CURRENT ISSUES IN THE WORLD ECONOMY

This chapter discusses in further detail some of the key issues facing the world economy (see Chapter I). Much of the chapter focuses on the nexus of increased productivity in the United States and some other countries in the late 1990s, its connection to technology (the "new economy"), and the consequences in terms of equity valuations and capital flows to emerging markets. As noted in Chapter I, these issues are closely linked to the imbalances and risks facing the global economy. In addition, the chapter looks at recent developments in commodity markets, including the oil market, another potential source of significant global risk.

The links between productivity growth and investment in information technology in the advanced economies are discussed first, focusing on the evidence of a "new economy" in the United States, the prospect that this could spread elsewhere, and some implications for the conduct of policies. Next, the consequences of the information technology revolution for asset prices are discussed across a wide range of advanced and emerging markets. The growing importance of the information technology sector has been associated with historically high price-earnings ratios in stock markets, greater equity price volatility, and stronger linkages of stock prices worldwide, implying that a correction of technology stocks would have important implications for both advanced and emerging market countries. The theme of financial stability and balanced economic growth worldwide is then carried forward into a review of recent developments in capital inflows to emerging markets. The implications of recent macroeconomic developments in the advanced economies ("push" factors), including the relationship between cap-

ital flows to emerging markets and developments in advanced countries' asset markets, as well as developments in emerging markets ("pull" factors) have contributed to the recovery in private financing since the Asian crisis.

Finally, the chapter reviews a rather separate issue, namely recent commodity market developments and their consequences for commodity exporting countries. While oil prices have rebounded sharply over the last 18 months, the prices of most non-fuel commodities have not recovered from their post-Asian crisis decline. This has led to large, negative terms of trade shocks for individual countries, particularly those that are heavily dependent on non-fuel commodity exports and must import oil. The hardest-hit countries are concentrated in Africa and are, regrettably, typically very poor, making the necessary adjustments all the more difficult but necessary to restore growth and reduce poverty.

Productivity Growth and IT in the Advanced Economies

Rapid economic growth in the United States over the past five years and the accompanying sharp increase in productivity growth have caused many observers to suggest that fundamental changes are under way in the U.S. economy. Recent evidence suggests that the pickup in productivity growth in the second half of the 1990s has been led by rapid advances in the information technology (IT) sector and the application of these technologies in other areas of the economy. This possibility of a "new economy" has sparked considerable interest in the United States and also in other faster-growing advanced economies, some of which have shown a similar pickup in productivity growth.[1] However, a num-

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[1]Definitions of the "new economy" are not precise but typically include one or more of the following characteristics: (1) a higher rate of productivity growth related to investment in IT; (2) a rise in total factor productivity growth due to IT

ber of uncertainties remain, in particular whether these recent improvements in performance will spread to other economies that have yet to show new economy phenomena, and how sustainable they ultimately will prove to be.

The "New Economy" in the United States

The rapid pace of U.S. output growth in the second half of the 1990s was made possible—as in many other countries—by both rising labor utilization and accelerating labor productivity (Figure 2.1).[2] Expanding employment added approximately 1¾ percentage points to growth over the period, with this rise reflecting both an increasing labor force (1¼ percent a year) and a decline in the unemployment rate from 6 percent in 1994 to nearly 4 percent by early 1999. Productivity growth in the nonfarm business sector jumped to 2½ percent a year, compared with a relatively stable rate of 1½ percent a year during 1973–95. Since the rise in productivity growth is relatively recent, and given the empirical difficulties in identifying the causes and nature of productivity shocks, most analysts have been reluctant to conclude that there had been a change in trend, despite speculation that advances in IT may have played a role. However, this is starting to change as supporting evidence accumulates.

A rise in productivity growth can be linked to computers and information technology through three channels:
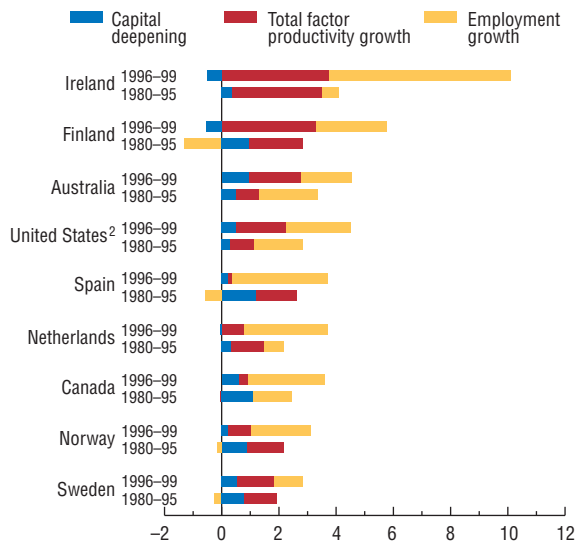
- *Direct productivity gains* in industries that produce information technology goods add to

Figure 2.1. Faster-Growing Advanced Economies: Output, Employment, and Productivity Growth in the Business Sector[1]
(Percent)

Labor productivity growth is the sum of capital deepening and total factor productivity growth.

Sources: OECD Analytical Data Bank; and IMF staff estimates.
[1]The advanced economies with average income growth close to or above the median rate for 1996–99. Greece, Iceland, Korea, and Portugal were dropped from the sample because total factor productivity estimates are not available.
[2]Estimates for the United States are based on gross capital stock data to facilitate cross-country comparisons. Estimates in Table 2.1 are based on capital services, a preferred measure in productivity analysis. This difference can affect estimates of capital deepening and TFP growth.

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utilization across the economy and resulting spillover effects (networking, increasing returns to scale); (3) an increase in factor utilization—for example, a decline in the nonaccelerating inflation rate of unemployment (NAIRU). See Paula R. De Masi, "Does the Pickup in Productivity Growth Mean That There Is a 'New Economy'?" *United States—Selected Issues,* (Washington: International Monetary Fund, 2000).

[2]Figure 2.1 shows average output growth in the business sector, and contributions to it from employment growth, capital deepening, and total factor productivity (TFP). By construction, labor productivity is equal to TFP plus capital deepening.

economy-wide productivity. These gains have driven computer and related equipment prices down, especially on a quality adjusted basis.

- *Capital deepening* increases the capital-labor ratio and therefore labor productivity through investment. Investment in information technologies has been strong, reflecting falling computer prices and new ways technology can help accomplish old tasks with fewer inputs.
- *Spillover* effects occur when returns to an investment increase because others make similar investments. Some positive effect is plausible with IT investment—for example, the returns to an internet-capable computer rise as more consumers and businesses connect to the internet.

An assessment of IT's impact on productivity growth is complicated by serious statistical problems. First, output and investment data for the IT sector are not readily available on a timely basis for many countries (the United States being a key exception), and therefore provide little information on technology's contribution to the recent increases in aggregate productivity. Second, real output in the IT sector may be mismeasured, or at least measured inconsistently across countries. The United States, Canada, and Japan are among the countries that adjust IT equipment price index data for quality improvements—for example, to account for a personal computer today being more powerful than last year's model that sold for the same price or more. To the extent that these new capabilities are incorporated in basic models and are not al-

ways fully used by consumers, however, price declines and real output increases would be overstated. Other countries (such as Germany and Italy) do not make this type of adjustment, and therefore data may understate output gains. Third, estimates of the capital services provided by IT equipment are subject to wide uncertainty because rapid technological progress itself makes it difficult to determine economic depreciation and useful service lives. Finally, the areas where output is likely to have the biggest impact—service industries—are those where output and productivity are the least well measured in the national accounts.

These problems notwithstanding, several new studies have concluded that IT accounted for about ½ to ¾ percentage point of the estimated one percentage point rise in U.S. productivity growth in the second half of the 1990s (Table 2.1).[3] Of this, investment in IT equipment (capital deepening) produced up to a ½ percentage point increase in productivity growth. There is a wider range of reported spillover effects, probably because these cannot be measured directly and are approximated in the studies by total factor productivity (TFP) calculations.[4] For the total economy, TFP is estimated to have contributed between ¼ and 1 percentage point to the increase in productivity growth. Of this, TFP growth in the IT sector itself contributed up to ½ percentage point, while TFP in all other sectors added up to ¾ percentage point to the increase in productivity growth.[5] One study that finds no spillover effects outside of the IT sector attributes ¾ percentage point of the observed productivity growth to cycle effects.[6]

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[3]The recent studies that identify this link are cited in Table 2.1. Before 1999, the main issue was the lack of evidence linking productivity growth to IT. For example, see Stephen D. Oliner and Daniel E. Sichel, "Computers and Output Growth Revisited: How Big is the Puzzle?" *Brookings Papers on Economic Activity: 2,* Brookings Institution (1994), pp. 273–317.

[4]In the Solow growth accounting framework, TFP is a residual category that can capture spillover effects, and also other phenomena such as mismeasurement of capital and labor service inputs to production and other cyclical effects.

[5]Very high TFP growth rates in the IT sector translate into smaller contributions to growth in the whole economy because the IT sector represents only about 5 percent of total output. Stephen D. Oliner and Daniel E. Sichel, "The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?" FED Working Paper 2000–20 (Washington: Federal Reserve Board, May 2000) estimate TFP growth in computer and semiconductor sectors as 16.6 percent and 45 percent, respectively, over 1996–99.

[6]Robert J. Gordon, "Does the 'New Economy' Measure up to the Great Inventions of the Past?" NBER Working Paper No. 7833 (Cambridge, Massachusetts: National Bureau of Economic Research, 2000).

Table 2.1. United States: Sources of the Acceleration in Labor-Productivity Growth, 1974–99[1]

	Study 1 Jorgenson and Stiroh 1990–95/ 1995–98	Study 2 Oliner and Sichel 1990–95/ 1995–99	Study 3 Whelan 1974–95/ 1996–98	Study 4 Council of Economic Advisors 1973–95/ 1995–99	Study 5 Gordon 1972–95/ 1995–99
Acceleration in labor productivity	0.9	1.0	1.0	1.5	0.7[2]
Of which:					
Capital deepening	0.3	0.5	. . .	0.5	0.3
Information technology sector	0.2	0.5	0.5	. . .	. . .
Other sectors	0.1	0.0	. . .	. . .	. . .
Lab or quality	–0.1	–0.1	. . .	0.1	0.1
Total factor productivity	0.7	0.7	. . .	0.9	0.3
Production of information technology goods	0.2	0.2	0.3	0.2	0.3
Other	0.5	0.5	. . .	0.7	0.0
All other factors	. . .	. . .	0.3	. . .	0.0
Memorandum					
Percent of acceleration in labor productivity related to information technology	44	64	73	. . .	. . .

Sources: *Study 1:* Dale Jorgenson and Kevin Stiroh, "Raising the Speed Limit: U.S. Economic Growth in the Information Age," *Brookings Papers on Economic Activity* (Washington, D.C., 2000); *Study 2:* Steven D. Oliner and Daniel E. Sichel, "The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?" *Journal of Economic Perspectives* (forthcoming); *Study 3:* Karl Whelan, "Computers, Obsolescence, and Productivity," Board of Governors for the Federal Reserve Working Paper 2000-6 (Washington: Federal Reserve Board, May 2000); *Study 4:* Council of Economic Advisors, *Economic Report of the President* (Washington, D.C.: U.S. Government Printing Office, 2000); *Study 5:* Robert J. Gordon, "Does the 'New Economy' Measure up to the Great Inventions of the Past?" *Journal of Economic Perspectives* (forthcoming). Study 3 looks at computer equipment only. All others incorporate data on communications equipment and software.
[1]In percentage points.
[2]Structural acceleration in labor productivity that eliminates the increases associated with cyclical effects.

Will productivity growth continue at a high rate? There are no clear answers. Over the next few years, it is likely that the recent higher rates of productivity growth will persist as businesses adapt to new technologies such as the Internet. Productivity growth would come through further investment and capital deepening or spillover effects, for example, as workers and managers become increasingly familiar with the new technologies. There are risks, however, that productivity growth could slow in the near term. One set of risks is captured in the harder landing scenario in which greater than expected inflation pressures, tighter monetary policies, and a reevaluation of economic prospects by financial markets cause the U.S. economy to slow (see Appendix 1 to Chapter I). Weaker investment growth in this scenario would slow capital deepening and thus productivity growth. Another possibility is that some part of the recent pickup in productivity growth is cyclical, as noted above. Even though such an acceleration in productivity is not typical in a mature expansion, it is possible that firms have met an uptick in demand by intensifying resource use beyond normal, sustainable levels. If this proves true, productivity growth could slow.

From a longer-term perspective, it is possible that the United States is experiencing a shift in the level of productivity rather than its growth rate. While it is difficult to distinguish the two when productivity is rising, and indeed there may be little practical difference during this period, it is important to note that a permanent productivity pickup implies continuous innovation. But almost by definition, the effects of innovations such as the personal computer, the Internet, and their useful purposes are impossible to predict with certainty.[7] Thus, policymakers face unavoid-

[7]The phenomenal gains in computer technology have fueled IT-related growth. This is captured by Moore's law: that is, computer power doubles every 18–24 months. Some scientists believe that Moore's Law may be in jeopardy because of physical limits to miniaturization. See Paul A. Pakan, "Pushing the Limits," *Science,* Vol. 285, No. 5436 (September 24, 2000), pp. 2079–80.

able uncertainty concerning both near- and longer-term productivity prospects. The implications for the conduct of monetary policies under this uncertainty are discussed in the concluding part of this section; implications for financial markets are discussed in the following section.

What Is the Scope for New Economies Elsewhere?

Several other advanced economies performed as well or better than the United States in terms of economic growth in the second half of the 1990s (see Figure 2.1).[8] In Canada, the Netherlands, and Spain, economic growth appears to have primarily reflected labor market developments, with structural reforms paving the way for strong employment growth. In the remaining countries in Figure 2.1, labor productivity gains owing to TFP or capital deepening contributed to output growth. While very little analytic work has been done on the role of IT in productivity increases, interest is growing. New studies are under way but have not yet reached firm conclusions.[9]

What is the evidence so far? Australia has experienced a pickup in labor productivity through TFP growth and capital deepening while Ireland, Finland, and Sweden have experienced pickups to varying degrees through TFP growth (see Figure 2.1).[10] The extent to which these contributions to growth can be attributed to IT is not clear, however. Capital deepening through investment in IT equipment may be

contributing to the aggregate growth shown in Figure 2.1, as these countries spent at least five percent of GDP on IT equipment in 1997, the most recent year for which data are available (Figure 2.2). The TFP growth for the business sector shown in Figure 2.1 could partly reflect the spillover effects of a new economy, but the magnitudes—especially for Ireland and Finland—are far larger than the IT spillover effects estimated for the United States (up to one percentage point). This suggests that much of the increase in productivity growth is probably coming from other areas. More research is needed to estimate the impact of IT using sector-specific, detailed data.

High productivity growth in the IT sector itself also may be contributing to aggregate productivity gains in some cases. In Finland and Sweden, IT equipment accounts for approximately 4 to 5 percent of output in each economy, well above most other advanced economies. While still a relatively small part of each economy, the IT sector could be adding about ¼ percentage point to economy-wide productivity growth, assuming that productivity growth in the industry is similar to that in the United States.[11] At the same time, not all higher productivity countries have a significant IT producing sector. IT spending as a share of GDP is extremely high in Australia, but production of IT equipment is a small share of total output (see Figure 2.2).[12]

Will the effects of IT spread to industrial countries beyond the United States? The answer

[8]The comparison periods 1980–95 and 1996–99 reflect data limitations and the pickup in U.S. economic growth. They are therefore somewhat arbitrary for other advanced economies.

[9]Paul Schreyer, "The Contribution of Information and Communication Technology to Output Growth: A Study of the G-7 Countries," OECD Working Paper 2000/02 (Paris: Organization for Economic Cooperation and Development, 2000).

[10]Capital deepening in Ireland and Finland lowered business sector output growth somewhat. This is because capital deepening reflects changes in the capital-labor ratio, which fell in these countries over the period because of very strong employment growth.

[11]This should be seen as a very rough estimate, and depends on the relative share of IT production in the economy and the share of IT production going to intermediate inputs (which in theory do not add directly to GDP productivity) or final consumption or investment goods (which do add to GDP productivity). The Swedish Ministry of Finance has estimated that productivity growth in the IT sector has contributed about ½ percentage point to aggregate labor productivity growth in recent years.

[12]Ranil Salgado, "Australia: Productivity Growth and Structural Reform," *Australia: Selected Issues and Statistical Appendix,* IMF Staff Country Report No. 00/24, (Washington: International Monetary Fund, March 2000), pp. 3–33, finds that reforms in Australia's trade and product markets are important in explaining the observed improvement in productivity growth.

is almost certainly yes, but the speed and scope are uncertain. Spending on IT equipment is a significant share of business sector output in most of these economies, and in principle there is no reason why IT should not play a role similar to that in the United States, with the exception in many cases of the contribution of the IT equipment sector. The timing will depend on several factors, however, including a high rate of investment in IT capital and a supportive environment.[13] Some studies indicate that productivity gains lag IT investment because of the learning needed to use the new technology efficiently.[14] The learning process could explain why IT did not boost productivity before the 1990s in the United States and why more definitive signs are not seen elsewhere. In this connection, structural reforms to ensure dynamic and mobile labor markets, available capital for start-ups, and entry into the telecommunications sector are an important part of fostering profitable IT investment. IT is also likely to have an impact on other advanced and emerging markets—some of which have very large IT sectors (see Figure 2.2)—provided the structural conditions just listed are in place.

New Economy Uncertainties and Policy Responses

Faster productivity growth is clearly a welcome development that raises living standards. The uncertainties related to a possible change in pro-

Figure 2.2. Advanced Economies: Expenditure and Production of Information and Communication Technology, 1997[1]
(Percent of GDP)

Spending on information and communication technologies exceeded 5 percent of total economy output in most countries. Production varied considerably.
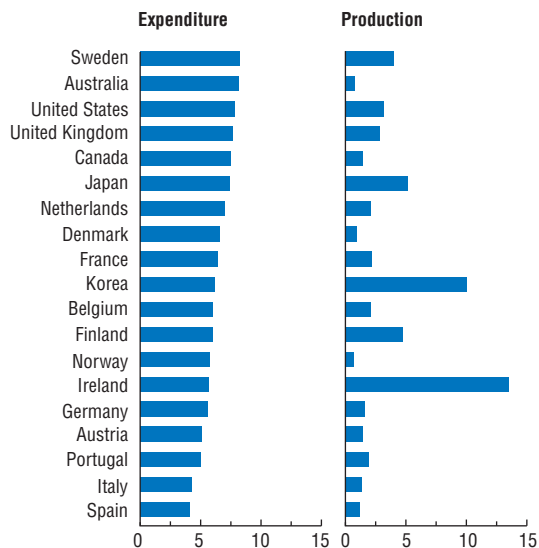
Sources: OECD Analytical Data Bank; and *OECD Information Technology Outlook 2000* (Paris: Organization for Economic Cooperation and Development, 2000).
[1]Data not available for Hong Kong SAR, Iceland, Israel, Luxembourg, Singapore, and Taiwan Province of China.

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[13]The impact of IT investment on productivity growth will depend on the relative share of IT equipment in the total capital stock and thus the past path of IT spending. Schreyer, "The Contribution of Information and Communication Technology to Output Growth," estimates that as of 1996, the share of IT equipment (including communications) in the nominal productive capital stock was in the 2 to 3 percent range in France, western Germany, Italy, and Japan; around 5 percent in Canada and the United Kingdom; and 7½ percent in the United States.

[14]Jeremy Greenwood and Mehmet Yorukoglu, "1974," *Carnegie-Rochester Conference Series on Public Policy,* Vol. 46 (June 1997), pp. 49–95. Also see Michael T. Kiley "Computers and Growth With Costs of Adjustment: Will the Future look like the Past," FED Working Paper 1999–36 (Washington: Federal Reserve Board, July 1999).

Figure 2.3. Illustrative Country Scenario: New Economy Uncertainty and Monetary Policy[1]

Identifying a Productivity Shock is Initially Difficult
(percent, deviations from baseline)

Consequences of Perception Errors[1]
(percent, deviations from productivity scenarios)
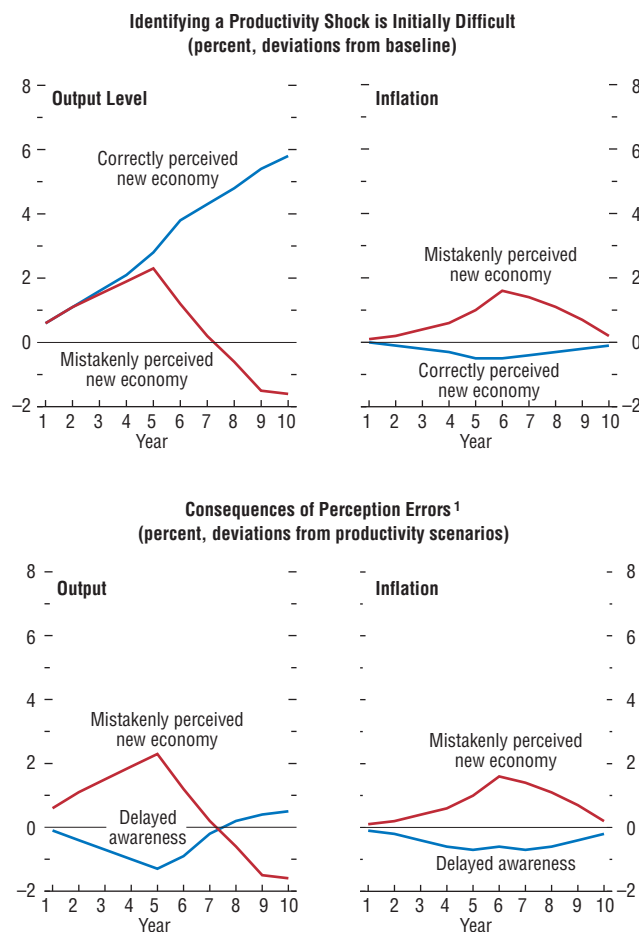
Source: IMF MULTIMOD simulations.
[1]The "correctly perceived" and "mistakenly perceived" simulations are compared to the *World Economic Outlook* baseline. The "delayed awareness" simulation is compared to a special baseline in which productivity growth increases by ½ percentage point a year starting in 2000. This increase is correctly perceived by both the central bank and the private sector. The deviations in output show the variability due to the central bank mistake.

ductivity growth, however, pose two related challenges for policymakers, namely identifying a shock when it occurs and determining how to respond to the uncertainties inherent when the growth rate of productivity is changing. Three simulations using the IMF's global macroeconomic model, MULTIMOD, are used to illustrate these challenges.[15]

In the first simulation, the central bank and the private sector correctly perceive that productivity growth has increased by ½ percentage point a year starting in 2000. The higher rate of productivity growth raises the private sector's expectations of returns to investment and future wealth and in consequence domestic demand and output increase (Figure 2.3, the "Correctly Perceived New Economy," in the upper panel). Inflationary consequences are absent because higher productivity growth raises aggregate supply. This outcome can be compared with a simulation in which the central bank and the private sector mistakenly perceive a positive productivity shock of the same size ("Mistakenly Perceived New Economy"). In the first few years, demand and output rise in a very similar manner to the first scenario, through the same expectations channels described above. After a few years, however, the inflationary consequences of the mistake in productivity expectations begin to emerge as the economy's potential supply does not increase as expected, providing a signal that productivity expectations may be incorrect. Hence, in the short term, it may be quite difficult to identify a "true" productivity increase. After five years, when it is assumed that people realize that productivity growth has not increased, output declines, falling significantly below the baseline scenario as earlier excess investment and consumption are reversed.

Given that identifying a "true" productivity increase may be difficult, it is also useful to examine the costs of the central bank making an in-

[15]See Tamim Bayoumi and Benjamin L. Hunt, "New Economy or Not: What Should the Monetary Policy Maker Believe?" (unpublished; Washington: International Monetary Fund, May 2000).

correct assumption about the productivity growth rate. The lower panel of Figure 2.3 reproduces the "Mistakenly Perceived New Economy" scenario discussed above in which both the central bank and the private sector mistakenly believe in higher productivity growth. This is compared with a "Delayed Awareness" scenario that illustrates the economic costs when the central bank fails to recognize a true rise in productivity growth of ½ percentage point. The central bank's error in this case (which is not shared by the private sector) causes it to run an inappropriately tight monetary policy that in the short term reduces wealth, domestic demand, and output relative to the alternative situation in which the productivity growth increase is correctly perceived by all parties. After five years, when the central bank is assumed to become aware of its mistake, interest rates are lowered and demand increases as the private sector makes up for lost investment and consumption opportunities. The scenarios indicate that these mistakes lead to relatively similar amounts of macroeconomic instability, and that this instability rises rapidly over time, thereby putting a premium on recognizing any policy error at the earliest possible moment.

The policy lesson from this analysis is that, in a situation when future productivity growth is highly uncertain, the costs of maintaining an inappropriate policy rise rapidly with time. Hence, when facing a potential shift in productivity growth, central banks should be particularly flexible and make use of a wide range of analytic tools in assessing the policy stance.[16] In particular, it is important to operate in a pragmatic fashion when exploring the limits to noninflationary growth, including placing weight on a wide range of direct indicators of economic performance and less emphasis on constructs such as the output gap (which depends on assumptions about trend productivity growth).

Developments in Global Equity Markets

Recent Trends

Fuelled by robust economic growth in the United States, an improved macroeconomic outlook for the world economy, and favorable liquidity conditions around the Year 2000 (Y2K) transition, stock prices staged a worldwide rally in the second half of 1999 through February 2000 (Figure 2.4).[17] Reflecting continuing upbeat sentiment about the growth prospects of the IT sector, the rally was especially pronounced for IT stocks, with the benchmark indicator of market developments in the sector—the U.S. NASDAQ stock index—rising by 80 percent between end-June 1999 and its mid-March 2000 peak.[18]

With Y2K transition fears behind, oil prices climbing up, and robust economic growth in the United States continuing into the first quarter of 2000 *pari passu* with expectations of faster growth in the euro area, inflation concerns have been intensifying and monetary conditions in advanced countries have tightened since March. In an environment where price-earnings ratios were at record highs, interest rate increases by the U.S. Federal Reserve and the European Central Bank triggered a downward revision in stock valuations. Stock prices fell sharply between mid-March and late May and, despite some recovery since, by early September most indices remained below their early 2000 peaks. In the United States and other advanced countries, the drop was largely felt in the IT sector. Because this sector's stock market capitalization has increased markedly in recent years, the decline in several stock indices in advanced economies largely reflected the drop in IT stock prices. Among emerging markets, stock prices also fell generally during March–May and, while staging a partial recovery in some countries, stock prices remain well below early 2000 peaks

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[16]Similar arguments are made in Lars P. Hansen and Thomas J. Sargent, "Wanting Robustness in Macroeconomics," presented at the Ninth International Conference at the Bank of Japan (July 2000) and Tiff Macklem, "Discussion of Wanting Robustness in Macroeconomics," presented at the same conference.
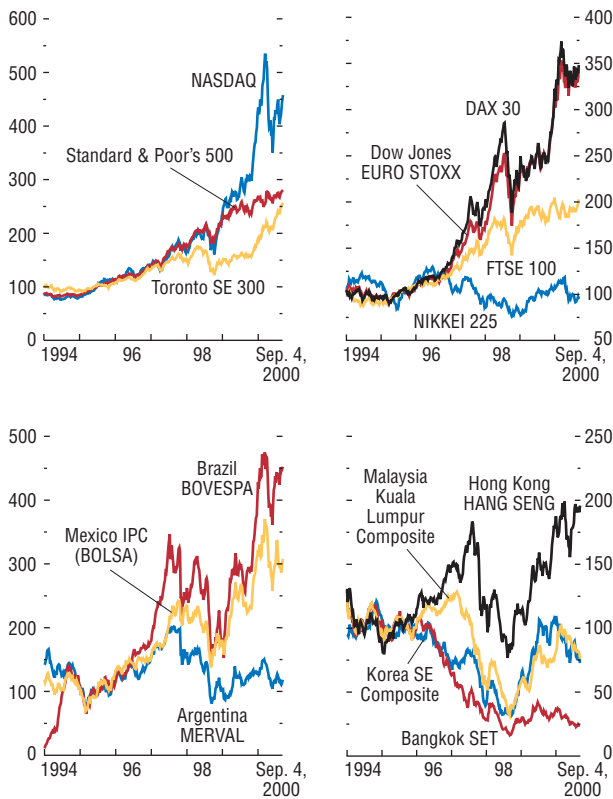
[17]For evidence on the positive relationship between global liquidity and stock prices, see Chapter II, "The Ongoing Recovery in Emerging Market Economies" in the May 2000 *World Economic Outlook*.

[18]The IT sector includes telecommunications and media technologies.

in other countries. This is notably the case in a few Asian economies where the IT sector has grown briskly over the past year.

While the differential behavior between stock prices in the IT and non-IT (or "traditional") sectors has received much attention recently, this phenomenon has in fact been under way since the mid-1990s, and has not been exclusive to the United States or even to advanced countries.[19] Figure 2.5 shows the extent of the price bifurcation between IT and "traditional" stocks in a number of advanced and developing countries, scaled by earnings.[20] The prospect of faster earnings growth associated with the diffusion of the internet and the development of new telecommunication technologies, combined with expectations that the bulk of these earnings will come on stream farther into the future, have led prices of IT stocks to rise far more rapidly than the prices of non-IT stocks and, indeed, than current earnings in the IT sector itself. This has produced price-earnings (P/E) ratios several times higher than those of traditional stocks.[21] Partly because of this much faster growth in IT stock prices, and partly because some IT firms have gained market share at the expense of older incumbents, the share of the IT sector in total stock market capitalization has risen markedly in advanced countries as well as in some emerging economies (Table 2.2).

Figure 2.4. Equity Price Indices
(1995 = 100)

Stock prices rallied between late 1999 and early 2000, but have come down since in most countries.

Source: Primark Datastream.

[19]The empirical analysis in the remainder of this chapter is based on the breakdown between IT versus non-IT sectors provided by Datastream Primark. The definition and coverage of the IT sector may differ somewhat from other individual country sources. However, the use of a single source for all countries is better suited to the type of cross-country comparative analysis conducted here. See Table 2.2 for the list of industries included under the respective definition of IT stocks.

[20]A similar picture emerges if stock prices alone (i.e., without scaling by earnings) are plotted. This is not presented here to avoid duplication. The advantages of focusing on P/E ratios will become clearer in the subsequent discussion.

[21]Although P/E ratios in the IT sector have come down since March, they remain far higher historical averages in most countries. In the United States, for instance, the average P/E ratio for the S&P 500 in the post-war period is about 16, having risen to an all-time high of 32 at end-1999. In contrast, the average P/E ratio for the NASDAQ peaked at 186 in March 2000.

Table 2.2. Market Capitalization of Information Technology Stocks as a Share of Total Market Capitalization[1]

	1990	1995	1999
North America	18.3	21.6	33.1
Canada	18.3	17.9	27.9
United States	18.3	21.8	33.3
Europe	8.5	10.4	19.4
Belgium	0.2	0.3	3.8
France	10.7	8.8	19.8
Germany	3.5	6.2	22.9
Ireland	2.1	3.2	9.1
Italy	11.7	16.2	27.7
Netherlands	5.2	13.9	12.6
Spain	9.3	10.2	17.2
United Kingdom	12.0	12.9	18.8
Finland	8.7	40.2	71.3
Asia	10.4	12.6	22.3
China	. . .	. . .	4.3
Hong Kong SAR	16.0	10.9	18.0
India	0.2	8.4	19.9
Korea	0.4	5.1	18.2
Malaysia	2.9	12.8	12.1
Thailand	3.0	25.5	14.8
Singapore	3.9	28.9	27.0
Japan	11.1	12.4	23.9
Latin America	. . .	17.0	29.3
Argentina	. . .	31.8	28.4
Brazil	. . .	14.7	39.7
Chile	14.4	8.6	11.2
Mexico	25.5	23.4	25.2

[1]IT stocks are defined to include stocks issued by enterprises that provide the following goods and services: computer hardware, semiconductors, telecom equipment, computer service, Internet, software, telecom fixed line, telecom wireless, broadcasting, cable and satellite, media agencies, publishing, and printing. Because of differences of coverage, the ratios reported in this table may differ from those obtained using other indices.

Figure 2.5. Price-Earnings Ratios for Information Technology (IT) vs. Non-IT Sector
(Percent)

Stock prices have gone up much faster than earnings in the information technology sector.

Behind these aggregate national figures on IT market capitalization, there are substantial regional differences in sector composition. While the IT sector in Asia largely consists of computer (hardware and software) technology and internet firms, the IT sector in the emerging countries of the Western Hemisphere and Europe is dominated by a few large firms operating in the telecommunications and media subsector (Table 2.3). Moreover, in some of the Asian countries, IT firms are primarily engaged in the production and export of semi-conductor technology and computer equipment, whereas Western Hemisphere telecom and media companies that issue equity cater largely to domestic markets.
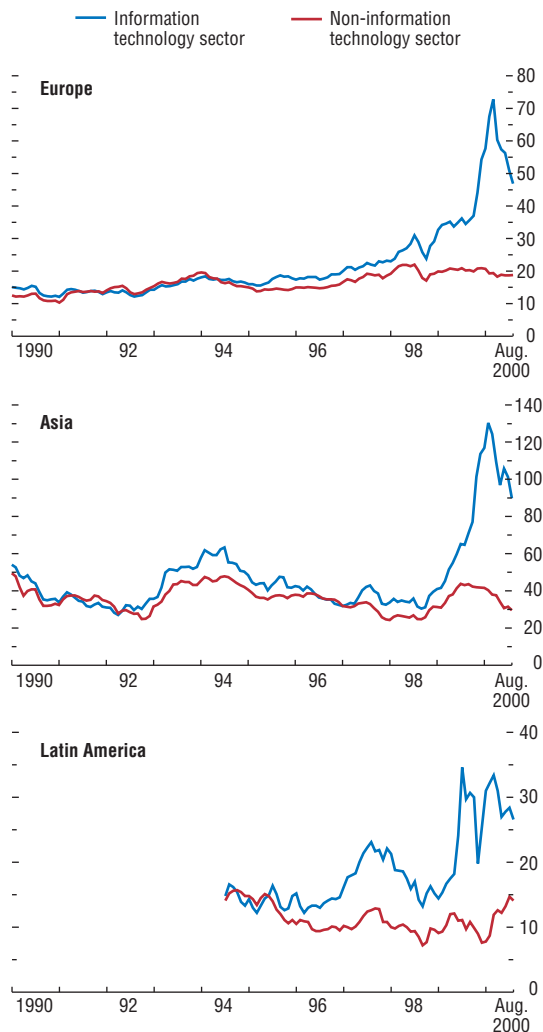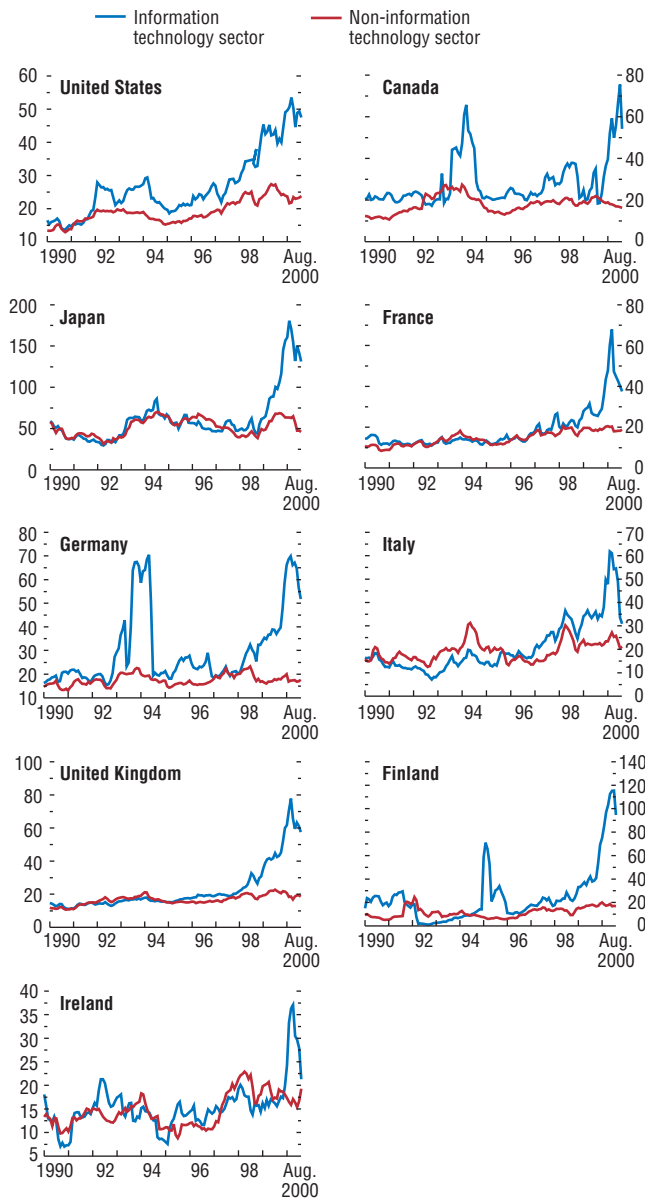
Figure 2.5 *(concluded)*

Source: Primark Datastream.

Table 2.3. Decomposition of the IT Sector into Telecommunications and Computer Subsectors
(Percent of total market capitalization)

	December 1997	December 1998	December 1999	June 2000
	Computer Software, Hardware, and Internet			
North America	10.8	14.3	20.2	24.5
Europe[1]	1.7	2.0	3.2	5.0
Asia	4.9	5.2	10.9	11.9
Latin America	0.0	0.0	0.1	0.1
	Telecommunications			
North America	9.6	12.1	16.2	16.8
Europe[1]	8.7	12.3	19.8	21.8
Asia	9.1	10.5	18.1	16.2
Latin America	16.4	29.7	31.0	30.1

Source: Datastream Primark.
[1]European Union member countries plus Switzerland.

The stock price bifurcation between IT and non-IT sectors, and the rising market capitalization of the technology sector worldwide, has been accompanied by growing international correlation of IT stock prices. Indeed, the growing internationalization of capital markets over the past decade has raised crossborder correlations of stock prices in general, and tech stocks in particular. Simple correlation measures between IT stock prices in the United States—the leading country in the new information technology—and in three other geographical areas (Asia, Europe, and Latin America) show that, over the past two and a half years, changes in IT stock prices have been more correlated internationally than those of non-IT stocks. More strikingly, this correlation has increased since early 1999, while the correlation for non-IT stocks has generally decreased (Table 2.4).

Within individual countries, IT stocks have also been more volatile than traditional stocks, in some cases by a substantial margin (Figure 2.6). This volatility appears to be on the rise, particularly since mid-1999. Thus, in addition to a bifurcation in terms of price *levels* and price-earnings ratios, recent years have witnessed a bifurcation in the stock price volatilities between the two sectors. The increased weight of IT stocks in national stock market indices helps explain some of the rise in aggregate stock market volatility worldwide.

Table 2.4. International Correlations of Stock Price Changes[1]

IT stocks (January 1995-May 2000)

	United States	EU	Asia	Latin America
United States	1			
EU	0.77	1		
Asia	0.59	0.50	1	
Latin America	0.44	0.50	0.56	1

Non-IT stocks (January 1995-May 2000)

	United States	EU	Asia	Latin America
United States	1			
EU	0.78	1		
Asia	0.40	0.39	1	
Latin America	0.43	0.46	0.44	1

IT stocks (January 1999-May 2000)

	United States	EU	Asia	Latin America
United States	1			
EU	0.85	1		
Asia	0.75	0.62	1	
Latin America	0.54	0.60	0.62	1

Non-IT stocks (January 1999-May 2000)

	United States	EU	Asia	Latin America
United States	1			
EU	0.54	1		
Asia	0.35	0.44	1	
Latin America	0.26	0.24	0.38	1

Source: Datastream Primark and staff estimates.
[1]Based on monthly data in U.S. dollars. EU figures include data for Switzerland.

Possible Causes of Stock Market Bifurcation

These developments raise three main questions. First, as the new information and communications technology becomes increasingly available to both new and older firms, why is there a marked bifurcation in stock valuations between these two groups? Second, why have IT stocks been more volatile than traditional stocks? Third, what explains the closer international correlation of IT stock prices relative to the non-IT stocks?

Although there is no established view on the matter, recent research has shed useful light on these questions. It has been argued, for instance, that the IT "revolution" favors new (and often smaller) firms, since old incumbents have a comparative disadvantage in adopting the new tech-

Figure 2.6. Selected Regions: Equity Price 12-Month Volatility
(Percent)

Stock price volatility has increased since the mid-1990s, particularly in the information technology sector.
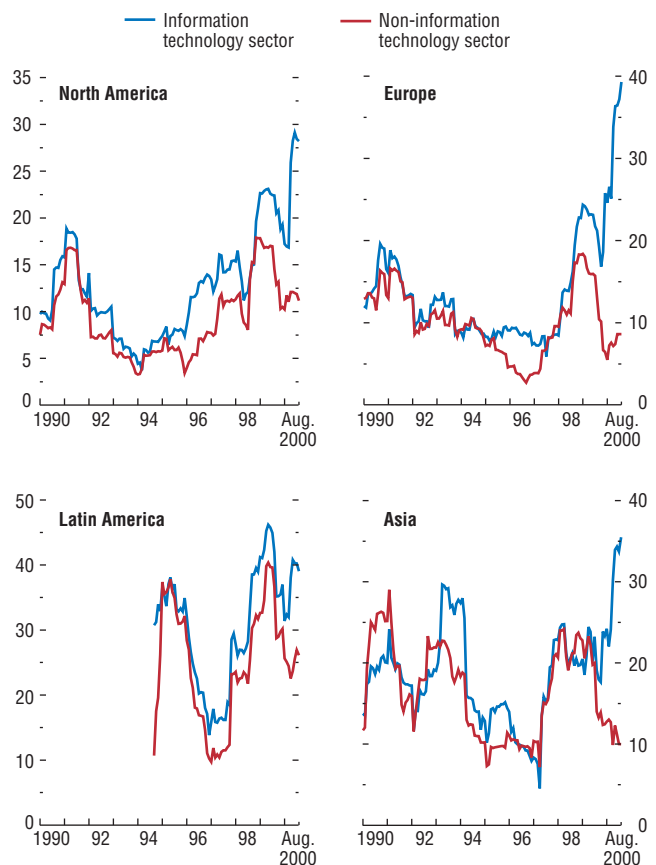
Sources: Primark Datastream; WEFA, Inc.; and IMF staff estimates.

nology due to high "sunk" costs.[22] Also, times of major technological change may tend to favor younger entrepreneurs who are better equipped to cope with the uncertainties of implementing a new technology.[23] The fact that old management practices die hard and well-established interest groups in older firms tend to be less receptive to radical changes in the production process also helps explain why younger firms tend to profit more from new technologies. Although, in principle, takeovers should gradually help eliminate less efficient firms and do away with this source of price bifurcation, institutional barriers to takeovers make the process much slower in practice.[24]

Arguments derived from the literature on technological change and industrial organization also help explain why the price volatility of new IT stocks is larger than that of traditional stocks. Once it is accepted that the commercial implementation and diffusion of new technologies are inherently riskier, it follows that earnings in the sector will often turn out to be disappointing, and tend to be more volatile in general. Indeed, while earnings in the IT sector as a whole in the United States turned positive after 1995, their volatility has increased despite the relative stability of aggregate demand growth and the decline in earnings volatility in the tradi-

tional sector. Since stock prices tend to respond sharply to "bad news," and given historical evidence that the short-run elasticity of stock prices to actual earnings growth is significantly greater than one,[25] higher volatility of earnings tends to produce an even greater volatility of stock prices. Moreover, corporate performance in the sector has been highly heterogeneous. As the IT sector is comprised of a few large firms alongside a large number of small firms operating in a fiercely competitive environment, survival rates tend to be lower. And insofar as small firms tend to be financially more fragile than well-established conglomerates and more dependent on capital markets for financing their current operations, both earnings prospects and survival rates of IT firms tend to be more vulnerable to macroeconomic shocks and changes in investors' appetite for risk.[26]

It is possible that these factors, which seem to account for the high volatility of IT stock prices relative to traditional stocks in the United States, may also help explain the volatility of IT stock prices at a global level. While more research is needed in this area, it is plausible that with falling barriers to the international diffusion of new technology, technology-intensive sectors in different countries are now more influenced by shocks in one country than in the past.[27] With

[22]This "sunk cost" argument has been widely developed in the context of vintage capital growth models. For a brief discussion and useful references on the topic, see Bart Hobijn and Boyan Jovanovic, "The Information Technology Revolution and the Stock Market: Evidence," NBER Working Paper No. 7684, (Cambridge, Massachusetts: National Bureau of Economic Research, May 2000).

[23]See Thomas Holmes and James Schmitz, "A Theory of Entrepreneurship and its Application to the Study of Business Transfers," *Journal of Political Economy,* Vol. 98, No. 2 (April 1990), pp. 265–294.

[24]This argument is developed in Hobijn and Jovanovic, "The Information Technology Revolution and the Stock Market."

[25]Using U.S. data since 1880, Barsky and De Long (1993) show that a 1 percent growth in dividends (or equivalently earnings) is typically associated with a 1.5 percent increase in stock prices in the short run. See Robert Barsky and J. Bradford De Long, "Why Does the Stock Market Fluctuate?" *Quarterly Journal of Economics,* Vol. 108 (May 1993), pp. 291–311.

[26]A recent econometric study using post-war U.S. data finds that small firms' stock returns are not only more cyclical than those of large firms but also the dispersion of small firms' earnings is higher during cyclical contractions than during cyclical expansions. This implies that the imminence of a slowdown in economic activity tends to raise the risk premia for those firms (or equivalently, lower their stock returns), and vice versa. See Gabriel Perez-Quiros and Allan Timmermann, "Firm Size and Cyclical Variations in Stock Returns," *Journal of Finance,* forthcoming. Evidence on the greater financial vulnerability of the IT sector can be gauged from the fact that several major Internet companies depend on frequent access to capital markets to finance their current operations.

[27]Empirical analysis of the breakdown of country versus industry-specific effects on stock returns indicates that country effects loom significantly larger. See Steven L. Heston and K. Geert Rouwenhorst, "Industry and Country Effects in International Stock Returns," *Journal of Portfolio Management,* Vol. 21 (Spring 1995), pp. 53–58. However, this and other studies dating back to the mid-1990s do not provide a breakdown of country versus industry-specific effects between IT and non-IT industries, which could possibly tilt the balance of their findings in the opposite direction.

the United States taking a leading role in IT, it follows that most such shocks will tend to stem from the U.S. market. Moreover, the fact that the United States is the home country of most IT companies operating internationally also tends to induce investors in the IT sector in other countries to be guided by market developments in the United States. In sum, to the extent that fluctuations in IT stock prices in the United States are viewed as indicating the industry's future prospects in other regions, this will tend to produce the high cross-country correlations in the price of IT stocks observed in the data.

Some Implications

The discussion above highlighted the growing importance of the IT sector and its association with historically high P/E ratios in stock markets around the globe, greater volatility of equity prices, and stronger international linkages of stock prices worldwide. As will be discussed in the next section, there is also evidence that a higher proportion of international capital flows is being influenced by such price fluctuations. These trends have some potentially important macroeconomic implications for both advanced and emerging countries.

In advanced countries, despite some drop in recent months, P/E ratios for IT remain very high relative to both historical standards and P/E ratios in emerging markets. Although it is hard to establish the extent to which this represents an overvaluation of such stocks relative to fundamentals, high P/E ratios have been historically associated with lower future stock returns and, often, with sharp market corrections.[28] Thus, to the extent that the growing bifurcation in stock markets since the late 1990s has been as-

sociated with very high P/E ratios, it raises the risk of a large market correction.[29] The macroeconomic implications of such a correction would tend to be more severe in the United States, where stock market capitalization is higher and the wealth effects are deemed to be larger, but far from negligible in other advanced countries (see Table 2.4).[30]

Regarding emerging markets, one obvious implication of the continuing diffusion of the technology sector is to increase emerging market exposure to fluctuations in IT prices originating in the developed world. Such an impact, however, is bound to differ significantly across the different countries, as the ratio of IT stock market capitalization to GDP varies widely (Figure 2.7). Moreover, it has been seen that the composition of the IT sector differs substantially across regions, being comprised mainly of Internet and computer hardware and software companies in Asia, and of telecoms and media companies in Western Hemisphere emerging markets. For the most part, Asia leads the latter region in the diffusion of new technology, explaining the higher correlation between IT stock price fluctuations in Asia and the United States (see Table 2.4). This suggests that a steep downward correction in tech stock prices in the advanced world is likely to have a more significant negative impact on the stock market and output in Asia than in other regions. Since a higher share of output and investment in Asia is stock market financed, the impact would also tend to be significant via domestic investment and balance-of-payments channels, with capital inflows into IT industries tending to slow and the export price of semiconductors and computer equipment declining.

Despite these near-term risks, the rapid expansion of IT sectors in emerging markets has the

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[28]See John Y. Campbell, "Asset Prices, Consumption, and the Business Cycle," in *Handbook of Macroeconomics,* edited by John Taylor and Michael Woodford (New York: Elsevier, 1999).

[29]See Chapter III in the May 2000 *World Economic Outlook* and the September 2000 *International Capital Markets Report.*

[30]Estimates typically indicate that wealth effects arising from the stock market are in the order of 3 to 5 cents on the dollar for the United States, and somewhat lower in other advanced countries. It is possible, however, that the magnitude of wealth effects may be changing with greater stock market bifurcation but the direction is not clear. On the one hand, changes in IT stock prices may lead to smaller wealth effects than changes in the price of traditional stocks, if volatile changes in IT stock prices are viewed as temporary rather than permanent. On the other hand, as a larger portion of IT stocks are bought on margin calls, their wealth effects will tend to be higher.

Figure 2.7. Market Value of Information Technology Stocks, 1999
(Percent of GDP)

The weight of the information technology sector in the economy has varied widely across countries and regions.

North America and Europe
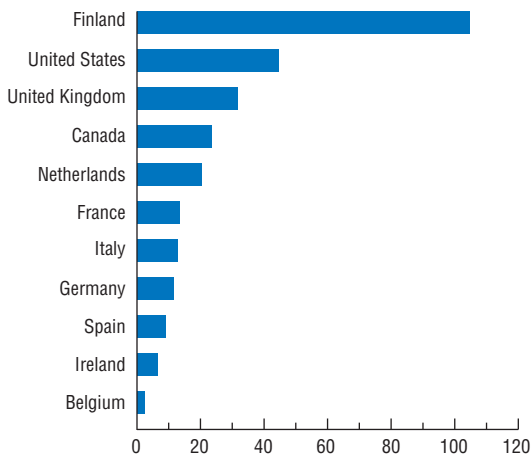
Asia and Latin America

Sources: Primark Datastream; and IMF staff estimates.

potential to yield sizable longer-term benefits. One is related to the capacity of IT industries to finance their investment needs through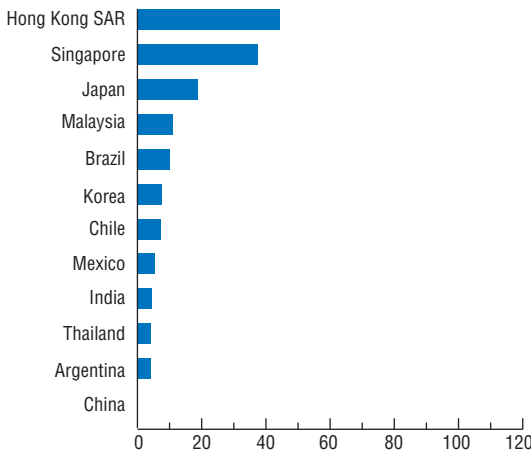 the stock market, as witnessed by recent developments in the developed world as well as in some emerging economies in Asia. Wherever stock market capitalization is low and the banking system is less efficient in allocating resources to investment, the expansion of the IT sector may be instrumental in boosting savings and fostering financial deepening more generally, even though at first IT firms may be held back by similar institutional barriers that hampered equity financing for traditional sectors and caused stock market capitalization to be very low in some of these countries. At the same time, the higher productivity of IT industries, if maintained and spread further, will tend to raise potential output worldwide, benefiting both advanced and emerging countries. Finally, as documented in the next section, expanding IT sectors have been associated with higher equity capital inflows to emerging markets. Provided that such investment is fairly priced (and not mainly the result of a bubble in IT valuations), a higher share of IT-related investment in total emerging market financing may contribute to the longer-term financing of current account deficits in the emerging world and a more efficient allocation of world savings.

International Capital Flows to Emerging Markets

Recent Developments

Following robust growth earlier in the decade, capital flows to emerging markets fell sharply between mid-1997 and end-1998, in the wake of the financial crises that hit Asia and Russia. The recovery from the trough in the last quarter of 1998—when gross private financing to emerging markets had fallen to nearly a third of the level just prior to the Asian crisis—has been uneven. After remaining relatively subdued through 1999, gross private sector financing to emerging markets boomed in the first quarter of 2000, before dropping again in the second quarter (Table 2.5). Moreover, this volatility has been

Table 2.5. Gross Private Financing to Emerging Market Economies
(Billions of U.S. dollars)

	1997	1998	1999	1999				2000				
				Q1	Q2	Q3	Q4	Q1	Q2	Apr.	May	Jun.
Total	**292.5**	**150.2**	**173.2**	**32.6**	**53.1**	**34.7**	**52.8**	**73.0**	**55.2**	**16.1**	**8.8**	**30.3**
Asia	128.6	35.0	62.9	11.9	17.1	17.4	16.5	29.6	25.3	10.8	3.2	11.3
Europe	37.7	35.9	26.0	3.2	7.9	5.1	9.8	9.5	9.5	2.8	0.9	5.8
Middle East and Africa	30.9	13.1	20.1	4.4	6.0	2.4	7.2	7.7	6.4	0.3	1.1	5.0
Western Hemisphere	95.3	66.1	64.2	13.2	22.0	9.8	19.3	26.2	14.0	2.2	3.6	8.2
Bond issues	**133.2**	**80.2**	**87.0**	**21.8**	**27.5**	**15.9**	**21.8**	**36.4**	**16.0**	**2.6**	**3.7**	**9.8**
Asia	45.5	12.4	24.1	7.0	6.3	6.2	4.7	8.7	4.0	1.3	0.6	2.1
Western Hemisphere	59.0	40.2	42.2	10.8	14.1	6.9	10.5	18.7	6.6	1.0	2.4	3.2
Other regions	28.7	27.6	20.6	4.1	7.1	2.9	6.5	9.1	5.4	0.4	0.6	4.4
Other fixed income	**19.7**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Asia	9.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Western Hemisphere	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other regions	9.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Loan commitments	**123.2**	**60.0**	**63.0**	**8.4**	**18.9**	**12.6**	**23.0**	**27.6**	**26.2**	**12.3**	**3.7**	**10.2**
Asia	58.9	17.7	20.5	3.5	5.1	5.9	5.9	14.2	11.9	9.1	1.4	1.5
Western Hemisphere	30.9	25.7	21.3	2.2	7.9	2.7	8.4	6.2	5.2	0.9	1.0	3.3
Other regions	33.4	16.6	21.3	2.7	5.9	4.0	8.7	7.2	9.1	2.4	1.3	5.5
Equity issues	**26.2**	**9.4**	**23.2**	**2.4**	**6.7**	**6.1**	**8.0**	**8.9**	**12.9**	**1.2**	**1.5**	**10.3**
Asia	14.4	4.5	18.3	1.4	5.7	5.3	5.8	6.7	9.3	0.4	1.2	7.7
Western Hemisphere	5.4	0.2	0.8	0.2	0.0	0.3	0.3	1.3	2.2	0.3	0.2	1.7
Other regions	6.4	4.8	4.2	0.8	1.0	0.5	1.9	0.9	1.3	0.4	0.1	0.9

accompanied by considerable dispersion in the composition of these flows, both across regions and countries, as well as by type of instrument.

Asia has led the recovery in 1999, with gross portfolio flows into the region nearly doubling in the year through the first half of 2000, despite the slowdown in the second quarter. Within this, loan commitments jumped sharply, but almost entirely due to two very large loans (to the infrastructure sector in Taiwan Province of China and to a major IT company in Hong Kong Special Administrative Region), which together accounted for two-thirds of such flows. Bond issues declined slightly, while equity financing more than doubled in the first half of 2000 from a year earlier, with Asia alone accounting for about three-quarters of emerging markets' external equity placements. A substantial part of portfolio equity flows has been directed toward IT firms, reflecting their brisk growth over the past year and investors' upbeat sentiment about the sector, at least until very recently (see previous section). Reflecting the growing importance of the IT sector and its relatively high market capitalization in

Asia, gross equity financing flows to Asia appear to have been sensitive to fluctuations in IT stock prices worldwide. As the demand for IT stocks retreated and prices dropped worldwide during March-May 2000, equity capital flows to Asia slowed accordingly; together with the decline in bond issuance during April and May, this caused total gross financing to Asia to drop in the second quarter, despite some recovery in June.

Compared with Asia, gross private financing to other regions remained relatively subdued through most of 1999 but, as in Asia, it rose sharply in the first quarter of 2000. First quarter gross flows into the Western Hemisphere were particularly strong, led by a boom in sovereign and other public sector placements. Gross private flows into emerging Europe, the Middle East, and Africa also rose, driven by large sovereign bond placements by a handful of individual countries. This boom in sovereign and other public sector issuance from all regions came to a virtual halt, however, in April and May 2000. As emerging market bond spreads widened (Figure 2.8), new issuance was postponed, with some

Figure 2.8. Emerging Markets: Bond Spreads[1]
(Percentage points)

Emerging market bond spreads narrowed through the first quarter of 2000, but widened in the second quarter.
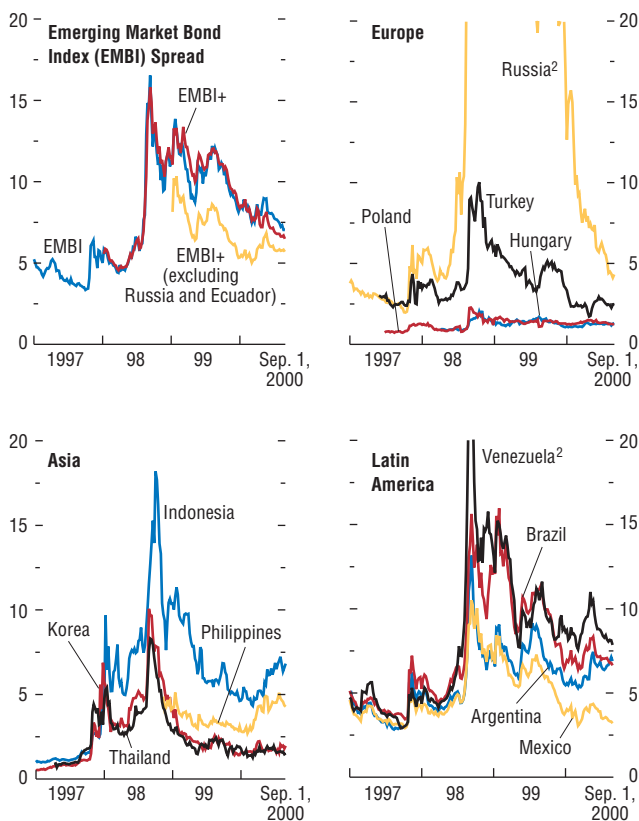
Sources: Bloomberg Financial Markets, LP; Reuters; and IMF staff estimates.

[1]Secondary market yield spreads on U.S. dollar-denominated bonds over comparable U.S. Treasury securities. The J.P. Morgan's EMBI+ tracks total returns for traded external debt instruments in the emerging markets. The instruments include external-currency-denominated Brady bonds, loans, and Eurobonds, as well as U.S. dollar local market instruments.

[2]The Russian Eurobond spread reached 67.3 percentage points in the first week of September 1998. The Venezuela EMBI+ spread reached 25.4 percentage points in the fourth week of July 1998.

governments resorting more heavily to domestic capital markets to meet their borrowing needs, thus contributing to the marked drop in total external financing flows; as in Asia, however, there was some recovery in June.

While gross private financing has picked up, *net capital flows* have continued to decline, reflecting sizable debt repayments by a few large economies and a large reduction in banks' external exposure (particularly in Asia). Net capital flows are not projected to increase until 2001 and, even then, to levels well below those just before the Asian crisis (Table 2.6). Within these, the level of direct foreign investment has been steady, slowing down through the crisis episodes of mid-1997 to early 1999, but forging ahead through the entire 1992–2000 period. Other net capital flows, including notably bank loans, have been considerably more volatile. Bank loans fell steeply during the 1997–98 Asian crisis—as international bank loans to the region were sharply curtailed—and continued to drop in net terms thereafter. This has resulted mainly from Asian banks accelerating foreign loan repayments and seeking to reduce their external exposure, as well as from the positive impact of higher oil prices on liquidity in Middle Eastern countries. Net portfolio investment has also been significantly more volatile than foreign direct investment, having risen rapidly in the early 1990s, before declining sharply during the 1997–98 financial crises and recovering afterwards. The greater volatility of portfolio flows relative to foreign direct investment is all the more apparent when looking at fluctuations across regions.[31]

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[31]For instance, flows into the Western Hemisphere fell steeply during the 1995 "Tequila" crisis that followed the sharp devaluation of the Mexican peso in December 1994, to bounce back in 1996 and remain positive during the Asian and Russian crises of 1997–98. In contrast, net portfolio flows to Asia continued to grow rapidly through 1994–95 amidst financial turbulence in the Western Hemisphere, but plunged into negative territory in 1998 before recovering in 1999 and early 2000. For an analysis of the links between large swings in foreign portfolio investment and regional financial contagion, see the May 1999 *World Economic Outlook.*

Table 2.6. Emerging Market Economies: Net Capital Flows[1]
(Billions of U.S. dollars)

	1992	1993	1994	1995	1996	1997	1998	1999	Proj. 2000	Proj. 2001
Total										
Private capital flows, net	106.9	128.6	142.3	211.4	224.7	115.2	66.2	67.4	36.4	116.0
Private direct investment, net	35.7	57.9	81.0	95.8	119.5	141.3	151.6	154.6	141.9	140.5
Private portfolio investment, net	62.7	76.8	105.0	41.4	79.6	39.4	0.3	4.8	17.3	31.8
Other private capital flows, net	8.5	−6.1	−43.7	74.2	25.6	−65.6	−85.6	−91.9	−122.8	−56.4
Official flows, net	25.0	48.7	4.8	15.7	2.0	52.7	55.3	13.0	19.9	9.9
Change in reserves[2]	−58.0	−62.7	−67.9	−117.5	−110.6	−62.9	−32.3	−64.0	−97.2	−108.1
Memorandum										
Current account[3]	−79.3	−119.5	−74.2	−93.3	−94.7	−65.2	−55.9	22.7	65.5	−3.3
Africa										
Private capital flows, net	−1.7	1.1	7.5	7.9	7.8	12.1	6.8	10.3	9.0	7.9
Private direct investment, net	1.0	2.2	2.5	2.2	4.7	8.2	6.6	9.0	8.0	8.8
Private portfolio investment, net	2.0	0.9	3.4	3.1	2.6	7.0	6.5	8.7	4.5	4.6
Other private capital flows, net	−4.7	−2.0	1.6	2.6	0.6	−3.1	−6.4	−7.4	−3.5	−5.5
Official flows, net	9.0	6.1	7.8	8.9	3.2	2.1	6.0	3.8	0.9	4.4
Change in reserves[2]	0.9	2.9	−6.0	−3.1	−9.2	−10.6	1.3	−2.9	−14.3	−7.9
Memorandum										
Current account[3]	−10.6	−11.6	−11.9	−16.8	−6.7	−7.9	−20.4	−16.8	−3.6	−9.1
Asia[4]										
Crisis countries[5]										
Private capital flows, net	21.4	22.5	33.6	53.9	67.4	−15.6	−28.2	2.9	−22.4	10.6
Private direct investment, net	6.3	6.7	6.5	8.8	9.8	9.8	10.3	13.1	9.1	9.0
Private portfolio investment, net	12.4	18.3	12.0	18.8	25.5	8.4	−8.2	12.8	13.2	3.3
Other private capital flows, net	2.7	−2.5	15.1	26.3	32.0	−33.8	−30.4	−23.0	−44.6	−1.7
Official flows, net	2.1	1.4	0.6	0.7	−6.1	15.7	19.5	−6.7	5.0	−2.1
Change in reserves[2]	−18.2	−20.6	−6.1	−18.5	−5.6	39.5	−47.0	−38.8	−19.2	−30.6
Memorandum										
Current account[3]	−16.1	−13.5	−23.2	−40.4	−53.0	−25.0	69.7	61.7	44.3	23.2
Other Asian emerging markets										
Private capital flows, net	−7.4	20.8	36.0	38.3	52.6	22.3	−12.5	−0.6	4.6	13.0
Private direct investment, net	8.4	26.3	38.2	39.3	44.4	45.3	49.6	41.1	38.4	38.9
Private portfolio investment, net	3.4	0.9	7.0	2.6	3.9	−0.1	−7.2	−8.9	−8.0	−0.2
Other private capital flows, net	−19.2	−6.4	−9.2	−3.5	4.3	−23.0	−54.8	−32.8	−25.8	−25.8
Official flows, net	8.9	8.1	2.0	−3.8	−7.6	−8.3	−1.1	−0.1	−8.1	−4.2
Change in reserves[2]	−7.7	−14.9	−51.7	−26.2	−43.1	−46.8	−16.9	−20.9	−16.4	−30.8
Memorandum										
Current account[3]	14.1	−8.2	18.9	9.2	16.3	50.4	41.4	36.7	34.9	34.1
Middle East and Europe[6]										
Private capital flows, net	36.7	26.8	16.6	14.3	13.4	22.5	10.1	1.1	−18.3	1.2
Private direct investment, net	1.9	3.4	5.4	7.5	8.4	7.4	8.2	5.4	8.2	9.7
Private portfolio investment, net	12.1	2.6	2.7	−0.4	−5.4	−5.8	−16.7	−10.1	−7.0	−3.3
Other private capital flows, net	22.8	20.8	8.4	7.1	10.4	20.9	18.6	5.7	−19.5	−5.2
Official flows, net	−1.3	4.0	0.8	2.5	2.7	1.5	8.5	5.6	3.1	1.7
Change in reserves[2]	−8.6	1.6	−3.1	−8.6	−21.0	−21.3	12.5	−4.7	−17.0	−15.0
Memorandum										
Current account[3]	−26.8	−31.9	−8.0	−6.8	4.5	2.9	−30.7	1.2	41.6	18.3
Western Hemisphere										
Private capital flows, net	53.4	35.5	39.9	46.0	64.0	67.6	61.7	40.4	47.5	65.1
Private direct investment, net	13.9	13.4	23.1	25.0	39.4	53.4	56.5	65.3	56.6	50.6
Private portfolio investment, net	32.8	45.4	62.5	2.7	38.3	19.2	19.8	9.3	6.3	18.2
Other private capital flows, net	6.7	−23.4	−45.7	18.2	−13.6	−5.0	−14.6	−34.2	−15.4	−3.7
Official flows, net	3.4	29.9	7.3	13.3	5.3	15.5	16.0	10.6	19.5	10.6
Change in reserves[2]	−22.9	−20.7	4.3	−23.4	−29.4	−14.1	18.9	10.3	−9.6	−9.5
Current account[3]	−34.8	−46.1	−52.2	−37.1	−38.9	−65.1	−89.5	−56.3	−58.7	−66.5

Table 2.6 *(concluded)*

	1992	1993	1994	1995	1996	1997	1998	1999	Proj. 2000	Proj. 2001
Countries in transition										
Private capital flows, net	4.6	21.9	8.6	51.1	19.3	6.2	28.4	13.4	16.0	18.2
Private direct investment, net	4.2	6.0	5.3	13.0	12.8	17.2	20.3	20.7	21.7	23.5
Private portfolio investment, net	0.1	8.7	17.3	14.6	14.7	10.6	6.0	−7.1	8.3	9.2
Other private capital flows, net	0.3	7.3	−14.0	23.4	−8.1	−21.6	2.0	−0.3	−14.0	−14.6
Official flows, net	3.0	−0.8	−13.7	−5.9	4.6	26.2	6.5	−0.2	−0.5	−0.6
Change in reserves²	−1.7	−11.0	−5.3	−37.7	−2.2	−9.5	−1.1	−7.1	−20.7	−14.4
Memorandum										
Current account³	−5.1	−8.1	2.2	−1.4	−16.8	−20.4	−26.4	−3.8	6.9	−3.4

¹Net capital flows comprise net direct investment, net portfolio investment, and other long- and short-term net investment flows, including official and private borrowing. Emerging markets include developing countries, countries in transition, Korea, Singapore, Taiwan Province of China, and Israel. No data for Hong Kong SAR are available.

²A minus sign indicates an increase.

³The sum of the current account balance, net private capital flows, net official flows, and the change in reserves equals, with the opposite sign, the sum of the capital account and errors and omissions.

⁴Includes Korea, Singapore, and Taiwan Province of China. No data for Hong Kong SAR are available.

⁵Indonesia, Korea, Malaysia, the Philippines, and Thailand.

⁶Includes Israel.

To gain further insight into the recent fluctuations of emerging market external financing and better assess the risks and prospects for their continuing recovery, it is useful to separate the determinants of these flows into "push" factors (which stem from developments in advanced countries) and "pull" factors (due to developments in emerging markets). Among "push" factors, there is evidence that gross external financing to emerging markets has been importantly influenced by monetary conditions in advanced countries, particularly in the United States. Periods of tighter (looser) liquidity conditions in advanced countries—brought about, for instance, by contractionary (expansionary) monetary policy stances—have tended to be associated with widening (narrowing) sovereign spreads and lower capital flows into Asia and Latin America (Box 2.1). Moreover, given the forward-looking nature of bond mar-

kets, greater uncertainty about the course of monetary policy in the United States, the European Union, and Japan, and prospects of additional tightening ahead, also appear to weigh down on emerging market bond prices, as witnessed by developments during March–May 2000.

Stock market developments in advanced countries have constituted another important "push" factor behind capital inflows to emerging markets.[32] As discussed above, there has been a positive and apparently growing correlation between changes in stock prices in advanced countries and those in emerging markets, particularly in the IT sector, as witnessed by the impact of the sharp losses in the NASDAQ on emerging market equity returns earlier this year.[33] Such a positive correlation between stock price changes in these two groups of countries implies that periods of high stock price volatility in advanced

[32]While changes in stock prices in advanced countries are clearly influenced by the monetary policy in these countries, the correlation between stock prices and monetary policy in advanced countries is not one-to-one. As extensively discussed in the May 2000 *World Economic Outlook*, fluctuations in stock prices in advanced countries also reflect other factors, including investors' sentiment and expected productivity growth, which are not under the control of monetary authorities and therefore constitute a distinct channel through which stock prices in advanced economies affect foreign investment in emerging markets.

[33]Rolling correlations of weekly returns in the NASDAQ and the Dow Jones stock indices and emerging market equity returns by region are provided in IMF, *Emerging Market Financing: A Quarterly Report on Development and Prospects*, second quarter 2000 (Washington: International Monetary Fund, August 2000).

Box 2.1. U.S. Monetary Policy and Sovereign Spreads in Emerging Markets

With the increased integration of global capital markets, changes in U.S. monetary policy are felt by developing countries through effects on the cost and availability of funds, and on their creditworthiness. In addition to the direct impact of changes in U.S. interest rates on rates in developing countries, interest rate spreads move in the same direction as the changes in U.S. interest rates. (Interest rate spreads refer to the differences between yields on sovereign bonds of developing countries and those on U.S. Treasury securities of comparable maturities, which are a proxy for country risk.) This effect on developing country spreads was seen clearly in 1994 when a tightening of U.S. monetary policy was reflected in a substantial widening of spreads, and in 1998 when an easing of U.S. monetary policy following the flight to quality associated with the Russian default and the demise of the hedge fund Long-Term Capital Management helped to reduce spreads somewhat.

The existing empirical literature is less conclusive on *how* U.S. monetary policy affects emerging market sovereign spreads. Most of the specifications adopted so far have proxied U.S. monetary policy by the yields on U.S. Treasury securities. Shocks to Treasury yields do not always imply changes in U.S. monetary policy, however, and the so-called "flight to quality" experienced during the Asian crisis was quite revealing in terms of fluctuations in U.S. Treasury yields in the absence of changes in U.S. monetary policy. The flight to quality also illustrates how changes in U.S. short-term rates affect sov-

ereign spreads in emerging markets. One study has found, for a sample of Latin American and east Asian countries during 1991–95, that a rise in interest rates on U.S. Treasury bills tended to reduce spreads, perhaps because it deterred less creditworthy borrowers from issuing bonds.[1] The study concluded that while the level of sovereign spreads was determined largely by fundamentals, changes in sovereign spreads were also driven significantly by shifts in investor sentiment. Other studies have found a positive but statistically insignificant effect of U.S. Treasury yields on sovereign spreads in selected emerging markets during the mid-1990s.[2]
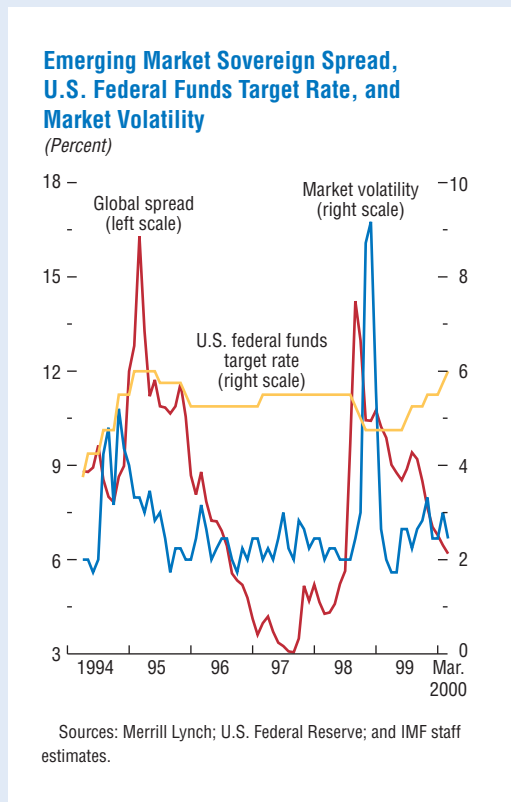
To examine this issue further, an econometric model for sovereign bond spreads was estimated individually for a group of emerging market countries.[3] The model explains fluctuations in spreads as a function of country-specific macroeconomic variables, the level of the U.S. Federal Funds target rate, and as a proxy for volatility in capital markets, based on estimates of the (variable) standard deviation of the residuals derived from a model of the spread between the three-month U.S. Treasury bill yield and the U.S. Federal Funds target rate. This proxy for market volatility is intended to capture changes in investor sentiment that may be related to expected changes in U.S. monetary policy. The model may also pick up the effects of other market related events, such as the so-called "flight to quality" effects. To provide a sense of overall devel-

[1]See Barry Eichengreen and Ashoka Mody, "What Explains Changing Spreads on Emerging-Market Debt: Fundamentals or Market Sentiment?" NBER Working Paper No. 6408 (Cambridge, Massachusetts: National Bureau of Economic Research, February 1998). Their results might reflect the fact that the analysis was based on spreads for new bond issues of developing countries and not on spreads for bonds actively traded in secondary markets. In addition, their analysis, which covers the period 1991–95, is based on a subperiod (1991–93) when the market for sovereign bonds was developing, and on another subperiod (1994–95) when shocks seriously restricted access to the market for lower quality issuers.

[2]See Kevin Barnes and William Cline, "Spreads and Risk in Emerging Markets Lending," Institute of International Finance, Working Paper No. 97-1 (December 1997), and Steven Kamin and Karsten von Kleist, "The Evolution and Determinants of Emerging Market Credit Spreads in the 1990s," unpublished manuscript (Federal Reserve Board and Bank for International Settlements, 1997).

[3]The model was estimated for Argentina, Brazil, Bulgaria, Colombia, Indonesia, Korea, Mexico, Panama, Philippines, Poland, and Thailand. For further details, see Vivek Arora, Martin Cerisola, and Victor Culiuc, "How Does U.S. Monetary Policy Influence Economic Conditions in Emerging Markets?" *United States—Selected Issues* (Washington: International Monetary Fund, 2000).

Box 2.1 *(concluded)*

Emerging Market Sovereign Spread, U.S. Federal Funds Target Rate, and Market Volatility
(Percent)

Sources: Merrill Lynch; U.S. Federal Reserve; and IMF staff estimates.

opments, the figure reports the global spread across all emerging markets, the U.S. Federal Funds rate, and the proxy for market volatility over the sample period.

The results suggest that the stance and predictability of U.S. monetary policy is important in explaining fluctuations in developing country interest rate spreads. To the extent that monetary policy actions can be anticipated by market participants, market turbulence would likely be reduced. One important conclusion therefore is that an approach to monetary policy that pro-

vides financial markets with clear indications of the U.S. authorities' intentions is likely to reduce the impact of a U.S. rate increase on developing countries. In particular, the results show that the level of the U.S. Federal Funds target rate has significant positive effects on emerging market spreads, with the estimated coefficient ranging from about ½ to 1.[4] The model also supports the view that increased market volatility related to heightened uncertainty about the expected path of U.S. monetary policy has significant positive effects on spreads across countries and regions.

Nevertheless, a significant proportion of fluctuations in emerging market spreads is driven by country-specific fundamentals. In general, improved macroeconomic fundamentals—such as higher net foreign assets (in terms of GDP or imports), lower fiscal deficits, and lower ratios of debt service to exports and debt to GDP—help to lower sovereign spreads across countries. For example, a higher net foreign asset position contributed to lower spreads in many Latin American and Asian countries (after 1997 in this region)—particularly in those have had in place fixed exchange rate regimes, such as Argentina, Panama, Thailand, and Korea. Foreign indebtedness appears to contribute positively to sovereign spreads, especially in Latin America (particularly Argentina, Mexico, Brazil, Panama), and in the Philippines—countries that underwent comprehensive debt reschedulings in the past.

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[4]The rise in the level of emerging market interest rates will, however, not necessarily be as large as the sum of the rise in spreads and the rise in the U.S. Federal Funds rate. In the United States, the yield curve tends to flatten as monetary policy is tightened, so that a rise in short-term interest rates tends not to be fully passed through to longer-term rates.

countries tend to be associated with higher volatility of stock prices in emerging markets. This in turn, by increasing investment risk, tends to impact negatively on capital inflows, reducing gross private financing to these countries. The negative relationship between the volatility of

stock returns in emerging markets and the capital inflows they receive is borne out by the data (Figure 2.9).

The links between stock prices in developed countries and gross private financing to emerging markets have not been confined to the equity

markets. Stock price volatility in advanced countries also appears to have had a significant impact on emerging market bond spreads. This is substantiated by a positive and relatively high correlation between emerging market bond spreads and stock returns in the Dow Jones and NASDAQ indices.[34] Moreover, as the volatility of those indices is reflected in the volatility of equity returns in emerging markets (as discussed above), periods of high price volatility of local stocks in emerging markets tend to be associated with higher EMBI spreads (see bottom panel of Figure 2.9). These correlations seem to reflect two main factors. First, institutional investors appear to regard most IT (and also a few non-IT) stocks, together with emerging market debt, as high risk assets. Thus, when seeking to reduce overall risk exposure, these investors will tend to cut down on their holdings of both assets; conversely, when appetite for risk is high, demand for both types of securities tends to rise. Second, recent commentary suggests that investors tend to view emerging market debt as liquid relative to its closest competitor asset class (U.S. corporate debt). So, when stock market volatility rises and greater uncertainty motivates investors to reduce their overall risk exposure, they will first reduce holdings of the more liquid class of assets, which includes emerging market debt. Emerging market spreads will thus tend to widen during those periods, causing emerging market borrowers to try to cut down or at least postpone new international issues, leading to a drop in portfolio flows.

On the "pull" side, recent developments suggest that both the volume and the terms of external financing have been quite responsive to domestic macroeconomic conditions and policies in

[34]Since 1994 the correlations between stock returns in the two U.S. indices and EMBI spreads have fluctuated between 0.4 and 0.7, and are statistically significant in a multivariate regression model. See International Monetary Fund, *International Capital Markets: Developments, Prospects, and Key Policy Issues*, September 2000. In recent months, the correlation between the NASDAQ and the average emerging market spread has been rising, while that between the Dow Jones and the EMBI has been falling, though both correlations have displayed considerable ups and downs in the very short run.

Figure 2.9. Emerging Markets: Capital Flows, Bond Spread, and Volatility in Equity Returns
(Percent, unless otherwise indicated)

Stock market volatility has been negatively correlated with gross private financing to emerging markets, and positively correlated with emerging market bond spreads.
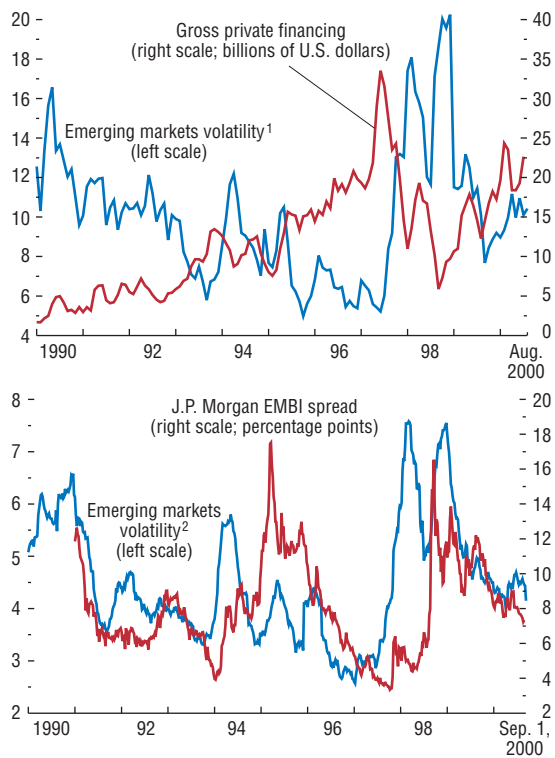

Sources: Capital Data Ltd.; J.P. Morgan; Morgan Stanley Capital International; International Finance Corporation, Emerging Markets Data Base; and Bloomberg L.P.
[1]Rolling 20-week volatility of monthly U.S. dollar equity returns, average for nine emerging markets.
[2]Rolling 20-week volatility of monthly U.S. dollar equity returns, average for 15 emerging markets.

Figure 2.10. Selected East Asian and Latin American Economies: Current Account Balance[1]
(Percent of GDP)

The current account positions of the east Asian economies have improved considerably since the crisis, but those of most Latin American countries remain relatively weak.
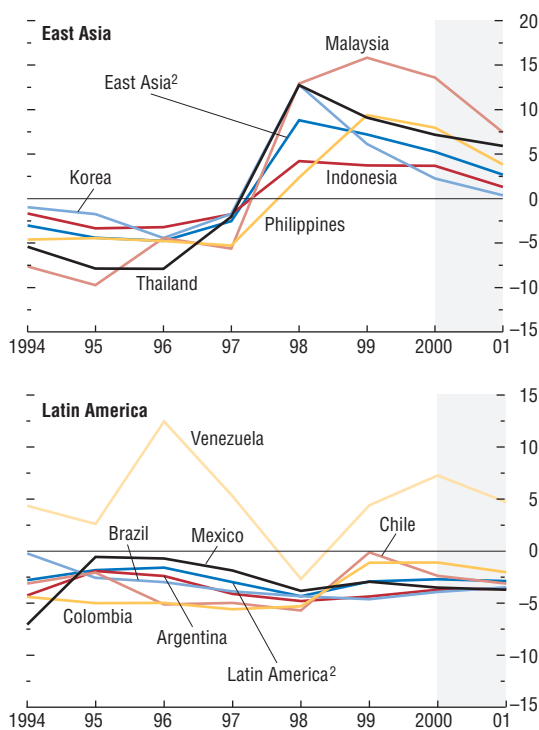
[1]Shaded areas indicate IMF staff projections.
[2]Weighted average.

emerging markets. In general, the decline in emerging market spreads since the 1997–98 financial crises—and more definitely since Brazil's move to a floating exchange rate regime in early 1999—has been associated with a strengthening of macroeconomic fundamentals in most countries. This is witnessed by the general upgrading of emerging market debt by credit rating agencies since early 1999.[35] As discussed in Chapter I, economic growth in Asia accelerated markedly during 1999 and early 2000 while external current accounts continued to post sizable surpluses (Figure 2.10). Although public deficits and external debt in a number of countries in the region are substantially higher than in the pre-1997 period (Tables 2.7 and 2.8), and concerns remain about the pace of structural reforms, progress has been made on both fronts. Consistent with these developments, Asian countries' spreads have declined markedly over the past two years, to a much lower level than elsewhere (see Figure 2.8). The drop in spreads has been larger in those countries where growth has been stronger and macroeconomic management has been more prudent, such as Korea and Malaysia.

Macroeconomic fundamentals have also improved considerably in some large emerging market economies in the Western Hemisphere since early 1999. Growth has been particularly robust in Mexico, and recoveries are firmly under way in Brazil and Chile. The fiscal position has also improved considerably in those three countries, while domestic interest rates have come down and inflation has remained under control. Mexico's debt was upgraded to investment grade in March 2000, contributing to a further decline in its EMBI spread to early 1997 lows and the continued strength of capital inflows (Figure 2.11). On the other hand, spreads in Argentina, Brazil, and Venezuela remain significantly higher than in Mexico. In the first two countries less favorable balance of payments out-

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[35]A discussion of the impact of credit rating upgrades on emerging market financing is provided in the forthcoming IMF *International Capital Markets* report, Chapter III, Box 3.2.

Table 2.7. General Government Balance
(Percent of GDP)

Country	1994	1995	1996	1997	1998	1999	2000
Argentina	−1.8	−2.3	−3.2	−2.0	−2.1	−4.1	−2.8
Brazil	−3.3	−7.0	−5.9	−6.6	−8.1	−9.8	−3.7
Chile	1.5	3.6	2.6	2.1	−0.1	−2.4	−1.0
Venezuela	−13.2	−6.9	7.2	1.9	−6.8	−1.2	0.3
Mexico	−0.3	−0.8	−0.7	−1.2	−1.7	−1.3	−0.6
Indonesia	0.0	0.8	1.2	−0.7	−1.9	−1.5	−3.6
Korea	1.0	1.3	1.0	−0.9	−3.8	−2.7	−1.6
Malaysia	3.3	2.2	2.3	4.1	−0.4	−3.8	−1.5
Philippines	−1.8	−1.4	−0.6	−0.8	−2.7	−4.4	−3.1
Thailand	1.9	3.0	2.5	−0.9	−2.5	−2.9	−2.4
Of which: central government							
Argentina	−0.5	−1.5	−2.2	−1.1	−1.3	−2.5	−1.8
Brazil	0.1	−2.3	−2.6	−2.6	−5.5	−6.7	−2.2
Chile	1.5	3.6	2.6	2.1	−0.1	−2.4	−1.0
Venezuela	−7.3	−4.3	0.6	1.6	−2.6	−3.0	−4.2
Mexico	−0.5	−1.3	−0.1	−2.8	−1.7	−1.5	−2.6
Indonesia	0.0	0.8	1.2	−0.7	−1.9	−1.5	−3.6
Korea	0.1	0.3	0.0	−1.7	−4.3	−3.3	−2.5
Malaysia	1.4	1.3	1.1	2.5	−1.5	−4.1	−4.3
Philippines	−1.8	−1.4	−0.6	−0.8	−2.7	−4.4	−3.1
Thailand	2.0	2.5	1.0	−1.7	−2.9	−3.7	−2.9

Table 2.8. External Debt
(Percent of GDP)

Country	1994	1995	1996	1997	1998	1999	2000
Argentina	33.3	38.2	40.3	42.6	47.1	51.1	52.6
Brazil	18.2	22.6	23.2	24.9	31.2	44.6	36.3
Chile	42.2	33.3	33.5	35.6	43.6	50.4	49.8
Colombia	27.4	27.9	31.6	31.5	36.0	42.6	44.2
Mexico	33.9	59.0	49.6	38.2	38.4	34.6	30.0
Venezuela	71.3	51.0	53.1	41.1	39.3	36.7	31.8
Indonesia	57.0	56.3	53.4	63.9	149.4	96.5	93.8
Malaysia	39.0	37.6	38.4	43.8	58.8	53.4	49.3
Philippines	61.4	54.9	55.0	61.6	81.7	75.7	78.9
Korea	22.0	26.0	31.6	33.4	46.9	33.4	26.5
Thailand	44.9	49.1	49.8	62.0	76.9	61.4	51.7
Of which: short-term debt							
Argentina	3.5	4.8	5.0	6.5	7.2	6.9	6.5
Brazil	3.5	4.3	4.9	4.6	3.4	5.1	3.8
Chile	10.7	7.9	6.5	4.8	5.4	5.8	9.5
Colombia	5.4	5.8	5.1	4.4	4.6	4.8	4.5
Mexico	3.4	5.4	4.5	3.3	3.1	2.9	2.4
Venezuela	4.3	1.9	2.6	2.7	2.2	1.5	1.9
Indonesia	6.5	8.7	7.5	27.5	76.4	5.9	5.7
Malaysia	7.5	7.2	9.9	11.1	11.7	7.6	6.4
Philippines	8.9	8.3	12.0	14.0	15.6	11.3	7.5
Korea	14.5	14.6	17.9	13.3	9.7	9.3	7.7
Thailand	20.2	24.5	20.7	23.1	21.0	11.4	6.8

looks and sizable public sector financing needs make them more vulnerable to higher volatility in mature markets. In the case of Venezuela, higher spreads appear to be more related to uncertainties regarding political developments and the future course of economic policy. A clear negative correlation between sovereign spreads on the one hand, and macroeconomic fundamentals on the other, is also seen in other economies in the region, sometimes exacerbated by political factors, as in Peru.

Macroeconomic fundamentals also have strengthened elsewhere in the emerging world. With a recovery in economic activity under way in the Czech Republic, Hungary, and Poland, and macroeconomic policies remaining broadly on track, spreads have narrowed and capital inflows have increased (see Figure 2.3). The combination of a recovering economy, improving commodity prices, and the reduction in the South African Reserve Bank's net open forward position in foreign currency has helped boost investors' confidence in South Africa, leading to a fall in spreads between 1999 and early 2000. And while the South African rand has not strength-

ened (largely for external reasons), the flow of foreign investment into the country has been steady. As discussed in Chapter I, improvements in macroeconomic fundamentals have been particularly remarkable in Russia and Turkey, where spreads have fallen the most, and a sharp pickup in external capital inflows is projected for 2000.

Outlook and Risks

To sum up, private financing to emerging markets has recovered from its late 1998 lows, reflecting a combination of improving macroeconomic fundamentals in these economies and favorable liquidity conditions in advanced economies between mid-1999 and February 2000. Sovereign spreads remain well above pre-Asian crisis levels for economies with sizable public sector financing needs and high current account deficits, underscoring the vulnerability of these economies to monetary tightening and other adverse asset market developments in the advanced world. Developments during March–May 2000—when average emerging mar-

Figure 2.11. Selected Emerging Market Economies: Capital Flows[1]
(Billions of U.S. dollars)

Net direct investment has been the most stable component of private capital flows to emerging markets and has grown rapidly in several countries in recent years.
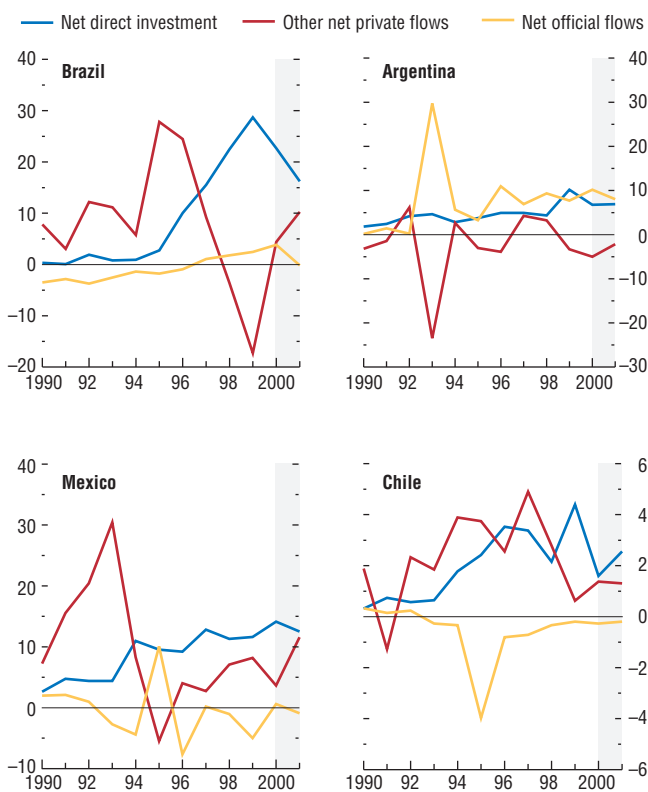
ket spreads widened in response to monetary policy tightening in the United States and the European Union, and higher stock market volatility—clearly illustrated this phenomenon. But the widening was steeper for regions and countries with weaker fiscal and balance-of-payments positions and less favorable growth performance. This suggests that investors are differentiating sharply both between regions and across countries.

Three other main trends in emerging market financing are worth stressing. One is the remarkable stability of foreign direct investment compared with private portfolio flows and crossborder bank loans, highlighting the important stabilizing role of direct investment in the international financial system. Second, the rapid expansion of the IT sector in some regions has been associated with some shift in external financing patterns. This is notably the case in Asia, where international equity issues have been growing faster than bond issues. While bonds and loans together still account for most of the gross portfolio flows into the region, a growing share of such flows is now non-debt creating. As local IT firms expand faster elsewhere and public sector financing needs shrink, a similar change in financing patterns may eventually be observed in other regions as well. Third, there are indications that higher asset market volatility in advanced economies leads to small capital flows into emerging markets. Although further research is needed to identify the different components behind such volatility—which, as discussed earlier, may have been exacerbated by the growing importance of the IT sector in these regions—this seems to underscore the importance of stable macroeconomic and sound structural policies that help minimize equity market volatility in emerging markets.

Over the medium term, the staff's baseline scenario envisages a continuing recovery of capital flows to emerging markets. This primarily reflects the continued strengthening of macroeconomic fundamentals in emerging markets, which will tend to lower sovereign spreads and

broaden opportunities for external private sector borrowing, and—more specifically—the conclusion of banks' stock adjustment in exposure to Asia. However, there are three potential risks. First, as both equity prices and bond spreads in emerging markets have been closely related to stock market developments in the United States, a sharp fallout from present valuation levels would likely have a substantial negative impact on portfolio financing to emerging markets. Second, as discussed in Box 2.1, further monetary tightening and/or greater uncertainty about the future course of monetary policy in advanced economies is also bound to impact significantly on the terms and volume of such flows— the impact likely to be mostly felt in countries with larger public sector financing needs and higher current account deficits. Third, a substantial slowdown of U.S. economic growth would adversely affect growth and therefore capital flows to emerging markets with strong trade links with the United States. The impact would be smaller on other emerging markets, however, especially if counterbalanced by further strengthening of economic activity in Europe and Japan.

Commodity Prices and Commodity Exporting Countries

Over the past three years, large swings in commodity prices have greatly affected many countries. After peaking in 1996, commodity prices fell by 30 percent in 1997–98, due to fallout from the Asian crisis as well as favorable harvests of some crops, causing a substantial terms of trade shock for commodity exporting developing countries (Figure 2.12). The oil price rebound in 1999–2000 has reversed these losses for oil exporters, but has substantially worsened the position of most other commodity exporters—many of which are among the poorest countries—especially given the relatively weak outlook for nonfuel commodity prices. In the advanced economies, commodity price developments have generally been helpful from a cyclical perspective, although the most recent rise in
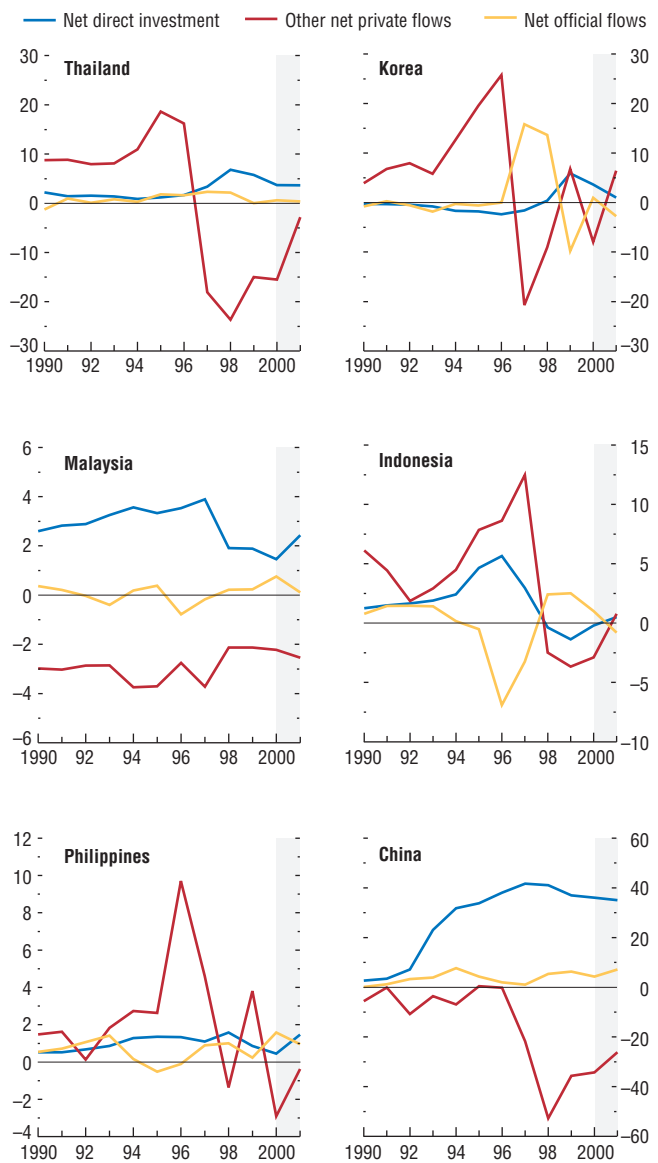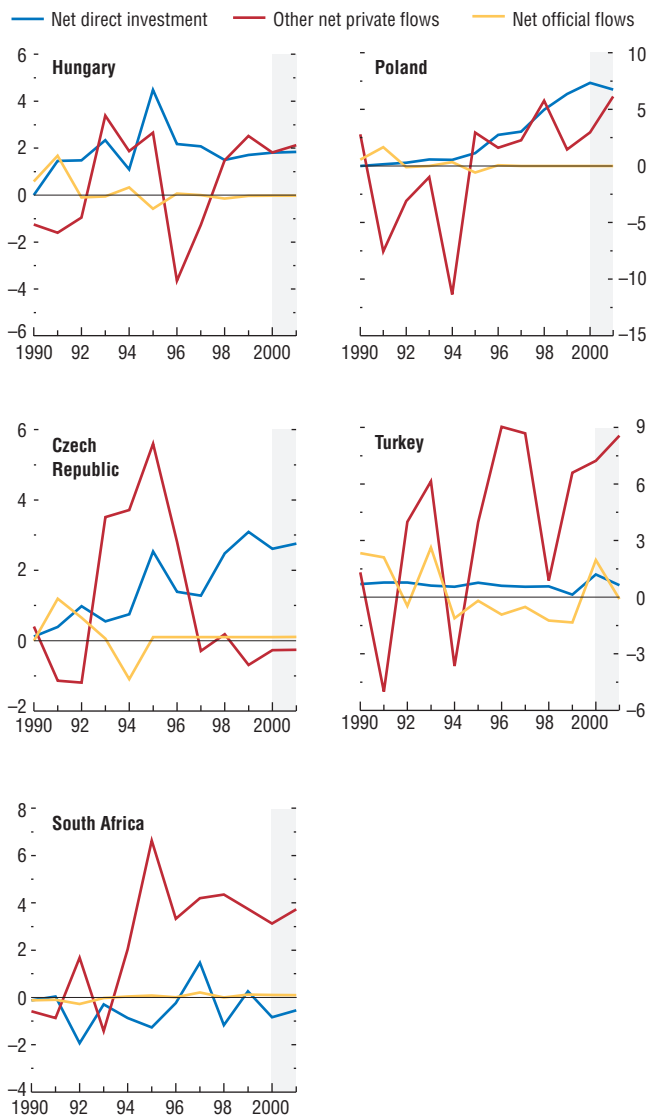
Figure 2.11 *(continued)*

Figure 2.11 *(concluded)*

— Net direct investment — Other net private flows — Net official flows

¹Shaded areas indicate IMF staff projections.

oil prices may add to inflationary risks, as well as slow output growth.

The prices of many key commodities have moved relatively independently over the past 12 to 18 months. While fuel prices have increased sharply, prices of nonfuel commodities have staged modest recoveries at best, with agricultural prices being particularly weak, despite rising global demand. In consequence, the IMF's nonfuel commodity index remained about 20 percent below 1995–97 levels through June 2000.[36] The remainder of this section focuses on the outlook in the oil market, the reasons for the underlying weakness of nonfuel commodity prices, and the implications of these developments for commodity exporting and importing countries.

The Oil Market

Oil prices have increased sharply in the last year and a half, rising from under $12 a barrel in the first quarter of 1999 to almost $27 a barrel in the second quarter of 2000, and are now at a 15-year high (excluding the Gulf war period) in both real and nominal terms.[37] The rapid run-up in world oil prices—from historically low levels—initially reflected supply constraints that followed a series of agreements involving major oil exporters beginning in March 1999. More recently, the upward pressure on oil prices has reflected more buoyant current and expected world demand growth as well as the limited capacity of oil producers, apart from a few major members of OPEC, to increase production. In the first half of 2000, prices fluctuated in the $25–$30 a barrel range, and continued to display considerable volatility (with day-to-day changes in spot prices of $1 a barrel not uncom-

[36]From end-June through end-August 2000, the IMF's nonfuel commodity index fell another 4 percent.

[37]Based on a simple average of spot prices for U.K. Brent, Dubai, and West Texas Intermediate. This basket of crude oil is also used to compute the baseline assumptions in the *World Economic Outlook*. It differs from the basket used for the OPEC reference price, which is a simple average of seven crude prices (Saharan Blend, Indonesian Minas, Arabian Light, Dubai, Tia Juana Light, Bonny Light, and Isthmus).

mon). Box 2.2 reviews recent developments in global oil markets, while risks to the projections are outlined below.

As a result of the recent run-up in prices, as of early September, spot oil prices (at more than $33 a barrel) and oil prices futures were over 20 percent higher than projected in the *World Economic Outlook*. Given the announced intention of OPEC members to hold oil prices in a $22 to $28 a barrel range, additional demand pressures could in principle be met through further increases in supply. While non-OPEC exporters are producing close to capacity (see Box 2.2 for details), some estimates indicate that OPEC member countries could increase supply by about 3 million barrels a day. However, this excess capacity is concentrated in a few countries, while an adjustment in supply targets would need to be agreed to by all OPEC members. In an environment of strengthening global demand and low oil inventories, the risks to oil prices would appear to be on the upside. At the OPEC meeting on September 10, OPEC members agreed to raise production by 800,000 barrels a day, about 3 percent of OPEC production or 1 percent of total world production. In the immediate aftermath of the meeting, oil prices continued to rise.

What Keeps Nonfuel Commodity Prices So Weak?

In many nonfuel commodity markets, the surprise has been the lack of larger price movements and consequently a persistence of prices at low levels when compared with pre-Asian crisis prices. From mid-1997 into 1999, the weakness in the prices of most commodities reflected largely the disruptions in demand growth, particularly in Asian markets. More recently, as the global recovery has gained pace, favorable conditions have increased supplies of many commodities and have kept price pressures in check.

The prices of most *agricultural* commodities have been particularly weak, in part because production did not adjust quickly to the slump in demand in 1998–99. For cereals and oilseeds, weather conditions, particularly in the Western

Figure 2.12. Prices of Crude Petroleum and Nonfuel Commodities[1]
(1990 = 100)

Oil prices have increased sharply since early 1999, while the recovery in nonfuel commodity prices has been weak at best.
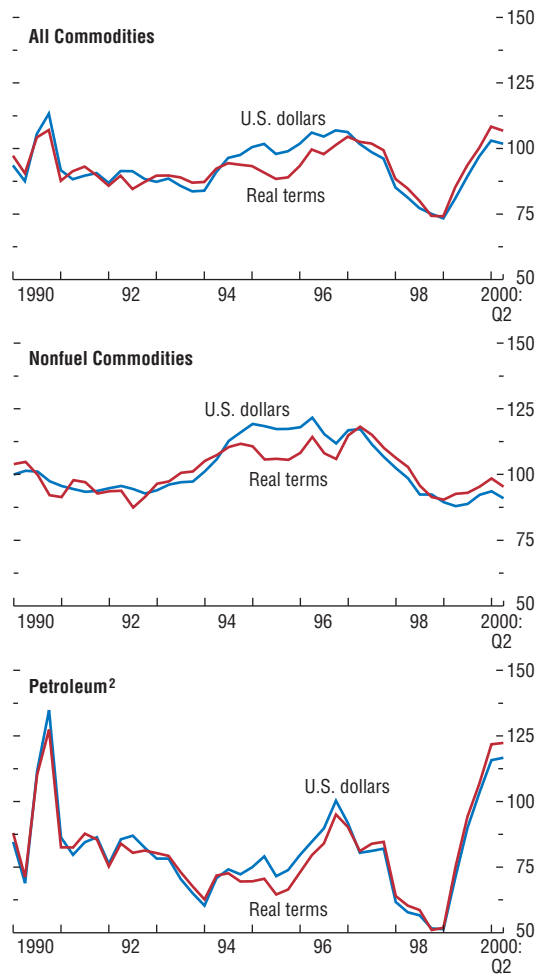
[1]Indices in real terms are obtained by deflating the nominal U.S. dollar price series by the unit value of manufactures exported by 20 industrial countries.
[2]Average Petroleum Spot index of UK Brent, Dubai, and West Texas.

Box 2.2. Developments in the Oil Markets

In March 1999, with oil prices still at their lowest levels since the 1980s, members of the Organization of Petroleum Exporting Countries (OPEC) pledged to cut targeted oil production by a total amount of 1.7 million barrels a day.[1] Some non-OPEC countries (most notably Mexico and Norway) pledged additional cuts in exports of around 0.4 million barrels a day. Compliance with the agreed output cuts was generally high and increasing demand resulting from continued global economic expansion outstripped supply with a corresponding drawdown of inventories, particularly in the United States, the most important market for petroleum and petroleum products. As a result, oil prices rose from little more than $10 a barrel in February 1999 to over $30 a barrel by February 2000.

In March 2000, a new OPEC agreement was announced, which increased targeted crude production by 1.7 million barrels a day in an effort to check the oil price increase. Following this agreement and partly in response to concerns by OPEC members on the long-term effect of high prices, OPEC informally defined a target price band of $22 to $28 a barrel, while Saudi Arabia indicated that it would like to see prices at around $25 a barrel.[2] Prices then declined in April to $23–$24 a barrel, but bounced back and in June exceeded the upper limit of the band, while inventories remained low.

At their June 21 meeting in Vienna, OPEC members (including Iran) agreed to increase output by 708,000 barrels a day as of July 1, followed by commitments by Mexico and Norway to increase production by 75,000 barrels a day and 100,000 barrels a day, respectively. The immediate reaction of the market was a small price increase, as the market had anticipated a larger production increase. With the oil price above $30, Saudi Arabia announced on July 3 that it was prepared to increase output by an additional 500,000 barrels a day. Iran followed the announcement by indicating it would go along with any boost in production, provided there was consensus among OPEC members to do so. (Iran is the second largest OPEC producer after Saudi Arabia—see the table).

During August, spot and futures prices continued rising, and by early September, futures contracts had soared to their highest levels since the Gulf War. On September 10, OPEC agreed to an increase in production of 800,000 barrels a day. With Saudi Arabia already producing significantly above its earlier target, the increase had been largely discounted in the markets, and oil prices initially increased further.

One of the major elements contributing to the uncertainty in the prospects for oil prices is the limited capacity of oil producers, apart from a few major members of OPEC, to increase production. With most OPEC and non-OPEC countries producing close to full capacity, OPEC as a whole has limited incentives to agree to an increase in production intended to reduce prices as earnings would decrease.[3] Low prices during 1998 and the first half of 1999, and the uncertainty of the overall oil market, have also severely limited recent investment aimed at expanding oil output.[4]

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[1]OPEC members produce about 40 percent of the world's oil output, and hold over 75 percent of the world's proven oil reserves.

[2]The price band mechanism of $22 to $28 a barrel was set by OPEC with the specification that if the average price for the OPEC crude basket falls below $22 or increases above $28 for 20 market days, OPEC's production would be decreased or increased by 500,000 barrels a day, respectively. The precise formulation of the trigger point was unclear. Some reports had the mechanism triggering after 20 consecutive market days; others made reference to an average price over a period of 20 days. The OPEC basket reference price is the simple average of seven crudes: Saharan Blend, Indonesian Minas, Arabian Light, Dubai, Tia Juana Light, Bonny Light, and Isthmus.

[3]Capacity is defined by Bloomberg as production attainable within 30 days and sustainable for 90 days. Non-OPEC producers typically operate close to capacity. See U.S. Energy Information Agency, *Non-OPEC Fact Sheet,* available via the Internet at http://www.eia.doe.gov (June 2000).

[4]The uncertainties in the oil market include the potential impact of U.N. sanctions on Iraq, including Iraq's threats to temporarily cut down or interrupt exports. Iraq has an estimated capacity of 2.8 million barrels a day or about 4 percent of the world's crude output.

Box 2.2 *(concluded)*

Crude Output and Estimated Capacity
(in thousands of barrels a day as of August 2000)

	Actual Output, 2000					Estimated
	April	May	June	July	August[1]	Capacity[2,3]
OPEC	27,700	28,220	28,080	28,340	28,800	32,150
Algeria	790	800	810	820	830	950
Indonesia	1,290	1,300	1,300	1,310	1,310	1,400
Iran	3,650	3,680	3,680	3,710	3,720	3,750
Iraq	2,660	2,970	2,650	2,660	2,900	2,950
Kuwait	2,060	2,080	2,110	2,100	2,130	2,600
Libya	1,410	1,410	1,420	1,420	1,430	1,500
Nigeria	2,000	1,960	2,010	2,050	1,980	2,200
Qatar	680	690	700	700	700	750
Saudi Arabia	8,030	8,180	8,230	8,350	8,550	10,500
United Arab Emirates	2,280	2,280	2,280	2,300	2,320	2,500
Venezuela	2,850	2,870	2,890	2,920	2,930	3,050
Non-OPEC	13,138	13,263	13,331	13,610	. . .	13,610
Mexico	3,041	3,040	3,056	3,100	. . .	3,100
Norway[4]	3,077	3,153	3,125	3,290	. . .	3,290
Oman	930	930	935	945	. . .	945
Russia	6,090	6,140	6,215	6,275	. . .	6,275
Total OPEC plus Non-Opec	40,838	41,483	41,411	41,950	. . .	45,760
World (IEA)[5]	76,090	76,350	76,190	76,750	. . .	. . .

Sources: Bloomberg Financial Services and *Oil Market Report* (Paris: International Energy Agency, various issues).
[1]Preliminary figures.
[2]Capacity is defined as that which is attainable within 30 days and sustainable for 90 days.
[3]Estimated capacity for non-OPEC producers is taken as their output in the most recent month for which data are available.
[4] The decline in production in June 2000 is associated with maintenance and technical problems.
[5]Includes condensates, Natural Gas Liquids, and oils from non-conventional sources.

The demand for crude is expected to continue to increase in the near term. Estimates by the International Energy Agency (IEA), based on underlying growth assumptions for Organization for Economic Cooperation and Development countries in 2000 that are slightly higher than those in the *World Economic Outlook*, suggest that there will be little change in the demand and supply balance for the remainder of the year. In addition, IEA suggests that increased demand for gasoline both in the United States and in Europe, together with the high gasoline prices and the high cost of inventories, may delay the usual shift from gasoline to heating oil refining. With the arrival of winter in the Northern Hemisphere, low stocks could result in a sharp hike in prices for heating oil.

Hemisphere, have been much more favorable in the late 1990s than in the mid-1990s, and there also was a slowing of the growth in global demand for livestock feed. Commodities such as coffee, cocoa, and sugar carry high fixed costs of planting trees and cane, and therefore downward adjustments to supply typically occur slowly, because it can be profitable to harvest in the short run even if prices are below total production costs. Even for cotton, which unlike the perennials above must be replanted each year, heavy infrastructure and other investment result in a high proportion of fixed costs; these farmers also may choose high production levels even if prices are low. This has resulted in rising stocks in some cases, putting further downward pressure on prices and dimming prospects for a price rebound. *World Economic Outlook* projections assume

a moderate price rise for these commodities, but on average prices are not expected to return to 1995–97 average levels in the near term.

The prices of other nonfuel commodities have shown modest increases since early 1999, but still remain well below their 1995–97 averages. The prices of most *metals* and some other industrial inputs have already increased from their lowest levels in mid-1999, but the increases have been less than might be expected, given the rise in global demand. For example, through the end of August 2000, the price of copper remained about 30 percent below its 1995–97 average, in part reflecting, until recently, high stock levels. This continuing weakness is also due to the slow pace at which supplies of these commodities have adjusted to changing market conditions. As with agricultural goods, metals prices are expected to increase but remain below previous peaks, with the exception of nickel, which surpassed its average price in 1995–97.

Implications for Commodity Exporting Countries

The recent movements in commodity prices have significantly impacted a number of commodity exporting countries, particularly those that export only a few commodities. Table 2.9 shows price movements in key commodities through June 2000 compared to a 1995–97 base period. Table 2.10 shows the impact of these changes on the most affected nonfuel commodity exporting countries, defined as those that have experienced a combination of lost export revenues and higher oil import costs amounting to at least 10 percent of total exports compared with 1995–97.[38] Nearly 30 countries have experienced cumulative terms of trade losses of more than 10 percent, and in over 10 countries the terms of trade losses exceed 20 percent. Losses measured as a percent of domestic absorption are also large in many cases. They range from

Table 2.9. Selected Primary Commodities: Recent Price Movements[1]

Commodity	1998	1999	2000 First-half
Commodities with prices in 2000 much higher than in 1995–97			
Crude petroleum	−31	−4	41
Natural gas	−17	−33	16
Nickel	−39	−21	25
Tea	24	21	26
Commodities with prices in 2000 much lower than in 1995–97			
Agricultural commodities			
Wheat	−30	−38	−40
Rice	−5	−22	−31
Soybeans	−14	−30	−24
Fish meal	18	−30	−29
Sugar (free market)	−27	−49	−49
Coffee (arabica)	−13	−33	−37
Coffee (robusta)	−13	−30	−51
Cocoa beans	12	−24	−39
Cotton	−24	−38	−35
Jute	−32	−27	−22
Metals			
Copper	−34	−37	−29
Cobalt	−17	−35	−41
Gold[2]	−24	−28	−26

[1]Percentage change from 1995–97 levels.
[2]Compared with base period 1995–96. Price slide began in 1997.

about 1 percent of domestic absorption (Brazil, Haiti, Rwanda, Tanzania) to more than 8 percent (Guyana, Zambia), and average about 4 percent. Agricultural exporters, particularly exporters of coffee, cocoa, and cotton, and also those that import large amounts of oil relative to total exports, have been hardest hit. Burundi, with its dependence on coffee (70 percent of total exports), and Mali, with its reliance on two exports (cotton and gold), are examples of the first group, while Tanzania and Haiti are two countries where a high oil import dependency resulted in gains in 1998, but losses in 2000.

Regrettably, almost all of the countries hit hardest by falling commodity prices are also among the world's poorest. All but two (Brazil

[38]The base period 1995–97 precedes the commodity demand shock attributed to the Asian crisis. The estimates reflect price changes from the base period and hold trade volumes unchanged from the base period. The loss estimates can be thought of as partial terms of trade effects, expressed as a percentage of base period export earnings. See footnote 2 to the table for details on the underlying calculations.

Table 2.10. Nonfuel Commodity Exporters: Export Dependency and Terms of Trade

Country	Export Dependency[1]		Oil Import Dependency	Change in Terms of Trade[2]		
	Main Export	Other Commodities		1998	1999	2000[3]
	Coffee					
Burundi	70	Tea 8	−24	1	−20	−33
Ethiopia	60	Gold 3	−22	−1	−19	−32
Uganda	56	Cotton 3	−11	−5	−17	−34
Rwanda	45	Tea 12	−29	6	−11	−25
El Salvador	30		−5	−2	−10	−14
Guatemala	19	Sugar 6	−1	−4	−10	−11
Madagascar	22		−9	0	−6	−15
Honduras	19		−11	0	−6	−11
Tanzania	11	Cotton 10, Tea 2	−14	1	−7	−13
Haiti	6		−33	10	−1	−16
	Cotton					
Mali	46	Gold 21	−17	−11	−23	−28
Chad	42		−14	−6	−15	−20
Burkina Faso	39	Gold 7	−23	−4	−16	−25
Benin	38		−7	−7	−14	−16
Uzbekistan	38	Gold 19	4	−15	−20	−17
Togo	20	Coffee 4, Cocoa 3	−8	−2	−9	−14
Sudan	18		−42	9	−5	−23
Pakistan	16	Rice 5	−20	2	−6	−15
Central African Republic	12	Coffee 9	−8	−2	−7	−12
	Cocoa					
Saõ Tomé and Príncipe	44		−27	−14	−10	−28
Côte d'Ivoire	30	Coffee 8, Cotton 3	0	2	−11	−16
	Copper					
Zambia	56	Cobalt 15	−7	−20	−26	−25
Chile	28	Fishmeal 3	−8	−7	−11	−12
Peru	15	Fishmeal 11, Gold 7	−5	−3	−11	−11
	Gold					
Ghana	31	Cocoa 24	−12	−1	−14	−22
Guyana	16	Rice 12	−14	0	−7	−14
	Soybeans					
Brazil	9	Coffee 7, Sugar 3	−9	0	−7	−11
	Jute					
Bangladesh	8		−39	10	0	−17

[1]Export dependency refers to the exports of the specific commodity (averaged over 1995–97) as a percentage of total exports of goods and services (averaged over 1995–97).
[2]The change in the terms of trade is defined as the average price change of each of the commodities listed relative to the 1995–97 base period, weighted by that commodity's share of total exports of goods and services in the base period. Changes are shown as percent of total exports. Countries with terms of trade shocks of 10 percent or more are shown.
[3]Through June 2000.

and Chile) are classified as low-income countries by the World Bank, over half are in sub-Saharan Africa, and sixteen are Heavily Indebted Poor Countries. In addition, average output growth for this group declined in 1998–2000, compared with the base period, consistent with studies that find that heavy dependence on nonfuel com-

modity exports is negatively related to output growth.[39] The low incomes and poor performance of these commodity exporters underscore the importance of export diversification as a longer-term objective, provided diversification comes in areas of comparative advantage and is commercially viable.

[39]Chapter IV of the May 2000 *World Economic Outlook* reviews the developing country growth issues in detail. In particular, Table 4.7 examines the relationships between terms of trade and real growth.

In general, adjustment to a *permanent negative terms of trade shock* requires a reduction in domestic absorption, accompanied by a real exchange rate depreciation particularly when access to international capital markets is limited.[40] This tends to occur because a negative terms of trade shock lowers domestic income (and wealth, if the shock is perceived as permanent) and demand. The demand slowdown may reduce inflation and contribute to a real depreciation, which may be augmented by downward pressure on the nominal exchange rate associated with an initial deterioration in the current account.

In many cases, however, restrictive fiscal policies—and in some cases a flexible exchange rate—are needed to augment market forces and reduce demand. Uganda provides a good example of the needed adjustments. Coffee makes up more than 50 percent of exports in Uganda, which experienced a terms-of-trade loss equivalent to 3½ percent of domestic demand in 1998–99 (close to the group average). By cutting back on planned spending and keeping priority spending mostly on track, Uganda succeeded in offsetting lower government revenues (related in part to the decline in coffee prices and the regional drought). External balances were held in a sustainable range as a depreciation of the Ugandan shilling essentially offset the terms of trade deterioration. Uganda also benefits from debt relief under the Initiative for Heavily Indebted Poor Countries (HIPCs).[41]

Table 2.11 presents similar terms of trade calculations for the countries in which oil exports made up at least 20 percent of total exports in the base period (1995–97). The 22 countries represented include a mix of economies, the majority of which are low income. In the case of Oman, Libya, and Nigeria, where oil exports account for some 90 percent of net exports, the drop in oil prices in 1998 cut export receipts by up to 28 percent, or about 11 to 15 percent of domestic absorption.[42] When the prices rebounded in 1999–2000, fuel exporters more than recouped these losses, and by 2000 all of these countries were showing substantial terms of trade gains—25 percent and more in about one-half of the countries.

The positive terms-of-trade shock to the oil exporters in 1999–2000 has clearly been a benefit and brought relief after the 1998–99 price slump, especially to the lower-income countries. At the same time, the increase in oil prices presents challenges to policymakers who need to ensure that increasing oil revenues are not wasted. For example, Cameroon, where oil accounted for 30 percent of exports in the base period, has responded to the recent rise in oil prices at a time when coffee and cocoa prices remained weak by allowing government spending to increase slightly in the current fiscal year compared with the budget, while devoting the bulk of the unanticipated revenue increase to a reduction in bank borrowing.[43] This approach of partially "sterilizing" revenue surprises and limiting the pass-through to government spending may work well in other low-income countries facing similar demands on resources.

For the higher-income oil exporters, the key policy challenge associated with higher oil prices is both to maintain fiscal discipline and strengthen ongoing structural reforms. Among the members of the Gulf Cooperation Council (GCC), episodes of falling oil prices in the 1980s

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[40]Temporary terms of trade shocks can be met with a mix of reduced domestic absorption and borrowing, depending on a country's access to external capital markets. Because it is often difficult to distinguish between temporary and permanent shocks *ex ante,* it may be prudent to seek a reduction in absorption at the outset.

[41]See Chapter IV, "How Can the Poorest Countries Catch Up?" of the May 2000 *World Economic Outlook* for a review of progress in HIPCs.

[42]The table assumes unchanged volumes from the 1995–97 base period. Price changes are also measured relative to this base period. See footnote 3 in the table for more details.

[43]This is being accomplished through a framework that allows for price "surprises" to feed partially through to spending and partially to borrowing (or debt repayment) in a symmetric way as oil prices rise and fall. In the medium term, sustained higher oil prices would provide scope to meet pressing human development needs, provided expenditure management is improved.

Table 2.11. Fuel Exporters: Export Dependency and Terms of Trade

Country[3]	Export Dependency[1]		Change in Terms of Trade[2]		
	Oil (Net Exports)	Other Commodities	1998	1999	2000[4]
Nigeria	92		−28	−4	38
Libya	91		−28	−4	37
Oman	90		−28	−4	37
Angola	87		−27	−4	36
Yemen	87		−27	−4	36
Kuwait	85		−26	−4	35
Congo, Republic of	84		−26	−4	34
Saudi Arabia	83		−26	−4	34
Iran, Islamic Republic of	78		−24	−3	32
Gabon	73		−23	−3	30
Equatorial Guinea	72		−22	−3	30
Venezuela	70		−22	−3	29
Syrian Arab Republic	64	Cotton 4	−21	−4	25
Algeria	63	Natural gas 27	−24	−12	30
Qatar	63		−20	−3	26
United Arab Emirates	45	Natural gas 6	−15	−4	19
Brunei Darussalem	37	Natural gas 36	−18	−14	21
Cameroon	30	Coffee 9, Cocoa 9	−10	−6	4
Ecuador	28	Coffee 4, Cocoa 3	−9	−3	9
Bahrain	27		−9	−1	11
Norway	24	Natural gas 4	−8	−3	11
Russia	21	Natural gas 14, Nickel 2	−10	−6	11

[1]Export dependency refers to net oil exports (averaged over 1995–97) as a percentage of total exports of goods and services (averaged over 1995–97).

[2]The change in the terms of trade is the average of the price change of each commodity listed relative to the 1995–97 base period, weighted by that commodity's share of total exports of goods and services in the base period. Changes are shown as a percent of total exports for countries for which oil exports were at least 20 percent of total exports in the base period.

[3]Not including Iraq.

[4]Through June 2000.

through the mid-1990s were addressed by a mix of financing and fiscal adjustment measures—an approach made possible by large official assets and access to international capital markets. In the later part of the decade, many countries in the region undertook fiscal and structural reforms aimed at fostering longer-term sustainability through improved fiscal balances and more diversified economies. It is important that the pace of these reforms does not slow. Indeed, governments in the region could take the opportunity provided by buoyant revenues to speed up the reform process, including trade liberaliza-

tion, to enhance economic efficiency and bolster investor confidence.

Implications of Higher Oil Prices for the World Economy

As noted above, the *World Economic Outlook* projections of oil prices may be subject to potential upside risk. Indeed, by early September, spot oil prices (at about $33 a barrel) and oil price futures were substantially higher than when the oil price assumptions used in this *World Economic Outlook* were set.[44] This change

[44]Based on closing prices on September 8. Oil price assumptions for the *World Economic Outlook* projections were set in mid-July with average prices for 2000 and 2001 projected to be $26.53 and $23.00 a barrel, respectively. See "Oil Price Assumptions and the World Economic Outlook," Box 1.4 of the October 1999 *World Economic Outlook* for information on methodology used to set the oil price assumption.

Table 2.12. Preliminary Estimates of a First Round Effect of an Oil Price Increase on Oil Importing Developing Countries[1]

Decline in Current Account Balance as Percent of GDP	
0.5 to 1 percent	Greater than 1 percent
Benin	Armenia
Bulgaria	Belarus
Cambodia	Burundi
Chile	Gambia
Croatia	Ghana
Czech Republic	Jamaica
Dominican Republic	Jordan
Ethiopia	Kyrgyz Republic
Georgia	Lao, P.D.R.
Guinea-Bissau	Lithuania
Honduras	Macedonia, FYR
Hungary	Mali
India	Mauritania
Kenya	Moldova
Madagascar	Mongolia
Mauritius	Nepal
Morocco	Slovak Republic
Namibia	Swaziland
Nicaragua	Tajikistan
Pakistan	Ukraine
Philippines	
Rwanda	
Senegal	
Sierra Leone	
Slovenia	
Sri Lanka	
Thailand	
Togo	
Turkey	
Uganda	
Zimbabwe	

[1]Computations are based on an increase of $5 a barrel above the WEO baseline of $26.53 a barrel in 2000. Only countries with population greater than one million are included. These estimates are preliminary and because of data limitations there may be some additional countries where prospective first round effects of a $5 a barrel increase will also have substantial effects on current account balances. In addition, the impact of the oil price increase may be larger because prices of substitutes will also be affected.

Table 2.13. Macroeconomic Impact of a Ten Percent Increase in Oil Prices[1]
(Percentage points)

	Real GDP	Consumer Price Inflation
Major industrial countries		
United States	−0.1	0.2
Japan	−0.1	0.1
Euro area	−0.1	0.2
United Kingdom	—	0.1
Canada	−0.1	0.2
Developing countries[2]		
Africa	—	0.3
Asia	−0.2	0.4
Western Hemisphere	—	0.3

Sources: Major industrial countries: IMF's MULTIMOD simulation; developing country regions: IMF staff estimates.
[1]Deviation from baseline.
[2]Weighted average of the larger economies in each region.

assuming no change in oil trade volumes), aggregate net oil imports by advanced economies would increase by about $40 billion annually; trade balances among the oil-exporting countries would rise by a corresponding amount, with the bulk of the increase accruing to the Middle East region.[45] In aggregate, the change in the trade balance in dollar terms for other developing country regions would be relatively small. However, a number of developing countries will be seriously affected as trade balances would deteriorate by more than ½ percent of GDP, leading to a sharp contraction in domestic absorption, particularly for countries with large current account deficits or with limited access to external financing. As shown in Table 2.12, these include a number of emerging market countries, as well as many transition and low-income economies (especially in Africa).

Higher oil prices would also have a direct impact on global activity and inflation. In particular, higher oil prices would put upward pressure on prices. This could cause central banks—particularly in the cyclically advanced countries—to raise interest rates, which—along with the direct impact of the terms of trade shock—would lower

in prices, if sustained, would suggest an upward revision to the oil price baseline of about $2.50 a barrel (or almost 10 percent) in 2000 and almost $5 a barrel (or about 21 percent) for 2001 and beyond.

Higher oil prices affect the world economy through several channels, with the most immediate impact felt through trade balances. Given a sustained $5 a barrel increase in oil prices (and

[45]These calculations do not take account of the potential impact of higher oil prices on other energy substitutes (such as gas).

GDP growth. This, in turn, would add to the direct impact of higher oil prices on activity in developing countries.[46] Based on the ready reckoners displayed in Table 2.13, derived using the Fund's MULTIMOD economic model, a sustained $5 a barrel increase in world oil prices (almost 20 percent higher than prices in the first half of 2000) would result in a reduction in output of about 0.2 percentage points in the major industrial countries after one year, while—notwithstanding higher interest rates—consumer price inflation would rise by 0.2 to 0.4 percent-

age points (less than in previous episodes since the ratio of oil consumption to GDP has significantly fallen over time).[47] Among the developing country regions, output in Asia—which is relatively dependent on imported oil—would decline by 0.4 percentage points, while there would be little net output impact in Africa and the Western Hemisphere regions because both include a mix of oil importers and producers. However, as discussed above, the impact on some individual countries could be significantly more serious.

[46]Since the oil exporting countries have a lower propensity to consume than do the oil importing countries, higher oil prices also tend to raise global savings and to reduce global growth and trade volumes.

[47]A "ready reckoner" provides a rough idea of the relationship between two variables, in this case relating a percentage change in oil prices to changes in output growth and inflation rates. See "Oil Price Assumptions and the World Economic Outlook," Box 1.4 of the October 1999 *World Economic Outlook,* for a more complete analysis, including the macroeconomic implications for developing countries.