Global Economic Prospects

Commodities at the Crossroads 2009

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Cover photos: Oil platform worker in Urucu, Brazil by Hervé Collart/Corbis (left); Molten steel
being poured in Tangshan, China by Yang Liu/Corbis (top right); Farmers in Kenya by Curt
Carnemark/The World Bank (bottom right)
Cover design: Critical Stages

The cutoff date for the data used in this report was November 20, 2008. Dollars are current
U.S. dollars unless otherwise indicated.

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Foreword

EACH YEAR, *Global Economic Prospects* explores critical "here and now" economic developments relevant to low- and middle-income countries. Past editions have examined the sustainability of developing-country growth over the long term, importance for developing countries of international and regional trade liberalization, and migration and remittances. Last year's report looked at the pace and determinants of technological diffusion in developing countries.

This year's *Global Economic Prospects* finds the global economy at a crossroads, transitioning from a sustained period of very strong developing country–led growth to one of substantial uncertainty as a financial crisis rooted in high-income countries has shaken financial markets worldwide. Commodity markets too are at a crossroads with the very high prices of 2007 and early 2008 having fallen by more than half in many instances.

Great uncertainty surrounds the implications of this crisis for developing countries. Initially, the repercussions for developing countries of the financial turmoil that characterized 2007 and the first half of 2008 were limited. However, since September 2008, the intensification of the banking crisis, the collapse of several global financial players, and the sharp increase in emerging market bond spreads have dramatically altered the outlook for developing countries. These events constitute the kind of disorderly adjustment that has been discussed in previous reports as a risk. Materialized, it implies a sharp slowdown for developing countries and the possibility that serious crises may emerge.

While the measure of that slowdown and its near-term implications for growth and incomes are important, governments in developing countries also need to be mindful of the longer-term implications of their policy response. Thus, while countercyclical policy may help reduce the short-term costs of the slowdown, care must be exercised to react prudently so as not to endanger longer-term fiscal sustainability and growth prospects. For as serious as the coming slowdown may be, developing-country growth is expected to recover after the crisis is over.

Commodity markets have seen spectacular swings over the past 24 months as enormous tensions first built up and were then released. The extended and sharp rise in commodity prices prompted concerns that the world was transitioning into a new phase of commodity scarcity—a concern that the recent dramatic drop in commodity prices has only partially alleviated. Long-term supply and demand prospects for commodities suggest that while commodity prices are likely to be higher than they were during the 1990s and early 2000s (when they were depressed by excess supply), the recent peaks that have been observed are unlikely to be the new norms. Over the long run, demand for commodities is not expected to outstrip supply. Even though per capita incomes in developing countries are expected to continue rising rapidly, population growth is slowing and with it global GDP growth. As a

result, the pace at which commodity demand expands should also ease. Assuming that efficiency with which commodities are both employed and produced continues to improve as it has done over the past few decades, supply should keep pace with demand.

However, policy will need to be supportive if such a positive result is to materialize. In particular, agricultural yields have declined in recent years. Unless governments in developing countries and aid agencies take concrete steps to increase investment in rural infrastructure, agricultural research and development, and agricultural extension services, it is possible that global agricultural productivity growth will slow. Higher food prices would follow and many countries that are now self-sufficient in food (notably those that still have fast growing populations) would become large net importers of food. On the energy side, policies to combat carbon emissions would help slow the depletion of hydrocarbon resources, by speeding both demand-side and supply-side substitution toward cleaner energy sources. If successful in slowing global warming, these could also help prevent the very large agricultural productivity losses predicted by some in the second half of this century.

The recent boom in commodity prices has challenged policy makers in both producing and consuming countries. Encouragingly, commodity producers appear to have managed their windfall revenues more prudently than in the past. Instead of expanding spending programs in line with increased revenues, many have saved a much larger share of these revenues—reducing the likelihood that they will need to cut back spending in a procyclical manner now that commodity prices (and

global growth) have declined. However, countries with new-found commodity wealth or newly independent commodity-rich states have not shown similar restraint and may encounter more difficulties during the current downturn.

Higher food prices are estimated to have increased global poverty by some 130–155 million people. Most countries responded to the food crisis by expanding existing social safety net programs, which made good sense given the profound and long-term consequences that increased malnutrition could generate. However, in many instances the response was poorly targeted and expensive. Now that food prices are declining, countries need to take steps to revamp their social welfare systems so that they are better targeted and that the next time a similar crisis comes along, additional spending will be more effective in limiting poverty impacts.

At the international level, steps need to be taken to prevent producing countries from exacerbating shortfalls by introducing export bans or by withholding stocks from the global market. An international scheme to share information about private and public stocks and coordinate their management during times of crisis is worth pursuing. Similarly, funding for international food aid programs should be made more predictable, and agencies should be endowed with a line of credit that would allow them to respond rapidly to future food emergencies in a way they cannot at present.

Justin Yifu Lin
Senior Vice President and
Chief Economist
The World Bank

Acknowledgments

Abbreviations

ASEAN	Association of South Eastern Asian Nations
CEE	Central and Eastern European countries
CIS	Commonwealth of Independent States
CPI	consumer price index
EMBI	Emerging Markets Bond Index
EMBIG	Emerging Markets Bond Index Global
EU	European Union
FDI	foreign direct investment
FSU	former Soviet Union
GCC	Gulf Cooperation Council
GDP	gross domestic product
GFRP	Global Food Crisis Response Program
GIDD	Global Income Distribution Dynamics Model
IDA	International Development Association (World Bank)
IEA	International Energy Agency
IMF	International Monetary Fund
IPO	initial public equity offering
LSMS	Living Standards Measurement Survey
MSCI	Morgan-Stanley Composite Index
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of Petroleum Exporting Countries
PPP	purchasing power parity
PCSC	*Programme Complémentaire de Soutien à la Croissance*
RIGA	Rural Income-Generating Activities
saar	seasonally adjusted annualized rate
toe	tonne of oil equivalent
UAE	United Arab Emirates
WFP	World Food Programme

Overview

The release of this year's *Global Economic Prospects* finds the world economy at a crossroads. Markets all over the world are engulfed in a global economic crisis, with stock markets sharply down and volatile, almost all currencies having depreciated substantially against the dollar, and risk premiums on a wide range of debt having increased by 600 or more basis points. Commodity markets too have turned a corner. Following several years of increase, prices have plummeted, and although well above their 1990s levels, they have given up most of the increases of the past 24 months.

Chapter 1 of this report examines the medium-term implications of this crisis for developing-country growth, inflation, and world trade. Chapter 2 looks at longer-term supply and demand prospects in commodity markets. It takes into account the long-term growth prospects of developing countries and their rising share in world GDP (gross domestic product), the declining quality of new pools of resources, and the influence of technology on both demand and supply. Finally, chapter 3 reports on the poverty impacts of high commodity prices and examines the effectiveness of policies in both producing and consuming countries in dealing with the challenges posed by periodic bouts of high commodity prices.

This report does not deal with water, fish, or timber, all commodities of critical importance to developing countries and the globe but which fall outside the scope of this report either because of their public-goods character or, in the case of timber, because of its treatment in a recent report (World Bank 2007).

The global financial crisis threatens short-term prospects in developing countries

The banking crisis that erupted in September 2008, following more than a year of less acute financial turmoil, has substantially reinforced the cyclical downturn that was already under way. Following the insolvency of a large number of banks and financial institutions in the United States, Europe, and the developing world, financial conditions have become much tighter, capital flows to developing countries have dried up, and huge amounts of market capitalization have evaporated.

The crisis began in high-income countries, but developing countries have been caught up in its wake. As of mid-November, developing-country equity markets had given up almost all of their gains since the beginning of 2008 and initial public offerings had disappeared. Risk premiums, which had risen to more than 800 basis points on sovereign bonds and 1,000 on commercial debt, have declined but remained well above 600 basis points in every developing region. As corporate bonds had been one of the most important source of developing-country finance, these developments suggest that a sharp slowing in developing-country investment growth is to be expected. Bank lending and foreign direct investment inflows were also down, but less dramatically. The increased volatility and losses emanating from the banking sector have caused investors worldwide to sell stocks and increase their holdings of less risky assets, notably U.S. treasuries. As a result, the currencies of virtually every developing country in the world has depreciated vis-à-vis the dollar.

Following a series of efforts by central banks and governments to resolve the growing crisis through liquidity injections and various ad hoc measures, policy makers have now acted forcefully to restore confidence in the international banking system, including the partial nationalization of nine banks and trillions of dollars in rescue plans introduced by governments in the United States and Europe and recent multilateral meetings to address weaknesses in the global financial architecture. At the time of this writing (November 20, 2008), it is too soon to judge the effectiveness of these measures in restoring confidence in the banking system. However, they do constitute the kind of forceful and credible action that has been needed, and interbank lending rates have fallen substantially and although they remain volatile, stock and bond markets have greeted these measures favorably.

Notwithstanding these steps, growth prospects for both high-income and developing countries have deteriorated substantially, and the possibility of a very deep global recession cannot be ruled out.

Even before the emergence of a full-blown financial crisis in September 2008, global growth showed significant weakening. Economic growth slowed sharply in Europe and Japan and in many developing countries in the second quarter of 2008. In the United States, the continued disruption in financial markets and the fall in housing prices caused domestic demand to fall in 6 of the past 12 quarters. However, strong export growth—driven in part by developing-country import demand—spared the U.S. economy from recession until recently when its GDP declined 0.5 percent in the third quarter of 2008. In developing countries, overall GDP growth also remained robust in the first half of the year. However, slower growth in high-income countries and the weakening of capital inflows, in combination with commodity-price-induced losses in real income, generated a sharp deceleration in industrial production, investment, and international trade beginning in the third quarter.

At the same time, rising commodity prices and tight capacity in many countries (following years of very fast growth fueled by ample liquidity) caused both headline and core inflation to pick up throughout the world, with headline inflation rising by some 5 percentage points among developing countries. Weaker growth and falling commodity prices have already caused inflationary pressures to ease in some countries. However, the significant losses in real income endured by many people in developing countries and the still overheated state of some of their economies could generate second-round price increases that either push inflation higher or stabilize expectations at high levels.

The combination of a relatively strong first half and a much weaker second half is expected to cause GDP growth to slow to 1.3 percent in high-income countries and to 6.3 percent in developing countries in 2008. The slowdown is projected to intensify in 2009 because most of the real-economy side effects of the banking crisis will be felt in the final months of 2008 and the first two quarters of 2009.

The main mechanism for the slowdown in both developing and high-income countries will be through investment, which for 2009 is expected to decline 3.1 percent in high-income countries. In developing countries, investment growth is projected to slow sharply to 3.4 percent in 2009 from more than 13 percent in 2007. Because low-income countries have less access to international capital markets, the slowdown will affect them mainly through indirect mechanisms, including slower global growth, lower commodity prices, slackening remittance receipts, and partial scaleback in aid flows.

Overall global GDP growth is projected to decline to 0.9 percent in 2009, with developing economies expanding by 4.5 percent—well below the 7.9 percent growth rate recorded in 2007. International trade should decelerate sharply, with global export volumes declining for the first time since 1982. As a result, both commodity prices and inflation are projected to ease, with oil prices averaging about $75 a barrel in 2009 and food prices projected to

decline by about 23 percent compared with their average for 2008.

This financial crisis and the expected abrupt slowing of global growth come at a moment when developing countries considered as a whole are more vulnerable than they have been in the recent past. Higher commodity prices have raised the current account deficits of many oil-importing countries to worrisome levels (they exceed 10 percent of GDP in about one-third of developing countries), and after having increased substantially, the international reserves of oil-exporting developing countries are now declining as a share of their imports. Moreover, inflation is high, and fiscal positions have deteriorated both for cyclical reasons and because government spending has increased to alleviate the burden of higher commodity prices.

Thus, even in the baseline scenario, where the rapid equity declines of September and October are assumed to end and where credit begins to thaw as recent policy actions improve financial market confidence, a number of developing countries are likely to be subjected to substantial strains, possibly including bank failures and currency crises. In these very uncertain circumstances, policy makers must place a premium on reducing the likelihood of domestic turmoil, by reacting swiftly and forcefully to emerging difficulties, including, if necessary, seeking assistance from the International Monetary Fund (IMF).

Uncertainty continues to cloud the outlook

While this sober outlook represents a likely outcome, a wide range of outcomes remains possible. The financial turmoil could intensify further, sparking a prolonged credit crunch and global recession. A milder downturn is also possible, if credit conditions do not deteriorate as much as anticipated in the baseline.

At the time of this writing, the possibility that the situation in high-income countries will deteriorate substantially cannot be ruled out. Should credit markets fail to respond to the robust policy interventions taken so far, the consequences for developing countries could be very serious. Global financing conditions would deteriorate rapidly, and apparently sound domestic financial sectors could find themselves unable to borrow or unwilling to lend—both in international and domestic markets. Such a scenario would be characterized by a long and profound recession in high-income countries and substantial disruption and turmoil, including bank failures and currency crises, in a wide range of developing countries. Sharply negative growth in a number of developing countries and all of the attendant repercussions, including increased poverty and unemployment, would be inevitable.
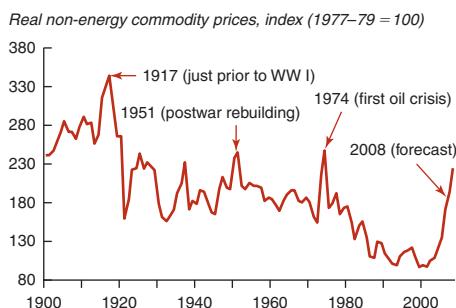
Although a receding concern, high inflation in developing countries, remains a problem, especially if the financial turmoil is resolved relatively quickly. While global growth would still slow in 2009 under such a scenario, the substantial policy stimulus that has been introduced could cause growth in both developing and developed countries to surge in 2010, reigniting inflationary pressures and forcing a subsequent tightening of policy and a second bout of slowing growth. Policy in countries that currently have large current account deficits and high inflation needs to be particularly vigilant. These economies continue to be vulnerable and investors skittish; under these conditions, their currencies are likely to remain particularly sensitive to changing market perceptions.

The commodity market boom has come to an end

The sharp rise in commodity prices over the past five years, like the earlier booms of the last century, was associated with a period of strong economic growth (partly fueled by relatively loose fiscal and monetary policy) and a period of global uncertainty, and it has generated significant inflationary pressures. This most recent boom has been the most marked of the past century in its magnitude, duration, and the number of commodity groups whose prices have increased (figure O.1).

The strength and duration of the boom mainly reflected the resilience of GDP growth between 2003 and 2008.

Figure O.1 The recent commodity boom was the largest and longest of any boom since 1900

Real non-energy commodity prices, index (1977–79 = 100)

Source: Grilli and Yang (1988) for 1900 to 1947; World Bank for 1948 to 2008.

In the oil and metals sector, the supply pressures that built up over the past five years and which drove prices to record heights stemmed mainly from slow-growing supply capacity. That slow growing supply capacity resulted because for much of the 1990s rising demand in the rest of the world was met by the slow reabsorption of idle capacity created following the 1980 oil shock and the collapse of demand in the former Soviet bloc when these formerly communist countries began to allocate resources according to market signals. As a result of this idle capacity, prices remained low in the oil and metals sectors and firms did not have the economic incentives to increase productive capacity.

Furthermore, because of low prices and because incremental demand was being met by this capacity, investment in the oil and metals industries plummeted, and the sectors that supplied the inputs necessary for exploration and exploitation atrophied. That in turn created a mismatch between the underlying rate of growth of supply capacity and demand. When the spare capacity was exhausted in the early 2000s, supply was no longer able to keep pace with strengthening demand, and prices began to rise.

The story in agricultural markets is different. Food-based demand for agricultural crops has been relatively stable. However, diversion of food crops toward biofuel production has increased sharply. Between 2003 and 2007,
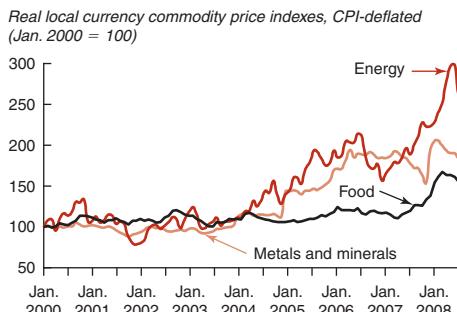
two-thirds of the global increase in maize production went to biofuels. Although the initial impact was confined to the maize market, as farmers switched land away from wheat and soybean production to grow maize, the price of these commodities also began to rise. Higher oil and fertilizer prices also increased food production costs, especially in high-income countries where they can account for as much as 30 percent of overall costs. This factor, plus biofuel demand for grains, has made the price for these products much more sensitive to changes in oil prices. Finally, a series of poor wheat crops in Australia compounded the situation, driving down stocks and contributing to the price rise.

In addition to these fundamental drivers, agricultural prices have been influenced both by increased investor interest in these commodities as an asset class and by government policies, including the decision by several countries to impose export bans. All of these factors are driven by forward-looking expectations and may have exacerbated both the upward rise in prices during 2007–08 and their more recent decline.

Commodity prices are declining in response to slower GDP growth

Like earlier commodity booms, this one has come to an end. Prices in all commodity markets have fallen sharply since July 2008 (figure O.2),

Figure O.2 Real commodity prices in local currency units increased by between 75 and 150 percent but have fallen since

Real local currency commodity price indexes, CPI-deflated (Jan. 2000 = 100)

Source: World Bank.

reflecting slower GDP growth, increased supplies and revised expectations. Because commodity prices reflect forward-looking expectations, the sharp slowing of growth that is expected over the next year has caused prices to decline rapidly even though the underlying supply and demand tensions are little changed from just a few months ago when these prices were close all-time highs.

Some metals prices have already fallen to pre-boom levels and the dollar price of many internationally traded foods has fallen back to their 2006 levels. While much weaker GDP growth is projected to cause commodity prices to ease further in the short run, they should nevertheless remain higher than they were during the 1990s. Real food prices are projected to decline by 26 percent between 2008 and 2010, energy prices to fall by 27 percent, and metals prices to decline by 32 percent.

In the longer term, growth in the demand for commodities should ease
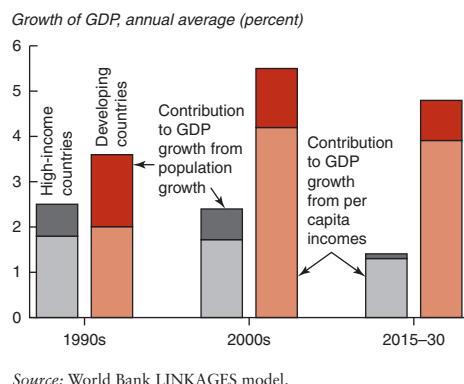
The strength, breadth (in terms of the number of commodities whose prices have increased), and duration of the current commodity boom have prompted speculation that the global economy is moving into a new era characterized by relative shortage and permanently higher (and even permanently rising) commodity prices.

This outcome does not appear likely. Over the next two decades, slower population growth and weaker (though still strong) income growth are projected to cause trend global GDP growth to ease (figure O.3) and, with it, the demand for commodities. As discussed later, the extent to which commodity demand does slow and how easily supply is able to keep pace with demand will very much depend on the policy environment, the pace of technological change, and external factors such as climate change.

Moderating demand for metals depends critically on increased efficiency in China

Over the past 50 years, a combination of conservation measures, technological change, and changes in the structure of global GDP (services tend to be less commodity-intensive than
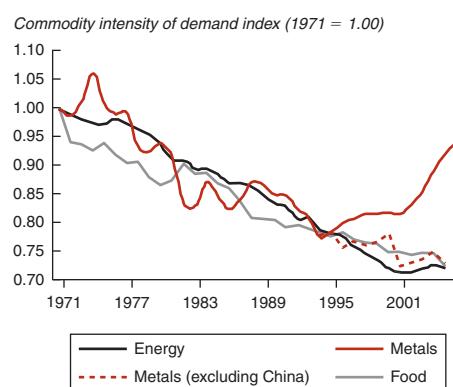
Figure O.3 Slower population growth should result in weaker GDP and commodity demand

Growth of GDP, annual average (percent)

Source: World Bank LINKAGES model.

manufactured goods) has reduced the quantity of metals and energy required to produce a unit of GDP by an average of 0.9 and 0.8 percent a year respectively (figure O.4). The food intensity of GDP has also declined as an increasing share of the world's population has reached income levels where per person demand for basic food commodities is stable.

Beginning in the middle 1990s, the decline in metals intensities began to reverse. That reversal is explained almost entirely by increasing metal intensities in China, which began

Figure O.4 Technological progress has reduced the quantity of commodities used per unit of GDP

Commodity intensity of demand index (1971 = 1.00)

Source: World Bank calculations, using data from the World Bureau of Metal Statistics, the IEA, and the FAO.

in 1995 and grew even more sharply at the beginning of the 2000s. The uptick in metals intensities was associated with the investment, manufacturing, and export booms in that country. Currently, metal intensity in China is four times higher than in developed countries and twice as high as in other developing countries. China's metal intensities are expected to stabilize in coming years and then begin to fall as the country's very high investment rate declines and the transitional shift in global manufacturing capacity from high-income countries to China slows.

Assuming China's metal intensity stabilizes and then falls in coming years, global demand for metals—which has outpaced GDP in recent years—should first realign itself with GDP growth over the next few years and then decline further during the next decade, reaching about 2.7 percent a year in the period 2015–30.

Future energy demand depends on improving automobile efficiency

Demand in the energy sector will depend critically on the pace at which energy efficiency continues to improve, especially in the transport sector. Since 1970 conservation efforts and technological progress have reduced energy demand by 56 percent, compared with a no-change scenario (IEA 2006). With some 75 percent of future energy demand expected to come from the transport sector, especially from developing countries, the pace of future energy demand growth (and its composition) will depend heavily on future efficiency gains in car technology.

Prospects for such improvements are good, if policy continues to be supportive of both conservation and efficiency measures. Already existing technologies—available either in initial rollout phases or as prototypes (flex-fuel and hybrid cars, plug-in hybrids, and electric and hydrogen-powered vehicles)—could help to more than double fuel efficiency. An ambitious (and successful) policy to speed the development and diffusion of these technologies could see the share of these vehicles rise to 90 percent in the high-income world and to 75 percent in developing countries by 2050, substantially reducing private transportation's dependency on liquid fuels.

In the baseline scenario, demand for oil is expected to continue rising to around 114 million barrels a day (mb/d) by 2030 (compared with 87 mb/d today). Energy demand is projected to grow somewhat more quickly as coal, natural gas, and non-fossil-fuel energy sources increase their share in total energy supply. The extent to which this shift occurs will depend importantly on the policy environment. A more proactive stance toward restraining carbon emissions could speed the pace at which alternative energies become economically viable and reduce the expected increase in reliance on coal-powered electrical plants.

Over the next 20 years, supplies of extracted commodities are likely to remain ample

The pace at which the growth in supply capacity in the oil and metals sectors catches up to demand will depend on how quickly capacity in the heavy and specialized equipment and labor supply sectors can be restored. Years of low prices and weak investment have reduced capacity in these sectors, and as a result, delivery times and costs of inputs have more than quadrupled in many instances. High prices for these components are speeding the alleviation of these constraints. With the expected slowing of global GDP growth and lower commodity prices, investment demand has eased and prices for these specialized investment goods are expected to fall further. Nevertheless, deliveries are projected to continue trailing demand for some time, and prices will remain relatively high for the next several years.

Over the longer run, the price of extracted commodities should fall—although they are not expected to fall to their levels in the 1990s. Higher prices than in the past will be required to ensure that firms continue to invest in new capacity.

Although the absolute quantity of fossil fuels and metals in the earth's crust is declining and the quantity that is extracted each

year is rising, there appears little likelihood that the world will run out anytime soon. Historically, proven reserves of both metals and oil have tended to rise even more rapidly than production, remaining surprisingly constant in the case of oil at about 40 years of production. In part, that is because measured reserves, rather than being an accurate count of the resources remaining in the ground, bear a closer resemblance to the inventory of product that firms can readily bring to the market. So long as firms have ample "known reserves" for expected future demand, they have little incentive to find more.

As production increases and more known reserves are brought into service, additional reserves will likely be discovered. In general, these newer reserves tend to be of lower quality and higher cost than existing ones. However, historically improvements in extraction technology have advanced quickly enough to keep the cost of exploiting new sources stable or even falling, despite increased remoteness and poorer quality. The projected long-term price of a barrel of oil of $75 (real 2008 dollars) is based on the expectation that such a price will be sufficient to incite additional output from high-cost sources such as the Canadian oil sands.

Even if certain resources do become scarce, ample alternatives exist. For example, if the pace at which new oil reserves are discovered declines, the rising price for oil will make alternative sources of energy (including coal, natural gas, nuclear, and renewable alternatives) more competitive and induce increased conservation and technological change. Simulations suggest that if oil production fails to rise between now and 2030, oil prices might double but most of the energy shortfall would be met by increased coal and natural gas consumption—albeit at higher cost.

Food demand will slow with lower population growth, but biofuels could expand crop demand very rapidly
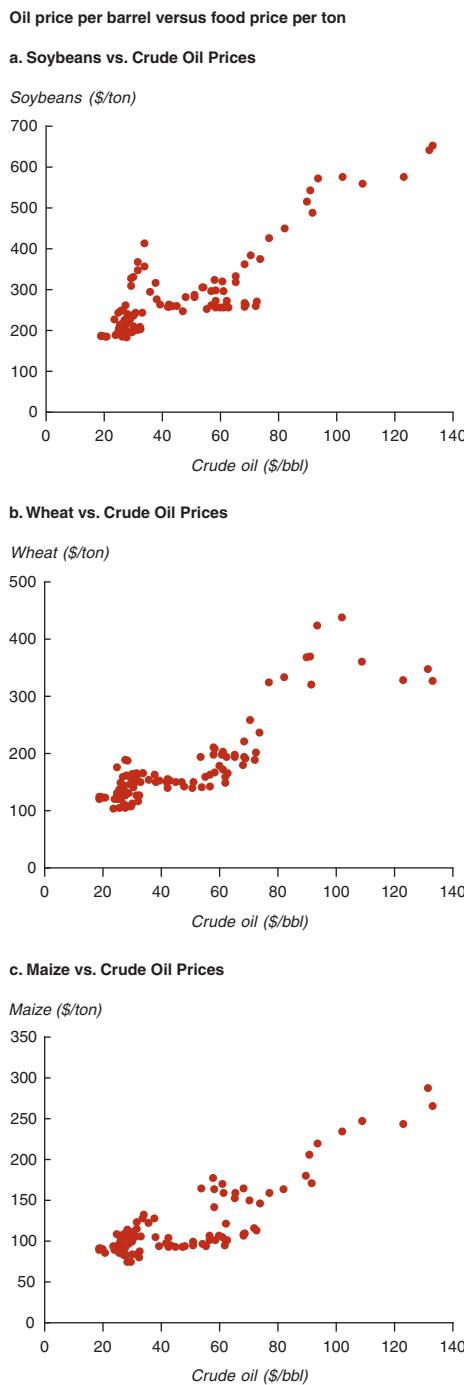
Because an increasing share of the world's population has reached income levels where demand for most primary food commodities no longer rises with income, demand for food is expected to slow—broadly in line with weaker population growth. However, the potential role of biofuel demand for food crops greatly complicates the picture. Given today's technology, maize can be profitably transformed into ethanol at oil prices in excess of $50 a barrel. Above that price, every percentage point increase in the barrel price of oil causes maize price to rise by 0.9 percent (figure O.5), which means the maize market is effectively tied to the oil market (this relationship is not statistically significant when oil is below $50 a barrel). Moreover, because farmers have responded to high maize prices by increasingly growing maize in fields where they once grew wheat and soybeans, prices of these (and other) commodities have also become increasingly sensitive to oil prices.

Given that the energy market is much larger than the market for maize (if all the world's maize were used to produce biofuels, it would only meet 8 percent of energy demand), biofuel demand has the potential to change permanently the nature (and price) of agricultural commodities. The International Energy Agency (IEA), for example, suggests that biofuel demand for grains could increase by 7.8 percent a year over the next 20 years (compared with 1.2 percent annual increases for food demand). If this prognosis is borne out, 40 percent of global grain production could be going to biofuels by 2030.

It is probably premature to argue that the nature of these markets is permanently changed. On the one hand, technological improvements are likely to lower the cost of producing ethanol from maize (and sugar), which in turn will lower the threshold oil price above which these food crops become sensitive to oil prices. However, technological change may also give rise to alternative sources of energy that make ethanol production from food crops uneconomic. Such alternatives might include biofuels made from cellulose or other nonfood sources, solar power, or hydrogen-based systems. In these cases, the

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Figure O. 5 Oil prices are having a direct impact on food prices

Oil price per barrel versus food price per ton

a. Soybeans vs. Crude Oil Prices

Soybeans ($/ton)

Crude oil ($/bbl)

b. Wheat vs. Crude Oil Prices

Wheat ($/ton)

Crude oil ($/bbl)

c. Maize vs. Crude Oil Prices

Maize ($/ton)

Crude oil ($/bbl)

Source: World Bank.

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new, stronger connection that has been created between the energy market and the grain markets would be broken, and food prices would likely fall significantly.

Strong productivity growth and unused crop land should ensure adequate food supply at the global level

Food supplies are unlikely to fall short of demand. Over the past 30 years, agricultural productivity has improved much faster than demand; as a result, agricultural output has increased rapidly even as the share of agricultural workers in total employment has steadily declined and prices fallen.

Longer-term prospects are somewhat clouded by the gradual exhaustion of the easy productivity gains offered by the green revolution. In addition, climate change threatens yields in many developing countries, although most of this effect is not likely to be felt until after 2030. Assuming that policies are put in place to expand infrastructure and facilitate the diffusion of the new technologies (including biotechnologies) that have sustained agricultural productivity in high-income countries, agricultural output should more than keep pace with food demand over the long term.

However, if developing countries are not successful in combating recent trends for yields to decline by increasing investment in rural agriculture and through the spread and adoption of more productive seed varieties and farming techniques, there is a real risk that many countries, notably in Africa (where population growth is expected to be faster), will move from a position of being broadly self-sufficient in food to being net food importers. Most of the shortfall would be met by production from high-income countries, where productivity growth has not slowed.

Even if biofuel demand increases substantially, enormous potential exists for bringing additional (albeit lower productivity) land into cultivation. That said, if biofuel-related demand for crops is much stronger or productivity performance disappoints, future food supplies may be much more expensive than in the past.

Simulations suggest that under these unfavorable circumstances, food crop prices could be as much as 30 percent higher than in the baseline scenario.

Commodity-producing countries are managing the revenue windfall better than they have in the past

Historically, countries whose economies are heavily dependent on commodities exports have tended to grow less quickly than those with more diverse economies. This tendency mainly reflects low GDP and underdevelopment of their nonresource sectors rather than the actual quantity of resources held by these countries. Indeed, measured by per capita value-added from resources, high-income countries tend to be more resource rich than developing countries, while their large nonresource sectors mean they are also less resource dependent (figure O.6).

Resource dependence need not result in slow growth. But to realize the potential of resource wealth, governments need to avoid following policies that exacerbate the tendency for resource dependence to generate poor growth outcomes. These include:
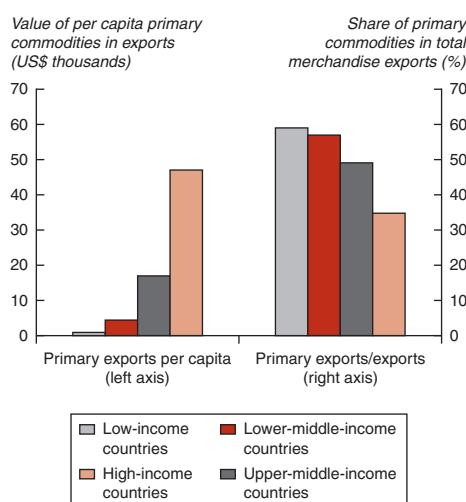
- The tendency for government spending in resource-dependent countries to rise in booms and fall procyclically during busts;
- The tendency for strong revenue inflows to cause an excessive real appreciation of the currency that hurts the competitiveness of the nonresource sectors of the economy; and
- The tendency for large commodity-based revenues to foster rent-seeking behavior, corruption, and even political violence.

Encouragingly, during the course of the recent commodity boom, fiscal spending in resource-dependent developing countries has been much more prudent than during earlier booms. Partly as a result, the currencies of most countries have appreciated by less than in the past. Moreover, corruption among commodity exporters has improved relative to diversified exporters (figure O.7), suggesting that perhaps this mechanism for reducing the development potential of resource wealth has been weakened as well.

Exceptions include newly independent commodity exporters or states with newly found resource wealth. Government spending in these countries has kept pace with or even exceeded export revenues, and their currencies have appreciated much more strongly than those with more experience of commodity booms (figure O.8). With prices now sharply lower, such countries may be encountering additional fiscal pressures. In addition, oil exporters with relatively low reserves are not saving significantly more than those with high reserves and, as a result, may be exacerbating the competitiveness problems of their non-oil sectors. That, in turn, could be creating a future problem, because these countries, unlike those with ample reserves, will have to rely on their non-resource-based sectors to generate most of the growth in coming years.
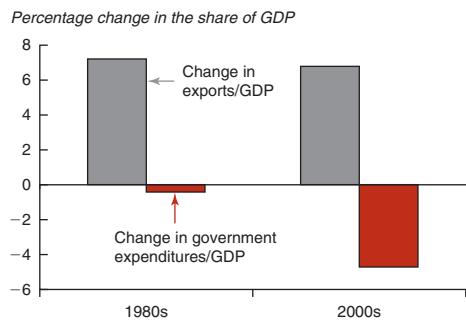
Figure O.6 On average, poor countries are dependent on commodities but relatively resource poor

Source: World Bank.
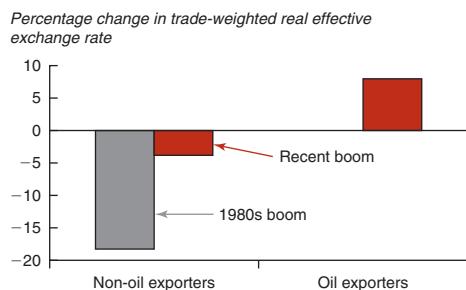
Figure O.7 Primary commodity exporters are exhibiting fewer signs of the behaviors linked to the "resource curse"

a. Government expenditures have increased by much less than export revenues

Percentage change in the share of GDP

Change in exports/GDP

Change in government expenditures/GDP

1980s   2000s
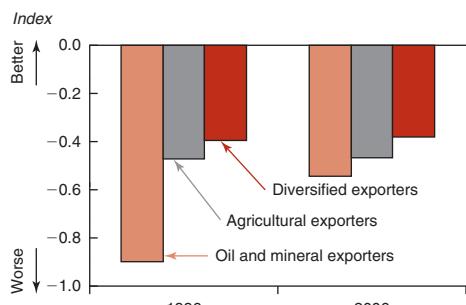
Source: World Bank.

b. The currencies of commodity exporters have appreciated modestly

Percentage change in trade-weighted real effective exchange rate

Recent boom

1980s boom

Non-oil exporters   Oil exporters

Source: IMF data; World Bank staff calculations.

Note: Increase indicates appreciation.
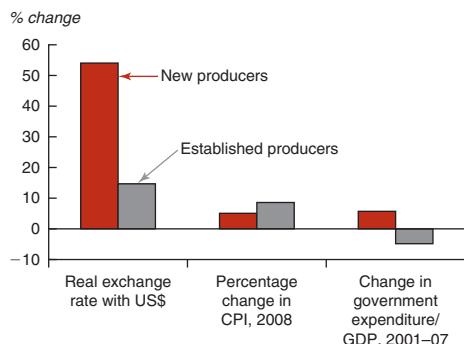
c. Corruption in commodity exporting countries has declined

Index

Better

Worse

Diversified exporters

Agricultural exporters

Oil and mineral exporters

1996   2006

Source: Kaufmann, Kraay, and Mastruzzi 2007; World Bank data.

In addition, spending from resource revenues in the private sector remains high. This is especially true for exporters of non-oil

Figure O.8 Exchange rates, inflation, and government expenditures in new versus established oil exporters, 2001–06

% change

New producers

Established producers

Real exchange rate with US$

Percentage change in CPI, 2008

Change in government expenditure/ GDP, 2001–07

Source: World Bank and IMF data.

Note: New producers are defined as countries dependent on oil that began production after 1985 or were established as a country after 1985, including Azerbaijan, Chad, Equatorial Guinea, Kazakhstan, Sudan, and the Republic of Yemen (Turkmenistan lacks data for inflation and the real exchange rate). The established producers include Algeria, Angola, Republic of Congo, Gabon, Islamic Republic of Iran, Libya, Nigeria, Oman, and República Bolivariana de Venezuela. The real exchange rate with the United States (rather than the trade-weighted real exchange rate as in figure 3.5) is reported here to include sufficient countries for a useful comparison between the two groups.

a. Real exchange rate with the U.S. dollar, where increase indicates appreciation. Data for Equatorial Guinea are for 2001–04.
b. Percentage change in consumer price index in 2008.
c. Change in ratio of government expenditure to GDP from 2001 to 2007.

commodities, such as agricultural producers, where the benefits of high prices are less concentrated. Encouragingly, much of the spending appears to be directed toward investment goods, which should contribute to future production potential. In a number of African countries, however, investment spending has been financed by heavy bank borrowing, which may pose significant problems as loans become due, now that commodity prices have declined and access to credit has become much more difficult.

High commodity prices pose challenges for the poor, especially in consuming nations

For consuming nations, high commodity prices pose a number of challenges. In the case of heavily traded commodities such as oil, sharp price hikes can pose serious balance of

payment difficulties and increase the vulnerability of net importers. In the case of food commodities, which are mainly consumed in the same country in which they are produced, the issue for most countries is one of a transfer of wealth between producers and consumers. That said, some countries are significant net importers of food and have suffered significant balance of payment impacts from high food prices as well. Both fuel and food prices have boosted inflation and cut into real incomes in developing countries.

In general, economic policy should not resist changes in relative prices but should seek to assist adjustment to changing circumstances. However, the magnitude of the changes over the past several years has been unusually large with important implications for inflation, balance of payments, and poverty in developing countries. Moreover, because high food prices can increase malnutrition among the very poor, resulting in permanent cognitive and physical damage, even a temporary but large hike in food prices demands a prompt and well-targeted policy response.

At the global level, the cost of higher food and fuel prices to consumers in developing countries during 2008 is estimated to have been about $680 billion. The price increases had major macroeconomic effects. High oil prices increased current account deficits in a number of countries by as much as 5 percent of their GDP. Both food and fuel price increases have led to a sharp uptick in inflation. In addition, by increasing costs, the food and fuel increases have increased the number of poor and the extent of their poverty. In general, higher food prices have had a more pronounced effect on poverty, because households in poor countries spend 50 percent or more of their income on food and only 10 percent on fuel. Moreover, for very poor households, food tends to claim an even higher share in expenditures, and fuel a much lower share. Finally, the poverty impacts are likely to be more significant because the demand for food is more inelastic than household demand for fuels, because the former can be replaced by biomass.

Not all foods prices have risen by as much as the prices for rice, maize, and wheat, however. Moreover, during 2007 and the first half of 2008, the dollar was depreciating so that local currency prices rose by less than the dollar prices. As a result, the real-local-currency increase in the price of food actually consumed in developing countries was much less than the 54 percent increase observed in internationally traded and dollar-denominated food prices (table O.1). Moreover, not all food consumed in poor countries is traded and the share of non-traded foods in total consumption varies across regions. In Africa, for example, real food prices rose by an average of 8.3 percent, compared with 19.8 percent in the Middle East, which relies much more heavily on imported foods.

Overall, the rise in food prices between 2005 and the beginning of 2008 is estimated to have increased the share of the population of East Asia, the Middle East, and South Asia living in extreme poverty by 1 or more percentage points. Impacts in Africa were less pronounced because food prices rose by less on average and

Table O.1 Food price hikes and consumption shares vary by region

Region	Price shock	Food share among the poor
	(percent)	
Rural population		
East Asia and Pacific	12.4	71.5
Europe and Central Asia	−0.2	63.4
Latin America and the Caribbean	6.9	51.2
Middle East and North Africa	25.9	64.5
South Asia	5.0	65.3
Sub-Saharan Africa	9.6	68.0
Developing world	6.7	66.1
Urban Population		
East Asia and Pacific	13.8	67.5
Europe and Central Asia	−0.5	57.9
Latin America and the Caribbean	1.6	44.1
Middle East and North Africa	12.5	57.1
South Asia	4.8	64.4
Sub-Saharan Africa	4.9	53.0
Developing world	4.1	60.4

Source: World Bank.
Note: Price shocks differ between the rural and urban populations because of differing degrees of urbanization among countries included in the aggregates.

because a much larger share of the population lives in rural areas. In general, rural dwellers have been less seriously affected because, in addition to being consumers, many are producers and benefit from higher revenues. The impact on the urban poor was much higher, increasing the incidence of poverty by more than 1.5 percentage points in East Asia, the Middle East, South Asia, and Sub-Saharan Africa (table O.2). Overall the number of extremely poor is estimated to have increased by between 130 and 155 million, and the poverty deficit (the annual cost of lifting the incomes of all of the poor to

Table O.2 Higher food prices have increased both the incidence and severity of poverty worldwide
January 2005–December 2007

Region	Initial levels:		Change in:	
	Poverty headcount	Income gap ratio	Poverty headcount	Income gap ratio
	(percent)		(percentage points)	
Urban population				
East Asia and Pacific	13.2	20.3	6.3	2.7
Europe and Central Asia	2.5	8.7	0.0	0.2
Latin America and the Caribbean	3.7	37.6	0.1	−0.7
Middle East and North Africa	2.7	17.8	2.4	5.7
South Asia	32.3	25.0	2.0	0.5
Sub-Saharan Africa	34.1	38.1	1.7	0.3
Developing world	15.3	27.1	2.9	0.5
Rural population				
East Asia and Pacific	31.9	23.2	4.9	0.7
Europe and Central Asia	8.2	6.6	0.0	0.0
Latin America and the Caribbean	18.6	43.9	0.1	0.1
Middle East and North Africa	15.4	22.9	0.7	0.9
South Asia	43.3	24.0	0.8	0.3
Sub-Saharan Africa	54.9	41.5	0.3	0.0
Developing world	37.1	28.2	2.1	0.1

Source: World Bank, using the Global Income Distribution Dynamics model.
Note: The per capita poverty line equals 1.25 international 2005 dollars a day. The ratio of food in total consumption among the poor is computed as described in De Hoyos and Lessem (2008). East Asia excludes China, and the Middle East comprises Jordan, Morocco, and the Republic of Yemen. The income gap ratio expresses, as a percent of the poverty line, how much the income of the average poor person is lower than the poverty line.

the poverty line) increased by $38 billion, or 0.5 percent of developing-country GDP.

For the very poor, reducing consumption from already very low levels, even for a short period, can have important long-term consequences. Already, higher food prices during 2008 may have increased the number of children suffering permanent cognitive and physical injury caused by malnutrition by 44 million. It is therefore critical that countries react to higher food prices by increasing the assistance they make available to those most at risk.

Most countries have reacted to the hike in food and fuel prices by some combination of increased government spending on existing social safety net programs, be they subsidies, conditional transfer systems, or food distribution schemes. Others have responded by seeking to hold domestic prices down by reducing taxes or instituting restrictions on exports.

Such programs have been relatively expensive, increasing government expenditures by as much as 2–4 percent of GDP. Moreover, in many cases poor targeting means that much of this spending does not benefit those most in need. And, by interfering with market prices, these programs often impede adjustment, reducing producers' incentives to increase output and consumers' incentives to conserve. As such they likely exacerbated the extent of price rises and extended their duration.

Going forward, policy makers need to restructure their support so that it is better targeted on the very poor. Doing so will help ensure that the next time food (or energy) prices spike, assistance programs will be both more affordable and more effective at delivering assistance to those most in need. Of the options available, targeted cash transfers tend to succeed best because they have relatively low administrative requirements and minimize the diversion of benefits toward less needy population groups. Unfortunately, these programs may also exclude the many poor who are either unable or unwilling to meet the conditions attached to the program, which are designed to dissuade all but the most needy from participating. In-kind

OVERVIEW

programs, such as school feeding and the distribution of fortified weaning food for toddlers, can be effective, especially in fiscally constrained countries. Subsidies, even targeted ones, tend to be much less efficient, with as little as one-fifth of the money spent benefiting the poor. Public works programs rarely provide sufficient coverage to meaningfully target poor families. Whatever policies are adopted, it is critical that the offsetting income support be clearly presented as temporary and include phaseout strategies to avoid creating an unnecessary longer-term fiscal burden.

The role for international policy

Ultimately, given the scope of the costs involved, neither individual governments nor international agencies are in a position to offset the costs of higher food and fuel prices entirely. However, well-targeted programs are much more affordable. For the poorest countries, these too may be beyond reach fiscally, and in these cases, the international community has a role.

Steps so far have concentrated on reallocating existing funds toward those most in need and on strengthening both the financial and infrastructural capacity of emergency food aid agencies such as the World Food Programme (WFP). Further steps that might be considered include providing the WFP with a more stable source of financing and affording it a line of credit so that it is able to act quickly in instances where food prices are unusually high.

Policy makers might also examine prospects for improving the coordinated management of grain reserves so that they can be more easily brought to the aid of those in need. Steps might include the construction of storage facilities in strategic parts of the world and the creation of a management system perhaps along the lines of that used by the IEA for oil. Individual food-importing and -exporting nations may wish to explore the use of market-based future contracts as an alternative to building stocks and restricting exports. Such contracts can reduce both price and quantity uncertainty by providing for guaranteed delivery of fixed quantities of grains at fixed prices. They can even be written conditionally, providing an option to sell or buy that can be exercised depending on market conditions.

Trade reform will necessarily form part of the solution as well. Steps are required to sanction effectively countries that use export restrictions as a mechanism to control domestic prices. Not only do such restrictions interfere with the domestic supply response, they also tend to exacerbate the price hikes and shortages in the rest of the global economy. Although a successful conclusion to the World Trade Organization's Doha Round of multilateral trade negotiations might result in higher prices in the short run, it would likely prove beneficial to developing countries by improving the competitiveness of their agricultural sectors and reducing their reliance on imported food.

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1

Prospects for the Global Economy

The stresses in the financial markets of the United States that first emerged in the summer of 2007 transformed themselves into a full-blown global financial crisis in the fall of 2008: credit markets froze; stock markets crashed; and a sequence of insolvencies threatened the entire international financial system. Massive liquidity injections by central banks and a variety of stopgap measures by governments proved inadequate to contain the crisis at first.

The initially hesitant policy response has become increasingly robust. The United States government introduced a $700 billion rescue package and has taken equity positions in nine major banks and several large regional banks. Various debt and deposit guarantees have also been introduced. At the same time, European governments have announced plans for equity injections and purchases of bank assets worth some $460 billion, along with up to almost $2 trillion in guarantees of bank debt. At the time of this writing, November 20, 2008, markets remain volatile despite the forcefulness of these measures and signs that credit conditions are improving somewhat in high-income countries. Both private-sector and sovereign interest rate spreads for developing countries have spiked even higher, and a growing list of countries have been forced to seek assistance from the International Monetary Fund (IMF).

During the initial phases of this financial crisis in 2007, the effects of the financial turmoil on developing countries were relatively modest. However, as the crisis intensified in 2008 and especially since mid-September, risk aversion (the absence of which had been the hallmark of the preceding boom) has increased, and capital flows to developing countries have seized up. As a result, the currencies of a wide range of developing countries depreciated sharply, and developing-market equity prices have given up almost all of their gains since the beginning of 2008. Initial public equity offerings have disappeared, and risk premiums have increased to more than 700 basis points on sovereign bonds and to more than 1,000 basis points on the debt of developing-country firms. Very recent data on bank lending and foreign direct investment inflows are not available, but indications are that these inflows have also declined, but less dramatically.

Virtually no country, developing or high-income, has escaped the impact of the widening crisis, although those countries with stronger fundamentals going into the crisis have been less affected. The deterioration in financing conditions has been most severe in countries with large current account deficits, and in those that showed signs of overheating and unsustainably rapid credit creation before the financial crisis intensified. Of the 20 developing countries whose economies have reacted most sharply to the deterioration in conditions (as measured by exchange rate depreciation, increase in spreads, and equity market declines), 6 come from Europe and Central Asia, and 8 from Latin America and the Caribbean.

Much tighter credit conditions will see investment and GDP growth slow sharply

In this climate, growth prospects for both high-income and developing countries have deteriorated substantially, and the possibility of a serious global recession cannot be ruled out.

Even if the waves of panic that have inundated credit and equity markets across the world are soon brought under control, the crisis is likely to cause a sharp slowdown in activity stemming from the deleveraging in financial markets that has already occurred and that is expected to continue. In the baseline forecast presented in this chapter, much tighter credit conditions, weaker capital inflows to middle-income countries, and a sharp reduction in global import demand are expected to be the main factors driving the slowdown in developing countries. Import demand is projected to decline by 3.4 percent in high-income countries during 2009, while net private debt and equity flows to developing countries are projected to decline from $1 trillion in 2007 to about $530 billion in 2009, or from 7.7 to 3 percent of developing-country GDP. As a result, investment growth in developing countries is projected to slow dramatically, rising only 3.5 percent in middle-income countries, compared with a 13.2 percent increase in 2007.

A pronounced recession is believed to have begun in mid-2008 in Europe, Japan, and most recently, the United States. This recession is projected to extend into 2009, yielding a decline in high-income country GDP of 0.1 percent that year (table 1.1). In developing countries, growth is projected to slow to 4.5 percent in 2009, down from 7.9 and 6.3 percent in 2007 and 2008. Overall, global GDP is projected to expand only 0.9 percent in 2009 (figure 1.1)— below the rate recorded in 2001 and 1991 and indeed, the weakest since records became available beginning in 1970.

Because low-income countries have less access to international capital markets, the slowdown will affect them mainly through indirect mechanisms, including reduced demand for their exports, lower commodity prices, and reduced remittance inflows. International trade is projected to decelerate sharply, with global export volumes falling by 2.1 percent in 2009—the first time they have declined since 1982 and eclipsing the 1.9 percent falloff that occurred in 1975. Export opportunities for developing countries will fade rapidly because of the recession in high-income countries and because export credits are drying up and export insurance has become more expensive.

Slower growth in high-income countries is estimated to have reduced remittance flows into developing countries from 2 to 1.8 percent of recipient country GDP between 2007 and 2008. At the country level, the extent of further slowdown will depend critically on exchange rate developments, with recent swings in bilateral exchange rates dwarfing the expected changes in remittances denominated in host-country currencies.

The global growth recession is projected to cause both commodity prices and inflation to ease further, with oil prices averaging about $75 a barrel (bbl) in 2009, and food and metal prices projected to decline by about 23 and 26 percent, respectively, compared with their average levels in 2008. Nevertheless, commodity prices will remain well above the very low levels of the 1990s.

Lower commodity prices should reduce the burden on some segments of the poor (notably urban dwellers), whose purchasing power has declined because of high food and fuel prices (see chapter 3). Lower prices should also help dampen headline inflation. Indeed, the rapid rise of food and energy prices over the course of 2007 and the first half of 2008, coupled with tight capacity in many countries (following years of very fast growth fueled by ample liquidity) caused headline and core inflation to pick up throughout the world. Headline inflation increased by 5 percentage points or more in most developing countries, and more than half of developing countries had an inflation rate in excess of 10 percent by the middle of 2008.

This financial crisis and the expected abrupt slowing of global growth comes at a moment when developing countries considered as a whole are more vulnerable than they have been

Table 1.1 The global outlook in summary
(percentage change from previous year, except for interest rates and oil prices)

Indicator	2006	2007	2008[*]	2009[†]	2010[†]
Global conditions					
World trade volume	9.8	7.5	6.2	−2.1	6.0
Consumer prices					
G-7 countries[a,b]	2.2	1.7	3.3	1.6	1.8
United States	3.3	2.6	4.5	2.5	2.8
Commodity prices (US$)					
Non-oil commodities	29.1	17.0	22.4	−23.2	−4.3
Oil price (US$ per barrel)[c]	64.3	71.1	101.2	74.5	75.8
Oil price (percent change)	20.4	10.6	42.3	−26.4	1.8
Manufactures unit export value[d]	1.6	5.5	9.0	2.1	1.3
Interest rates					
$ LIBOR, 6-month (percent)	5.2	5.3	3.3	1.9	2.5
€ EURIBOR, 6-month (percent)	3.1	4.3	4.9	3.8	4.2
Real GDP growth[e]					
World	**4.0**	**3.7**	**2.5**	**0.9**	**3.0**
Memo item: World (PPP weights)[f]	5.0	4.9	3.6	1.9	3.9
High-income countries	**3.0**	**2.6**	**1.3**	**−0.1**	**2.0**
OECD countries	2.9	2.4	1.2	−0.3	1.9
Euro Area	2.9	2.6	1.1	−0.6	1.6
Japan	2.4	2.1	0.5	−0.1	1.5
United States	2.8	2.0	1.4	−0.5	2.0
Non-OECD countries	5.5	5.6	4.3	3.1	5.3
Developing countries	**7.7**	**7.9**	**6.3**	**4.5**	**6.1**
East Asia and the Pacific	10.1	10.5	8.5	6.7	7.8
China	11.6	11.9	9.4	7.5	8.5
Indonesia	5.5	6.3	6.0	4.4	6.0
Thailand	5.1	4.8	4.6	3.6	5.0
Europe and Central Asia	7.5	7.1	5.3	2.7	5.0
Poland	6.2	6.6	5.4	4.0	4.7
Russian Federation	7.4	8.1	6.0	3.0	5.0
Turkey	6.9	4.6	3.0	1.7	4.9
Latin America and the Caribbean	5.6	5.7	4.4	2.1	4.0
Argentina	8.5	8.7	6.6	1.5	4.0
Brazil	3.8	5.4	5.2	2.8	4.6
Mexico	4.9	3.2	2.0	1.1	3.1
Middle East and North Africa	5.3	5.8	5.8	3.9	5.2
Algeria	1.8	3.1	4.9	3.8	5.4
Egypt, Arab Rep. of	6.8	7.1	7.2	4.5	6.0
Iran, Islamic Rep. of	5.9	7.8	5.6	3.5	4.2
South Asia	9.0	8.4	6.3	5.4	7.2
Bangladesh	6.6	6.4	6.2	5.7	6.2
India	9.7	9.0	6.3	5.8	7.7
Pakistan	6.2	6.0	6.0	3.0	4.5
Sub-Saharan Africa	5.9	6.3	5.4	4.6	5.8
Kenya	6.1	7.1	3.3	3.7	5.9
Nigeria	5.2	6.5	6.3	5.8	6.2
South Africa	5.4	5.1	3.4	2.8	4.4
Memo items					
Developing countries					
excluding transition countries	7.8	7.9	6.3	4.6	6.2
excluding China and India	6.0	6.1	5.0	2.9	4.7

Source: World Bank.
Note: PPP = purchasing power parity; * = estimate; † = forecast.
a. Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.
b. In local currency, aggregated using 2000 GDP weights.
c. Simple average of Dubai, Brent, and West Texas Intermediate.
d. Unit value index of manufactured exports from major economies, expressed in U.S. dollars.
e. GDP in 2000 constant U.S. dollars, 2000 prices, and market exchange rates.
f. GDP measured at 2000 PPP weights.
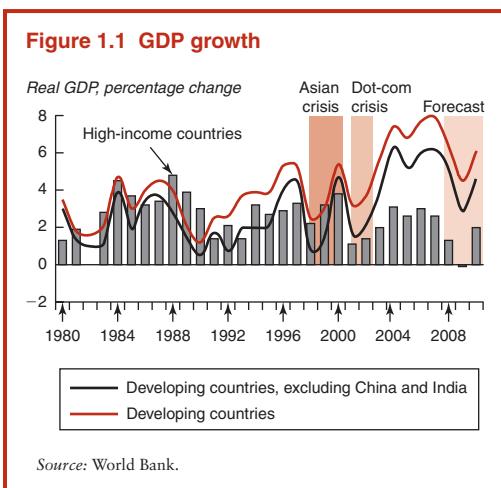
Figure 1.1 GDP growth

Real GDP, percentage change

Source: World Bank.

Prudent and vigilant policies are key as uncertainty continues to cloud the outlook

Although this sober outlook represents a likely outcome, the situation remains unstable, and a wide range of outcomes are possible, including a scenario where the rebound of growth in 2010 is weaker, held back by continuing banking sector restructuring, and negative wealth effects resulting from lower housing and stock market prices.

An even sharper recession is also possible. If the freeze in credit markets does not thaw as anticipated in the baseline, the consequences for developing countries could be catastrophic. Financing conditions would deteriorate rapidly, and apparently sound domestic financial sectors could find themselves unable to borrow or unwilling to lend—in both international and domestic markets. Such a scenario would be characterized by a long and profound recession in high-income countries and substantial disruption and turmoil, including bank failures and currency crises, in a wide range of developing countries. Sharply negative growth in a number of developing countries with all of the attendant repercussions, including increased poverty and unemployment, would be inevitable.

Although it is a receding concern, high inflation in developing countries remains a problem, especially if the impact from the current crisis on developing-country investment demand is less pronounced, and the stimulus provided by various rescue and fiscal packages in high-income and developing countries feeds a rapid expansion in demand. Under such a scenario, global growth would still slow in 2009, which would tend to dampen inflationary pressures initially, but growth could be expected to snap back much more sharply in 2010. Countries that now have large current account deficits and high inflation could suffer from a renewed overheating of their economies. Policies would have to be very prudent in these circumstances, because the currencies of these countries are likely to remain sensitive to changing market perceptions and increased risk aversion.

in the recent past. Higher commodity prices have widened current account deficits of many oil-importing countries to worrisome levels (they exceed 10 percent of GDP in about one-third of developing countries), and after having increased substantially, the international reserves of oil-exporting developing countries are now declining as a share of their imports. Moreover, inflation is high, and fiscal positions have deteriorated both for cyclical reasons and because government spending has increased to alleviate some of the burden of higher commodity prices.

Although the global recession is likely to be protracted, some elements of an eventual recovery can already be discerned. These include early movement toward stabilization in the housing sector in the United States; continued progress on debt workouts and a strengthening of balance sheets among both banks and households; a gradual easing of credit conditions as government rescue packages take hold and investors begin to return to heavily discounted equity markets; increases in real incomes (stemming from lower food and fuel prices) among individuals with relatively high marginal propensities to consume; and increased space for fiscal and monetary policies as inflationary pressures ease and government outlays on food and fuel subsidies decline in tandem.

The challenge for policy makers is not only to prevent an escalation of the crisis and to mitigate the downturn but also to ensure a good starting position once the rebound sets in. For developing countries, this means responding rapidly and forcefully to signs of weakness in domestic banking sectors, including resorting to international assistance where necessary. It also means pursuing a prudent countercyclical policy, relying on automatic stabilizers, social safety nets, and infrastructure investment that addresses bottlenecks that have become binding constraints on long-term sustainable growth in many countries.

In the current circumstances of heightened risk aversion and investor skittishness, policy makers need to be especially wary of taking on excessive levels of debt or creating the conditions for an inflationary bubble by reacting too aggressively to the global slowdown. Although it is important for policy makers to react quickly to emerging problems, it is also essential that steps and conditions attached to assistance be well focused on overcoming some of the fundamental sources of weakness. Otherwise there is a risk that governments lose the support of markets and taxpayers in their efforts to limit the extent of near-term disruptions.

Financial markets

The deterioration in financial conditions accelerated markedly in September 2008

The protracted turmoil that has plagued global financial and credit markets since mid-2007 escalated in September 2008, with the sudden collapse of major financial institutions, first in the United States and subsequently in Europe. The crisis has spread rapidly to emerging markets and has raised fears of systemic risk to the international financial system. Growing concerns about counterparty risk have disrupted credit markets, especially the interbank and commercial paper markets.

Earlier in the year major banks were still able to attract new equity investors in an effort to rebuild their capital bases, which were eroded by significant losses stemming from large write-downs on mortgage-backed securities and other assets. However, investor confidence was shaken by the March collapse of Bear Sterns, the seventh largest securities firm in the world in total assets. In September and October, authorities in the United States and Europe had to respond with extraordinary steps, including large injections of liquidity; coordinated reductions in policy interest rates; the takeover of major financial institutions; enhancements in deposit guarantees; and plans to purchase impaired financial assets (such as the U.S. Troubled Asset Repurchase Program, or TARP), to take equity positions in commercial banks, and to intervene in the commercial paper markets (box 1.1).

The turmoil has had a dramatic impact on emerging market assets

Although financial institutions in developing countries are believed to have limited direct exposure to U.S. subprime assets and related securities, the financial turmoil has affected virtually all emerging-market economies as high-income-country banks and investment funds withdrew from emerging markets and converted a broad range of risky assets into more liquid holdings. The rapid increase in risk aversion has also led to a forceful unwinding of the carry trade. The sell-off in risky assets carried a dramatic impact on equity prices, bond spreads, and currencies in virtually all emerging-market economies and has also contributed to tighter domestic credit conditions in larger countries, including India, the Russian Federation, and Brazil, and smaller countries, including Thailand and the Philippines. These developments were reinforced as local investors also moved out of equity markets, and more generally, out of investments denominated in local currencies.

Countries with large current account deficits, and therefore most dependent on foreign capital, were hit hardest by the substantial

Box 1.1 Chronology of recent developments in the financial crisis

Financial stress escalated in the United States and Europe over the course of 2008, beginning with the takeover of Bear Stearns by JP Morgan in March, and culminating in September when several major institutions came under severe distress.

Week of September 7

The U.S. government seized control of Fannie Mae and Freddie Mac, institutions that own or guarantee about one-half of all mortgage assets in the United States.

Week of September 14

The U.S. investment bank Lehman Brothers filed for bankruptcy and Merrill Lynch was taken over by the Bank of America for $50 billion.

The U.S. government seized control of American International Group Inc., providing an $85 billion emergency loan and taking a 79.9 percent equity stake in the firm.

Britain's largest mortgage lender, HBOS, agreed to be purchased by Lloyds TSB in an $18.9 billion deal.

The Russian government pledged to provide $120 billion to support financial markets and banks (the amount was increased by $50 billion on October 7).

U.S. Treasury Secretary Henry Paulson introduced the Troubled Asset Relief Program, a key element of which enables the government to buy up to $700 billion of mortgage-backed securities. An amended version was signed into law on October 4th.

Week of September 21

Goldman-Sachs and Morgan Stanley became bank holding companies.

The U.K. government nationalized the mortgage bank Bradford and Bingley (a loan portfolio of $90 billion).

Week of September 28

Washington Mutual became the largest bank failure in U.S. history, with assets valued at $328 billion.

The Belgian, Dutch, and Luxembourg governments each took a 49.9 percent equity stake in the operations of the banking and insurance company Fortis within their respective borders, each injecting $16.4 billion in capital. One week later, the Dutch government took full control of the company's operations in the Netherlands. Fortis' operations in

the BENELUX countries were later sold to the French commercial bank, BNP Paribas.

The German government, together with commercial banks and federal regulators, provided $50 billion in credit guarantees to Hypo Real Estate.

Citigroup agreed to buy the banking operations of Wachovia.

France, Belgium, and Luxembourg injected $9.2 billion into the French-Belgian bank Dexia.

The Icelandic government took a 75 percent equity stake in Glitnir, the country's third-largest bank.

The Swedish central bank announced that it would lend up to $700 million to the Swedish unit of the Icelandic bank Kaupthing.

Ireland announced unlimited guarantees on retail, commercial, and interbank bank deposits. Similar measures were adopted in Austria, Denmark, Germany, Greece, Iceland, Italy, and Portugal. Sweden, the United Kingdom, and the United States raised limits on deposit guarantees. On October 3, European finance ministers agreed to raise the minimum guarantee on bank deposits to €50,000 across all EU member states.

Week of October 5

The Icelandic government loaned $683 million to Kaupthing, and seized control of Landsbanki, and sought a $5.5 billion loan from Russia.

The Spanish government established a $40 to $68 billion emergency fund to purchase assets held by Spanish banks.

The U.S. Federal Reserve intervened in the commercial paper market for the first time since the Great Depression.

The British government made available $87 billion in emergency loans to the banking system and offered to purchase capital in eight of the largest banks. The package includes guarantees of £250 million for new debt and the same for liquidity provisions.

The central banks of the United States, the Euro Zone, Canada, Sweden, and Switzerland each cut their benchmark rates by half a percentage point in an unprecedented coordinated effort. Separately, China's central bank lowered its key one-year lending rate by 27 basis points, the second reduction in three weeks.

The Icelandic government placed Glitnir into receivership, seized control of Kaupthing Bank, and abandoned its attempt to peg the krona at 131 per euro, established one day earlier, after it touched 340 against the euro.

California, the most populous U.S. state, asked federal authorities for a $7 billion emergency loan as it was unable to obtain financing in the wake of the bankruptcy of Lehman Brothers.

The British government announced a $685 billion plan to restore confidence in financial institutions, which included insuring up to $438 billion in new debt issued by banks, along with providing as much as $88 billion in equity capital.

The National Bank of Ukraine seized control of Prominvestbank, the country's sixth-largest bank.

Week of October 12

European governments announced financing packages totaling over $2.5 trillion. The packages include recapitalizing the banking sectors, credit guarantees on interbank lending, and direct loans.

The British government injected $60 billion in equity capital into the country's three largest banks.

The United States announced that it would commit $250 billion of the $700 billion rescue package to recapitalize the banking sector.

Week of October 19

The IMF agreed with Iceland on an economic recovery program supported by a two-year loan of $2.1 billion.

The Belarusian authorities requested financial assistance from the IMF under a program that could be supported by a Stand-By Arrangement.

The Pakistani authorities requested discussions with the IMF on an economic program supported by financial assistance from the IMF.

Week of October 26

IMF staff agreed with the Hungarian and Ukrainian authorities' economic programs supporting loans of $15.7 and $16.7 billion, respectively.

The European Union stood ready to provide a loan of $8.1 billion to Hungary and the World Bank agreed to provide $1.3 billion.

The IMF announced the Short-Term Liquidity Facility designed to channel funds quickly to emerging markets that have a strong track record, but that need rapid help during the current financial crisis to get them through temporary liquidity problems.

Week of November 9

The Leaders of the Group of Twenty agreed to a plan of action to restore global growth and achieve needed reforms of the world's financial systems.

IMF staff and Pakistani authorities reached agreement on an economic program supported by a $7.6 billion loan. The Executive Board of the IMF was expected to discuss the program shortly under the IMF's Emergency Financing Mechanism procedures.

Week of November 16
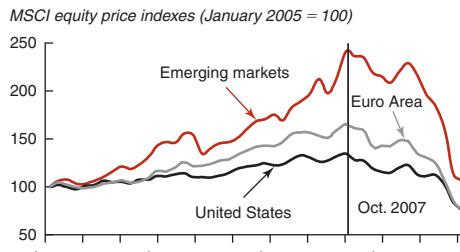
IMF staff and Serbian authorities agreed on an economic program supported by a $0.5 billion loan.

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tightening of credit conditions in international markets. One-third of developing countries are running current account deficits in excess of 10 percent of GDP, many of which may be forced to restrict domestic demand severely as capital inflows dry up. During 2007, for example, several countries were the recipients of vigorous increases in private debt flows that fueled credit growth to the domestic private sector and intensified inflation pressures. A year later private debt flows to the banking sector declined dramatically in a number of cases: by $13.2 billion in Kazakhstan, $6.6 billion in Russia, $3.7 billion in South Africa, $3.1 billion in Turkey, and $2.1 billion in Ukraine (comparing January through September 2008 with the same period in 2007).

All middle-income countries, even with current account surplus positions, have come to be substantially affected by the financial crisis. A Revealed Vulnerability Index indicates the extent to which financial conditions for developing countries have deteriorated since September 15, 2008 (upon the failure of Lehman Brothers). The vulnerability index averages the standardized depreciation of currencies, domestic equity market losses, and increases in risk premiums, as well as the decline

Figure 1.2 Emerging market equities are hit hard as turbulence evolves to crisis

MSCI equity price indexes (January 2005 = 100)

Source: Morgan-Stanley, Standard & Poor's.

in gross capital flows to a country over the preceding 12 months. The index shows that virtually all middle-income countries are experiencing financial stress.
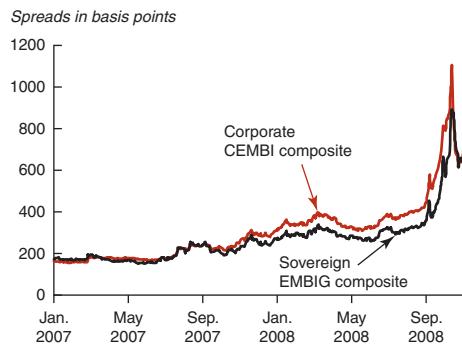
Emerging-market equity prices—as captured by the Morgan-Stanley Composite Index (MSCI)—tumbled by over 60 percent (in dollar terms) from their peak of October 2007, bringing prices back to levels attained at the beginning of 2005 (figure 1.2).[1] The massive correction in equity prices was widespread across emerging market economies, with the largest declines found in a number of European and Central Asian economies—Ukraine (80 percent), Romania (75 percent), Bulgaria (75 percent), and the Russian Federation (73 percent). Other large emerging market economies, including Brazil, China, and India, experienced corrections of over 60 percent. Despite the declines of the past year, equity prices in emerging markets remain above those in mature markets from a longer-term perspective, albeit characterized by much higher volatility.

The selloff in emerging market assets triggered a marked depreciation of exchange rates in a large number of countries, reversing much of the appreciation of the past two years. For example, the Brazilian real dropped by 40 percent against the dollar (20 percent against the euro) from early August to mid-November 2008, but the currency stands only 8 percent below its January 2007 dollar value. The

South African rand depreciated by nearly 60 percent against the dollar (38 percent against the euro) from late October 2007 to mid-November 2008. Similarly, the Turkish lira depreciated by over 40 percent against the dollar (20 percent vis-à-vis the euro) from late October 2007 to mid-November 2008, but the currency has appreciated by 6 percent in real effective terms between January 2007 and October 2008.

The banking crisis that erupted in September 2008 is restricting credit to developing countries, and in particular to the least creditworthy borrowers. Sovereign bond spreads widened to a peak of 1,100 basis points in late October 2008 from 330 points in late August—well above the record 150 basis points registered in June 2007—before recovering to just over 700 basis points by mid-November. At that time, sovereign bond spreads exceeded the "distressed debt" threshold of 1,000 basis points in 14 of 38 emerging market economies currently part of JPMorgan's EMBI Global Index. Corporate bond spreads jumped by still more than sovereign spreads (figure 1.3). Spreads on risky non-investment grade (BB-rated) emerging market corporate bonds widened to 1,750 basis points in mid-November, up more than 1,450 points since mid-2007.

Figure 1.3 Emerging-market bond spreads widen, especially for corporates

Spreads in basis points

Source: JPMorgan-Chase.

Note: CEMBI = Corporate Emerging Markets Bond Index;
      EMBIG = Emerging Markets Bond Index Global.

The rise in spreads was only partially offset by a 1.3 percentage point decline in the benchmark yield on 10-year U.S. Treasury notes between June 2007 and November 2008, so the yield on dollar-denominated sovereign bonds issued by emerging markets reached 10.5 percent, the highest in four years.

Private capital flows expected to continue decline

Even before the intensification of the financial crisis, tighter credit conditions were curtailing gross private debt and equity flows to developing countries (figure 1.4). Cross-border syndicated bank loan commitments declined to $315 billion over the 12-months ending October 2008, down from a record $400 billion a year earlier (but still above levels recorded over 2005–06). Bond issuance by developing countries decreased to $72 billion over the year to October, down from a record high of just over $170 billion at mid-2007. Corporate bond issuance declined sharply, with large falloffs in South Africa (by $15.6 billion), India ($12.8 billion), and Russia ($9.4 billion). Indeed, non-investment-grade bonds by corporations located in emerging markets accounted for about 40 percent of total issuance from January to October 2008, compared with 60 percent over 2005–06. And equity issuance plummeted along with falling equity prices to total $90 billion in the period,

down from a record high of $200 billion achieved at the start of 2008.

Even assuming a restoration of market confidence and a thawing of credit markets and capital movements, overall credit conditions for emerging markets will remain substantially tighter than in the recent past. As a consequence, net private debt and equity flows to developing countries are anticipated to decline from the record-high $1.03 trillion (7.6 percent of developing-country GDP) set in 2007 to about $530 billion (3 percent of GDP) in 2009. Although net foreign direct investment should be moderately more resistant to the downturn (as in past episodes), tighter credit may cause high-income firms to reduce their foreign direct investment by much more than they did during earlier financial crises, which were centered in developing countries.
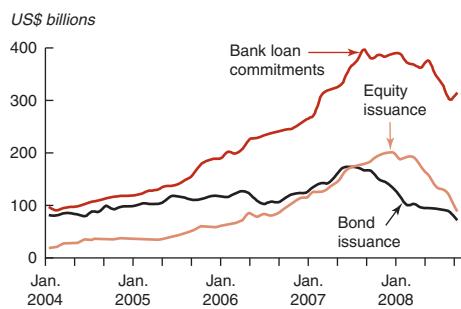
Tightening of credit sharply reduces domestic growth prospects

Before the financial turmoil developed into a crisis of global proportions, developing countries were affected mainly by slowing demand in high-income countries through the export channel. Many developing countries had shown strong resilience in the face of the gradually deteriorating external environment, because their economies were supported by strong investment growth and shielded by large amounts of international reserves. This situation has changed dramatically since September 2008.

Unlike gradual adjustments in markets for goods and services, adjustments in financial markets come fast and suddenly, and they often tend to "overshoot." More importantly, the escalation of the crisis directly affects the engine for domestic growth in many developing economies, because obtaining finance for capital spending has become abruptly more difficult. Moreover, the crisis is placing strong pressure on foreign exchange reserves and, at the same time, can reveal dangerous currency mismatches in private sector balance sheets.

During the global boom of the past five years, local banks and private companies whose local currencies were appreciating

Figure 1.4 Private debt and equity flows decline by a third in 2008

US$ billions

Bank loan commitments

Equity issuance

Bond issuance

Source: Dealogic Analytics.

found it attractive to borrow abroad in dollars. With the sudden turnaround in currency movements, the currency mismatch on private sector balance sheets has likely led to substantial losses across firms and banks and even for households. To the extent that this development results in loan defaults, it may strain domestic banking systems and place pressure on banks to find alternative sources of funding at a time when global financing conditions have deteriorated markedly. Stress induced by currency movements thus carries the potential to further degrade prospects for investment spending in developing countries.

Outlook for high-income OECD countries

The intensification of the financial crisis in the United States, and its widening to major European countries in the autumn of 2008, is expected to exact a significant toll on economic activity across the high-income countries belonging to the Organisation for Economic Co-operation and Development (OECD). Even if confidence in global credit markets is restored quickly, reductions in the finance available for firms and consumers, coupled with a slowdown in developing-country import demand, have set the stage for a recession in the United States, Europe, and Japan beginning in the second half of 2008 and lasting into 2009.

A movement to joint recession across key OECD countries

Through the first quarter of 2008, the slowdown among the OECD countries was fairly moderate (although industrial production stagnated in the quarter): exports benefited from strong import demand from developing countries and from oil exporters, while falling imports served to boost the contribution of net trade to GDP growth. But GDP fell to 0.3 percent growth (at an annual rate) in the second quarter for the key advanced economies, down from 2.4 percent in 2007; and as GDP growth moved to decline across

the United States, Europe, and Japan during the third quarter, OECD growth dropped to −0.6 percent.

Industrial production slipped to negative ground across all major OECD economies in both the second and third quarters of the year, as fading overseas demand combined with a lack of domestic orders tied to sluggish conditions in housing and autos in a number of countries (table 1.2, first and second panels). Growth of export volumes dropped from 14.6 percent in 2007 to 2.5 percent during the third quarter (saar), as intra-OECD trade (especially within Europe) softened at the same time as developing-country demand slowed.

During the second quarter, conditions in Europe and Japan deteriorated sharply. Japan's GDP declined at a steep 3.7 percent seasonally adjusted annualized rate (saar), and Euro Area GDP fell 0.7 percent (figure 1.5 and table 1.2, first panel). A falloff in household spending tied to the effects of much higher inflation, a decline in investment, and a dramatic shift in the growth contribution of trade all contributed to the turnaround. In Europe, increased sluggishness in export markets and the long bout of euro appreciation pressured exports and imports into negative territory in the second quarter, with contributions to overall growth slipping to nil from 1.4 points in the final quarter of 2007.

In the United States, conversely, GDP picked up 2.8 percent (saar) in the second quarter, as fiscal stimulus and looser monetary policy boosted consumption spending. Moreover, the pace of decline in residential investment slackened, while contributions from trade—still benefiting from the weak dollar—increased to a large 1.6 percentage points of growth (figure 1.6). U.S. domestic demand has been depressed since the final quarter of 2006, as a rise in domestic savings helped to unwind the global imbalances that were of such concern a couple of years ago. As financial dislocations heightened in the third quarter, including unprecedented declines in equity markets in Europe, Japan, and the United States, consumer spending came under increasing
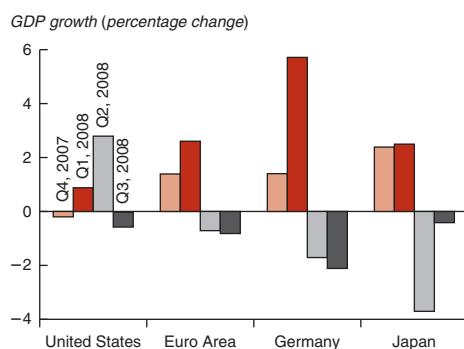
Table 1.2 High-income OECD countries: growth and related indicators

Indicator, country	Growth year-over-year		Seasonally adjusted annualized growth			Growth year-over-year	
	2006	2007	Q108	Q208	Q308	H108	Q308
GDP growth (percent)							
High-income OECD	**2.9**	**2.4**	**1.5**	**0.3**	**−0.6**	**1.9**	**0.5**
United States	2.8	2.0	0.9	2.8	−0.5	2.3	0.7
Japan	2.4	2.1	2.5	−3.7	−0.4	1.0	0.0
Euro Area	3.0	2.6	2.6	−0.7	−0.8	1.7	0.3
Germany	3.2	2.6	5.7	−1.7	−2.1	2.2	0.8
France	2.4	2.1	1.6	−1.1	0.6	1.6	0.6
United Kingdom	2.8	3.0	1.1	0.0	−2.0	1.9	0.3
Industrial production							
High-income OECD	**2.9**	**2.4**	**0.1**	**−3.2**	**−3.8**	**1.4**	**−2.2**
United States	2.2	1.7	0.4	−3.2	−5.9	1.0	−4.5
Japan	4.1	2.9	−1.7	−3.5	−4.3	1.8	−1.9
Euro Area	3.4	2.8	1.3	−4.5	−2.6	1.2	−1.8
Germany	5.9	6.1	4.9	−3.2	−4.7	4.2	−2.3
France	0.9	1.2	0.1	−6.1	−2.6	0.7	−1.9
United Kingdom	0.7	0.4	−1.7	−2.9	−5.8	−0.2	−3.0
Consumer prices[a]							
High-income OECD	**2.3**	**2.0**	**3.1**	**3.2**	**4.0**	**3.2**	**4.0**
United States	3.2	2.9	4.3	4.0	4.9	4.2	4.9
Japan	0.3	0.1	0.7	1.2	2.1	1.0	2.1
Euro Area	1.9	2.3	3.3	3.5	3.9	3.4	3.9
Germany	1.7	2.3	2.8	3.1	2.9	3.0	2.9
France	1.7	1.5	2.8	3.2	3.0	3.0	3.0
United Kingdom	2.3	2.3	2.2	2.4	5.0	2.3	5.0
Export volumes							
High-income OECD	**13.9**	**14.6**	**9.2**	**2.8**	**2.5**	**6.7**	**4.8**
United States	10.5	6.9	5.3	14.7	21.9	9.8	11.2
Japan	8.1	5.9	4.0	2.1	−12.9	7.1	−1.6
Germany	13.0	6.2	11.0	0.4	−5.9	6.4	3.9
France	9.9	3.7	32.6	−14.6	−0.1	5.1	4.2
United Kingdom	11.7	−10.4	0.7	−1.3	4.2	−0.8	0.2
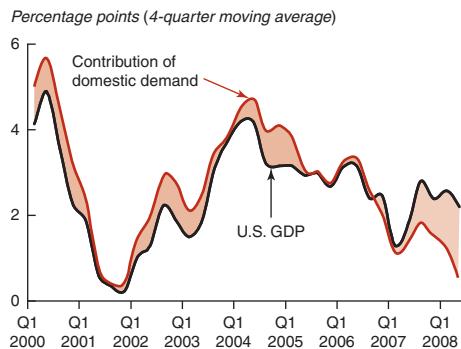
Source: National statistical agencies through Haver Analytics and Thomson/Datastream.
Note: CPI inflation for high-income OECD countries is GDP weighted.
a. Year-over-year growth rates.
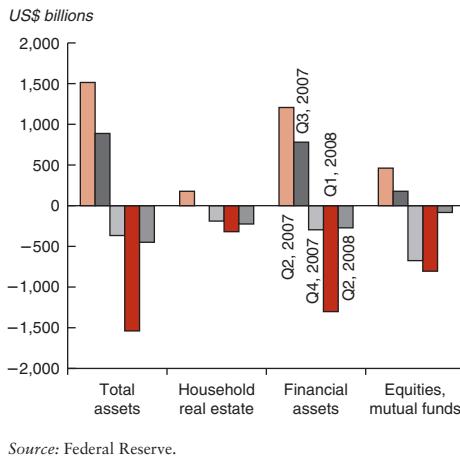
Figure 1.5 Change in GDP in the United States, Europe, and Japan

GDP growth (percentage change)

Source: World Bank, national statistical agencies.

Figure 1.6 The contribution of U.S. domestic demand to GDP growth

Percentage points (*4-quarter moving average*)

Source: U.S. Department of Commerce; World Bank calculations.

Figure 1.7 U.S. household wealth falls sharply in the last quarters

US$ billions

Q3, 2007
Q2, 2007
Q4, 2007
Q1, 2008
Q2, 2008

Source: Federal Reserve.

pressure (figure 1.7).[2] And with export performance for OECD economies fading on the back of sputtering global demand, the Euro Area and Japan fell into technical recession in the quarter, while growth in the United States reverted to decline.

Financial crisis places outlook under exceptional uncertainty
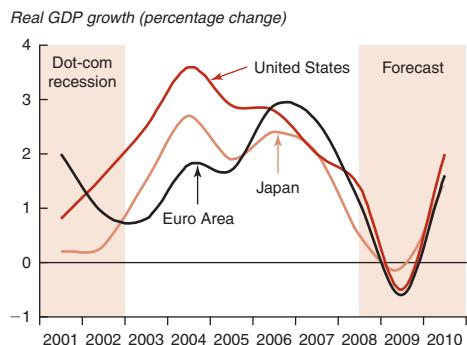
Given the dramatic developments over September to November 2008, the depth of the coming recession is difficult to gauge. Should credit markets remain frozen and asset prices continue to fall, then the decline in output over the next year could be extreme. However, the extraordinary measures now being taken by fiscal and monetary authorities are expected to eventually restore confidence so that banks will no longer hoard cash, and businesses can obtain the finance essential for normal operations. Nevertheless, the outlook for OECD countries remains grim. A common element is a falloff in domestic demand—increasingly deep in business capital spending—no longer offset by support from net trade because of a coincident marked slowdown in growth among the developing countries.

With U.S. private consumption dropping an unprecedented 3.1 percent in the quarter, the

decline in GDP would have been much more severe save for the contribution of net trade. Notwithstanding that GDP is projected to decline more sharply in the fourth quarter of 2008, growth for the year is expected to register 1.4 percent, because of the strong contributions of trade in the first half of the year. An abrupt decline in investment and a 1 percent falloff in consumer spending are expected to cause GDP to fall in both the first and second quarters of 2009, with a shallow recovery beginning in the second half of the year. GDP is projected to decline by 0.5 percent for all of 2009 but to recover to a still below-par 2.0 percent in 2010 (figure 1.8).

Financial conditions in the Euro Area are now also perilous. After having fallen 0.7 percent in the second quarter (saar), GDP dropped 0.8 percent during the third quarter and is expected to register modest declines in coming quarters before picking up steam toward the end of 2009. Growth is expected to register a weak 1.1 percent increase for 2008 as a whole and a 0.6 percent decline in 2009, before strengthening in 2010 to a still below-trend advance of 1.6 percent. The depth of recession in Europe should be comparable to that in the United States, in part because corporate finance in Europe is more reliant on the banking sector but also because lower commodity prices will dampen import demand in

Figure 1.8 GDP to decline across the OECD

Real GDP growth (percentage change)

Dot-com recession

United States

Forecast

Japan

Euro Area

Source: National statistical agencies, World Bank.

the Middle East and North Africa, a region that has been an important origin of export demand for Europe. The rapid decline in output, plus the drop in commodity prices should alleviate inflationary pressures in Europe. But the recent depreciation of the euro measured against the dollar may continue, as investors' continue to perceive U.S. government securities as safe-haven assets.

Aside from sharp equity market declines, Japan's financial markets have been less affected (through mid-November 2008) by fallout from the global financial and banking crisis. Nevertheless, the macroeconomic landscape is surprisingly similar to that in the United States and Europe. Household spending has retrenched, higher inflation has compressed purchasing power, and consumer sentiment has plummeted to 17-year lows. The Tankan survey of business investment intentions has been marked down steeply, in line with a downward shift in expectations for Japan's export prospects. Slumping import demand in emerging Asia has been amplified by a tightening of policy interest rates in countries such as India, Indonesia, the Philippines, and Thailand to stem inflation pressures. During the third quarter, Japan's GDP dropped by 0.4 percent (saar) and for the remainder of 2008, creeping spillover from the credit crunch and falling exports will cause Japan's GDP to recede further, coming to register 0.5 percent growth for the year. Recession in Japan is expected to be less pronounced than elsewhere, with output declining by 0.1 percent in 2009 before picking up to 1.6 percent in 2010 as global investment demand revives and stimulates Japanese exports.

Outlook for the developing countries

(A deeper discussion of developments in each of the six developing regions may be found in the Regional Appendix in this book.)

Even before international credit channels froze, there were increasing signs of slowing economic activity in developing countries.

Slowing growth in the high-income economies, falling equity markets, and reduced international capital flows cut into investment in developing countries, while a sharp acceleration in inflation linked to the surge in commodity prices constrained consumer spending.
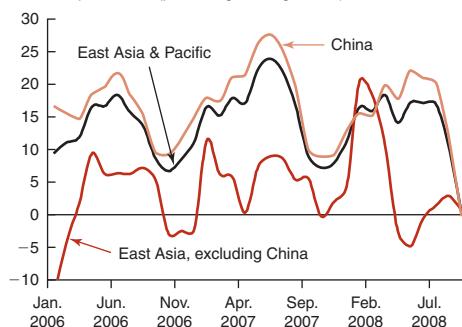
Industrial production (outside of China) had been robust but began to slow in mid-2008. In the rest of East Asia, the downward shift in production growth has been sharp, dropping from 20 percent in January (saar) to a decline of 5 percent by May 2008, before recovery to nil by September (figure 1.9).

More dramatic has been the steep recent falloff in China's industrial production growth, from 20 percent in July to a decline of 0.2 percent in September (saar). Softening export growth, together with tightening micromanagement of inventories—given uncertain sales prospects—have underpinned this development. This, in turn, has carried aggregate production growth in East Asia to zero as of the third quarter.

Output growth also faded in India and elsewhere in South Asia, while production in Hungary, Poland, Turkey, and the Baltic states began to decline more recently. Output dynamics have also faltered in Latin America, as production in Chile, Colombia, and Mexico have dropped to negative ground, while that in Brazil has slowed
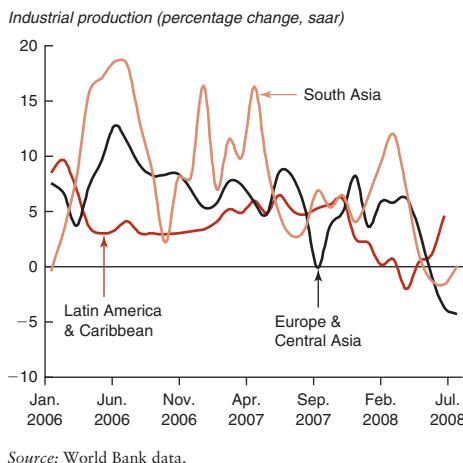
Figure 1.9 East Asian countries show steep falloff in output growth

Industrial production (percentage change, saar)

Source: World Bank data.

Figure 1.10 Output growth in Latin America, South Asia, and Europe and Central Asia is fading

Industrial production (percentage change, saar)

Source: World Bank data.

prospects. The effects of the global financial crisis on developing countries will differ by region and by the ability of individual countries to offset adverse effects on domestic banking sectors and the broader financial market.

Emerging-market corporate borrowers already are seeing a sizable widening of spreads and are increasingly being shut out of international bond markets (see discussion above). A pullback in syndicated bank lending is emerging (as commercial banks and other financial institutions in the high-income countries shore up balance sheets by limiting new lending or by calling in existing lines of credit), and initial public equity offerings from key emerging markets have dried up. Even before the freezing of credit flows that has accompanied the banking crisis, overall capital inflows to developing economies were down 35 percent over the first nine months of 2008 from the same period a year earlier.

sharply (figure 1.10 and table 1.3, second panel). Imports across developing regions are also showing signs of easing, reflecting a softening of domestic demand. And export volumes from emerging markets displayed fading momentum over the first three quarters of 2008, notably in Latin America, as import demand in the OECD countries declined sharply. Overall GDP growth for the developing countries slowed from the 7.9 percent advance recorded in 2007 to 5.3 percent (annualized) during the second quarter of 2008 (see table 1.3 and associated notes).

Financial turmoil likely to curb investment

Fixed investment has been a powerful driving force for growth across developing countries over the last decade, particularly in East Asia and the Pacific and in Europe and Central Asia, increasing its contribution to overall growth to almost 4 percentage points in recent years, and well outstripping contributions from trade (figure 1.11). But the intensification of the credit crisis in the United States has severely constrained finance to developing countries, with ominous implications for growth

The slowdown is likely to be more pronounced in 2009

Looking forward, recent adverse trends are anticipated to intensify, driven by an especially sharp decline in investment growth in developing countries, weaker exports as import demand from high-income economies declines, and lingering and in some cases still-escalating

Figure 1.11 Investment was the driving force for growth in developing countries

Contribution to real GDP growth (percentage points)

Source: World Bank data.

a. Projected.

Table 1.3   Developing regions: growth and related indicators

Indicator	Growth year-over-year		Seasonally adjusted annualized growth			Growth year-over-year	
	2006	2007	Q108	Q208	Q308	H108	Latest
GDP growth (percent)							
Developing countries	**7.7**	**7.9**	**7.5**	**5.3**	—	**6.9**	—
East Asia and the Pacific	10.1	10.5	9.4	9.2	—	9.0	—
South Asia	9.0	8.4	11.3	2.9	—	8.3	—
Europe and Central Asia	7.5	7.1	8.8	−1.2	—	5.9	—
Latin America and the Caribbean	5.6	5.7	4.4	5.4	—	5.3	—
Middle East and North Africa	5.3	5.8	4.0	3.8	—	4.0	—
Sub-Saharan Africa	5.9	6.3	4.9	5.2	—	4.5	—
Industrial production							
Developing countries	**8.8**	**9.7**	**10.6**	**9.6**	**−2.4**	**9.2**	**5.0**
East Asia and the Pacific	13.0	15.0	18.3	17.1	0.2	14.7	10.2
South Asia	10.6	9.1	9.5	1.1	−4.1	6.1	1.0
Europe and Central Asia	7.6	6.9	5.9	3.3	−9.8	5.1	0.3
Latin America and the Caribbean	4.3	4.3	0.2	0.4	3.6	3.4	2.2
Middle East and North Africa	−0.8	−0.5	8.6	3.5	−0.2	3.6	3.5
Sub-Saharan Africa	3.9	5.8	−2.1	15.6	−9.3	6.5	4.7
Consumer prices[a]							
Developing countries	**6.2**	**6.1**	**8.6**	**10.4**	**9.9**	**9.5**	**9.9**
East Asia and the Pacific	5.1	5.3	7.7	9.5	8.2	8.6	8.2
South Asia	7.6	7.6	10.1	11.0	22.0	10.6	22.0
Europe and Central Asia	5.6	8.0	11.0	11.3	11.0	11.2	11.0
Latin America and the Caribbean	5.6	6.5	8.8	9.7	7.5	9.3	7.5
Middle East and North Africa	5.1	7.2	11.2	10.8	12.7	11.0	12.7
Sub-Saharan Africa	6.2	6.0	8.2	10.4	11.3	9.3	11.3
Export volumes[a]							
Developing countries	**13.9**	**14.6**	**14.0**	**13.8**	—	**14.0**	—
East Asia and the Pacific	19.2	18.7	16.2	17.0	17.1	16.2	19.2
South Asia	4.8	9.0	13.8	9.4	12.8	13.8	10.5
Europe & Central Asia	11.8	11.8	14.3	10.3	—	14.3	—
Latin America and the Caribbean	6.9	4.5	0.7	−2.5	−11.4	−0.7	−5.4

Source: National Statistical Agencies through Haver Analytics.
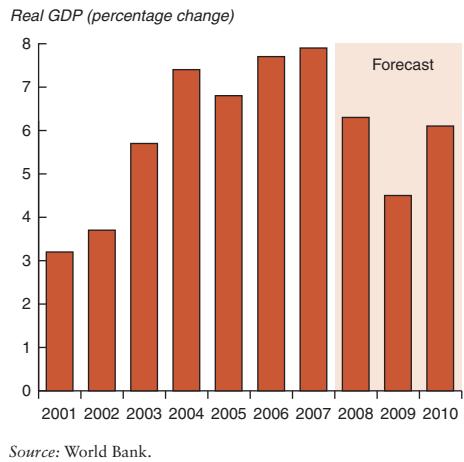
Note: Growth rates at annual or annualized rates, unless otherwise indicated. Consumer prices for regions are medians. Quarterly 2008 growth for developing regions is based on data available for key economies. No data on export volumes for South Asia and Sub-Saharan Africa are available. East Asia and Pacific: China, Indonesia, Malaysia, the Philippines, and Thailand. South Asia: India. Europe and Central Asia: Czech Republic, Hungary, Poland, Russian Federation, and Turkey. Latin America and the Caribbean: Argentina, Brazil, Chile, Colombia, and Mexico. Middle East and North Africa: Arab Republic of Egypt. Sub-Saharan Africa: Nigeria, and South Africa.

a. Quarterly data, year-over-year growth.
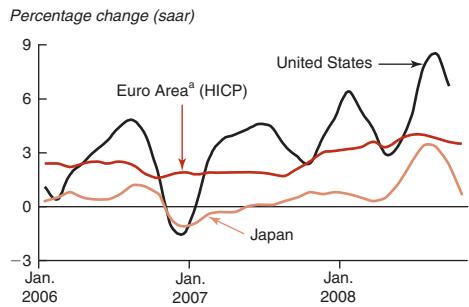
inflation. Developing-country GDP growth is projected to decline to 4.5 percent in 2009, more than 3 percentage points below the average of the past five years (figure 1.12). No region or country is likely to escape this growth recession. Recovery in 2010 to a 6.1 percent advance is predicated upon a relatively quick improvement in financial and growth conditions among the high-income countries, a prospect currently subject to a high degree of uncertainty.

Growth outcomes for 2009 are anticipated to vary significantly across developing countries and regions, depending on their reliance on external flows and bank lending to finance investment, trade links to deeply affected high-income countries, direct and indirect exposures to the subprime mortgage crisis, and the degree of participation of foreign banks in the domestic financial sector. Moreover, policy responses to the crisis will play a large role in shaping the near-term economic outlook.

Figure 1.12 Developing-country GDP growth is expected to fall below 5 percent in 2009

Real GDP (percentage change)

Source: World Bank.

Figure 1.13 Headline inflation is easing across industrial countries

Percentage change (saar)

Source: World Bank data.
a. Year-over-year.
Note: HICP = Harmonized index of consumer prices.

Inflation has been rising but is now set to decline
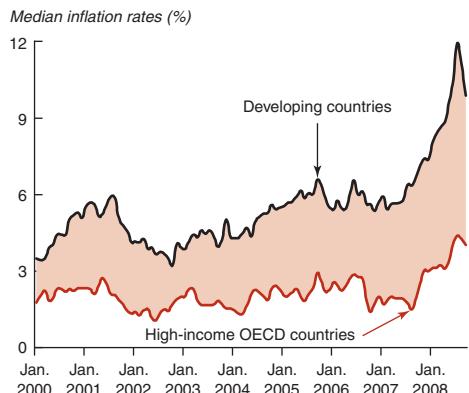
The projected global growth recession and much lower commodity prices should help ease the surge in inflation observed over 2007 and 2008. Headline consumer price inflation among the OECD countries increased from a modest 2 percent in 2007 to a 4 percent year-over-year pace in the third quarter of 2008, led by increases in the United States (4.9 percent), the Euro Area (3.9 percent), and the United Kingdom (5 percent). Although the peak in commodity prices appears to have passed, the momentum of headline inflation during August picked up to 8.5 percent in the United States before easing in September, while falling to 2.3 percent in Japan and to 3.6 percent in Europe (figure 1.13).

Consumer price inflation accelerated much more quickly in developing countries than in the advanced economies (figure 1.14, and table 1.3, third panel). In the majority of developing economies, most of the increase in headline inflation was attributable to the direct effects of higher commodity prices; increases in core inflation (which excludes food and energy) were limited. Indeed, inflation in developing countries has remained relatively low over the past five years of rapid growth,

despite substantial increases in oil and metals prices since 2003 (box 1.2). However, the sharp rise in food and fuel prices in the first half of 2008 pushed median inflation in the developing world to 12 percent by July 2008, and more than 30 countries were facing double-digit inflation rates.

In a welcome development, median inflation has since retreated to below 10 percent in September, as falling commodity prices have improved CPI developments across a wide range of developing countries.

Figure 1.14 Inflation in emerging markets surged on higher food and energy prices

Median inflation rates (%)

Source: World Bank data.
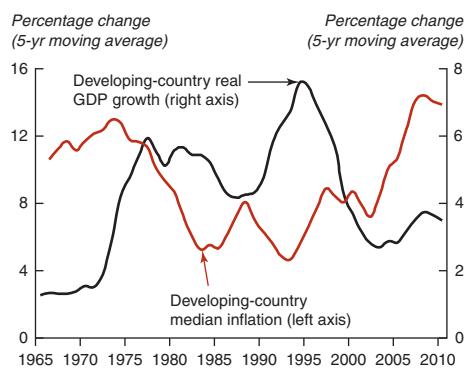
Box 1.2   Commodity prices and inflation in developing countries

Strong growth in developing countries during the 1960s coincided with a low-inflation environment, while high inflation during the subsequent two decades coincided with low average growth (box figure 1.2a). The recent sharp pickup in GDP growth occurred in an environment of low and stable inflation. Although the causality is always difficult to untangle, the potential adverse impact of high inflation on the ability to interpret price signals, on disciplined fiscal management, and on savings and investment are well understood.
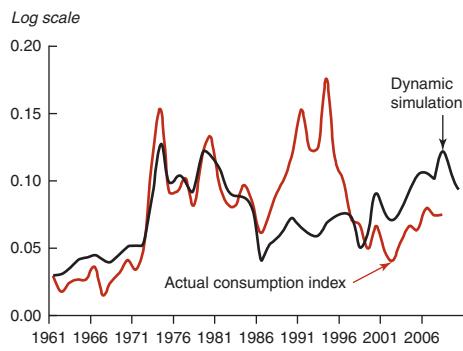
These negative effects underscore the importance of preventing an acceleration of inflation beyond the direct impact of increased commodity prices.

The relatively low inflation of the recent past can be clearly illustrated at an aggregate level with a model that explains median inflation in the developing world as stemming from commodity price increases in local currencies (measured as a median) and persistence (inflation tends to depend on past inflation as a result of indexation and as inflationary expectations are adjusted). In the model, CPI_t denotes consumer price inflation in developing countries, P_t denotes annual commodity prices, both in (median) local currencies for the 1962–2008 period. Numbers in parentheses denote t-ratios, and Δ denotes the first-difference operator:

Box figure 1.2b How do international commodity prices explain inflation in developing countries?

Log scale

Source: World Bank.

$$\Delta\log(CPI_t)=0.01+0.09\ \Delta\log(CPI_{t-1})+0.79\ \Delta\log(P_t),$$
$$\quad\quad\quad (1.39)\ (5.09)\quad\quad\quad\quad (11.60)$$

adjusted $R^2 = 0.78$.

Box figure 1.2b shows a dynamic simulation of the equation since the 1960s.
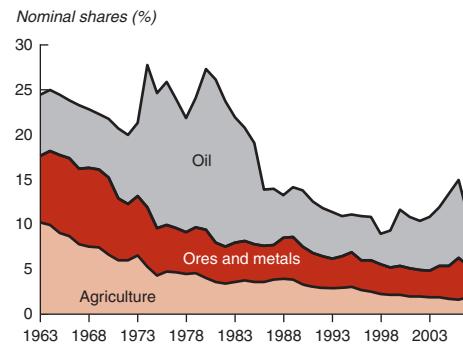
Inflationary pressures during the 1970s are well explained by a combination of commodity price increases and persistence. During the 1990s, however, many developing countries experienced high inflation unrelated to commodity prices and therefore not explained by the estimated equation. These increases in inflation were caused more by loose policy reactions to debt crises, especially in Latin America, and the transition toward market economies in Europe. In the recent period, inflation has actually remained lower than the model would predict, largely as a result of institutional reforms, which made monetary policy more independent in many countries and inflation targeting more prevalent.

The literature provides a range of explanations for the relatively low inflation of recent years. Dominant in the debate is the role of inflation expectations, which have been brought down sharply by institutional reforms. Increased competition in global markets, making it more difficult to pass through increases in the higher costs of production, is another explanation. Moreover, the additional low-cost

Box figure 1.2a Inverse long-term correlation between inflation and growth

Percentage change (5-yr moving average)

Source: World Bank.

supply from developing countries, notably China, in global markets carried deflationary effects. And the share of commodities in world production and trade has declined over time, as a result of which the impact of commodity price increases is now substantially less than during the 1970s (box figure 1.2c).

On the other hand, many of the factors that have kept inflation low over the last five years may have lost a degree of efficacy. Indeed, with the recent rise in commodity prices, the share of commodities in the global economy, and with that, their effects on the general price level, is increasing rapidly. Many fast-growing developing countries have reached capacity constraints in infrastructure, energy, and other inputs to production, and the increase of low-cost goods in global markets is waning. With broader inflation rates rising, it becomes easier to pass through cost increases, and, importantly, low inflation expectations might be revised upward quite quickly. These are serious challenges to be faced to prevent a reemergence of a high-inflation environment. In the baseline forecast, we assume that as a result of the sharp global growth slowdown and the recent de-

Box figure 1.2c Commodities are a declining share in global merchandise trade

Nominal shares (%)

Source: World Bank.

clines in commodity prices, headline inflation will ease gradually, even if core inflation moves up moderately. But the probability of higher inflation is certainly not negligible.

Many countries that experienced the sharpest run-up in inflation have been subjected to a dangerous combination of escalating food and energy prices and generally tight conditions in domestic markets, caused by a rapid increase in credit creation. Of the 24 countries where inflation picked up by more than 5 percentage points within the past year, 10 are in Europe and Central Asia, where inflation was spurred by very strong capital inflows or booming commodity revenues. Other countries subject to strong domestic inflationary pressures include Bolivia, Chile, the Philippines, República Bolivariana de Venezuela, and Vietnam. Some of the biggest jumps in headline inflation were seen in Sub-Saharan African countries, but that is largely because food represents more than 50 percent of consumption in many African countries.
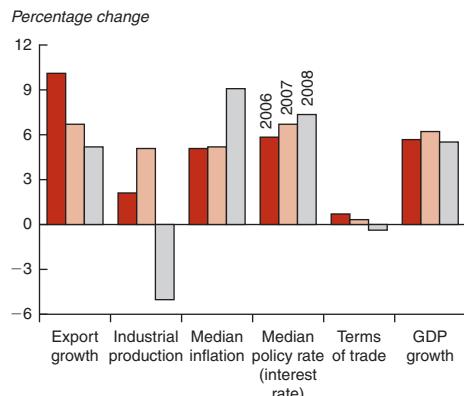
The ramp-up of commodity prices over 2006–08 and the associated acceleration of inflation have posed difficult policy challenges. The continued practice of official subsidization

of fuels and basic foodstuffs across many countries in the Middle East and North Africa, and East and South Asia is contributing to wider fiscal deficits, narrowing the room policy makers have for maneuver in other areas, including targeted income support, investment in the Millennium Development Goals, and countercyclical fiscal policy. Many monetary authorities have faced a trade-off between supporting growth and dampening inflation and inflation expectations. Brazil, Indonesia, Mexico, the Philippines, South Africa, and Thailand have raised policy rates by 25 basis points or more. The recent fall in commodity prices and the global slowdown are likely to ease this difficulty over time, and indeed, a shift toward monetary accommodation is now under way to mitigate a portion of the growth-dampening effects of the financial crisis.

Regional outlooks

GDP in **East Asia and the Pacific** increased by 8.5 percent in 2008, down from 10.5 percent in

Figure 1.15 Key developments in 2008 for East Asia and the Pacific (excluding China)

Percentage change

Source: World Bank.
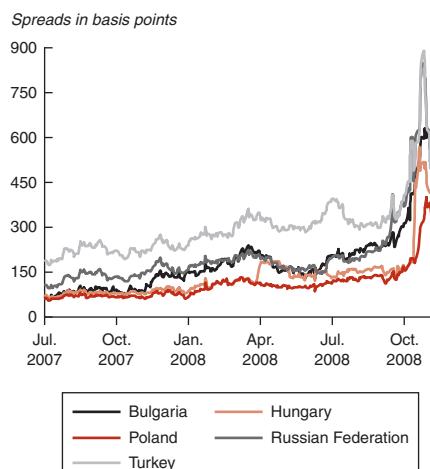
2007. (Excluding China, growth in the region fell to 5.3 percent, from 6.2 percent in 2007.) Of importance to the slowing pace of growth, China's GDP growth in the third quarter eased to 9 percent, from 10.6 percent in the first quarter, on a slump in investment and exports. Rising oil and food prices boosted median inflation in the region to 9 percent in 2008, compared with 5 percent over the preceding 2 years. The deterioration in the outlook for Japan and the United States reduced export growth, which for East Asian countries outside of China fell from 10.5 percent in 2006 to 4 percent in 2008 (figure 1.15). In turn, manufacturing output fell from 5 percent growth in 2007 to a decline of the same magnitude in 2008. And gross capital flows fell by a third, to $64 billion over the year to September 2008.

Prospects for 2009 and 2010 have dimmed with the deterioration in the external environment. The global banking crisis has had little direct effect on the region, but several countries are more vulnerable to spillovers in the form of higher corporate spreads, reduced capital flows, and plummeting domestic equity markets. Private sector investment in particular stands at risk. Although China is well cushioned against coming shocks, several countries remain exposed to a steep downturn in world

trade and more difficult financing conditions. While the decline in oil and food prices will support external positions and provide some relief on the inflation front, reduced investment spending is expected to contribute to a substantial slowdown in regional growth to 6.7 percent in 2009. A gradual recovery in key foreign markets will offer fresh impetus for exports and production and will help return growth in the region to a 7.8 percent pace by 2010.

In **Europe and Central Asia,** output is likely to increase by 5.3 percent in 2008, down from 7.1 percent in 2007, though growth held up remarkably well during the first half of the year. First-half GDP growth in Russia (7.8 percent), Poland (6 percent), Turkey (5.8 percent), and Romania (8.8 percent) were grounded in strong domestic demand, along with higher oil prices and fiscal revenues for the region's hydrocarbon exporters. But in 2009 deteriorating external positions and new risks from the global banking crisis are likely to depress prospects for vulnerable countries, and the downside risks are substantial. Sovereign spreads jumped in October 2008, notably for the Russian Federation and Turkey, and especially for Ukraine and Kazakhstan (figure 1.16).

Figure 1.16 Sovereign bond spreads widen across Europe and Central Asia

Spreads in basis points

Bulgaria	Hungary
Poland	Russian Federation
Turkey	

Source: JPMorgan-Chase.

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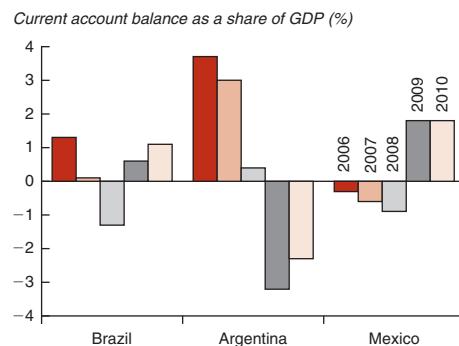
While most countries have maintained forward momentum, a divergence in growth performance has emerged: Latvia is in recession, the Romanian economy is overheating, and the Kyrgyz Republic, Tajikistan, and Moldova, which are receiving World Bank support, are facing the impact of rising food prices. The situation in Russia shifted dramatically from concerns about domestic overheating to fears of financial crisis, as equity prices gyrated with the turmoil in global markets, and oil prices fell.

Most countries have experienced strong growth in domestic demand, but net trade has remained a drag on growth. At the same time, rapid credit expansion and wage escalation has made the region more vulnerable to deterioration in external financing conditions. The medium-term outlook points to a sharp decline in regional growth to 2.7 percent in 2009, driven by a falloff in investment tied to difficult financing conditions and a marked weakening in export market demand. Growth is projected to firm to 5.0 percent by 2010, as credit markets stabilize, inflation pressures ease, and growth in external markets resumes, paving the way for a revival in spending and exports.

Latin America and the Caribbean countries have enjoyed four years of robust growth, while current account surpluses, accumulation of reserves, and improved policies have served to restrain core inflation rates, improve the quality of banking systems, and build up substantial buffers against financial contagion. However, in 2008 headline inflation jumped in response to higher oil and food prices, and policy makers in countries such as Brazil and Chile raised interest rates. Gross capital inflows to the region compressed by 45 percent between January and September 2008, compared with the same period in 2007. The deterioration in external demand and in international financial markets, combined with the recent falloff in commodity prices, reduced GDP growth to 4.4 percent in 2008 from 5.7 percent in 2007.

The global slowdown and a shortfall in capital flows present substantial risks to sustained

Figure 1.17 In Latin America and the Caribbean, current accounts of largest economies diverge

Current account balance as a share of GDP (%)

Source: World Bank.

growth, pressuring private sector investment in particular. As commodity prices continue to weaken, some major exporters, Argentina of note, will likely see current account surplus positions shift to deficit. For other countries, including Brazil and Mexico, the depth of recession in the United States and Europe will turn exports to negative growth, while contraction in imports should lead to a return of surplus position (figure 1.17).

GDP growth in the region is expected to drop to 2.1 percent in 2009 before recouping to 4 percent by 2010. Country-specific events could also pose a challenge: conditions in several Andean countries have tended toward less stability; República Bolivariana de Venezuela has seen another wave of nationalizations, and its growth is expected to fall from 8.4 percent in 2007 to 3.2 percent by 2010; and Argentina's GDP is expected to slow from 8.7 percent in 2007 to 4 percent by 2010, with a 1.5 percent growth trough in 2009.

The developing countries of the **Middle East and North Africa** region offer a good example of the diversity of effects stemming from the ramp-up in global fuel and food prices—at both extremes of the spectrum. In oil-exporting economies, a rise in oil and natural gas revenues to $200 billion supported 5.8 percent growth in 2008, down from 6.4 percent

in 2007. Slower domestic demand growth in the Islamic Republic of Iran (where GDP growth declined from 7.8 percent to 5.6 percent) was a key factor in this development. Outside Iran, growth among oil exporters stepped up to 5.9 percent.

In the more-diversified economies that are highly dependent on oil and food imports, exports slowed in 2008 as growth turned sluggish among key trading partners in Europe and the United States. But strong recovery in Morocco following drought in 2007 and continued solid performance in Tunisia and Jordan boosted growth to 5.7 percent from 3.8 percent. For the region as a whole, these developments yielded a flat profile of activity at 5.8 in 2008 (figure 1.18).
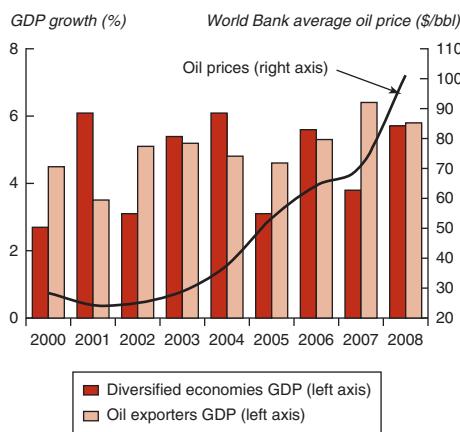
The region's oil exporters will face the challenge of diminished revenues in 2009. The global oil price is anticipated to fall from its July 2008 peak ($145/bbl) to below $80 in 2009. Growth in oil-exporting countries is projected to slow to 3.9 percent in 2009. Although their economies are unlikely to be severely affected by developments in financial markets, several countries stand more exposed to spillover effects from these developments, including Lebanon, Jordan, and the Arab

Republic of Egypt. Moreover, oil-exporting members of the Gulf Cooperation Council are vulnerable to losses on international investment positions, potentially prompting a hiatus in the recent buildup of foreign direct investment within the region. For the region's oil-importing economies, lower energy prices will reduce the import bill and provide some breathing space on the inflation front following the surge in prices in the first half of 2008. Growth for the region should recover to a 5.2 percent pace by 2010 as external demand recovers, and declines in hydrocarbon prices give way to a period of greater stability.

GDP growth in **South Asia** eased to an estimated 6.3 percent in 2008, from 8.4 percent in 2007 and from a 25-year high of 9 percent during 2006. High food and fuel prices, tighter international credit conditions, and weaker foreign demand have led to worsening external accounts and contributed to a slowdown in investment growth. Deterioration in trade balances, however, has been offset in large part by large remittance inflows, particularly for Bangladesh, Nepal, and Sri Lanka, where remittances represent 8 percent of GDP or more. Policy makers responded to high commodity prices and rising inflation pressures by partially adjusting domestic fuel prices, cutting development spending, and (initially) tightening monetary policy.
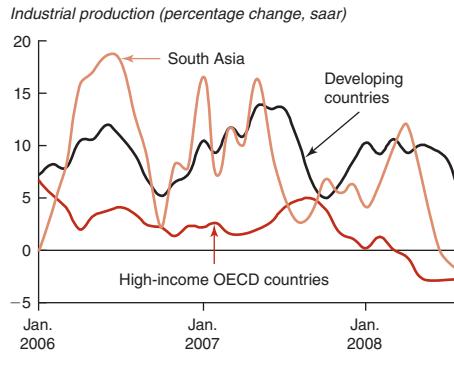
The global financial crisis is placing further downward pressure on growth. Lower capital inflows (down 40 percent, over January–September 2008 compared with the same period in 2007) and harder credit terms will reduce private investment, while reduced remittance inflows will add to pressures on growth. Food and fuel price subsidies have pushed fiscal outlays higher, reversing recent progress in fiscal consolidation. And increasing deficits are narrowing the scope to provide support for other urgent public programs, including the region's overburdened infrastructure. The slowdown in growth is most apparent in India and Pakistan, where industrial production fell sharply, and the momentum of production for South Asia has recently declined from a peak

Figure 1.18 Oil revenues, recovery from drought underpin growth in the Middle East and North Africa in 2008
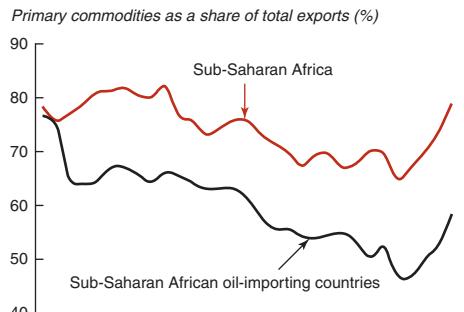
Source: World Bank data.

Figure 1.19 South Asian production slips in the last months

Industrial production (percentage change, saar)

Source: World Bank.

Figure 1.20 In Sub-Saharan Africa, primary commodity exports increased as prices surged

Primary commodities as a share of total exports (%)

Source: UN Conference on Trade and Development, Comtrade.

of 12 percent in April 2008 to a decline of 2 percent in August (saar) (figure 1.19).

South Asia's GDP is expected to drop to 5.4 percent in 2009 but to recoup to 7.2 percent by 2010. Firming growth will be supported by improving external demand and lower commodity prices.

Growth in **Sub-Saharan Africa**, outside of South Africa, increased to a remarkable 7 percent in 2007, the highest in some 35 years, as outcomes for both oil-importing and oil-exporting countries were robust. Growth among oil exporters increased to 8.2 percent in 2007, exceeding 5.5 percent gains for a fifth year running; growth in oil-importing economies breached a 25-year record, gaining 5.4 percent. GDP advances have become more broad-based and less volatile in recent years, especially among oil importers. And a notable and encouraging feature of Africa's recent performance is the sustained contribution of investment to overall GDP growth.

In 2008, activity outside of South Africa remained strong at 6.6 percent as GDP gains among oil-producing countries eased moderately to 7.8 percent, joining the larger group of oil-importing countries where GDP gains slowed to 4.2 percent in the year. Investment continues to provide an underpinning for GDP growth, while net exports are contributing to
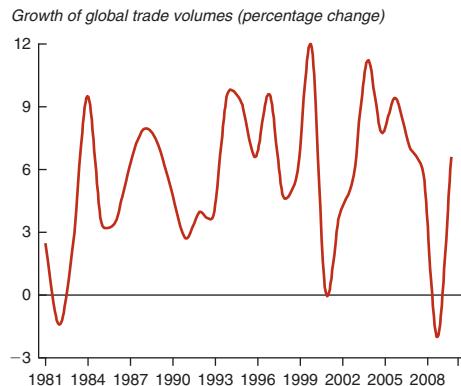
growth despite a sharp slowdown in global trade (figure 1.20).

The region's growth is expected to decline to 4.6 percent in 2009, before firming to 5.8 percent by 2010 as a result of recovery in external demand. Excluding South Africa, growth is anticipated to ease to 5.7 percent in 2009 and to accelerate to 6.6 percent in 2010. But this scenario is subject to significant downside risks. Should the global slowdown prove much deeper than anticipated, fostering a sharp fall in world trade growth, the contribution of net exports to African GDP growth will diminish. And many countries in the region have become more vulnerable to terms of trade shocks, as high fuel and food prices have led to a deterioration in external positions over the past years. Higher food and fuel prices have also widened the poverty gap, raising the risk of possible social unrest.

World trade
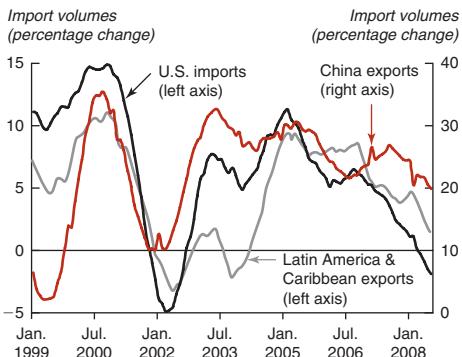
World trade volumes are expected to contract in 2009 for the first time since 1982 (figure 1.21). This decline is driven first and foremost by a sharp drop in demand, as the global financial crisis imposes a rare simultaneous recession in high-income countries and a sharp slowdown across the developing

Figure 1.21 World trade is expected to decline in 2009 for the first time since 1982

Growth of global trade volumes (percentage change)

Source: World Bank data.

Figure 1.22 Decline in high-income import growth affects developing-country exports

Import volumes (percentage change)   *Import volumes (percentage change)*
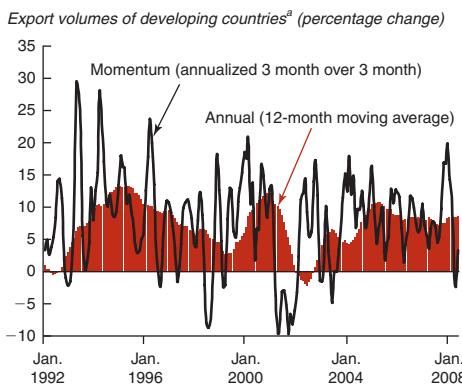
Source: World Bank data.

world. The global credit crunch is likely to affect private investment especially, which is the most cyclical and most internationally traded component of GDP. At the same time, the credit crunch is restricting export finance. Already there is anecdotal evidence that commercial bank trade credits are drying up and that export receipts are becoming more difficult to insure. Similarly, exporting firms may cut back on shipments if their access to credit lines is limited. Finally, the crisis has been associated with sharp, unpredictable swings in exchange rates, which also will hamper trade.

Signs of an economic slowdown have been visible for some time (growth in U.S. import demand was already falling in 2005), but they have been building at a much more gradual pace than occurred, for example, during the sharp correction in 2001, when import growth dropped from plus 15 percent to minus 5 percent within a year (figure 1.22). The current gradual decline in demand growth means that some exporting countries have had time to shift to higher growth markets in developing countries. For example, while the share of the United States in India's exports fell from 17.1 percent in 2004 to 15.3 percent in 2007, China's share in India's imports rose from 5.5 percent to 8.4 percent.

In addition, several countries (many in Latin America) that experienced a slowing of exports because of low U.S. demand growth benefited from higher commodity prices. Moreover, the impact on the volume of world trade was mitigated by the strong intraregional growth of trade in East Asia, largely driven by China's continuing integration into global markets. China's import and export growth continued to exceed 20 percent over the past two years; while outside of China, export growth remained robust (figure 1.23).

Figure 1.23 Developing-country exports have been strong, even outside China

Export volumes of developing countries[a] (percentage change)

Source: World Bank data.
a. Excluding China.

These mitigating and compensating factors are unlikely to be active in 2009. The slowdown in high-income import demand has accelerated, few growth centers are left to which exports can be redirected, and commodity prices are falling. Thus developing countries are set to experience a sharp, but likely temporary, fall in their export revenues. Those countries with insufficient reserves to sustain import growth will need to rely on some combination of exchange rate depreciation and slower growth to restrain imports.

Remittance flows to developing countries, which reached an estimated $283 billion in 2008 (Ratha, Mohapatra, and Xu 2008), began easing in the second half of the year and are projected to slow sharply in 2009. Migrant earnings in host-country currency terms are anticipated to be compressed by the recession in the industrial economies, lower revenues in high-income oil-exporting countries, and slower growth in many developing countries that are destinations for migrants.

While the baseline projection is for remittance flows to developing countries to decline as a share of recipient-country GDP from 1.8 to 1.6 percent in 2009, the extent of the decline at the country level will depend critically on exchange rate developments. Recent swings in bilateral exchange rates have outweighed the expected change in remittances denominated in host-country currencies. Future exchange rate movements will also play an important role.

Global current account balances are expected to show substantial shifts
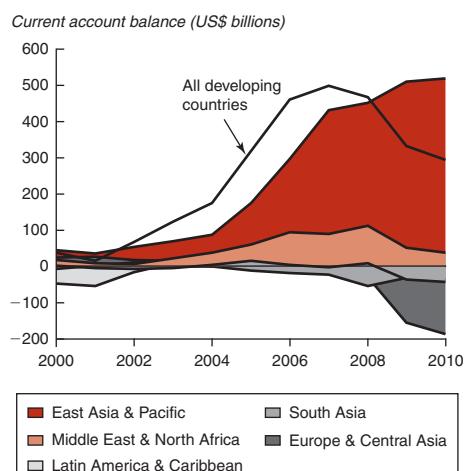
The global recession and attendant decline in world trade and in commodity prices will have a dramatic impact on current account balances. Surplus positions in Japan and the Euro Area should increase to $240 billion and $180 billion, respectively, during 2009 as commodity prices fall and trade volumes compress. Despite the improvement in the U.S. terms of trade, its current account shortfall is expected to deteriorate from $770 billion in 2008 (5.4 percent of GDP) to $830 billion or 5.8 percent of GDP in

2009. The sharp downturn in world trade hits the United States especially hard: export volumes are expected to drop 2.6 percent in 2009, while imports contract 1.1 percent. Overall, the high-income OECD countries' current account deficit is projected to narrow by $185 billion to $375 billion in the year.

The lower industrial-country deficit has its counterpart in lower surpluses in high-income oil exporters and in developing countries. The current account surplus in developing countries is expected to fall from a peak $500 billion, or 3.7 percent of GDP, in 2007 to $333 billion, or 2 percent of GDP in 2009 (figure 1.24). While China's (and thus East Asia's) surplus is anticipated to increase, in other regions, surpluses are expected to narrow, or deficits to widen.
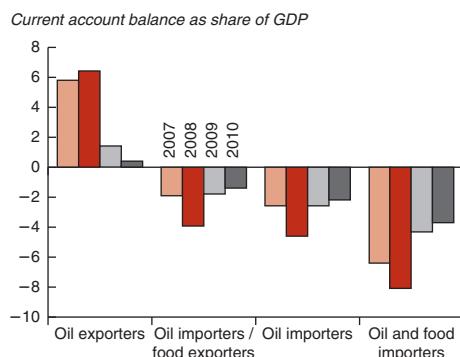
Some appreciation of the impact of the global recession on current account balances can be gained by looking at countries grouped by their primary commodity trade (here we exclude China, because the country's massive current surplus—nearly $400 billion in 2008—masks underlying developments across smaller countries). The expected 26 percent fall in the price of oil and 23 percent fall in non-oil commodity prices (see the Commodity

Figure 1.24 Developing-country current account surpluses to wane after 2008

Current account balance (US$ billions)

Source: World Bank data.

Figure 1.25 Current account balances for commodity-exporting and -importing developing-country groups (excluding China)

Current account balance as share of GDP

Source: World Bank data.

Figure 1.26 Almost all currencies have depreciated against the dollar

% depreciation since Sept.15 –Oct. 30

Source: World Bank.

Markets section below) will shift the terms of trade in favor of oil- and food-importing countries, following a string of at least five years of substantial losses. For developing-country oil exporters, the fall in global demand will reduce both oil prices and export volumes (which are expected to shift from 5.1 percent growth in 2008 to 0.3 percent in 2009), and their current account surplus will fall from a peak of 6.4 percent of GDP in 2008 to 1.4 percent in 2009 (figure 1.25). By contrast, the current account deficit of developing-country importers of both oil and food almost halves, from a peak of 8.1 percent of GDP in 2008 to 4.3 percent by 2009, because of lower commodity prices and a sharp slowdown of imports from 8.1 percent growth in 2008 to 1.5 percent in 2009. The impact of these global developments should begin to dissipate in 2010 as oil prices stabilize, the prices of nonenergy commodities decline by only 4.3 percent, and world trade begins to recover.

The financial crisis has induced major fluctuations in exchange rates during the autumn of 2008. Almost every currency in the world has depreciated against the dollar and the yen, reflecting a "flight to quality" into U.S. Treasury securities, the unwinding of yen-based carry trades, and the deleveraging of banks,

firms, and investors. No developing-country currency has appreciated against the dollar by more than 0.5 percent during this period. On average, currencies of developing countries have fallen by 15 percent against the dollar, but high-income-country currencies (save Japan's), have also depreciated (figure 1.26). In general the competitiveness of the United States, Japan, China (whose currency has held steady versus the dollar), and those countries whose currencies have been pegged to the dollar will have been reduced; competitiveness for countries whose currencies have depreciated will be improved in these markets. As a result, the strong impetus that net exports have provided for U.S. growth is likely to be attenuated; at the same time, net exports are likely to support the growth recovery of many developing countries.

Commodity markets
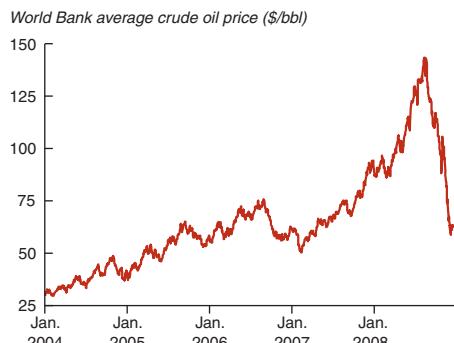
Commodity prices—which have been trending higher since 2003—continued the robust rise that began in 2007 into the first half of 2008. As of mid-November, prices have since fallen sharply, giving up most of their gains of the first half of the year. The abrupt decline reflects a classic response of commodities to slowing global growth at the end of a boom (for more on this subject, see chapter 2), a decline that has been amplified and accelerated by the financial crisis. In the summer of

Figure 1.27 Commodity prices surged before retreating in the second half of 2008

Commodity price indexes (2000 = 100, current US$)

Source: World Bank data.

Figure 1.28 Crude oil prices correct sharply after unprecedented run-up

World Bank average crude oil price ($/bbl)

Source: Datastream and World Bank.

2008, energy prices were 80 percent higher in dollar terms than a year earlier, while nonenergy prices were 35 percent higher (figure 1.27 and table 1.4).

Almost all the advance in nonenergy commodity prices during 2008 came from grains (up 60 percent), fats and oils (up 34 percent), and fertilizers (up 140 percent). Metals prices, which increased rapidly between 2003 and 2008, picked up just 8 percent over the first six months of 2008. Almost all commodity prices peaked in early or mid-2008, and most have declined sharply since then. Crude oil prices dropped from $143/bbl in early July to less than $50/bbl in mid-November. The price drop stemmed from weaker realized demand across

OECD member countries, appreciation of the dollar, and concerns about demand prospects in the wake of financial turmoil (figure 1.28). The sharp decline in crude oil prices has also been a significant contributor to declines in other commodities, because these markets are increasingly linked through production costs and through the development of biofuels (see chapter 2).

Falloff in demand in high-income countries drives decline in oil prices

Oil demand in the OECD countries has been declining for three years, with most of the reduction in the United States, which was affected by slowing economic activity and the consumption-dampening effects of higher oil and gasoline prices. U.S. oil demand fell 5.6 percent over the first 10 months of 2008 (year-over-year). Gasoline consumption dropped 3 percent as consumers reduced the number of miles driven and began switching to more energy-efficient vehicles. Oil demand also slowed in Europe. Overall, OECD demand is expected to fall by more than 2.2 percent during 2008 and by less than 2 percent in 2009. Demand in developing countries and emerging markets has continued to grow by about 4 percent, with demand strongest in Asia and the Middle East, the latter fueled until recently by strong economic growth and in some countries fuel subsidies and thus low consumer prices (box 1.3).

Table 1.4   Forecast of commodity prices

Percent change	2000–05	2006	2007	2008	2009f	2010f
Energy	**13.5**	**17.3**	**10.8**	**45.1**	**−25.0**	**0.9**
Oil	13.6	20.4	10.6	42.3	−26.4	1.8
Natural gas	10.4	33.9	1.0	57.2	−10.8	−4.2
Coal	12.7	3.1	33.9	97.8	−23.1	−10.0
Nonenergy	**8.3**	**29.1**	**17.0**	**22.4**	**−23.2**	**−4.3**
Agriculture	6.0	12.7	20.0	28.4	−20.9	−1.3
Foods	6.0	10.0	25.6	35.2	−23.4	−0.3
Grains	4.8	18.4	26.1	50.9	−27.7	2.6
Raw materials	5.0	22.7	9.0	13.0	−14.9	−2.7
Metals and minerals	12.3	56.9	12.0	5.0	−25.5	−5.5
Copper	15.2	82.7	5.9	−0.6	−32.2	−4.2
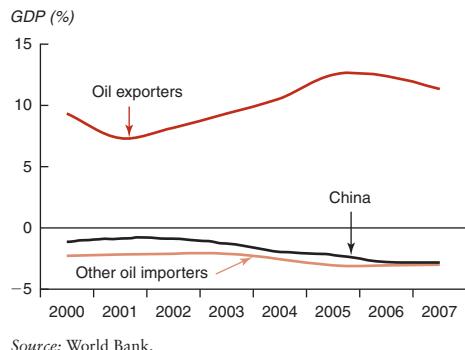
Source: World Bank data.
f. Forecast.

Box 1.3   Impact of commodity prices on external balances and capital flows

Deterioration in external balances has become a significant problem for many developing countries. Overall, in 2007, current account deficits exceeded 10 percent of GDP in about one-third of developing countries, up from about one-quarter in 2006. Twelve countries ran deficits in excess of 20 percent of GDP in 2007. In part, these deficits reflect the impact of higher oil prices on oil-importing countries: oil balances account for more than half of the current account deficit in one of every two developing countries. Excluding the massive rise in China's surplus, the current account deficit of oil-importing countries has increased significantly during the rise in prices, from close to zero in 2002–03 to about $130 billion in 2007, an amount equal to 2.2 percent of GDP (box figure 1.3a). In contrast, the current account surplus of oil-exporting countries improved from 2 percent of GDP to more than 7 percent in 2005–06, though it declined to below 5 percent in 2007.

The rise in oil prices has contributed to, but does not fully explain, this disparity in current account balances. The rise in oil-importing countries' deficits has been less than the increase in their net oil balance, while the increase in oil-exporting countries' surplus has been well below the improvement in their oil balance (box figure 1.3b). As should be expected, many countries have made compensating
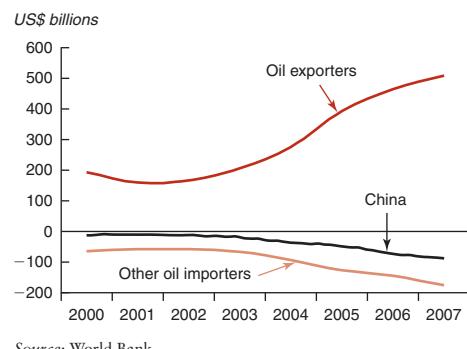
Box figure 1.3b Oil balances as a share of GDP in developing countries, 2000–07

Source: World Bank.

adjustments in trade and domestic absorption to accommodate the rise in oil prices. And there is little correlation between the size of countries' net oil balance and the size of current account balances. Several oil-importing countries continue to run sizable current account surpluses (exceeding 10 percent of GDP in four countries), whereas several oil-exporting countries are running sizable current account deficits (notably Kazakhstan and Sudan). Some countries (Botswana, Nepal, Paraguay, Swaziland, and Thailand) managed to run current account surpluses even though their deficits on the oil component of the trade balance exceeded 5 percent of GDP.

How have countries been able to finance their large external imbalances?

The financing of increased current account deficits has not come principally from higher portfolio flows or reserve drawdowns, but from foreign direct investment and aid. Much of the surge in private debt and equity flows to developing countries over the past few years has gone to countries with sizable current account surpluses. For example, private debt flows to the 11 countries with current account surpluses in 2005–07 accounted for half of the total to all developing countries (in 2007, Russia ran a current account surplus equal to 6 percent of its GDP and yet received $125 billion in private debt

Box figure 1.3a Oil balances in developing countries, 2000–07

Source: World Bank.

Developing countries with large external imbalances, 2007
(percent)

Country	Current account	Oil balance	Non-oil commodity balance	Commodity balance	FDI inflows	Net ODA disbursements
Burundi	−37.6	−11.6	−0.4	−12.0	0.0	46.0
Seychelles	−32.7	−36.5	0.7	−35.8	18.8	1.8
Togo	−21.9	−8.5	4.6	−4.0	3.5	3.6
Nicaragua	−21.5	−13.1	6.5	−6.6	0.1	13.8
Latvia	−20.8	−3.2	1.2	−2.0	7.3	0.0
Georgia	−20.0	−5.5	−1.8	−7.3	16.9	4.7
Fiji	−18.8	−11.7	2.9	−8.8	11.9	1.8
Malawi	−18.6	−4.3	11.6	7.3	—	21.3

Source: World Bank.
Note: — = not available. For Burundi, Fiji, Malawi, Seychelles, and Togo, data are for 2006.

flows). And to date few countries have had to draw down their ample foreign reserve holdings. Instead, of the 13 countries with the largest current account deficits (and where data are available), in 8 countries foreign direct investment covered over half of the current account deficit, and in 4 countries net official development assistance (ODA) disbursements exceeded 10 percent of GDP (box table).

OPEC producers—reluctant to raise output significantly during the run-up in prices during the first half of 2008—increased production at midyear, mainly through Saudi Arabia, which unilaterally agreed in June to lift output by 0.5 million barrels a day (mb/d). Iraq's output breeched 2.5 mb/d for the first time since 2001 as attacks on infrastructure subsided somewhat. But increases elsewhere in the Gulf were partly offset by declines in Nigeria, where civil strife continued to cause large supply disruptions.

As discussed in chapter 2, the non-OPEC supply response has been disappointing. Production has been plagued by several factors during the current decade, notably rising costs and taxes, and the ongoing depletion of aging fields. Despite these constraints, non-OPEC supplies are beginning to increase in a number of regions and are projected to rise in the second half of 2008 and over 2009–10.

As a result of weakening demand and expected supply increases, oil prices are anticipated to average $75/bbl in nominal terms during 2008–10, implying a cumulative real decline of more than 30 percent.

Prices for many metals are falling on the back of weaker demand

Several metals prices have plummeted in recent months because of slowing global growth and improving supply prospects. Nickel prices have fallen more than three-quarters from their 2007 peak, partly because of difficulties in the automobile and construction sectors. Prices have fallen below the marginal costs of high-cost producers, and some plants are being closed and new projects delayed or reconsidered. Zinc prices have fallen almost as much as nickel in percentage terms. Lead prices have fallen more than 60 percent on improving supply prospects. Prices for these metals are expected to decline further as new capacity comes online.

Copper is among the few metals whose price remained elevated during the first half of 2008, despite weak demand; numerous supply disruptions tied to strikes in Latin America and delays bringing on new capacity kept copper prices high. However, prices plunged in the second half of the year in the wake of the financial crisis and the weakening global economic environment. China's import demand has been weak in 2008, and the slowdown in

global housing construction more broadly contributed to diminishing demand. Prices nonetheless remain well above production costs and are expected to continue to decline significantly through 2010 as new capacity comes online.
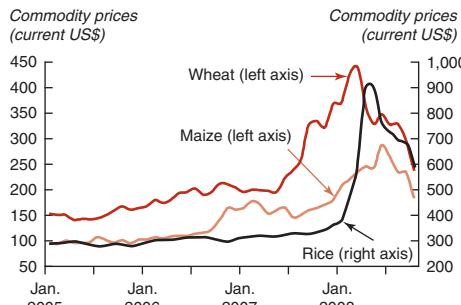
Aluminum—the one major metal whose price has not surged during the current cycle because of the growth of capacity in China—became more expensive recently because of still-strong global demand and increasing costs of electricity, a major input to the production of aluminum. The outlook for aluminum prices depends critically on the pace of investment in new capacity (especially in China and the Middle East), as well as on the level of energy costs and deregulation of power markets. Even if new capacity is concentrated in areas with stranded, low-cost energy sources, such as the Middle East, there is limited downside potential for prices, because aluminum has been fluctuating near the upper portion of the cost curve.

Taken together, the index of metals and minerals prices is projected to fall 25 percent in 2009 and an additional 5 percent in 2010 compared to 2008.

Prices of agricultural commodities are falling sharply from peaks

Prices for food traded internationally increased almost 60 percent during the first half of 2008 in dollar terms, with basic staples such as grains and oilseeds showing the largest increases. Wheat prices more than doubled, from $200 a ton to $440 between March 2007 and March 2008, while rice prices almost tripled in the four months ending April 2008 (figure 1.29). Soybean and palm oil prices increased 44 percent from 2007 to 2008. Prices have since declined sharply. Wheat prices, for example, fell to less than $240 a ton in November. Since their peak in April 2008, grain prices have declined by more than 30 percent. The spike in rice prices in April and May 2008, on concerns regarding the adequacy of global food supplies and export bans, appears to have subsided, with prices falling from nearly $1,000 a ton to $550 a ton

Figure 1.29 Grains prices show sharp declines from recent peaks

Source: World Bank data.

in November. Export bans that had been in place were either eliminated by many countries or partly circumvented through bilateral agreements. For example, Egypt, which had accumulated 7 million tons of rice during the period of its export ban, is expected to curb the intervention soon. Similarly, India has allowed shipments of non-basmati rice to four African nations.

Oilseed prices also have fallen sharply. Palm oil prices averaged less than $480 a ton in November, down from $1,250 a ton in March 2008. Similar declines took place in most edible oils (soybean oil dropped from $1,475 a ton to $835, and coconut oil from $1,470 a ton to $705 over the period). The weakening of edible oil prices reflects not only slowing economic growth but also improved supplies, and perhaps mounting pressure in the European Union (EU) to scale back biofuel mandates—most of the EU's biofuel production is biodiesel, whose feedstock is rapeseed oil, a close substitute for palm and soybean oils.

Rubber prices began easing in July and August 2008, an unsurprising development because they track crude oil prices closely (synthetic rubber is made from petroleum). Signs of weakening prices have also been evident in beverages, with cocoa averaging a little over $2 a kilogram in November, down from $3.00 in June 2008. Other agricultural commodities, especially raw materials and some foods such

as bananas and sugar, have experienced smaller declines, because their price increases were not as sharp and they are less closely linked to energy prices.

Fertilizer prices experienced the largest increase among all commodity groups in 2008, with the index up 116 percent between January and August 2008; prices were driven up by the combination of strong demand growth (in response to high crop prices), limited surplus production capacity, higher production costs related to high energy prices, and an export tax imposed by China to protect domestic supplies. Phosphate prices (DAP), for example, increased by almost 110 percent between January and August 2008 while urea prices doubled in just four months (December 2007 to April 2008). The decline in crude oil and grain prices, along with weak demand, however, is now being reflected in fertilizer prices. Urea, for example, declined to $250/ton (a two-year low) while DAP averaged below $650/ton as of November 20.

Current crop prospects are favorable. Grain production is projected to increase about 4 percent in the current crop year, and oilseed production is anticipated to rise by twice as much. Although this production increase will allow some rebuilding of stocks, continued growth of demand for biofuels should keep pressure on inventories. Maize used for ethanol in the United States is expected to increase to 33 percent of the crop in 2008, accounting for nearly all of the increase in global maize consumption and causing global maize stocks to fall. In contrast, large increases in wheat and oilseed production should allow some rebuilding of stocks. Stocks will remain low by historic standards, however, and prices will remain vulnerable to supply disruptions or demand surges.

Overall, grain prices are projected to decline about 28 percent in 2009 and to recoup 3 percent in 2010. Fats and oil prices are anticipated to fall by 27 percent in 2009 and another 5 percent in 2010. And beverages are projected to decline 18 percent and 4 percent, respectively. Despite these developments, food
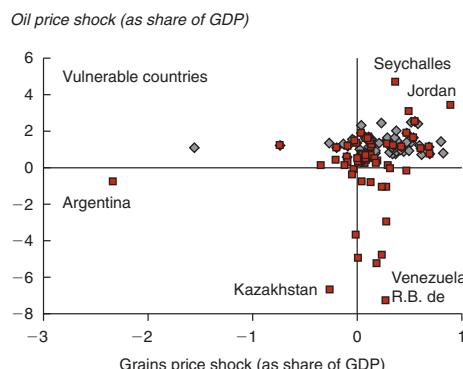
prices are expected to remain much higher than during the 1990s and more than 60 percent higher than their levels in 2003.

In the baseline, the very tight credit conditions observed in November are projected to dissipate during the first quarter of 2009—which together with a strong crop this season should ensure that prices do not rise sharply in the medium term. However, if farmers in high- and middle-income countries are unable to get financing for seed and fertilizer purchases for plantings for next season, plantings may be lower than expected, which could cause agricultural prices to rebound during the 2009/10 crop year. Farmers in key agricultural producing and exporting countries, including Australia, Argentina, Brazil, the United States, and the European Union, rely on short-term financing for inputs (e.g., fertilizer) and longer-term financing for the purchase of machinery. The short-term financing is typically guaranteed by placing land as collateral and to a lesser extent by hedging in futures markets for a minimum price guarantee (the latter mostly in the United States). The credit crunch combined with declining commodity prices has made banks reluctant to lend. The situation may worsen if land prices begin to decline—there are already signs that land prices are falling in some EU countries—or if credit conditions do not begin to thaw. At the same time, farmers appear to have lost faith in hedging instruments.

Commodity price declines carry significant implications for the terms of trade
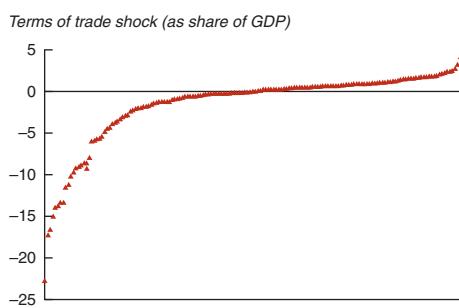
The decline of commodity prices anticipated for 2009 will drive sharp changes in developing countries' terms of trade. Some 30 countries are expected to gain more than 1.5 percent of GDP from the decline in oil prices (figure 1.30). Of these, Cyprus, Guyana, Jamaica, Jordan, the Kyrgyz Republic, Moldova, Nicaragua, the Seychelles, and Tajikistan stand to gain more than 2.5 percent of GDP. And the fall in food prices will help to ease both external and fiscal positions (as the cost of food subsidies declines) for many of the world's poorest countries, including Benin,

Figure 1.30 Most vulnerable countries will benefit from the decline in grains and oil prices

Oil price shock (as share of GDP)

Source: World Bank.

Figure 1.31 First-round income impact of lower commodity prices will be positive in more than half of developing countries

Terms of trade shock (as share of GDP)

Source: World Bank.

Eritrea, Ghana, Guinea, Haiti, Madagascar, Niger, Senegal, and Togo.

At the same time, oil-exporting countries will experience large terms of trade losses, with Angola, Azerbaijan, the Republic of Congo, Equatorial Guinea, Gabon, the Islamic Republic of Iran, Kuwait, Libya, Nigeria, and Saudi Arabia incurring first-round income losses in excess of 10 percent of GDP. Weaker metals prices are anticipated to reduce incomes by more than 2 percent of GDP in Chile, Mauritania, Mongolia, Papua New Guinea, Suriname, and Zimbabwe. Countries that rely heavily on grains exports are likely to be hit hard. Exporters like Argentina (maize, soybeans, wheat), Bolivia (soybeans), The Gambia (groundnuts), Guinea-Bissau (groundnuts), Guyana (rice), and Paraguay (soybeans) will experience losses ranging from 1.6 percent to 9 percent of GDP, though for some the impact will be softened by falling oil prices.

Taking into account the effects of commodity price declines on both import and export prices, more than half of the countries in a sample of 162 economies are expected to see an increase in the terms of trade, of which 24 will experience gains in excess of 1.5 percent of GDP. About a quarter of the countries, including most oil producers, are seen to incur

first-round income losses in excess of 1.5 percent of GDP (figure 1.31).

Key risks and uncertainties

The freezing of credit markets, collapse of stock markets, large shifts in exchange rates and commodities prices, and unprecedented policy reactions have combined to create an extremely uncertain environment for market participants and forecasters alike. Several possible outcomes for the global economy remain plausible at this juncture—even assuming that a catastrophic meltdown of markets is avoided. Global GDP growth could reasonably be expected to be as strong as 1.4 percent in 2009 and as weak as 0.4 percent, compared with the baseline projection of 0.9 percent growth presented in this chapter.

The confidence interval around projections for 2010 is even wider. Instead of the typical cyclical rebound envisaged in the baseline, output could remain subdued as consolidation in the banking sector acts as a persistent drag on growth, and credit growth remains almost stagnant for several years (see Hebling 2005; IMF 2008). Alternatively, the crisis may have less pronounced direct effects on the real economy, in which case the aggressive monetary loosening and large-scale fiscal stimulus that the crisis has provoked could lead to a sharper rebound in 2010. Such a scenario runs the risk

of reaccelerating inflation, which would likely need to be followed by a tightening of both monetary and fiscal policies.

In such an environment, policy makers in both developing and high-income countries must be prepared to weather a worst-case scenario of even lower growth, including the possibility of a decline in world GDP for the first time in the postwar period, as well as a financial meltdown that could lead to a sudden stop of credit flows to all but the most creditworthy borrowers. Whatever the eventual outcome, the environment over the next two years will be radically different from that which was expected only a few months ago, and policies will need to adapt.

Understandably (and correctly) under current circumstances, with the world economy confronted with systemic financial risks, short-term attention is focused on dealing with the immediate crisis, minimizing risks, and reacting to rapidly evolving developments. Major risks concern the possibility of balance of payments and currency crises in individual countries—a real risk at this stage for at least some developing countries. A collapse of the domestic banking system in select developing countries is also a tenable possibility. In the case of Russia, where the economy is flush with petrodollars, the authorities look to be in a position to rescue domestic financial institutions. Other countries are less well positioned and may have to draw upon international assistance, a development that should be undertaken quickly if necessary. The longer the global stress lasts, the more currencies may come under pressure. The increase in corporate spreads still exceeds the increase in sovereign spreads by a large margin. In all cases preventing a financial crisis in one country from infecting a broader group of countries would be difficult. Therefore, instead of exploring the details of a potential crisis, it is paramount to avoid a crisis altogether through coordinated international action.

From a longer-term perspective, concerns are of a very different nature. The question is: How will developing countries emerge from the current downturn, and will they retain the underlying strength, confidence, and strong macroeconomic fundamentals that underpinned the record growth of the past five years? The danger for all countries is that too aggressive an effort to combat what looks to be an inevitable slowdown may prove too costly and undermine the strong fundamentals that had earlier underpinned growth. Countries need to react quickly and forcefully to signs of weakness in their financial sectors, including by liquidity injections and recapitalizing banks where necessary.

Care must also be taken, however, to avoid the possible entrenchment of inflationary pressures by ensuring that more general efforts to provide support to banking systems are highly targeted and efficient, and that any necessary liquidity injections are reabsorbed once growth revives. The long-term costs of such policies could be substantial even if they help to lighten the coming recession. Policy makers must ensure that the steps taken are clear and coherent. So far, the worst has been avoided by huge government interventions. If the market comes to view such interventions as ineffective, because they are poorly understood or seen as not addressing the most critical problems, then the policies likely will be ineffective. In this case, global economic difficulties could become very serious indeed.

Long-term prospects and poverty forecast

Despite the current financial turmoil and sharp slowdown in growth anticipated for 2009, longer-term prospects for developing countries have changed only modestly compared with last year's forecast. In part prospects are little changed because a slowdown had already been anticipated, albeit to a much lesser degree. The primary reason, however, lies in the long-term supply potential of developing countries, which should allow output to recoup the lost production induced by the coming growth recession during the first five years of the next decade.

Per capita GDP in developing countries over the period 2010–15 is expected to expand at a relatively rapid annual pace of 4.6 percent, much faster than the 2.1 percent pace of the 1990s and the 0.6 percent average of the 1980s, replicating the average performance of this decade. Improvements in macroeconomic policies (lower inflation, relaxation of trade restrictions, more flexible exchange rate regimes, and lower fiscal deficits) have combined with structural reforms (privatization and regulatory initiatives) to reduce uncertainty and generally improve incentives for investment. Projected future growth rates are higher than in the 1990s (and much more so than in the 1980s) in every developing region except East Asia and the Pacific, where growth is expected to decline somewhat because of an aging population.

Rapid growth should enable developing countries, as a group, to achieve the Millennium Development Goal of halving poverty by 2015. The poverty forecast for 2015 is 15.5 percent, well below the target of 20.9 percent—half of the revised 1990 level as explained in more detail below. The East Asia and Pacific region has clearly surpassed its individual target, and South Asia is on target. The main concern remains Sub-Saharan Africa. Although the incidence of poverty in the region has been declining over the past decade, at about 37.1 percent in 2015, the share of people living in extreme poverty will remain well above the region's target of 29 percent (table 1.5).

This year's poverty forecast is consistent with the World Bank's revised poverty estimates for developing countries. The new poverty estimates largely result from a revision of purchasing power parities (PPP) by using a new International Comparison Project survey of prices paid by households. The 2005 survey improved on the 1993 data and methods used to prepare previous estimates. The new price data reveal that the cost of living is higher in low- and middle-income countries than had been suggested by past surveys. Other factors influencing the changes to the poverty estimates include revisions to national accounts

Table 1.5 Poverty in developing countries by region, selected years

Region or country	1990	2005	2015
Number of people living on less than $1.25/day (millions)			
East Asia and the Pacific	873.3	316.2	137.6
China	683.2	207.7	84.3
Europe and Central Asia	9.1	17.3	9.8
Latin America and the Caribbean	49.6	45.1	30.6
Middle East and North Africa	9.7	11.0	8.8
South Asia	579.2	595.6	403.9
India	435.5	455.8	313.2
Sub-Saharan Africa	297.5	388.4	356.4
Total	1,818.5	1,373.5	947.2
Number of people living on less than $2.00/day (millions)			
East Asia and the Pacific	1,273.7	728.7	438.0
China	960.8	473.7	260.9
Europe and Central Asia	31.9	41.9	26.7
Latin America and the Caribbean	86.3	91.3	72.4
Middle East and North Africa	44.4	51.5	33.3
South Asia	926.0	1,091.5	959.5
India	701.6	827.7	714.5
Sub-Saharan Africa	393.6	556.7	585.0
Total	2,755.9	2,561.5	2,115.0
Percentage of the population living on less than $1.25/day			
East Asia and the Pacific	54.7	16.8	6.8
China	60.2	15.9	6.1
Europe and Central Asia	2.0	3.7	2.2
Latin America and the Caribbean	11.3	8.2	5.0
Middle East and North Africa	4.3	3.6	2.5
South Asia	51.7	40.3	23.8
India	51.3	41.6	25.4
Sub-Saharan Africa	57.6	50.9	37.1
Total	41.7	25.2	15.5
Percentage of the population living on less than $2.00/day			
East Asia and the Pacific	79.8	38.7	21.6
China	84.6	36.3	18.9
Europe and Central Asia	6.9	8.9	6.0
Latin America and the Caribbean	19.7	16.6	11.8
Middle East and North Africa	19.7	16.9	9.3
South Asia	82.7	73.9	56.6
India	82.6	75.6	57.9
Sub-Saharan Africa	76.2	73.0	60.8
Total	63.2	47.0	34.6

Source: World Bank.

and the incorporation of new and more recent household surveys (see box 1.4 and Chen and Ravallion 2008 for more detail).

The new poverty estimates provide a significantly different picture of global poverty—back to 1990 and for the most recent year, 2005 (figure 1.32). Global poverty in 1990, the benchmark year for the Millennium Development Goals, is now estimated to have been 41.7 percent of the developing-country population

Box 1.4   The impact of the new price survey on poverty estimates

Surveys of prices are obviously critical in determining the cost of the common basket of goods and services in each country that is used to define poverty. The price surveys determine the purchasing power parity (PPP) exchange rate used in translating domestic prices into international dollars. Compared with the measure provided by market exchange rates, these PPP exchange rates provide a more accurate measure of the affordability of nontraded goods in the poverty basket (because prices of nontraded goods vary enormously across countries at different levels of development). Previously, the PPP exchange rates were based on a 1993 survey of prices that covered relatively few countries and used a weak survey methodology. In 2005, the World Bank, in partnership with other international organizations and national statistical offices, concluded a new price survey that covers 146 countries—of which 101 are developing—and between 600 and 800 products (World Bank 2008). The survey includes China for the first time and updates the earlier survey of India, which dated from 1985. The new price survey has had two impacts on measured poverty.

First, it has revealed that prices paid by the poor in developing countries are higher than thought previously, thereby reducing estimates of mean per capita consumption (or income) based on a common unit, that is, international dollars. In China, for example, average per capita consumption in 2005 was estimated to be about $2,400 at the old PPP exchange rate but only about $1,400 at the new PPP exchange rate. These newer price levels imply quite naturally that households can afford fewer goods and that many more are living on less than a $1 a day.

Second, in light of the new price survey, the definition of the "international" poverty line has been

reevaluated. The international poverty line is meant to capture a notion of extreme poverty. As such, it is calculated as the average poverty line of the poorest countries. Using the new PPP estimates, the new poverty line for extreme poverty is now measured at $1.25 (in 2005 international dollars, and represents the average of the poverty lines of the fifteen poorest countries for which there is data). This new poverty line is about 14 percent lower than the old international poverty line, which in 2005 dollars is $1.45. This reflects the higher PPPs for the poorest countries implied by the 2005 survey data. To capture a broader notion of poverty, the World Bank's poverty forecast has also presented statistics relevant to the so-called $2/day poverty line that was double the $1/day poverty line and reflected the average of the national poverty lines of the middle-income countries. The new $2/day poverty line, measured in 2005 prices, represents the median of all of the national poverty lines in the available surveys.
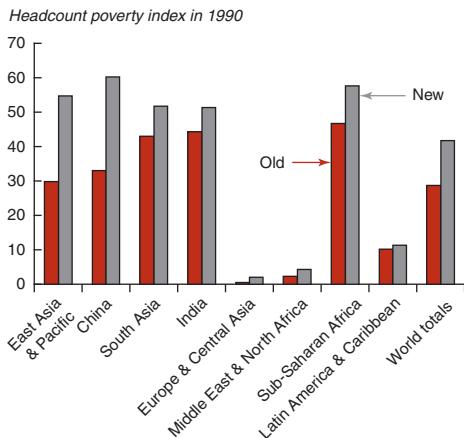
The increased estimates of prices in many countries and a lowering of the international poverty line have changed the picture of poverty globally—over time and in 2005. As reported in Chen and Ravallion (2008), these two effects partially offset each other. The revisions in the PPPs alone, with no change in the poverty line, would have raised the poverty estimate in 2005 from the previous 17 percent to 32 percent. The reduction in the poverty line to $1.25 a day lowers this estimate to 25 percent. The net effect is to raise the poverty estimate for 2005 by 8 percentage points. The upward revision in the poverty level does not imply that the rate of poverty reduction, say between 1990 and 2005, has not been as rapid as previously reported.

(compared with the previous estimate of 28.7 percent using the old prices and guidelines). This implies that the target for the poverty MDG is 20.9 percent, rather than the previous 14.4 percent. The revisions had a significant affect on all regions, except Latin America and the Caribbean, which saw only minor adjustments. The case of China is

illustrative. The headcount index for 1990 jumped from 33 percent to 60.2 percent. This dramatic change was attributable mainly to the poor price comparison basis for the earlier estimate rather than to any underlying change in China itself.

The combination of a new estimate of mean consumption and a new poverty line also

Figure 1.32 Revised poverty estimates following from new price survey

Headcount poverty index in 1990

Source: World Bank data and staff calculations.

Note: The comparison reflects both revisions necessitated by the change in purchasing power parities and the new international poverty line, which was $1.45 per day in 2005 dollars under the old methodology and has been revised down to $1.25 per day in 2005 dollars with the new methodology.

It should be noted that the impact on the poverty forecast of the recent rise in food and energy prices is not fully reflected in these projections, which largely reflect neutral changes in per capita incomes.[4] As discussed in chapter 3, the increase in food prices between January 2007 and January 2008 is likely to have increased global poverty by between 130 million and 155 million people, or by 1.3–1.5 percentage points. With prices now declining but not expected to return to their earlier levels, at least some of this deterioration is likely to be permanent.

Notes

1. Prices are as of November 20, 2008.

2. Total assets of U.S. households began to decline in the fourth quarter of 2007, as real estate values dropped by $185 billion and financial assets fell by $200 billion. By the second quarter of 2009, the cumulative decline in household assets amounted to $2.4 trillion, the equivalent of 16 percent of GDP.

3. It is difficult to make an exact comparison because last year's forecast was benchmarked to 2004, not 2005 as is this year's forecast. As well, there have been (slight) revisions to historical national income and product accounts.

4. Because of the inherent delays in processing household surveys, the current forecast reflects surveys that were taken in 2005—before the rapid increase in commodity prices in 2007 and the first half of 2008.

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implies a change in the starting value of the growth-to-poverty elasticity. Even if the shape of the income distribution is broadly the same as in earlier income surveys (as is the case for many countries), the fact that the poverty line intersects the distribution at a different spot means that the impact of a given increase in per capita incomes has changed. Nevertheless, the rate of improvement in the headcount poverty rate between 1990 and 2005 has not changed that much using the new estimates.[3] This year's forecast reports an annual decline in global poverty between 1990 and 2005 of some 3.3 percent, which is very close to the earlier estimated annual decline of 3.2 percent. However, the higher poverty level means that 25.2 percent of the developing world's population was living on less than $1.25 a day in 2005, compared with last year's estimate of 18.1 percent for 2004. As before, much of decline in global poverty between 1990 and 2005 results from increased incomes in China, where the level of extreme poverty fell from over 60 percent in 1990 to less than 16 percent in 2005.

2

The Commodity Boom: Longer-Term Prospects

The enduring importance of commodities to the world economy and their volatility has been driven home with the rise, and recent decline, of prices for energy, metals, and food. Before they began to fall in the second half of 2008, the real prices of energy and metals more than doubled over the past five years, while the real price of internationally traded food commodities increased 75 percent (see chapter 1 for more detail on the most recent developments in commodity markets).

This chapter reviews the main characteristics of this most recent boom in commodity markets and examines the structure and behavior of both their demand and supply, with a view to better understanding prospects over the medium to long term. The discussion does not include forests or fisheries, given their complexity and the greater importance of issues related to the public commons than for oil, metals, minerals, and agricultural products.

Several important insights emerge from this chapter that are likely to drive developments over the next several decades.

The magnitude and duration of the commodity price boom are unprecedented.

- The upswing of the current boom lasted five years. Average commodity prices doubled in U.S. dollar terms (in part boosted by dollar depreciation), making this boom longer and stronger than any boom in the 20th century.

- Like earlier booms, this one ended when a slowdown in global growth eased demand pressures. The unusual strength and duration of this boom reflect the unusual resilience, until now, of global growth, particularly in developing countries.

For oils and metals, an extended period of low or falling prices created the conditions for the boom and help explain the weak supply response.

- Low prices throughout much of the 1980s and 1990s reflected periods of relatively weak growth and abundant spare capacity. Idle capacity arose, both because energy demand declined in the wake of high oil prices in the 1970s and early 1980s and because demand for oil and metals in the former Soviet Union (FSU) fell sharply when altered economic incentives caused these countries to radically increase the efficiency with which commodities are used.

- During the 1990s, much of the rising demand for oils and metals was met by the relatively easy rehabilitation of this already-existing capacity. This helped to keep global commodity prices low and deterred investment in new supply capacity, thus depressing activity in the sectors supplying inputs to commodity exploration and exploitation.

- As a result, a mismatch developed between the trend growth of demand and the trend growth of supply capacity. This mismatch became apparent in the early to mid-2000s, when spare capacity was exhausted and demand began to outstrip supply, pushing up oil and metals prices.
- Metals prices also were boosted by strong demand growth, linked to unusually high and rising metal intensities in China. Going forward, the intensity of metals demand in China should decline as investment rates fall and market mechanisms provoke an increase in efficiency similar to that observed in the FSU.

The supply response in oil and metals is expected to remain sluggish over the next few years, but new discoveries and technological progress are likely to boost supply over the long run.

- Ongoing shortages in the sectors that provide exploration and exploitation services, and the long lags between initial investments and the coming onstream of new production, suggest that supply conditions may remain relatively tight in the oil and metals sectors and that prices, although declining, are unlikely fall to their 1990s levels.
- Despite rising production levels, known reserves of most metals and oil have remained fairly constant because of new discoveries and improvements in extraction technology.
- Although oil prices are likely to fall below existing levels during the current downturn, they are expected to rise during the recovery and stabilize at around $75 a barrel in real terms because new supplies—for example, from offshore oil fields and Canadian tar sands—have higher production costs, and a majority of known reserves are located in regions that are politically unstable or not open to outside investors.

- Given continued technological progress and appropriate policies, high oil prices will prompt and use development of alternative energy sources (including renewables) and greater efforts at conservation, raising energy supplies and significantly reducing the demand for oil.
- For metals, slower growth in commodity-intensive developing countries (as population growth slows and income levels catch up with the West), the easing of China's investment surge, a rise in the share of total output held by the less-commodity-intensive service sector, and substitution away from expensive materials should slow demand over the long term, facilitating a decline in prices.

The extension of the boom to agricultural markets mainly reflects the rising demand for biofuels and high energy prices.

- Higher energy and fertilizer prices raised production costs in agriculture, and the combination of high oil prices and biofuel subsidies and mandates boosted demand for some food crops. Poor harvests in Australia also contributed to a decline in grain stocks.
- Demand growth for food and feed in developing countries (such as China and India) has not accelerated and was not a major contributor to the rise in food prices.
- Real-side speculation (the decision to hold on to physical stocks in anticipation of further price increases) and financial investments along with policy reactions such as the imposition of export bans, also contributed to the rapid increase in grain and oilseed prices during 2007 and 2008.

The prospects for growth in the supply of agricultural commodities at the global level are good, while demand growth is likely to slow.

- Historically, agricultural productivity has increased more quickly than population,

allowing food production to keep pace with growing demand, even as the share of the population working in agriculture declined. Over the next 20 years, assuming sufficient investment is forthcoming in developing and high-income countries, the spread of more-intensive production techniques coupled with improved varieties that are emerging from recent advances in biotechnology, should allow global productivity gains on par with historical trends despite some productivity losses caused by climate change.

- Considerable potential remains for bringing new (albeit somewhat less productive) land under cultivation in Latin America, Africa, and the FSU countries.
- The demand for agricultural commodities will slow as population growth slows and as incomes in developing countries continue to rise (at higher incomes, the incremental rise in demand for agricultural commodities sparked by further increases in income is relatively small).
- Robust supply growth and slowing demand are expected to reduce agricultural prices in the long run. Increased demand for biofuels, however, will extend the period of high prices unless policies change or energy prices fall more rapidly than expected.
- A more-rapid-than-expected warming of the planet could reduce agricultural productivity sharply, leading to rising food prices.

While global supply prospects are good, unless policy responds forcefully, food production in many developing countries may fall short of output gains

Yield gains associated with the green revolution are waning in many countries. Productivity levels in much of Africa and Europe and Central Asia are also declining; they are only one half those of best-practice developing countries, even after having controlled for differences in climate and soil.

Unless large-scale agricultural investment and knowledge creation and dissemination are stepped up, food production in many of these countries will not keep pace with demand. As a result, these countries will become increasingly dependent on imported food.

Simulations suggest that if productivity growth in developing countries disappoints, global food prices will be higher, and many developing countries—especially those with rapidly growing populations—will be forced to import more-expensive food from high-income countries, where productivity growth shows fewer signs of waning.

The remainder of this chapter explores each of these themes in more detail. The next section compares the main characteristics of the current commodity price cycle with earlier ones. Then an examination of the long-term demand and supply sides of commodity markets follows. The chapter then brings the forecasts for supply and demand in commodity markets together to form a base-case scenario for prices, along with some alternative scenarios. While a wide range of future outcomes for supply, demand, and prices are possible, the simulations support a highest-probability outcome where today's high prices should induce sufficient additional supply to keep commodity prices well below their recent highs over the medium to long term—although they are not expected to descend as low as they were in the 1990s. A final section concludes.

Characteristics of the current commodity price boom

Booms and busts are relatively common occurrences in commodity markets (box 2.1 and figure 2.1). Like its predecessors, this episode of high prices has occurred during a period of strong global growth and heightened geopolitical uncertainty, and it generated significant inflationary pressures (see chapter 1).[1] However, this commodity boom was different in important ways as well. It was among the most marked of the past century in its

Box 2.1   Commodity price cycles

It is in the nature of commodities for their prices to show pronounced cyclical behavior. Indeed, some of the most influential early insights about the role of expectations in pricing behavior derived from observations of how the interaction between prices and quantities in agricultural markets tended to generate price cycles (Kaldor 1934).
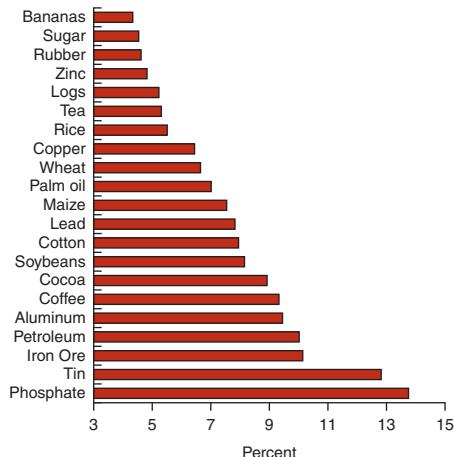
Prices in commodity markets tend to exhibit cyclical behavior because supply decisions (how much to plant, how many mine shafts to dig) must be made by market participants well before the final sale price of the commodity is known. Because producers in the market are uncertain about future demand and the production decisions of other producers, the tendency in the aggregate is for the independent production decisions to overcompensate for short-term imbalances between demand and supply and therefore for commodity prices to be volatile. The longer the lag between the production or investment decision of producers and the actual increase in output, the longer the cycle in prices.

Individual commodities differ in the extent to which they exhibit cyclical behavior and in the mechanisms underlying the cycles. The output of industrial commodities tends to be most volatile, mainly because their demand tends to fluctuate with the business cycle and (in the case of crude oil) to be subject to policy-related supply shocks (box figure 2.1a).

While prices of all commodities are sensitive to spare capacity, the duration of booms and busts in the metals, minerals, and the oil sectors tends to be longer than in agricultural markets because of the longer lags between investing in new capacity and the eventual increase in supply.
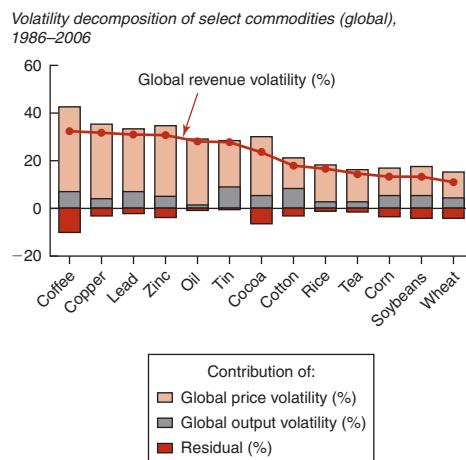
Their revenues also tend to be more volatile than revenues in agricultural commodities because changes in production mainly reflect demand shocks. As a result, both prices and quantities move in tandem, rising during periods of high demand and declining in periods of low demand. In contrast, demand for agricultural products tends to be more stable, and volatility tends to stem from supply shocks. As a result, price movements tend to reduce revenue volatility among agricultural commodities because prices tend to move in the opposite direction of supply shocks—rising when supply is low and falling when supply is ample. Thus, for example, copper, lead, and zinc have much higher price and revenue volatility than maize, soybeans, and wheat, but the differences in output volatility are much less marked (box figure 2.1b).

Box figure 2.1a Volatility of production around trend, 1960–2007

Source: World Bank.

Box figure 2.1b Volatility decomposition of global revenue for selected commodities, 1986–2006

Volatility decomposition of select commodities (global), 1986–2006
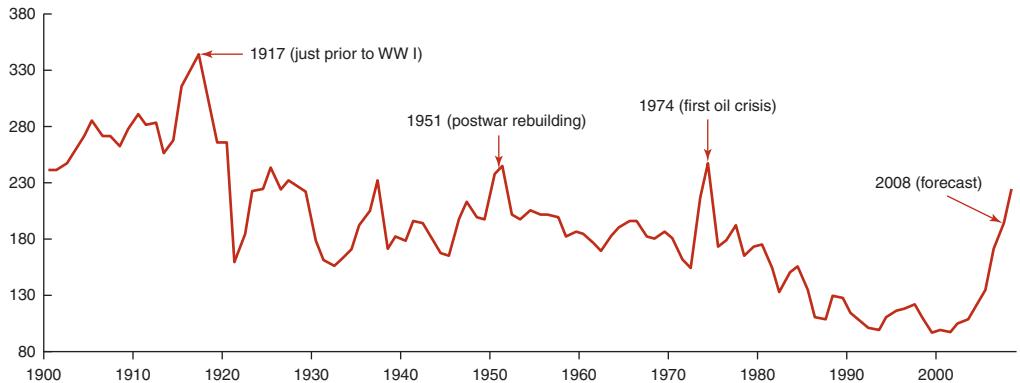
Source: World Bank.

The current boom in agricultural prices is different in this regard, because it reflects a demand shock rather than a supply shock, meaning that prices have risen even as overall production (including that destined for biofuels) has increased.

Figure 2.1 The recent commodity boom was the largest and longest of any boom since 1900

Real non-energy commodity prices, index (1977–79 = 100)

Source: Grilli and Yang (1988) for 1900 to 1947; World Bank for 1948 to 2008.

magnitude, duration, and the number of commodity groups whose prices have increased.

The size of the price increases are unprecedented

The magnitude of commodity price increases during the current boom is without precedent. The real U.S. dollar price of commodities has increased by some 109 percent since 2003, or 130 percent since the earlier cyclical low in 1999. By contrast, the increase in earlier major booms never exceeded 60 percent (table 2.1).

The unusual amplitude of the price increases during this boom partly reflects the
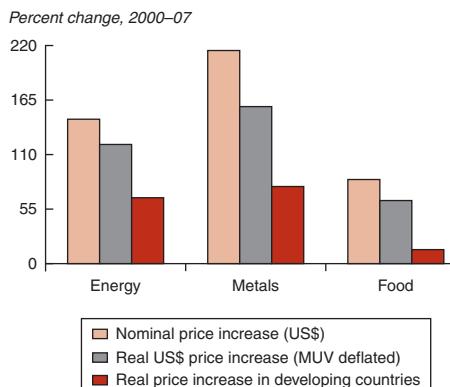
Table 2.1   Principal characteristics of major commodity booms

Common features	1915–17	1950–57	1973–74	2003–08
Rapid global real growth (average annual percent)	—	4.8	4.0	3.5
Major conflict and geopolitical uncertainty	World War I	Korean War	Yom Kippur War, Vietnam War	Iraq conflict
Inflation	Widespread	Limited	Widespread	Limited second round effects
Period of significant infrastructure investment	World War I	Postwar rebuilding in Europe and Japan	Not a period of significant investment	Rapid buildup of infrastructure in China
Centered in which major commodity groups	Metals, agriculture	Metals, agriculture	Oil, agriculture	Oil, metals, agriculture
Initial rise observed in prices of	Metals, agriculture	Metals	Oil	Oil
Preceded by extended period of low prices or investment	No	World War II destroyed much capacity	Low prices and a supply shock	Extended period of low prices
Percent increase in prices (previous trough to peak)	34	47	59	131
Years of rising prices prior to peak	4	3	2	5
Years of declining prices prior to trough	4	11	19	—

Source: World Bank.
— = Not available.
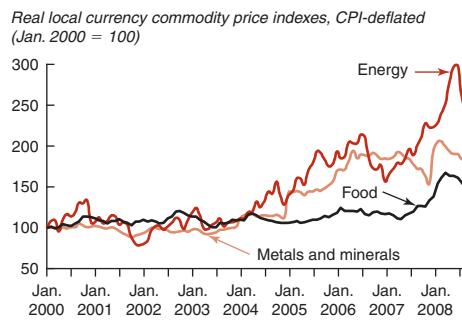
Figure 2.2 The real local currency price of commodities rose much less than the real dollar price

Percent change, 2000–07

Source: World Bank.

Note: Real US$ price has been deflated by the unit value of manufactures (MUV); real price in developing countries represents a trade-weighted average of local currency price increases deflated by local consumer prices increases.

Figure 2.3 Oil and metal prices led this boom, with food prices rising only much later

Real local currency commodity price indexes, CPI-deflated (Jan. 2000 = 100)

Source: World Bank.

fact that the U.S. dollar has been depreciating during the same period and most primary commodity prices are quoted in dollars. The real commodity prices in developing countries (local currency prices deflated by local inflation), have increased by much less than their dollar counterparts. The real dollar price of internationally traded metals and minerals rose by 158 percent between 2000 and 2007, but by only 78 percent in developing countries. Similarly, the real dollar price of internationally traded food commodities increased 64 percent compared with a much lower 14 percent in developing countries (figure 2.2).[2]

The boom covers a wide range of commodities and has lasted much longer than previous ones

This boom also differs from earlier ones in the breadth of commodities that have seen their prices rise sharply. The initial acceleration in prices was first visible in the oil market and was quickly followed by developments in the metals and minerals market. The

real price of agricultural products was broadly stable, especially in developing countries, and began to rise sharply only in early 2007 (figure 2.3).

This is very different from the 1950s boom, when post–World War II rebuilding (and fears of shortages) increased metals prices and poor harvests raised agricultural prices, but the price of oil remained flat. In the 1970s boom, agricultural and oil prices increased, but metals prices rose initially and then collapsed with the decline in aggregate demand.

The current price boom is unusually long. The U.S. dollar price of internationally traded commodities has been rising for more than five years, much longer than the price booms of the 1950s and 1970s. Only the 1917 boom saw a sustained increase in commodity prices over a similarly long period (four years).

Typically a commodity price boom is followed by a bust as demand reacts to high prices by contracting and supply reacts by expanding. For example, the 1970s and 1980s busts were associated with a sharp slowdown in world output, which eased demand pressures at the same time as supply was rebounding. Until most recently, the current boom has been marked by a weak supply response (see below) and sustained global growth.

The roots of the boom in commodity prices

This commodity price boom has been supported by strong growth in global demand, primarily from developing countries. With the possible exception of a few metals, however, the strong GDP growth of the past five years does not by itself account for the magnitude or duration of the current boom (box 2.2). Global GDP was actually growing faster in the lead-up to the 1970s boom, with Japan—taking the role China plays today—emerging as a new economic power with growth in excess of 10 percent (figure 2.4). However, the strength and duration of this boom owes much to the resilience of developing-country growth, which continued at high levels for much longer than during previous episodes of high commodity prices. On the one hand, this reflected the surprising facility with which both industrial and developing countries absorbed the initial very large hikes in commodity prices—itself a reflection of the very buoyant external conditions, including notably historically low interest rates, weak inflation, and ample liquidity (see World Bank 2007a, 2008).

Other important factors were also at work. The supply response in extractive industries has been muted because of the low prices of

Figure 2.4 Global growth lasted longer and was stronger during the recent commodity boom than in earlier ones

Annual percent change in global GDP

Source: World Bank.

the late 1980s and 1990s, which reduced incentives to develop new deposits and to invest in the physical and human capital required to expand supply. In agriculture, higher oil and fertilizer prices, along with increased demand from biofuels and a reduction in grain stocks, have been more important than fast growth per se.
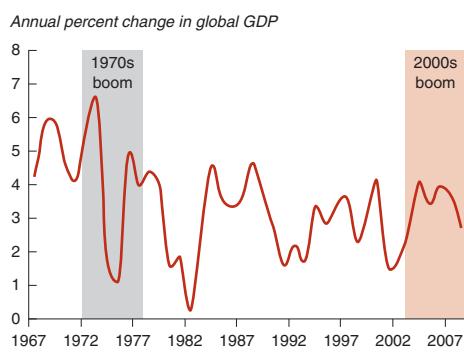
An extended period of low prices depressed investment in new capacity

The influence of low prices was perhaps most marked in the oil sector, where following the oil shocks of the 1970s and 1980s, conservation efforts and substitution toward other sources of energy depressed demand for oil and oil prices. Indeed, it took 15 years for world oil demand to regain its 1979 level. Meanwhile, the expansion of oil production, particularly in the North Sea, Mexico, and Alaska eliminated the market power that the Organization of Petroleum-Exporting Countries (OPEC) had exploited to keep prices high even in the face of rapidly declining demand. By mid-1986, nominal prices had fallen to less than $10 a barrel and OPEC's spare production capacity was equal to 8.7 mb/d—more than 13 percent of world demand at that time.[3]

Global spare capacity was further augmented during the 1990s, when demand for oil in the FSU declined precipitously and more or less permanently. As the prices of primary commodities were allowed to reflect world prices and many of the energy- (and metals-) intensive industries that had characterized the Soviet era closed or retooled, demand for energy (and metals) in these countries declined rapidly. Overall, oil demand declined by 40 percent between 1987 (its peak) and 1999—or by 5 million barrels a day—the equivalent of 7 percent of world demand in 2000.

Initially, oil production in the FSU fell by about as much, so there was an enormous buildup of dormant capacity. Including OPEC's surplus capacity of about 5 mb/d, total dormant capacity from these countries equaled around 10 mb/d in 1995 (figure 2.5).[4]

Box 2.2   Developing-country growth and global commodity demand in the recent past

The growth surge of developing countries between 2003 and 2007 contributed to strong demand for commodities. Had output expanded more slowly, in line with the long-term growth potential of developing countries—estimated to be about 6.4 percent—oil demand would have been lower by only about 1 million barrels a day, or just under 1.2 percent of world consumption; demand for metals would have been about 1.5 percent lower and demand for grains about 1.9 percent lower.

Overall, demand for most commodities at the global level rose less quickly than world GDP, and for most commodities, the contribution of developing countries to the increase in commodity demand was in line with their GDP growth (box figure). Incremental developing-country demand for some commodities was much stronger than in high-income countries, both because developing-country GDP was growing at a faster rate and because relatively commodity-intensive manufacturing activities were being transferred from high-income to developing countries in this time period—a factor that by itself should have had no impact on global commodity demand.
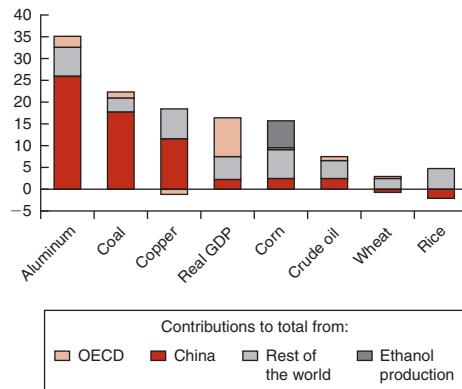
Indeed, despite the acceleration in world GDP, consumption for most commodities did not rise rapidly. Coal and certain metals represent notable exceptions, and here the demand of China has played a particular role. Between 2003 and 2007, China's consumption of aluminum increased by 7.1 million tons, or 26 percent of world demand. Coal consumption increased by 458 million (oil equivalent) tons, or 18 percent of global demand. However, China's production of these commodities increased by almost as much—7.0 million tons in the case of aluminum and

421 tons in the case of coal—so its demand surge contributed relatively little to overall market tightness. Indeed, by mid-2008, the price of aluminum rose by only 74 percent compared with its average value in the 1990s (versus 200 percent for metals and minerals in general), and coal rose by 392 percent, about the same as natural gas, but much less than oil.

Importantly, despite rapid gains in developing-country GDP and income growth, grain demand did not accelerate appreciably for developing countries considered as a whole or for China alone. In fact, Chinese consumption of wheat and rice declined, and China's contribution to incremental global corn demand was roughly in line with its increase in GDP.

Box figure 2.2 China was the key global metals contributor to global demand growth

Percent increase in global commodity demand, 2003–07

Contributions to total from:
☐ OECD   ■ China   ☐ Rest of the world   ◼ Ethanol production
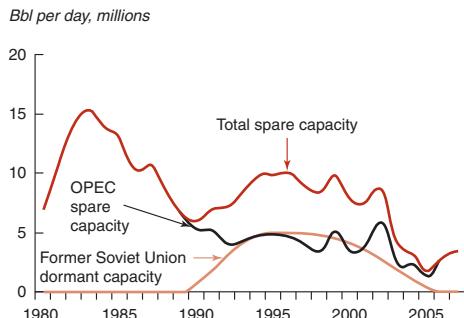
Source: World Bank.

The buildup of excess capacity meant that the real price of oil during the 1990s remained low, at $16 a barrel, equivalent to half the price experienced during 1985. It also meant that there was little incentive to invest in new, higher-cost oil fields. Overall spending by major American multinational oil companies on exploration for new wells and the development of existing wells declined by more than 50 percent, from $72 billion in 1980 to $30 billion in 1999 (figure 2.6).[5] As a result, demand for the inputs required for oil exploration and extraction was weak, and capacity in these supporting industries declined, as did the number of new engineers trained to find and extract oil.[6]
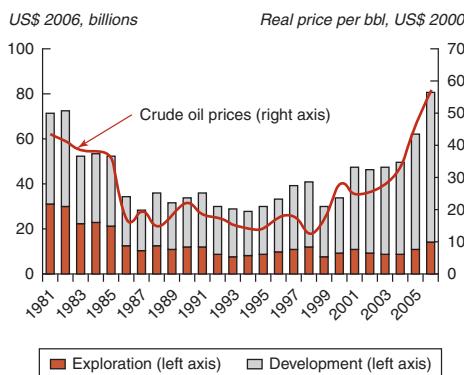
Figure 2.5 Dormant capacity helped keep oil prices low in the 1990s

Bbl per day, millions

Source: World Bank, British Petroleum, International Energy Agency, Petroleum Economics Ltd.

Figure 2.6 Real spending by major American multinational oil companies declined by 60 percent in the 1980s

US$ 2006, billions   *Real price per bbl, US$ 2000*

Exploration (left axis)   Development (left axis)

Source: Energy Information Agency; World Bank.

As the transition continued, oil-producing firms in the region were able to rehabilitate existing capacity relatively easily and to reorient expanding output to Western markets, where demand continued to rise. Between 1995 and 2005, world oil demand increased by nearly 14 mb/d, with 8 mb/d of that total being met by the dormant capacity in the countries of the FSU and OPEC.[7] As a result, underlying capacity grew less than half as fast as demand throughout the period.
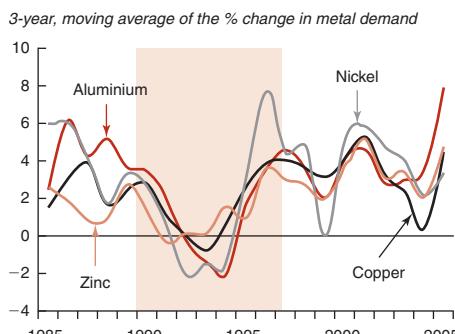
With spare and dormant capacity absorbed, prices surged in 2004

By 2004, the dormant capacity that had been created by the decline in demand in the FSU had been reabsorbed. When demand growth (which had been subdued following the bursting of the Internet bubble) regained strength, supply was unable to keep pace, in turn resulting in a surge in prices.[8]

Metal demand also declined sharply as numerous heavy industries in the FSU went out of business. Global demand for metals and minerals eased sharply beginning in 1990 and only returned to trend rates in 1997 (figure 2.7). As was the case in the oil sector, the pickup in metals prices beginning in 2003 did not reflect unusually strong demand—except for aluminum—whose price, as it happens, has been relatively stable. Rather, it reflected low stock levels and depressed capacity.

Indeed, the strong correlation between the prices of metals and minerals on the one hand and oil on the other during 2003–06 is unusual. Historically, the correlation between the prices of these commodities tends to be much less pronounced than between oil and agricultural goods (table 2.2) because high oil prices tend to cut into industrial production and demand for metals, while food demand is relatively inelastic.

Figure 2.7 Global metal demand also fell during the transition

3-year, moving average of the % change in metal demand

Source: World Bank, International Monetary Fund.

Table 2.2 Comovement among major commodity prices, 1960–2007

Commodity	Maize	Wheat	Rice	Coffee	Cotton	Copper	Aluminum	Iron ore	Gold
Wheat	0.91								
Rice	0.82	0.81							
Coffee	0.70	0.45	0.63						
Cotton	0.83	0.80	0.82	0.82					
Copper	0.75	0.55	0.71	0.35	0.75				
Aluminum	0.70	0.46	0.63	0.37	0.76	0.41			
Iron ore	0.72	0.49	0.63	0.36	0.76	0.0	0.34		
Gold	0.69	0.0	0.65	0.54	0.80	0.0	0.44	0.0	
Crude oil	0.72	0.55	0.65	0.58	0.81	0.0	0.48	0.0	0.83

Source: World Bank.
Note: The numbers are the adjusted R^2s of a regression of each price on all other prices (individually), a time trend, and the MUV, both directions. The residual was tested for stationarity (5% level of significance). If cointegration was confirmed in one direction, the table reports the respective adjusted R^2. If cointegration was found in both directions, the higher adjusted R^2 is reported. If no cointegration was found, implying that any correlation would, in fact, be a spurious correlation, the result was not reported, and the respective cell shows 0.0 (e.g., gold with wheat or copper).

Increasing prices sparked a boom in investment in the oil, metals, and minerals markets

Global private investment in exploration for nonferrous metals rose from $2 billion in 2002 to $7 billion in 2006 and to an estimated $9 billion in 2007. Overall investment in the sector more than doubled between 2001 and 2005 in a number of mineral-rich countries including Canada, Mexico, the Russian Federation, South Africa, and the United States (UNCTAD 2007). At the same time, investment in the oil sector increased dramatically, 75 percent in the case of the American multinational companies (see figure 2.6).

After years of low investment, the ability of service sectors to deliver inputs to the commodity-producing firms had atrophied. As a result, the surge in demand for investment goods over the last several years has exceeded capacity by a wide margin and costs have skyrocketed.

In the oil sector, operating costs have more than doubled, and the cost of inputs to exploration and extraction have increased substantially. For example, the day-rate price of semisubmersible rigs in the Gulf of Mexico (0–3,000 ft. water depth) increased from $36,000 in 2000 to $325,000 in March 2008, a ninefold increase. Similar increases have been observed in other items, such as water jack-up rigs, whose day rates have increased fivefold in West Africa.

Such factors have put upward pressure on the costs of developing new mines and oil fields. Operating costs for marginal producers rose by 25 percent for copper and 28 percent for aluminum between 2002 and 2005 (IMF 2006), and in the case of at least one nickel project, they rose by 170 percent.[9] Higher costs are reported to have increased the cost of extracting a barrel of crude from Canada's oil sands to $75, while deepwater offshore projects may cost more than $50 a barrel.

Although higher prices are inducing substantial increases in capacity in the input industry, that capacity will not be in place for several years. As a result, some delivery times have more than doubled. For example, in the mining sector it currently takes 45 months to deliver a grinding mill, compared with a more normal 20 months; for rope shovels the delivery time has gone from 9 months to 24. Large haul trucks, normally available within 4 months, now take 2 years.[10] Other services may take even longer to come into balance; the training of technical personnel such as engineers typically takes many years.

As a consequence, it may take some time before the surge in investment now under way leads to a surge in the delivery of inputs, and even more time before delivery of inputs

translates into actual increases in oil, metal, and mineral production. All of this suggests that notwithstanding recent declines, supply will continue to be relatively scarce for several more years and that prices will remain higher than in the 1990s for some time.

The boom in agricultural prices reflects both high costs stemming from oil prices and increased demand from biofuels

The rise in the price of agricultural commodities occurred much later than it did for either oil or metals and minerals. Dollar prices were rising as early as 2003, but these increases mainly reflected exchange rate movements. Relative to consumer prices in developing countries, internationally traded food prices were broadly stable until 2007, when the prices of internationally traded food commodities (such as maize, wheat, and soybeans) rose very rapidly (figure 2.8).
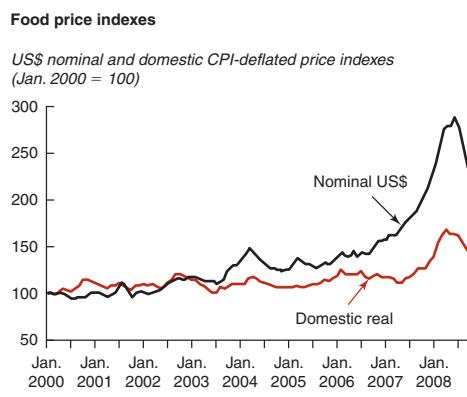
The timing of the rise in agricultural prices points strongly to the impact of energy markets (box 2.3) First, agriculture production is fairly energy intensive. The increase in oil prices raised the price of fuels to power machinery and irrigation systems; it also raised the price

of fertilizer and other chemicals that are energy intensive to produce. The impact across different countries is difficult to quantify owing to a lack of data. In the United States, fuel, fertilizer, and chemicals accounted for 34 percent of maize production costs and 27 percent of wheat production costs in 2007 (USDA 2008). Energy, fertilizer, and chemicals would typically make up a smaller share of production costs in developing countries, because production is less intensive. Nevertheless such costs can be significant where intensive techniques are used. Thus, fertilizer is estimated to have accounted for 18 percent of variable costs for irrigated wheat in the Indian Punjab in 2002 and for 34 percent of soybean costs in the Mato Grosso, Brazil (World Bank 2007b).

Second, high oil prices sparked an increase in biofuel production in the United States and Europe that boosted demand for certain grains and oilseeds thus contributing to their rapid price rise in the course of 2007 and early 2008 (Mitchell 2008). Overall, two-thirds of the increase in world maize production since 2004 has gone to meet increased biofuel demand in the United States, thereby reducing the quantity available for food and feed uses. Estimates of the impact of increased demand for biofuels on the rise in nominal maize prices range from 70 percent (Lipsky 2008), to 60 percent (Collins 2008), to 47 percent (Rosegrant and others 2008).

The increased demand for crops used for biofuels contributed to price increases for other food by reducing the land allocated to other crops. For example, in the United States high prices increased land devoted to maize production by 22 percent in 2007, with most of the increase at the expense of soybeans, the production of which declined by 16 percent. Area planted to rapeseed and sunflowers—used for biodiesel production—increased in Europe and elsewhere at the expense of wheat. Moreover, rising prices for maize, wheat, and soybeans redirected consumer demand toward other food products, aggravating price pressures on other grains. For example, rice prices rose from $376 a ton in January 2008 to $907

Figure 2.8 Real food prices were broadly stable in developing countries until mid-2007

Food price indexes

US$ nominal and domestic CPI-deflated price indexes (Jan. 2000 = 100)

Source: World Bank.

Note: Individual country data deflated by local consumer price index and aggregated by country shares in global imports.

Box 2.3   The historical link between crude oil and other commodity prices

Crude oil prices affect the prices of other commodities in a number of ways. On the supply side, crude oil enters the aggregate production function of most primary commodities through the use of various energy-intensive inputs and, often, transportation over long distances, an energy-demanding process. Some commodities, such as aluminum, have to go through an energy-intensive primary processing stage.

On the demand side, some commodities compete directly with synthetic products, which are produced from crude oil (cotton with man-made fibers, natural rubber with synthetic rubber). The demand for other commodities (maize, sugar, rapeseed, and other oils) has increased to produce biofuels. And the price of energy commodities such as gas and coal are affected because of their substitutability with crude oil.

Increases in crude oil prices also increase the disposable income of oil-exporting countries. Because these countries are heavy consumers of some commodities (e.g. tea and gold), and demand for these products is sensitive to incomes, high oil prices sharply increased regional demand for these products. Finally, crude oil price spikes are often associated with

inflationary pressures. As a result, the demand (and hence the price) of precious metals often rise with oil prices, because investors and households view these metals as more secure ways for storing wealth.

Crude oil price increases reduce the disposable incomes of consumers, which, in turn, may slow industrial production. In principle, lower disposable income should have a negative impact on the consumption of food commodities. However, because the income elasticity for most food commodities is small, this effect is limited, and the positive impact of crude oil price increases on the prices of food commodities—through increased production and transportation costs—tends to overshadow the negative impact of reduced global consumption.

In contrast, the negative effect of high energy prices on industrial production reduces the demand for metals, thereby putting downward pressure on their prices. This tends to offset the positive effect from higher production and transportation costs. As a result the correlation between metals and oil prices is much lower than between oil and food prices (see table 2.2).

a ton in April, partly in response to the growing concern about the adequacy of global food supplies and the 120 percent increase in wheat prices during the previous six months.
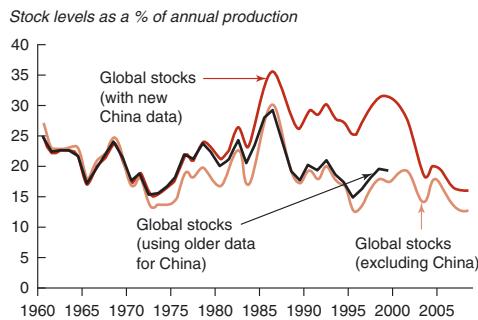
While biofuels have contributed to higher food crop prices, they also represent an opportunity for profitable production in developing countries (OECD 2007; GTZ 2006). Additional ethanol production need not imply reducing food crops production. Brazil, for example, is a low-cost producer of ethanol from sugarcane and has an estimated 180 million hectares of pasture that could be used to produce additional sugarcane for ethanol—without reducing the food sugar crop. Many Sub-Saharan African countries, including Angola, Mozambique, and Tanzania, also

have the potential to produce ethanol profitably from sugarcane on land that is not used for food crop production. Finally, nonfood crops such as *jatropha* can be used to produce biodiesel in many developing countries.[11]

In addition to the impact of oil markets, food prices were boosted by a series of poor wheat harvests, notably in Australia.[12] Before the run-up of prices in 2007, wheat stocks had fallen to the second lowest level of the past 40 years (figure 2.9).
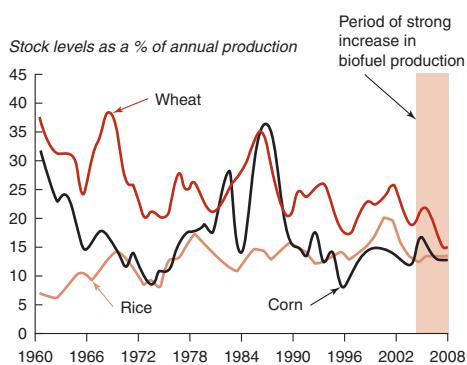
Reported global stocks of corn and rice declined before 2007, mainly due to a reduction of very large government stocks in China. Because these stocks have been greatly underestimated for the past 30 years (figure 2.10), current stock levels are not that different than what the world

Figure 2.9 Most of the decline in global grain stocks reflects lower stocks in China

Stock levels as a % of annual production

Source: World Bank.

Figure 2.10 Outside of China, only wheat stocks are unusually low

Stock levels as a % of annual production

Source: World Bank.

thought them to be during the early 1990s. It is thus unclear whether market participants took the decline in global stocks as a signal of coming scarcity or simply a return to stock levels that were consistent with relatively low prices a decade ago.

Government policy and investment fund activity may have exacerbated the increase in commodity prices

The extent of food price rises during this boom was probably exacerbated by the actions of governments, which impeded market forces that otherwise would have helped to attenuate the rise in prices and shorten the duration of the boom. As discussed in chapter 3, although the various subsidies and price controls that were in place or were introduced muted the poverty impact of higher prices, they have also reduced producers' incentives to increase output and consumers' incentives to substitute less-costly items in their food baskets. And export bans limited supplies available on international markets. For example, India's ban on rice exports in April 2008 was followed by other rice exporters, which prompted some countries, notably the Philippines, to increase rice imports to build up strategic reserves, thus further boosting international prices.

The activities of financial investors may have contributed to price rises as well. Traditionally, hedgers and speculators have been the dominant players in futures exchanges, but over the past few years, investment funds have become important players as well. Such funds may have indirectly influenced commodity prices. Since 2003 index fund investors, who allocate funds across a basket of commodity futures, have invested almost $250 billion in U.S. commodity markets, about half of it in energy commodities (Masters 2008). While such purchases create no real demand for commodities, they may have influenced prices because these funds are large compared with their physical market counterparts and because they have expanded rapidly. Their influence on prices is especially likely, if the rapid expansion of these markets contributed to expectations of rising prices, thereby exacerbating swings, as argued by Soros (2008).

The empirical evidence on whether such funds have contributed to the recent price surge is mixed. In the nonferrous metals market (where a similar buildup of financial positions has occurred), Gilbert (2008) found no direct evidence of the impact of investor activity on the prices of metals but some evidence of extrapolative price behavior that resulted in price movements not fully justified by market fundamentals. He also found strong evidence

that futures positions of index providers over the past two years have affected soybean (but not maize) prices. Similarly, Plastina (2008) concluded that between January 2006 and February 2008, investment fund activity might have pushed cotton prices 14 percent higher than they would have been otherwise. On the other hand, two IMF (2006, 2008) studies failed to find evidence that speculators have had a systematic influence on commodity prices. A similar conclusion was reached by a series of studies undertaken by the Commodities Futures Trading Commission, the agency that regulates U.S. futures exchanges (Büyükşahin, Haigh, and Robe 2008; ITF 2008).

Although evidence that financial investments have contributed to the rapid run-up in commodity prices is limited, it seems likely that real-side speculation (the decision to hold stocks in anticipation of further price increases or to order more than needed now for the same reasons) likely contributed to the rapid increase in prices during 2007 and 2008.[13]
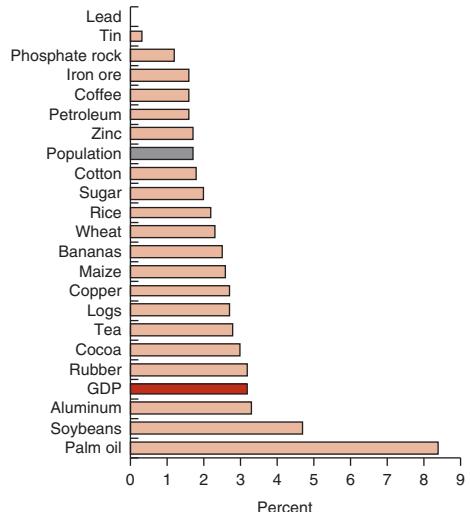
Long-term demand prospects

The longevity of the current boom and the wide range of commodities that have been affected have prompted many observers to wonder if the global economy is moving into a new era characterized by relative shortage and permanently higher (and even permanently rising) commodity prices. This section looks at demand and supply conditions in commodity markets over the medium to long term and concludes that slower population and GDP growth, changes in the structure of GDP, and technological improvements in production and use of commodities make this scenario unlikely.

Demand for (and supply of) commodities over the past 35 years has been rising steadily. The quantity of energy consumed has increased by an average of 2.2 percent a year during 1970–2005, that of metals and minerals by 3.1 percent, and that of food by around 2.2 percent. However, demand for these commodities

Figure 2.11 Demand for most commodities has grown less rapidly than GDP but more rapidly than population

Average annual growth rate, 1975–2006

Source: World Bank.
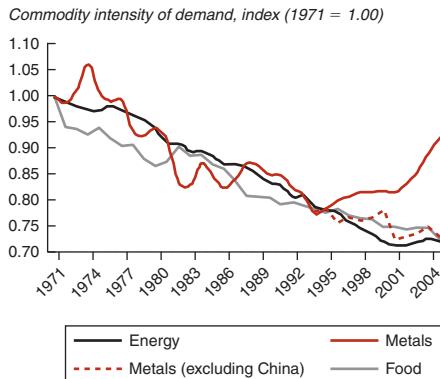
has grown less quickly than GDP, albeit more quickly than population (figure 2.11).

Expressed another way, the commodity intensity of GDP has been declining. For oil and food, this process has been going on continuously since the 1970s. For metals, the same trend was observed until the mid-1990s when it began to reverse (figure 2.12)

More generally, growth in the demand for commodities is influenced by a wide range of factors including several fundamental economic drivers.

Incomes and population. As per capita incomes rise, demand for commodities also tends to increase, but the sensitivity of demand to an increase in income differs across commodities and changes as income levels rise. For example, at low-income levels, demand for grains rises relatively quickly as income increases, but as per capita incomes reach about $3,000 dollars, the pace at which grains demand rises declines, ultimately falling to close to zero. Thus, a 10 percent increase in

Figure 2.12 The quantity of most commodities used per unit of GDP was declining until recently

Commodity intensity of demand, index (1971 = 1.00)

Source: World Bank.

Table 2.4   Modern goods make less intensive use of commodities
(US$)

Good	Value per kilogram
Iron ore	0.04
Steam coal	0.07
Wheat	0.27
Crude oil	0.47
Standard steel	0.56
Newsprint	0.89
Supertanker	4.00
Motor car	33.00
Dishwasher	56.00
TV set	133.00
Submarine	222.00
Large passenger aircraft	1,334.00
Laptop computer	2,224.00
Mobile telephone	4,448.00
Jet fighter	13,344.00
Windows 2000 Software, CD Rom	44,480.00
Telecom satellite	88,960.00
Banking services	∞

Source: Radetzki 2008a.

incomes is associated with a 6 percent increase in grains demand in low-income countries but almost no increase in high-income countries (table 2.3). As a result, beyond a certain income level, grains demand is mainly dictated by population growth. The sensitivity of demand for metals to incomes is much higher but tends not to change as income levels rise. Energy is the reverse of grains, with the demand for energy rising more rapidly than incomes in high-income countries.

The composition of GDP. Commodity demand depends on more than just GDP. The composition of demand also plays an important role. Over time, the commodity intensity of GDP has declined partly because demand has evolved toward goods and services that

are much less intensive in their use of commodities. This trend is illustrated in table 2.4, which shows the value per kilogram of a variety of different products. Newer products, such as computers and mobile telephones, have a growing share in world GDP and contain very little in the way of commodities (proxied here by their weight).

The same effect can be seen at the sectoral level. Industrial activity tends to be more commodity intensive than agricultural activity, which in turn is more commodity intensive than services. Thus, part of the declining commodity intensity of demand over the past 35 years reflects the rise of the service sector, which accounted for 50 percent of world GDP in 1971 and 69 percent in 2005—a trend that is shared by both high-income and developing countries.

Technological change. Increased efficiency in the use of commodities in production and consumption has also contributed significantly to the dematerialization of economic activity. Examples include improvements in gas mileage in automobiles and the substitution of artificial for natural fibers in clothing.

Table 2.3   Impact of a 10 percent increase in incomes on commodity demand
(Percent)

Income group	Grains	Energy	Metals
Low	6.0	4.5	10.1
Lower middle	3.3	7.2	10.1
Upper middle	1.4	9.2	10.1
High	0.0	1.1	10.1

Source: World Bank.

Table 2.5   Fundamental economic factors drive future commodity demand

Period	Average annual growth rate				Share of services in GDP
	Per capita income	Population	GDP	Share of services in GDP	
	(percent)				(percent)
1990s					
World	1.2	1.5	2.7	0.99	64.6
High income	1.8	0.7	2.5	0.89	67.8
Low and middle income	2.0	1.6	3.6	1.73	49.8
Low income	2.3	2.2	4.5	0.96	44.3
Middle income	2.2	1.2	3.5	1.84	50.8
2000s					
World	1.8	1.2	3.1	0.47	68.5
High income	1.7	0.7	2.5	0.51	71.8
Low and middle income	4.2	1.3	5.6	0.24	53.8
Low income	4.1	1.9	6.1	1.50	49.4
Middle income	4.6	0.9	5.5	0.04	54.5
2015–30					
World	1.7	0.8	2.5	−0.41	50.3
High income	1.2	0.1	1.3	0.02	59.0
Low and middle income	3.9	0.9	4.9	−0.07	35.6
Low income	3.8	1.5	5.4	−0.02	44.0
Middle income	4.1	0.7	4.8	−0.08	35.0
Change (2015–30 vs. 2000s)					
World	−0.2	−0.4	−0.6	−0.88	−18.3
High-income	−0.5	−0.7	−1.2	−0.49	−12.8
Low and middle income	−0.3	−0.4	−0.7	−0.31	−18.2
Low income	−0.3	−0.4	−0.7	−1.52	−5.4
Middle income	−0.5	−0.2	−0.7	−0.12	−19.5

Source: World Bank LINKAGES model.

Long-term projections suggest that the main factors driving commodity demand will slow

To a significant degree, future demand for commodities will reflect the combined impact of, GDP growth, changes in the composition of demand, and technological progress (table 2.5).

- *Population growth* over the next two decades is expected to slow significantly from 1.2 percent during the 2000s to about 0.8 percent in the period 2015–30, which should help moderate commodity demand compared with past demand.
- *Per capita income growth* is also projected to slow somewhat for the world as a whole, mainly because incomes in the largest developing countries are expected

to rise less quickly than they did during the 1990s. Nevertheless, developing-country per capita incomes are projected to triple, rising from $1,550 to $4,650 between 2004 and 2030. This means that, although global demand for grains and some metals is likely to decelerate, energy demand is likely to strengthen.

- *The composition of GDP* is not expected to continue to move toward services but to stabilize more or less at current levels. This suggests that commodity intensities may decline less rapidly than they have in the past.
- *Prospects for technological progress* are the least certain element likely to determine future commodity demand. Should policy succeed in continuing past gains, then this too should tend to moderate commodity demand.

The remainder of this section discusses in more detail how these factors and technological change are expected to play out in individual commodity markets.

Demand prospects for energy

Rising incomes and technology are expected to play crucial roles in determining future energy demand. Assuming no improvement in energy efficiency, given expected increases in incomes and population, demand for energy would rise by more than 120 percent between now and 2030, with growth in developing countries responsible for three-fourths of that increase. Assuming the composition of energy demand and supply did not change, that would imply that demand for oil would more than double, from 82 mb/d in 2007 to 174 mb/d in 2030.

Efficiency gains and conservation efforts reduced energy demand by 50 percent over the past 35 years

Of course, these assumptions are somewhat simplistic, viewed against the light of recent history. Energy efficiency over the past 50 years has in fact improved sharply. Since 1960, the efficiency of jet transport has more than tripled (Lee and others 2001) while fuel efficiency in cars has also increased significantly. Overall, between 1970 and 2004, technological change lowered energy demand 56 percent from what it would have been otherwise (IEA 2007). Much of the improvement resulted from substitution and conservation prompted by higher prices. Ongoing technological change and increased efficiency in China (Lin and others 2006) and the FSU countries (see earlier discussion) also played important roles.[14]

Looking forward, similar improvements in energy efficiency are possible if supported by an appropriate policy mix. Of particular importance will be efficiency in the transport sector, which is expected to account for some 75 percent of the increase in future oil use, largely because of rising incomes and car ownership in developing countries (IEA 2007).

A number of technologies currently available as prototypes or in early stages of commercialization could help more than double fuel efficiency over the next several decades. In 2005, about 8 liters of fuel were needed to drive 100 kilometers; by 2050, fewer than 3 liters may be needed (IEA 2008a). Even more optimistic scenarios project that by 2050, 90 percent of the vehicles in the high-income world and 75 percent in the developing world will be powered by alternative fuels, such as plug-in hybrids (hybrid cars with large batteries that can be plugged into the main electrical network), electric, and hydrogen-powered cars. Such a shift would reduce considerably private transportation's dependence on liquid fuels. Indeed, prototype and soon-to-be-released electric and hydrogen-powered cars already exist (box 2.4).

Strong growth in developing countries is expected to dominate future energy demand

Assuming that energy efficiency continues to improve at about the same rate as in the past, total demand for energy is projected to rise by 55 percent between now and 2030, with 80 percent of that emanating from fast-growing developing countries (table 2.6). Overall, weaker population growth and technological change are likely to outweigh the impact of rising developing-country incomes and their increased weight in overall demand. Hence the rate of growth of energy demand is expected to ease over time, declining from an average of 1.8 percent during the past 15 years to about 1.3 percent in the period 2015–30.

In the baseline scenario, climatic and environmental concerns are expected to contribute to a modest shift away from petroleum products toward less carbon-intensive fuel sources, such as natural gas, and renewable fuels, such as wind, solar, and geothermal. Oil's share in overall energy consumption is expected to decline, with demand rising more slowly. Demand growth is projected to fall from 1.7 percent a year in 2005–15 to 1.1 percent in 2015–30, reaching between 112 and 118 million barrels a day by 2030.

Box 2.4   Alternative fuels for transportation

Hydrogen and electricity are emerging fuels for transportation; fully ethanol-powered and flex-fuel cars are already well-established commercial successes in Brazil and increasingly in the United States and Europe. Existing hybrid cars offer a 50 percent improvement in fuel efficiency for city driving, while plug-in hybrid cars have the potential of reducing reliance on gasoline even more. Hydrogen-fuel-cell and all-electric cars could reduce that dependence to zero, but considerable progress needs to be made in increasing the efficiency of battery technology and in the production and conversion of hydrogen into electricity before these vehicles will be competitive.

Currently, most major car manufacturers have prototype versions of all such cars. General Motors has announced its intention to sell commercially as soon as 2010 an extended-range electric vehicle (the "Volt"), which is a battery-powered electric car that uses a small flex-fuel engine to extend its range for highway driving. The Volt is expected to be able to run up to 40 miles a day (more than the average daily driving distance of 75 percent of Americans) on batteries alone and 250 miles using its flex-fuel generator. The car is expected to have an EPA rating of 100 miles a gallon (Connor 2008), and its operating costs could be 0.02 cents a mile or one-sixth the cost of a vehicle powered with gasoline at $3.80 a gallon (Padget 2008).

Meanwhile, Honda is already leasing a limited number of hydrogen-fuel-cell-powered cars to the general public in southern California. While costs of operation are similar to gas-powered cars, the cars themselves are extremely expensive and the leases being offered imply a substantial subsidy. The cost of fuel-cell stack systems (the mechanism that converts hydrogen into power and that uses platinum) will have to decline tenfold before these vehicles become economically viable.

For both plug-in hybrids and electric cars, the major stumbling block is the size, weight, and cost of the battery required to power them. With current technology, the battery needed to power an electric car 500 kilometers weighs five times as much as the equivalent amount of gasoline and would cost $50,000. Over the next several decades, technological progress achieved through the commercialization of hybrid cars is expected to raise battery efficiency and reduce costs, so that plug-in hybrids will be widely available by 2020.

Prospects for all-electric cars are less clear, mainly because of the time that it takes to recharge batteries, a factor that makes them much less attractive than gas-powered vehicles. Here hydrogen-fuel-cell-powered cars could have an advantage if the costs associated with the fuel stack can be resolved.

Source: IEA 2008a.

Another important feature of the composition of energy demand is the importance of coal, which currently accounts for more than a quarter of global energy consumption. Coal is primarily used by developing countries (62 percent), with China accounting for more than 40 percent of global consumption. The baseline simulations indicate a slight increase in coal's share, from 25.3 percent in 2005 to 27.8 percent in 2015. However, the projection is subject to two risks: on the upside, if new clean coal technologies (including carbon sequestration) come on board, coal's share in global energy consumption is likely to be much higher. However, if such technologies do not materialize, coal use is likely to be subjected to significant environmental regulation that could significantly reduce its economic attractiveness.

The future path and mix of energy demand will depend on policy

Simulations suggest that a more aggressive stance toward reducing carbon emissions could generate a further moderation in energy demand and in fossil-fuel use. For example, a $21 tax per ton of carbon dioxide could be expected to reduce demand for energy by 33 percent (see the simulations at the end of the chapter). Because of its high carbon content,

Table 2.6 Energy demand is projected to slow in the baseline scenario

Contributions to annual average global growth in energy demand (percentage points)

	1990–2005	2005–15	2015–30
World	1.4	1.1	0.6
High-income countries	0.7	0.4	0.3
Developing countries	2.2	3.4	2.0
Middle-income countries	−0.1	2.4	1.5
Low-income countries	4.1	3.9	2.2

Shares in total energy demand (percent of total)

	1970	1990	2005	2015	2030
Coal	26.0	25.3	25.3	27.8	28.2
Oil	44.0	36.7	35.0	32.9	31.5
Gas	16.0	19.1	20.6	21.2	22.3
Nuclear	1.0	6.0	6.3	5.6	4.8
Hydro	2.0	2.1	2.2	2.3	2.3
Biomass, waste	11.0	10.3	10.1	9.3	9.1
Other renewables	—	0.4	0.5	1.0	1.7

Source: World Bank ENVISAGE model (forecast); IEA (historical data).
— = Not available.

demand for coal would decline most sharply under such a scenario, with natural gas and other low-carbon energies increasing their share in total demand.

An even more aggressive set of policies, including a significant policy initiative to increase energy efficiency and reduce carbon emissions to below their 2005 levels, could see energy demand fall even further (table 2.7).

Demand prospects for metals and minerals

Demand for metals and minerals is also closely related to GDP and the mix of GDP—with manufacturing and investment activities

Table 2.7 Energy demand could decline further under more aggressive climate change policies

Energy source	Baseline	Stable emissions	Aggressive
		(percent change in energy consumption)	
Coal	198	−15	−22
Oil	57	10	−29
Gas	96	68	25
Biomass, waste	48	144	214
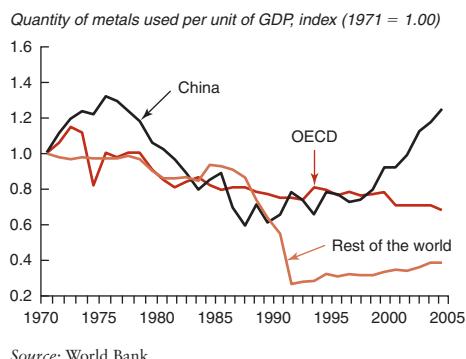
Source: IEA 2008a.

associated with relatively high commodity intensities. Like oil, the evolution of metals intensities reflects technological change, the growing importance of services in the economies of high-income countries, and other structural changes in demand.

After falling for years, metals intensities in developing countries are rising, especially in China

The reversal of the trend decline in metals intensities that began in the mid-1990s (see figure 2.10) reflects very different trends in high-income countries, most developing countries, and China (figure 2.13). The trend decline observed for all three groups between 1970 and 1990 has continued among high-income countries, apace with the continued transfer of commodity-intensive manufacturing activities to developing countries. In developing countries excluding China, the same process has driven a slight rise in metal intensities beginning in 1992, after their fall attributable to the efficiency improvements associated with the end of the FSU.

China stands out as the country where intensities have increased the most. After declining for years, they began to rise gradually toward the beginning of the 1990s and then sharply accelerated around 1998, reflecting a rapid increase in manufacturing activity and a

Figure 2.13 Metal intensities have declined steadily in high-income countries but have reversed in China since 1993

Quantity of metals used per unit of GDP, index (1971 = 1.00)

Source: World Bank.

Box 2.5   Understanding the rise in Chinese metal intensities

China's accession to the World Trade Organization and the boom in manufacturing activity that accession generated certainly played a role in increasing metals demand. However, the long-term investments in new capacity and infrastructure that began at the same time as WTO accession were likely just as important. Overall investment in China increased from 36 percent of GDP in the early 1990s to around 45 percent currently, a result both of increased manufacturing and rapid urbanization (over the same period, the share of the population living in cities increased from 30 to 40 percent). Similarly, part of the increase in China's energy demand was associated with an acceleration in steel and cement production (Lin and others 2006). These structural changes entailed substantial investments in infrastructure and were associated with a rapid increase in automobile production—all heavy consumers of metals.

As of 2007, more than 50 percent of Chinese steel and 44 percent of copper demand was used in construction and infrastructure. While China's specialization in manufacturing is likely to persist, investment rates are projected to decline over time (the average life span of infrastructure investments exceeds 50 years) so China's metal intensity is expected to stabilize and then decline, as did the metal intensities of other Asian countries, such as Japan and the Republic of Korea, that followed a manufacturing- and export-intensive development path (Mitchell, Tan, and Timmer 2007).
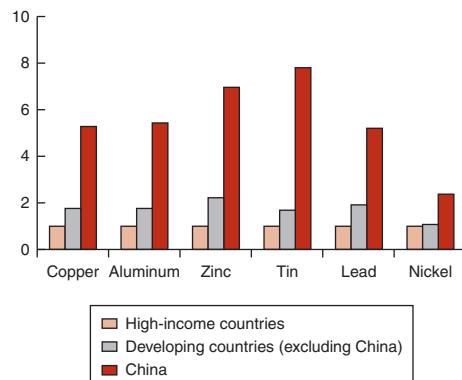
sharp uptick in investment. The increase in the Chinese investment ratio came partly from the need to create capacity to meet the manufacturing boom, but the increase also reflects significant investment in support of infrastructure in response to increased urbanization (box 2.5).

Except for a few export- and manufacturing-intensive Asian economies, other developing countries, including those at much higher levels of income than China, have not seen metal intensities rise in this way. Metal intensities in Brazil, India, and South Africa, for example, remained flat or continued to decline during the same period.[15] As a consequence, the strong acceleration in metal demand observed in China is not expected to be repeated in other developing countries.

Not only have Chinese metal intensities been rising, they are also as much as 7.5 times as high as in high-income countries and 4 times as high as in other developing countries (figure 2.14). While some of the same factors (high investment rate, large manufacturing sector) that explain the increase in Chinese intensities likely explain these differences, the

Figure 2.14 Metal intensities in China are much higher than elsewhere

Metal intensity indexes, 2000–06 averages (high-income countries = 1)

Legend:
- High-income countries
- Developing countries (excluding China)
- China

Source: World Bank.

fact that the former Soviet Union also had similarly high intensities before its economic transition suggests that perhaps nonmarket factors continue to influence allocation of these resources in a way not seen elsewhere.

Slowing global growth and a decline in Chinese metals intensity should see demand growth for metals slow over the next 25 years

Over the next quarter of a century, metal intensities in developing countries are likely to stabilize and begin declining once again. Several factors should contribute to the reassertion of the earlier downward trend.

A slowing in the pace at which global manufacturing capacity is transferred to the developing world is projected to result in a leveling off and eventual decline in manufactures' share in Chinese GDP, from about 40 percent in 2005 to around 33 percent in 2030. This slowing in turn should be reflected in a decline in metals intensities. Less-rapid growth in manufacturing and the gradual completion of investment projects are expected to cause the share of investment in GDP to decline considerably, which should also serve to lower Chinese metal intensities. Finally, the rising influence of market forces in determining allocation decisions in China should also cause a drop in the quantity of metal used per unit of output.

In the rest of the developing world, similar forces should be at work, which, coupled with rising incomes and increased service-sector demand, is expected to reduce the metals intensity of demand.[16]

Nevertheless, growth in China and developing countries more generally is expected to continue to outpace growth in the rest of the world throughout the projection period. Given China's high metal intensities, developing-country growth should keep global metal intensities from falling, at least initially. However, the beginning of the decline in Chinese metal intensities should be reflected in a significant weakening in the rate of growth of metals demand during the period 2015–30. Overall, global demand for metals is expected to continue to grow somewhat more quickly than global GDP, at about 4.0 percent through 2015, before slowing to around 2.5 percent in the period 2015–30, a pace significantly slower than that of projected GDP growth itself.
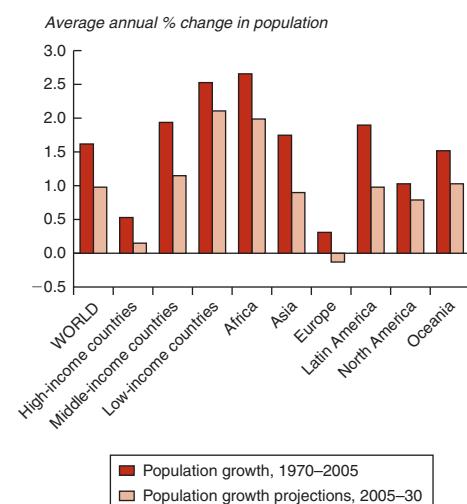
Demand for food and other agricultural products

The weaker growth in population and GDP expected over the next few decades (see table 2.4) should cause global demand for food to grow less quickly over the next 25 years.

Overall, the global population growth rate is projected to decline from an annual average of 1.6 percent between 1970 and 2005 to about 1.0 percent over the following 25 years. While most of the slowdown is expected to take place in high-income countries, population growth rates in every developing region are expected to decline between 0.4 and 0.8 percentage points (figure 2.15).
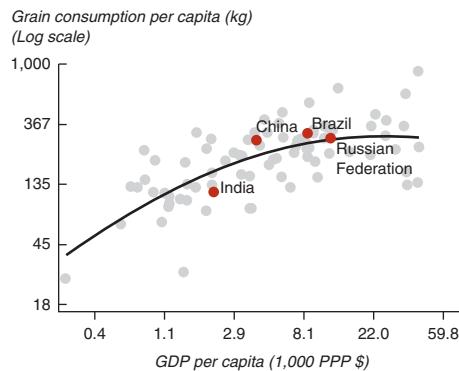
Rising incomes in developing countries imply that per capita food consumption will increase in most of these countries, but the impact on overall demand is expected to be small. As the earlier analysis suggested, a 10 percent increase in per capita income will increase grain demand by 6 percent in poor countries (those with per capita incomes below $2,000), but only by 2 percent in middle-income countries.[17] Most of the heavily populated developing regions have already

Figure 2.15 Weaker population growth should slow demand for food

Average annual % change in population

Legend:
- Population growth, 1970–2005
- Population growth projections, 2005–30

Source: UN 2006.

Figure 2.16 Per capita grain demand tends to stop rising when income reaches around $5,000

Grain consumption per capita (kg)
(Log scale)

GDP per capita (1,000 PPP $)
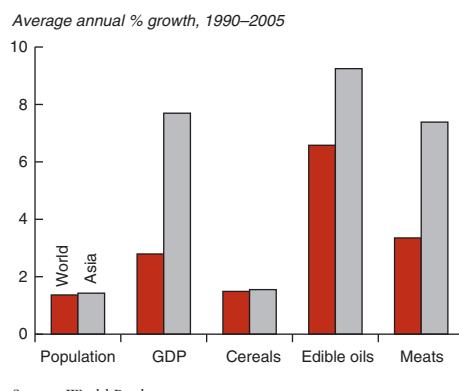
Source: World Bank.

Note: Curve fitted on a log scale.

Table 2.8 Developing countries will account for most of the projected demand for various foods, 2000–30

	All agriculture	Cereal	Edible oils	Meats
WORLD	1.5	1.2	2.3	1.7
Developed	0.7	0.9	2.0	—
Transition	0.5	0.8	1.7	—
Developing	2.0	1.4	2.5	2.4
Sub-Saharan Africa	2.8	2.5	2.9	3.3
Middle East and North Africa	2.2	2.1	2.3	3.3
Latin America and the Caribbean	1.8	1.2	2.6	2.0
South Asia	2.3	1.6	2.7	4.0
East Asia and Pacific	1.7	1.2	2.4	2.1

Source: FAO (2006, pp. 33, 39–42, 47).
— = Not available.

achieved incomes associated with income elasticities close to 0.2 (figure 2.16).[18]

Demand for meat and dairy products (and feed grains) will likely expand more rapidly because these products tend to be more income elastic than basic food stuffs.[19] For example, in Asia, demand growth for meat and edible oils outstripped population growth by a wide margin over the past 15 years, even rising somewhat faster than GDP in the case of edible oils (figure 2.17).

Figure 2.17 Demand for edible oils grew much faster than population in Asia

Average annual % growth, 1990–2005

Source: World Bank.

Slower population growth will dampen demand for agricultural products

Overall demand for food should slow over the next few decades, despite income gains. The Food and Agriculture Organization (FAO) estimates global food demand will increase by about 1.5 percent a year between now and 2030, with cereals, edible oils, and meats growing at 1.2, 2.3, and 1.7 percent, respectively—somewhat slower than they did between 1990 and 2006 (table 2.8). Developing countries have higher income elasticities, faster income and population growth, and relatively large populations, compared with high-income countries. Thus, three-quarters of the additional global demand for food between now and 2030 will emanate from developing countries.

The implications of biofuels demand for agricultural prices

The production of biofuels in Brazil, the United States, and the European Union (which together account for more than 90 percent of global output) has increased by 18 percent a year since 2000. Biofuels now use 16 percent of global sugarcane production, 9 percent of global vegetable oils production, and 13 percent of global maize production, and have been the key contributor to the rise in food crop prices in recent years (Mitchell 2008).

The rapid expansion of production capacity in the United States and Europe was prompted by generous subsidies and use mandates, but high energy prices have made continued production without subsidies profitable in many cases. As a result, demand for biofuels may mean that in the future prices for crops used to produce biofuels will be higher, and more volatile, than if these crops were used only for food.

Indeed, when oil prices exceed the threshold of roughly $50 a barrel, a strong correlation can be observed between the price of crude oil and crop prices that does not exist when prices are below $50 a barrel (figure 2.18). At oil prices below $50 a barrel, ethanol production is not very profitable. However, at $50 a barrel, a 1 percent increase in oil prices results more or less in a 0.9 percent increase in maize prices, because every dollar increase in the price of oil increases the profitability of ethanol and hence biofuel demand for maize.[20] Since the oil market is much larger than the market for maize (if all the maize currently produced in the world were converted into ethanol, it would equal only 8 percent of global gasoline supplies), the price of maize is now effectively determined by the price of oil.
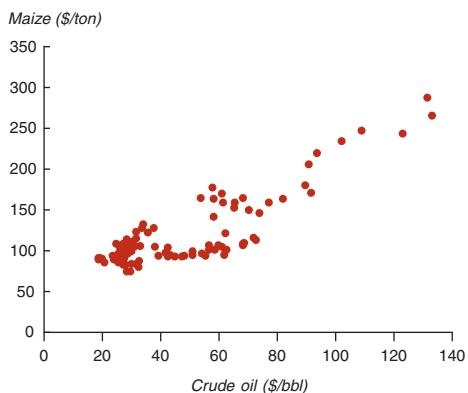
The impact of biofuels is not limited to the crops used for biofuel production. As more cropland shifts to produce the now-more-profitable biofuel crops, then the supply of other crops declines (or less productive land is brought under cultivation), thus raising food prices in general. As a consequence, the price of wheat and soybeans have also become more sensitive to oil prices in excess of $50.

The future impact of the oil market on the demand for food crops and their prices is uncertain. Technological improvements may lower the cost of producing ethanol, in turn lowering the threshold oil price above which crops used for biofuels become sensitive to oil prices. But technological change may also give rise to other nonfood sources (such as cellulose) for biofuel production or to other energy alternatives such as solar, wind, and hydrogen-based
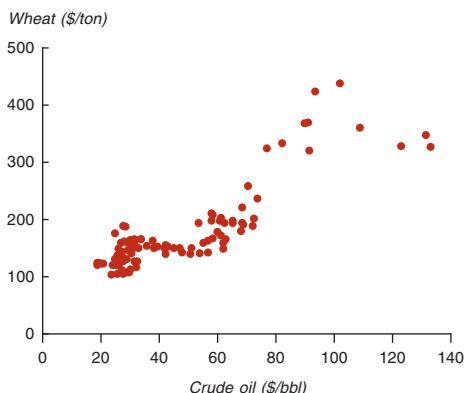
Figure 2.18 Food crop prices have become sensitive to oil prices

Oil price per barrel versus food price per ton
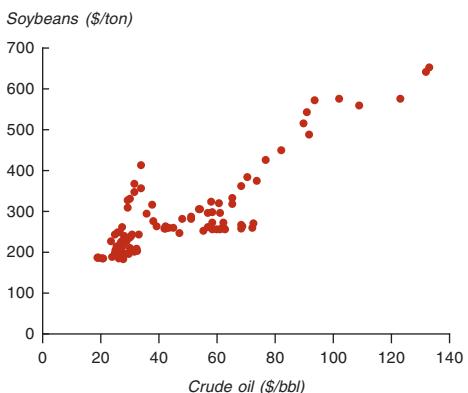
a. Maize vs. Crude Oil Prices

Maize ($/ton)

Crude oil ($/bbl)

b. Wheat vs. Crude Oil Prices

Wheat ($/ton)

Crude oil ($/bbl)

c. Soybeans vs. Crude Oil Prices

Soybeans ($/ton)

Crude oil ($/bbl)

Source: World Bank.

systems. Should this occur, demand for biofuel food crops would drop off and food prices with it.

Long-term supply prospects

The slowing of growth should bring commodity prices down by roughly 25 percent in 2009 (see chapter 1). But over the medium to long term, they are not expected to decline to the levels observed in the 1990s. How far they come down, and their future trajectory, will depend not only on the demand factors already discussed but also on the pace at which finite resources are exhausted; improvements in the efficiency with which commodities are found, extracted, and grown; and the policies that are put into place to promote long-term supply.

Energy and metals supply

Supply prospects for both oil and metals depend on the competing forces of resource exhaustion and the declining quality of new sources, on the one hand, and the pace of new discoveries and improvements in the technology with which commodities are discovered and extracted, on the other.

The world is unlikely to run out of oil, metals, and minerals in the foreseeable future

Despite ultimately finite quantities of oil, metals, and minerals in the earth's crust, there is little likelihood that the world will run out of natural resources (or food) in coming decades. The existence of ample (and growing) reserves, and a history of significant improvements in the technology with which resources are found and extracted, suggests that supply will continue to rise in pace with demand. True resource exhaustion is unlikely not least because, as resources become scarcer, their prices rise, consumption declines, and alternatives that once may have been uneconomic are substituted for the scarce (and expensive) commodity.

Indeed, over the past 50 years these forces have enabled global production of most commodities to rise despite falling, or at best stable, real prices. Production of aluminum, for example, increased fivefold between 1965 and 2007, while that of crude oil, copper, and wheat increased 2.6, 3.2, and 2.8 times, respectively (figure 2.19).
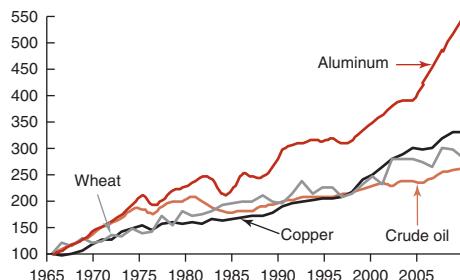
Technological change has kept extraction costs in check even as the quality of mines and wells declined

Although the quality of newly discovered mines and oil wells (and the ease with which they can be exploited) tends to be lower on average than older ones, technological improvements have reduced the cost of producing most commodities over the past 50 years, allowing effective supply to keep pace with demand (box 2.6).

In the case of oil, declining yields from onshore wells pushed exploration into offshore fields that are much more difficult and expensive to exploit. Improved technologies allowed these sources to be exploited profitably even at low prices and even though they are much more challenging to drill than existing wells. As a result, nearly all of the additional increase in global oil production since 1978 has come from offshore wells (figure 2.20).[21]

Figure 2.19 Output of virtually all commodities has increased since 1965

Output volumes, 1965–2007, index (1965 = 100)

Source: World Bank.

Box 2.6   Declining costs of resource extraction
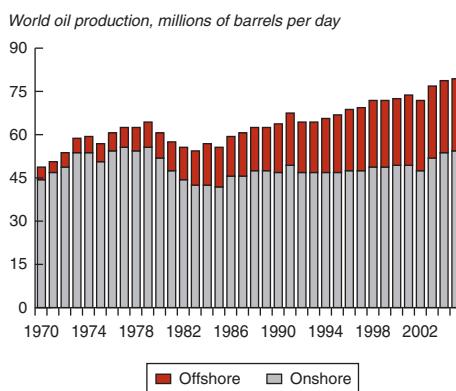
Rising costs for producing a unit of output represent a good a priori indicator of increasing scarcity. The fact that the prices of most commodities have remained stable or declined for most of the past 100 years is therefore a good indicator that at least until 2003 the world was not running out of them (Radetzki 2008a).

Production costs—especially for the marginal producer—are an even better indicator. For the median producer, the real cost of producing a ton of metal between 1985 and 2002 declined by 28 percent for aluminum and copper and by 21 percent for nickel (IMF 2006). For high-cost producers, the decline was the same for aluminum but was only 18 percent for copper and nickel. Those numbers suggest that while new projects to extract copper and nickel were more expensive than preexisting

ones, technological change had nevertheless reduced the costs of production by more than the lower quality of the underlying vein or its remoteness had raised them.

Similarly, the average cost of bringing a new oil field into production declined from $29 a barrel in 1981 to $9 in 1999 (IEA 2001). These cost reductions would be all the more marked if the numbers were expressed in real terms. And although not all of this cost decline can be attributed to technological change, much can (Bohi 1999). Indeed, improvements in extractive technology allowed copper prices to decline more or less continuously between 1890 and 1970 even as the average grade of copper ore in the United States fell from 6 percent to less than 2 percent between 1890 and 1920 and to less than 1 percent by 1960 (Lowell 1970).

Figure 2.20 Almost all of the additional oil supply since the 1970s has come from nontraditional sources

World oil production, millions of barrels per day

Source: Sandrea and Sandrea 2007.
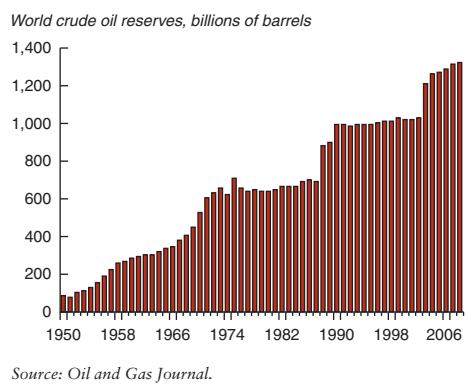
Technology has also helped maintain surprisingly stable ratios of reserves to output

Advances in the technology with which new reserves are discovered and in the efficiency with which the final product is extracted from

ore beds or wells has meant that known reserves of most extractive commodities have increased over time—despite rising production.

Such technological improvements help explain the substantial rise in estimates of reserves over past decades. Two authoritative sources of such data for oil are the *Oil and Gas Journal*, which reports annual estimates of proven reserves (figure 2.21), and the

Figure 2.21 Rather than declining, known oil reserves keep rising

World crude oil reserves, billions of barrels

Source: Oil and Gas Journal.

Table 2.9 Historically, estimates of oil reserves have kept pace with production

Category	Date of assessment				
	1981	1985	1990	1993	1996
	(billions of barrels)				
Cumulative production	445	524	629	699	710
Known reserves	724	795	1,053	1,103	891
Undiscovered conventional resources	550	425	489	471	732
Expected reserve growth	—	—	—	—	688
Estimated total resources	**1,719**	**1,744**	**2,171**	**2,273**	**3,021**
Total resources still in ground (percent)	74	70	71	69	76

Source: U.S. Geological Survey, World Bank calculations.
Note: Estimated total resources is the sum of the first three rows. Total resources still in ground is one minus the ratio of cumulative production over total resources.
— = Data are not available (the concept of reserve growth was first introduced in 1996).
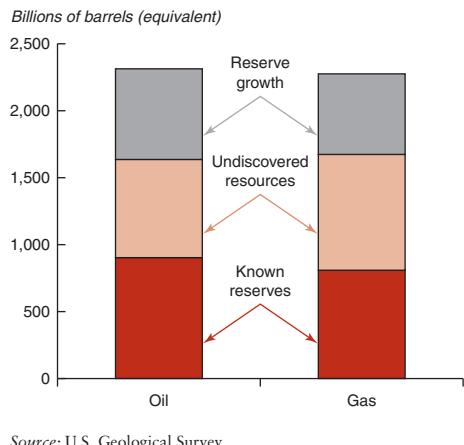
Figure 2.22 Gas reserves are almost as large as oil reserves

Billions of barrels (equivalent)

Source: U.S. Geological Survey.

United States Geological Survey (USGS), which attempts to quantify the resource base of the world's major basins by including assessments of known reserves, undiscovered resources, and reserve growth (table 2.9).[22]

Estimates from the *Oil and Gas Journal*, which include unconventional sources of hydrocarbon fuels such as Canadian oil sands and oil shale, show known reserves rising from just over 600 billion barrels in 1980 to 1.3 trillion barrels by 2008. Furthermore, the reserve estimates for a number of major producers in the Middle East have not changed for years, reflecting both their current size compared with production levels (national-reserve-to-production levels imply adequate reserves for 82 years of production for the Middle East–producing countries) and the fact that for decades these countries have not felt an incentive to explore in more depth the potential for additional reserves nor to verify existing reserve estimates.

On the other hand, according to the USGS estimates (which include undiscovered resources),

total resources increased from 1.7 trillion barrels in 1981 to 3.0 trillion barrels in 1996, so the amount of known oil still in the ground remained stable, at around 70 percent of the total of oil ever found (see table 2.9).

Reserves of natural gas estimates are equally high. According to the USGS, they were at 2.3 trillion barrels of oil equivalent in 2003, almost as large as crude oil reserves (figure 2.22).

Yet, among the key hydrocarbon sources of energy, coal is perhaps the most abundant. As of 2007, the reserves-to-production ratio was estimated at 133 years, according to BP. However, as mentioned earlier, the use of coal will depend on the degree to which new technological advances will be able to ameliorate the environmental concerns.

Finally, expansion of nuclear energy (and other renewable fuel) supplies could lessen the relative importance of hydrocarbon-based fuels. For example, in addition to the existence of abundant feed stocks (at current consumption rates, known uranium reserves are expected to last almost a century), current modern nuclear technologies not only produce much less nuclear waste but also have lower likelihood of accidents compared with nuclear power plants in the past.

Reserves of metals and minerals have also tended to rise with output

The story for metals and minerals is somewhat more nuanced. Reserves expressed as a share of production for a number of metals did decline during the 1980s and 1990s. In part this reflected their relative abundance (reserves exceeded more than 40 years for bauxite, copper, iron ore, and nickel), continued rising production levels, declining prices, and underinvestment. It also reflected the fact that reserves are really a measure of the inventory that producers have readily available for future delivery, rather than a measure of the physical quantity remaining of a commodity. With demand and prices weak, and inventories (reserves) ample, firms had little incentive to invest in additional inventory.

Since 2003, when metal prices began rising and production accelerated, exploration expenditures have picked up (see earlier discussion). For some metals, the reserve-to-production ratios have increased as a result (table 2.10).

Increasing scarcity is unlikely to result in resource exhaustion

Although the history of reserves data suggests that much more oil is likely to be discovered, ultimately the quantity of available oil is finite.

Long before the world begins to run out of oil, however, prices would begin to rise and consumption growth would slow. As a result, alternatives such as natural gas, nuclear power, and renewable energy sources would increase their output share (see earlier discussion on long-term demand). Reserves of crude oil would not decline as rapidly as they would have had prices not increased, and its use would be reserved for those products (plastics, chemicals, and polymers) where few alternatives exist.

Overall, high prices will encourage increased supply and substitution of alternative sources

As indicated earlier, the supply of crude oil is expected to continue to expand over the next few decades, reaching about 112 mb/d by 2030. The supply of other energy sources is expected to increase more rapidly than that for oil, with coal and natural gas projected to increase their shares in total energy supply from 46 percent in 2005 to 51 percent in 2030. Renewable energy sources are projected to see their share in total energy supply rise from about 0.45 percent to about 1.7 percent over the same period (table 2.11).

Biofuels are a source of renewable energy whose share of global liquids production has

Table 2.10   Increased investment has stabilized reserve-to-production ratios for some commodities

Year	Oil	Coal	Bauxite	Iron ore	Copper	Lead	Nickel	Tin	Zinc
Proven reserves									
	billions of barrels			(Millions of metric tons)					
1980	667	—	25,000	250,000	493	127	55	10	162
1990	1,003	—	22,000	150,000	350	70	49	8	147
2000	1,104	984,211	24,000	140,000	340	64	58	7	190
2007	1,238	847,488	25,000	150,000	490	79	67	6	180
Reserves/production ratio									
				(Years of production equivalent)					
1980	29	—	280	280	64	36	77	42	26
1990	42	—	193	178	41	20	53	37	21
2000	40	230	178	132	26	21	46	29	22
2007	42	133	132	79	31	22	40	20	17

Source: Radetzki (2008a, 2008b), British Petroleum, U.S. Geological Survey.

Table 2.11 Oil's share in global energy supply is projected to decline

Energy source	Average annual growth rate (%)		
	1990–2005	2005–15	2015–30
Coal	1.8	3.3	1.5
Oil	1.5	1.7	1.1
Gas	2.3	2.6	1.7
Nuclear	2.1	1.1	0.4
Hydro	2.1	2.7	1.6
Biomass & Waste	1.6	1.5	1.3
Other renewables	3.8	9.0	5.2
Total	1.8	2.3	1.4

	Share in total energy supply (percent)			
	1990	2005	2015	2030
Coal	25.3	25.3	27.8	28.2
Oil	36.7	35.0	32.9	31.5
Gas	19.1	20.6	21.2	22.3
Nuclear	6.0	6.3	5.6	4.8
Hydro	2.1	2.2	2.3	2.3
Biomass, waste	10.3	10.1	9.3	9.1
Other renewables	0.4	0.5	1.0	1.7
Total	100	100	100	100

Source: IEA 2008a.

reached 1.6 percent, largely because of government encouragement (box 2.7). Recent projections suggest that biofuel production will reach the equivalent of 1.95 mb/d of oil by 2013 (a 45 percent increase over 2008), corresponding to 2.1 percent of the projected global oil demand (IEA 2008b; FAPRI 2008).[23] While popular, biofuels are controversial, in part because energy is required to produce energy, so the net addition to the global energy supply from corn-based ethanol is relatively small (Kojima, Mitchell, and Ward 2006), and in part because biofuels yield only limited environmental benefits (Searchinger and others 2008; Fargione and others 2008).

Long-term projections for metals and minerals supplies are optimistic, with expectations that production will increase by a further 3.0 percent a year between now and 2030. At the same time, the trend toward substitution of alternative metal products is likely to continue. For example, copper initially displaced lead in plumbing applications, only to be displaced by

plastics most recently and by sand (fiber optics) in telecommunications applications. And the rapid expansion in demand for aluminum, shown in figure 2.19, partly reflects its increasing use as a lightweight alternative for steel.

Another element of growing importance in the metals markets is the role of recycling, which currently ranges from 55 percent of final demand in the case of lead to about 5 percent in the case of zinc. In developed economies, the proportion of metal available from scrap is higher because of greater inventories embodied in old cars and infrastructure that can be recycled. Future increases in scrap's share of the metal supply in emerging economies will slow the rate of growth of demand for mined metal.[24]

Actual results will depend on policy choices and technological progress

Supply of both energy and metals over the long term depends critically on policies and the pace of technological change. Rising concerns about the environmental consequences of economic activity, notably but not exclusively those associated with climate change, may alter the regulatory environment in important ways.

Emissions abatement policies may restrict the use of hydrocarbons, either through mandates or tax policy that alters the economics of both demand and supply—potentially extending reserve-to-production ratios significantly. Environmental concerns may also restrict the use of extraction and production techniques in other primary sectors in ways that reduce supply or significantly raise production costs. In the IEA's aggressive emissions abatement scenarios, global oil demand falls by 29 percent.

How successful alternative fuels and improved extraction technologies will be in enabling the kind of substitution and increased supply that has been observed in the past will depend on how successful policy is in supporting the creation and diffusion of new technologies. Particularly important for poor countries will be efforts to create affordable

Box 2.7   The rise of biofuel production

While biofuels have been used since the early days of the automobile (Henry Ford's 1908 Model T car was designed to run on maize-based ethanol), limited supplies and the availability of cheaper and more efficient petroleum products diminished the use of biofuels (except for a brief revival during the petroleum shortages of World War II).

In the United States, various amendments to the 1970 Clean Air Act and the 1992 Energy Policy Act were instituted that favored the use of biofuels, especially maize-based ethanol. More recently, the 2007 Energy Independence and Security Act called for a fourfold increase in biofuel production by 2022. As a result, an estimated 25 percent of U.S. maize output in 2007–08 was diverted to ethanol production. In 2007, the United States produced 6.6 billion gallons of ethanol, roughly equivalent to 4.5 percent of its gasoline consumption.

The European Union began instituting mandatory use of biodiesel (mostly from rapeseed oil) as early as 1992. During 2008, its biofuel output was expected to reach 225,000 barrels a day of oil equivalent, representing about 1.5 percent of its crude oil consumption. The European Union has a target 5.75 percent of biofuel use by 2010, whereas a 2008 European Commission directive proposed a 10 percent use mandate by 2020.

In the 1970s, Brazil offered incentives to both sugarcane producers and its car industry to encourage biofuels, and by the mid-1980s, Brazil was producing 3 billion gallons of sugarcane-based ethanol a year, while 90 percent of Brazilian-made cars were designed to run on ethanol. The biofuel program almost collapsed during the 1990s when the price of oil was low, offshore oil discoveries weakened political support for biofuels, and high sugar prices strained the subsidy program and diverted sugarcane to the world market. However, the recent crude oil price spike along with the introduction of "flex-fuel" cars that can use any combination of gas and ethanol has encouraged reliance on ethanol.

In Brazil, the government no longer provides subsidies to either the car or the sugar industry, and the cost of producing ethanol is $1.40 a gallon (very low compared with maize-based ethanol or edible oil–based biodiesel), making the industry competitive even if crude oil prices decline to $40 a barrel (Kojima and Johnson 2005).

and durable solar cells, whereas at the global level efforts to reduce dependence on liquids for transportation—such as a breakthrough in battery technologies or hydrogen generation—will be key.[25]

The structure of energy markets, including the market power and supply decisions made by OPEC may also play a role. The concentration of oil reserves in the hands of a few countries could limit the increase in exploration and production anticipated in response to high prices (box 2.8). OPEC controls three-quarters of the world's oil reserves and dominates export markets.[26] Moreover, a number of producers have made their reserves and fields off limits to private investors; two of these countries (Mexico and Saudi Arabia) officially prohibit the participation of foreign companies, even in a consultancy capacity. In the baseline scenario, more than 75 percent of the increase in global production is expected to come from OPEC member countries. Should they decide to restrict supply, oil prices could be sharply higher in the medium term, and demand much lower. Although such an episode would likely be very painful, ultimately it would speed the switch into alternative energy sources (much as it did in the 1980s) and result in a significant decline in the long-term demand for oil.

Agricultural supply

Increases in cultivated land and yields are likely to result in strong growth in agricultural production and declines in prices from their current high levels, as has occurred during the

Box 2.8   State-owned firms and output efficiency

The rising share of oil reserves and global production controlled by state-owned firms has prompted concerns about future supply. The concerns are about:

- Cartel-like behavior
- The efficiency and responsiveness of state-owned firms to economic incentives
- The denial of access to multinational firms, which have historically been among the most efficient

State-owned firms need not be less responsive or less efficient than privately owned ones. To maximize productivity, however, policy makers need to ensure that government-owned or -controlled firms are not overburdened with very high effective tax rates (including profit remittances to the state and obligations to sell oil at below-market prices) or social mandates that limit the extent to which they are able to invest in new technologies, infrastructure, and fields.

In some countries, such responsibilities have been associated with disappointing results. For example, oil production in República Bolivariana de Venezuela has declined 19 percent since 2000, while it has been stagnant and is now declining in Mexico; both are countries with restrictive legislation or practice.

This contrasts with the 45 percent increase in production and 49 percent increase in reserves (not including the new Tupi field) recorded by Brazil's state-owned Petrobras, which has been encouraged to reinvest profits and hire foreign experts when needed.

past 50 years. However, supply growth will remain sensitive to public policy as well as to investments in infrastructure and research. Furthermore, prospects are subject to significant risks, both upside (rapid technological change) and downside (impacts of environment and climate change and links to oil prices through inputs and biofuels demand).
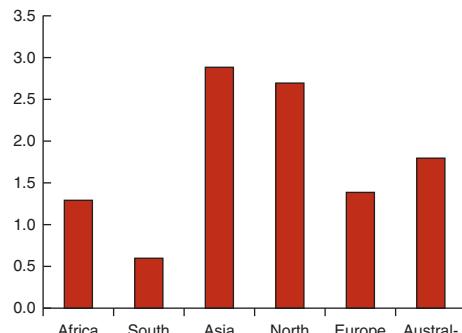
Rising productivity and land under cultivation have boosted agricultural production

The past half century has witnessed a steady increase in agricultural output, both in absolute and per capita terms. Total factor productivity in the agricultural sector has increased by between 2.1 and 2.5 percent each year (Coelli and Rao 2005; Martin and Mitra 2001) over the past 20 years, with the largest productivity gains recorded in Asia and North America (figure 2.23).

Reflecting this strong productivity growth, most of the increase in agricultural output over the past 40 years is attributable to increased yields rather than to increases in the quantity of cropped land (figure 2.24). Similar gains were observed in the livestock sector, with the quantity of meat produced per animal rising by

Figure 2.23 Agricultural productivity has been rising rapidly over the past 20 years
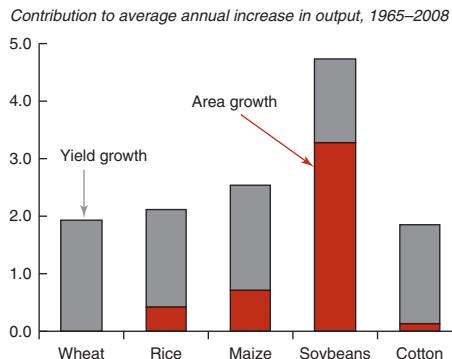
Average, annual percentage change in agricultural TFP, 1980–2000

Source: Coelli and Rao 2005.
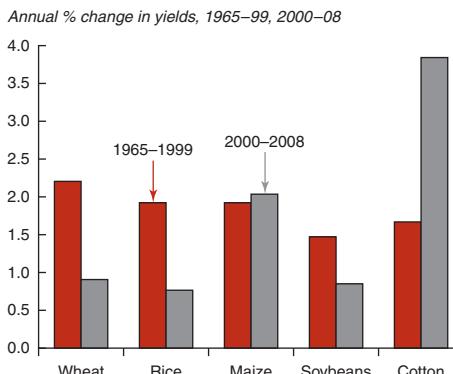
1.7 percent for chicken and 3.5 percent for pork between 1980 and 2005 (FAO 2006). Growth in productivity was responsible for half of the increase in output since 1960 in China and India and between 30 and 40 percent of the increase in other East Asian countries (World Bank 2008). These productivity improvements enabled a decline in the share of labor force employed in agriculture (even as

Figure 2.24 For key crops, most of the increase in output was due to increased yield, not increased area planted

Contribution to average annual increase in output, 1965–2008

Figure 2.25 Yield growth has decelerated recently

Annual % change in yields, 1965–99, 2000–08

Source: World Bank calculations based on U.S. Department of Agriculture data.

Source: World Bank calculations based on U.S. Department of Agriculture data.

production and population increased) and a 25 percent increase in the average caloric per capita consumption in developing countries during the past 30 years.[27]

Among developing countries, crop productivity increases (which control for increases in inputs such as capital and labor) have been driven mainly by the expansion of irrigation, improved seed varieties, and increased use of fertilizer. Worldwide, the area devoted to improved varieties has been expanding continuously. In 2000, high-yielding grain varieties were used on 90 percent of planted area in South and East Asia, up from 10 percent in 1970 (World Bank 2007b). The use of improved varieties is expanding in all regions, including Sub-Saharan Africa, where it now represents almost one-quarter of cropped land.

Fertilizer use is also up. In developing countries it has risen from only 10 percent of global use in the 1960s to 77 percent now (FAO 2008). However, fertilizer use in sub-Saharan Africa is minimal, accounting for less than 3 percent of global use versus a 40 percent share in East Asia.

Most recently, yield growth has declined for some commodities, notably wheat, rice, and soybeans (figure 2.25). While such weakening in yield gains has been attributed to

exhaustion of the gains that came from the introduction of green revolution technologies, persistently low commodity prices have also played a role. Yields gains in other commodities have accelerated because of greater use of genetically modified varieties, which boosted yields in cotton in China and India by 19 and 26 percent, respectively (World Bank 2007b). In addition, maize yields have benefited from the more extensive use of techniques made economically profitable by high prices.

The recent slowing of productivity gains and the spike in food prices have raised concerns about long-term output trends. Fears of a food shortage over the long term are unwarranted, however, given the enormous potential for increasing agricultural output through cultivating unused land and increases in yields.

Although much of the best agricultural land is already in use, significant opportunities for increasing output remain simply by increasing the amount of land under cultivation. About 12 percent of arable land worldwide that is not currently forested could be brought into agricultural production relatively easily (Thompson 2008). Considerable amounts of arable and unforested land in Africa could be brought into production assuming appropriate infrastructure were put into place, while in

Brazil about 180 million arable hectares that are currently used as pasture could eventually be brought into food crops. Sizable amounts of unused or underutilized land also exist in Ukraine and Russia.[28]

Another source of additional farmland is the 18 million hectares in the United States and Europe that have been set aside to reduce supply and keep producer prices high (Normila, Effland, and Young 2004). Recent changes to the Common Agricultural Policy have authorized European farmers to use about half of that land, which could see the amount of land applied to agriculture in Europe rise by 3.5 percent this year. Similarly, the United States recently released 1.5 million acres of the land fallowed by its conservation program.

However, the new land is less productive than existing land and will be more costly to exploit, especially in an environment of high prices for energy and equipment. Furthermore, the expansion of new land (especially in Africa) will require large investments in infrastructure and likely will take decades to expand significantly.
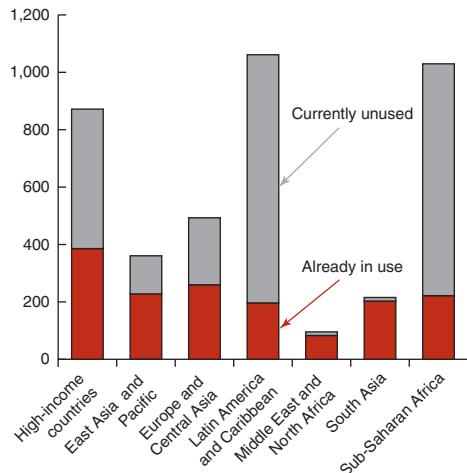
These calculations do not include land that is currently forested but that is suitable for rainfed crop production. Such lands exceed by one and one-half times the total currently used for agriculture (figure 2.26). Bringing all of this land into crop production is probably neither desirable nor likely, but its existence means that the agricultural supply potential of the planet is far from exhausted.

Technological gains are likely to drive continued increases in yields

Much of the increase in agricultural productivity over the past 50 years came about through often scientifically simple improvements in agricultural technique, including increased use of irrigation, fertilizers, and commercially optimized seeds. The adoption of these techniques in the developing world is most advanced in Asia, and its impact on yields is evident in the very strong productivity growth enjoyed by the region over the past half century (table 2.12). Considerable potential exists

Figure 2.26 The stock of unused but potentially arable land is enormous

Millions of hectares of arable rain-fed cropland

Source: Food and Agriculture Organization.

for extending the same kind of gains to other regions, particularly Sub-Saharan Africa and many countries in Europe and Central Asia, that have adopted these techniques less extensively (table 2.13).[29] However, such expansion will require policies to encourage research and

Table 2.12 Potential gains from extending the green revolution remain large

Region	Actual production	Potential production	Poential gain	Potential gain (Percent of current production)
	(Millions of metric tons)			
High income	423	440	17	3.9
East Asia and the Pacific	501	508	7	1.4
Europe and Central Asia	130	191	60	46.5
Latin America and the Caribbean	140	161	21	15.0
Middle East and North Africa	50	57	7	14.3
South Asia	250	259	9	3.7
Sub-Saharan Africa	56	81	25	43.9
Total	1,551	1,697	146	9.4

Source: World Bank.

Table 2.13 With some exceptions, yield growth for key agricultural commodities has been highest in South and East Asia

Category	Wheat	Rice	Maize	Soybeans	Cotton
	(Annual percent change in yields, 1965–2006)				
World	2.0	1.7	1.8	1.5	1.7
Income level					
High income	1.6	0.9	1.6	1.3	1.6
Middle income	2.0	1.9	2.6	2.8	2.3
Low income	2.6	2.0	1.1	1.4	3.1
Region					
East Asia and the Pacific	3.8	1.8	2.9	1.9	2.7
Europe and Central Asia	0.1	0.0	0.8	−0.1	0.7
Latin America and the Caribbean	2.0	2.5	2.6	1.3	2.1
Middle East and North Africa	2.5	1.2	2.7	3.0	1.2
South Asia	2.6	2.1	1.6	1.5	3.1
Sub-Saharan Africa	2.2	0.7	0.7	3.2	1.6

Source: World Bank calculations based on U.S. Department of Agriculture data.

development (R&D) and extension directed particularly at small-holders. If these countries were to adopt more intensive techniques like those used in Asia and elsewhere, global production of cereals could be increased by as much as 9.4 percent, enough to meet several years' worth of increasing global demand.

Based on similar observations, the FAO in its most recent long-term forecasting exercise expects global agricultural production to rise by 1.5 percent a year for the next three decades, somewhat slower than over the past 50 years but still significantly faster than projected population growth.

Prospects will depend on a number of uncertain factors
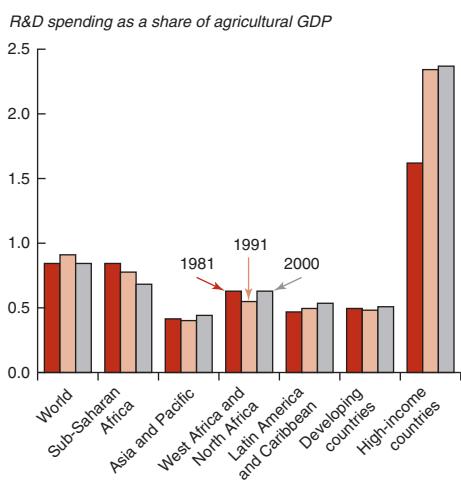
Of course, the long-term supply prospects for agricultural commodities are far from certain. Past productivity gains are an imperfect indicator of what might be expected in the future. Moreover, a number of looming issues in the global economy could affect supply conditions in important ways.

Public investment in infrastructure and R&D will be critical to realizing potential productivity gains and to ensuring that such gains benefit the poor. About 95 percent of developing-country R&D expenditures in agriculture is publicly funded. As a result, this R&D is mainly dependent on administrative decisions, which may or may not respond to market conditions. Therefore, it is imperative that efforts to increase food production in low-income countries should be part of a comprehensive effort that includes investment in R&D as well as dissemination efforts.[30] Notwithstanding the swings in the prices of agricultural products, agricultural R&D has remained remarkably stable as a share of agricultural value added, at about 0.85 percent between 1981 and 2000. Moreover, developing countries are spending much less on R&D than are high-income countries, both in absolute terms and as a share of agricultural GDP (figure 2.27).

Recent advances in biotechnology may offer developing countries additional improvements in yields through the introduction of new plant varieties with heightened resistance to drought, rain, diseases, and pestilence—characteristics

Figure 2.27 Developing countries spend less on agricultural R&D than high-income countries

R&D spending as a share of agricultural GDP

Source: Pardey, Alston, and Jones 2008.

Box 2.9 Genetically modified crops—the next green revolution?

The most important recent technological break-through in agriculture has been the development of genetically modified (GM) crops. These crops tend to be more disease resistant than traditional varieties and lower cost because of increased yields and the need for fewer pesticides.

Originally developed in the United States, they have spread to many countries, including many in the developing world. In 2006, farmers in 22 countries planted GM seeds on 100 million hectares, corresponding to about 8 percent of global crop area (World Bank 2007b). Although GM crops were initially taken up by commercial farming, increasingly small farmers are now using the technology.

Yet GM crops have not been adopted widely in developing countries despite considerable potential in crops, such as bananas, that suffer large losses from disease. This lack of uptake results partly from concerns over environmental and food safety risks and partly from private producers of these seeds that are unwilling to allow them to be distributed in countries where they are unable to enforce their property rights.

Some countries (such as China) have gotten around this problem by developing their own varieties in public research agencies that they make available to small-holders. Other countries (such as Burkina Faso) have entered into agreements with private companies that allow them to develop GM seeds to be used by small-holders under a general licensing agreement.

The current generation of GM technology has concentrated on internalizing resistance to diseases and pests. Research in the pipeline, however, focuses on developing varieties with other characteristics such as increased tolerance to drought, wetness, and temperature, as well as slowing product deterioration. As a result, whereas the first generation of GM crops was tailored to the agriculture of the developed world, the second generation may be better suited to resolving the kinds of problems found in the production systems of developing countries.

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that might be especially desirable during a period of climate change. However, like the chemical-based pesticides and fertilizers that helped generate substantial improvements to yields during the green revolution, they may also carry with them hidden risks such as cross-plant genetic contamination and potential health impacts because of unexpected interactions with human biology. Transparent and cost-effective regulatory systems that inspire public confidence will be needed to evaluate risks and benefits on a case-by-case basis.

Moreover, the diffusion of these innovations into developing countries has been uneven, partly because of the high cost of these seeds and their incompatibility with traditional agricultural methods and partly because of the unwillingness of seed companies to market them into countries with weak regulatory frameworks and intellectual property regimes (box 2.9).

In the long term, climate change and water scarcity could have significant impacts on yields

Global temperatures are expected to rise by 0.4 degrees Celsius between now and 2030. This could lead to an overall decline in agricultural productivity of between 1 and 10 percent by 2030 (compared with a counterfactual where average global temperatures remained stable), with India, Sub-Saharan Africa, and parts of Latin America being most affected (see next section).

Over the longer term, the impacts of climate change could be much more serious, with agricultural productivity in many developing regions, notably Africa, potentially declining by as much as 25 percent as compared with a baseline of temperatures remaining stable at their 2030 levels (Cline 2007).

Sustainable water supply forms another longer-term risk facing future agricultural

supply. About 85 percent of water use in developing countries goes to agriculture, with less than one-fifth of the cultivated area in developing countries producing two-fifths of the value of agricultural output (World Bank 2007b). Already 15–35 percent of water withdrawals worldwide are not sustainable, in the sense that the amount being withdrawn from aquifers or rivers exceeds the rate at which the source is naturally resupplied. Perhaps the most notable example of unsustainable use was the rapid expansion of cotton production in the Aral Sea basin, which has resulted in the disappearance of 90 percent of the sea's surface area and a broadly based environmental disaster. Improving water management will require countries to take more responsibility for shared water resources, ensuring that they are priced appropriately and that adequate water management institutions are put in place to prevent a recurrence.

Projections

As anyone following commodity markets over the recent past can attest, forecasting future demand, supply, and prices in commodity markets is—at best—a hazardous undertaking. While some commodities, especially extracted commodities such as oil and metals, may become more scarce in coming decades, there is little likelihood of a serious shortfall in supply. Nevertheless, the overall balance between demand and supply is very uncertain. It will depend on a wide range of factors, including climate change, productivity developments in commodity supply and commodity demand markets, GDP and population growth, and the policy environment. The remainder of this chapter attempts to quantify the range of possible outcomes in commodity markets.

Agricultural prices are likely to decline over the long term

As discussed in chapter 1, agricultural prices are forecast to decline over the next two years but remain well above the levels of the first half of this decade. While the long-term outlook for

agricultural prices is particularly uncertain, this decline is expected to continue through the forecast period.

As outlined earlier, the growth in demand for agricultural products is expected to be somewhat weaker in the next several decades because of slower population growth and the limited impact of higher incomes on food demand. On the supply side, the availability of additional land and further productivity improvements should enable production to keep pace with demand even as the agricultural sector continues to release labor to work in other parts of the global economy.

Based on long-term forecasts of population and incomes and a continuation of the historical experience of rising productivity, annual demand and supply are projected to grow by about 1.7 percent on average between 2008 and 2030. This would imply a continued decline in agricultural prices of about 0.7 percent a year relative to manufacturing prices and the share of the unskilled labor force working in agriculture declines by 6 percentage points (table 2.14).

One particularly difficult issue in the long-term forecasts for agricultural production and prices concerns the impact of climate change. Human-induced global warming has begun to change growing conditions around the world, particularly in developing countries. In many countries, and for many crops, ideal growing temperatures have been surpassed, stressing the growth of plants. Perhaps more significantly, more-extreme water-related events are occurring, including more periods of persistent droughts, drier soils from higher temperatures, changing patterns of rainfall (for example the monsoon arriving earlier or later), and more severe rainfall falling in shorter periods. These climate events can reduce immediate production and impair agricultural development, as poor farmers faced with drought may be forced to sell or eat animals, while severe storms damage other types of capital such as irrigation canals.

Forecasts of the rise in temperature and the impact on agriculture over the next two decades are extremely uncertain. Lobell and others (2008) anticipate that southern Africa,

Table 2.14   Agricultural sector simulation results, 2005–30

		Results in 2030 by scenario		
	Baseline	I. Global productivity slowdown	II. Developing-country slowdown	III. Strong demand for biofuels
Total factor productivity[a]				
Developing countries	2.1	1.2	1.2	2.1
High-income countries	2.1	1.2	2.1	2.1
Output[a]	1.7	1.9	1.9	2.4
Prices[a]	−0.7	0.3	−0.1	−0.5
Employment (unskilled in develoing countries)[a]	−6.0	−4.8	−5.3	−5.4
Change in real income[b]		−3.4	−2.3	−1.8

Source: World Bank ENVISAGE model.
a. Change in share of total employment between 2005 and 2030.
b. Percent of base income.

South Asia, and parts of Latin America will rank among the hardest-hit areas, with maize production in southern Africa, for example, potentially falling as much as 30 percent below what it would have been without climate change by 2030.

Our base case in table 2.14 assumes significant damage from climate change over the long run. However, over the projection period 2030, the impacts are relatively modest. To date, global temperatures have risen 0.8° C since 1900 and are projected to rise a further 0.4° C by 2030 (Cline 2007). Scaling Cline's 2080 estimates of damage to agriculture by the estimated temperature change in 2030 leads to an overall decline in agricultural productivity of between 1 and 10 percent by 2030 (compared with a future where average global temperatures remain stable), with Canada and Europe least affected and India, Sub-Saharan Africa, and parts of Latin America most affected.[31] Were there to be no climate change between now and 2030, global agricultural productivity would be nearly 4 percent higher, and the world price of food 5.3 percent lower.

These projections are subject to other important uncertainties. In particular, the projected productivity gains are contingent on policies being put in place that permit productivity gains to continue rising as they have in the recent past. The policies include the removal of trade distortions, progress to limit the increase in carbon emissions, construction of infrastructure, and R&D investments in developing countries with lagging productivity.

As shown in Scenario I, should global agricultural productivity rise by only 1.2 percent a year on average instead of the 2.1 percent projected in the baseline, then prices, rather than declining, can be expected to rise by as much as 0.3 percent a year relative to manufactures—reversing the trend decline of the past 100 years. Reduced productivity includes increasing the quantity of cereal required to produce meat and as a result total agricultural output rises, even though final consumption declines by 0.3 percent per annum. Final demand does not decline by more, because lower productivity is partially compensated for by increased inputs, including a 1.2 percentage point increase in the share of agricultural workers in the labor force compared with the base case. Overall, by the end of the projection period, real incomes in developing countries would be lower by about 3.4 percent compared with the baseline.

Consistent with Scenario II, should the weaker productivity be limited to developing countries, in part because climate change is expected to affect them more adversely and perhaps because policy fails to step up infrastructure, R&D, and dissemination of investments, the overall impact in markets would be attenuated somewhat. Prices would fall by only 0.17 percent a year (compared with a decline of 0.7 percent a year in the base case), and agricultural sector employment would rise

slightly compared with the baseline. But developing countries, especially those whose populations continue to grow relatively rapidly would become much more dependent on high-income countries for their food supply.

Scenario III examines the potential impact of biofuels production on food prices. While biofuels have made a major contribution to the rise in food prices over the past two years, their impact in the future is difficult to estimate. The decline in oil prices has already contributed to the decline in food prices via its influence on biofuel demand for food crops. Should oil prices remain moderate as projected (see below), the influence of biofuels on food prices should also stabilize. If technological progress improves the attractiveness of nonfood biofuels inputs, the link between oil and food prices may be broken. Alternatively, biofuels could have a significant impact on food prices if oil prices remain high or the cost of biofuels production declines.

The simulation reported in table 2.14 explores the implications of a permanent increase in the rate of growth of demand for food products as source material for biofuels. Under this scenario, global demand is expected to grow twice as fast as it does in the baseline. In this instance, agricultural employment increases by 0.6 percent of the labor force, output of other grains (including maize) rises by 350 percent, but food prices increase by much less, due to substitution away from these products.

Over the long run oil prices are expected to stabilize (in real terms) at around $75

As described in chapter 1, despite rather recent volatility, oil prices are not expected to fall much below $60 in the medium term. Oil demand should pick up as the global economy recovers, but supply conditions should also have recovered, enabling the real price of oil to rise gradually to around the $75 range. This forecast assumes that, in the absence of policy changes, demand for energy will continue to rise faster than GDP. The actual rate of increase of demand and how it is met will depend critically on policies, technological change, and the level of reserves.

The simulations presented in table 2.15 illustrate the potential impacts of four alternative scenarios.

Table 2.15   Energy sector simulation results, 2005–30

			Results in 2030 by scenario			
	2004	Baseline	I. High demand	II. Carbon tax	III. Alternative energy	IV. Weak oil supply
Energy demand (average annual percent growth)						
Coal		4.9	5.7	2.2	2.5	5.4
Oil		1.6	1.8	1.6	1.4	0.2
Natural gas (excluding distribution)		1.3	1.8	1.0	−0.2	1.3
Total		3.0	3.5	1.7	1.6	2.9
Prices ($ per ton of oil equivalent)						
Coal	59	60	62	55	54	60
Crude oil	256	428	475	420	219	760
Natural gas	157	288	306	281	231	296
Production level						
Coal (metric tons)	5,680	18,312	21,907	10,184	10,185	19,993
Crude oil (mbd)	75	113	117	112	78	78
Natural gas (1e12 BTU)	59,435	82,951	93,105	76,020	56,156	84,356
Share in total energy supply (percent)						
Coal	33.4	53.9	57.2	37.7	42.3	63.1
Oil	47.3	33.5	30.5	46.2	45.6	23.8
Natural gas	19.3	12.5	12.3	16.1	12.1	13.0

Source: World Bank ENVISAGE model.

In Scenario I, energy demand rises 0.5 percent faster (3.5 percent versus 3.0 percent) than in the baseline each year because energy-saving technologies and conservation measures fail to come onstream as rapidly as anticipated.[32] This results in higher prices for all forms of energy. The higher price of energy means that global GDP grows somewhat more slowly, with the cumulative impact on the level of output, compared with the base case, equal to 2.7 percent in 2030. Most of the increase in demand is concentrated in the use of coal (in absolute and percentage terms). Relatively higher supply elasticities for coal and gas lead to higher volume shifts for these two fuels, whereas the tighter supply of the oil markets leads to a concomitantly higher price rise for oil and a relative shift away from oil consumption.

Scenario II examines the impact of a more concerted effort to limit carbon emissions. In this scenario, it is assumed that policies are put into place beginning in 2011 that are consistent with achieving a target concentration of 500 parts per million of carbon dioxide in the atmosphere by 2050. This implies a shadow price of carbon of $21 per ton of CO_2 in 2030 and a stock of emissions of around 11 gigatons of carbon in 2030, a reduction of 32 percent from the base-case level.[33]

Such a carbon price would lead to a significant drop in energy demand, with coal taking the largest hit (from 4.9 percent to 2.2 percent). Coal would be most affected because it releases the most carbon emissions per unit of equivalent energy. But a more significant factor is the large wedge in the price of coal (per unit of energy) compared with oil and gas. In other words, the uniform price of carbon has a much larger percentage increase on the price of coal than on oil and natural gas. As a corollary, the countries with the greatest coal consumption experience the largest decline in energy demand.

Scenario III illustrates a situation where a combination of policies to promote conservation, increase fuel efficiency, and invest in alternative sources of energy such as solar and wind power succeeds in reducing the demand for traditional fossil fuels. In this scenario, the global energy demand is lower by about the same amount as in the carbon tax scenario, but prices of crude oil and natural gas are much lower. By the end of the period, coal consumption is down by 45 percent from the base case (from 4.9 percent to 2.5 percent), while natural gas and crude oil are 30 percent lower than they are in the carbon tax scenario.

The price of various forms of energy in the long run is little different from the baseline scenario because the additional carbon tax induces sufficient reductions in energy demand to lower the final price by almost as much as the tax itself.

Finally, under Scenario IV, oil reserves deplete more quickly than in the baseline scenario, either because current estimates of reserves prove too optimistic or because additional technology improvements do not materialize. In this scenario, oil supply, instead of growing at about 1 percent a year, is broadly stable, with production of about 78 mb/d in 2030. Oil prices are about 80 percent higher and demand 32 percent lower than in the baseline, with the difference being made up by about a 9 percent stronger growth in consumption of coal.

The price of oil in this scenario rises to about $122 a barrel but not higher because of increased supply from alternative energy sources induced by the higher prices.

Overall, the impact on global growth in Scenario IV would be limited. By 2030 global GDP would be only 1.4 percentage points below the level in the base case. The bulk of this decline would be felt by the middle-income developing countries, where energy intensities are highest.

Taken together, these scenarios illustrate the considerable uncertainty surrounding the assumptions of the base case. Nevertheless, even the pessimistic scenarios have a limited impact on global welfare. Over the long run, economies have considerable potential to adjust to higher oil prices through switching to other energy sources and conservation, thus moderating the impact of higher oil prices on growth and poverty reduction.

Conclusions

The almost unprecedented duration and size of the recent commodity price boom gave the impression, at least as can be judged by the popular press, that the world is running out of natural resources. This is not true. A combination of circumstances have shaped this boom: an unusually long period of above-potential growth among developing countries; a long period of low oil and metals prices that eroded supply capacity, in part driven by the expansion of net oil exports from the transition economies of Eastern Europe once domestic prices increased to world levels; the depreciation of the dollar; the increase in subsidies for biofuels that diverted resources from growing crops for food; declines in grain stocks; increasing demand from developing-country consumers of oil and raw materials; and continued global economic expansion in the face of rising commodity prices. As the rapid decline of commodity prices since mid-2008 attests, the current boom is best understood as yet another cycle in a long history of commodity price cycles.

This does not mean that commodity prices are necessarily going to fall all the way back to the levels of the 1990s, nor are they likely to return to recent heights when demand recovers. In the oil and metals markets, it will take time to build the machines and train the engineers required to find and exploit new resources, and this kind of exploration will require that oil prices be maintained at around $75 a barrel in real terms.

However, in the long run, it will be difficult to sustain very high oil prices (in excess of $100 a barrel) for a lengthy period, because alternative sources of oil (such as Canadian oil sands and more-expensive offshore sources) and substitutes for oil (such as solar, wind, and biofuels) would become profitable, while the potential for reductions in demand from conservation remain large. On average, the weakening of global demand and increased supply have caused metal prices to fall by more than 40 percent from their recent peaks. Nevertheless, they remain 2.5 times higher than they were in the 1990s and even though they are projected to decline a further 20-odd percent (see chapter 1) in 2009, these prices are high enough to ensure that sufficient further supply will be forthcoming over the medium term. In the longer run, metals demand should slow as Chinese metal intensities first stabilize and then fall, both because of lower investment rates and because of a higher share of services in Chinese GDP.

In agriculture, slower population growth should slow demand for food, while productivity growth should be sufficient to ensure future supply at the global level. However, prospects for individual countries are less clear. Yields have been declining among many of the countries that had the strongest gains from the Green Revolution, unless they step up investments in infrastructure and R&D and remain open to new technologies, agricultural productivity growth in developing countries may decline. Moreover, for those countries with relatively high population growth, many of which are in Africa, failure to make investments to boost agricultural productivity may see them cease to be self-sufficient and forced to import increasingly expensive food from high-income countries where agricultural productivity continues to rise much faster than the population.

Central to these forecasts, and particularly uncertain, are the prospects for technological progress. Technology will determine the availability of oil reserves and the costs of extraction, the price levels at which different oil substitutes become profitable, the potential for economizing on scarce oil and metals, and the likelihood of rapid increases in crop yields. Making assumptions for technological progress 25 years in the future is a perilous undertaking. Most likely to be missed are technological surprises that enable rapid increases in productivity. So in a sense these forecasts are conservative. But even without counting on technological miracles, under reasonable assumptions the supply of commodities is likely to increase rapidly enough over the long run to meet anticipated increases in demand at prices that are lower than the current levels.

Notes

1. The 1916–17 boom was associated with the First World War. Similarly, all three booms since 1945 have been associated with a major, though geographically confined, military conflict (Korea, Vietnam, and Iraq) and heightened geopolitical uncertainty, which translated into market fears about the availability of supplies.

2. However, real prices of domestic food commodities in developing countries increased by an additional 28 percent during the first three quarters of 2008.

3. This capacity was partly and temporarily utilized during the time of the first Gulf war, when 5 mb/d of capacity was shut in Iraq and Kuwait.

4. OPEC surplus capacity typically refers to capacity that can be brought onstream within 90 days. Here, OPEC's surplus is conservatively estimated as that lying dormant from previously higher (though not peak) levels.

5. Although less important than in the past, these firms still account for almost 50 percent of global upstream spending.

6. Upstream expenditures and the price of crude oil are highly correlated; the correlation coefficient between spending per barrel of oil and the price of oil is 0.95.

7. The balance of supply was made up from OPEC natural gas liquids (1.8 mb/d); non-OPEC, non-FSU production growth (3.1 mb/d); and rising OPEC capacity.

8. The pickup in oil demand was led by China, where demand for electricity had outstripped supply from public sector utilities, resulting in a spike in the private use of diesel oil for electrical generators.

9. Private communication with David Humphreys, chief economist at Norilsk Nickel.

10. The contrast between inputs in metal and inputs in the agricultural sectors is noteworthy. In agriculture, the same type of machinery can be used for virtually all crops in all countries of the world. However, machinery in metals is custom-made for each mine.

11. *Jatropha curcus L.* is a bush or small tree used as a hedge by farmers in developing countries because it is not browsed by animals. It produces a fruit with high oil content, suitable for biodiesel production.

12. The poor harvests in Australia come against a backdrop of an unprecedented, decade-long period of unusually low rainfall and record-high temperatures, which are at least partly a result of climate change. These events have severely stressed water supplies in the east and southwest of the country (http://www.bom.gov.au/climate/drought/drought.shtml).

13. When hoarding and real-side speculation occur in response to expectations of a future shortfall, stocks (and prices) tend to increase in the short run (relative to a baseline where the behavior did not occur). In turn,

this ensures that future stocks are higher and future prices lower than they would have been otherwise. At the same time it encourages producers to increase output, thereby accelerating a return to more normal prices.

14. In member countries of the Organisation for Economic Co-operation and Development, high prices induced a substantial switch away from oil and toward coal, natural gas, and nuclear power for electrical generation.

15. Exceptions include nickel, which has been rising in Brazil; copper, which has been rising in India; and aluminum, which has been rising in South Africa.

16. Although developing countries now account for almost half of the world's metal consumption, it should be noted that their average per capita use of metals is only a fraction of that in the developed economies.

17. These income levels correspond roughly to the midpoint in the World Bank's official range for lower-middle-income countries and close to the upper range for upper-middle-income countries.

18. At incomes of less than $1 a day (or annual per capita income of less than $350), consumption of basic staples such as maize, wheat, and rice tends to increase along with income. At higher incomes, per capita consumption of staples tends to remain stable, so the growth of staples consumption falls below income growth.

19. The income elasticity for meat products exceeds 3.0 for per capita incomes below $4,500 and declines to 2.6 for countries with incomes in excess of $25,000.

20. When oil costs $120 a barrel (as it did in early 2008), wholesale gas prices would be around $3.25 a gallon in the United States, and the fuel-equivalent ethanol price would be $2.44 a gallon. At that price, ethanol production from maize is profitable as long as maize prices do not exceed $245 a ton, which was more or less the price of maize at that time.

21. Global production from onshore sources in 2004 was 54 mb/day, almost identical to the 1973 level.

22. Reserve growth refers to the increase in the estimated sizes of fields that occurs as oil and gas fields are developed. In the United States, the world's most intensely explored country, reserve growth is a major component of remaining oil and gas resources. It is hypothesized that reserve growth can occur worldwide in similar proportions as exploration of new fields matures. Undiscovered resources, on the other hand, are resources postulated from geologic information and theory to exist outside of known oil and gas fields (Kleitt and others 2000).

23. If all announced projects materialize, potential capacity could reach 3.3 mb/d.

24. Concerns over the environment are likely to be another constraint in future mining activities.

25. Like electric cars, hydrogen-powered vehicles allow the consumption of the power and the consumption of the propellant to be geographically separated. For electric cars, the energy source (be it coal, nuclear, or solar) that powers the car is consumed at the power-producing plant, whereas for hydrogen-powered cars (as distinct from hydrogen fuel-cell cars), it is expended in the plant that separates the hydrogen from water. Thus a hydrogen-powered car can be considered just another form of battery-powered car.

26. If OPEC is considered as a single producer, then both oil-export and oil-reserve markets are highly concentrated (Herfindahl index of 0.53 and to 0.57, respectively). However, if the member countries were to act independently, the market would not be particularly concentrated (Herfindahl index of 0.07 and 0.09, respectively).

27. Specifically, average caloric consumption in developing countries rose from 2,110 kilocalories per person per day to 2,650 (FAO 2006, p. 3).

28. Much of the underutilized land in the former Soviet bloc was cultivated in the Soviet era but was left to fallow when price signals rather than command and control began to determine land use decisions.

29. The potential gains in the table reflect estimates of the increase in production that could be expected if fertilizer production in countries in each of these regions were brought up to the 75th percentile level—roughly the level in Pakistan. In contrast with the calculations of Coelli and Rao (2005), which yield broadly similar results, these control for climatic conditions, income per capita, and soil conditions.

30. Investment expenditures in extractive industries are highly correlated with the respective prices. For example, when crude oil prices declined by 50 percent from 1980 to 2000, investment expenditures followed suit.

31. These estimates do not include the carbon fertilization effect (on which scientific evidence is mixed), whereby increases in atmospheric carbon concentration enhance plant growth The simulations may be overestimating the negative impacts. The Cline estimates have been scaled assuming linearity, but some evidence suggests that the actual damage functions are nonlinear. These simulations may therefore overestimate damages in the short run and underestimate them in the long run.

32. The baseline scenario incorporates an increase in efficiency of energy use of 1 percent a year. This represents the culmination of new scientific advances (for example, the use of carbon fiber materials instead of metals); the replacement of old, more-energy-intensive capital with new capital; and changes in behavior (for example, switching from large vehicles to smaller ones).

33. The questions regarding who should bear the burden on reducing carbon emissions are critically important but are set aside in this simulation to investigate the impact on overall demand and prices. The revenues generated by the price of carbon are assumed to be recycled domestically with no international transfers.

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3

Dealing with Changing Commodity Prices

As discussed in chapter 2, the rise in primary commodity prices between 2003 and mid-2008 was much larger and more sustained than those of earlier decades. Although commodity prices have fallen sharply from their recent highs, they remain well above their levels in the early 2000s and are projected to remain high relative to their levels in the 1990s for a significant period of time.

The boom in commodity prices has generated dramatic transfers of income within and among countries. While high commodity prices have imposed a severe burden on many consumers, they have also created significant opportunities for producers. The short-term macroeconomic, balance of payment, inflationary, and growth implications of these higher prices were discussed in chapter 1, while long-term prospects for commodity markets were discussed in chapter 2.

This chapter focuses on the challenges that prolonged periods of high and then low commodity prices pose for developing countries. In particular, it evaluates the policies adopted by both commodity-producing and -consuming countries during this boom, as well as the potential role of the international community in managing the commodity price boom to maximize the development impact and protect the most vulnerable.

The main messages arising from this analysis are:

Commodity dependence need not hurt long-term growth. Indeed, high commodity prices provide a development opportunity but only if the proceeds are not squandered and if the right policies are adopted.

- Although commodity-dependent economies have, on average, grown more slowly than more diversified economies, for most economies dependence on commodities is the result of slow growth, not the cause. Several countries have achieved rapid development based on the exploitation of natural resources.
- To achieve the growth potentially inherent in commodity riches, countries need to implement policies that minimize the potential disruptive effects of volatile export revenues, exchange rate appreciation that can erode the competitiveness of manufacturing, and incentives for rent seeking and corruption.

Higher food prices, while damaging to urban consumers, may help lower poverty in the long run.

- Higher agricultural prices provide additional income in the rural economy, where more than 75 percent of the world's poor live. Some of this income will go directly to

farmers, potentially helping them move beyond precarious forms of subsistence agriculture. Another part will go to raise incomes of farm workers and increase demand for related services such as transportation, inputs, and processing.

- For these potential gains to be realized government will need to pursue policies that invest in infrastructure, including roads and marketing institutions to move farm products to markets and inputs to farmers.

Resource-dependent developing countries have done a better job than in the past of managing the macroeconomic consequences of rapidly rising foreign currency earnings.

- Government spending in most countries has responded more prudently to increased commodity revenues than in the past. Instead of spending temporary windfall reserves, many governments have accumulated foreign reserves, and created and augmented sovereign wealth funds. As a result, real effective exchange rates in most resource-rich countries have appreciated by less than in the past. Finally, resource-dependent countries are less corrupt and more transparent when compared with more diversified economies than in the past.

- As a result, the nonresource sectors of these countries are more likely to have avoided a large deterioration in international competitiveness, and a strong procyclical cut in spending is less likely to accompany the recent decline in commodity prices. Improvements in governance may also have contributed to these developments and have increased the chances that revenues are being allocated toward projects that enhance the long-term development potential of countries.

- Although in aggregate the story is encouraging, some countries are experiencing strong inflationary pressures that may reduce their competitiveness and the sustain-

ability of growth. Others that lack a long history of oil or mineral development have pursued less prudent policies that may have sewn the seeds of future difficulties.

High food and oil prices may have increased the number of people living in extreme poverty by between 130 and 150 million.

- High food and fuel prices have implied enormous transfers in incomes between producers and consumers. High fuel prices have reduced real incomes in oil-importing developing countries by some $162 billion dollars but increased them by some $400 billion in oil exporters. With the exception of a few import-dependent countries, food is mainly consumed in the same country where it is produced. As a result, the redistributive impact of high food prices is mainly between domestic producers and amounted to some $277 billion between January 2007 and August 2008.

- Within countries, the largest poverty impacts have been among urban populations, which have not benefited from increased earnings to the same degree as the rural population. Impacts were also larger in countries with fewer domestic alternatives to internationally traded grains, whose prices rose the most (maize, wheat, and rice).

To mitigate the poverty impacts of higher food prices in a fiscally responsible way, countries need to respond with targeted measures. The record so far is mixed at best.

- Strict targeting of assistance programs is essential to reach those most affected while limiting the strain on fiscal accounts. The costs of fully compensating people in developing countries for higher food and fuel prices would be prohibitive both to countries and to the aid community. Costs range between 6 and 27 percent of the GDP of individual countries.

- Many policies imposed by countries so far (lower taxes, export restrictions, and price subsidies) have been costly and have impeded adjustment. Increased fiscal outlays have exceeded 2 percent of GDP in many countries. Moreover, policies designed to keep domestic prices low have exacerbated and prolonged high market prices by reducing incentives to increase production and reduce consumption.

- Countries should seek to expand or create more-targeted safety net programs. Food subsidy programs, fuel subsides, and tax exemptions tend to be regressive, with most of the benefits accruing to the nonpoor. In contrast, well-targeted schemes, involving some form of means testing or selection mechanisms such as geographic targeting or a work requirement, are most successful in reducing costs and concentrating benefits among the poor.

Some modest steps have been taken, but the international community can do much more to mitigate the impact of high prices and reduce the likelihood of further spikes and new commodity booms.

- Given the magnitude of the problem, international efforts to assist the poor need to focus on the most vulnerable. One approach would be to direct aid to assisting the extreme poor in IDA-eligible countries (countries whose poverty and lack of access to market-based finance make them eligible for concessional lending and grants from the World Bank Group). The cost of compensating the poor in these countries for the rise in food prices between January 2005 and December 2007 would be about $2.4 billion.

- International agreement is needed to place more effective restrictions on the use of export bans, which have become too common. These bans have increased global food price volatility and reduced confidence in the reliability of world food markets, with potentially long-term impacts on food policies.

- Efforts to improve information about and coordination of global grain stocks could reduce the probability of another food crisis. Similarly, the effectiveness of humanitarian aid would be enhanced if the World Food Programme (WFP) were provided with a stable source of financing and a line of credit that would allow it to respond rapidly to emergencies.

- Biofuels policies that subsidize production, impose high tariffs, and mandate consumption need to be reconsidered in light of their impact on food prices and their trade-distorting effects. Such policies have led to rapid expansion of biofuels production from food crops, such as maize and vegetable oils, and have contributed to higher food prices as well as to environmental degradation. These policies have also reduced opportunities for lower-cost developing-country producers to expand production and exports.

- A successful conclusion to the World Trade Organization's Doha Round will not reduce food prices in the near term, but it does offer the prospect of greater discipline in agriculture and more-rapid income growth in developing countries.
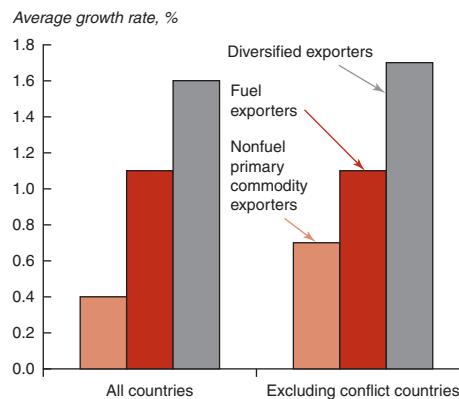
The remainder of this chapter is organized as follows. The next section considers the perspective of commodity-producing countries, evaluating the extent to which their policies have succeeded in coping with volatility from commodity prices, thus avoiding some of the pitfalls that have typically caused such countries to grow less quickly than resource-dependent countries. The following sections examine the boom from the perspective of consumers, focusing on the impact of high prices on the poor and the effectiveness of the antipoverty measures imposed and their impact on long-term adjustment. The chapter then considers the international response to the rise in food prices and sets out some concluding remarks.

Commodity dependence and growth

Economic dependence on primary commodities has been long associated with slow growth in development.[1] While commodity booms are often associated with a pickup in growth, countries heavily dependent on the exports of commodities have slower growth over the long term than those with more diversified exports (the so-called resource curse). This section argues that this relationship should not be interpreted as causal and is, in fact, far from inevitable. Provided the right policies are adopted, the resource-rich developing countries have much to benefit from a period of high commodity prices.

The idea that there exists a resource curse derives from the observation that countries dependent on primary commodities for their export revenues have tended, on average, to grow more slowly than more-diversified exporters (figure 3.1). Developing countries, which in 1980 derived more than 70 percent of their export revenues from nonfuel primary commodities, increased their per capita GDP by only 0.4 percent a year between 1980 and

Figure 3.2 Poorer countries are more dependent on nonfuel primary commodities

% share of merchandise export revenues, 2006

Source: World Bank.

2006, and countries that mainly exported fuels raised their per capita GDP by 1.1 percent a year (figure 3.2). By contrast, more-diversified exporters achieved per capita growth of 1.6 percent a year. The same relationship holds if countries severely affected by conflict are excluded, although the nonfuel primary commodity exporters fare somewhat better in this case.

Moreover, low-income countries tend to be more dependent on nonfuel commodity exports than high-income countries (see figure 3.2). More than 60 percent of the exports of low-income countries derives from nonfuel commodities compared with about 33 percent for high-income countries.

Resource dependency reflects low GDP, not resource wealth

However, resource dependence is not the same as resource richness. Most countries that are resource dependent (measured as the share of non-oil primary commodities in exports) actually have relatively poor resource endowments (measured as per capita income derived from non-oil primary commodities). Conversely, many countries that are rich in resources have low resource dependencies because, in addition to having ample resources and large

Figure 3.1 More-diversified developing countries grew more rapidly from 1980 to 2006

Average growth rate, %

Source: World Bank.

Note: Diversified exporters include countries that depend on fuel and nonfuel primary commodities as well exports of manufactures.

Table 3.1   Non-oil or resource-rich countries have higher per capita incomes than resource-dependent countries, 2006

	Real GDP per capita (US$)	Share of nonfuel primary commodities in exports (percent)	Net nonfuel primary commodity exports per capita (US$)
Top countries dependent on non-oil primary commodities			
1 Gambia, The	320	97	−81
2 Uganda	275	91	17
3 Cuba	—	85	49
4 Ethiopia	146	84	6
5 Niger	168	83	3
6 Malawi	145	82	24
7 Jamaica	3,357	81	276
8 Rwanda	262	80	−4
9 Chile	5,896	79	2,596
10 Burundi	102	79	−4
Top countries rich in non-oil primary commodities			
1 New Zealand	15,199	62	2,597
2 Chile	5,896	79	2,596
3 Australia	23,262	48	2,389
4 Netherlands	25,678	16	1,447
5 Norway	41,446	14	1,436
6 Ireland	30,736	10	1,265
7 Denmark	32,484	23	1,142
8 Canada	25,894	17	1,082
9 Estonia	6,938	26	675
10 Kazakhstan	2,166	28	533

Source: World Bank.
Note: — = Not available.

Figure 3.3 On average, poor countries are dependent on commodities but relatively resource poor

Value of per capita primary commodities in exports (US$ thousands)

Share of primary commodities in total merchandise exports (%)

Primary exports per capita (left axis)

Primary exports/exports (right axis)

■ Low-income countries   ■ Lower-middle-income countries
■ High-income countries   ■ Upper-middle-income countries

Source: World Bank.

resource sectors, they also have thriving industrial and service sectors. Oil-exporting countries are excluded from this comparison because most of them are both resource rich and resource dependent.

Resource dependency primarily reflects low levels of GDP, not resource richness. While the top 20 non-oil resource-dependent countries have an average annual per capita income of just $1,099, the annual income of the top 20 resource-rich countries is 11 times higher (table 3.1). These trends are reflected more broadly. Even when oil exporters are included in the mix, low-income countries have the highest dependence on primary commodities, but the lowest level of primary commodity exports per capita, and the inverse is true for rich countries (figure 3.3).

Considerable efforts have been made to determine if, after controlling for other determi-

nants of growth, dependence on primary commodities is associated with slower growth. Several authors have found a negative relationship in cross-section regressions between natural resource abundance and growth.[2] Others find that natural resource abundance is not responsible for the slow growth of resource-rich developing countries (Manzano and Rigobon 2007), and that there is a positive relationship between resource abundance and both short-term (Collier and Goderis 2007) and long-term growth (Lederman and Maloney 2007) after accounting for other growth determinants.

Commodity dependence may, but need not, result in slower growth

While the causality behind these correlations remains unresolved in the literature, there is consensus about the channels through which commodity dependence could contribute to weaker growth. These include:

- A tendency for significant fluctuations in export revenues, often exacerbated by

Box 3.1   The impact of severe shocks on economic progress

As discussed in chapter 2, at the national level the revenues from commodities tend to be much more volatile year to year than at the global level, and they are more volatile than manufactures. As a result, countries for whom primary commodities represent a large share of exports experience higher levels of GDP volatility than countries with more diversified exports.[a] Indeed, export revenues, the real exchange rate, and per capita output were all more volatile over the past 25 years among those developing countries where primary commodity exports represented more than 70 percent of total exports (box figure).[b]

High volatility in these annual data reflects pronounced economic cycles that can have adverse implications for growth and development.[c] Sharp booms and busts can lead to unemployment and underutilized capital during downswings and to bottlenecks during upswings. High levels of uncertainty concerning future prices and demand can depress the average level of investment over the cycle. Higher risks may bias lenders toward shorter maturities, further raising the risks of investment. And volatility of consumption reduces welfare directly if most consumers are risk averse.

For countries with the same level of primary commodity dependence, less-developed economies tend to be more sensitive to such swings because they lack the means of coping with volatility. In countries with more-developed financial systems, individuals can borrow to smooth consumption over the cycle, firms can borrow to sustain operations in bad times, and governments can run countercyclical fiscal policy to reduce the macroeconomic implications of adverse shocks. By contrast, in less-developed countries with underdeveloped domestic financial systems and weak access to international finance, these adjustment mechanisms tend to function poorly. As a result, the impact of volatility on long-term growth and welfare is more severe.
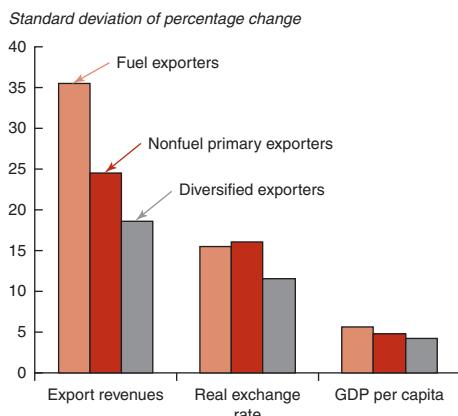
Moreover, poor households suffer most from adverse shocks, because they tend to have lower levels of savings, have limited access to credit (and interest rates from informal lenders tend to be high), and must therefore respond to negative shocks by cutting into already low levels of consumption. In addition, if workers lose labor experience and connections and children leave school, these permanent losses in human capital may increase long-term poverty (Ocampo 2003).

Whether month-to-month or day-to-day volatility has similarly deleterious economic impacts is less clear. High-frequency volatility tends to increase transaction costs and reduce activity levels, but it is less likely to cause the kind of cycles in investment behavior and economic activity described above. Moreover, high-frequency volatility is easier to overcome through traditional financing mechanisms, such as short-term credit and inventory adjustments.

An illustration of the difference between economic cycles and measured volatility based on more frequent data is provided by the recent boom in commodity prices. While this was the longest and largest commodity price boom in the past 100 years (see chapter 2), price volatility, as measured by changes in monthly data, increased only modestly

Box figure 3.1 The impact of severe shocks on economic progress

Economies dependent on primary commodities experience more volatility

Standard deviation of percentage change

Source: World Bank.

Note: Volatility is defined as the standard deviation of percentage changes over time (annual data). Commodity concentration measured in 1980. Excludes countries with population of less than 1 million.

until 2008. Indeed, only some of the commodities that have experienced a sharp rise in price experienced greater volatility during the price rise than they did previously (box table). Volatility did increase for almost all of the principal commodities in 2008, reflecting the rise in prices earlier in the year and their subsequent decline.

Price volatility has not increased systematically

Average absolute monthly percent price change

	Crude oil	Copper	Aluminum	Coal
2000–03	8.4	3.4	3.1	4.0
2004–07	6.9	6.2	4.6	5.7
2008	7.6	6.3	6.5	15.0
	Wheat	Corn	Rice	
2000–06	4.5	5.0	2.9	
2007	7.9	6.1	1.8	
2008	9.5	9.4	18.3	

Source: World Bank.
Note: Volatility is defined as the average of the absolute value of the month-to-month percentage change in detrended prices.

a. See Turnovsky and Chattopadhyay (1998) and Van der Ploeg and Poelhekke (2007) among many others. Cashin, Cespedes, and Sahay (2002) show that volatile commodity prices increased the volatility of real exchange rates for 58 countries over 1980–2002.

b. The more diversified exporters include countries that depend on both fuel and nonfuel primary commodities, as well as exporters of manufactures.

c. In cross-country regressions, Aghion and others (2005) find that real exchange rate volatility lowered growth performance in developing countries over 1960–2000. Fatas and Mihov (2005) find that variability in inflation and government spending were related to lower growth in a cross-section of 91 countries. Aizenman and Marion (1996) find a negative relationship between volatility and private (but not total) investment, and Bleaney (1996) and Ramey and Ramey (1995) find a negative relationship between volatility and growth but not between volatility and investment. Empirically, there is a relatively robust negative relationship between high volatility of growth rates and the level of development (Koren and Tenreyro 2003). However, the direction of causation is unclear. Rather than suggesting that volatility causes underdevelopment, the greater dependence of poorer countries on relatively volatile primary commodities may explain the correlation.

procyclical government spending, to accentuate economic cycles, tending to depress growth over the medium term (box 3.1);

- A tendency for exchange rate appreciations associated with commodity booms to weaken the competitiveness of the noncommodity sectors of the economy (the so-called Dutch disease); and

- A tendency for high commodity revenues to incite individuals to attempt to appropriate the wealth generated by the resource without investing in productivity or value-enhancing activities (rent-seeking behavior) or, in the worst cases, to engage in outright corruption.

Of course, abundant commodity wealth, or a large rise in the value of commodities stemming from higher prices, can also contribute to a country's development, if the implied income generated is fruitfully invested—for example, in infrastructure, education, and health or in additional productive capacity when the rents accrue to the private sector. Although more easily said than done, when government controls the resource rents, care must be exercised to avoid forcing the economy down an artificial capital-intensive path instead of using the commodity rents to exploit the economy's comparative advantage, which could be based on a combination of commodities, commodity-intensive sectors, and labor-intensive services.

What determines whether resource wealth generates wider development is the extent to which the proceeds are consumed (appropriate for a permanent increase in income) or saved (appropriate for a temporary increase); whether they are invested in high- or low-return enterprises; the extent to which rents accrue to the population at large or are channeled through the government; and whether they are deployed responsibly and transparently by governments, or used to fund a bloated civil service or are even stolen outright.

Overall, an abundance of natural resources does not necessarily impair development and can in fact promote it, but it does present particular challenges that require appropriate policies to overcome.

Managing primary commodity booms

While dependence on primary commodities does not condemn a country to slow growth, it does require careful management of macroeconomic policy to reduce the impact of volatile export revenues (see box 3.1).

In past decades, the governments of several developing countries failed to react appropriately to commodity price booms, increasing public expenditures on inefficient, import-intensive investment projects (Cashin, Cespedes, and Sahay 2002) and borrowing excessively—expecting export revenues to remain high for longer than was the case.[3] As a result, many of them faced severe economic difficulties when prices declined. For example, the seeds for the Latin American debt crisis of the 1980s were sown by the accumulation of debts by countries during a period of high commodity prices. The payments for these loans proved to be unsustainable when interest rates rose and commodity prices declined, resulting in years of slow growth or economic stagnation (Manzano and Rigobon 2007).

Commodity revenues and fiscal spending

The tendency for a temporary rise in revenues to be reflected in an unsustainable rise in government spending has historically been an important explanation for the poor long-term growth performance of commodity-dependent developing countries. Countries that are dependent on point resources—oil and metals—are particularly vulnerable because the government is the direct recipient of a large share of boom revenues, either through ownership of the resource or through taxing the rents accruing to a limited number of private firms. By contrast,

government revenues are less sensitive to booms in agriculture prices because agricultural export crops are produced in many locations by many producers, so production expands to the point where, in normal times, there are no rents for governments to appropriate and no special tax regimes (Collier 2007).

Although the evidence is not conclusive, the tendency for government spending to rise with windfall revenues, while still present during the current commodity boom, is less pronounced than in the past. This in turn suggests that perhaps the strong growth that has been associated with higher commodity prices this time may prove more sustained than in past booms.[4]
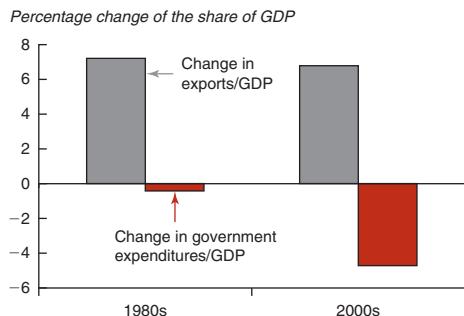
Resource-rich developing countries have shown greater fiscal restraint during the current boom

During this boom, resource-rich developing countries appear to have shown greater fiscal restraint than they did during earlier booms, thereby reducing the risk of a procyclical cut in government spending now that commodity prices are declining.[5] The average general government budget surplus of oil-exporting countries improved from 0.6 percent of GDP in 2001 to 7.7 percent in 2007. Among developing-country exporters of oil, minerals, and agricultural products, public consumption has increased more slowly than private consumption, external debt has risen more slowly than during past booms, and government borrowing has increased more slowly than private borrowing (IMF 2008b).

While fiscal policy responses have been extremely diverse,[6] government expenditures of primary commodity exporters have increased less strongly than during the 1980s, a period like the current boom when the export revenues of resource-dependent developing countries increased by about 7 percent of GDP (figure 3.4).[7]

In the 1980s, government spending tended to increase procyclically—rising in line with the boom in GDP caused by windfall commodity revenues. As a result, the ratio of

Figure 3.4 Government spending by primary commodity exporters responded less to export booms in this decade than in the 1980s

Percentage change of the share of GDP

Source: World Bank.

Note: The country sample includes developing countries where primary commodities account for more than 70 percent of merchandise exports. The figures represent the percentage point change in merchandise exports divided by GDP, and government expenditures divided by GDP, during the boom.

have also taken steps to increase the share of the windfall revenues that accrue to the state, although care must be taken to avoid harming incentives for production (box 3.2).
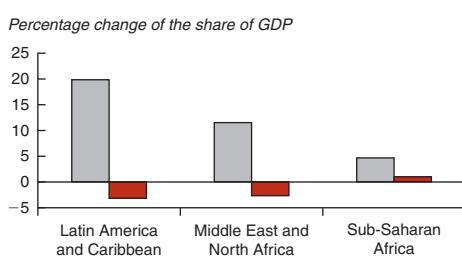
Much of the difference between the two periods reflects more prudent behavior by governments in Sub-Saharan Africa. During the 1980s boom, government expenditures in countries dependent on primary commodities in Sub-Saharan Africa rose even more quickly than GDP. In this decade, the ratio of government expenditures to GDP has declined by almost 8 percentage points (figure 3.5). This trend contrasts with the spending pattern in Latin America and the Caribbean and the Middle East and North Africa (other regions have too few observations to report useful

government expenditure to GDP was broadly stable. On a cyclically adjusted basis, however, government spending rose. Because much of the additional money went to government spending and transfer programs of a quasi-permanent nature, the increased spending proved hard to reverse when GDP slowed and commodity prices reversed. Governments were either obliged to cut spending procyclically as commodity prices fell, which exacerbated the cycle, or allow the deficit and debt to build up, increasing their macroeconomic vulnerability

Most recently, governments have reacted much more prudently. As a consequence, while government expenditure has increased in real terms, it has declined as a share of GDP by almost 5 percentage points. Government expenditure among nonfuel exporters has declined the most, perhaps reflecting concern that nonfuel commodity prices would remain high only temporarily and the tendency for governments to absorb a smaller share of windfall revenues from high prices for nonfuel commodities than from those for hydrocarbon resources.[8] Fuels (and minerals) exporters
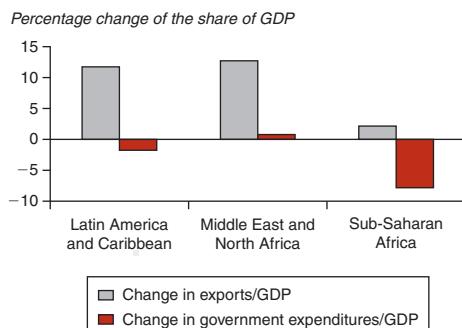
Figure 3.5 Public expenditures in Sub-Saharan Africa grew much less quickly in the 2000s than in the 1980s

a. 1980s

Percentage change of the share of GDP

Source: World Bank.

b. 2000s

Percentage change of the share of GDP

Source: World Bank.

Box 3.2   Efforts to capture a larger share of windfall commodity revenues

As commodity prices increased, a number of countries sought to increase the share of the windfall that accrues to the state. Several energy producers (including Argentina, Bolivia, Colombia, Ecuador, and República Bolivariana de Venezuela) have increased, or are considering increases in, the rates for royalties or taxes. A few countries have forced the renegotiation of contracts or nationalized exploitation rights, which has had a chilling effect on investors' willingness to participate in some markets. Developed-country governments (for example, Alaska in the United States and Alberta in Canada) also are increasing their revenue share.

The governments of several metal-producing countries also have attempted to increase their share of the rising profits in recent years (UNCTAD 2006). For example, Mongolia instituted increased rights for the government to acquire equities in new ventures. The Democratic Republic of Congo is reviewing contracts for mineral extraction signed since 1995 with the purpose of increasing the government's stake. Governments, including Chile, Mongolia, Peru, South Africa, and Zambia, have taken steps or are considering proposals to raise mineral taxes or royalty fees.

Countries that contract with private (often international) firms to exploit nonrenewable resources have revised contracts to reflect higher prices. The danger here is that arbitrary changes in their share of revenues will reduce the companies' incentive to invest and lower confidence in the broader investment climate. An alternative approach, which is now being considered by several countries, is to base the government's revenue share on the price. For example, Colombia has proposed imposing an additional 5 percent tax on every $30 increase in the price of a barrel of oil, thereby raising the tax rate to 75 percent when oil exceeds $140 a barrel. This kind of arrangement holds some promise of creating a stable framework so that firms can evaluate investments accurately and governments can capture a fair share of windfall revenues when price increases.

It is understandable that countries wish to capture a rising share of revenues from nonrenewable resources as prices increase. However, such efforts need to be carefully calibrated to maintain appropriate incentives for making new investments and maximizing current output. Countries with state-owned companies that control resource extraction have to ensure that incentives facing these companies encourage efficiency. For example, whereas some state-owned energy firms (for example Brazil's Petrobras) continue to enjoy very positive relations with service-providing firms and are efficiently managed, others (such as in Mexico and República Bolivariana de Venezuela) face very high effective tax rates that have resulted in chronic underinvestment, declining output, and poor efficiency.

averages), where government spending has been more procyclical—rising at about the same rate as GDP as during the 1980s.

Surprisingly the extent to which governments are saving from increased oil revenues is only loosely correlated with the size of their reserves

For countries dependent on nonrenewable resources, the optimal fiscal response to primary commodity price booms in part depends on the importance and expected life span of the resource.[9] Some countries, such as República Bolivariana de Venezuela, could continue to produce oil at current rates until almost the end of this century before exhausting all of the oil deposits detected under their soil (table 3.2). However, other countries that are heavily dependent on deposits of oil or mineral resources could exhaust their reserves (as currently estimated) within one or two decades.[10]

If resources are viewed as a national asset of both current and future generations, then countries with low reserves should be saving a much larger proportion of permanent (and windfall) revenues—investing them in either

Table 3.2 Ratios of reserves to production vary greatly among oil exporters
(Percent)

Countries	Share of oil in merchandise exports	Ratio of oil reserves to current production
Algeria	95.7	16.8
Angola	92.0	17.6
Azerbaijan	85.1	29.3
Equatorial Guinea	83.8	13.8
Gabon	71.1	25.3
Iran, Islamic Rep. of	89.8	86.7
Iraq	88.1	157.6
Kazakhstan	52.8	76.5
Libya	98.7	61.9
Nigeria	95.6	40.3
Oman	85.2	20.5
Congo, Rep. of	92.1	19.9
Sudan	74.8	44.2
Syria, Arab Rep. of	58.3	19.7
Turkmenistan	81.0	9.2
Venezuela, R. B. de	80.5	77.6
Yemen, Rep. of	80.9	20.0

Source: World Bank, British Petroleum.

Figure 3.6 Oil-exporting countries with large reserves spent a smaller portion of their revenue from the recent boom in oil prices, 2000–06

Percentage point change of the ratio

Source: OPEC Secretariat, *World Oil, Oil and Gas Journal,* World Bank staff calculations.

Note: Includes countries where oil accounts for more than 70 percent of merchandise export revenues and data on oil reserves, oil production, and government expenditures are available (Angola, Republic of Congo, Equatorial Guinea, Islamic Republic of Iran, Kazakhstan, Libya, Nigeria, Oman, Syrian Arab Republic, Turkmenistan, República Bolivariana de Venezuela, and Republic of Yemen).

productive potential or financial assets that will continue to generate an income even as the original resource is depleted.[11] To a degree, this is what countries are doing. The share of government spending in total GDP among countries with low reserves has declined, whereas those with high reserves have been more procyclical (figure 3.6).[12]

Countries like Algeria, Angola, the Republic of Congo, Turkmenistan, and the Republic of Yemen, all of which have less than 20 years worth of reserves and rely upon hydrocarbon exports for 80 or more of their merchandise exports, face serious challenges. Unless their savings from oil revenues are high, associated expenditures are likely to lead to exchange rate appreciation, with serious negative impacts on the non-oil sectors of their economies (see below).

Private sector saving from commodity revenues

While governments appear to be saving more of the windfall than they did in the 1980s, private sector spending is rising rapidly—especially among non-oil primary commodity

exporters. However, much of the demand is going to investment goods. Investment demand in commodity-dependent economies increased 7.5 percentage points faster during this boom than during the 1980s. As a result, the current private sector boom should be increasing domestic productive capacity that will help countries sustain the high growth of the past several years.
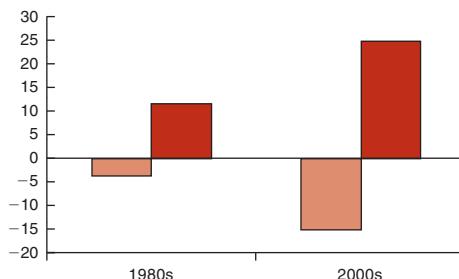
Reflecting the large share of commodity revenues that accrue to the government in oil-exporting countries and the relative prudence that these governments have displayed, imports in these countries have increased less rapidly than GDP, and current account surpluses have improved significantly as a share of GDP during the recent oil price rise. This pattern is similar to, but more pronounced than, that prevailing during the 1980s boom (figure 3.7).

In part because the benefits of high agricultural prices accrue to a much wider segment of the population, the private sector in non-oil-commodity exporters appears to have increased spending sharply during the recent boom, with much of the increased demand

Figure 3.7 Imports and current account positions suggest more savings from commodity revenues by oil exporters than by nonfuel commodity exporters

a. Oil exporters

Percentage change of the share of GDP

b. Non-fuel exporters

Percentage change of the share of GDP

Imports/GDP   Current account/GDP

Source: World Bank.

ness of the noncommodity sectors of the economy. To the extent that the imports reflect investment, they are less worrisome if they are creating the future productive potential that will allow these countries to continue growing strongly when commodity prices and incomes weaken.

Most resource-rich countries are showing fewer signs of real effective exchange rate appreciation

The relationship between export revenues and the exchange rate is complex. While a real exchange rate appreciation is the appropriate response to a long-term improvement in the terms of trade, it may have a deleterious impact on the economy if the appreciation proves short-lived. Potential negative effects include adjustment costs, such as increased unemployment or the bankrupting of marginal firms, and reductions in potential positive externalities in tradable goods sectors, such as

- More-rapid technological progress through learning by doing in industries characterized by firm-specific knowledge
- Demonstration effects, where the gains in efficiency of one firm are easily copied by others
- Increased incentives for accumulation of human capital
- More-stable and faster-growing markets in manufactures than primary commodities[13]
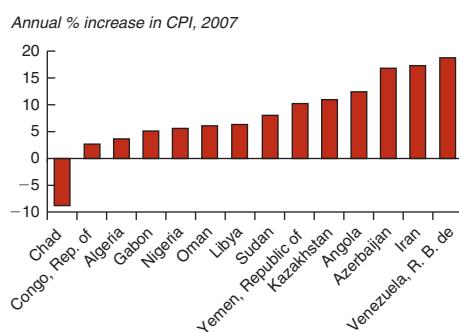
During the most recent boom, there is some evidence that developing countries have succeeded in limiting the appreciation of their currencies, thus reducing potential adjustment costs as prices decline (figure 3.8). On average, the currencies of non-oil primary commodity exporters have actually depreciated by a modest 4 percent in real effective terms, while the currencies of developing-country oil exporters have appreciated only 8 percent in real effective terms—although most recently domestic inflation has risen to more than 10 percent in Angola, the Islamic Republic of Iran, República

having been met through imports. The ratio of imports to GDP increased by 6 percentage points, and the current account balance has remained roughly stable despite a 23 percent rise in export revenues.

Real currency appreciation

The rapid increase in imports and the stability of the current account in the face of rising export revenues and domestic demand is potentially disturbing, because it suggests that the domestic supply response in these countries has been relatively weak. This situation is especially problematic if the increased imports are consumption goods, and if they are associated with a real effective appreciation of the currency that has impaired the competitive-

Figure 3.8 Primary commodity exporters limited the real appreciation of their currencies during the recent boom

Percentage change in trade-weighted real effective exchange rate

Source: IMF data. World Bank staff calculations.

Figure 3.9 Many oil exporters are suffering significantly higher inflation

Annual % increase in CPI, 2007

Source: World Bank data.

Table 3.3 Assets in sovereign wealth funds grow in commodity-exporting countries
($US billions)

Country	As of mid-2008
Algeria	47.0
Azerbaijan	5.0
Botswana	6.9
Chile	15.5
Equatorial Guinea	2.9
Iran, Islamic Republic of	12.9
Kazakhstan	21.5
Libya	50.0
Mexico	5.0
Nigeria	11.0
Russian Federation	162.5
Timor-Leste	3.0
Trinidad and Tobago	2.0
Venezuela, R. B. de	22.0
Total	367.2

Source: Sovereign Wealth Fund Institute (www.swfinstitute.org).
Note: Latest available information as of June 2008, but all estimates may not refer to 2008. Excludes funds with assets under $1 billion. Data for Equatorial Guinea as of 2005.

them into foreign-denominated assets. Oil-exporting developing countries doubled their official foreign reserves from $36 billion in 2000 to $70 billion by mid-2008, or from about four months of import cover to around eight months in 2008. At the same time, some of these countries created new sovereign wealth funds (Algeria, Kazakhstan, and Libya) or greatly expanded preexisting sovereign wealth funds (Azerbaijan, Russian Federation, and República Bolivariana de Venezuela) (Griffith-Jones and Ocampo 2008). The assets of developing-country exporters of oil and minerals in such funds reached $367 billion by mid-2008 (table 3.3).

New entrants into oil production may be exceptions to these welcome trends

Several resource-rich developing countries are enjoying the fruits of newly found natural wealth or are experiencing their first commodity boom as an independent state, notably the oil-producing countries of central Asia that were formerly part of the Soviet Union. These countries have less experience in

Bolivariana de Venezuela, and the Republic of Yemen (see chapter 1 for a discussion of inflation and commodity prices) (figure 3.9).[14]

The limited currency appreciation in response to the commodity price boom is in part attributable to the fiscal restraint discussed earlier. Government expenditures fall most heavily on nontraded goods. As a result, increasing government expenditures tend to raise the price of nontraded goods relative to traded goods, which causes the real exchange rate to appreciate.

Commodity-dependent countries also avoided real appreciations by sterilizing the inflows of foreign currency by converting

managing a resource boom than countries that have been producing substantial amounts of oil for many years.
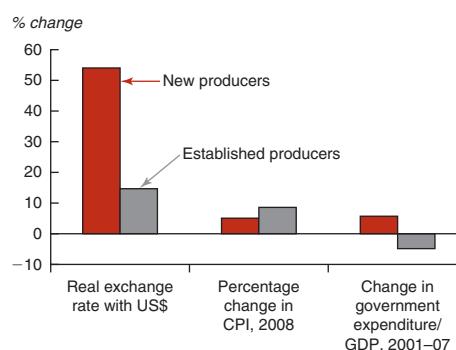
Perhaps because of this lack of experience, many of these countries show signs of experiencing the same kind of macroeconomic volatility that characterized developing, resource-rich countries in the 1980s. Their currencies have appreciated in real terms (against the U.S. dollar) by 43 percent from 2001 to 2007, their inflation rates are higher, and government expenditures have been rising in line with GDP (figure 3.10).

While these developments may be consistent with prudent management of newfound wealth and a careful investment strategy designed to enhance future production capacity, they mirror, disconcertingly, those of the 1980s among more established producers. New producers

must therefore pay particular attention to macroeconomic management going forward to ensure that the current downturn in primary commodity prices does not lead to a sharp reversal of economic progress.

Another troublesome aspect of the current boom, especially given the financial crisis, is the rapid increase in bank lending to commodity-dependent economies in Sub-Saharan Africa, in part to finance investments in oil and mineral projects. Despite enjoying substantial increases in their export revenues, many of these economies remain poor and need to be particularly careful in incurring foreign currency liabilities on market terms. Commercial bank commitments to these economies rose from an average of just under $2 billion a year in 1995–2000 to more than $5 billion a year in 2004–06, and to $11 billion in 2007 (figure 3.11). These countries' total stock of private-source external debt has not increased significantly above the $35 billion level reached in 2000 and has fallen as a share of GDP. The downturn in commodity prices could result in disappointing returns to these projects and difficulties in servicing this debt on the part of firms, especially as existing loans come due in the current environment of much tighter credit conditions and higher risk premiums for developing countries. Should companies have

Figure 3.10 New oil exporters are experiencing more macroeconomic volatility than established producers
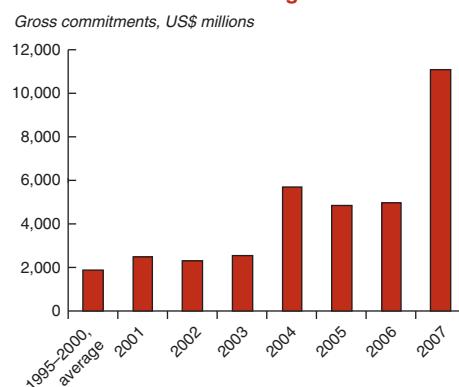
% change

Source: World Bank and IMF data.

Note: New producers are defined as countries dependent on oil that began production after 1985 or were established as a country after 1985, including Azerbaijan, Chad, Equatorial Guinea, Kazakhstan, Sudan, and the Republic of Yemen (Turkmenistan lacks data for inflation and the real exchange rate). The established producers include Algeria, Angola, Republic of Congo, Gabon, Islamic Republic of Iran, Libya, Nigeria, Oman, and República Bolivariana de Venezuela. We use the real exchange rate with the United States (rather than the trade-weighted real exchange rate as in figure 3.5), to include sufficient countries for a useful comparison between the two groups.

a. Real exchange rate with the U.S. dollar, where increase indicates appreciation. Data for Equatorial Guinea are for 2001–04.

b. Percentage change in consumer price index in 2008.

c. Change in ratio of government expenditure to GDP from 2001 to 2007.

Figure 3.11 Commercial bank lending to commodity-dependent economies in Sub-Saharan Africa is rising

Gross commitments, US$ millions

Source: Loanware 2008.

Box 3.3 Combating the corrupting influence of high commodity revenues

A recent example of efforts to reduce the scope for corruption in commodity-rich countries is the Extractive Industries Transparency Initiative. Launched in 2002, it aims to increase the accountability of governments in resource-rich countries through the publication of company payments and government revenues from oil, gas, and mining. As of July 2008, 23 countries were in the process of meeting the conditions for transparency supported by the initiative, and 17 of 42 major oil companies were supporting the initiative.[a] These developments could be strengthened if the home countries of multinational companies were to require these firms to account more explicitly for the funds they disburse to local governments.[b]

a. See the Transparency International Web site, transparency.org.

b. Statement by Michel Roy, from the French NGO Secours Catholique, published in a press release from Publish What You Pay (www.publishwhatyoupay.org).

difficulty refinancing, this could transfer into a sovereign risk——especially in those cases where the debtor firms are state-owned.
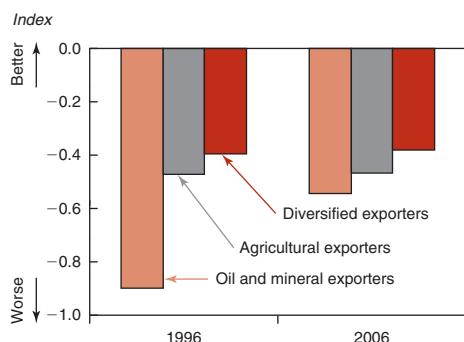
Governance and transparency

Resource riches can yield disappointing growth outcomes by creating incentives and opportunities for corruption, mismanagement, and political instability. Resource wealth has been a source of political conflicts in Africa (Gelb 1998) that have been enormously destructive of wealth, while in countries with weak governance and institutions, the concentrated wealth deriving from point resources too often lends itself to corrupt practices by politicians and civil servants charged with overseeing the firms exploiting them.[15] Indeed, some econometric analyses have found that dependence on oil, metals, and minerals, where the government plays a central role in determining the allocation of rents, lowers the quality of institutions.[16]

Partly reflecting the influence of these incentives, countries dependent on nonrenewable resources (equal to more than 70 percent of merchandise exports) tended in 1996 to be more corrupt than those dependent on agricultural commodities and more diversified exports (figure 3.12).[17] More recently, corruption levels in the oil, metals, and mineral exporters have drawn much closer to the developing-country average. These are relative rankings and thus cannot indicate absolute improvements in individual countries. Nevertheless, this progress may reflect the reforms instituted over the past 10 years to counter the corrupting influence of high resource rents and may also indicate that resource wealth is being more effectively deployed in promoting the overall development of these economies (box 3.3).

Figure 3.12 Corruption is highest among fuel exporters, although the difference has narrowed

Diversified exporters

Agricultural exporters

Oil and mineral exporters

Source: Kaufmann and others 2007; World Bank data.

Note: The lower the value of the index, the worse the level of corruption relative to other countries. Countries are classified as oil or mineral, or agricultural exporters if they earn more than 70 percent of merchandise export revenues from these sources. Diversified exporters are all other developing countries. Classification is based on shares in 2000.

Box 3.4   Successful sovereign wealth funds

For a sovereign wealth fund to be successful, transparent procedures must be established for managing the allocation of resources to the fund and the investment of these resources. For example, clear rules for forecasting prices (necessary for the calculation of permanent income that underlies allocation decisions) and, where available, reliance on independent forecasts can help insulate allocation decisions from political pressures. National revenue funds in Norway and Botswana benefited from stable and democratic political systems that encouraged decision making based on long-term considerations (Eifert, Gelb, and Tallroth 2002).

Rules for the allocation of a share of resource revenues to a wealth fund must not be too rigid. Several countries have changed, bypassed, or eliminated such rules when conflicts arose (IMF 2007). Such changes, although often needed, can limit the impact of the fund if they occur too frequently as has happened in Oman (UNCTAD 2006).

Transparency in the procedures governing the fund must be matched by overall strong governance to ensure that fiscal policy is consistent with the allocation of resources to the fund. For example, in some instances governments have effectively circumvented the goals of a sovereign wealth fund by borrowing (using the fund as collateral). In República Bolivariana de Venezuela, for example, resources were deposited in the national revenue fund according to the rules, but at the same time the government borrowed heavily to finance procyclical expenditures (Fasano 2000).

Sovereign wealth funds

The increased prevalence of sovereign wealth funds among resource-rich countries is another recent innovation aimed at increasing the development impact derived from mineral wealth, both by increasing the returns that countries receive on their savings from resource revenues and by insulating those savings from procyclical spending and corrupt practices.

The success of these funds in managing natural resource revenue and reducing procyclical spending has been mixed (Asfaha 2007). In general, countries with sovereign wealth funds have tended to experience less-procyclical fiscal policies and less-volatile macroeconomic outcomes.[18] However, the commodity here is unclear. Such funds tend to be most successful in countries that are already fiscally prudent and are most likely to be established in countries with strong institutions. As such, sovereign wealth funds are no substitute for strong fiscal institutions (box 3.4).[19]

Dealing with revenue volatility

The volatility of commodity prices and output means that revenues also tend to be volatile (see chapter 2). At the macroeconomic level, this manifests itself as greater GDP, exchange rate, and export volatility (see box 3.1). For individual producers, this volatility increases the riskiness and quantity of investment, especially in developing countries where financial systems that could provide temporary financing to bridge shortfalls are underdeveloped. As a result, the overall production potential of the sector rises less quickly, which may be reflected in poor growth outcomes. Perhaps more importantly, for the poor who are dependent on farm-related incomes (close to 75 percent of all poor; see below) and living close to the subsistence level, the impacts can be particularly devastating.

Traditionally, developing (and developed) countries have sought to offset this kind of volatility with price stabilization schemes, marketing boards, and the like (box 3.5). However, the track record of these schemes has not been good and they have fallen into disfavor. More recently, countries are entering into more market-based mechanisms such as long-term contracting arrangements and market-based conditional contracts.

Box 3.5   National and international marketing strategies

Marketing boards in developing countries typically got their start during colonial times as a way to facilitate the export of agricultural commodities to Europe and to stabilize prices for food crops. Newly independent governments generally retained marketing boards because they provided a convenient way for the governments to maintain control over the distribution of strategic commodities such as food staples and export crops.

Marketing boards are state-controlled or state-sanctioned entities legally granted control over the purchase or sale of agricultural commodities (Barrett and Mutambatsere 2008). They flourished in the 20th century in both developed and developing countries but have declined in number under pressure for domestic liberalization and international trade rules. Where reforms have been widespread and successful, marketing boards have vanished or retreated to providing public goods, such as strategic grain reserves or insurance against extraordinary price fluctuations. Where reforms have been less successful, the weakness of private agricultural marketing channels has been revealed by the rollback of marketing boards, often leading to calls for reinstatement of the powerful boards.

Similar efforts to minimize volatility have been tried at the global level as well. These included the International Sugar Agreement of 1954 and international agreements for tin (1956), coffee (1962), natural rubber (1980), and cocoa (1981). These agreements used some combination of supply control, buffer stocks, and export controls to limit price changes. All of these commodity agreements broke down or lapsed in the 1980s and 1990s either because of their ineffectiveness or because of difficulties in coordinating production among members (Gilbert 2005).

Long-term contracting provides large-scale producers with some protection from output volatility

Over the past decade or so, a number of resource-dependent developing countries have entered into long-term contracts with client countries that guarantee sales volumes and in some cases prices. These contracts cover an extended period, sometimes with specific escalator clauses that ensure that prices, while more stable than market prices, do not vary too far from market norms, causing one partner or the other to renege on the deal.

Russia and oil-producing countries in Europe and Central Asia have engaged in such contracts with Hungary, the Czech Republic, Poland, and Ukraine as well as with several high-income countries. Because these contracts specify prices over the duration of the contract, these consuming countries have not observed as large a swing in energy costs as other countries (and supplier countries have not experienced as large a boom).

Such contracts are sometimes entered into in the context of a foreign direct investment deal by either the resource-exporting country or, increasingly, a resource-importing country hoping to gain security of future supply.[20] Several African countries have entered into such relationships with Brazil, China, India, and Malaysia, among others, in exchange for a stable demand-supply relationship and access to foreign capital (most often in the form of foreign direct investment) to develop domestic resources.

China, or Chinese state-owned firms, have taken equity positions in oil ventures in Africa equal to some $13.5 billion as of early 2007. Investments have been made in Angola, Chad, Côte d'Ivoire, Equatorial Guinea, Kenya, Mauritania, Niger, Nigeria, São Tomé and Principe, Somalia, and Sudan, but the bulk of production is currently concentrated in Angola, Nigeria, and Sudan (Downs 2007). Chinese companies also have invested in the development of minerals, such as copper and

other resources in Zambia, and cobalt and copper in the Republic of Congo (Lyman 2005). Chinese companies also have invested in Latin America, with the bulk of this investment related to the production of primary commodities, such as oil in Ecuador (Caspary 2008).

Market-based conditional contracts offer protection from both price and volume volatility for large-scale market participants

Some countries are attempting to reduce the impact of volatile commodity prices through market-based derivative instruments. Unfortunately, developing-country producers, and particularly agricultural small-holders, have little access to the market-based risk management instruments now available, because of a lack of knowledge; lack of collateral for margins; the small scale of their operations; and the complexities of executing, monitoring, and administering hedging transactions.

These hurdles can be overcome through a large domestic entity that pools price risk from many small producers and hedges them in international markets. In Mexico, the government organization, ASERCA, does this to hedge price risks for cotton farmers. Through ASERCA, the government offers farmers the chance to participate in a program to guarantee a minimum cotton price for a fixed fee. ASERCA then hedges its price risk by using the fee to purchase a "put" option in international financial markets, which pays if the international price of cotton falls below the specified price. This payoff is in turn paid out to farmers, effectively providing them with market-based insurance against the cotton price falling below the specified minimum that is demand driven and inexpensive to administer (Larson, Varangis, and Yabuki 1998).

The over-the-counter market is very active for oil (over-the-counter risk management instruments are highly liquid and can extend as far as seven years in the future) and precious metals (contracts are considered competitive over the three-to-five-year time horizon). Exchange-traded instruments also exist for highly traded tropical products such as coffee and cocoa, and for maize, soybeans, and wheat, which are produced and exported by the United States. However, the over-the-counter market is more limited for the base metals exported by many developing countries.[21] Moreover, many agricultural products produced and consumed by developing countries are difficult to hedge efficiently.

In any event, small-holders in developing countries have little access to these instruments. The provision of agricultural risk insurance to small-holders also has proven difficult. State-managed insurance schemes have been largely ineffective and unsustainable without subsidies to cover premiums. One hopeful development is the advent of index-based weather insurance. These schemes, which provide for a different way of underwriting, and transferring, weather risk to the market, are now being scaled up by private initiatives in India and elsewhere. In addition to the direct benefits these contracts provide to producers, by reducing overall revenue volatility, they reduce the risk by potential lenders and can improve farmers' access to credit.

So far these efforts have been limited to large-scale farms. To bring similar benefits to small-scale producers, more direct government involvement may be required to ensure that supply-chain actors, who are the only actors large enough to enter into such contracts, have the incentives to share their benefits with small-holders.

Food markets are more complicated politically

Food markets present a particularly difficult risk management challenge, because the requirements (objectives) of consumers and producers are often in conflict. Historically, government interventions in food markets have had significant adverse effects on the supply side, creating strong disincentives for private sector storage, finance, and trade. All too often, the ensuing shortfall in private sector investment in these markets—and the correspondingly weak development of local and

Box 3.6 Malawi government hedging of maize price and supply risks, 2005–08

In 2005–06, southern Africa experienced a severe drought-related food shortage. Affected countries included Malawi, Mozambique, Zambia, and Zimbabwe. Initial estimates suggested that as much as 2 million metric tons of maize imports might be required.

The government of Malawi, with assistance from the World Bank and the British government, used call options from the South Africa Exchange Market (SAFEX) to help cap the cost of managing the food shortage. The government was concerned about both high price increases and its ability to secure additional grain on world markets. As a result, a customized call option for 60,000 metric tons of white maize with a total value of approximately $17 million and a premium payment of $1.53 million was written. To ensure that the maize was delivered (if needed), the contract was written on a delivered basis, thus combining the price for white maize on the SAFEX exchange with the transport costs to Malawi.

In the event, with spot prices rising and the food shortage growing more severe in November and December 2005, the government exercised the call option, elected physical settlement, and allocated the majority of the maize to humanitarian operations. During the delivery period, spot prices for a metric ton of white maize rose $50–$90 above the ceiling price of the contract following increases in the SAFEX white maize price and transport costs over the October-January period. The maize purchased through the option contract had a better delivery performance than most other procurement procedures.

Since then the government, facing a projected maize surplus, worked with the World Bank to structure contingent export contracts. These were put options structured to ensure foreign markets would take up any surplus grain and provide a price floor in the case that maize prices fell. Although the contracts were not taken up, they did demonstrate how contingent contracting could be used to help manage risk associated with surpluses. In May of 2008, the Malawi government issued a request for proposals for a repurchase option, which will be based on a trade finance structure for grain held in the country combined with a call option. The objective of this approach is to set up a second layer of grain reserves that operates financially through the private sector (Dana, Gilbert, and Shim 2006; Dana 2008).

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regional trade—exacerbate the price and supply volatility that the interventions were attempting to mitigate in the first place.

More recently, governments have used customized price and supply risk management contracts to help reduce volatility and ensure security of supply in a way that strengthens rather than weakens private sector trade. Trading companies and banks in southern Africa are now offering contingent purchase agreements that use "call" options as a basis for physical supply contracts (box 3.6). Risk management can also be enhanced by more-open borders and private trade, as in the successful management of flood-induced rice shortages in Bangladesh in 1998.

Poverty impacts of higher commodity prices

While resource-rich countries have faced challenges in capitalizing on the rise in commodity prices, poor consumers confront severe difficulties in coping with the substantial decline in real incomes. The rise in real commodity prices in developing countries was much less marked than in the United States (see chapter 1); nevertheless, the increases were substantial and imply severe consequences for the poor in developing countries.

The rise in food prices presents the greater challenge for the poor, most of whom spend more than half of their incomes on food. The

urban poor are most directly affected, both because they consume more commercially produced foods and because they are much less likely than the rural population to benefit from increased revenues from food sales or improved employment opportunities arising from higher food prices. The poor are less affected by rising fuel prices because they spend less of their incomes on fuel; however, high fuel prices are still a burden to the poor, especially those in colder climates.

The remainder of this section explores in more detail the impacts that higher prices have had on the poor in developing countries.

Higher oil prices and poverty

As discussed previously, oil price increases since 2003 pushed up consumer spending in oil-producing developing countries by some $400 billion in 2008, while the annual increase in the food bill due to the price increases between January 2007 and May 2008 was some $240 billion—assuming in both cases that international prices were fully passed through to consumers. Of course not all of these price increases have been passed through. In these cases, the costs are either being borne by governments as increased expenditures or by firms in the form of forgone revenues when price increases are controlled.

Most estimates suggest that the poverty impact of higher oil prices was smaller than the impact of higher food prices, mainly because in most developing countries, the poor spend only about 10 percent of total household spending on energy, compared with 50 percent for food (Grosh, del Ninno, and Tesliuc 2008). For example, the poorest 20 percent of Bolivians, Malians, and Sri Lankans spend more than 40 percent of their income on food, but only 3 percent on energy (World Bank 2008a). Moreover, when energy costs rise, the extremely poor tend to turn to alternative sources of energy (principally biomass). Even where the poor receive subsidized fuel for cooking, consumption tends to be low, in part because they resell it on the black market.[22]

At the same time, the direct cost of higher energy prices may well underestimate their total cost. While direct energy consumption may be low, higher energy prices increase the prices of energy-intensive goods and services consumed by the poor. For example, surveys of poor communities in China, India, Indonesia, and the Lao People's Democratic Republic indicate that households have reacted to energy-induced increases in the prices of electricity and transportation by reducing lighting and increasing their isolation (UNDP 2007). Moreover, the switch to lower-cost biomass energy sources carries with it hidden costs in the form of increased indoor pollution, increased incidence of respiratory disease, blindness, heart disease, and obstetrical problems such as stillbirth and low birth weight (IEA 2002).

Many efforts to measure the poverty impact of higher oil prices have taken an indirect route because few household expenditure surveys have enough detail on the consumption of petroleum or petroleum products to estimate poverty impacts directly.[23] Some country studies have relied on input-output tables combined with household surveys, or on computable general equilibrium models, to estimate the impact of an oil price rise on poverty. The results are mixed, with most studies concluding that a 20 percent rise in oil prices could impose a 1–3 percent reduction in the incomes of poor households (table 3.4).

Global studies of the impact of oil prices on poverty have first estimated the impact of higher fuel prices on GDP and then the impact of lower GDP on poverty. For example, Herrera and others (2005) estimate that a $10 increase in the price of a barrel of oil would reduce GDP in the short run by about 0.8 percent in developing-country oil importers. They calculate that poverty rates would increase in the more severely affected countries by a range of 1.4–1.5 percentage points.

A simplistic extrapolation of these results (which are based on an everything-else-equal assumption) to the $110 increase in crude prices between 2003 and mid-2008, would

Table 3.4 Country studies suggest that high oil prices have large poverty impacts

Study	Country	Impact on poor of 20 percent increase in oil price (unless otherwise specified)
Coady and Newhouse (2005)	Ghana	Poor incomes decline by 3.6 percent
World Bank (2003)	Iran	Cost of living of rural poor rises by 3.1 percent
ESMAP Report done in 2001[a]	Pakistan	Cost of living of poor rises by 1.15 percent
McDonald and van Schoor (2005)	South Africa	Rural households suffer drop in income of 0.76 percent, versus 0.83 percent for urban households, with poor households less affected than rich households
Clements, Hong-Sang, and Gupta (2003)	Indonesia	25 percent rise in oil prices reduces average real consumption by 2.5 percent, with high-income groups slightly more affected than low-income groups
ESMAP (2005)	Yemen	Increasing fuels to import parity (62 percent) increases household expenditures by 14.4 percent for poorest decile
Kpodar (2006)	Mali	Household expenditures of poor rise by 1.8 percent

Source: Kpodar 2006.
a. As cited in Kpodar (2006).

lead to the conclusion that the GDP in developing-country oil importers would have declined by more than 8 percent and that the incidence of extreme poverty in developing countries would have increased by some 15 percentage points. However, everything else was not equal and for most of the period during which oil prices were rising, GDP in oil-importing developing countries was expanding by more than 6 percent a year (much faster than in the past). At least for the initial increases in oil prices between 2003 and mid-2006, such a simplistic calculation substantially overstates the impact of higher oil prices on GDP and poverty.

That said, the most recent oil-price hikes occurred under very different conditions than the initial ones. Global capacity was constrained, inflation was rising, and the initial cushions that allowed the first oil price hikes to be absorbed were exhausted (see chapter 1). Partly as a consequence, global growth in oil-importing developing countries slowed by 1.7 percentage points between 2007 and 2008. Although not all of that slowdown can be attributed to oil prices, if it were, applying the poverty elasticities used by Herrera and Pang (2006) would lead to a conclusion that the most recent hike in oil prices may have increased headcount poverty rates by as much as 1.7 or 2.0 percentage points.
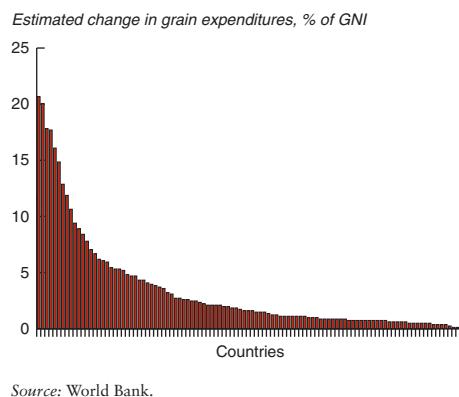
The rise in the food bill is attributable to higher prices

The balance of payments implications of the rise in food prices are important for a few countries, including some oil or metals exporters, a few countries beset by civil conflicts, and several small island states that sell services and import most of their needs, including food. However, with the exception of a few foods such as palm oil and a few countries, including several island states and some Middle Eastern countries, the bulk of food products are consumed in the same country where they are produced.

Nevertheless, the increased food bill facing consumers has been extremely large, equaling on average about 2.4 percent of gross national income in developing countries, or 8.0 percent of government expenditures. For some countries, the costs rise as high as 20 percent of gross national income, equal to the total of government expenditures (figure 3.13).

The magnitude of these costs would make it impossible for most governments (or the international community) to completely finance the rise in expenditures on grains required to maintain consumption at 2006 levels. As a result, the greater part of the adjustment must be borne by consumers, while government interventions need to focus on programs that strictly target the poor.

Figure 3.13 The increased grain bill could exceed 5 percent of GDP in more than 20 countries

Estimated change in grain expenditures, % of GNI

Source: World Bank.

Higher food prices and poverty

Although estimating the direct poverty effects of high oil prices is difficult, a more direct approach is possible for analyzing the poverty effect of higher food prices, because household expenditure surveys tend to provide more detail on the consumption of food.

Changes in food prices can affect poverty through consumption and income channels. On the consumption side, as food prices rise, the cost of a given basket of food increases and consumer welfare declines. However, for the segment of the population whose income depends directly or indirectly on agriculture (that is, farmers, wage workers in agriculture, and rural landowners), higher food prices represent an increase in income. Thus, for each household, the net welfare effect of an increase in food prices depends on the combination of a loss of purchasing power (consumption effect) and, for some households, a gain in income (income effect). At the country level, the poverty effect of higher food prices depends on

- The initial incidence and depth of poverty
- The proportion of the poor that have little or no direct income from agriculture, such as the urban poor

- The importance of food in the budgets of the poor
- Households' ability to substitute between food items

A rise in the price of food relative to other goods and services tends to raise poverty in the short term. The recent increase in internationally traded food prices (mostly grains and oilseeds) is estimated to have increased poverty in eight of nine developing countries studied by Ivanic and Martin (2008). This finding reflects the fact that most of the poor in developing countries (including those in rural areas) are net food buyers, as demonstrated by a number of studies based on detailed household surveys (Christiaensen and Demery 2007; Seshan and Umali-Deininger 2007; Byerlee, Meyers, and Jayne 2006).

Analyzing the poverty impact of higher food prices is complicated, however, because net sellers are disproportionately poor (Aksoy and Isik-Dikmelik 2008). As a consequence, high food prices can transfer income from richer to poorer households. Moreover, over the longer run, higher food prices that boost farm income may also increase other rural incomes by boosting employment and wages among the landless rural poor. Thus the impact of rising food prices on poverty can differ substantially between urban and rural areas.

Higher food prices increase urban poverty unambiguously

The overall impact of higher prices on poverty may be complicated to sort out, but there is broad consensus that higher food prices increase urban poverty, mainly because most of the urban poor have no offsetting income effects. The upper panel of table 3.5 reports the estimated effects on urban poverty levels in the six World Bank regions of a hypothetical 10 percent increase in food prices. The estimates are calculated using the Bank's model for Global Income Distribution Dynamics (GIDD) (see box 3.7 for a discussion of the assumptions underlying this and other modeling exercises reported here).[24]

Table 3.5   Higher food prices raise poverty more in urban areas than in rural areas
Estimated change in poverty from a 10 percent increase in food prices

| | Initial | | Change | |
	Poverty headcount (percent)	Income gap ratio (percent)	Poverty headcount (percentage point)	Income gap ratio (percentage point)
Region				
Urban population				
East Asia and the Pacific	13.2	20.3	2.9	1.2
Europe and Central Asia	2.5	8.7	0.6	2.5
Latin America and the Caribbean	3.7	37.6	0.3	0.0
Middle East and North Africa	2.7	17.8	0.6	1.1
South Asia	32.3	25.0	4.4	1.5
Sub-Saharan Africa	34.1	38.1	2.8	0.5
Developing world	15.3	27.1	2.2	0.8
Rural population				
East Asia and the Pacific	31.9	23.2	1.8	0.3
Europe and Central Asia	8.2	6.6	0.3	1.0
Latin America and the Caribbean	18.6	43.9	−0.2	0.2
Middle East and North Africa	15.4	22.9	0.3	0.2
South Asia	43.3	24.0	1.7	0.5
Sub-Saharan Africa	54.9	41.5	−0.2	−0.3
Developing world	37.1	28.2	1.2	0.1

Source: Computations using data from the World Bank's GIDD.
Note: The poverty line is set at 1.25 international dollars (2005) a day per capita. The ratio of food in total consumption among the poor is computed as described in De Hoyos and Lessem 2008. East Asia excludes China. The Middle East comprises only Jordan, Morocco, and the Republic of Yemen.

The largest impacts, both in the increase in the proportion of individuals in the urban population living in absolute poverty (the headcount poverty rate) and in the extent to which the average income of the poor falls below the poverty line (the income gap ratio), are observed in East Asia, South Asia, and Sub-Saharan Africa and are attributable to the heavy weight that food plays in the household consumption basket in these regions and to the high initial poverty headcounts in these regions (see table 3.5). The increase in headcount poverty in Sub-Saharan Africa is somewhat lower than in South Asia because food represents a smaller share of the urban poor's overall budget.[25] Low food shares in Latin America and the Caribbean and very low initial poverty levels in Europe and Central Asia mean that the urban poverty effects of higher food prices in those regions are close to zero.

In a similar exercise, Dessus, Herrera, and De Hoyos (2008) estimated that the increase in financial resources needed to alleviate urban poverty arising from the recent increase in food prices is less than 1 percent of GDP for the majority of countries, rising to 3 percent of GDP among those most affected.[26] The authors find that around 90 percent of the increase in costs derives from a reduction in the real incomes of households that were poor before the price shock and that the rest is attributable to an increase in the number of poor caused by higher prices.

Higher food prices also tend to raise poverty in rural areas, but by less

Most households under the extreme poverty line live in rural areas. In 2000, 7 out of every 10 poor individuals lived in a household where agricultural activities represented the main occupation of the head, with lower average incomes among these households being a constant pattern across all regions and countries (Bussolo, De Hoyos, and Medvedev 2008).[27]

The lower panel of table 3.5 reports the effect on rural poverty of the same uniform

Box 3.7   Critical assumptions underlying the estimation of the poverty impact of food price increases

The poverty analysis reported in this chapter is based on microsimulations using the World Bank's model for Global Income Distribution Dynamics (GIDD). The GIDD comprises household-level data for 73 countries covering around 60 percent of the developing world population.

In the reported simulations a number of simplifying assumptions had to be made.

1. All households within a country face the same increase in the real price of food, measured as the rise in the price of food deflated by the rise in the average price of all nonfood items. Data are taken from national consumer price indexes.

2. The income generated by the rise in food prices is redistributed to rural households in proportion to their agricultural-generated incomes. Information on the share of rural household income from agricultural activities is taken from the "Rural Income Generating Activities" (RIGA), a project of the Food and Agriculture Organization (FAO) and World Bank based on 17 Living Standards Measurement Surveys. This information is extended to the remaining 56 countries in the GIDD by estimating a simple polynomial relationship between the share of agricultural-related income and the level of income (at the centile level) across the 17 RIGA countries and then applying the estimated coefficients to the remaining countries in the GIDD.

3. One issue is whether self-employed workers and wage earners are likely to share in the rise in income from higher food prices. Because it is not possible to identify which households are self-employed and which are wage earners, the additional income attributable to high food prices is distributed equally among them. This approach is equivalent to assuming that all of the income goes to the self-employed (i.e., assuming that agricultural wages and employment are constant) and that all of the agricultural wage earners in a given centile work for a self-employed farmer from the same centile.

4. Household-level information on food consumption is available for only 21 countries in the GIDD. Engel curves, relating food shares to household per capita income (or consumption) and other household characteristics (see De Hoyos and Lessem 2008) are estimated, and estimated parameters plus a randomly drawn residual are used to impute food shares in countries that do not report this information.

5. The simulations show the instantaneous impact of the rise in food prices, assuming no substitution or conservation on the part of consumers (or producers).

The technical annex to this chapter reports the sensitivity of the poverty estimates to variation in assumptions made concerning the size of the price shock and the distribution of resources within both the rural and urban sectors.

10 percent increase in food prices. It assumes that farm-related incomes of rural households also rise by 10 percent. This could be an underestimate, because total spending on food includes retailing and transportation margins. Assuming that all of the real increase in food prices was attributable to increased food commodity prices, then the percentage increase in farmgate prices would have been proportionately larger than that of retail prices (see technical appendix).

In every region, the deterioration in the rural poverty indicators is milder than it is for urban poverty, primarily because of the effect of increased prices on the incomes of farmers. Rural poverty actually declines somewhat in Latin America and Sub-Saharan Africa, whereas it increases a fair amount in East Asia

Table 3.6 Observed real price shocks and food shares of consumption vary across developing regions
(Percent)

Region	Price Shock	Food share among the poor
Rural population		
East Asia and the Pacific	12.4	71.5
Europe and Central Asia	−0.2	63.4
Latin America and the Caribbean	6.9	51.2
Middle East and North Africa	25.9	64.5
South Asia	5.0	65.3
Sub-Saharan Africa	9.6	68.0
Developing world	6.7	66.1
Urban population		
East Asia and the Pacific	13.8	67.5
Europe and Central Asia	−0.5	57.9
Latin America and the Caribbean	1.6	44.1
Middle East and North Africa	12.5	57.1
South Asia	4.8	64.4
Sub-Saharan Africa	4.9	53.0
Developing world	4.1	60.4

Source: World Bank.

and South Asia, reflecting the greater importance of nonfarm incomes within the overall incomes of the rural poor in those regions and the large share of food in consumption (see the second column of table 3.6).
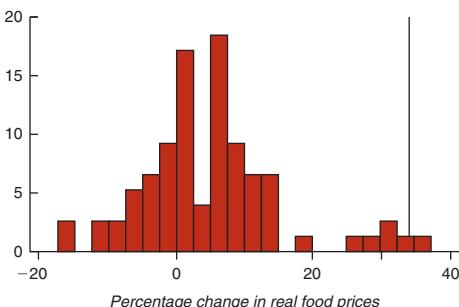
The actual extent of food price increases varies widely across countries

The analysis so far has assumed that all food prices increased by a uniform 10 percent. In fact, observed changes have been very different. As discussed in chapters 1 and 2, while prices of internationally traded commodities denominated in U.S. dollars increased by as much as 74 percent between January 2005 and December 2007, the real increase observed in individual developing countries was much smaller. Indeed, among the 73 countries for which distinct monthly consumer price index and household survey data are available, the majority had real food price increases of 12 percent or less (figure 3.14).[28] Only four countries saw real food prices rise by as much

Figure 3.14 Real food prices in developing countries rose less than prices of internationally traded foods

Distribution of cumulative increases in relative food prices (Local currency unit, January 2005–December 2007)

Percentage of developing countries

Percentage change in real food prices

Source: World Bank.

Note: Real local currency price increase of internationally traded food commodities is shown by vertical line.

or more than the average increase of real internationally traded food prices. The difference between domestic and international prices arises because internationally traded foods represent only a small share of total food consumption in most developing countries. Moreover, different foods have very different weights across developing countries, and many developing countries have policies that have prevented local prices from fully reflecting changes in international prices.

Table 3.7 reports the result of simulations of the poverty impacts of the observed increase in real food prices. Like the earlier simulations, it assumes that the farm incomes in rural households rise in line with the real increase in national food prices.[29]

As with the uniform shock, all regions except Europe and Central Asia and Latin America and the Caribbean experience a significant increase in the incidence and depth of poverty. At the global level, the headcount ratio increases by 1.3 percentage points, representing an additional 130 million individuals falling below the poverty line.[30]

The largest increases in the absolute number of poor are in Asia and Sub-Saharan

Table 3.7 Poverty effects of the changes in relative food prices
January 2005–December 2007

Region	Initial levels:		Change in:	
	Poverty headcount	Income gap ratio	Poverty headcount	Income gap ratio
	(percent)		(percentage point)	
Urban population				
East Asia and the Pacific	13.2	20.3	6.3	2.7
Europe and Central Asia	2.5	8.7	0.0	0.2
Latin America and the Caribbean	3.7	37.6	0.1	−0.7
Middle East and North Africa	2.7	17.8	2.4	5.7
South Asia	32.3	25.0	2.0	0.5
Sub-Saharan Africa	34.1	38.1	1.7	0.3
Developing world	15.3	27.1	2.9	0.5
Rural population				
East Asia and the Pacific	31.9	23.2	4.9	0.7
Europe and Central Asia	8.2	6.6	0.0	0.0
Latin America and the Caribbean	18.6	43.9	0.1	0.1
Middle East and North Africa	15.4	22.9	0.7	0.9
South Asia	43.3	24.0	0.8	0.3
Sub-Saharan Africa	54.9	41.5	0.3	0.0
Developing world	37.1	28.2	2.1	0.1

Source: World Bank.
Note: Computations using data from the GIDD. Poverty line of 1.25 international 2005 dollars per day. The ratio of food in total consumption among the poor is computed as described in De Hoyos and Lessem 2008. East Asia excludes China. The Middle East comprises Jordan, Morocco, and the Republic of Yemen.

Africa, reflecting the large number of people in each of these regions living just above the poverty line. The share of the urban population in extreme poverty is estimated to double from 2.7 to 5.2 percent in the Middle East and North Africa and to increase by almost 50 percent in the East Asia and Pacific region.

Some caution should be exercised in interpreting the figure for East Asia because the GIDD data set does not include China, by far the largest country in the region. As a result, the GIDD model reports an initial poverty headcount ratio of 24 percent for urban and rural populations combined, a figure substantially higher than the 18 percent reported in Chen and Ravallion (2008), which includes China. The impact that this discrepancy has on the global poverty estimates depends on the difference between the poverty effects of higher food prices in China and those effects in the average East Asian country. In the absence of household-level information for China, the underlying assumption is that the poverty impacts there (that is, the change in the headcount ratio and the income gap ratio) will be equal to the average poverty effects for the region.

Overall, the rise in food prices increases the global poverty deficit (the amount that a perfectly targeted poverty alleviation program would need to spend to bring all of those living on less than $1 a day up to the poverty line) from 8.2 to 13.4 percent of developing-country GDP, or an increase of $37 billion. The income gap ratio (the average difference between the incomes of poor people and the poverty line, expressed as a percent of the poverty line) rises by much more in urban than in rural areas, reflecting increased earnings in rural areas when food prices rise. The difference is particularly dramatic in East Asia and the Middle East, where the increase in the income gap ratio in urban areas is more than 4 times larger than it is in rural areas.

The results presented in table 3.7 hide important heterogeneities across countries. Indeed, the increase in the poverty headcount and the deficit resulting from the rise in food prices is less than one-fifth of a percentage point for almost half of the countries analyzed. In around 40 percent of the countries analyzed, higher food prices raise the headcount ratio by at least 0.2 percentage point; and in 6 countries, the change in relative prices reduces the incidence of poverty by at least 0.2 percentage point. In some countries, the measured impact of higher food prices on poverty is small, or even negative, because nonfood prices rose more quickly than food prices during the period in question.[31]

Over the long term, higher food prices will raise incomes in the agricultural sector

In most developing countries, higher food prices raise the number of poor and lower incomes of the existing poor in the short term. Over time, however, the impact on poverty becomes less clear. The increased incomes of food sellers will raise incomes in rural areas (where the majority of poor live). The simulations summarized here do not reflect the multiplier effects of higher food prices on incomes in the agricultural sector nor any long-term dynamic effects that may arise because agriculture has strong links to the rest of the economy. These include backward links, when farmers purchase inputs such as chemicals, fertilizers, and farm equipment for agriculture, and forward links, when agricultural production provides raw materials to food and fiber processing in the nonfarm sector.

Moreover, increases in agricultural incomes are usually spent on locally produced goods and services, which generate local employment. In many African countries, for example, on average for every $1 of additional farm income, an additional $1.47 in net income is generated in the wider economy, some of which accrues to the poor (Delgado, Hopkins, and Kelly 1998).

The long-term impacts of higher agricultural prices are difficult to measure because they are lengthy and complex (World Bank 2007). They depend in part on public investments in roads, markets, irrigation, infrastructure, education, and health as well as on investments in the main factors of agricultural production—land, labor, and capital—all of which take a long time to adjust. Over time, increases in agricultural prices relative to other sectors slow migration out of agriculture and increase capital investment, which results in increased agricultural output.[32]

To the extent that agricultural sectors do sustain more rapid growth because of higher food prices, rural poverty will be reduced, especially where the concentration of land ownership is low and labor-intensive technologies are used (Gaiha 1993; Datt and Ravillion 1998).

Dealing with high food and fuel prices
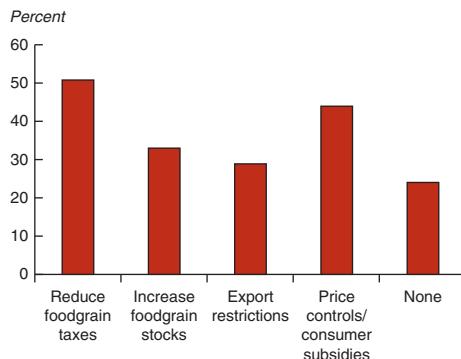
The priority for governments is to address the immediate needs of the poor while minimizing the impact on already-strained budgets. Care must be exercised to do so in a way that does not exacerbate the crisis or impair the economic adjustment of the economy to higher prices. Given the necessity to respond quickly and the time and cost involved in gathering information on the poor, governments have tended to respond to the rise in food prices by increasing resources to existing antipoverty programs. While a logical response, in many cases care has not been taken to clearly define the temporary boost in spending to compensate for a temporary rise in food prices by announcing, for example, a limited time for improved benefits or by tying them explicitly to food prices to avoid creating an unnecessary, permanent, and unsustainable fiscal burden.

Over the medium term, governments need to put in place more efficient policies for protecting the poor and supporting agriculture, so that the next crisis can be met without seriously impairing incentives for production or ramping up wasteful spending. Such policies would entail better targeted and more efficient safety nets, along with steps to achieve the potential for strong improvements in agricultural production described in chapter 2, including investing in agricultural research and infrastructure, promoting the diffusion of best practices, and reducing carbon emissions to minimize the extent of climate change in the long term.

The immediate response has been policies designed to mitigate the impact of rising food and fuel prices
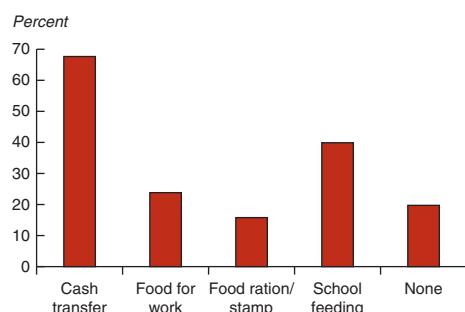
The immediate response of most countries to the rapid rise in food and fuel prices during the course of 2008 has included a mix of market interventions and the scaling up of existing antipoverty measures. Almost three-quarters of the 80 developing countries surveyed by the

Figure 3.15 Developing countries have responded to rising food prices with a variety of policies

Percent

Source: Revenga, Wodon, and Zaman 2008.

Figure 3.16 Countries have tended to expand cash transfers and school feeding programs when responding to higher food prices

Percent

Source: Revenga, Wodon, and Zaman 2008.

World Bank in March 2008 have taken some policy action in response to the rise in food prices (figure 3.15).

The most common response was reduced tariffs on imports combined with price controls or consumer subsidies, followed by bans or restrictions on exports and decisions to add to official grain stocks. Most oil-importing countries have passed through all or more than all of the fuel price increases since 2003, but on average oil-exporting countries have passed through only about one-half of the increase (Mati 2008).[33] Indeed, as oil prices hit the $140 range, the fiscal cost of fuel subsidies became very large in some oil-exporting countries and represented a significant challenge to fiscal sustainability. Some 36 countries responded to higher fuel prices by increasing subsidies and 43 by lowering fuel taxes (IMF 2008a). Those countries that have expanded existing safety net programs have favored cash transfers and school-feeding systems. Food for work and food stamps were also popular options (figure 3.16).

Overall, the additional fiscal costs of measures aimed at offsetting higher fuel and food costs varies from zero to a maximum of 4.8 percent of GDP, with food and fuel price subsidies the most costly measures implemented (table 3.8). However, individual coun-

Table 3.8 Fiscal costs of selected antipoverty measures vary widely

Measure	Number of countries where implemented	Maximum increase (percent of GDP)	Median increase (percent of GDP)
Food tax decreases	31	1.1	0.1
Food price subsidies	28	2.7	0.2
Targeted transfers	21	2.0	0.2
Public sector wage hikes	10	1.9	0.6
Fuel subsidies	38	4.0	0.7
Fuel tax reductions	37	1.3	0.3
Aggregate costs	79	4.8	0.7

Source: IMF 2008a.

try experience varied widely. Indeed, although the majority of countries increased spending—either because preexisting subsidy policies became much more expensive or because of direct measures—some actually reduced the scope of programs and cut into spending because of increased budgetary cost.

Policies need to be more targeted and more supportive of medium-term adjustment

Although subsidies and export restrictions have helped dampen the immediate impact of higher prices in the countries where they are implemented, they are very expensive and often poorly targeted. Moreover, they tend to exacerbate the extent and duration of the

crisis by reducing producers' incentives to increase output and consumers' incentives to reduce demand. Over the medium-term, policy makers need to redress the balance, placing more emphasis on well-targeted antipoverty measures and on policies that promote increased supply and more prudent use of natural resources.

Subsidies and price floors are expensive and poorly targeted antipoverty measures

Food and fuel subsidies tend to be costly and poorly targeted, even when steps are taken to make the subsidized material available only to certain segments of the population. For example, the Egyptian system of food subsidies is targeted at the poor by restricting access to subsidized flour to the truly poor, by locating distribution points in poor neighborhoods, and by using lower-quality products. Nevertheless, the system is very expensive (with an estimated financial cost of 2 percent of GDP) and ineffective (World Bank 2005a). Between one-quarter and one-third of the poor do not benefit from it, and fully 83 percent of the value of the food subsidies goes to the nonpoor. Moreover, those poor and vulnerable households that do benefit receive so little that the net effect is to lift only 5 percent of the population out of poverty.

General fuel subsidies tend to be even more regressive and more costly than food subsidies because they involve substantial leakages of benefits to higher-income groups. A study of five countries from various regions found that on average 78 percent of fuel subsidies went to the richest 60 percent of households (Coady and others 2006). Even when targeted through voucher programs, fuel subsidies tend to be ineffective. In India, for example, about half of subsidized kerosene[34] (which is made available to poor families on a quota basis at 9 rupees a liter) is diverted to the black market where it is either sold at a higher price or is used to adulterate diesel, which sells for about 30 rupees per liter.[35]

More generalized price subsidies or price floors (including indirect ones such as man-

dating the national oil company to sell at below cost) are also common and can be very expensive.[36] Estimates suggest that India's total fuel subsidies amount to about 2 percent of GDP. Even after reform, the fuel subsidy in Indonesia is expected to total 127 trillion Indonesian rupiah ($13.9 billion) in 2008 and make up about 13 percent of the country's total budget (more than the total of spending on education and health).
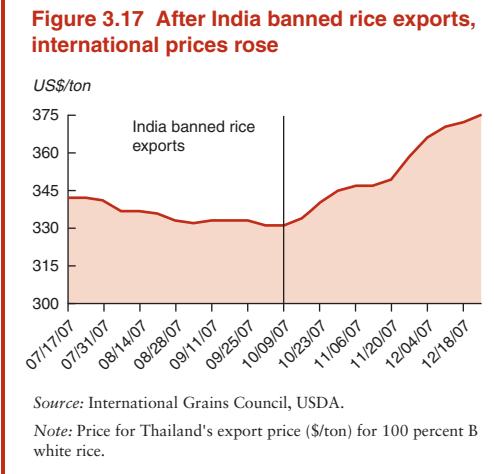
The imposition of export bans by food-exporting countries has the same basic goal of keeping consumer prices below the market level.[37] Some 20 developing counties have introduced such bans since 2007, including Argentina, China, Egypt, India, Kazakhstan, Pakistan, Russia, Ukraine, and Vietnam. Several different policies have been used, including export taxes on a particular commodity (India), taxes on transport (Kazakhstan), restricting licenses to export (Argentina), and a complete ban on exports (Vietnam).

Price containment policies distort incentives, reducing supply, limiting conservation, and exacerbating and prolonging high prices

While expensive and generally poorly targeted, all of these policies (price subsidies, price floors, and export bans) do succeed in limiting the immediate domestic impact of rising international prices. However, they do so at a cost. Not only are they fiscally unsustainable in many cases, but they also tend to exacerbate and prolong the price increase. Lower producer prices mean that less new supply is forthcoming, while lower consumer prices means that demand is not curtailed—both domestically and internationally. For example a series of steps taken by Serbia in 2007 to secure domestic supply, including a temporary ban on exports of wheat, maize, soybeans, and sunflower backfired. Serbia's wheat plantings fell to a 90-year low (partly because of bad weather) and prices rose (USDA 2007).

The problem with export bans is even more severe. Although they are domestically appealing, these bans decrease confidence of net

Figure 3.17 After India banned rice exports, international prices rose

US$/ton

Source: International Grains Council, USDA.

Note: Price for Thailand's export price ($/ton) for 100 percent B white rice.

Table 3.9 Increasing rice self-sufficiency can be more costly than relying on imports

	Production	Consumption	Imports	Cost of rice consumption — Import strategy	Cost of rice consumption — Self-sufficiency
	(millions of metric tons)			($US billions)	
China	123.2	133.8	10.6	28.8	43.2
Indonesia	33.8	36.1	2.3	7.8	11.6
Nigeria	2.2	3.7	1.6	0.8	1.2
Iran, Islamic Rep.	1.6	2.9	1.3	0.6	0.9
Iraq	0.1	1.1	1.0	0.2	0.4
European Union	1.7	2.6	0.9	0.6	0.8
Philippines	8.7	9.6	0.9	2.1	3.1
Bangladesh	25.3	26.0	0.8	5.6	8.4
Senegal	0.1	0.9	0.7	0.2	0.3
Côte d'Ivoire	0.5	1.2	0.7	0.3	0.4
Total	197.2	217.9	20.7	46.8	70.3

Source: World Bank.

importers in the international trading system as a reliable source of food. For example, following India's ban on exports of premium rice on October 9, 2007, domestic prices remained well below international prices, but the withdrawal of supply from international markets sparked an almost immediate rise in international rice prices (figure 3.17).[38]

Although countries' food security concerns are legitimate, a widespread return to policies of food self-sufficiency could be very costly depending on how quickly it is achieved, the resource endowments of the country and the policies used to achieve it.[39] If investments in research and infrastructure are made to improve productivity, the costs may not be too high. Although the rate of return on such investments is high, it can take many years to raise production enough to achieve self-sufficiency.

If price policies are used to boost domestic production, the costs could be very high and the effectiveness uncertain. First, the supply response of the agricultural sector as a whole is low (Cavallo 1988).[40] Raising the total of agricultural production as opposed to production of a single crop takes many years. Thus, unless a policy is very carefully constructed, it risks increasing production in one food item at the expense of reduced production (and increased dependence) in another.

Moreover, using a price subsidy or import restrictions to boost domestic prices and induce additional production is often a costly alternative to importing (table 3.9). For example, to increase domestic rice output by 10 percent, a country would have to increase domestic prices by as much as 50 percent.[41] For the 10 largest rice importers over 2000–05 (who imported about 10 percent of their total consumption), achieving self-sufficiency in this way would imply a $24 billion dollar increase in food costs compared with the current situation where the rice is imported—mainly because the extra 50 percent would have to be paid both on the rice currently produced domestically as well as on the new rice to be produced (currently imported).

A better approach would be to enter into long-term supply arrangements, such as those discussed earlier in the context of the oil market. Under these agreements, importing countries could agree to buy a minimum amount of grain or other food crop each year in exchange for a commitment by the exporting country to meet larger imports when needed. Alternatively, countries might make more intensive

use of the kinds of conditional contracting recently used by Malawi (see box 3.6).

Over the medium term, countries need to move toward more flexible and targeted social safety net schemes

Having weathered the initial consequences of high food and fuel prices, countries need to transfer more of the burden of dealing with high prices to better-targeted social safety nets and market mechanisms. Doing so will bring both fiscal and economic benefits, in the form of increased poverty reduction, reduced cost, and lower commodity prices.

There is no magic prescription for effective social safety nets, especially among developing countries where both fiscal and administrative resources are often in short supply. Successful systems usually consist of several individual programs that complement each other as well as other public or social policies. Ultimately, the particular policy mix put into place will depend on the country context.

Nevertheless, there is general consensus on the relative strengths and weaknesses of different forms of support. A loose ranking of programs would favor targeted cash transfers of adequate coverage, generosity, and quality as the best option and could include increasing pensions and unemployment benefits when they target the poor (box 3.8).

Emergency food aid distribution, used in places like Afghanistan and Angola, often in partnership with agencies such as the World Food Programme (WFP), ensure food security for vulnerable groups and are appropriate where markets are functioning poorly or where foreign assistance is only available in-kind, but the physical transfer and potential leakages can make these programs costly. School feeding programs can be used for a quick response, but these do not typically address child malnutrition at its most critical point—when children are in their infancy. Conditional cash transfer programs can help foster increased use of health and education services and are generally most efficient, but they are not always a feasible option in low-income

countries with weak administrative capacity. Finally, public works programs, in food or cash (such as in Cambodia and Mozambique), can be effective only for a few areas and for people who are currently unemployed.

Household targeting systems—such as proxy means tests or means tests, sometimes community-based decision making, or hybrids among these—can be effective in directing resources to the poor. Where a household targeting system is not in place, a combination of geographic targeting, self-targeting, or demographic targeting can produce at least moderately good results, reducing the cost of administrative targeting.[42] For example, school feeding programs targeted geographically to poor rural areas may have relatively low errors of inclusion. Self-targeting can be achieved by setting low wages for labor-intensive public works. Open market operations for food sales can be geographically targeted to slum areas, with a limitation on quantity and provision of an inferior staple commodity inducing some degree of self-targeting. Fees for networked electricity can be differentiated by use level or neighborhood. Provision of fortified weaning foods that are culturally acceptable for only very young children is a good use of demographic targeting.

Although the economics of reform are solid, eliminating existing but inefficient antipoverty measures is politically difficult

Removing subsidies is difficult and can be met with strong opposition and violent protest. Nevertheless, given the fiscal burden that such subsidies impose—especially on oil importers—governments have little choice but to reform. While many different approaches have been followed, those that have worked have tended to use a strategy that replaces the subsidy with a better-targeted benefit, preceded by an effective publicity campaign that emphasizes the poorly targeted nature of the existing subsidy (Kojima and Bacon 2006).

Several countries have used some variation of this approach. Chile made a one-time payment of $28 to low-income households to

Box 3.8   Conditional cash transfers are most effective in getting money to the poor

Targeted cash transfers are the cornerstone of safety net programs in most of the countries with safety nets. They help protect poor households by providing them with the resources they need to maintain a minimum level of consumption. These are the most flexible programs and can be adapted to particular circumstances. It is not surprising that targeted cash transfers are used in countries of varying income level, from Albania to Mexico to Zambia.

Even poor countries can afford to allocate resources for safety net programs. The fiscal costs of a well-targeted safety net for the poorest need not be unduly high. For a large share of developing countries, spending on overall safety nets has been on the order of 1–2 percent of GDP in recent years. However, the costs of the responses differ according to the scope, generosity, and degree of targeting: ranging from a mere 0.04 percent of GDP in Chile (for a well-targeted response) to more than 1 percent of GDP in Ethiopia (for lifting the value added tax on food grains, raising the wage on the cash-for-work program, and distributing wheat to the urban poor at a subsidized price). A careful fiscal-planning exercise will be needed in each country. Such a plan should seek to protect critical growth-enhancing spending and prune low-priority expenditures, and be embedded in a medium-term fiscal sustainability strategy so that the longer-term fiscal sustainability of the program is ensured. For the poorest countries, international assistance will be essential.

The quality and care with which programs are designed and implemented, including the selection, provision, and monitoring of benefits, have a large impact on program efficiency and effectiveness. No program is a guaranteed success, and few are guaranteed failures. The role of good systems and adroit managers in getting the most from a program cannot be overemphasized.

Conditional cash transfer programs have a good reputation and are an effective mechanism for directing assistance toward the poor. Large-scale conditional cash transfer programs were developed in Mexico (*Progresa, Oportunidades*) and in Brazil (*Bolsa familia*) and later spread to other countries in Latin America and the Caribbean and to the rest of the world. Those programs are well targeted to poor families through a combination of geographic prioritization and household assessment mechanisms and are particularly efficient in providing transfer to the poor. Administrative costs are relatively low, averaging about 5 percent of total program costs after start-up, compared with food-based programs, whose administrative costs average 36 percent of total program costs. However, because they are more difficult to set up than unconditional programs and might exclude the neediest where services are scarce, cash transfer programs can be part of an emergency response, for example to high food prices, where they are already established.

Care must be taken to ensure that the policy response to temporary crises is temporary. Although a permanent increase in fiscal space may be justified in countries that have underinvested in adequate safety net systems, in countries that already had broadly adequate safety nets a temporary expansion of benefits may be best. Permanent changes in the benefit levels or scope of the transfer program can be avoided by targeting additional benefits at those already qualified for a program; making payments in a lump sum or explicitly time-limited fashion.

Source: Grosh, del Ninno, and Tesliuc 2008.

compensate for higher fuel prices and provided extra cash compensation to 1.4 million households consuming less than 150 kilowatt-hours of electricity a month. Indonesia used an effective public relations campaign, coupled with a cash compensation scheme and general trust in the government, to more than double gasoline and diesel prices and nearly triple kerosene prices in 2005 with no substantial opposition. Ghana combined prior analysis of who benefited from fuel subsidies with a campaign publishing the measures that would be used to compensate for removing subsidies in a successful effort to remove subsidies (box 3.9).

Box 3.9   Removing fuel subsidies in Ghana

Ghana could not continue fuel subsidies as world oil prices rose in 2004, and the government launched a poverty and social impact assessment to study the situation. Guided by a steering committee of stakeholders from ministries, academia, and the national oil company, the assessment was completed in less than a year. By the time the government announced the 50 percent price increases in February 2005, it could use the assessment findings to make its case for liberalizing fuel prices to the public—including the fact that the price subsidies mostly benefited the better-off.

The minister of finance launched the public relations campaign with a broadcast explaining the need for the price increases and announcing measures to mitigate their impact. A series of interviews with government officials and trade union representatives followed. The Energy Ministry used newspaper advertisements with charts to show that Ghana's fuel prices were the lowest in West Africa, after Nigeria's.

The mitigation measures, which were transparent and easily monitored by society, included an immediate elimination of fees at government-run primary and junior secondary schools and a program to improve public transport. Although the trade unions remained opposed to the price increases, the public generally accepted them, and no large-scale demonstrations occurred.

Source: Bacon and Kojima 2006.

The international response to high commodity prices

The effectiveness of the policy response to the recent rise in food and fuel prices will, in the main, depend on the ability of individual governments to put in place well-targeted programs to ameliorate hardship and to provide the infrastructure, services, and appropriate incentives required to raise food production and encourage adjustments to high food and fuel prices. For the poorest countries, some form of additional assistance will be required, while for other countries international coordination may be required to help restore confidence in global food markets and provide emergency assistance for poor consumers.

The loss of real income from higher food prices is too great to compensate all consumers

As discussed earlier, the rise in food and fuel prices substantially reduced the purchasing power of the poor throughout the developing world. During such episodes, short-term assistance is urgently needed to avoid hardship. However, effective targeting of assistance is critical. The cost of compensating all consumers for the rise in food prices alone since January 2007 is impossibly large—perhaps more than $270 billion annually. Moreover, insulating consumers from the effects of price increases (and taxing producers to finance this assistance) delays the necessary adjustments in demand and supply that will eventually bring prices down.

Even if a program could be devised that concentrated aid only on the poor, it would cost some $38 billion annually, or about 14 percent of all official development aid in 2007. Focusing international assistance on the poorest countries makes sense, in part because higher proportions of their populations are extremely poor and because their own fiscal resources are particularly weak. The total cost of reversing the poverty impact of higher food prices in IDA-eligible countries would be a more manageable $2.4 billion.

Box 3.10   The international response to rising food prices

The UN secretary-general established a Task Force on the Global Food Security Crisis aimed at promoting a unified response to the global food price challenge. An initial meeting was held in June 2008, attended by 181 countries, and 60 nongovernmental and civil society organizations.

The summit concluded with a declaration calling on the international community to increase assistance for developing counties, in particular the least developed countries and those that are most negatively affected by high food prices. The immediate response was to call for increased humanitarian assistance to those hardest hit by the rise in food prices through food aid and balance of payments support to countries. The medium-term response has been to assist countries to put in place revised policies and measures to help farmers, particularly small-scale producers, to increase production and integrate into local, regional, and international markets along with measures to moderate the fluctuations in food grain prices through increased stockholding capacity and better use of risk management practices. Longer-term responses have focused on how to increase the resiliency of food production systems to challenges posed by climate change.

The international community has reacted swiftly to the rise in food prices

The international community has been quick to recognize the serious risks that higher food prices posed for the poor. The United Nations has established a Task Force on the Global Food Security Crisis to formulate a unified response to the food crisis (box 3.10).

Donors ramped up existing programs and launched new initiatives to speed the provision of food aid to the poor. Examples include the Food and Agricultural Organization has launched the Initiative on Soaring Food Prices, which assists small-holders in critically affected countries (beginning with Burkina Faso, Haiti, Mauritania, and Senegal) to obtain seeds, fertilizers, and animal feedstock; the International Fund for Agricultural Development (IFAD) is making up to $200 million from existing loans and grants available to improve poor farmers' access to seeds and fertilizer; bilateral donors (for example, the U.S. Agency for International Development and the U.K. Department for International Development) are focusing existing programs on countries most affected by the food crisis; the European Union has committed €1.0 billion in funds from European farm subsidies that have not been used (because high prices have reduced the compensatory amounts payable to farmers) to farmers in developing countries, mostly in Africa; and the World Food Programme has pledged $214 million to provide assistance to vulnerable groups.

For its part, the World Bank has created a $1.2 billion rapid financing facility, the Global Food Crisis Response Program (GFRP), to address immediate needs arising from the food crisis. The facility includes $200 million in grants targeted at vulnerable poor countries, with priority given to the most fragile states.

The GFRP strives to create a balance between short-run food stabilization and measures to ensure that countries are able to cope better in the medium term. Countries can select measures most relevant to their individual situations from program components that address price policies, social protection and nutrition, and immediate supply response provisions for getting seeds and fertilizers to farmers.

The World Bank is also establishing a multidonor trust fund, with an initial contribution from Saudi Arabia, to help the poor respond to high energy and food prices. This fund will operate in parallel with the GFRP and will

provide priority assistance to countries whose economies are most severely affected by the increase in the price of imported fuel, that have already embraced or are pursuing energies policies that are more fiscally sustainable, and that propose cost-effective social safety net programs.

Improvements are required in the architecture for humanitarian aid to strengthen the response to the food crisis

The dramatic increase in food prices has underlined the importance of improving the efficiency of programs to deliver emergency food aid. Bilateral food aid programs are largely based on the disposal of surplus commodities. This approach has played an important role in garnering political support for the provision of food aid. However, 60–86 percent of the aid is tied, either directly to commodities provided by the donor country or through constraints on the use of cash donations (FAO 2006). As a consequence, the cost of this aid can be 30–50 percent higher than nontied sources (OECD 2005). Moreover, tied food aid of this type slows the delivery of food aid, and reduces supplier incentives in local food markets. [43]

Progress is being made in improving the administration of food aid programs. Some donors have lifted requirements that food aid be procured domestically and have shifted from providing commodities to providing cash, making it possible to purchase some food locally. Resources have shifted toward the provision of emergency aid, implying an improvement in the targeting of food aid (FAO 2006). Additional efforts to provide cash aid and allow the food to be purchased where and from whom made most economic sense would reduce costs and help make food aid a more efficient instrument in reducing poverty.

Improvements in food aid management are required at the international level as well. The main multilateral provider of food assistance is the UN's World Food Programme, which delivers more than half of the humanitarian food aid in the world. Higher food prices have made it very expensive for the WFP to purchase food on international markets, threatening its capacity to deliver emergency humanitarian aid in a timely manner.

A strengthening of the financing arrangements for the WFP could markedly improve the efficiency of its operations, allowing for an expansion in food aid and a reduction in costs. [44] Financing of the WFP depends on voluntary contributions from donor countries that are largely tied to assistance for specific countries or programs on a year-to-year basis. [45] As a result, WFP programs can be designed and implemented only after financing is committed. Contributions are often based on surplus disposal, with provision that the food be transported on the carriers of the donating nation.

These arrangements are major constraints on the WFP's ability to respond flexibly and efficiently to the need for assistance. The time required to obtain donor commitments makes it difficult to respond to unexpected shocks. The timing of commitments also can mean that food purchases must be made when prices are at seasonal highs rather than following harvest when prices are at seasonal lows. Several donors provide commodities rather than cash, significantly increasing the cost of food compared to local purchases. Providing an annual dollar budget equivalent to the value of current commitments would dramatically improve the efficiency of WFP operations. Given the volatility of food prices, this budget might be supplemented by a line of credit upon which it could draw in years when either prices or needs are unusually high.

Steps to assist the replenishment of international grain stocks would help

The role that low stocks have played in the rise of food prices has raised the issue of whether or not an international food stockpile should be created to help prevent a repetition of the past year's high prices, in part by ensuring that supply would be available to the market and by dissuading speculative behavior. While an appealing notion, it is not clear that such a stockpile would be effective—or

needed. To have a significant dampening effect on the market, such a stockpile would have to be large and would be very expensive to create and maintain. Rough calculations suggest that a stockpile equivalent to 10 percent of global production would cost about $66 billion to create and some $8–10 billion annually to maintain.[46] Moreover, the creation of the stockpile would add significantly to global food demand and price pressures during the period in which it was being created. Nor is it clear that a global stockpile would actually increase world stocks. The public stock increase may well be matched by a reduction in private stocks, thus transferring the costs of keeping a stock to the public sector without necessarily improving the stability of the market.

A more effective strategy might be to improve information flows about stocks and create mechanisms by which they can be managed. Currently most stocks are held by a limited number of major producers and importers. It may be possible to create an international agreement that provides for the sharing of some of these costs—perhaps along the lines of the International Energy Agency agreement governing oil reserves. As in that agreement, the rules for accumulating and distributing grain stocks would need to be clearly defined to prevent their being used for surplus disposal or price support and to ensure they are used for humanitarian purposes.

More multilateral discipline in trade policies would help mitigate the rise in food prices

A range of multilateral and trade policies (export restrictions, biofuel subsidies, tariffs, mandates, and global protection of agriculture more generally) have contributed to the rise in food prices. Moreover they have reduced confidence in the international food trading system and interfered with consumer and producer incentives, reducing supply and increasing demand. As a result, the price hike has been larger and longer lasting than it would have been otherwise.

A strengthening of existing international rules governing the imposition of export re-

strictions may be desirable. Currently, unlike countervailing duties, the conditions that must be met before export restrictions are introduced are ill defined, and although there is a requirement that the World Trade Organization be notified of their implementation, it is not enforced.[47] Even the enhanced rules proposed under the Doha Round should probably be strengthened.[48] Helpful measures might include including stricter (even pre-) notification requirements, limits on the allowed duration of restrictions, and possibly a definition of the conditions under which such restrictions might be admissible.

Policy makers should also consider phasing out biofuel subsidies and production mandates, especially where these are coupled with tariffs that restrict imports from lower-cost producers. This step would both reduce pressure on food prices and help low-cost and environmentally cleaner developing-country biofuel producers that are currently shut out of major markets by these rules.[49] There are indications that a number of developed countries are beginning to reexamine their biofuel policies, but it remains a contentious issue.

More fundamentally, decades of trade-distorting policies (such as tariffs, quantitative restrictions, and subsidies) are partly responsible for the current spike in food prices, having encouraged inefficient agricultural production in rich countries and discouraged efficient production in developing countries (Chauffour 2008). The kind of agricultural trade barrier reductions contemplated in the Doha Round might lead to higher agricultural prices in the short term, but in the long run, they should help establish a more transparent, rules-based, and predictable food trading system that would stimulate trade and raise incomes around the world. An ambitious program could reduce global poverty by as much as 8 percent (World Bank 2004).[50]

Moreover, removal of the rules that allow such trade restrictions would help ensure that, as prices come down, countries cannot introduce new subsidies and restrictions in an effort

to prevent domestic producers' prices from declining as sharply as they would otherwise.

Conclusions

The rise in primary commodity prices since 2003 was much larger and more sustained than those of earlier periods. This boom generated dramatic transfers of income within and among countries and has imposed severe burdens on some consumers. However, it has also created opportunities for producers and these, if managed properly, can provide significant growth opportunities. The boom has also exposed weaknesses in domestic and international policies that have contributed to and prolonged the period of high prices and reduced confidence in international markets.

For commodity producers, commodity dependence need not hurt long-term growth. Although commodity-dependent economies have, on average, grown more slowly than more-diversified economies, for most economies dependence on commodities is the result of slow growth, not the cause. To achieve the growth potential inherent in commodity riches, countries need to implement policies that minimize the potential disruptive impacts of volatile export revenues, exchange rate appreciation that can erode the competitiveness of manufacturing, and incentives for rent seeking and corruption. It would appear that producing countries have responded to higher prices in a more prudent manner during this boom than in the past. Fiscal policy has been less procyclical than in the past, countries have made greater efforts to save windfall profits, and rate appreciation has been muted. As a result, they are less likely to endure the major setbacks that characterized the 1980s as prices declined. An exception to this generally welcome response has been the performance of countries with newfound commodity wealth and some newly independent resource-rich countries that may have repeated some of the mistakes of the past.

Consumers have faced daunting challenges from the commodity price boom. The rise in food prices has presented the greater challenge because the poor in developing countries spend as much as half of their incomes on food, while fuel is a smaller share of their expenditures. The rise in food prices has increased poverty and boosted the cost of many countries' poorly targeted and inefficient subsidy programs, which by limiting the impact of food and fuel prices impede the necessary adjustment to high prices.

The expansion of existing programs and the adoption of emergency measures are understandable, given the magnitude of the oil and food price increases, the potentially dire implications for the poor, and the limited time. However, the high cost of this response underlines the importance of putting in place well-targeted and efficient safety net programs, so that next time countries can address the needs of the poor without incurring undue fiscal costs. This episode has also shone light on the need for international coordination to encourage countries to avoid counterproductive policies and to marshal aid resources to help the poor.

Policies to deal with the rising food and fuel prices have often exacerbated the problem by slowing necessary adjustments. Such policy responses have included price controls and export bans that have impaired incentives to reduce consumption and invest in the additional capacity that would help bring prices down, while weakening confidence in the international trading system.

The dramatic increase in food prices has underlined the importance of improving the efficiency of programs to deliver emergency food aid and transition these programs from largely surplus disposal programs to effective humanitarian assistance programs with fewer constraints on their use. A range of multilateral and trade policies (export restrictions, biofuels subsidies, tariffs, mandates, and global protection of agriculture more generally) have contributed to the rise in food prices and need to be reconsidered. The Doha Round, while not likely to lower food prices in the near term, would provide longer-term discipline to agricultural policies and raise incomes around the world.

Technical Annex: Sensitivity Analysis

The poverty effects of higher food prices discussed in chapter 3 are based on a number of assumptions. This annex reports the sensitivity of the results (change in the number of poor and the change in the income gap ratio) under different assumptions regarding the nature of the price shock and the proportion of increased food expenditures that accrue to agricultural households.

The results presented in the main text deflate the increase in food prices by the nonfood deflator. More traditionally in high-income countries, where food represents a small share of total spending, real food prices are deflated by the overall consumer price index. If the whole consumer price index had been used to deflate the increase in food prices, the overall shock would have been much smaller and hence the estimated poverty effects would have been milder. Under this scenario, labeled "real price change" in table 3A.1, the total number of poor would be around half as large as in the central scenario.

Another important assumption driving the estimated poverty effects is the allocation of the revenues from higher food prices to different households. In the central scenario, producer prices are increased by the same proportion as consumer prices. To the extent that *all* of the increase in retail food prices is attributable to an increase in farmgate prices, then the proportional increase in farmgate prices should have been larger than that experienced by retail prices.[51] The other issue is how the price change affects the incomes of different households. In the kind of short-term simulation being conducted here, wages and employment are normally held constant. Therefore, only the incomes of self-employed agricultural workers or landowners, who sell the final product, should increase, not those of agricultural wage laborers. Unfortunately, the GIDD database does not distinguish between different income sources. Therefore the data in the GIDD is complemented with information from the Rural Income Generating Activities (RIGA) project. RIGA is an FAO–World Bank funded project that uses data from 21 (household) Living Standards Measurement

Table 3A.1 Sensitivity analysis

Region	Real price change		Relative price change	
	All agricultural incomes affected	Self-employment agricultural incomes affected	Central Scenario: All agricultural incomes affected	Self-employment agricultural incomes affected
Change in number of poor (million)				
East Asia and the Pacific	52.1	59.9	103.7	114.7
Europe and Central Asia	0.0	0.0	0.1	0.1
Latin America and the Caribbean	0.4	0.8	0.7	1.3
Middle East and North Africa	1.9	3.0	4.6	7.2
South Asia	10.8	14.3	16.8	24.4
Sub-Saharan Africa	2.0	2.2	5.7	5.9
Developing world	67.2	80.3	131.6	153.5
Change in income gap ratio (percent)				
East Asia and the Pacific	0.36	0.43	0.78	0.93
Europe and Central Asia	0.00	0.00	0.00	0.00
Latin America and the Caribbean	0.00	0.01	0.01	0.01
Middle East and North Africa	0.03	0.06	0.09	0.15
South Asia	0.17	0.24	0.28	0.43
Sub-Saharan Africa	0.10	0.11	0.30	0.32
Developing world	0.16	0.21	0.33	0.41

Source: World Bank.

Surveys (LSMS) to identify the various income generating activities of rural households.[52] The information on total agricultural incomes and self-employment agricultural incomes reported in RIGA is used to estimate the econometric relationship between this and per-capita household income and consumption, which was then used to impute agricultural income shares in all the households included in the GIDD (De Hoyos and Medvedev 2008).[53]

If the short-term price increase benefits only self-employed landowners, the increase of self-employment agricultural incomes should be larger than the increase in retail prices. At the limit, if agricultural wages and employment are held constant, then all of the additional income would accrue to landowners and none to farm workers.

Mathematically,

$$P_1^c * Q_1 = \Pi_1 * SE + W_1 * E + other\ costs,$$

where P_1^c, Q_1 are the retail price and quantity consumed of good 1, respectively. Π_1, W_1 are remunerations of self-employed workers (including the return to land to self-employed landowners) and wage earners, respectively. Rearranging:

$$P_1^c = \Pi_1 \frac{SE}{Q} + W_1 \frac{E^{AG}}{Q} + \frac{other\ costs}{Q},$$

where SE/Q is profits share in total output. We denote these as alpha and those of other costs as beta, giving us:

$$P_1^c = \Pi_1 \alpha + W_1(1 - \alpha - \beta) + \beta \frac{other\ cost}{Q}.$$

Taking the total derivative while holding wages and other costs constant gives us:

$$\frac{d}{dt}P^c = \alpha \frac{d}{dt}\Pi$$

or

$$\frac{d}{dt}\Pi = \frac{1}{\alpha}\frac{d}{dt}P^c.$$

Numerically, if the landowner's share in the value of output initially is 50 percent, then the percent increase in his revenues will be twice that of the increase in the retail price (assuming all the changes in retail price are translated into increases in profits).

In the central scenario, *all* agricultural incomes are raised by the same amount as retail prices. This is tantamount to assuming that wages, self-employed profits, and other costs all rise by the same proportion as the increase in consumer food prices.

It is also equivalent to assuming that all of the increase in farm incomes accrue to landowners but that all the farm workers work for poor landowners.

An alternative assumption is to assume that only landowner incomes and other incomes rise in the same proportion as consumer prices. This essentially assumes that none of the agricultural workers work for proper landowners. Under this assumption, the head-count poverty rate increases by substantially more— 153 million (see results in table 3A.1 under the label "self-employed agricultural incomes affected").

The lower panel of table 3A.1 reports the change in the income gap ratio (Foster, Greer, and Thorbecke 1984)—the average difference between the per capita income of poor households and the poverty line stated as a percent of the poverty line—for the various scenarios. The differences in the income gap ratio between different scenarios confirm that larger poverty impacts are found when the change in relative prices is used as the shock and when only self-employment agricultural household incomes are assumed to respond to change in relative prices.

Notes

1. The idea that dependence on natural resources may impede development dates back at least to the decline of Spain, a period when it was benefiting from substantial gold inflows from the New World in the 17th century (Landes 1999). The idea was forcefully restated by development theorists in the decades following World War II (such as Prebisch 1950 and Singer 1950) and continues to attract attention.

2. Sachs and Warner (1995, 2001) are perhaps the most influential. See also Gylfason, Herbertsson, and Zoega (1999); Leite and Weidmann (1999); Auty (1998); and Bravo Ortega and De Gregorio (2005). Gylfason (2001) finds that resource dependence is associated with lower education levels, implying that economies dependent on primary commodities have limited incentives to invest in human capital. Lederman and Maloney (2007) find that the Sachs and Warner results are not robust to data modifications and changes in estimation techniques.

3. Bevan, Collier, and Gunning (1991) provide case-study evidence of excessive expenditures, debt accumulation, and low-quality investments during commodity price booms in Sub-Saharan Africa. Cuddington (1989) finds that many developing countries overspent during and after the 1970s boom.

4. Manzano and Rigobon (2006), for example, find that the post-boom slowdown in Latin America in the 1980s was almost entirely explained by the debt overhang accumulated during the boom period.

5. The average data presented in this section tend to obscure the great diversity of country experiences, because both the rate of increase in government expenditures and in exports (relative to GDP) vary enormously. The difference between changes in the ratio of exports to GDP and changes in the ratio of government expenditures to GDP may be viewed as a rough summary indicator of the fiscal response to primary commodity booms. In both the 1980s and the 2000s, this difference varied by as much as 60 percent of GDP between countries.

6. Historically, the very different circumstances facing individual countries were reflected in diverse fiscal responses to commodity booms. For Sub-Saharan Africa, see Deaton and Miller (1995); for a more geographically diverse collection of countries, see Collier and Gunning (1994).

7. This analysis includes developing countries where primary commodities accounted for more than 70 percent of merchandise exports. Boom periods are defined as sequential increases in merchandise export revenues that average more than 10 percent a year. Thus "booms" do not represent trough-to-peak changes in prices but simply periods of rapid growth in export revenues in countries dependent on primary commodities. We report simple averages of the percentage point change in the ratios of exports and government expenditures to GDP.

8. Because of the small number of countries in the sample for fuel exporters during the 1980s (owing to the lack of government expenditure data for many countries), these results must be treated with caution. The basic results for nonfuel primary commodity exporters remain robust to the exclusion of the two largest outliers in the sample (São Tomé and Principe, whose government expenditures declined by 45 percentage points, and Paraguay, whose export revenues rose by 37 percentage points of GDP).

9. For any given price forecast, countries with 70 or 80 years of reserves at current production levels have a higher permanent income from the oil price rise than countries with only 10 or 20 years of reserves at current production. Thus, assuming countries wish to smooth the revenue flow over an extended period of time, countries with large reserves relative to production should spend a larger share of the current revenues than countries with smaller reserves.

10. The countries of concern here are mostly oil exporters. Based on available data, only one country (Zambia) relies on minerals for more than 70 percent of export revenues. (Botswana's dependence on diamonds would be another example, except that a large share of diamond exports are counted as processed goods in trade statistics.)

11. The calculation of the life span of reserves is subject to considerable uncertainty, given that geologists are continually increasing estimates of reserves, and changes in technology and in prices raise the share of proven reserves that can be exploited profitably (see chapter 2).

12. This calculation does not take into account the share of the increase in export revenues captured by the government. Most of the high-reserves countries control their oil resources through a state company, but even so the government may not see the full proceeds from the increase in price.

13. A brief discussion of this type of reduction in the context of the Dutch disease is given in Sachs and Warner (1995). See also the references they cite and Torvik (2001).

14. Comparisons with the experience of the 1980s are difficult to draw because of missing data for oil-exporting countries. Moreover, after initially appreciating, the currencies of many non-oil primary commodity exporters depreciated sharply in real terms in the 1980s in reaction to the debt crisis, so that foreign exchange was limited, despite the rise in export earnings.

15. On corruption, see Lane and Tornell (1999), Baland and Francois (2000), Torvik (2002), and Wick and Bulte (2006). On resource wealth and civil wars, see Collier and Hoeffler (2004). On inefficient distribution of rents, see Acemoglu and Robinson (2001).

16. Mehlum, Moene, and Torvik (2006) provide evidence that natural resource abundance has a negative impact on growth only in countries with poor institutions. Murshed (2004) finds that oil and mineral wealth slows growth through impairing institutional development.

17. Oil and mineral wealth can be more heavily taxed than agricultural wealth (see above) and thus generates more opportunities for corruption.

18. The relationship between government revenues and expenditures has been found to be weaker in countries with national revenue funds than in countries without such funds (Davis and others 2001; Crain and Devlin 2003). Analysis of 15 oil-dependent economies over 30 years indicates that national revenue funds are associated with reduced volatility of broad money and prices, but the relationship with real exchange volatility is weak (Shabsigh and Ilahi 2007).

19. In countries with strong political institutions (as measured by the existence of effective checks and balances in decision making), government consumption is unrelated to changes in oil revenues (that is, it is not procyclical), but in countries with weak institutions, government consumption is strongly related to oil revenues (Humphreys and Standbu 2004).

20. Such deals are, by no means a new phenomenon. Firms from high-income countries have entered into such contracts for several decades.

21. Factors such as delivery specifications, contract liquidity, particular industry structures in various countries, and transportation differences make defining standardized contracts more difficult.

22. "Indian Fuel Prices, Too Hot to Touch," *Economist*, November 29, 2007.

23. Estimating the impact of rising metals prices is even more difficult, because metals tend to enter into the consumption basket of households only indirectly in the form of manufactured goods.

24. The GIDD data set consists of 73 recent household surveys for low- and middle-income countries complemented with more aggregate information on income distributions for 25 high-income and 22 developing countries, together representing 90 percent of the world's population.

25. According to household surveys in Africa, the relationship between food shares and per capita household incomes is concave, that is, for very low levels of income, food shares accelerate as the households become richer. The household surveys indicate that in extremely poor households, consumption items such as wood or kerosene are incompressible.

26. The cost is estimated as the change in the *poverty deficit* (Atkinson 1987), that is, the variation in financial resources required to eliminate poverty under a perfect targeting scenario.

27. This share assumes the same poverty line for rural and urban areas. Ravallion, Chen, and Sangrula (2007) use a higher poverty line for urban areas and show that the rural share of poverty is 75 percent.

28. Real price increases are calculated as the total increase in the ratio of the food and nonfood consumer price index (CPI) over the period January 2005–December 2007. This differs from the common practice in high-income countries where the numerator is the level of the overall CPI including food prices. The definition adopted here provides a better measure of the relative increase in food prices because food is a very large share of the overall CPI in most developing countries. Were the more usual measure to be employed, the real price increases would be seriously underestimated.

29. For details on this and other reported simulations, see De Hoyos and Medvedev (2008).

30. Despite a very different methodology and a much smaller sample set, Ivanic and Martin (2008) arrive at a similar figure—105 million.

31. In part, this reflects the influence of higher oil prices on nonfood prices—-the numeraire used for calculating real food price increases. Unfortunately, too few countries had information on the actual impact of high fuel prices on the consumer price index to use a nonfood non-oil index to deflate the increase in food prices.

32. An analysis of Argentina suggests that a 10 percent increase in prices will increase output by 3.6, 7.1, and 17.8 percent after 5, 10, and 20 years respectively (Cavallo 1988), a result that is consistent with Binswanger's (1989) estimate that long-run effects may take between 10 and 20 years to play out.

33. The pass-through was defined as the ratio of absolute changes since December 2003 in the retail price of fuel and the local currency price of the relevant fuel import product.

34. Many countries subsidize kerosene, which is used for lighting and cooking fuel by the poor, and unlike gasoline and diesel, whose retail prices rose by more than the international price in 2007, the median increase in domestic kerosene prices was only 85 percent of the international price increase (Mati 2008).

35. "Indian Fuel Prices, Too Hot to Touch." *Economist*, November 29, 2007.

36. For example, diesel is kept artificially cheap by preventing state oil companies from raising prices; in return these companies issue oil bonds that the government guarantees.

37. Export bans are not new (the United States imposed one on soybeans in the 1970s and the European Union banned wheat exports in 1995), but their use has become more common.

38. India's ban was later replaced by a minimum export price, which was then replaced by another complete ban on exports. Other factors also contributed to the increase in international rice prices, including the thinness of the international rice market and a simultaneous decision by consuming countries to increase

demand to build stockpiles. Increased government-to-government rice sales, which are not subject to the ban, have reduced its effectiveness.

39. Reacting to its inability to secure imports of rice in early 2007, the Philippines recently passed policies aimed at achieving rice self-sufficiency.

40. Although the supply of a single crop may respond quickly to an increase in prices, supply is normally achieved through crop switching.

41. Binswanger (1989) estimates the long-term price elasticity of supply to be approximately 0.2.

42. Self-targeted programs are designed to minimize the incentives the nonpoor may have to participate, typically achieved through a mix of rationing benefits (such as limiting food quantities), imposing physical requirements (such as manual work for food), and limiting the subsidies to inferior commodities.

43. For example, delivery of emergency food aid provided under U.S. Title II takes five months, on average (CARE 2006).

44. This discussions is based on "Strengthening the World Food Program's Role in Humanitarian Food Assistance," a note prepared by World Bank staff.

45. Fully 93 percent of commitments are tied to specific operations. A few countries (Canada, the Netherlands, Russia, and the United States) have begun making limited three-year pledges.

46. Financing costs (based on a 6 percent interest rate) would be around $4 billion, while storage costs would be around $1.4 billion, based on U.S. storage costs of $0.29 a bushel or $10.70 a metric ton incurred during 2004–07 for wheat in the Bill Emerson Humanitarian Trust (pers. comm., Fred Blott, USDA, August 11, 2008). Assuming that 3–5 percent of the stockpile spoiled each year (consistent with losses in high-income countries), the annual cost would be an additional $3–5 billion.

47. Under existing rules, export restrictions are allowed to prevent or relieve critical shortages of foodstuffs or other essential products. The last notification, by Hungary, dates to 1997.

48. The Doha rules, for example, proposed that notification be made within 90 days from the entry into force of the measure and that it explain the reasons for their introduction. The rules also would limit the duration of export restrictions to 12 months unless importing members agree to an 18-month period.

49. This need not eliminate the impact of biofuels production on food prices, because at some level all biofuel production inevitably competes with food for agricultural land, water, and other resources

50. A pro-poor agreement in which rich countries cut tariff peaks to 10 percent in agriculture and 5 percent in manufacturing, combined with cuts of 15 and

10 percent in developing countries, respectively, could yield gains in developing countries of $315 billion over 10 years along with gains of $170 billion for rich countries (World Bank 2004).

51. The difference would stem from transport, merchandising, and other costs.

52. For more details on the LSMS household surveys see http://www.worldbank.org/LSMS/. For a complete description of the RIGA project, including publication of the first results, see Carletto and others (2007).

53. Notice that given the data restrictions, all rural households are assumed to have positive agricultural and self-employment agricultural income shares, and therefore a good part of the distribution story behind higher food prices is lost.

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Appendix
Regional Economic Prospects

East Asia and the Pacific
Recent Developments

Substantial headwinds buffeted the economies of East Asia and the Pacific during 2008, causing GDP growth to slow sharply, from the 10.5 percent pace of 2007 to 8.5 percent in the year. The surge and relapse of crude oil and non-energy commodity prices affected a large and diverse set of countries in the region, from the hydrocarbon-exporting countries of Indonesia, Malaysia, Papua New Guinea, and Vietnam, to food and agricultural raw materials exporters, Thailand, the Philippines, and again Indonesia and Malaysia. The fall to negative ground in U.S. and Japanese import demand—under way for more than two years in the case of the United States—began to take a toll on the region's export growth and to dampen the earlier buoyancy of intra-region trade.[1]

What began in August 2007 as financial difficulties in the United States tied to subprime mortgage-based securities had turned into a global financial crisis as of October 2008, raising risk perceptions for several economies in East Asia. Equity markets were hard hit, spreads on international sovereign- and especially corporate debt increased sharply, exchange rates depreciated rapidly, and gross capital flows to the region fell by half during the first 9 months of 2008. Slower investment growth in East Asia is now expected to spill over into still weaker production, employment, household spending, and GDP growth.

Growth outturns were fairly diverse across the region in 2008. China registered a diminished 9.4 percent advance, down from 11.9 percent during 2007, on a slowdown in investment and smaller positive contributions to growth from net exports. The larger members of the Association of South Eastern Asian Nations (ASEAN)—Indonesia, Malaysia, and Thailand—grew 5.2 percent in the year, down from 6.1 percent during 2007. Growth in Vietnam dropped by 2 full percentage points to 6.5, in part as oil and non-energy commodities prices slumped, while a group of smaller economies saw a pick-up in growth to 5.1 percent from 3.7 percent, on the back of recovery in Fiji and continued strong growth in Papua New Guinea, powered by oil exports (table A1).

Even before the financial crisis intensified, there were signs of slowing growth. In China, GDP in the third quarter of 2008 eased to a gain of 9 percent (year-over-year) from 11.2 percent in the final quarter of 2007, marking a fifth consecutive quarter of slowing growth (figure A1). Thailand and Malaysia witnessed a larger falloff, with Thailand dropping to 2.9 percent in the second quarter from 7.1 (saar) in the fourth quarter of 2007, and Malaysia falling to 4.2 percent from 6.7 percent, on softer exports and private consumption. In contrast, growth in Indonesia accelerated, boosted by public spending financed from increases in windfall revenues thanks to high prices for hydrocarbons, fats, and oils.

Table A1   East Asia and Pacific forecast summary
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[e]	2009[f]	2010[f]
GDP at market prices (2000 US$)[b]	8.4	9.1	10.1	10.5	8.5	6.7	7.8
GDP per capita (units in US$)	7.1	8.2	9.2	9.7	7.6	5.9	7.0
PPP GDP[c]	—	9.1	10.0	10.5	8.4	6.7	7.8
Private consumption	7.3	7.5	2.6	3.4	5.6	6.7	7.9
Public consumption	9.0	10.9	9.5	11.8	13.0	13.4	10.4
Fixed investment	10.3	12.6	12.6	12.9	10.5	6.9	8.4
Exports, GNFS[d]	11.7	18.5	18.6	15.4	8.3	2.6	9.7
Imports, GNFS[d]	11.2	11.0	11.6	10.9	10.8	3.4	11.7
Net exports, contribution to growth	0.3	4.1	4.6	3.8	0.2	0.0	0.5
Current account balance/GDP (%)	0.1	5.8	8.6	10.5	9.0	8.7	7.7
GDP deflator (median, LCU)	6.7	6.5	5.8	4.0	7.5	6.6	4.9
Fiscal balance/GDP (%)	−0.7	−1.1	−0.6	0.2	−0.9	−1.4	−1.5
Memo items: GDP							
East Asia excluding China	4.8	5.4	5.7	6.2	5.3	4.0	5.3
China	10.4	10.4	11.6	11.9	9.4	7.5	8.5
Indonesia	4.2	5.7	5.5	6.3	6.0	4.4	6.0
Thailand	4.5	4.5	5.1	4.8	4.6	3.6	5.0

Source: World Bank.

Notes: — = not available.
a. Growth rates over intervals are compound averages; growth contributions, ratios, and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. GDP measured at PPP exchange rates.
d. Exports and imports of goods and nonfactor services.
e. Estimate.
f. Forecast.
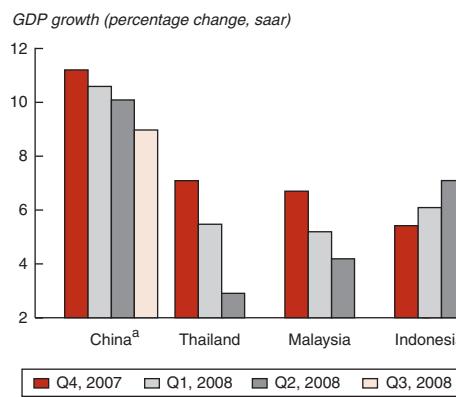
Figure A1   GDP growth eases in several East Asian economies

GDP growth (percentage change, saar)

Q4, 2007   Q1, 2008   Q2, 2008   Q3, 2008

Source: World Bank and national agencies.
a. China = year-on-year.

Regional GDP is projected to slow to 6.7 percent in 2009, the weakest since the dot.com recession of 2001, and prior to that, the East Asia crisis of 1997–98. Regional export vol-umes are expected to decline from 8.3 percent in 2008 to 2.6 percent; investment to ease to 7 percent (still relatively strong due to devel-opments in China), and net trade to contribute no impetus to regional growth for the first time in some years.

Commodity prices plummet; export-market growth contracts

East Asia (excluding China), along with the Latin America region, has benefitted from high food and fuel prices from 2005 through mid-2008. During this period, terms of trade improved by a cumulative 10.3 percent in Viet-nam, 4 percent in Indonesia, and 4.8 percent in Malaysia. In contrast, the terms of trade moved against China by a substantial 11.4 per-cent, with little effect, however, on the current account surplus. The steep decline in commod-ity prices since mid-2008 should benefit China and other oil importers in the region, helping to improve East Asia's aggregate terms of trade

by 3.5 percent in 2009, with China's picking up 5.5 percent.

Sharply higher food and fuel prices and overheating in several economies accelerated inflation in the region, from a median 5.7 percent increase during 2007 to 11.9 percent by July 2008 (year-over-year). September figures (8.2 percent) suggest that favorable inflation responses are coming in step with the falloff in commodity prices and improved terms of trade since mid-2008. Headline consumer price inflation has eased substantially in China, for example, from a peak of 8.5 percent in April to 4 percent by October 2008; but Indonesia and the Philippines continue to witness building price pressures, stoked in the former by still strong consumer demand.

The spread of technical recession from the United States to Japan and the Euro Area during the second half of 2008 has begun to make a dent in export performance for the region, with China's outbound shipments (in dollar terms) easing below 20 percent growth (year-over-year) in October from the 30 percent pace of early 2007 (figure A2). Growth of exports from Hong Kong, China, reflecting in large part transshipments from the mainland, have halved to 5 percent. And the falloff in export performance is particularly acute in Singapore and Taiwan, China, where exports are now declining, affected in particular by a sharp drop

Figure A2 Export growth in East Asia turns down on falling OECD demand

Export values (US$, percentage change, 3-month moving average year-on-year)

Source: Haver Analytics.
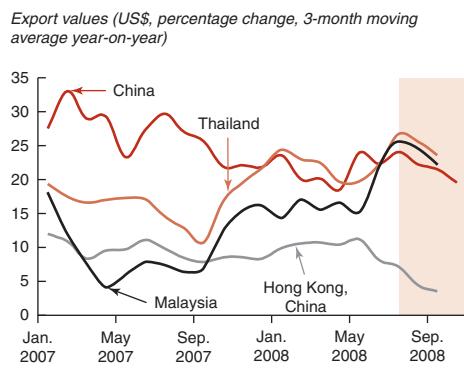
in demand for high-tech products. Export growth is also slowing in Malaysia and Thailand, which are experiencing sluggish manufactures shipments as well as the effects of commodity price declines on the dollar value of oil and agricultural exports. As recession deepens across the countries of the Organisation for Economic Co-operation and Development (OECD) during the course of 2009, East Asian export volumes are likely to fall sharply—to negative territory for many countries—with China seeing a modest advance of some 4.2 percent, down from the 10.1 percent gain of 2008.

Ripples of the financial crisis are reaching East Asia

The region was spared significant fallout during the early stages of the financial crisis in 2007, because, outside of China, holdings of securities backed by subprime U.S. mortgages were quite small. But with the intensification of the crisis, effects within the region are spreading. A sharp increase in risk aversion at the global level, plus a process of deleveraging by firms and banks that have suffered large losses in both high-income and developing countries, resulted in a heavy sell-off of global, including East Asian, equities. The benchmark MSCI Asia-Pacific Index plummeted by a cumulative 50 percent from January through October 2008, while China's 'B' share market in Shanghai is off a full 75 percent. The proceeds of these sales have been converted out of local currencies, resulting in a sharp depreciation for many regional currencies against both the dollar and the yen (figure A3). The Philippine peso, for example, has given up some 18 percent against the dollar over 2008 to date and 30 percent versus the yen. These developments have sharply increased the cost of capital for regional firms and escalated the local currency cost of international debt servicing, both factors likely to dampen private investment outlays in the coming months.
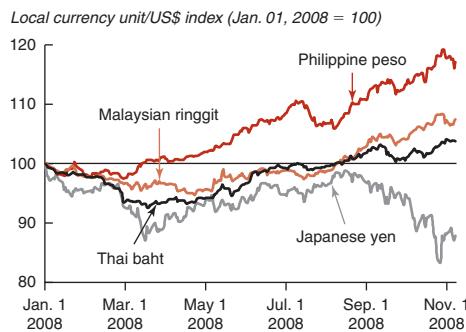
In international debt markets, sovereign spreads for East Asia jumped by some 610 basis points since the spring of 2008, reaching
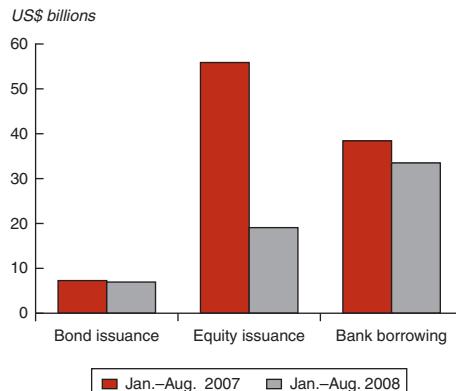
Figure A3 Exchange rates decline sharply as carry trades unwind

Local currency unit/US$ index (Jan. 01, 2008 = 100)

Source: Thomson/Datastream.

Note: Increase implies weaker local currency.

Figure A4 Gross capital inflows to East Asia contracted 40 percent in 2008

US$ billions

Source: World Bank.

825 basis points as of late October, well above the high of 450 basis points at the peak of the East Asian crisis in 1998. But as conditions in international markets began to unfreeze, and more and more countries announced fiscal stimulus packages to underpin their economies, spreads narrowed once more to 560 basis points during the first week of November. As of November 7, 2008, spreads were up by a modest 50 basis points for China, 300 points for Malaysia, 250 points in the Philippines, but a more-substantial 570 points in Indonesia. Spreads for corporate borrowers have increased by far more, and those for noninvestment grade corporations—the majority of private sector issuance in the region—have skyrocketed (see chapter 1). For several countries in East Asia, the hike in spreads has become problematic, effectively shutting down bond issuance as a cost-effective means of finance.

Given the process of deleveraging now under way among high-income financial institutions, the retreat from regional equity markets should be viewed together with a substantial falloff in capital flows to the region over the course of 2008. Gross capital flows to East Asia and the Pacific, not including foreign direct investment (FDI), dropped from $100 billion to $60 billion from January through August 2008, down 40 percent from

the same period in 2007. The bulk of the falloff may be traced to sharp contractions in the issuance of initial public equity offerings (IPOs), largely from China, which were off 65 percent, from $56 billion to $19 billion in the year, in line with the deterioration of conditions in international markets. But banking flows also dropped 12.5 percent to $35 billion, and bond issuance eased by 7.5 percent to $7 billion (figure A4).

In contrast, FDI flows to the region surged by some two-thirds to a fresh record $175 billion in 2007, with FDI to China picking up 75 percent to near $140 billion, and with advances of 40 percent in Malaysia to $8.5 billion. Estimates for 2008 suggest a modest increase in overall FDI flows, showing some resilience in the face of the crisis. Measured by the extent to which sovereign spreads have increased, equity markets declined and exchange rates depreciated since September 15, together with the sharp falloff in capital flows in the last year, East Asian economies hit hardest by the crisis to date include Fiji, Indonesia, the Philippines, Thailand, and Vanuatu.

Difficult policy decisions

The general stance of policy in the region is moving from a tightening posture—initiated

to deal with rising inflation—to a more re-laxed one; large efforts have been made to free up liquidity to support banking systems from the contagion of financial stress from the high-income countries. Moreover, measures to under-pin growth at a time of downside risks have also come to the fore. In China, bank rates were raised to 7.47 percent in January to help dampen inflation, then reduced to 6.66 per-cent on October 28, as the risk of financial disruptions and loss of liquidity in the banking system increased in importance. Further actions undertaken by China to prop up eco-nomic activity have included the announce-ment of a massive $586 billion stimulus pro-gram to focus on infrastructure, housing and income support, and increasing export tax re-bates. In contrast, the Philippines first reduced policy rates to 7 percent to stimulate growth, then raised rates in four steps of 25 basis points to 8 percent to help stem a ramp-up in inflation.

Medium-term outlook

As always, developments in China will play a key role in shaping the region's growth profile through 2010. China's buffers against the financial crisis are impressive: $1.6 trillion in international reserves; a fiscal surplus of 1 per-cent of GDP; and a current account surplus of almost $400 billion or 10.4 percent of GDP in 2008. Policy efforts to underpin exports and household spending—to maintain GDP growth at rates near 9 percent in 2009 and forward—should carry positive effects. But an extreme falloff in export volume growth to 4.2 percent, on the back of recession in high-income countries, and slippage in investment to 8 percent in the year is projected to slow GDP growth to 7.5 percent in 2009, from the 9.4 percent pace of 2008 (table A2). A step-down in China's import growth to 6.5 percent will dampen the momentum of intraregional trade, causing exports for East Asia in aggre-gate to slide to 2.6 percent from the 8.3 per-cent advance of 2008.

Growth among the larger ASEAN coun-tries is expected to ease to 3.8 percent from

5.2 percent in 2008, as export volumes decline by a percentage point, and the squeeze on commercial credit hits fixed investment, drop-ping it from growth of 8.8 percent in 2008 to 3.6 percent. Lower commodity prices and weaker import demand are projected to im-prove the group's current account surplus to $58 billion in 2009 from $55 billion in 2008. Among smaller countries, including Fiji, the Lao People's Democratic Republic, and Papua New Guinea, output growth is projected to slow to 3.4 percent from 5.1 percent in 2008, on the back of a sharp 5 percent decline in exports.

Recovery in regional growth during 2010 is anticipated to be fairly swift. The downturn in investment should be relatively short-lived, as credit and capital flows begin to thaw, and expectations for stronger domestic and exter-nal demand underpins a revival in regional capital spending to 8.4 percent (see table A1). Export growth is expected to rebound to 9.7 percent in the region (to 10.7 percent for China), as OECD and regional demand re-turn to positive territory. Moreover, a moder-ation in East Asian inflation, as the surge in commodity prices passes out of calculation, will help to restore purchasing power to households and support a renewal in spend-ing. Inflation as measured by the median GDP deflator for the region is expected to decline from 7.5 percent in 2008 to 4.9 percent by 2010.

Under these conditions, aggregate GDP for the region is anticipated to grow 7.8 percent in 2010, underpinned by 8.5 percent growth in China. For East Asia excluding China, GDP is expected to grow 5.3 percent in 2010, up from 4 percent. Current account positions are pro-jected to vary across countries, easing to 8.8 percent of GDP in China, to 4.4 percent in the larger ASEAN members to minus 5.7 per-cent among the smaller countries of the region.

Risks

The favorable external environment that came to benefit the region in the past five years has shifted dramatically to the downside. Given

Table A2   East Asia and Pacific country forecasts
(annual percent change unless indicated otherwise)

	1991–2000ᵃ	2005	2006	2007	2008ᶜ	2009ᵈ	2010ᵈ
Cambodia							
GDP at market prices (2000 US$)ᵇ	—	13.5	10.8	10.2	6.7	4.9	6.0
Current account balance/GDP (%)	—	−5.7	−4.7	−6.0	−15.3	−11.2	−8.0
China							
GDP at market prices (2000 US$)ᵇ	10.4	10.4	11.6	11.9	9.4	7.5	8.5
Current account bal/GDP (%)	1.5	7.2	9.9	12.2	10.7	10.2	8.8
Fiji							
GDP at market prices (2000 US$)ᵇ	2.1	0.7	3.6	−6.6	1.7	−1.0	3.0
Current account bal/GDP (%)	−3.7	−13.3	−24.1	−15.6	−22.6	−23.6	−22.5
Indonesia							
GDP at market prices (2000 US$)ᵇ	4.2	5.7	5.5	6.3	6.0	4.4	6.0
Current account bal/GDP (%)	−0.4	0.1	2.9	2.6	0.8	−0.1	−0.4
Lao PDR							
GDP at market prices (2000 US$)ᵇ	6.3	7.1	8.1	7.9	6.8	4.5	7.5
Current account bal/GDP (%)	−12.5	−19.3	−9.7	−16.4	−16.0	−17.2	−16.8
Malaysia							
GDP at market prices (2000 US$)ᵇ	7.1	5.0	5.8	6.4	5.5	3.7	4.6
Current account bal/GDP (%)	−0.4	14.6	17.2	16.7	22.0	17.5	16.4
Papua New Guinea							
GDP at market prices (2000 US$)ᵇ	4.8	3.3	2.6	6.2	5.5	4.5	5.5
Current account bal/GDP (%)	2.4	8.5	17.5	21.6	24.1	9.8	7.7
Philippines							
GDP at market prices (2000 US$)ᵇ	3.0	4.9	5.4	7.2	4.0	3.0	4.1
Current account bal/GDP (%)	−3.1	2.0	4.0	4.1	0.4	3.6	3.5
Thailand							
GDP at market prices (2000 US$)ᵇ	4.5	4.5	5.1	4.8	4.6	3.6	5.0
Current account bal/GDP (%)	−1.2	−4.3	1.1	6.3	2.2	5.2	5.0
Vanuatu							
GDP at market prices (2000 US$)ᵇ	4.1	6.5	7.2	5.0	4.5	3.0	5.2
Current account bal/GDP (%)	−8.2	−14.3	−8.1	−9.8	−14.4	−7.1	−5.3
Vietnam							
GDP at market prices (2000 US$)ᵇ	7.6	8.4	8.2	8.5	6.5	6.5	7.5
Current account bal/GDP (%)	−5.1	0.2	1.2	−0.2	−8.5	−3.4	−2.6

Source: World Bank.

Note: — = not available. Growth and current account figures presented here are World Bank projections and may differ from targets contained in other World Bank documents. American Samoa; Micronesia; Federated States of Kiribati; Marshall Islands; Myanmar; Mongolia; N. Mariana Islands; Palau; Korea, Dem. Rep. Of; Solomon Islands; Timor-Leste; and Tonga are not forecast because of data limitations.

a. Growth rates over intervals are compound averages; growth contributions, ratios, and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. Estimate.
d. Forecast.

the sensitivity of regional GDP growth to trade, the possibility of a more extended period of recession, or only sluggish activity among the OECD countries, represents one of the primary risks to growth in East Asia. Such a scenario would be predicated on a more prolonged period than projected for the financial sector in the high-income countries to redress their balance sheets and for lending to resume. A second area of risk relates to continued adverse developments in financial markets. Should sovereign and especially corporate spreads not retreat from current levels, the region could face difficulty financing new investment and sustaining current projects. As a result, investment activity would continue to be depressed and the recession deeper; in that case, the risk that a country in the region could suffer significant exchange rate pressure or a balance of payments crisis cannot be ruled out.

Europe and Central Asia
Recent developments

The rapid GDP growth in Europe and Central Asia of the past 20 years, which largely reflected the enormous reform efforts undertaken by countries in the region (including those associated with accession to the European Union), eased in 2008 and is expected to give way to a sharp slowdown in 2009. The global financial crisis is expected to cut heavily into capital inflows and investment in the region. Moreover, a number of countries are particularly vulnerable because of high current account deficits that in many instances have been reliant on short-term capital inflows for their financing.

Regional GDP growth fell almost 2 percentage points to 5.3 percent in 2008, moderating from 7.1 percent in 2007, tied largely to a sharp falloff in growth during the second half of the year. The financial crisis and associated growth slowdown outside of the region is eroding macroeconomic buffers, including international reserves, and is placing banking sectors in several countries (notably, Hungary, the Russian Federation, and Ukraine) under severe stress. Even economies with little direct exposure to troubled U.S. financial assets are likely to be hit hard by direct and indirect spillover effects from the financial crisis.

The region exhibits diverse performance

GDP growth slowed across the region during 2008. The group of Central and Eastern European countries (CEE), (including Bulgaria, Poland, Romania, and the middle-income Baltic states but excluding Turkey), saw growth ease from 6.6 percent to 5.5 percent in the year. Slowing demand in the Euro Area dampened export performance, while overheating in several countries required a mix of fiscal and monetary tightening to stem inflationary pressures. Growth in the Baltic states has come close to a standstill, with Estonia and Latvia falling into recession and Lithuania faring little better. The global financial crisis disrupted Hungary's slow recovery of domestic demand and led the country to accept an emergency €15 billion Standby Arrangement with the International Monetary Fund. Growth in Turkey eased from 4.6 percent to 3 percent in 2008, as financial and exchange rate pressures picked up in the second half of the year (table A3).

GDP among the Commonwealth of Independent States (CIS) slid from the robust 8.6 percent registered in 2007—grounded in a surge in activity across hydrocarbon exporters—to 6.4 percent in 2008, reflecting reduced incomes as oil prices declined, and the effects of the banking crisis in Russia (growth in Russia eased from 8.1 percent to 6.0 percent). Excluding Russia and Kazakhstan (where growth slowed sharply from 8.5 to 4 percent), GDP declined less dramatically in the remaining CIS states, falling from 10.4 to 8.5 percent in the year.

The commodity price surge of 2006 through mid-2008 contributed directly to high inflation across almost all countries of the region. Most countries tightened monetary policy to stem second-round effects from the initial price hikes, while substantial currency appreciation (against the dollar) helped to mitigate inflation pressures to a degree. Romania posted the highest interest rates in the European Union, while Turkey scored the highest across all developing and advanced economies in Europe. The global food crisis had not caused the serious social tensions witnessed in other regions, because almost all countries in Europe and Central Asia have more or less adequate social safety nets in place. The World Bank is currently helping to finance seed purchases and nutritional programs for the Kyrgyz Republic, Moldova, and Tajikistan. And with three major grain exporters (Kazakhstan, Russia, and Ukraine) relaxing previously imposed export bans amid the region's best harvest in a decade, food prices are expected to moderate, helping to ease the earlier jump in headline inflation.

Table A3   Europe and Central Asia forecast summary
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[e]	2009[f]	2010[f]
GDP at market prices (2000 US$)[b]	−1.1	6.4	7.5	7.1	5.3	2.7	5.0
GDP per capita (units in US$)	−1.3	6.3	7.4	7.0	5.3	2.7	5.0
PPP GDP[c]	−1.2	6.3	7.7	7.4	5.7	2.6	5.1
Private consumption	0.6	7.0	8.2	8.5	8.4	5.3	6.2
Public consumption	0.0	3.6	5.2	5.5	4.9	3.3	4.0
Fixed investment	−7.0	11.0	14.9	15.4	10.0	−0.7	7.2
Exports, GNFS[d]	0.3	5.6	8.0	7.8	9.4	5.4	10.1
Imports, GNFS[d]	−2.8	10.6	15.5	18.8	14.7	6.3	11.0
Net exports, contribution to growth	1.1	−2.0	−3.4	−5.5	−3.6	−1.2	−1.8
Current account balance/GDP (%)	−0.7	2.6	1.5	−0.6	−0.8	−4.1	−4.5
GDP deflator (median, LCU)	—	6.8	5.8	7.5	10.9	8.9	6.8
Fiscal balance/GDP (%)	−5.0	2.6	2.9	2.4	1.9	1.1	1.1
Memo items: GDP							
Transition countries	2.3	6.1	6.7	5.7	4.4	2.6	4.8
Central and Eastern Europe	1.4	4.3	6.6	6.6	5.5	3.2	4.7
Commonwealth of Independent States	−4.3	6.8	8.4	8.6	6.4	2.9	5.2
Russian Federation	−3.9	6.4	7.4	8.1	6.0	3.0	5.0
Turkey	3.7	8.4	6.9	4.6	3.0	1.7	4.9
Poland	3.8	3.6	6.2	6.6	5.4	4.0	4.7

Source: World Bank.

Note: — = not available.
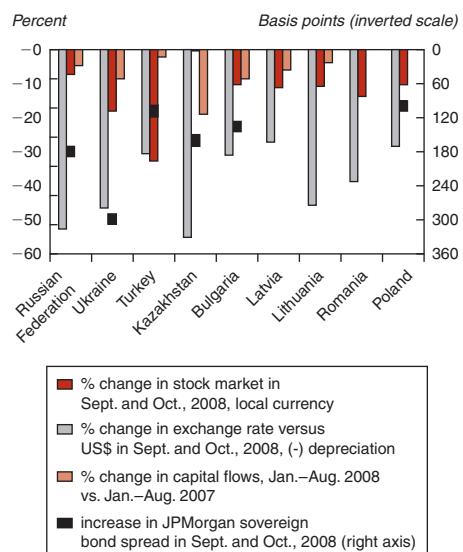
a. Growth rates over intervals are compound averages; growth contributions, ratios, and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. GDP measured at PPP exchange rates.
d. Exports and imports of goods and nonfactor services.
e. Estimate.
f. Forecast.

Intensification of global crisis begins to exact toll

The sudden deepening of the financial crisis in the United States during September and October, and the accompanying start of deleveraging across financial institutions worldwide, triggered a wave of sell-offs in emerging market assets across the globe. Widening sovereign spreads, sharp currency depreciation, and a halving of domestic equity prices have been witnessed across emerging markets. The magnitude and extent of these developments in Europe and Central Asia are of concern (figure A5).

Recent spikes in sovereign spreads for a number of countries in the region have dwarfed those witnessed in earlier periods of flare-up since the start of financial turmoil in 2007. Except for Kazakhstan and Russia, where massive central bank intervention has taken place, other regional currencies have

Figure A5 Deepening global financial crisis affects Europe and Central Asia

Percent   *Basis points (inverted scale)*

Russian Federation, Ukraine, Turkey, Kazakhstan, Bulgaria, Latvia, Lithuania, Romania, Poland

- % change in stock market in Sept. and Oct., 2008, local currency
- % change in exchange rate versus US$ in Sept. and Oct., 2008, (-) depreciation
- % change in capital flows, Jan.–Aug. 2008 vs. Jan.–Aug. 2007
- increase in JPMorgan sovereign bond spread in Sept. and Oct., 2008 (right axis)

Source: World Bank.

depreciated quite sharply, reversing almost all the gains of the last two years. Moreover, gross capital inflows to the region (equity IPOs, bond issuance, and bank lending) declined to $123 billion from January through August 2008, from $187 billion in the like period of 2007, a drop of some 34 percent. These developments underscore the swift spread of effects from the deterioration in international financial markets and point to more difficult financing conditions ahead, with funding for fixed investment in the region—a primary driver for growth—under particular uncertainty.

Activity in Russia already showed signs of slowing before fall 2008, when the financial crisis entered a more intense phase. Industrial production over the first eight months of 2008 declined by 2.3 points to 4.9 percent, compared with the same period in 2007, and growth in fixed capital investment almost halved. Gross capital inflows did halve to $74 billion in the January–August period, compared with $150 billion for all of 2007. Moreover, the credit crunch appeared to be draining domestic liquidity from the economy either directly (given that Russia is Europe's third largest bank borrower) or indirectly through the interbank and corporate sectors.

The Russian stock market crisis forced multiple suspensions of trading, and the government has taken all possible measures to mitigate growing financial and economic difficulties. These include but are not limited to cutting banks' reserve requirements and oil companies' export duties several times; injecting liquidity (more than $200 billion in federal budget fund deposits, subordinated loans, and the like), increasing coverage of retail bank deposit insurance by 75 percent; intervening in the foreign exchange market, evidenced in a decline of more than $100 billion in reserves between August and October; committing an additional $50 billion of reserves to solve refinancing difficulties in banks and companies (estimated to hold $80 billion-90 billion in debt service due in 2009); and using another $20 billion from its

national wealth fund to boost domestic stock markets directly.

As in Russia, Ukraine's banks have relied on foreign bank- and other loans to fund domestic lending. And about $1 billion to service foreign debts is due during the final months of 2008. Facing rating agencies' downgrades, and massive withdrawals from the banking system during the first three weeks of October (amounting to $3 billion or about 4 percent of total deposits), the central bank banned preterm withdrawals, injected further liquidity, and imposed exchange controls. On the real side of the economy, Ukraine is starting to see decline in the metallurgy industry and in exports of these products (which provide 40 percent of export revenues), as global production and metal prices cool. These negative developments have prompted Ukraine to seek an IMF loan of $16.4 billion. Turkey's second-quarter GDP deteriorated sharply to 1.9 percent year-over-year from 6.7 percent a quarter earlier. And given Turkey's traditional reliance on short-term debt and external financing, the debt rollover situation is no better for Turkey than for Russia and Ukraine; Turkey holds more than $280 billion of foreign debt, of which one-sixth is short term.

Based on credit-default swap prices, Kazakhstan stands second in the global league of economies as riskiest for severe banking disruptions—after Iceland. The government has $15 billion dollars ($10 billion of which from its oil fund) available to stabilize the banking situation. Many other countries in Central and Eastern Europe carry similar vulnerabilities in terms of banking exposures, external deficits, and reliance on foreign capital flows, and governments have reacted to address them while trying to reassure investors and depositors. In Bulgaria, Poland, and Romania, guarantees on individual bank deposits have been raised in line with EU levels; Hungary, the Slovak Republic, and Slovenia have all enacted unlimited government guarantees on private bank deposits.

Medium-term outlook

The outlook for 2009 appears fairly sobering at this juncture. Slower growth in the region's main trading partners, the EU, (and for the CIS countries) Russia and China, will limit export opportunities. For example, the auto fabrication and export–industry, which had been performing well in Turkey and some CEE countries, will be put to a difficult test. Declines in equity markets will tend to raise the cost of capital for domestic firms and could delay privatization plans. Moreover, in countries where foreign banks have a dominant presence, local subsidiaries may feel the pinch from headquarters in the high-income countries, further escalating difficulties in domestic credit markets and contributing to a slow-down in economic activity.

Table A3 shows that still-robust gains in investment continued during 2008—an advance of 10 percent for the region; Russia gained 16 percent, other CIS countries grew capital spending 14 percent, with the CEE countries up 10.5 percent. But a flattening in domestic and foreign demand and much more difficult financing conditions are expected to cause real investment to stagnate in 2009, with related declines in orders, production, and employment.

Signs of the slowdown have already begun to emerge. In Russia, for example, Sberbank and Gazprom, the leading state bank and state company, both plan to cut back on workforce and investment; the third-largest steelmaker, Magnitogorsk, is reducing workforce levels by 3,000; truck manufacturer KamAZ plans to curtail production by 20 percent; and car-maker GAZ also foresees substantially less domestic and export demand. Russia's GDP is anticipated to drop to 3 percent in 2009, from the 6 percent pace of 2008 (table A4). However, financial support policies enacted to date, plus the substantial amount of international reserves held by the country, should help Russia weather the depth of global crisis in 2009 and rebound to growth of 5 percent by 2010.[2]

Deterioration in the external environment—and the fragile set of current conditions in a large number of European and Central Asian countries suggests the potential for a sharp slowdown in regional GDP growth to 2.7 percent in 2009 from the 5.3 percent advance of 2008. But under assumptions that global credit markets begin to function once more by early to mid-2009, and that growth in OECD centers starts to pull-up at the same time, regional growth is anticipated to firm to 5 percent by 2010. CIS countries outside of Russia are expected to realize a rebound in exports and a pick-up in consumer spending, as growth recovers from 2.8 percent in 2009 to 5.7 percent. And gradual revival in Euro Area demand helps CEE exports pick-up from 2.5 percent gains in 2009 to 7.6 percent by 2010, supporting a move in GDP from 3.2 percent to 4.7 percent. Lower oil prices will help alleviate a portion of the current account burden in oil importing countries, especially Turkey, and a large number of Central European countries.

Risks

In the short term, the financial system will be tested. In Russia, for example, the largest banks have enjoyed generous government support, but private and smaller banks may face liquidity shortages and possibly large-scale withdrawals should the situation worsen. Russia currently is home to 1,100 banks, of which the 20 largest account for 70 percent of household deposits and corporate loans. Outside Russia, the financial sector in a number of countries is dominated by banks from Western Europe, carrying the potential risk of contagion from difficulties being experienced by their home-country institutions.

In the medium-term, divergent performance in 2008 should not belie either the common factors underlying growth in Europe and Central Asia or the associated common risks. Recent growth has been supported by domestic demand and enabled by easy access to external financing in bank lending, bond issuance, and FDI, while net exports continue to offer a substantial drag on growth. Rapid credit expansion and accommodative wage policies have been widespread, while domestic saving is insufficient, while pro-cyclical fiscal

Table A4 Europe and Central Asia country forecasts
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[c]	2009[d]	2010[d]
Albania							
GDP at market prices (2000 US$)[b]	1.4	5.5	5.0	6.0	6.0	5.0	5.5
Current account balance/GDP (%)	−5.6	−6.8	−7.3	−10.0	−11.2	−5.3	−4.7
Armenia							
GDP at market prices (2000 US$)[b]	−3.8	13.9	13.3	13.7	9.0	6.4	6.7
Current account balance/GDP (%)	−12.0	−1.1	−1.8	−6.2	−7.6	−4.3	−4.3
Azerbaijan							
GDP at market prices (2000 US$)[b]	−5.2	26.2	34.5	25.0	17.7	10.4	7.8
Current account balance/GDP (%)	−15.8	1.3	17.7	30.7	41.6	30.7	28.4
Belarus							
GDP at market prices (2000 US$)[b]	−1.2	9.4	9.9	8.2	9.2	5.0	5.8
Current account balance/GDP (%)	—	1.4	−4.1	−6.4	−5.5	−6.2	−6.4
Bulgaria							
GDP at market prices (2000 US$)[b]	−1.7	6.2	6.3	6.2	6.0	2.4	6.0
Current account balance/GDP (%)	−2.3	−12.3	−15.7	−21.6	−24.3	−15.6	−13.6
Croatia							
GDP at market prices (2000 US$)[b]	−1.5	4.3	4.8	5.6	3.5	2.3	5.1
Current account balance/GDP (%)	1.0	−6.6	−7.6	−8.6	−9.9	−4.2	−3.2
Georgia							
GDP at market prices (2000 US$)[b]	−9.3	9.6	9.4	12.4	3.5	4.0	6.0
Current account balance/GDP (%)	—	−11.9	−16.2	−21.5	−21.9	−20.7	−22.0
Kazakhstan							
GDP at market prices (2000 US$)[b]	−3.6	9.7	10.7	8.5	4.0	1.9	6.2
Current account balance/GDP (%)	−2.1	−1.9	−2.2	−6.9	0.1	−7.0	−7.2
Kyrgyz Republic							
GDP at market prices (2000 US$)[b]	−4.0	−0.2	2.7	8.2	6.6	4.2	5.6
Current account balance/GDP (%)	−10.6	−2.4	−10.6	−7.2	−10.6	−5.6	−2.4
Lithuania							
GDP at market prices (2000 US$)[b]	−3.3	7.9	7.7	8.8	4.0	−0.3	2.0
Current account balance/GDP (%)	−5.8	−7.1	−10.7	−13.6	−13.9	−12.2	−10.9
Latvia							
GDP at market prices (2000 US$)[b]	−2.8	10.6	12.2	10.3	−0.8	−3.5	0.7
Current account balance/GDP (%)	−1.6	−12.4	−22.7	−22.8	−15.2	−10.5	−8.2
Moldova							
GDP at market prices (2000 US$)[b]	−9.8	7.5	4.0	3.0	6.5	4.0	4.0
Current account balance/GDP (%)	—	−8.3	−11.5	−15.8	−17.7	−4.4	−5.8
Macedonia, FYR							
GDP at market prices (2000 US$)[b]	−0.9	4.1	3.0	5.1	5.5	4.8	5.6
Current account balance/GDP (%)	—	−1.4	−0.4	−3.4	−9.8	−4.4	−3.5
Poland							
GDP at market prices (2000 US$)[b]	3.8	3.6	6.2	6.6	5.4	4.0	4.7
Current account balance/GDP (%)	−3.5	−1.2	−2.7	−3.8	−5.4	−6.2	−5.6
Romania							
GDP at market prices (2000 US$)[b]	−1.7	4.1	7.9	6.0	8.6	3.2	5.8
Current account balance/GDP (%)	−4.8	−8.7	−10.5	−13.7	−15.5	−8.6	−7.4
Russian Federation							
GDP at market prices (2000 US$)[b]	−3.9	6.4	7.4	8.1	6.0	3.0	5.0
Current account balance/GDP (%)	—	11.1	9.6	6.1	6.0	−3.4	−5.0
Turkey							
GDP at market prices (2000 US$)[b]	3.7	8.4	6.9	4.6	3.0	1.7	4.9
Current account balance/GDP (%)	−1.1	−4.7	−6.0	−5.7	−8.4	−3.9	−3.1

(continued)

Table A4 (*continued*)
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[c]	2009[d]	2010[d]
Ukraine							
GDP at market prices (2000 US$)[b]	−8.0	2.7	7.9	7.7	6.0	−3.0	4.4
Current account balance/GDP (%)	—	2.9	−1.5	−4.2	−6.5	−2.2	−1.3
Uzbekistan							
GDP at market prices (2000 US$)[b]	−0.2	7.0	7.3	9.5	8.0	7.0	6.5
Current account balance/GDP (%)	−0.9	13.1	14.3	18.8	20.6	14.7	13.1

Source: World Bank.

Note: — = not available.

Growth and Current Account figures presented here are World Bank projections and may differ from targets contained in other Bank documents. Bosnia and Herzegovina, Montenegro, Serbia, Tajikistan, Turkmenistan, and Yugoslavia are not forecast because of data limitations.
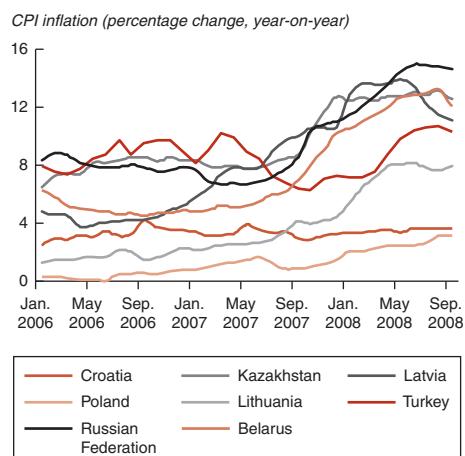
a. Growth rates over intervals are compound averages; growth contributions, ratios, and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. Estimate.
d. Forecast.

policy is underway in a number of countries, such as Belarus, Romania, Russia and Ukraine.

The potential for second-round inflation effects remains a problem in the region. The reversal in commodity prices since mid-2008 has been reflected in a flattening or decline in inflation trends in at least 12 countries amid some indications of a falloff in core inflation (figure A6).[3] However, because domestic factors such as government spending and strong wage growth also drive prices, inflation expectations remain high, and the potential for a wage spiral is notable. Moreover, recent sharp currency declines and loosening of monetary policy, together with other aggressive measures to resist the economic downturn, may drive up inflation and endanger fiscal positions, causing problems in the longer run.

For many small and poorer countries that rely on remittances as an important source of financing, a downturn in neighboring countries in Western Europe and the CIS implies less in remittance flows from migrants abroad, raising the need for financing from other sources and potentially exacerbating poverty. This said, historical evidence shows remittances tend to be relatively resilient during a downturn, and should help cushion the slowdown.

Figure A6 Core inflation is rising in several countries of Europe and Central Asia

CPI inflation (percentage change, year-on-year)

Legend: Croatia, Poland, Russian Federation, Kazakhstan, Lithuania, Belarus, Latvia, Turkey

Source: World Bank.

Beyond the set of immediate challenges, a longer-term concern is the set of substantial bottlenecks to growth that have been reached in infrastructure and labor markets in developing countries in general, and in a large number of European and Central Asian countries in particular. Faster GDP growth in the future is likely only if countries can take the necessary steps to improve the supply of essential

utilities and upgrade transport, communications, and other key infrastructure. Such improvement, together with a diminishing of institutional and structural inefficiencies could help alleviate current constraints on growth in the longer run.
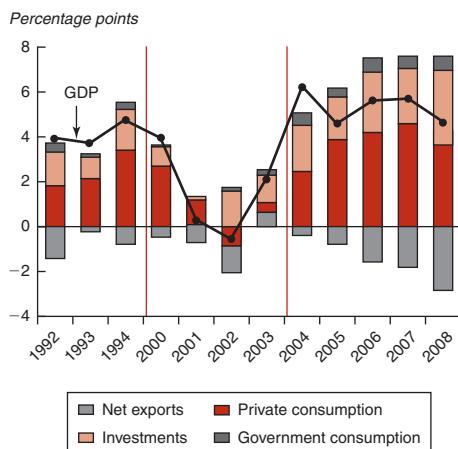
Latin America and the Caribbean
Recent developments

The global financial crisis has come to affect Latin America and the Caribbean after a period of exceptional GDP growth. The region grew at an annual rate of 5.3 percent over 2004–08, the strongest pace in the last three decades. GDP gains were led by República Bolivariana de Venezuela, which advanced at a 10.5 percent clip; Argentina at 8.4 percent; and Peru at 7.4 percent. Growth was also broad-based during this period, with the Caribbean countries gaining 5.9 percent annually and Central American countries growing 3.7 percent. The oil-exporting economies of the region saw GDP pick up at a 5.7 percent rate, and oil importers also grew briskly at 5.3 percent. Only two countries grew slower than 3 percent per year over the period— Jamaica at 1.6 percent and Haiti at 1.4 percent. The last period of strong region-wide growth occurred in 1991–94 when GDP advanced 4.2 percent annually (figure A7).

A favorable external environment of high commodity prices and strong import demand in high-income countries supported the region's recent growth performance. The role of the external environment is emphasized in Izquierdo and others 2008; Calvo and Talvi 2007; and Österholm and Zettelmeyer 2007. However, the region has also made genuine progress in maintaining independent monetary policy and increasing the credibility of central banks, introducing exchange rate flexibility, deepening local currency debt markets, and providing supportive fiscal policy (World Bank 2008c). Because of the improvements in policy and in the external environment, the region is in better macroeconomic and fiscal

Figure A7 Contributions to GDP growth in Latin America and the Caribbean

Percentage points

Legend: Net exports, Private consumption, Investments, Government consumption

Source: World Bank.

health than it was five years ago, or at the end of the previous growth spurt. But this healthy starting position will be seriously tested by the global crisis, which has already led to a withdrawal of funds from regional equity markets by international investors, sharply depreciating currencies and soaring sovereign- and corporate bond spreads. The U.S. and European recessions and the turnaround to decline in global commodity prices further darken the external environment for the region.

During 2008, Latin American GDP advanced 4.4 percent, still robust, albeit down from the strong 5.7 percent pace of the previous year. Buffers in the form of large levels of reserves and current account surpluses mitigated the impact of slowing exports to the United States to a degree. Latin America's exports lost momentum, however, growing only 1.7 percent in 2008 compared with 5 percent in 2007, while the region's current account position dropped from a surplus of 0.5 percent of GDP to a deficit of the same magnitude.

Output gains were quite differentiated across key countries and sub regions in Latin America and the Caribbean. The outright decline in U.S. imports adversely affected

Mexico's exports, sending them from growth of 3.3 percent in 2007 to contraction of 0.9 percent in 2008, and contributing to a slowdown in GDP growth from 3.2 percent to 2 percent over the period. Argentina's growth performance also slipped, from 8.7 percent in 2007 to 6.6 percent in 2008, on the back of slowing consumer spending and exports. In contrast, Brazil maintained GDP gains at a still-robust 5.2 percent pace, with its economy grounded in stronger consumer outlays and investment, further supported by favorable terms-of-trade developments during the first half of the year.

GDP growth eased in the Caribbean, declining from 6 percent in 2007 to 4.6 percent in 2008. The falloff was linked in part to hurricane damage but also to weaker exports and a negative contribution of trade to GDP. And Central American GDP slowed by more than a percentage point to 2.2 percent from

3.6 percent, largely because of a downshift in exports tied to the slowdown in U.S. demand (table A5).

Although not yet visible in GDP figures, a large number of countries in the region are already subject to adverse spillover effects of the financial crisis. Between September 15, when Lehman Brothers announced bankruptcy, and the end of October, equity markets lost half of their dollar values; currencies, especially those of Brazil, Chile, and Mexico depreciated precipitously against the dollar; the cost of corporate and government borrowing on international bond markets surged; investment spending appeared to be slowing, and the availability of trade finance tightened. These developments have added to the region's concerns regarding falling commodity prices (on the upside of which food and oil exporters benefited greatly), slowing remittance inflows and rising inflation.

Table A5   Latin America and the Caribbean forecast summary
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[e]	2009[f]	2010[f]
GDP at market prices (2000 US$)[b]	3.3	4.6	5.6	5.7	4.4	2.1	4.0
GDP per capita (units in US$)	1.6	3.3	4.2	4.4	3.1	0.9	2.8
PPP GDP[c]	4.2	4.6	5.5	5.7	4.4	2.2	4.1
Private consumption	—	5.8	6.3	6.9	5.4	3.1	4.6
Public consumption	—	3.0	4.6	4.0	4.5	2.4	2.6
Fixed investment	4.7	11.3	14.6	12.2	14.6	−4.1	8.8
Exports, GNFS[d]	8.1	8.1	7.7	5.0	1.7	−2.1	2.4
Imports, GNFS[d]	10.9	11.9	14.3	11.9	12.3	−3.9	6.9
Net exports, contribution to growth	−0.4	−0.8	−1.6	−1.9	−2.9	0.6	−1.4
Current account balance/GDP (%)	−2.8	1.4	1.6	0.5	−0.6	−0.3	0.0
GDP deflator (median, LCU)	11.3	5.7	8.0	7.5	10.2	6.7	5.5
Fiscal balance/GDP (%)	—	1.2	1.4	1.3	0.9	0.6	0.4
Memo items: GDP							
Latin America excluding Argentina	3.1	3.9	5.1	5.2	4.1	2.2	4.1
Central America	3.6	3.0	5.1	3.6	2.2	1.4	3.3
Caribbean	3.6	6.7	8.7	6.0	4.6	3.3	4.7
Brazil	2.5	2.9	3.8	5.4	5.2	2.8	4.6
Mexico	3.5	2.8	4.9	3.2	2.0	1.1	3.1
Argentina	4.5	9.2	8.5	8.7	6.6	1.5	4.0

Source: World Bank.

Note: — = not available.

a. Growth rates over intervals are compound averages; growth contributions, ratios, and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. GDP measured at PPP exchange rates.
d. Exports and imports of goods and nonfactor services.
e. Estimate.
f. Forecast.

Credit conditions tighten, capital flows plummet

Sovereign spreads, as measured by JPMorgan-Chase Emerging Market Price Index (EMBI), have increased rapidly since mid-September throughout the region, with the largest rise (over 1,000 basis points) for Argentina and República Bolivariana de Venezuela (figure A8). The corporate bond market is seeing a similar trend, with soaring corporate spreads. Moreover, gross capital inflows to the region halved over January–August 2008 compared with the like period in 2007. Bond issuance dropped 46 percent to $18.5 billion; equity IPO issues virtually vanished in the hostile climate of 2008 (down 75 percent); and bank borrowing dropped one-third to $36 billion over the year to date.
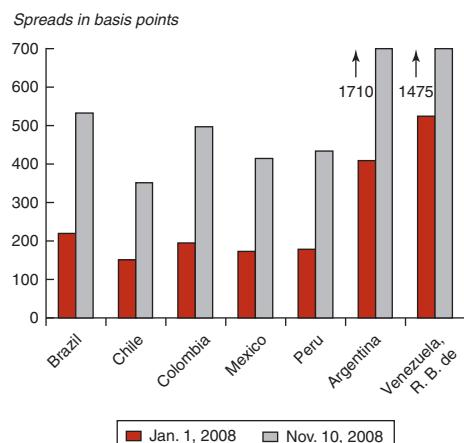
Tighter financing conditions and expectations of weaker demand growth have led corporations and governments alike to review investment plans. The Republic of Korea's Hyundai, India's Reliance, and Brazil's Petrobras have either announced or postponed decisions on investment plans in Brazil. Petroleos de Venezuela has postponed several refining projects across the Caribbean and Central America. The Mexican airline Aladia

filed for bankruptcy protection in October because of financing difficulties. And Controladora Comercial Mexicana, a large supermarket chain, also filed for bankruptcy after sustaining losses from derivatives trading.

As a result of falling equity markets and repatriation of foreign funds to home currencies, many of the region's currencies have experienced sharp depreciation since mid-September, a situation that runs the risk of reigniting inflation, even as commodity prices decline. After several years of appreciation, the Brazilian real started to decline in early July (figure A9). The central banks of Argentina, Brazil, Chile, and Mexico sold dollars on the spot market during October to prevent their currencies from sliding further. Mexico offered direct financing to commercial banks. Brazil relaxed reserve requirements, eliminated taxes on foreign investment, authorized state-owned banks to buy stakes in financial institutions, and allowed the central bank to enter into currency swaps with other central banks.
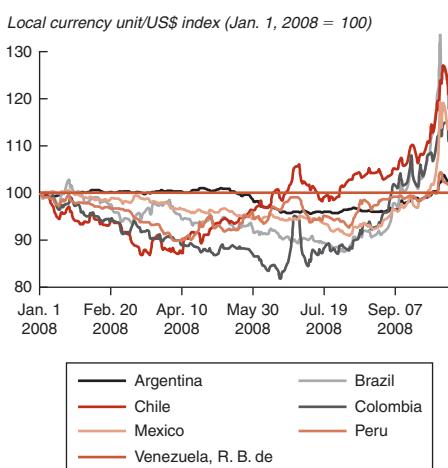
Another consequence of tightened credit conditions has been vanishing export credit

Figure A8 Bond spreads have increased sharply for many Latin American countries

Spreads in basis points

Source: JPMorgan-Chase.

Figure A9 Exchange rates in Latin America and the Caribbean fell sharply against the dollar in late 2008

Local currency unit/US$ index (Jan. 1, 2008 = 100)

Source: Thomson/Datastream.

Note: Increase = weaker local currency.

lines, which allow exporters to purchase goods and services they need to support their export sales. Exporters now face a double hit, with slowing import demand in high-income countries on the one hand, and more expensive credit to support export operations on the other. Anecdotal evidence from Brazil suggests that the fall of Lehman Brothers precipitated a collapse in export credit in Brazil, leading foreign investors and companies to repatriate billions of dollars from Brazil. Shrinking export credit could lead to difficult conditions for businesses that supply inputs to exporters, with ripple effects to the rest of the economy.

Remittance inflows are slowing

Worker remittances are an important source of income for many Latin American countries. The region has sent 28.3 million workers abroad—5.1 percent of the region's population—who send back $60 billion, on average, to their home countries (World Bank 2008a). The United States is the primary recipient of the region's emigrants, followed by Spain and Italy. In eight Latin American countries, remittances account for more than 10 percent of GDP. Mexico is the largest recipient with $25 billion in receipts. But the slowdown in the U.S. housing market and the resulting loss of construction jobs led to a 4.2 percent decline in remittances to Mexico over January–August 2008, compared with the same period of 2007. No evidence of similar large-scale decline has yet come to light in other regional economies.

Inflation remains high, notably in food

Rapid economic growth in Latin America also brought with it a ramp-up in inflation, which in 2008—abetted by the price surge for oil and food traded internationally—was at its highest level in a decade. Food prices rose substantially faster than the overall consumer price index for most countries (World Bank 2008b), and fundamental changes in global food dynamics appear to be under way. High energy prices, climate change, and rising biofuel production have driven the rise in food price
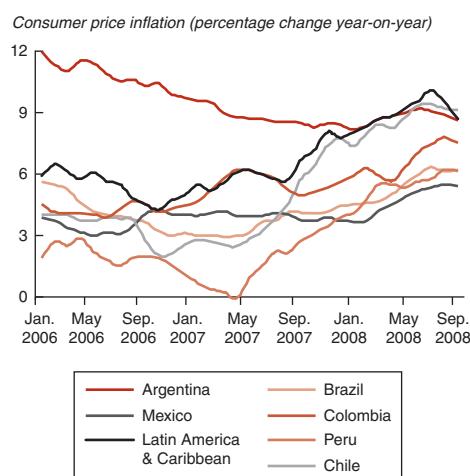
inflation. Although Latin America has the largest surplus in food trade of all developing regions, food price inflation adversely affects most of the population, because households are net buyers of food. Poor people are also affected disproportionately because they spend a larger share of their income on food.

Two developments have occurred in recent months that are likely to help ease the pressure of food inflation. Central governments across the region raised interest rates in the first half of 2008 to stem inflationary pressures. More importantly, commodity prices began to plummet after reaching historically high levels in mid-2008. The latest inflation numbers (September 2008) for the region were generally lower than their peak levels in the preceding months (figure A10).

Medium-term outlook

GDP growth in the region is expected to fall off sharply to 2.1 percent in 2009 from 4.4 percent in 2008, driven by a sharp decline in capital spending—from robust growth of

Figure A10 Inflation still high in Latin America and the Caribbean despite sharp falloff in food and fuel prices

Consumer price inflation (percentage change year-on-year)

Source: World Bank.

14.6 percent in 2008 to a decline of 4 percent. Increasing cost of capital for business, channeled through falling domestic equity markets, widening spreads on international corporate bonds, and depreciating exchange rates is anticipated to combine with expectations for a sharp falloff in both domestic and overseas sales growth, leading to a retrenchment in private capital outlays (see table A5, earlier).

Falling investment is expected to lead to similar declines in regional imports, because the import content of investment tends to be quite high in Latin America. With imports declining almost 4 percent in 2009 and exports falling 2 percent, the contribution of trade to growth will shift to positive 0.6 points of growth for the first time in 20 years. But the drop in investment and in export revenues also carry multiplier effects through the regional economy, with real household spending easing to a 3.1 pace from 5.4 percent in 2008, and GDP growth slowing to 2.1 percent. GDP could rebound fairly quickly to 4 percent gains by 2010, should global credit markets thaw, risk aversion subside, and OECD countries revive on the back of renewed vigor in consumer spending—in step with the anticipated remission of inflation pressures. These developments represent a substantial change from recent global forecasts prepared in June 2008, when the region was expected to grow 4.3 percent in 2009 and 4.2 percent in 2010 (see *Global Development Finance 2008*, World Bank 2007d).

Growth in Brazil is expected to slow from 5.2 percent in 2008 to 2.8 percent in 2009. Inflation has already started to level off, in part as a result of the Central Bank of Brazil's raising policy interest rates, amid falling commodity prices. Consumer price inflation is expected to diminish from 6.3 percent in 2008 to 4.8 percent in 2009. Brazil is likely to witness its first current account deficit since 2002, tied to developments in the income accounts, as repatriation of profits by foreign companies is under way. However, a decline in the imports of capital goods is expected to help improve

the current account in 2009 and 2010 (table A6).

Mexico's close economic ties to the U.S. economy are expected to slow its growth sharply in 2009. Export volume growth—which was already in negative territory in 2008—is projected to drop by 5 percent in 2009. Argentina will perhaps see the sharpest growth falloff in the region as it experiences declines in export market demand, commodity prices, and investment. Peru, Panama, and the Dominican Republic will also slow after very high growth averaging 8 percent for the last four years.

Risks

With the onset of the financial crisis, skyrocketing costs of capital, or an outright shutdown in credit flows, are the primary risks faced by the region. Should sovereign and corporate spreads not retreat from current levels, Latin America could have difficulty financing new investment projects and sustaining current projects. Although central banks worldwide have undertaken steps to inject liquidity into banking systems, a marked thawing of interbank rates and revival of credit flows has yet to be seen.

The favorable external environment that benefited the region in the past five years has almost vanished. Both high-income and developing-country GDP growth is slowing, diminishing demand for Latin America's commodities, manufactures, and services exports. Although inflation is still much higher than in early 2007, increases in headline inflation appear to have peaked in July or August 2008 in the seven largest economies in the region. Although inflation will likely continue to ease given declining commodity prices, a potential revival of inflation remains a concern, given depreciating currencies, a move toward monetary accommodation (mitigating a portion of the economic downturn), and the potential for second-round inflation effects.

Table A6   Latin America and the Caribbean country forecasts
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[c]	2009[d]	2010[d]
Argentina							
GDP at market prices (2000 US$)[b]	4.5	9.2	8.5	8.7	6.6	1.5	4.0
Current account balance/GDP (%)	−3.1	2.8	3.7	3.0	0.4	−3.2	−2.3
Belize							
GDP at market prices (2000 US$)[b]	5.9	3.1	5.6	3.0	2.8	2.1	2.9
Current account balance/GDP (%)	−7.3	−13.6	−1.2	−3.0	−3.7	−3.7	−1.6
Bolivia							
GDP at market prices (2000 US$)[b]	3.8	4.4	4.8	4.6	4.1	3.6	4.3
Current account balance/GDP (%)	−6.1	6.5	11.5	13.4	13.3	9.9	8.3
Brazil							
GDP at market prices (2000 US$)[b]	2.5	2.9	3.8	5.4	5.2	2.8	4.6
Current account balance/GDP (%)	−2.0	1.7	1.3	0.1	−1.3	0.6	1.1
Chile							
GDP at market prices (2000 US$)[b]	6.4	5.7	4.3	5.1	4.2	3.4	4.7
Current account balance/GDP (%)	−2.7	1.2	5.0	4.3	−0.8	−0.8	0.0
Colombia							
GDP at market prices (2000 US$)[b]	2.5	4.7	6.8	8.2	3.7	2.6	4.7
Current account balance/GDP (%)	−1.9	−1.6	−2.9	−2.6	−3.0	−1.5	−0.6
Costa Rica							
GDP at market prices (2000 US$)[b]	5.2	5.9	8.8	6.8	4.0	3.9	4.9
Current account balance/GDP (%)	−3.6	−4.9	−1.9	−8.7	−2.2	−3.3	−6.9
Dominica							
GDP at market prices (2000 US$)[b]	1.8	3.1	4.0	3.2	3.1	−1.5	3.3
Current account balance/GDP (%)	−16.9	−32.6	−0.3	−0.4	0.4	6.2	6.9
Dominican Republic							
GDP at market prices (2000 US$)[b]	6.0	9.3	10.7	8.5	5.2	2.6	4.5
Current account balance/GDP (%)	−3.2	−1.9	−3.7	−5.7	−9.5	−8.0	−3.8
Ecuador							
GDP at market prices (2000 US$)[b]	1.8	6.0	3.9	1.9	2.5	0.8	2.1
Current account balance/GDP (%)	−2.3	0.8	3.5	2.3	5.2	5.4	4.0
El Salvador							
GDP at market prices (2000 US$)[b]	4.6	3.1	4.2	4.2	2.0	2.6	2.9
Current account balance/GDP (%)	−2.0	−5.3	−4.7	−6.0	−8.4	−5.5	−5.2
Guatemala							
GDP at market prices (2000 US$)[b]	4.1	3.2	4.5	5.7	2.8	3.1	3.3
Current account balance/GDP (%)	−4.6	−4.5	−4.4	−5.1	−7.5	−5.3	−4.3
Guyana							
GDP at market prices (2000 US$)[b]	4.9	−2.2	4.8	5.5	4.8	4.0	3.1
Current account balance/GDP (%)	−15.4	−12.1	−19.7	−15.4	−18.2	−16.6	−15.1
Honduras							
GDP at market prices (2000 US$)[b]	3.3	6.1	6.3	6.3	3.1	4.0	4.8
Current account balance/GDP (%)	−7.7	−3.0	−4.7	−10.6	−14.7	−9.6	−8.3
Haiti							
GDP at market prices (2000 US$)[b]	−1.3	1.8	2.3	3.5	3.0	3.8	3.9
Current account balance/GDP (%)	−1.7	−6.4	−7.6	−1.8	−11.9	−12.1	−13.1
Jamaica							
GDP at market prices (2000 US$)[b]	1.9	1.8	2.5	1.2	0.9	0.8	2.3
Current account balance/GDP (%)	−2.7	−11.4	−10.9	−11.7	−17.0	−12.8	−10.8
Mexico							
GDP at market prices (2000 US$)[b]	3.5	2.8	4.9	3.2	2.0	1.1	3.1
Current account balance/GDP (%)	−3.7	−0.7	−0.3	−0.6	−1.0	−1.7	−1.7
Nicaragua							
GDP at market prices (2000 US$)[b]	3.4	4.3	3.7	3.5	2.2	1.5	2.9
Current account balance/GDP (%)	−28.7	−15.3	−16.4	−17.7	−20.9	−19.0	−15.4

(continued)

	1991–2000[a]	2005	2006	2007	2008[c]	2009[d]	2010[d]
Panama							
GDP at market prices (2000 US$)[b]	5.1	7.2	8.5	11.5	7.8	3.3	6.2
Current account balance/GDP (%)	−4.8	−3.1	−7.2	−5.4	−7.6	−9.4	−9.1
Peru							
GDP at market prices (2000 US$)[b]	4.0	6.4	7.6	9.0	8.5	5.2	6.6
Current account balance/GDP (%)	−5.5	1.6	3.0	1.3	−2.2	−1.6	−1.6
Paraguay							
GDP at market prices (2000 US$)[b]	1.8	2.9	6.0	6.8	4.2	3.0	3.8
Current account balance/GDP (%)	−2.2	0.5	2.0	0.8	0.0	−1.0	−0.8
St. Lucia							
GDP at market prices (2000 US$)[b]	3.1	7.3	4.5	4.0	4.4	4.8	5.0
Current account balance/GDP (%)	−11.6	−17.4	−23.4	−21.4	−21.8	−20.7	−19.8
St. Vincent and the Grenadines							
GDP at market prices (2000 US$)[b]	3.1	1.5	4.5	5.5	6.3	−0.6	5.6
Current account balance/GDP (%)	−18.8	−26.3	−25.9	−24.5	−24.7	−24.2	−20.0
Uruguay							
GDP at market prices (2000 US$)[b]	3.0	6.6	7.0	7.4	4.7	2.8	3.0
Current account balance/GDP (%)	−1.5	0.1	−2.3	−0.7	−1.7	−1.4	−0.9
Venezuela, R. B. de							
GDP at market prices (2000 US$)[b]	2.1	10.3	10.3	8.4	5.3	1.0	3.2
Current account balance/GDP (%)	2.6	17.5	14.8	8.8	8.7	9.0	8.0

Source: World Bank.

Note: Growth and current account figures presented here are World Bank projections and may differ from targets contained in other World Bank documents. Barbados, Cuba, Grenada, and Suriname are not forecast because of data limitations.

a. Growth rates over intervals are compound averages; growth contributions, ratios, and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. Estimate.
d. Forecast.

Middle East and North Africa
Recent developments

The Middle East and North Africa region has been affected dramatically by developments in global commodity markets over the last three years, notably in 2008.[4] As a result there have been substantial up- and downshifts in terms of trade, current account positions, and external financing requirements. These shifts have occurred at the same time as the external environment for growth and for international finance deteriorated markedly. Still, regional GDP held up well through 2008, with domestic demand, notably investment financed in large part by FDI, providing impetus for growth. The pace of GDP growth for the developing countries of the region was unchanged in 2008 from the strong 5.8 percent registered in 2007. A falloff in the Islamic Republic of Iran's hydrocarbon sector eased GDP growth among oil-dominant economies from 6.4 percent in 2007 to 5.8 percent. And growth among the more diversified economies picked up from 3.8 percent in 2007 to 5.7 percent, led by a strong recovery from drought in Morocco (table A7).

Commodity price changes carry extreme effects across the region

The region has undergone tortuous change linked to global commodity prices through the last years—from gradual increases to a surge in crude oil, food (especially grains), and raw materials prices from 2005 through mid-2008—to a sudden and forceful unwinding of the bubble during the second half of 2008. On the upside of the commodity run, the developing oil exporters—Algeria, the Arab Republic of Egypt (though a more diversified economy), the Islamic Republic of Iran, the Syrian Arab Republic, and the Republic of Yemen—accumulated $82 billion in additional revenues over 2003–07, with receipts coming to stand at $130 billion in the latter year. During the first

Table A7   Middle East and North Africa forecast summary
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[*]	2009[†]	2010[†]
GDP at market prices (2000 US$)[b]	3.7	4.2	5.3	5.8	5.8	3.9	5.2
GDP per capita (units in US$)	1.6	2.5	3.6	4.0	4.0	2.2	3.5
PPP GDP[c]	4.8	4.3	5.4	6.3	5.7	3.8	5.0
Private consumption	3.9	5.0	6.2	6.1	7.0	4.2	6.0
Public consumption	4.2	5.6	4.2	1.8	8.7	5.4	5.4
Fixed investment	3.9	7.8	4.8	16.8	18.9	7.0	10.5
Exports, GNFS[d]	3.1	9.5	6.7	6.0	10.1	−2.1	4.9
Imports, GNFS[d]	1.4	14.0	7.6	14.3	19.8	1.7	8.8
Net exports, contribution to growth	0.4	−1.7	−0.6	−3.1	−4.3	−1.3	−2.2
Current account balance/GDP (%)	−0.3	10.9	14.9	12.8	13.5	6.0	4.1
GDP deflator (median, LCU)	9.1	6.3	8.0	5.3	14.1	6.6	7.2
Fiscal balance/GDP (%)	4.0	5.5	0.7	1.3	2.0	0.0	−1.0
Memo items: GDP							
Middle East and North Africa[e]	3.4	5.1	4.9	5.1	5.9	4.1	5.5
Resource poor and labor abundant[f]	4.2	3.8	6.3	5.6	6.5	4.3	5.9
Resource rich and labor abundant[g]	3.3	4.6	4.5	6.1	5.1	3.6	4.5
Resource rich and labor importing[h]	3.0	6.5	4.2	4.1	6.0	4.3	6.0
Egypt, Arab Rep.	4.3	4.4	6.8	7.1	7.2	4.5	6.0
Iran, Islamic Rep.	3.7	4.3	5.9	7.8	5.6	3.5	4.2
Algeria	1.7	5.3	1.8	3.1	4.9	3.8	5.4

Source: World Bank.
* Estimate.
† Forecast.

a. Growth rates over intervals are compound averages; growth contributions, ratios, and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. GDP measured at PPP exchange rates.
d. Exports and imports of goods and nonfactor services.
e. Geographic region includes these high-income countries: Bahrain, Kuwait, and Saudi Arabia.
f. Arab Rep. of Egypt, Jordan, Lebanon, Morocco, and Tunisia.
g. Algeria, Islamic Rep. of Iran, Syrian Arab Rep., and Republic of Yemen.
h. Bahrain, Kuwait, Oman, and Saudi Arabia.
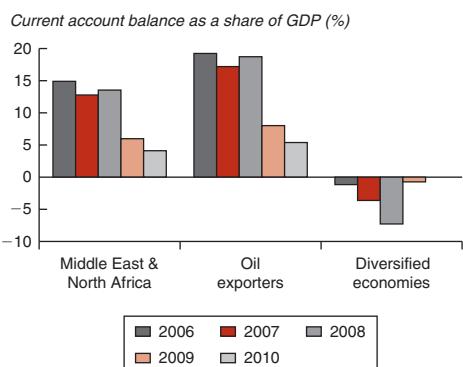
half of 2008, revenues jumped a further 50 percent to nearly $200 billion. Since then, however, the financial crisis and expectations of much lower global growth have caused oil prices to plunge from peaks of nearly $150/bbl in early July to near $65/bbl by end-October 2008. As a result, regional oil exporters are now experiencing a substantial downshift in hydrocarbon receipts, terms of trade, and current account surplus positions that will manifest more clearly in 2009 (figure A11).

The oil exporters' current account surplus increased from 17.2 percent of GDP in 2007 only moderately to 18.7 percent in 2008, but global economic recession in 2009 will pressure oil prices lower and yield a sizable additional falloff in world oil demand. The group's current surplus position is projected to drop steeply to 8 percent of GDP during 2009 and to 5.4 percent by 2010. Real-side growth will be affected as revenue declines are likely to result in downsizing of ambitious investment projects or postponement of planned programs. At the same time, the Organization of Petroleum Exporting Countries (OPEC) will likely attempt to set limits on the decline in oil prices by constraining oil production, which will depress the oil sector in many economies, with ripple effects to the non-oil economy and the private sector.

The diversified economies of the region, including Jordan, Lebanon, Morocco, and Tunisia, are to varying degrees highly dependent on imports of oil and refined petroleum products, as well as on food and feedstuffs,

Figure A11 Current account positions in the Middle East and North Africa set to shift dramatically

Current account balance as a share of GDP (%)

Source: World Bank.

notably wheat and coarse grains. Their terms of trade worsened by 4.2 percent in 2008, pushing the group's current account deficit to 7.3 percent of GDP (not witnessed since the Asia crisis of 1997) from 3.6 percent in 2007 (see figure A11). Looking forward, these economies will benefit from lower commodity prices through 2010, and current account deficits are projected to decline to 0.7 and 0 percent of GDP in 2009 and 2010 respectively.

Effects of financial crisis are fairly muted, but several countries are vulnerable
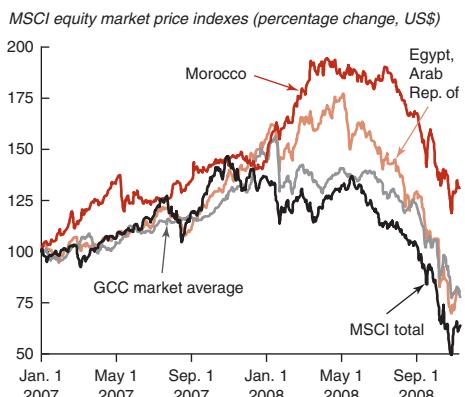
To date, the direct effects of the financial crisis experienced by most developing economies in the region have been relatively mild. Banks and investment companies in the Middle East and North Africa were not large holders of subprime mortgage-backed securities, or "toxic assets" (though there may be questions concerning portfolios of sovereign wealth funds in the Gulf States). Indirect effects, however, have become evident. Following the announcement of the U.S. financial rescue plan in early October 2008, spreads on sovereign debt increased 170 basis points for Lebanon and 100 points for Egypt; but these increases contrasted well with the average rise of 250 basis points for all developing economies at that time. With country-specific developments

set against the background of subsequent concerted policy rate reductions across the OECD countries, a step-up in economic stimulus plans and the beginnings of a thaw in credit markets, spreads in Egypt eased to 350 points, but those in Lebanon escalated to 730 basis points by early November.

Equity markets across the region echoed the sharp declines seen by emerging markets generally, as international (and domestic) investors withdrew funds from the asset class. From peak levels in the spring through early-November 2008, the Egyptian bourse dropped 54 percent, Morocco's exchange fell 33 percent, and the Gulf Cooperation Council (GCC) markets in aggregate declined 50 percent. This contrasts with a 54 percent decline in the MSCI index which covers all emerging markets (figure A12).

Gross capital flows to countries in the region have also declined, and may be expected to weaken further. Bond issuance dropped by two-thirds from $4.6 billion to $1.5 billion between January and August 2007 and the like period of 2008. Equity issuance declined from $2.1 billion to $750 million or 65 percent in the period as well. But a surge in bank borrowing from $4 billion to $14 billion in the period offset the downturn in other

Figure A12 Markets in the Middle East and North Africa are hard hit by financial crisis

MSCI equity market price indexes (percentage change, US$)

Source: Morgan-Stanley.
Note: Gulf Cooperation Council (GCC).

finance components. Moreover, preliminary data for September show declines across all segments of flows to the region. The process of deleveraging across high-income financial institutions appears to have raised the possibility for a potentially sharp reduction in capital flows, particularly syndicated bank lending and to a lesser degree bond issuance, for the region. This is likely to carry adverse effects across countries, but with highly differentiated outcomes.[5]

Several countries stand exposed to the risk of adverse developments in international financial markets, which could negatively affect investment spending and growth. These countries may suffer from fragilities in macroeconomic structure (for example, a string of substantial current account- or fiscal deficits) or from the presence of stress points made clearer by the heightening of investor risk aversion.

The vulnerability index presented in chapter 1 (a weighted measure of the exposure of a country to developments in sovereign spreads, equity markets, and exchange rates, as well as in gross capital inflows) suggests that Lebanon, Syria, Jordan, and Egypt have been among the more affected countries in the region, though the vulnerability of these economies is low in contrast with the average exposure for other regions. Under a global scenario in which financial markets require a prolonged period to return to balance, these countries might find themselves at risk of adverse capital movements, pressures on equity markets, exchange rates, and eventually investment and growth.
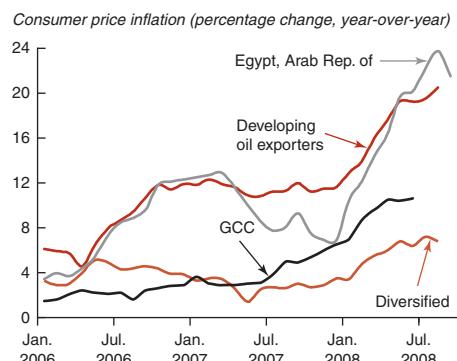
Production is mixed; inflation ramps higher, denting budgets across the region

Industrial production for the diversified economies of the region tailed off in late 2008, shifting from gains of 8 percent (on a GDP-weighted basis) during the first quarter to 4.5 percent by the third quarter (year-over-year). This decline reflects the increasingly sluggish performance of exports to key European and U.S. markets as well as emerging softness in domestic demand. In contrast, production among

the developing oil exporters picked up from negative ground in the first quarter to 3 percent in the third, as growth in the non-oil sectors in both Algeria and the Islamic Republic of Iran well outpaced sluggish conditions in hydrocarbons. Output among the high-income GCC economies continued to grow quickly, underpinned by a continued rapid pace of commercial and residential real estate development in Bahrain, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). Production gains for the group jumped from 3 percent to 10 percent by the third quarter, with Qatar up 12 percent, Saudi Arabia climbing 11 percent, and the UAE moving to 20 percent growth in the period.

The surge in global prices for crude oil, food, and feed grains (50 percent or more during the first half of 2008), together with overheated domestic demand in several economies in the region (notably Egypt, the Islamic Republic of Iran, and a number of GCC countries), led to a sharp rise in consumer price inflation across the Middle East and North Africa (figure A13). Consumer prices for the diversified economies (GDP-weighted) accelerated to 7 percent in August 2008 from a trough nearer 1.5 percent in mid-2007; much of the increase was centered

Figure A13 Inflation rises across the Middle East and North Africa

Consumer price inflation (percentage change, year-over-year)

Source: World Bank data.

Note: Gulf Cooperation Council (GCC).

in Jordan, where inflation reached 20 percent. Aggregate inflation for developing oil exporters also breached 20 percent, mainly reflecting developments in the Islamic Republic of Iran, where substantial monetary stimulus led to overheating, pushing inflation to 27 percent; consumer prices in Egypt rose to a 24 percent pace, pushed up primarily by rising food prices and expanding domestic demand fueled by monetary growth.

Inflation remains a key challenge for the region. Although extensive reliance on fuel and food subsidies helps limit inflationary pressures, it comes at a very high fiscal cost. Not only do such steps reduce fiscal space to address other priorities, as discussed in chapter 3, they tend to be very inefficient mechanisms for alleviating poverty. Iranian energy subsidies exceeded 20 percent of GDP in 2007—08. Food and energy subsidies in Egypt increased to 1.9 and 6.9 percent of GDP in fiscal 2008, up from 1.3 and 5.5 percent, respectively, in fiscal 2007. Second-round inflationary effects have been boosted in several countries that responded to high food prices by increasing wages of select groups to help mitigate the worst of the impact on living standards.

Domestic demand, underpinned by substantial FDI, drives growth in the region

Strong gains in consumer spending, and especially in fixed investment, have been the key factors supporting growth across the region in 2008—all the more so as exports of the oil-dominant economies have been restrained in an effort to prop up crude oil prices, and those of the diversified economies have been increasingly affected by the slowdown in export market demand. Investment in the region grew almost 20 percent in 2008, accounting for 3.4 points of the region's 5.8 percent growth in the year, while consumer spending grew 7 percent (see table A7, earlier). Large infrastructure investment projects, such as the *Programme Complémentaire de Soutien à la Croissance* (PCSC) in Algeria, find counterparts in new real estate, commercial, and industrial developments

in countries such as Egypt, Jordan, Morocco, and Tunisia, funded in large part by direct investment flows from the GCC.

Sectors benefiting from FDI have diversified from real estate and tourism-related properties toward industrial and infrastructure projects in the past few years. FDI to the developing countries of the region increased more than five-fold from $4.7 billion in 2000 to $26.4 billion in 2006; preliminary estimates for 2007 suggest a moderate downshift to $21.5 billion, reflecting diminishing levels of flows to Egypt, Jordan, and Tunisia.

Recent examples of FDI-driven developments include the Mediterranean Gate project, which aims to turn Tunis into a regional hub for finance, business, and technology. Work has begun on the first $1 billion of the $25 billion project, which is slated to house 2,500 international firms and provide 350,000 jobs over a 20-year period. In Jordan, Aqaba Development signed a $100 million agreement to develop an industrial port at Aqaba to handle potash exports. And in Morocco, construction is under way on a new Renault/Nissan production site—the plant will sponsor about 6,000 direct jobs, with 90 percent of production exported.

Among the region's oil exporters, Algeria experienced a fillip to growth in 2008, to 4.9 percent from 3.1 in 2007, as gains continued at a rapid 6 percent clip in the non-oil sector, notably in construction and services linked to infrastructure projects (table A8). Algeria stands in fair stead to weather financial spillovers from the global crisis; at end-September 2008, reserves stood at $140 billion, up $30 billion from end-2007. A falloff in the oil sector to 2 percent pressured growth in the Islamic Republic of Iran from 7.8 percent in 2007 to 5.6 percent. Overall GDP was supported by industry, which advanced 7.4 percent, services (6.8 percent), and agriculture (6.2 percent). Growth is being powered by a highly expansionary fiscal policy, which has pushed inflation toward 30 percent; and public spending is anticipated to move higher still ahead of presidential elections slated for 2009.

Table A8 Middle East and North Africa country forecasts
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[c]	2009[d]	2010[d]
Algeria							
GDP at market prices (2000 US$)[b]	1.7	5.3	1.8	3.1	4.9	3.8	5.4
Current account balance/GDP (%)	3.2	21.6	24.7	21.2	23.3	12.2	9.8
Egypt, Arab Rep.							
GDP at market prices (2000 US$)[b]	4.3	4.4	6.8	7.1	7.2	4.5	6.0
Current account balance/GDP (%)	0.9	2.3	2.4	0.3	−5.1	−2.7	−1.3
Iran, Islamic Rep.							
GDP at market prices (2000 US$)[b]	3.7	4.3	5.9	7.8	5.6	3.5	4.2
Current account balance/GDP (%)	1.2	20.4	27.6	28.5	36.3	17.9	12.1
Jordan							
GDP at market prices (2000 US$)[b]	5.1	7.3	6.3	6.0	5.5	4.2	6.0
Current account balance/GDP (%)	−4.3	−17.7	−8.1	−13.9	−14.9	−0.8	0.0
Lebanon							
GDP at market prices (2000 US$)[b]	7.2	1.0	0.0	2.0	5.5	4.0	4.5
Current account balance/GDP (%)	—	−12.8	−5.3	−8.7	−16.4	−6.5	−5.9
Morocco							
GDP at market prices (2000 US$)[b]	2.4	2.4	7.8	2.7	6.2	4.0	6.0
Current account balance/GDP (%)	−1.4	1.7	2.0	−0.3	−4.5	1.0	1.7
Syrian Arab Rep.							
GDP at market prices (2000 US$)[b]	5.1	4.5	5.1	6.6	3.7	2.5	4.2
Current account balance/GDP (%)	1.0	1.0	2.7	1.2	2.4	−2.0	−3.3
Tunisia							
GDP at market prices (2000 US$)[b]	4.7	4.2	5.7	6.3	5.1	3.7	5.8
Current account balance/GDP (%)	−4.3	−1.1	−2.0	−2.6	−3.9	0.0	0.8
Yemen, Rep.							
GDP at market prices (2000 US$)[b]	5.5	4.6	3.2	2.8	2.7	5.7	4.0
Current account balance/GDP (%)	−4.3	3.7	8.1	−0.5	1.3	1.3	2.5

Source: World Bank.

Note: Growth and current account figures presented here are World Bank projections and may differ from targets contained in other World Bank documents. Djibouti, Iraq, Libya, and West Bank and Gaza are not forecast because of data limitations.

a. Growth rates over intervals are compound averages; growth contributions, ratios, and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. Estimate.
d. Forecast.

Growth in Egypt continued its strong momentum into 2008, moving from GDP gains of 7.1 percent in 2007 to 7.2 percent, as investment advanced by more than 30 percent funded in large part by FDI. Egypt has been the largest recipient of FDI in the region, attracting $13 billion (8.4 percent of GDP) in fiscal 2008, up from $11 billion in the previous fiscal year. But the country's equity markets have been hard hit by recent financial turmoil, with the CASE index off more than 50 percent since May 2008. Moody's and Fitch had earlier lowered the outlook on the country's Ba1 rating to negative from stable, citing inflation and the fiscal deficit as primary concerns. Egypt appears among the more exposed economies in the Middle East and North Africa to potential repercussions from developments in international financial markets.

In Syria, domestic demand, supported by strong output gains in transport, communications, finance and real estate, and public administration, drove growth of 3.7 percent during 2008. Declining oil production is the key challenge facing the economy. Oil output dropped 23 percent between 2003 and 2007, increasing pressure to expand the scope for private non-oil activities. Similar falloffs in oil production in the Republic of Yemen continue to plague the economy, restraining GDP growth there to 2.7 percent in 2008; though a coming online of large natural gas facilities in

2009 should yield a fillip to growth by more than 3 percentage points at that time.

Among the more-diversified economies, growth in Morocco recouped sharply to 6.2 percent in 2008 from the drought-inflicted 2.7 percent outturn of 2007. Vigor in non-agricultural sectors, especially in telecommunications, financial services, and construction, has driven growth. Policies to control domestic prices—food and fuel subsidies, temporary waivers on customs duties for cereals, and actions to fight price speculation—have helped maintain overall inflation at relatively low levels compared with many countries in the region. But subsidies have tripled in two years, reaching close to 6 percent of GDP in 2008. In Tunisia, GDP eased to 5.1 percent growth in 2008, from 6.3 percent in 2007, largely because of deterioration in the external environment, in particular the economic slowdown in the EU. Remaining import tariffs on EU goods were dismantled in January within the framework of the EU-Tunisia Association Agreement, and steps have been taken in the financial sector to reduce unsound and nonperforming loans by improving credit risk appraisals. Over the first seven months of 2008, foreign investment in industry increased 47.2 percent, widening from the earlier focus of FDI in tourism.

Jordan's growth slipped to 5.5 percent from 6 percent in 2007, on the back of still-buoyant domestic demand, financed in part by large capital inflows. Heavy public sector outlays in 2008 (and anticipated in the draft 2009 budget) suggest that fiscal and financing pressures will continue in the short term. The rise in fuel and food prices, together with expansionary policy, has pushed inflation above 22 percent as of August, and the current account deficit widened to almost 15 percent of GDP in the year. These circumstances place Jordan at some risk of interruption in private capital flows in the short term, but official development assistance and worker remittances may help the country bridge the potential financing gap. Finally, in Lebanon, GDP picked up to a 5.5 percent pace in 2008, from 2 percent

during 2007, on a strong rise in consumer spending. At the same time, inflation lofted into double digits on the back of food and fuel prices, as well as high public sector wage settlements. Lebanon managed to finance its large trade deficit through stronger exports of services and higher net inflows from abroad.
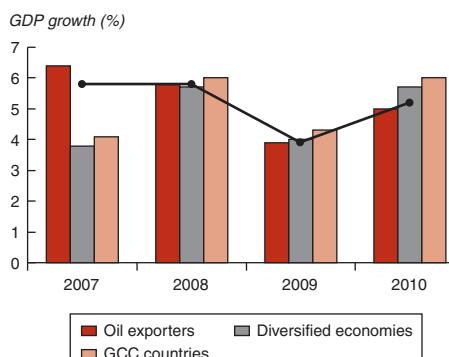
The medium-term outlook

The global downturn and financial crisis will exact a toll on growth in the Middle East and North Africa, but one that will be less dramatic than, for example, in Europe and Central Asia or South Asia, where country exposure and fragility of initial conditions are considerably more pronounced. As world oil demand falls sharply, any decisions by the region's oil exporters to curtail output to set a "floor" under oil prices—will play a large role in shaping growth profiles. And the shift from windfall revenue gains to current account surplus positions of less than 6 percent of GDP by 2010, much weaker oil revenues, tighter credit conditions, and weaker demand for the region's exports (including tourism) are expected to cause investment to decelerate sharply, rising by 7 percent in 2009 after growing 18.9 percent in 2008.

As a result, the region's GDP is anticipated to slow from 5.8 percent in 2008 to 3.9 percent in 2009. Growth among the oil exporters as well as the diversified economies is anticipated to fall to about 4 percent in 2009 (figure A14). Recovery in 2010, predicated upon a quick resolution of the financial crisis in high-income countries and a moderate revival of OECD growth, would see GDP pick-up to 5.2 percent, led by a return to 5.7 percent growth among the diversified economies. A very gradual buildup in global oil demand is likely to restrain GDP gains among the oil-exporting countries to 5 percent in 2010. Mainly reflecting cuts in oil production, export volumes are projected to decline 2.1 percent in 2009, while the regional current account surplus falls to 6 percent of GDP, from 13.5 percent in 2008.

Recovery for the region in 2010 hinges on a pickup in exports and a moderate upturn in

Figure A14 Notable slowing of growth across the Middle East and North Africa in 2009

GDP growth (%)

Source: World Bank.

investment, but primarily on a 1.8 percentage point pickup in household outlays to growth of 6 percent, as the earlier run-up in commodity prices and consumer price inflation moderates, giving way to gradual stabilization and to a pick-up in consumer purchasing power. The region's current account position should continue to narrow to some 4 percent of GDP, providing a new set of "initial conditions" from which developments into the next decade are likely to spring.

Risks

Uncertainty surrounding the medium-term path for oil prices is probably the element of greatest risk confronting the region. Where the global price of oil settles, grounded in the fundamentals—as well as by pressures exerted by OPEC—will determine the potential growth path for the oil-dominant economies of the region. The "base case" view posits world crude oil prices remaining within a $65 to $75/bbl range through 2010, moving toward a real equilibrium price of $60/bbl in 2007 dollars by 2015. But substantial downsides to this price forecast can be envisioned should the slowdown in developing-country GDP growth fall much below the 4.5 percent posited for 2009. Although a repeat of 1985–86, when oil prices tumbled to $10/bbl

is unlikely, prices below $50/bbl could be in the cards, with attendant adjustments required by the region's exporters.

A second element of concern for the region is the potential for unrest among the populace under the potentially harsh conditions of a global recession. A slowdown in remittance inflows would carry direct effects to poor families in need of income to sustain household consumption. And government budgets will remain under pressure, in part to maintain subsidies for basic goods.

South Asia
Recent Developments

GDP growth in South Asia slowed markedly in 2008 to 6.3 percent from 8.4 percent in 2007.[6] The onset of the financial crisis in the United States and Europe in mid-September 2008—which led to severe financial turmoil in emerging markets, including in many South Asian countries—ushered in a downshift in activity that started to take hold in late-2008. Growth had already begun to wane in the region prior to the onset of the global crisis, as rising inflationary pressures and tight credit conditions had started to take a toll on domestic activity, while already slowing external demand and high international commodity prices led to a deterioration in external positions.

The initial effects of the global financial crisis in South Asia were sharp corrections in regional equity markets. Bourses in India, Pakistan, and Sri Lanka dropped 57 percent, 39 percent, and 35 percent, respectively, over the year through mid-November (and 66, 50, and 39 percent, when measured in U.S. dollars). Notably in Pakistan, curbs on the sale of equities were imposed in August, effectively preventing the exit of existing investors and discouraging potential new investors.

Equity sell-offs and 'flight-to-quality' contributed to significant currency depreciation in some countries, with local currencies in India, Pakistan, and Nepal[7] falling by 21 percent, 30 percent, and 21 percent, respectively, against the U.S. dollar, over the year through

mid-November. The Sri Lankan rupee depreciated by nearly 2 percent when the Central Bank allowed the peg against the U.S. dollar to adjust at end-October 2008. In contrast, the Bangladeshi taka appreciated slightly (2 percent) over the same period.

Notably, the region's banking sectors have been largely insulated from the crisis, given very limited exposures to the toxic debt instruments tied to U.S. sub-prime mortgages. With respect to the associated impacts of the financial crisis on the real economy—as financing for corporations, loans for households, and trade credit for exporters have become significantly more difficult to obtain—indications of a fall-off in external and domestic demand have begun to trickle in. For example, India's goods exports contracted 12 percent in October (year-over-year). This comes on the heels of a substantial deceleration in export growth to 10 percent in September from 27 percent in August despite the marked weakening of the rupee. Sri Lanka's exports also declined, falling 9.4 percent in September, contrasted with growth of 16.6 percent and 24.1 percent in August and July, respectively. Further, consumer confidence in India has deteriorated, with the index related to consumer spending down for a fourth consecutive month in October.[8]

Weaker conditions in South Asia were evident in the region prior to the onset of the global financial crisis, and were marked by an increasingly challenging global environment. In particular, sharply negative terms-of-trade effects from the rise in oil and global non-energy commodity prices, which peaked in mid-2008, acted as a drag on regional growth and contributed to a doubling of the regional current account deficit in the year. Rising international prices also contributed to a pronounced buildup in South Asia's inflation pressures. Higher prices, particularly for food and fuel, undermined real household incomes—with the poorest households generally affected the most—thus crimping household expenditures. Several governments attempted to offset the international price hikes with domestic subsidies, placing strains on fiscal balances. But

with substantial and sustained increases through the middle of 2008, a greater degree of feed-through of higher food and fuel prices to households in these countries became inevitable. Tighter credit conditions, moderating demand, higher prices, and diminishing levels of confidence weighed on consumer and business spending alike. And investment growth decelerated to single digits from the robust growth witnessed during recent years.

The slowdown in growth during 2008 reflected increasing weakness in the region's two largest economies, India and Pakistan (table A9). In India, growth slowed across all sectors, with tighter monetary policy, rising inflationary pressures, and mounting fiscal and current account deficits weighing down economic activity. The more recent onset of the global financial crisis resulted in sharp losses in India's equity markets and drove down the value of the rupee. Foreign institutional investors pulled out of India to cover losses in high-income countries and as risk aversion heightened across the globe.

In Pakistan, the economy deteriorated sharply over the course of 2008, as headline inflation surged, and the current account and fiscal deficits jumped on the back of rising oil and food prices. Political turmoil and ongoing security concerns have also taken a toll on Pakistan's economy, while the global financial crisis added substantial downward pressures on its financial markets. Prior to reaching an agreement with the IMF for standby credit in mid-November, Pakistan came close to a full-blown balance of payments crisis. In neighboring Afghanistan, the economy has been hurt by a decline in agricultural output caused by poor precipitation, a sharp rise in international food prices, and the wheat export restrictions imposed by Pakistan, in addition to the disruptive effects of the spreading insurgency. And while GDP growth in Bhutan remained vibrant at 14.4 percent in 2008, it moderated from the 17 percent expansion of 2007, stemming from the initial boost from the first full year of operation of the immense Tala hydropower project.

Table A9　South Asia forecast summary
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[e]	2009[f]	2010[f]
GDP at market prices (2000 US$)[b]	5.2	8.7	9.0	8.4	6.3	5.4	7.2
GDP per capita (units in US$)	3.1	6.9	7.2	6.9	4.8	4.0	5.8
PPP GDP[c]	6.3	8.7	9.0	8.4	6.3	5.4	7.2
Private consumption	3.9	7.0	6.0	7.5	5.7	4.7	5.7
Public consumption	4.7	8.8	10.0	4.9	8.8	9.2	6.7
Fixed investment	5.5	14.6	16.5	13.5	7.1	4.8	10.7
Exports, GNFS[d]	10.6	7.0	17.3	7.3	4.3	3.7	8.3
Imports, GNFS[d]	9.8	12.9	21.9	7.0	6.5	2.7	7.8
Net exports, contribution to growth	−0.1	−1.0	−0.8	0.0	−0.5	0.2	0.0
Current account balance/GDP (%)	−1.6	−1.2	−1.5	−1.6	−3.5	−2.0	−1.9
GDP deflator (median, LCU)	8.2	6.5	9.2	8.4	9.7	8.0	6.0
Fiscal balance/GDP (%)	−7.7	−5.9	−6.1	−6.4	−8.1	−8.6	−8.0
Memo items: GDP							
South Asia excluding India	4.4	6.7	6.4	6.1	6.1	4.0	5.2
India	5.5	9.2	9.7	9.0	6.3	5.8	7.7
Pakistan	3.9	7.7	6.2	6.0	6.0	3.0	4.5
Bangladesh	4.8	6.0	6.6	6.4	6.2	5.7	6.2

Source: World Bank.

Note: To simplify presentation across countries and with other regions, annual national income and product account data for South Asia are reported in calendar years, although official country data are originally reported by fiscal year for Bangladesh, India, Pakistan, and Nepal.
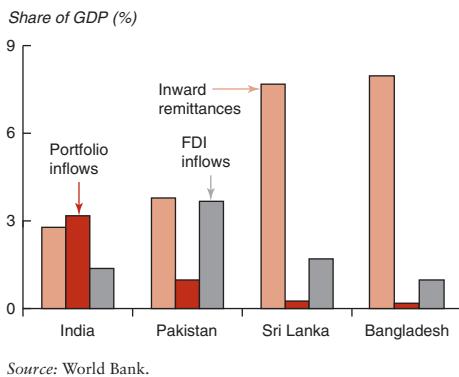
a. Growth rates over intervals are compound average; growth contributions, ratios, and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. GDP measured at PPP exchange rates.
d. Exports and imports of goods and nonfactor services.
e. Estimate.
f. Forecast.

In contrast with broadly declining activity in the region, growth in Bangladesh held steady, with domestic demand buoyed by a sharp increase in remittance inflows and by robust garment exports recorded in the first half of 2008. With relatively thin capital markets, Bangladesh's equities experienced much more muted declines than those experienced in other regional markets. Growth in Sri Lanka has also proven resilient in 2008, primarily because of a marked rise in agricultural production and a boom in tea exports, which helped to offset slower growth in garment exports. While its equity markets also suffered sharp corrections with the global financial crisis, the Sri Lankan rupee, which was pegged to the U.S. dollar early in 2008, remained stable against that currency. Partially in consequence, real appreciation of the Sri Lankan rupee has contributed to substantial widening of the current account deficit. In Nepal, growth firmed in 2008, helped by higher agricultural output

and rising remittance inflows. These factors supported an increase in household incomes and private consumption, despite a buildup in inflation pressures.

The general deterioration in regional trade balances has been offset by large remittance inflows, which represent a sizable, and generally increasing share of GDP: during 2007, 14 percent in Nepal, 8 percent in Bangladesh and Sri Lanka, 4 percent in Pakistan, and 3 percent in India. FDI inflows remained strong through the first half of 2008, helping to ease external financing requirements. In India, FDI surged to 3 percent of GDP in 2008, up from 1.4 percent in 2007. FDI inflows to Pakistan remained relatively steady through the summer of 2008—on course to match the 3.7 percent of GDP recorded in 2007—but the extreme financial and economic difficulties encountered during the second half of the year were likely to have changed that for the worse. In 2007, FDI inflows to Sri Lanka and

Figure A15 Key international finance links in South Asia, 2007

Share of GDP (%)

Source: World Bank.

price subsidies for food, fuel, and fertilizer contributed to higher fiscal outlays. In some cases (India, Bangladesh, Pakistan), the subsidies contributed to a reversal in the general trend toward fiscal consolidation in recent years. Downward pressure on the revenue stream, resulting from the deceleration in growth, also played a role. As a consequence, a number of regional governments had begun to cut development spending.

With low, or in many cases, negative real interest rates, monetary policy is also broadly expansionary in South Asia. Prior to the onset of the global financial market crash in September 2008, some countries had tightened monetary conditions through interest rate hikes (India) or slower credit growth (Sri Lanka) in an effort to curtail rising inflationary pressures. Later in the year, however, as the credit crunch became manifest, regional monetary authorities quickly responded by injecting liquidity into banking systems through various measures, including lowering required reserve ratios and reducing policy interest rates.

Medium-term outlook

The outlook for regional growth is highly uncertain, because of the sustained degree of volatility and synchronized nature of the slowdown across countries—and because the full extent of financial disruption on both the regional and global economies remains unclear. South Asian GDP growth is projected to step down to 5.4 percent in 2009 from 6.3 percent in 2008. Continued financial sector volatility and balance sheet weakness will translate into ongoing risk aversion. That is expected to lead to a further contraction in portfolio inflows and mute the prospects for FDI, primarily affecting India and Pakistan, which receive the lion's share of the region's inflows. In turn, these factors are projected to lead to a sharp falloff in private investment growth. Equity price declines are expected to generate negative wealth effects, especially in the case of India, where market capitalization reached 160 percent of GDP in 2007, up from 90 percent in

Bangladesh reached 1.7 and 1 percent of GDP respectively (figure A15).

In contrast, net portfolio flows to the region turned sharply negative during the first half of 2008, shifting from vibrant inflows of recent years. In India, where portfolio inflows surged to 3 percent of GDP in 2007, outflows are projected to exceed 1 percent of GDP in 2008. With the increase in global risk aversion and rebalancing of portfolio holdings in the high-income countries, gross capital flows decelerated in 2008, with an especially sharp falloff in equity and bond issuance and a somewhat less pronounced decline in bank borrowing. Faltering investor confidence led to higher international bond spreads, with those for Pakistan and Sri Lanka spiking to prohibitive levels in September and October. Hard currency reserves were drawn down to varying degrees, as investors pulled out of regional markets and as central banks sought to shore up currencies.

Fiscal policy across South Asia is broadly expansionary, with deficits generally exceeding 4.5 percent of GDP—they are projected to reach 8.5 percent in India, 7.5 percent in Pakistan and Sri Lanka, and 4.7 percent in Bangladesh in 2008. Nepal is an exception, where the 2008 deficit is projected at 2.8 percent of GDP, although that would be double the 2007 deficit. In 2008, budget deficits rose across the region—or remained high—as

Table A10   South Asia country forecasts
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[c]	2009[d]	2010[d]
Bangladesh							
GDP at market prices (2000 US$)[b]	4.8	6.0	6.6	6.4	6.2	5.7	6.2
Current account balance/GDP (%)	−0.4	−0.3	2.0	1.2	0.8	0.7	0.7
India							
GDP at market prices (2000 US$)[b]	5.5	9.2	9.7	9.0	6.3	5.8	7.7
Current account balance/GDP (%)	−1.2	−1.0	−1.0	−1.2	−3.1	−1.7	−1.9
Nepal							
GDP at market prices (2000 US$)[b]	5.0	3.1	3.7	2.6	5.5	3.8	4.9
Current account balance/GDP (%)	−6.3	0.0	−0.1	−1.2	1.2	1.0	0.8
Pakistan							
GDP at market prices (2000 US$)[b]	3.9	7.7	6.2	6.0	6.0	3.0	4.5
Current account balance/GDP (%)	−3.7	−3.3	−5.4	−5.8	−8.1	−4.6	−3.2
Sri Lanka							
GDP at market prices (2000 US$)[b]	5.2	6.0	7.7	6.8	6.3	4.0	5.5
Current account balance/GDP (%)	−4.6	−3.2	−5.3	−4.4	−7.5	−5.7	−5.5

Source: World Bank.

Note: Growth and Current Account figures presented here are World Bank projections and may differ from targets contained in other World Bank documents. Afghanistan, Bhutan, and Maldives are not forecast because of data limitations.

a. Growth rates over intervals are compound average; growth contributions, ratios and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. Estimate.
d. Forecast.

2006 and where the housing boom has begun to lose steam (table A10).

Weakening foreign demand is expected to lead to a significant slowing in regional export growth, including services. In particular, the information technology and communications sector is considered vulnerable to shifts in financial sector activity, and clothing and tourism revenues are vulnerable to shifts in discretionary spending. Potential mitigating factors include cost-cutting measures by companies in high-income countries to the benefit of outsourcing suppliers (such as India) and shifts in spending to low-priced retailers, such as Wal-Mart, to the benefit of their suppliers (such as Bangladesh). Recession in high-income countries and a slow-down in growth among the Gulf oil exporters are expected to depress remittances inflows.

However, the set of unfavorable global conditions are anticipated to lead to lower commodity prices, which will not only provide a fillip to real household incomes, but also provide governments with greater scope for fiscal stimulus. Falling commodity prices will reduce the import bill and boost the region's terms of trade. At the regional level, the

current account deficit is expected to narrow substantially. Additionally, the recent sharp depreciation of local currencies against the dollar for India, Pakistan, and Nepal will help boost export competitiveness. This should help offset partially the negative effects of the coming contraction in world trade.

To help cushion the downturn related to the financial crisis, South Asian governments are seen to pursue countercyclical measures, although fiscal space is limited. Thus, monetary policy measures will often be the key mechanism for response to the crisis, although reductions in policy rates should be undertaken with care where there is pressure on the exchange rate. Even with tight budget envelopes, regional governments can improve the efficiency of public outlays by more directly targeting safety net programs to the benefit of the poor. In addition, and particularly where both fiscal and monetary policy responses are constrained, expansion of structural reforms should be pursued to stimulate growth in the near term and improve prospects for the medium and longer terms. Examples include improving governance and management of

public sector firms, rationalizing government finances, enhancing openness where it could improve stability (such as FDI), and improving the quality of physical and financial infrastructure. Moving forward with existing planned investment programs, which often take years to develop, will support current activity and build capacity for eventual recovery.

Given strong underlying growth dynamics in South Asia, the negative feedback effects of the global financial crisis are expected to be temporary. A relatively rapid rebound is expected in 2010, with a projected revival of GDP growth to 7.2 percent by 2010. Private consumption and investment growth are forecast to gain steam, supported by strengthening global demand and a rebound in consumer and business confidence. Commodity price decreases are projected, which will support a reduction of inflationary pressures within the South Asian economies. The region's median inflation rate will have peaked in 2008 at 9.7 percent, although sustained pipeline pressures will prevent a rapid easing, with inflation moderating incrementally to 8 percent in 2009 and 6 percent by 2010.

Risks

Given the synchronized and widespread nature of the current crisis, downside risks to the baseline are pronounced. A more prolonged and pervasive credit crunch than envisioned in the baseline would lead to a deeper global recession. That in turn would likely lead to outright contraction of South Asia's private fixed investment (compared with the sharp slowing of growth found in the baseline), driven in part by a crimping of FDI inflows. South Asia's exports would also likely contract instead of slow, and remittances could compress sharply, especially were destination countries to send migrants home. With the growth slowdown, household incomes would decline and unemployment rise. Progress in poverty alleviation could slow markedly. While the region's banking sector has not been exposed to the toxic debt instruments that have plagued many high-income countries, in a downside scenario of

protracted sluggish growth and risk aversion, weaknesses in the region's financial sector could emerge.

Whereas India holds sizable foreign exchange reserves (despite recent draw-downs) to help weather more negative than expected growth dynamics, other countries in the region have seen widening trade deficits and capital outflows reduce their reserve holdings, increasing their vulnerability to sustained pressure on currencies. Countries holding substantial short-term debt obligations would be more vulnerable. In the Maldives, the rapid buildup of debt obligations with the construction boom following the tsunami is of concern. Sri Lanka has a large public debt (equivalent to 83 percent of GDP in 2007), with 44 percent of the debt external, albeit primarily concessional; the country's fiscal position is thus vulnerable to higher interest rates and exchange rate depreciation. The Sri Lankan currency peg against the dollar could come under pressure, because the foreign reserve cover is relatively low. Bhutan also holds significant external debt obligations, but these are held primarily by India for the development of hydroelectric power, which Bhutan is in turn exporting to India. Should a deeper crisis lead to a falloff in foreign assistance, countries significantly reliant on aid (such as Afghanistan) would be more adversely affected.

In contrast, should the current global financial crisis be resolved relatively quickly, and growth dynamics prove more favorable than projected, policy makers would face very different challenges. Inflationary pressures could return to the forefront—as countercyclical measures could become effectively pro-cyclical—leading to higher internal and external deficits, hindering investment (through crowding out), and acting as a drag on growth.

Sub-Saharan Africa
Recent Developments

Sub-Saharan Africa's economy expanded 5.4 percent in 2008, the first time in more than 45 years that growth exceeded 5 percent

for five years in succession—this despite substantial deterioration in the external environment during the year. GDP gains have been broad-based and less volatile, even in oil-importing economies, as strong commodity export revenues and capital inflows underpinned domestic demand. Another notable and encouraging feature of the recent growth spurt is the sustained contribution of fixed investment to growth, which carries positive implications for long-term potential growth.

Strong external demand, high commodity prices, and relatively robust private capital inflows invigorated growth across a large spectrum of economies, whether resource rich or resource poor. Oil-importing economies, outside of South Africa, grew 5.2 percent in 2008, down from 5.8 percent in 2007, while oil-exporting countries grew by more than 7.5 percent for a second consecutive year. However, several years of above-trend economic expansion have pushed a larger number of African economies up against capacity constraints

stemming from inadequate investment in energy, roads, railways, and ports over the past decades. This constraint along with high food and fuel prices has contributed to the upturn in inflation witnessed across the subcontinent during the year (table A11).

South African growth eases

Growth in the Republic of South Africa trailed growth in other African economies in 2008, slowing markedly to an estimated 3.4 percent from 5.1 percent in 2007. Power outages plagued output growth in the mining sector, and household consumption slowed sharply, undercut by slower growth of credit, falling asset prices, and higher food and fuel prices. The region's largest economy has felt the repercussions of the intensification of the financial crisis since September 15. Increased risk aversion vis-à-vis emerging markets caused asset prices in South Africa to plummet, putting pressure on the rand, which has depreciated nearly 25 percent in nominal

Table A11   Sub-Saharan Africa forecast summary
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[e]	2009[f]	2010[f]
GDP at market prices (2000 US$)[b]	2.3	5.9	5.9	6.3	5.4	4.6	5.8
GDP per capita (units in US$)	−0.5	3.4	3.4	4.3	3.4	2.7	3.8
PPP GDP[c]	3.2	6.2	6.1	6.7	5.7	4.9	6.1
Private consumption	1.3	5.2	6.5	6.5	3.4	3.5	5.2
Public consumption	2.4	6.2	6.0	6.2	5.4	6.0	7.4
Fixed investment	3.6	14.8	19.4	20.3	12.7	7.7	9.9
Exports, GNFS[d]	4.6	6.2	4.7	5.4	5.9	4.5	7.2
Imports, GNFS[d]	4.5	12.8	12.8	11.9	7.6	5.6	9.4
Net exports, contribution to growth	0.1	−2.3	−3.1	−2.9	−1.2	−0.8	−1.6
Current account balance/GDP (%)	−2.0	2.4	0.7	−0.3	1.0	−3.5	−3.7
GDP deflator (median, LCU)	10.2	7.2	7.3	6.3	8.6	6.5	4.1
Fiscal balance/GDP (%)	−4.7	0.2	1.0	−1.9	−0.6	−1.3	−1.5
Memo items: GDP							
Sub-Saharan Africa excluding South Africa	2.6	6.4	6.2	7.0	6.6	5.7	6.6
Oil exporters	2.0	7.5	6.8	8.2	7.8	6.6	7.3
CFA countries	2.5	4.0	2.4	3.4	4.5	4.3	5.0
South Africa	1.8	5.0	5.4	5.1	3.4	2.8	4.4
Nigeria	2.8	7.2	5.2	6.5	6.3	5.8	6.2
Kenya	1.9	5.7	6.1	7.1	3.3	3.7	5.9

Source: World Bank.
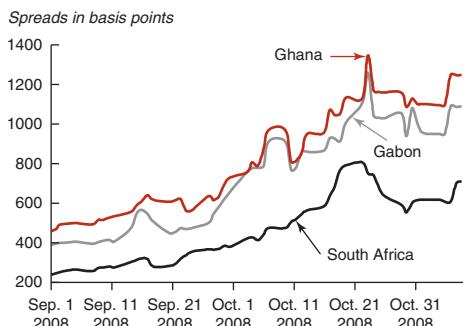
a. Growth rates over intervals are compound averages; growth contributions, ratios, and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. GDP measured at PPP exchange rates.
d. Exports and imports of goods and nonfactor services.
e. Estimate.
f. Forecast.

Figure A16 Bond spreads for African countries jumped after mid-September

Spreads in basis points

Source: JPMorgan-Chase.

effective terms since the beginning of 2008. Like most emerging markets, South Africa saw spreads on its sovereign bonds surge, by more than 450 basis points between the beginning of September and mid November 2008; equity prices plummeted 40 percent in dollar terms over the same period (in local currency the loss was 21.7 percent) (figure A16).
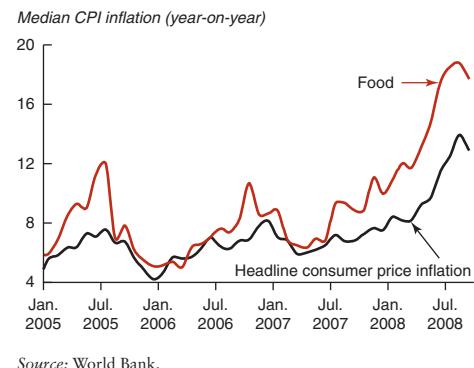
Helped by higher exports of gold and platinum, South Africa's current account deficit retreated to 7.3 percent of GDP in the second quarter of 2008, from 8.9 percent in the previous quarter. Lower prices for its main exports, together with weaker external demand, will cause the current account deficit to rise to 8 percent of GDP this year from 7.3 percent in 2007. With portfolio inflows financing three-fourths of South Africa's current account deficit in 2007, and with the increased volatility of these inflows, South Africa may find it difficult to finance its large current account deficit, especially if FDI inflows are also falling. Meanwhile, fiscal financing requirements are much more modest; South Africa is expected to run a small budget deficit in 2009, after being almost in-balance in 2008. Furthermore, government indebtedness remains low, with debt at 23.3 percent of GDP as of March 2008, and foreign debt accounting for less than 20 percent of total. This means that the government has room to borrow domestically to finance countercyclical policies.

Higher fiscal spending, a slowdown in FDI, and drying up of credit suggests that private investment growth, which has already been affected by tighter monetary policy, will slow further. The intensification of political tensions within the ruling African National Congress Party, which led to the resignation of President Thabo Mbeki several months before the end of his term, is likely to have a minimal direct impact on the economy but will add to uncertainties faced by investors now worried about a possible shift in economic policy.

Outside of South Africa, large commodity windfalls have fueled growth in resource-rich countries. Encouragingly, growth is spilling over to other sectors outside oil and mining, as part of the windfall is spent. In Nigeria, the non-oil economy is booming, despite continued unrest in the Niger Delta that caused oil output to drop 11.2 percent in the second quarter of 2008. Despite underperformance in the oil sector, second-quarter growth accelerated to 6.7 percent, from 5.5 percent in the first, as output in non-oil industries picked up to 8.5 percent, mainly on strong growth in agriculture, trade, and telecoms, which together accounted for 95 percent of non-oil growth. In Angola, GDP growth remained robust in the first half of the year, and growth in the non-oil sector will approach 20 percent this year, marginally down from 21.5 percent in 2007, as the construction, agriculture, and communication sectors continue to expand at an impressive pace.

High energy and agricultural prices and lower agriculture output caused by unfavorable weather conditions have affected industrial output in some countries. Indeed, in many West African countries the food processing sector has contracted due to lower agricultural output and higher input costs. Surges in food and fuel prices have pushed headline consumer price inflation into double digits in almost half of the countries in Sub-Saharan Africa, with median inflation moving rapidly to nearly 13 percent as of September 2008; median food inflation increased to more than 17.7 percent (figure A17). For example in Ethiopia, headline

Figure A17 African headline inflation jumps as food prices skyrocket

Median CPI inflation (year-on-year)

Food

Headline consumer price inflation

Source: World Bank.

fected to varying degrees, with transport contracting 2.2 percent; strong performance in mining and construction prevented a more dismal growth outcome. A resumption of conflict is also threatening growth prospects in the Democratic Republic of Congo.

Medium-term outlook

The rapid and marked deterioration in the external environment will cause growth in Sub-Saharan Africa to slow, coming in at 4.6 percent in 2009, a pace below 5 percent for only the first time in five years (see table A11, earlier). Direct effects of the global financial and economic crisis are likely to be much more limited than in other regions, because African economies are less integrated into the international financial system and rely relatively less on international capital and bond markets to finance investment.

For Africa, weaker external demand and lower commodity prices will be the major mechanisms through which the financial crisis will be transmitted. Declines in demand in key external markets will take a toll on exports, and the contribution of trade to GDP growth is likely to be negative in 2009. Perhaps more importantly, export revenues will be affected by markedly lower commodity prices next year, eroding government and corporate finances and affecting farmers' incomes adversely. Additional adverse factors coming to affect Sub-Saharan Africa, potentially with some lag, are a slowing pace of worker remittance receipts, and importantly for many low-income countries, possible moderation in Official Development Assistance (ODA) flows.

More of an issue for commodity-rich countries, gross portfolio flows to the region are expected to fall markedly as credit becomes scarce and more expensive and investors' risk aversion intensifies. Official aid may also be squeezed by reduced fiscal space in donor countries as they tackle financial crises at home. As a result, fragile countries that rely heavily on aid are faced with a potential deterioration in growth prospects. Moreover, recession in high-income countries will undermine tourism arrivals and

inflation surged as high as 64 percent in 2008, as food inflation breached 80 percent. In some cases, core inflation also accelerated, as second-round inflation effects through wage settlements incorporating expectations of higher inflation were concluded. For example, in South Africa, unit labor costs increased 10.5 percent in the second quarter of 2008, spurred by average wage increases of 9.6 percent in the first nine months of the year.

High import prices in conjunction, in some cases, with strong investment demand (investment carries high import content in Africa) led current account balances to deteriorate in more than one of every two countries during 2008 relative to 2007. Thirteen of 44 countries experienced a worsening in excess of 2 percent of GDP, and 19 of 44 countries registered current account deficits in excess of 10 percent of GDP. In Ghana, for example, the trade deficit breached 26.2 percent of GDP in the second quarter of 2008 and is expected to reach more than 30 percent in 2009. The deficit excluding official transfers is likely to rise to more than 17 percent of GDP.

Political instability can still derail growth, as it did in Kenya, where output contracted 0.8 percent in the first quarter of 2008 (year-over-year). Political tensions caused a sharp contraction in tourism arrivals and in the agriculture sector. Other sectors were also af-

revenues, as well as remittances, which represent a significant share of GDP for Cape Verde, the Gambia, Kenya, Liberia, Lesotho, and the Seychelles, among other countries. However, for countries where currencies depreciated heavily with respect to donor country currencies, receipts in local currency terms could still increase.

Countries with very large current account deficits, including Burundi, Eritrea, the Gambia, Ghana, Madagascar, Malawi, Rwanda, Togo, and the Seychelles will need to adjust domestic demand to lessen import growth as financing external deficits becomes more difficult, and as export revenues and transfers are diminished by slower global growth. Many of these economies are especially vulnerable because they have low levels of international reserves, in many cases covering less than three months of imports.

While oil exporters hold sufficient resources to weather the global economic downturn, many oil-importing economies have been hit hard by higher food and fuel prices and are less well equipped for the coming downturn. In a number of cases, increased subsidies have limited fiscal space for counter-cyclical spending. Over the past year, as food prices surged, many governments removed or suspended tariffs on imported foods, which undercut tariff revenues. In addition, a less-than-full pass-through of higher international oil prices led to a large increase in fuel subsidies in some countries, further reducing fiscal room. While the movement to lower food and fuel prices will bring some relief, countries remain in a weakened state.

Overall, aggregate GDP growth in Sub-Saharan Africa is projected to decline to 4.6 percent in 2009 from 5.4 percent in 2008, on the back of weaker investment outlays, faltering export performance, and softer private consumption. As external demand gradually recovers over the second half of 2009 and into 2010, growth should firm to 5.8 percent by the latter year. Excluding South Africa and Nigeria, growth is projected to ease by a full percentage point to 5.6 percent in 2009 and to

bounce back to 6.7 percent by 2010. In oil-exporting economies, growth will slow by more than a full percentage point to 6.6 percent, but the exporters will remain the fastest-growing group of countries in the region, while growth in oil-importing countries outside South Africa is projected to ease to 4.6 percent, a rate still above the historical trend (table A12).

South Africa's economic growth is likely to weaken further in 2009, falling below 3 percent for the first time in almost a decade, as tighter monetary policy and high inflation causes household consumption to falter. Private investment growth will continue to decelerate, pushed down by tighter credit markets and as demand in main export markets contracts (figure A18). Large asset price declines and associated negative wealth effects, along with slower credit creation will undermine household consumption, and together with weaker external demand will cut into manufacturing output. Although investment growth in South Africa is projected to ease in 2009, it will still remain one of the engines of growth for the country, as the South African government continues to bring forth large projects in the energy sector to address the chronic electricity deficit and in infrastructure ahead of the 2010 World Football Cup. The falloff in South Africa's GDP growth will carry repercussions for neighboring economies that trade heavily with South Africa and receive remittances from expatriate workers in South Africa.

Risks

With the world economy at a crossroads, risks facing Sub-Saharan Africa have intensified. If the concerted efforts of policy makers around the globe fail to re-establish trust in the international financial system, the world economy risks a deeper and more prolonged recession. As a result, Sub-Saharan Africa's growth would drop more sharply than envisaged in the base forecast.

Among African countries, South Africa is probably the country most directly exposed to

Table A12 Sub-Saharan Africa country forecasts
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[e]	2009[f]	2010[f]
Angola							
GDP at market prices (2000 US$)[b]	0.8	20.6	18.6	24.7	15.8	11.1	11.3
Current account balance/GDP (%)	−6.1	16.8	20.9	14.1	17.8	8.9	9.2
Benin							
GDP at market prices (2000 US$)[b]	4.8	2.9	3.8	4.7	5.0	5.1	5.7
Current account balance/GDP (%)	−6.8	−6.3	−7.3	−7.0	−8.6	−9.5	−9.5
Botswana							
GDP at market prices (2000 US$)[b]	6.2	4.0	2.1	6.0	4.7	4.1	4.5
Current account balance/GDP (%)	8.1	15.3	18.2	19.3	9.5	7.4	5.2
Burkina Faso							
GDP at market prices (2000 US$)[b]	4.0	7.1	5.5	3.6	4.1	4.6	5.5
Current account balance/GDP (%)	−5.6	−12.4	−11.7	−13.1	−14.2	−12.8	−12.2
Burundi							
GDP at market prices (2000 US$)[b]	−1.7	0.9	5.1	3.4	4.4	4.0	5.1
Current account bal/GDP (%)	−3.4	−28.4	−36.0	−37.6	−38.9	−36.2	−36.7
Cape Verde							
GDP at market prices (2000 US$)[b]	5.8	11.9	10.8	6.5	6.7	5.1	6.3
Current account bal/GDP (%)	−8.3	−3.5	−9.6	−15.5	−13.9	−11.9	−12.8
Cameroon							
GDP at market prices (2000 US$)[b]	1.4	2.0	3.2	3.4	3.9	4.0	4.4
Current account bal/GDP (%)	−2.9	−2.4	−2.1	−2.3	−0.5	−4.3	−4.6
Central African Republic							
GDP at market prices (2000 US$)[b]	1.6	2.2	4.1	3.8	3.4	4.2	4.8
Current account balance/GDP (%)	−4.3	−7.1	−7.4	−7.3	−7.0	−6.7	−7.1
Chad							
GDP at market prices (2000 US$)[b]	2.3	7.9	−0.5	0.7	1.6	2.8	3.0
Current account balance/GDP (%)	−5.5	−6.3	−7.3	−8.2	−3.8	−7.0	−8.8
Comoros							
GDP at market prices (2000 US$)[b]	1.1	4.2	0.5	1.8	0.6	1.2	2.5
Current account balance/GDP (%)	−6.8	−4.6	−5.5	−4.8	−7.2	−6.3	−6.8
Congo, Dem. Rep.							
GDP at market prices (2000 US$)[b]	−5.6	6.5	5.6	6.3	10.7	8.3	11.9
Current account balance/GDP (%)	2.0	−10.0	−9.8	−12.2	−11.9	−13.4	−10.1
Congo, Rep.							
GDP at market prices (2000 US$)[b]	1.4	7.7	6.2	−1.4	9.1	7.4	9.7
Current account balance/GDP (%)	−16.5	15.1	−3.9	−23.0	6.8	2.6	11.6
Côte d'Ivoire							
GDP at market prices (2000 US$)[b]	2.3	1.2	0.9	1.5	2.6	3.1	4.9
Current account balance/GDP (%)	−4.0	0.2	3.4	−0.2	0.7	−3.2	−3.8
Eritrea							
GDP at market prices (2000 US$)[b]	—	4.8	−1.0	1.3	1.2	2.0	4.2
Current account balance/GDP (%)	—	−26.1	−29.5	−30.2	−32.8	−22.1	−19.0
Ethiopia							
GDP at market prices (2000 US$)[b]	2.9	10.2	11.5	11.1	8.8	6.0	7.3
Current account balance/GDP (%)	−0.8	−13.7	−12.3	−11.8	−11.6	−8.9	−8.6
Gabon							
GDP at market prices (2000 US$)[b]	1.7	3.0	1.3	5.4	3.7	4.2	4.0
Current account balance/GDP (%)	5.6	15.9	15.5	15.4	19.6	10.3	8.1
Gambia, The							
GDP at market prices (2000 US$)[b]	3.3	5.0	6.5	6.4	5.3	4.5	5.4
Current account balance/GDP (%)	−1.6	−10.9	−13.8	−16.9	−19.8	−17.4	−16.3
Ghana							
GDP at market prices (2000 US$)[b]	4.3	5.9	6.2	6.5	6.0	5.6	6.0
Current account balance/GDP (%)	−6.5	−10.3	−12.6	−14.2	−17.1	−15.6	−16.0

(continued)

	1991–2000[a]	2005	2006	2007	2008[e]	2009[f]	2010[f]
Guinea							
GDP at market prices (2000 US$)[b]	4.1	3.3	2.8	1.8	4.3	3.7	4.6
Current account balance/GDP (%)	−5.6	−4.9	−1.7	−2.4	−4.9	−7.1	−7.2
Guinea-Bissau							
GDP at market prices (2000 US$)[b]	1.5	3.5	4.2	2.7	2.9	2.8	3.4
Current account balance/GDP (%)	−24.0	−7.2	−19.3	−15.9	−10.9	−12.1	−10.8
Kenya							
GDP at market prices (2000 US$)[b]	1.9	5.7	6.1	7.1	3.3	3.7	5.9
Current account balance/GDP (%)	−1.6	−1.4	−2.3	−3.7	−8.0	−6.4	−5.5
Lesotho							
GDP at market prices (2000 US$)[b]	3.5	2.9	7.2	4.9	4.1	3.2	4.2
Current account balance/GDP (%)	−13.4	−6.9	0.7	−0.2	1.8	4.6	4.5
Madagascar							
GDP at market prices (2000 US$)[b]	1.7	4.6	4.9	6.3	6.8	6.0	10.4
Current account balance/GDP (%)	−7.8	−12.4	−9.4	−14.2	−21.0	−15.7	−4.8
Malawi							
GDP at market prices (2000 US$)[b]	3.4	2.7	8.2	8.4	7.9	6.5	7.9
Current account balance/GDP (%)	−8.5	−11.8	−19.3	−17.9	−20.7	−19.8	−19.6
Mali							
GDP at market prices (2000 US$)[b]	4.0	6.1	5.3	3.1	5.1	3.9	5.1
Current account balance/GDP (%)	−8.9	−8.2	−6.4	−9.9	−9.1	−10.5	−10.4
Mauritania							
GDP at market prices (2000 US$)[b]	2.9	5.4	11.6	0.9	2.1	5.9	6.4
Current account balance/GDP (%)	−0.3	−49.0	−2.8	−4.9	−4.4	−9.4	−10.7
Mauritius							
GDP at market prices (2000 US$)[b]	5.3	4.6	3.5	5.4	5.0	3.8	5.3
Current account balance/GDP (%)	−1.6	−5.0	−10.0	−8.4	−10.0	−8.2	−8.3
Mozambique							
GDP at market prices (2000 US$)[b]	5.0	8.4	8.7	7.0	6.0	6.3	6.4
Current account balance/GDP (%)	−16.4	−11.6	−9.0	−15.8	−17.0	−16.0	−16.3
Namibia							
GDP at market prices (2000 US$)[b]	4.2	4.7	4.1	3.8	3.6	3.1	4.5
Current account balance/GDP (%)	3.1	4.3	18.8	20.9	23.0	21.3	20.1
Niger							
GDP at market prices (2000 US$)[b]	1.8	7.2	5.1	3.2	4.9	3.6	4.9
Current account balance/GDP (%)	−6.9	−9.1	−9.2	−10.9	−14.5	−13.7	−15.4
Nigeria							
GDP at market prices (2000 US$)[b]	2.8	7.2	5.2	6.5	6.3	5.8	6.2
Current account balance/GDP (%)	−0.8	31.5	22.5	21.8	20.3	7.0	4.6
Rwanda							
GDP at market prices (2000 US$)[b]	0.2	6.0	5.5	6.0	8.0	5.0	5.5
Current account balance/GDP (%)	−1.2	−3.9	−15.7	−15.6	−21.7	−15.7	−16.7
Senegal							
GDP at market prices (2000 US$)[b]	3.1	5.6	2.3	4.6	4.5	4.7	5.9
Current account balance/GDP (%)	−5.7	−6.5	−9.3	−11.7	−14.4	−12.7	−12.8
Seychelles							
GDP at market prices (2000 US$)[b]	4.5	1.2	5.3	7.3	2.3	0.5	3.0
Current account balance/GDP (%)	−7.4	−29.0	−22.6	−31.4	−30.2	−27.4	−23.8
Sierra Leone							
GDP at market prices (2000 US$)[b]	−4.7	7.3	7.4	6.4	5.8	5.1	6.5
Current account balance/GDP (%)	−9.0	−14.3	−8.8	−7.2	−8.3	−9.6	−9.7
South Africa							
GDP at market prices (2000 US$)[b]	1.8	5.0	5.4	5.1	3.4	2.8	4.4
Current account balance/GDP (%)	−0.2	−4.0	−6.5	−7.3	−8.0	−8.1	−8.3
Sudan							
GDP at market prices (2000 US$)[b]	5.8	8.6	11.8	10.1	10.3	8.0	8.1
Current account balance/GDP (%)	−8.2	−10.8	−13.6	−10.7	−6.8	−8.9	−9.0

(*continued*)

Table A12 (*continued*)
(annual percent change unless indicated otherwise)

	1991–2000[a]	2005	2006	2007	2008[e]	2009[f]	2010[f]
Swaziland							
GDP at market prices (2000 US$)[b]	3.1	2.3	2.1	3.2	2.2	1.8	1.9
Current account balance/GDP (%)	−2.4	3.3	5.9	9.5	10.7	10.7	9.3
Tanzania							
GDP at market prices (2000 US$)[b]	2.9	6.8	6.2	7.1	7.2	6.3	7.0
Current account balance/GDP (%)	−12.5	−7.0	−12.9	−12.7	−14.2	−12.7	−12.9
Togo							
GDP at market prices (2000 US$)[b]	2.2	1.2	4.1	2.3	0.8	2.4	3.3
Current account balance/GDP (%)	−8.5	−21.8	−17.6	−16.0	−22.1	−16.9	−16.9
Uganda							
GDP at market prices (2000 US$)[b]	6.8	6.7	8.4	8.9	7.9	5.9	7.6
Current account balance/GDP (%)	−7.0	−4.8	−7.6	−8.0	−8.8	−9.3	−9.9
Zambia							
GDP at market prices (2000 US$)[b]	0.7	5.2	6.2	6.2	6.1	4.6	6.0
Current account balance/GDP (%)	−10.6	−10.0	−7.3	−7.2	−5.5	−8.1	−9.5
Zimbabwe							
GDP at market prices (2000 US$)[b]	0.9	−5.3	−4.2	−6.3	−4.9	−2.1	−2.1
Current account balance/GDP (%)	−7.5	28.5	30.7	36.6	40.2	18.1	18.6

Source: World Bank.

Note: — = not available.
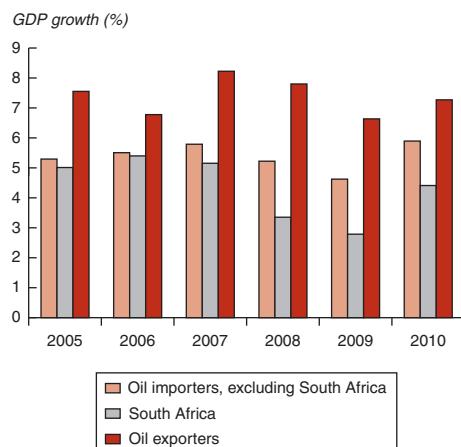
a. Growth rates over intervals are compound averages; growth contributions, ratios, and the GDP deflator are averages.
b. GDP measured in constant 2000 U.S. dollars.
c. Growth and current account figures presented here are World Bank projections and may differ from targets contained in other World Bank documents.
d. Liberia, Somalia, Săo Tomé and Príncipe, are not forecast because of data limitations. Current account balances exclude official transfers. In SACU members they include nonduty SACU transfers.
e. Estimate.
f. Forecast.

Figure A18 Economic growth to slow in Sub-Saharan Africa

GDP growth (%)

Legend:
- Oil importers, excluding South Africa
- South Africa
- Oil exporters

Source: World Bank.

the current global financial turmoil. South Africa's risk of financial contagion, however, is limited by low exposure to "toxic" assets and foreign currency risks. However, a "flight to quality" could cause large portfolio out-flows, which would imperil the country's abil-ity to finance its large current account deficit, which in turn could trigger sharp depreciation of the rand and higher inflation.

Sub-Saharan African countries that are less integrated with international financial and capital markets would suffer more from lower external demand, dwindling tourism revenues, remittances, or aid. Commodity prices would fall further in such a scenario, causing export revenues in many countries to fall sharply and eroding fiscal positions, corporate profitabil-ity, and incomes. Vulnerability to external shocks, including terms-of-trade shocks, has

increased over the past couple of years, as external and fiscal balances have deteriorated in many countries. Several countries have reached a point where external imbalances are unsustainable and a shut-off of financing, or large negative terms-of-trade shocks, could lead to balance of payments and currency crises, with adverse consequences for hard-won macroeconomic stability and long-term growth. Moreover, fragile economies that rely heavily on external aid and face daunting reconstruction and stabilization challenges will see their efforts to normalize the situation derailed by lack of sufficient external financing.

A sharp deceleration in growth would have significant consequences for poverty reduction in Africa. According to Arbache and Page (2007), had the region avoided some of the sharpest declines in per capita GDP growth, overall growth would have been 1 percentage point faster every year for the past three decades. Another risk is that the large-scale injection of liquidity into the global financial system comes to fuel inflation if monetary authorities fail to reverse polices at the first signs of a turnaround.

Notes

1. A downturn in the global high-tech cycle, in which East Asia plays a key role in the production and export of higher-tech goods, also contributed to the slowing of trade growth.

2. Russia currently holds somewhat less than $500 billion in reserves, along with two large oil funds (about $140 billion and $50 billion, respectively, as of September 2008); it also has ample fiscal and current account surpluses (the latter, $90 billion, or 8 percent of GDP as of September 2008).

3. Core inflation is calculated as headline CPI net of food, household energy, and transport fuels. Data for Belarus, Russia, and Turkey, where detailed sub-indexes are not available, are from official sources directly, which may use different definitions and calculation methods.

4. This report covers the developing (that is, low- and middle-income) countries of the Middle East and North Africa region, and thus excludes high-income economies Bahrain, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates. In addition, for a number of middle- and high-income countries, the availability of economic data is insufficient for inclusion in the report; these include Djibuti, Iraq, Libya, and the West Bank and Gaza. For recent developments and the outlook for a broader range of Middle Eastern and North African economies, see *Economic Developments and Prospects, 2008,* The Middle East and North Africa Region World Bank, 2008.

5. Several GCC countries have responded forcefully to head off financial contagion. Qatar on October 13 launched a $5.3 billion plan to purchase up to 20 percent of shares in banks listed on the Doha stock exchange. This followed by one day an announcement that United Arab Emirates would guarantee all deposits and savings in national banks, as well as all interbank operations in the Emirates. And Saudi Arabia cut interest rates in line with the Federal Reserve, while indicating that some $40 billion would be made available to local banks.

6. National income and product account figures are presented in calendar years, although originally reported in fiscal years by Bangladesh, India, Nepal, and Pakistan. For example, fiscal year 2007/08 is reported as calendar year 2007 for India, and as 2008 for Bangladesh, Nepal, and Pakistan, due to differences in the timing of their fiscal years.

7. Nepal's currency is pegged to the Indian rupee.

8. Source: Boston Analytics Consumer Sentiment Index (BACSI), which is based on a monthly survey targeting Indian consumers across 11 cities (Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bengaluru, Nagpur, Kochi, Lucknow, Chandigarh, and Jaipur). See http://www.bostonanalytics.com/news.html.

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The eruption of the worldwide financial crisis has radically recast prospects for the world economy. *Global Economic Prospects 2009: Commodities at the Crossroads* analyzes the implications of the crisis for low- and middle-income countries, including an in-depth look at long-term prospects for global commodity markets and the policies of both commodity producing and consuming nations.

Developing countries face sharply higher borrowing costs and reduced access to capital. This will cut into their capacity to finance investment spending—ending a five-year stretch of developing-country growth in excess of 6 percent annually. The looming recession presents new risks, coming as it does on the heels of the recent food and fuel crisis.

Commodity markets, meanwhile, are at a crossroads. Following decades of low prices and weak investment in supply capacity, commodity prices first spiked—spurred on by five years of very fast developing-country growth—and have now plummeted in response to the financial crisis.

In the longer run, commodities are not expected to be in short supply. Prices should be higher than they were in the 1990s but much lower than in the recent past. These higher prices should provide producers with sufficient incentive to discover new supplies, improve output from existing resources, and promote greater conservation and substitution with more abundant alternatives. At the same time, slower population growth will ease the pace at which commodity demand grows. Policies to limit carbon emissions and boost agricultural investment, along with the dissemination of efficient techniques, should also contribute to this long-term outcome.

This year's *Global Economic Prospects* also looks at government responses to the recent price boom. Producing-country governments have saved more of their windfall revenues, and are therefore less likely to be forced to cut into spending now that prices have declined. The spike in food prices tipped more people into poverty, which led governments to expand social assistance programs. These programs need to be better targeted to the needs of the very poor so that governments can respond effectively the next time there is a crisis.

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