscal and monetary stimuli are reduced. Expansionary macroeconomic policies in the surplus countries may compensate for the growth loss and stimulate United States exports. In Europe, economic stimulus should come primarily from interest rates' being kept down in an effort to stimulate private demand. Room for fiscal expansion is more limited in most countries. Yet more should be done to revitalize consumption and investment demand. Structural reform policies of recent years have thus far not been able to create such a stimulus. In Japan, continued financial sector reform and fiscal incentives to stimulate private investment demand should combine to reduce domestic savings and trade surpluses. Asian surplus countries should try to boost public and private investment rates, or if these are considered sufficiently high as in China, they should try to boost broad-based consumption demand, particularly through increasing wages and rural sector incomes.

When implemented in a timely and coordinated fashion, a cooperative policy approach could avoid a contractionary and/or disorderly adjustment of the global imbalances. Such an approach would require a substantial degree of international macroeconomic policy coordination involving a much broader forum of countries than that comprising the major economies of the G-8. Given its nature, the surveillance of international policy coordination would be a natural task for the International Monetary Fund (IMF). The role of IMF in such matters, however, has eroded over the past two decades or so. The Fund should remain the central institution charged with fostering global financial stability and growth, even though there may be no consensus as yet on how exactly it would achieve those targets. In effect, at the 2006 spring meetings, agree-

ment was reached on a new framework for Fund surveillance. The new focus of the surveillance should be on multilateral issues, including global financial issues, and especially the spillover effects of one economy on others. To make multilateral surveillance effective for international policy coordination, the larger economies should be willing to accept advice from IMF.

Prevention of an influenza pandemic

The prevention of an influenza pandemic or its containment, if one were to occur, should be considered a global public good. Once the virus becomes efficiently transmissible between humans, it will not stop at national borders. Efforts to contain the virus at its source, by culling infected poultry and taking follow-up measures to keep the virus from spreading to other animals or humans, are essential to decreasing the risk of a dangerous mutation. It is therefore in the international community's own best interest, apart from its purely humanitarian concerns, to assist poor countries in preventing and controlling outbreaks.

Owing to technical constraints and the limited scale of vaccine production, it will take several months after the first outbreaks to develop an effective vaccine, and more time to produce an adequate supply for the world's population.⁸ Early quarantine measures and travel restrictions, as well as targeted treatment with antiviral drugs can buy valuable time for generating such a vaccine. This could help to attenuate the virulence of at least the second wave of the pandemic (past pandemics have typically occurred in two or three distinct waves over time).

Therefore, international cooperation and technical and financial assistance are essential. Preparedness and contingency planning is needed at the global, national and local levels in the public and private sectors. Surveillance measures, effective communication mechanisms, and quick-response capacities need to be established, and health-care systems must be prepared to handle peak numbers of patients. Increased international cooperation can also help both to improve the process of vaccine development and the scale of production and to step up efforts to produce and distribute antiviral drugs.

Costly preparatory measures for an uncertain event can be hard to justify in the presence of competing budget pressures, but they will likely pay off in the medium term, even if the A (H5N1) virus does not trigger the next global influenza pandemic. Improvements in the vaccine production process and the enhancement of international surveillance and communication mechanisms are a case in point. They can help to fend off future pandemics triggered by different influenza strains, and contribute to fighting other global diseases or coping with natural disasters. These medium-term benefits strengthen the case to be made for international cooperation and investment in pandemic prevention and preparedness.

Regional outlook: highlights

Among *developed countries*, the economy of the *United States* is increasingly challenged by a number of structural macroeconomic weaknesses, despite exceptionally strong growth in the first quarter of 2006. Growth of private consumption is expected to slow considerably in the face of higher energy prices, rising interest rates and a cooling housing market. On the other hand, a continued modest improvement in employment could prevent household spending from experiencing an excessive retrenchment, and the prospects for business investment remain robust,

⁸ While a prototype vaccine can be developed based on a subtype of the virus, in order to be effective it will have to be adapted to the exact characteristics of the yet unknown mutated version.

buttressed by record corporate profits and ample cash positions. While the baseline outlook for GDP growth remains at about 3 per cent for 2006 as a whole, major downside risks exist: a larger-than-expected decline in house prices and/or further substantial increases in energy prices, for example, would lead to a much more severe downward adjustment in private consumption, which could, in turn — given the protracted large external deficit — cause an abrupt adjustment in the United States current-account imbalance, derailing not only its growth but also that of the world economy.

The growth prospects for *Western Europe* have improved, but only marginally. GDP growth in the euro area is forecast to be about 2 per cent for 2006, a slight upward revision of the forecast contained in *World Economic Situation and Prospects 2006*. A number of leading indicators are positive, with industrial confidence climbing steadily, particularly in Germany, and consumer confidence also improving, although less robustly. Investment is expected to be the major driver of growth, and will be supported by increased rates of capacity utilization, robust export demand, improved corporate balance sheets, and continuing favourable financing conditions. Real interest rates, both long- and short-term, remain historically low, and the gradual return of policy to a more neutral level is not expected to have a major impact in the near term. Household consumption has been weak, but is expected to recover gradually over the year, supported by moderate growth in employment, but dampened by higher oil prices. Government spending will be unable to add much to growth at the aggregate level owing to severe fiscal constraints in most of the major economies.

For the group of *new members of the European Union (EU)*, broad-based growth is expected to continue in 2006. More of a contribution from domestic demand is expected in Central Europe, in spite of slower real wage growth. In the Czech Republic and Hungary, a reduction in the income tax and pre-electoral spending will provide some boost to private consumption, while in Poland, consumption will be supported by lower interest rates, an improving employment situation and higher real wages. FDI flows are expected to continue throughout the region, and public investment projects associated with the utilization of the EU funds will also contribute to growth. Some moderation of domestic demand is expected in the Baltic States, where growth will likely decelerate somewhat, remaining nevertheless robust, driven by strong exports and double-digit investment rates.

Japan's economic expansion continues at a stronger-than-expected pace. While the export sector remains an important source for growth, domestic demand has strengthened, supporting the overall economic expansion. Business investment is expected to pick up, as corporate profitability improves significantly. More progress has been made in restructuring the corporate sector and financial system to reduce non-performing loans, and bank lending has stabilized after having declined for years. Household consumption, which lagged in the recovery of the previous years, has finally strengthened. With further improvement in wages and employment, growth in household consumption is expected to continue. On the other hand, some drag will come from the public sector, as the Government aims at further fiscal consolidation through spending cuts and the reversal of previous tax cuts. Meanwhile, deflation, in which the economy has been mired for a number of years, is expected to end in 2006, as prices, including property prices, are recovering.

The economy of Canada, among *other developed economies*, will maintain growth near its long-run potential pace of 3 per cent, supported by the strong external demand for and higher prices of commodities, and by improvement in employment. Australia also continues to benefit from a strong external demand, offsetting to some extent the weak private consumption due to a slowing housing sector and higher energy costs. In contrast, growth in New Zealand

is expected to decelerate significantly owing to a falling net immigration after the boom in the previous years and the tighter monetary policy stance.

Among the *economies in transition*, growth in the *Commonwealth of Independent States (CIS)* is expected to remain robust, above 6 per cent, benefiting from higher commodity prices, in particular for oil, gas and metals. Private consumption is being boosted by rising wages and pensions, underpinned by fiscal stimuli and credit expansion. Investment is also picking up, largely in oil-exporting countries. A certain moderation in growth is expected in the Russian Federation, as a result of rising production costs, the continued real appreciation of the rouble, and inadequate investment levels. In Ukraine, after a sharp deceleration in 2005, political and economic uncertainties continue to weigh on growth prospects. By contrast, a few CIS economies in Central Asia have growth rates that are outperforming the regional average by a large margin — for example, Azerbaijan, growing at a rate of over 20 per cent boosted by strong exports of oil, and Armenia, growing at a rate of nearly 10 per cent driven by rapid expansion of construction and private consumption. Major risks for the region include the building up of inflation pressures, the volatility in commodity prices and the continued real appreciation of the currencies.

Regarding the remaining economies in transition, *South-eastern Europe* is expected to grow at a rate of about 4.8 per cent in 2006. Some slowdown is expected in private consumption in response to policy measures for cooling down private demand, while investment, including public investment, should boost growth. Improvements in productivity will likely sustain robust expansion in exports, although some adverse effects are expected from currency appreciation in some countries and from the phase-out of the Agreement on Textiles and Clothing in 2005 — especially increased competition from Asian textile products in the EU markets.

Among *developing countries*, growth in *Africa* will continue to expand by more than 5 per cent in 2006, maintaining the momentum gained over the past three years. Many countries are expected to benefit from robust exports of oil and some non-oil commodities, and buoyant domestic demand, as well as from increased FDI flows and donor support in the form of ODA and debt relief. On the other hand, several countries will likely suffer from weak agriculture caused by adverse weather conditions in the last quarter of 2005 and the continuing decline in textiles and clothing exports. Growth in all Northern African countries is expected to accelerate in 2006. While continued strong hydrocarbon earnings will support public consumption and investment in Algeria and the Libyan Arab Jamahiriya, GDP in Egypt will be buttressed by export growth, private investment, and higher receipts from tourism and the Suez Canal. Morocco's GDP growth is also expected to recover from a severe contraction caused by inadequate rainfall in 2005. In sub-Saharan Africa, excluding Nigeria and South Africa, growth is projected to be more than 6 per cent in 2006 (see box). South Africa's GDP growth will moderate slightly, but will remain strong, while Nigeria's growth will decelerate to about 5 per cent owing to increased disruption in oil production, partly offsetting the relatively robust growth in the agricultural and manufacturing sectors.

Growth in *East Asia* is expected to maintain a strong momentum, above 7 per cent, led by China.⁹ China's growth in 2006 is expected to decelerate marginally, including some tightening measures to prevent the economy from overheating. While investment will continue to post strong growth, private consumption is expected to strengthen, resulting from a number of policy initiatives to boost income and consumption in the rural area. Export growth is expected to remain high, slowing only somewhat from the pace of the previous year, and import growth is likely to accelerate. A continued upswing in global electronics demand will benefit economies

⁹ In contrast with *World Economic Situation and Prospects 2006*, the present document has included the revision of the GDP numbers released by the Chinese authorities at the end of 2005.

Box

Prospects for the least developed countries

Many least developed countries have sustained strong growth, averaging more than 6 per cent per year since 2001. Growth performance varied widely within the group, however. Fifteen least developed countries are expected to have per capita GDP growth exceeding 3 per cent in 2006, down slightly from 19 in 2005 (see table 2). Meanwhile, five least developed countries likely will suffer a decline in per capita GDP in 2006. In 2005-2006, sustained high oil exports earnings and increased public spending are expected to support strong growth in a number of oil-exporting countries, such as Angola and the Sudan.

In the majority of the least developed countries, however, economic growth depends significantly on agricultural production, which is vulnerable to weather conditions. Most least developed countries enjoyed good harvests in 2005, although some — like Lesotho, Malawi and the Niger — were severely hurt by drought, food shortages and related inflationary pressures. The loss of trade preferences associated with the Agreement on Textiles and Clothing in 2005 hit some least developed countries hard. These included Lesotho, Madagascar and Malawi. Those effects will continue to be felt in 2006. Bangladesh is an exception: it has been able to weather this shock well and textile production and exports have expanded. The most vulnerable least developed countries are the net oil-importing countries, which suffer from high oil prices, do not benefit from higher non-oil primary commodity prices and have limited access to external financing. Those and other adverse factors have constrained economic growth in countries such as the Central African Republic, Eritrea, Guinea, Guinea-Bissau and Togo.

Political stability and sound macroeconomic policies continue to be crucial for growth in the least developed countries. Improved political and economic governance have directly contributed to sustained growth rates of above 5 per cent during the past three years in countries such as Cape Verde, Madagascar, Mozambique, Senegal, the United Republic of Tanzania and Zambia. Meanwhile, the ongoing civil conflicts in Côte d'Ivoire (which is not a least developed country) and in the Darfur region of the Sudan remain of great concern, not only because of the consequences for the inhabitants of those countries, but also in view of the potentially destabilizing effects on neighbouring countries. Increased tensions on the Chad-Sudan border, for instance, have been partly responsible for the rapid deceleration of GDP growth in Chad in 2005-2006.

Many least developed countries will continue to pursue relatively cautious monetary and fiscal policies. Least developed countries that have experienced lower export earnings and higher import costs will have to rely on additional official development assistance (ODA) and debt relief to avoid a major recession. The new plans announced by the European Union (EU) in 2005 to substantially increase aid flows to Africa and to improve the coordination of bilateral aid programmes and policies of member States are expected, when fully implemented, to enhance the prospects of many least developed countries in the region for achieving the Millennium Development Goals. The recent decision to write off multilateral debt owed by heavily indebted poor countries is expected to facilitate long-term debt sustainability in many least developed countries.

such as the Republic of Korea, Malaysia, Singapore and Taiwan Province of China. Meanwhile, growth in Thailand is expected to recover from its decline in 2005, as tourism is forecast to pick up, and a number of planned large infrastructure projects should help bolster domestic demand, this being conditional on a swift resolution of the current political uncertainty. Hong Kong SAR is expected to register a slight slowdown, owing to the maturing of its economic cycle. In light of the increased regional and international incidence of the avian influenza since the beginning of 2006, the risk of further outbreaks among poultry and humans, and the potential for a human pandemic, should not be underestimated. Other downside risks for the region include an increase in protectionist trade policies in the region's main export destinations.

South Asia will continue its strong growth in 2006, above 6 per cent, only slightly below that of the previous year. India is expected to experience a moderate cyclical downturn,

as is Pakistan, which posted record growth in the fiscal year ending June 2005. Growth in the Islamic Republic of Iran in 2006 is likely to surpass the pace of 2005 owing to increased public spending. As in 2005, growth in 2006 will be broad-based across economic sectors, although agricultural output growth in most countries will likely slow after the rebound in 2005, except in Bangladesh, where agricultural growth is expected to recover from last year's severe flood damages. Industrial production and the services sector will remain buoyant throughout 2006. Domestic demand will continue to be driven by private consumption demand and public investment. Many Governments are planning significant infrastructure investments; and post-tsunami reconstruction activities in Sri Lanka and Maldives continue. Pakistan has also entered the reconstruction phase after the October 2005 earthquake. Private investment is also picking up in some countries, most notably India, where sustained growth and reforms have contributed to a rise in investor confidence. Downside risks for the region, besides higher oil prices and avian influenza, include the uncertainties centred around the international settlement of the nuclear issue in the Islamic Republic of Iran, and the political instability in Nepal and Sri Lanka.

Growth in *Western Asia* continues to benefit from booming oil revenues. In the oil-exporting economies of the Gulf Cooperation Council (GCC), rising trade surpluses and fiscal expenditures, along with wealth effects from asset prices and ample credit to the private sector, have been stimulating consumption and investment. With oil prices staying at high levels, some countries, such as Saudi Arabia, have planned to increase investment in the oil sector and broad infrastructure, which will sustain strong growth in the outlook. Despite having suffered from falling terms of trade, the economies of these oil-importing countries in the region have benefited from spillover effects emanating from the oil boom, as workers' remittances from the Gulf have increased. A positive trend in intraregional tourism flows supported demand expansion, particularly in the Syrian Arab Republic and Jordan. Jordan has also benefited from inflows of capital and skilled labour. Growth in Turkey is moderating from the exceptionally strong expansion of last year, but may still reach 6 per cent in 2006: domestic demand is strong, but the widening current-account deficit presents a challenge. For the region, in addition to the chronic, as well as the new geopolitical uncertainties, there are other downside risks associated with the boom in real estate and financial markets fuelled by surging oil revenues, which could be followed by a burst when oil prices reverse the trend.

The growth prospects for *Latin America and the Caribbean* have been upgraded slightly from the last forecast in *World Economic Situation and Prospects 2006*, owing mainly to improved conditions in Argentina, the Bolivarian Republic of Venezuela, Brazil, Peru and Uruguay, delaying the previously anticipated mild slowdown. The improved outlook relies on both a continued favourable external environment and a strengthened domestic demand. Monetary easing since the end of 2005 in the two largest economies, Brazil and Mexico, has helped revive real investment after contractions in the previous year. Investment has also accelerated in Argentina, especially in construction and commerce, boosting a higher-than-expected growth. Meanwhile, private consumption in the region has also gained momentum along with lower interest rates. Real import demand has also strengthened, but the current-account surplus of the region over an unprecedented three consecutive years will continue, owing to the higher commodity export prices and strong demand from China and the United States. This has resulted in currency appreciation which presents policy challenges in several countries in the region. Despite salient progress made in reducing public debt, the debt-to-GDP ratio remains high in some countries, hence these countries are still vulnerable to deterioration in the international environment, under conditions such as higher interest rates in global capital markets and the softening of commodity prices.