5 | STATES AND MARKETS

The state in the twenty-first century plays many roles. It ensures law and order. It delivers essential services, such as education and health. It creates the preconditions for markets to function effectively by maintaining macroeconomic stability, establishing sound regulations, providing basic infrastructure, and protecting individuals and investors from arbitrary state actions. And it balances diverse interests to solve common problems.

Successful development requires that states complement markets, not substitute for them. States that foster a good investment climate—an environment that provides opportunities and incentives for firms, from microenterprises to multinationals, to invest productively, create jobs, and expand—are managing better in the global economy. Government institutions can support the development of markets in many ways—by providing information, encouraging competition, and enforcing contracts. By leveling the playing field, governments create opportunities for poor people to participate in markets and improve their standards of living, giving them hope for a better future for their children.

How do governments get the balance right between society's interests and firms' incentives to invest? First, they restrain corruption by public officials, firms, and other interest groups. Second, they establish credibility by maintaining economic and political stability and preventing arbitrary behavior by the key agencies of the state. Third, they foster public trust and legitimacy through open and participatory policymaking, transparency, and equity. Fourth, they establish policies that reflect current conditions and continue to adapt to changing economic and business conditions.

This section covers a broad range of indicators showing how effective and accountable government and an energetic private initiative create a sound investment climate. Its 12 tables cover three cross-cutting development themes: private sector development (including improving the investment climate), public sector policies, and infrastructure, information, and telecommunications.

Creating the conditions for private sector development and improving the investment and business climates

A good investment climate plays a central role in growth and poverty reduction by ensuring that contracts are enforced, markets function, basic infrastructure is provided, and people (especially poor people) are empowered to participate and manage better in the global economy. Although every country confronts different constraints, the main elements to get right are security and stability, regulation and taxation, finance, infrastructure, and labor markets. Governments that focus on creating a good climate for finance and infrastructure through sound regulation and private participation help to improve productivity and growth. Governments can also foster a better workforce by making education more inclusive, increasing equity in the workforce, and helping workers cope with labor mobility.

During the past few years the World Bank, in partnership with local chambers of commerce or business associations, government statistics agencies, and a government partner, pioneered new measures of the investment climate derived from surveys of firms. The core survey has two parts. The main part deals with characteristics of the business and investment climate and is administered to the firm's management or owners. It seeks business owners' opinions on the business environment and their motivations for business decisions. The second part focuses on productivity measures, collecting information on the availability of physical infrastructure, the structure and functioning of factor and product markets, interbusiness relations and networking, industrial regulation, law and order, tax and customs administration, and other aspects of governance (table 5.2). The investment climate surveys measure specific constraints facing firms and relate them to measures of firm performance, growth, and investment. Some of the challenges of this new data initiative for measuring the investment climate are presented in box 5b.

What are some of the major findings from these surveys? Although each country confronts different constraints, investment climate surveys show that firms in developing countries rate policy uncertainty as their major concern. Other important concerns are macroeconomic stability, tax rates and regulation, and tax administration.

The annual Doing Business reports, produced by the World Bank–sponsored Doing Business Project, also shed light on the investment climate. These reports investigate the scope and manner of regulations that enhance business activity and those that constrain it. Quantitative indicators cover obstacles faced by an entrepreneur performing standardized tasks such as starting a business, hiring and firing workers, obtaining business licenses, getting credit, registering property, protecting investors, enforcing contracts, and closing down a business (table 5.3).

5a

Policy uncertainty dominates the investment climate concerns of firms

Constraints in the investment climate, based on rankings by country, 2002–04
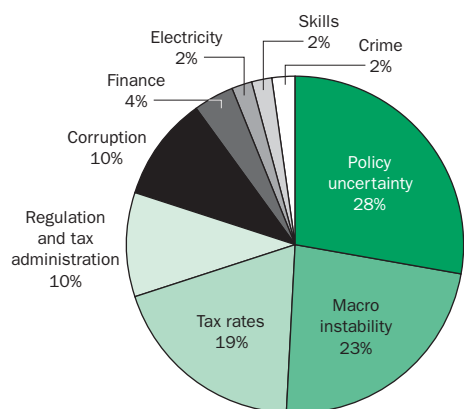
Source: World Bank 2005b.

The main findings in Doing Business in 2005, the second in a series, are:
- Businesses face much larger regulatory burdens in poor countries than in rich countries. They face three times the administrative costs and nearly twice as many bureaucratic procedures and delays, and they have fewer than half the protections of property rights of rich countries.
- Heavy regulation and weak property rights exclude the poor from doing business. In poor countries 40 percent of the economy is informal. Women, young, and low-skilled workers are hurt the most.
- The payoffs from reform appear large. A hypothetical improvement on all aspects of the Doing Business Indicators to reach the level of the top quartile of countries is associated with an estimated 1.4–2.2 percentage points more in annual economic growth.

Public sector policies and institutions can improve service delivery—and private sector business activities

Improving people's standard of living by ensuring access to essential services such as health, education, safety, water, sanitation, and electricity is widely viewed as government's responsibility. An efficient and accountable public sector has institutions that are responsive to citizens, provide information, deliver services efficiently and equitably, and help to enforce people's rights. Making services work better, especially for poor people who often do not get their fair share of public spending on services, is a challenge that can be met by governments, citizens, and private service providers working together.

Good governance—sound management of a country's economic and social resources, and strong institutions that support, regulate, and stabilize markets and ensure fair treatment of all citizens—strengthens the investment climate. Government functions and policies affect many areas of social and economic life: health and education, natural resources and environmental protection, fiscal and monetary stability, and flows of trade. Data related to these topics are presented in the respective sections. This section provides data on key public sector activities: tax policies, exchange rates, and defense expenditures (tables 5.6–5.8).

Taxes are the main source of revenue for most governments. They are levied mainly on income, profits, capital gains, goods and services, and exports and imports. (Grants and other revenue are also important in some economies; see table 4.13.) A comparison of tax levels across countries provides an overview of the fiscal obligations and incentives facing the private sector. Central government tax revenues range from 2–3 percent of GDP in Myanmar to almost 30 percent in Israel and the United Kingdom (table 5.6).

The level and progressivity of taxes on personal and corporate income influence incentives to work and invest. Marginal tax rates on individual income range from 0 percent to 50 percent or more. Most marginal tax rates on corporate income are in the 20–30 percent range (table 5.6).

Infrastructure is central to growth, poverty reduction, and achievement of the Millennium Development Goals Improved infrastructure such as roads, rails, power, telecommunications, water supply, and sanitation systems are important elements in the investment climate and are crucial for economic growth, competitiveness, poverty reduction, and achievement of the Millennium Development Goals (tables 1.2–1.4 and World view). New ways of providing infrastructure are expanding services to poor people. For example, private firms participating in infrastructure contribute capital and know-how and improve access to basic infrastructure services. In developing countries private firms invest mainly in the communications and energy sectors. Although investment in projects with private participation plays a role in delivering improved access and quality of infrastructure services, public investment (with accompanying policy reform) will likely be the main driver of increased service delivery going forward (table 5.1).

Quality infrastructure services such as safe water and sanitation systems are essential for sustaining life and maintaining health (tables 2.15 and 3.5). A good transportation network and reliable power are needed for businesses to operate efficiently and remain globally competitive. And good transportation and schooling advance gender equality and the empowerment of women (tables 1.5, 3.7, 3.8, and 5.9). But many people in developing countries, especially in rural areas, lack access to good quality services at affordable prices.

New information and communications technologies are helping people everywhere improve their quality of life by creating, using, and sharing information and knowledge (tables 5.10 and 5.11).

Assessing the impact of reforms in infrastructure sectors requires better data, including data reflecting the impact on people's lives. Because there are no international agencies that specialize in infrastructure, definitions, methods, and data collection efforts for infrastructure have been fragmented. World Bank staff are compiling an infrastructure database from several sources and covering several policy dimensions: access, affordability, quality, efficiency, and fiscal sustainability. This effort complements the World Bank's drive toward managing for results and recognition of the need for good quality statistical data and for continuing support for statistical capacity building. The World Bank's Results Measurement System for assessing development progress in member countries of the International Development Association includes infrastructure indicators such as the share of population with sustainable access to an improved water source, fixed lines and mobile telephones per 1,000 inhabitants, access of rural population to an all-season road, and the household electrification rate.

5b

Challenges in measuring the investment climate

The main challenges in developing investment climate data include:

- Multidimensional nature of the concept being measured. Reducing details to those that contribute to a single measure may miss important insights and hide the degree of variation within a country.
- Some dimensions are inherently difficult to measure. Certain investment climate constraints are relatively easy to identify and measure, such as the reliability of the power supply or the time to register a business. But others are sensitive issues, such as corruption, and can lead to underreporting. Other dimensions that are difficult to quantify are competitive pressures and policy-related risks.
- Differences in perspective across firms and activities. The same dimension of the investment climate can affect firms or activities in different ways. Deficiencies in port and customs infrastructure can be a major impediment to firms engaged in exporting but have only limited effects on other firms. Some firms may benefit from government-mandated monopolies, while other firms lose by being denied the opportunity to compete or by paying higher prices for products from the protected industry. Taxes levied to improve public services or to meet other social goals and regulations to safeguard the environment or consumers can affect the ability of some firms to compete fairly. Thus both objective and perception-based opinions from firms can vary by type of respondent, but taken together both types of measures help to capture the range of perspectives and evaluations of constraints.
- Differences across locations within countries. Investment climate conditions may vary considerably in different locations. This is most obviously

the case in large countries with federal structures, where subnational governments may differ in their policies and behavior. But it also true with more centralized governments, where there are often important differences within the country in matters like infrastructure provision and enforcement of national laws and regulations.

- Experience on the ground does not always reflect formal policies. In some countries the gap between the formal statement of policy and its implementation is substantial. Variations in the degree of discretion officials have, the resources made available, and the political will to enforce regulations can have a big impact. The distinction can be important in determining the priorities and expected benefits of reform initiatives.

In grappling with these issues, objective and perception-based data can each make a contribution. Objective measures have advantages of allowing more precise and consistent benchmarking of conditions. But for some factors subjective indicators may be the only effective way to gauge differences across locations or types of firms. Because investment decisions ultimately depend on subjective judgments, measures that reflect firm perceptions add additional insight.

Additional information on the investment climate is available in World Bank (2005a) and World Bank (2005b). Their datasets are available at http://econ.worldbank.org/wdr/wdr2005, http://Iresearch.worldbank. org/ics, and http://rru.worldbank.org/DoingBusiness.

Source: World Bank 2005b.

	Domestic credit to private sector		Foreign direct investment		Investment in infrastructure projects with private participation[a]							
									$ millions			
	% of GDP		% of GDP		Telecommunications		Energy		Transport		Water and sanitation	
	1990	2003	1990	2003	1990–95	1996–2003	1990–95	1996–2003	1990–95	1996–2003	1990–95	1996–2003
Afghanistan	..	..	..	0.0	..	70.0	..	..	..	..	..	..
Albania	..	7.8	0.0	2.9	..	283.2	..	8.0	..	..	..	..
Algeria	44.4	11.4	0.0	1.0	..	1,164.5	2,300.0	..	..	..	..	..
Angola	..	5.5	-3.3	10.7	..	75.3	..	..	..	..	..	..
Argentina	15.6	10.8	1.3	0.8	11,907.0	12,228.4	12,057.1	13,930.4	6,112.0	8,385.5	5,166.0	3,071.5
Armenia	40.4	6.0	0.0	4.3	..	468.4	..	37.0	..	50.0	..	..
Australia	61.6	99.0	2.6	1.3	..	..	..	..	..	..	..	..
Austria	91.6	105.2	0.4	2.9	..	..	..	..	..	..	..	..
Azerbaijan	10.8	6.7	0.0	46.0	14.0	245.6	..	375.2	..	..	..	..
Bangladesh	16.7	28.8	0.0	0.2	146.0	1,049.4	..	1,056.4	..	..	..	..
Belarus	..	12.0	0.0	1.0	10.0	416.3	..	500.0	..	..	..	..
Belgium	37.0	76.2	4.1	32.4	..	..	..	..	..	..	..	..
Benin	20.3	14.5	3.4	1.5	..	90.4	..	..	..	..	..	..
Bolivia	24.0	49.0	0.6	2.1	38.0	808.9	252.4	2,718.2	..	185.3	..	682.0
Bosnia and Herzegovina	..	42.0	..	5.5	..	..	..	..	..	..	..	..
Botswana	9.4	18.3	2.5	1.1	..	80.0	..	..	..	..	..	..
Brazil	38.9	34.6	0.2	2.1	..	76,339.0	613.6	56,058.4	1,317.4	19,251.2	156.3	3,362.2
Bulgaria	82.8	27.6	0.0	7.1	64.0	949.6	..	697.6	..	..	..	152.0
Burkina Faso	16.8	14.0	0.0	0.3	..	36.6	..	5.6	..	..	..	..
Burundi	13.7	28.1	0.1	0.0	0.5	15.6	..	..	..	..	..	..
Cambodia	..	7.9	0.0	2.1	31.6	155.7	..	123.2	120.0	72.2	..	..
Cameroon	26.7	10.2	-1.0	1.7	..	266.1	..	91.9	30.8	95.0	..	..
Canada	75.9	81.3	1.3	0.7	..	..	..	..	..	..	..	..
Central African Republic	7.2	5.9	0.0	0.3	1.1	..	..	..	..	..	0.7	..
Chad	7.3	4.4	0.5	32.1	..	13.0	..	..	..	..	..	..
Chile	47.2	63.3	2.2	4.1	148.9	1,631.8	2,260.0	6,687.3	539.9	6,727.6	67.5	3,940.1
China	87.7	147.2	1.0	3.8	..	13,325.0	6,113.5	16,202.6	6,219.8	16,768.8	104.0	2,436.4
Hong Kong, China	163.7	150.6	..	8.6	..	..	..	..	..	..	..	..
Colombia	30.8	23.4	1.2	2.2	1,551.2	1,704.9	1,813.2	5,762.2	1,008.8	1,608.2	..	330.0
Congo, Dem. Rep.	1.8	0.9	-0.2	2.8	..	369.7	..	..	..	..	..	..
Congo, Rep.	15.7	3.6	0.8	5.6	4.6	111.9	..	325.0	..	..	..	..
Costa Rica	15.8	31.3	2.8	3.3	..	..	76.3	243.1	..	161.0	..	..
Côte d'Ivoire	36.5	13.6	0.4	1.3	..	827.4	147.2	223.0	..	178.0	..	..
Croatia	..	54.3	0.0	6.9	..	1,761.5	..	375.6	..	672.2	..	298.7
Cuba	..	..	..	..	371.0	60.0	..	165.0	..	..	..	600.0
Czech Republic	..	32.4	0.0	2.8	876.0	9,605.1	356.0	4,809.4	263.7	126.7	36.5	314.6
Denmark	52.2	152.1	0.8	0.6	..	..	..	..	..	..	..	..
Dominican Republic	27.5	41.1	1.9	1.9	10.0	433.2	372.5	1,936.3	..	833.9	..	..
Ecuador	13.6	19.9	1.2	5.7	51.2	728.8	..	310.0	12.5	886.8	..	550.0
Egypt, Arab Rep.	30.6	61.5	1.7	0.3	..	3,247.4	..	1,378.0	..	1,057.2	6.0	..
El Salvador	17.2	41.2	0.0	0.6	..	910.7	106.0	879.2	..	..	..	..
Eritrea	..	33.9	0.0	2.9	..	40.0	..	..	..	..	..	..
Estonia	20.2	33.2	0.0	9.8	211.7	733.5	..	26.5	..	299.4	..	81.0
Ethiopia	19.5	26.1	0.1	0.9	..	..	..	..	..	..	..	..
Finland	86.6	64.2	0.6	2.1	..	..	..	..	..	..	..	..
France	96.1	90.2	1.1	2.7	..	..	..	..	..	..	..	..
Gabon	13.0	10.8	1.2	0.9	..	35.0	..	624.8	..	46.7	..	..
Gambia, The	11.0	16.7	0.0	15.2	..	6.6	..	..	..	..	..	..
Georgia	..	8.7	0.0	8.5	21.6	134.3	..	172.0	..	..	..	..
Germany	90.6	117.3	0.2	0.5	..	..	..	..	..	..	..	..
Ghana	4.9	11.8	0.3	1.8	25.0	460.4	..	383.8	..	10.0	..	..
Greece	36.3	72.5	1.2	0.4	..	..	..	..	..	..	..	..
Guatemala	14.2	19.1	0.6	0.5	20.0	1,673.3	134.8	1,298.4	..	33.8	..	..
Guinea	3.5	4.0	0.6	2.2	45.0	75.3	36.4	..	..	..	..	..
Guinea-Bissau	22.0	1.9	0.8	0.9	..	..	23.2	..	..	..	..	..
Haiti	12.6	17.9	0.0	0.3	..	19.5	4.7	..	..	..	..	..

	Domestic credit to private sector		Foreign direct investment		Investment in infrastructure projects with private participation[a]							
									$ millions			
					Telecommunications		Energy		Transport		Water and sanitation	
	% of GDP		% of GDP									
	1990	2003	1990	2003	1990–95	1996–2003	1990–95	1996–2003	1990–95	1996–2003	1990–95	1996–2003
Honduras	31.1	40.6	1.4	2.8	..	71.1	95.3	86.8	..	130.5	..	220.0
Hungary	46.6	43.0	0.9	3.0	3,510.9	8,513.4	2,156.7	1,916.0	1,004.0	135.0	10.9	167.6
India	25.2	32.0	0.1	0.7	779.5	16,996.9	2,974.7	9,713.5	126.9	2,300.0	..	216.0
Indonesia	46.9	24.2	1.0	-0.3	3,549.0	10,481.0	3,202.5	7,534.7	1,204.9	2,314.6	3.8	919.5
Iran, Islamic Rep.	32.5	35.3	-0.3	0.1	5.0	28.0	..	..	..	..	..	..
Iraq	..	..	0.0	..	..	..	..	..	..	..	..	..
Ireland	47.6	117.6	1.3	17.3	..	..	..	..	..	..	..	..
Israel	57.6	92.2	0.3	3.3	..	..	..	..	..	..	..	..
Italy	56.5	85.8	0.6	1.1	..	..	..	..	..	..	..	..
Jamaica	36.1	17.6	3.0	8.8	..	494.0	289.0	201.0	30.0	390.0	..	..
Japan	196.0	102.4	0.1	0.1	..	..	..	..	..	..	..	..
Jordan	72.3	71.7	0.9	3.8	43.0	967.9	..	..	..	182.0	..	169.0
Kazakhstan	..	22.9	0.0	7.0	30.0	2,027.0	..	2,125.0	..	..	..	40.0
Kenya	32.8	21.3	0.7	0.6	..	507.0	..	171.5	..	53.4	..	..
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	62.8	103.8	0.3	0.5	..	..	..	..	..	..	..	..
Kuwait	52.1	79.8	0.0	-0.2	..	..	..	..	..	..	..	..
Kyrgyz Republic	..	4.8	0.0	2.4	..	94.0	..	..	..	..	..	..
Lao PDR	1.0	6.5	0.7	0.9	..	185.5	..	535.5	..	100.0	..	..
Latvia	..	34.6	0.0	2.7	230.0	1,473.3	..	177.1	..	75.0	..	..
Lebanon	79.4	83.1	0.2	1.9	100.0	573.8	..	..	..	150.0	..	..
Lesotho	15.8	5.9	2.8	3.7	..	33.5	..	..	..	..	..	..
Liberia	30.9	4.0	0.0	0.0	..	..	..	..	..	..	..	..
Libya	31.0	18.0	0.5	-0.4	..	..	..	..	..	..	..	..
Lithuania	..	20.6	0.0	1.0	74.2	1,584.0	..	284.5	..	..	..	..
Macedonia, FYR	..	19.6	0.0	2.0	..	670.2	..	..	..	..	..	..
Madagascar	16.9	8.8	0.7	0.2	5.0	10.1	..	..	..	20.3	..	..
Malawi	10.9	7.7	1.2	1.3	8.0	25.5	..	..	..	6.0	..	..
Malaysia	108.5	141.3	5.3	2.4	2,630.0	3,590.8	6,909.5	4,210.0	4,657.6	9,605.1	3,986.7	1,105.5
Mali	12.8	19.2	0.2	3.0	..	42.7	0.1	747.0	..	..	..	..
Mauritania	43.5	31.7	0.7	19.6	..	99.6	..	..	..	..	..	..
Mauritius	35.6	59.3	1.7	1.2	..	365.6	..	109.3	..	42.6	..	..
Mexico	17.5	18.5	1.0	1.7	18,031.0	19,974.0	1.0	7,659.1	7,910.3	5,534.2	312.1	331.5
Moldova	5.9	20.6	0.0	3.0	..	84.6	..	85.3	..	..	..	..
Mongolia	19.0	30.3	..	10.3	13.1	20.4	..	..	..	..	..	..
Morocco	34.0	56.0	0.6	5.2	..	3,643.0	2,300.0	5,868.9	..	..	..	1,000.0
Mozambique	17.6	2.2	0.4	7.8	..	44.0	..	1,200.0	..	959.7	..	0.6
Myanmar	4.7	12.1	..	..	4.0	..	394.0	..	..	50.0	..	..
Namibia	22.6	52.8	1.3	3.1	18.0	4.0	..	5.0	..	450.0	..	..
Nepal	12.8	..	0.0	0.3	..	45.6	131.4	137.2	..	..	..	..
Netherlands	79.9	154.0	3.6	3.1	..	..	..	..	..	..	..	..
New Zealand	76.0	118.6	4.0	3.1	..	..	..	..	..	..	..	..
Nicaragua	112.6	26.4	0.0	4.9	9.9	162.2	..	347.4	..	104.0	..	..
Niger	12.3	5.2	1.6	1.1	..	52.7	..	..	..	..	..	4.9
Nigeria	9.4	15.7	2.1	2.1	..	2,797.7	..	259.0	..	22.8	..	..
Norway	81.7	89.6	0.9	0.9	..	..	..	..	..	..	..	..
Oman	22.9	38.6	1.4	0.1	..	..	204.5	1,001.3	..	551.3	..	..
Pakistan	27.7	25.7	0.6	0.6	602.0	500.0	3,417.3	2,519.7	299.6	148.7	..	..
Panama	46.7	92.1	2.6	6.1	..	1,429.2	..	1,064.9	409.9	806.0	..	25.0
Papua New Guinea	28.6	12.1	4.8	3.2	..	..	..	65.0	..	..	..	175.0
Paraguay	15.8	15.5	1.5	1.5	48.1	204.4	..	..	..	58.0	..	..
Peru	11.8	20.8	0.2	2.3	2,568.7	5,511.4	1,207.8	4,085.7	6.6	325.8	..	56.0
Philippines	22.3	34.6	1.2	0.4	1,279.0	7,232.1	6,820.9	7,393.1	300.0	2,124.5	..	5,867.7
Poland	21.1	29.0	0.2	2.0	479.0	13,788.2	145.0	2,760.6	3.1	826.9	..	22.1
Portugal	49.1	148.1	3.7	0.7	..	..	..	..	..	..	..	..
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..

	Domestic credit to private sector		Foreign direct investment		Investment in infrastructure projects with private participation[a]							
								$ millions				
	% of GDP		% of GDP		Telecommunications		Energy		Transport		Water and sanitation	
	1990	2003	1990	2003	1990–95	1996–2003	1990–95	1996–2003	1990–95	1996–2003	1990–95	1996–2003
Romania	..	9.5	0.0	3.2	5.0	4,058.7	..	100.0	..	23.4	..	1,134.0
Russian Federation	..	20.9	0.0	1.8	861.1	9,884.2	1,100.0	2,295.3	..	515.4	..	128.0
Rwanda	6.9	11.0	0.3	0.3	..	15.6	..	..	..	..	..	..
Saudi Arabia	54.7	55.4	1.6	0.0	..	4,080.0	..	..	..	245.0	..	52.0
Senegal	26.5	20.8	1.0	1.2	..	606.0	..	124.0	..	..	..	6.3
Serbia and Montenegro	..	..	..	6.6	..	2,120.6	..	..	..	..	..	..
Sierra Leone	3.2	5.0	5.0	0.4	..	23.5	..	..	..	..	..	..
Singapore	96.8	116.2	15.1	12.5	..	..	..	..	..	..	..	..
Slovak Republic	..	32.6	0.0	1.8	118.6	2,394.4	..	3,323.6	..	..	..	..
Slovenia	34.9	41.5	0.9	1.2	..	..	..	..	..	..	..	..
Somalia	..	..	0.6	..	..	2.0	..	..	..	..	..	..
South Africa	81.0	142.1	-0.1	0.5	1,072.8	11,535.6	3.0	1,244.3	..	1,891.1	..	212.5
Spain	80.2	119.3	2.7	3.0	..	..	..	..	..	..	..	..
Sri Lanka	19.6	29.9	0.5	1.3	43.6	1,139.6	21.7	286.6	..	240.0	..	..
Sudan	4.8	6.0	0.0	7.6	..	6.0	..	..	..	..	..	..
Swaziland	21.3	16.9	3.5	2.4	..	33.6	..	..	..	..	..	..
Sweden	127.4	104.1	0.8	1.1	..	..	..	..	..	..	..	..
Switzerland	162.6	159.4	2.4	5.5	..	..	..	..	..	..	..	..
Syrian Arab Republic	7.5	10.1	0.6	0.7	..	130.0	..	..	..	..	..	..
Tajikistan	..	14.0	0.0	2.0	..	1.0	..	..	..	..	..	..
Tanzania	13.9	7.6	0.0	2.4	30.1	383.0	6.0	490.0	..	23.0	..	4.8
Thailand	83.4	102.9	2.9	1.4	4,814.0	5,086.2	2,059.6	8,214.0	2,395.9	591.4	153.0	347.5
Togo	22.6	16.3	1.1	1.1	..	5.0	..	..	..	..	..	..
Trinidad and Tobago	44.7	39.0	2.2	5.9	47.0	146.7	..	207.0	..	..	..	120.0
Tunisia	66.2	66.6	0.6	2.2	..	277.0	627.0	265.0	..	..	..	..
Turkey	16.7	16.3	0.5	0.6	190.3	8,216.2	2,478.0	5,167.2	..	724.8	..	942.0
Turkmenistan	..	1.9	0.0	1.6	..	..	..	..	..	..	..	..
Uganda	4.0	6.9	0.0	3.1	8.8	288.1	..	11.3	..	..	..	..
Ukraine	2.6	24.6	0.0	2.9	110.6	2,094.1	..	160.0	..	..	..	..
United Arab Emirates	37.4	55.9	..	..	..	..	..	..	..	..	..	..
United Kingdom	115.8	148.4	3.4	1.2	..	..	..	..	..	..	..	..
United States	148.4	238.7	0.8	0.4	..	..	..	..	..	..	..	..
Uruguay	32.4	44.6	0.0	2.5	19.0	61.4	86.0	330.0	96.0	280.2	10.0	351.0
Uzbekistan	..	..	0.0	0.7	2.5	370.5	..	..	..	..	..	..
Venezuela, RB	25.4	8.6	0.9	3.0	4,603.3	6,709.3	..	133.0	100.0	268.0	..	44.0
Vietnam	2.5	49.0	2.8	3.7	128.0	295.0	..	2,627.5	10.0	115.0	..	212.8
West Bank and Gaza	..	..	..	..	65.0	410.6	..	150.0	..	..	..	9.5
Yemen, Rep.	6.1	6.9	-2.7	-0.8	25.0	340.0	..	..	..	190.0	..	..
Zambia	8.9	6.7	6.2	2.3	..	56.9	..	289.4	..	..	..	..
Zimbabwe	23.0	37.0	-0.1	0.1	..	54.0	..	603.0	18.0	85.0	..	..
World	**112.9 w**	**139.1 w**	**0.9 w**	**1.5 w**	**.. s**	**.. s**	**.. s**	**.. s**	**.. s**	**.. s**	**.. s**	**.. s**
Low income	22.3	27.0	0.3	1.5	1,869.7	27,841.5	7,135.0	22,146.1	605.3	4,555.1	0.7	620.4
Middle income	43.0	64.2	0.7	2.4	59,958.9	270,230.7	56,297.4	183,850.8	33,592.4	85,662.7	10,012.8	29,153.0
Lower middle income	50.1	76.6	0.4	2.4	16,965.3	179,446.3	31,910.8	133,926.0	12,495.9	50,686.7	423.1	19,158.3
Upper middle income	27.4	36.6	1.2	2.3	42,993.6	90,784.4	24,386.6	49,924.8	21,096.5	34,976.0	9,589.7	9,994.7
Low & middle income	39.3	58.6	0.6	2.3	61,828.6	298,072.2	63,432.4	205,996.9	34,197.7	90,217.8	10,013.5	29,773.4
East Asia & Pacific	74.0	123.6	1.6	3.0	12,481.7	40,521.3	25,500.0	46,905.6	14,908.2	31,741.6	4,247.5	11,064.4
Europe & Central Asia	..	24.2	0.1	2.5	6,809.5	71,971.9	6,235.7	25,395.9	1,270.8	3,448.8	47.4	3,280.0
Latin America & Carib.	28.4	25.7	0.8	2.1	39,489.4	131,395.3	19,504.2	104,204.7	17,543.4	46,007.6	5,711.9	13,753.4
Middle East & N. Africa	39.5	46.4	0.6	0.9	238.0	14,862.2	5,431.5	8,663.2	..	2,425.5	6.0	1,230.5
South Asia	24.6	31.0	0.1	0.7	1,571.1	19,801.5	6,545.1	13,713.4	426.5	2,688.7	..	216.0
Sub-Saharan Africa	42.4	63.7	0.3	2.5	1,238.9	19,520.0	215.9	7,114.1	48.8	3,905.6	0.7	229.1
High income	125.8	158.3	1.0	1.4	..	..	..	..	..	..	..	..
Europe EMU	79.8	105.0	1.1	3.1	..	..	..	..	..	..	..	..

a. Data refer to total for the period shown.

About the data

Private sector development and investment—that is, tapping private sector initiative and investment for socially useful purposes—are critical for poverty reduction. In parallel with public sector efforts, private investment, especially in competitive markets, has tremendous potential to contribute to growth. Private markets serve as the engine of productivity growth, creating productive jobs and higher incomes. And with government playing a complementary role of regulation, funding, and provision of services, private initiative and investment can help provide the basic services and conditions that empower the poor—by improving health, education, and infrastructure.

Credit is an important link in the money transmission process; it finances production, consumption, and capital formation, which in turn affect the level of economic activity. The data on domestic credit to the private sector are taken from the banking survey of the International Monetary Fund's (IMF) International Financial Statistics or, when data are unavailable, from its monetary survey. The monetary survey includes monetary authorities (the central bank), deposit money banks, and other banking institutions, such as finance companies, development banks, and savings and loan institutions. In some cases credit to the private sector may include credit to state-owned or partially state-owned enterprises.

The statistics on foreign direct investment are based on balance of payments data reported by the IMF, supplemented by data on net foreign direct investment reported by the Organisation for Economic Co-operation and Development and official national sources. (For a detailed discussion of data on foreign direct investment, see About the data for table 6.7).

Private participation in infrastructure has made important contributions to easing fiscal constraints, improving the efficiency of infrastructure services, and extending their delivery to poor people. The privatization trend in infrastructure that began in the 1970s and 1980s took off in the 1990s, peaking in 1997. Developing countries have been at the head of this wave, pioneering better approaches to providing infrastructure services and reaping the benefits of greater competition and customer focus. In 1990–2003 more than 130 developing countries introduced private participation in at least one infrastructure sector, awarding more than 2,500 projects attracting investment commitments of $890 billion. In 2003 more than 100 new infrastructure projects with private participation, valued at about $50 billion, were implemented.

The data on investment in infrastructure projects with private participation refer to all investment (public and private) in projects in which a private company assumes operating risk during the operating period or assumes development and operating risk during the contract period. Foreign state-owned companies are considered private entities for the purposes of this measure. The data are from the World Bank's Private Participation in Infrastructure (PPI) Project Database, which tracks more than 2,500 projects, newly owned or managed by private companies, that reached financial closure in low- and middle-income economies in 1990–2003. For more information, see http://ppi.worldbank.org/.

Definitions

• **Domestic credit to private sector** refers to financial resources provided to the private sector—such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable—that establish a claim for repayment. For some countries these claims include credit to public enterprises. • **Foreign direct investment** is net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. • **Investment in infrastructure projects with private participation** covers infrastructure projects in telecommunications, energy (electricity and natural gas transmission and distribution), transport, and water and sanitation that have reached financial closure and directly or indirectly serve the public. Incinerators, movable assets, stand-alone solid waste projects, and small projects such as windmills are excluded. The types of projects included are operation and management contracts, operation and management contracts with major capital expenditure, greenfield projects (in which a private entity or a public-private joint venture builds and operates a new facility), and divestiture.

5.1a

Latin America and the Caribbean still has the highest investment levels, but activity has declined for the fifth consecutive year

Investment in infrastructure projects with private participation in developing countries, 1990–2003 (2003 US$ billions)
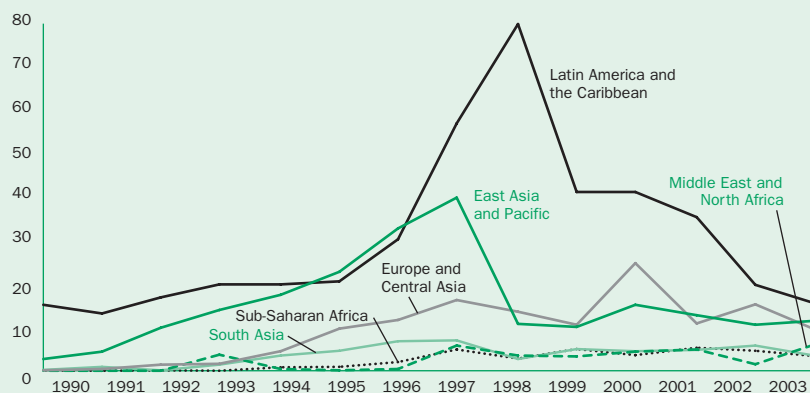
Source: World Bank, Private Participation in Infrastructure Project Database.

Data sources

The data on domestic credit are from the IMF's International Financial Statistics. The data on foreign direct investment are based on estimates compiled by the IMF in its Balance of Payments Statistics Yearbook, supplemented by World Bank staff estimates. The data on investment in infrastructure projects with private participation are from the World Bank's Private Participation in Infrastructure (PPI) Project Database (http://ppi.worldbank.org).

	Survey year	Policy uncertainty Major constraint %	Corruption Major constraint %	Courts Major constraint %	Courts Lack confidence courts uphold property rights %	Crime Major constraint %	Regulation and tax administration Tax rates as a major constraint %	Time dealing with officials % of management time	Average time to clear customs days	Finance Major constraint %	Electricity Major constraint %	Labor Major constraint % Skills	Labor Major constraint % Regulation
Afghanistan		..	..	..	..	..	..	..	..	..	..	..	..
Albania	2002	48.5	47.5	32.9	50.6	21.2	37.1	13.6	2.4	20.1	57.1	13.2	7.3
Algeria	2003	..	35.2	..	27.3	..	44.8	..	21.6	51.3	11.5	25.5	12.9
Angola		..	..	..	..	..	..	..	..	..	..	..	..
Argentina		..	..	..	..	..	..	..	..	..	..	..	..
Armenia	2002	32.0	13.5	8.2	44.1	3.6	35.5	7.4	3.7	25.9	15.8	6.0	1.8
Australia		..	..	..	..	..	..	..	..	..	..	..	..
Austria		..	..	..	..	..	..	..	..	..	..	..	..
Azerbaijan	2002	6.7	19.5	4.4	31.0	2.6	18.8	7.3	2.6	12.3	20.2	4.5	1.3
Bangladesh	2002	45.4	57.9	..	83.0	39.4	35.8	4.6	11.5	45.7	73.2	19.8	10.8
Belarus	2002	59.0	17.9	11.2	48.1	12.3	47.0	11.0	2.4	30.1	2.8	8.4	9.3
Belgium		..	..	..	..	..	..	..	..	..	..	..	..
Benin		..	..	..	..	..	..	..	..	..	..	..	..
Bolivia	2001	..	..	..	..	..	..	..	9.3	..	..	..	..
Bosnia and Herzegovina	2002	40.5	34.8	22.6	38.0	18.7	26.9	11.8	3.6	27.9	5.6	5.7	9.1
Botswana		..	..	..	..	..	..	..	..	..	..	..	..
Brazil	2003	75.9	67.2	32.8	39.6	52.2	84.5	9.4	13.8	71.7	20.3	39.6	56.9
Bulgaria	2002	59.5	25.4	17.9	50.6	18.8	33.1	8.5	4.2	40.3	8.0	10.2	7.8
Burkina Faso		..	..	..	..	..	..	..	..	..	..	..	..
Burundi		..	..	..	..	..	..	..	..	..	..	..	..
Cambodia	2003	40.1	55.9	31.4	61.0	41.7	18.6	14.6	..	9.9	12.7	6.6	5.9
Cameroon		..	..	..	..	..	..	..	..	..	..	..	..
Canada		..	..	..	..	..	..	..	..	..	..	..	..
Central African Republic		..	..	..	..	..	..	..	..	..	..	..	..
Chad		..	..	..	..	..	..	..	..	..	..	..	..
Chile		..	..	..	..	..	..	..	..	..	..	..	..
China	2002/03	32.9	27.3	..	17.5	20.0	36.8	19.0	7.9	22.3	29.7	30.7	20.7
Hong Kong, China		..	..	..	..	..	..	..	..	..	..	..	..
Colombia		..	..	..	..	..	..	..	..	..	..	..	..
Congo, Dem. Rep.		..	..	..	..	..	..	..	..	..	..	..	..
Congo, Rep.		..	..	..	..	..	..	..	..	..	..	..	..
Costa Rica		..	..	..	..	..	..	..	..	..	..	..	..
Côte d'Ivoire		..	..	..	..	..	..	..	..	..	..	..	..
Croatia	2002	35.9	22.5	27.6	33.3	8.5	27.8	9.0	3.8	21.6	1.1	8.7	5.4
Cuba		..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	2002	20.2	12.5	11.1	47.1	14.3	25.6	5.5	4.4	23.1	5.3	9.1	3.5
Denmark		..	..	..	..	..	..	..	..	..	..	..	..
Dominican Republic		..	..	..	..	..	..	..	..	..	..	..	..
Ecuador	2003	60.7	49.2	34.1	70.8	27.8	38.1	17.7	16.4	42.2	28.3	22.3	14.1
Egypt, Arab Rep.		..	..	..	..	..	..	..	..	..	..	..	..
El Salvador		..	..	..	..	..	..	..	..	..	..	..	..
Eritrea	2002	31.5	2.7	..	..	1.3	31.1	5.9	9.1	53.7	38.2	41.0	5.2
Estonia	2002	12.0	5.4	4.8	28.6	6.5	16.7	6.2	1.6	8.4	10.1	23.8	4.2
Ethiopia	2002	39.3	39.0	..	..	9.5	73.6	5.7	13.5	40.2	42.5	17.9	4.6
Finland		..	..	..	..	..	..	..	..	..	..	..	..
France		..	..	..	..	..	..	..	..	..	..	..	..
Gabon		..	..	..	..	..	..	..	..	..	..	..	..
Gambia, The		..	..	..	..	..	..	..	..	..	..	..	..
Georgia	2002	44.3	35.1	11.2	59.0	19.0	30.5	14.7	3.2	14.2	22.4	8.6	4.0
Germany		..	..	..	..	..	..	..	..	..	..	..	..
Ghana		..	..	..	..	..	..	..	..	..	..	..	..
Greece		..	..	..	..	..	..	..	..	..	..	..	..
Guatemala	2003	66.4	80.9	36.7	71.3	80.4	56.5	17.4	9.4	38.7	26.6	31.4	16.7
Guinea		..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau		..	..	..	..	..	..	..	..	..	..	..	..
Haiti		..	..	..	..	..	..	..	..	..	..	..	..

	Survey year	Policy uncertainty Major constraint %	Corruption Major constraint %	Courts Major constraint %	Lack confidence courts uphold property rights %	Crime Major constraint %	Tax rates as a major constraint %	Time dealing with officials % of management time	Average time to clear customs days	Finance Major constraint %	Electricity Major constraint %	Labor Major constraint % Skills	Labor Regulation
Honduras	2003	47.0	62.8	21.8	56.1	60.9	35.6	14.2	5.1	55.4	36.4	26.4	14.2
Hungary	2002	21.1	8.8	4.5	40.3	4.9	30.2	8.7	4.3	20.2	1.2	12.5	7.3
India	2003	20.9	37.4	..	29.4	15.6	27.9	15.3	6.7	19.2	28.9	12.5	16.7
Indonesia	2004	48.2	41.5	24.7	40.8	22.0	29.5	14.6	5.8	23.0	22.3	18.9	25.9
Iran, Islamic Rep.		..	..	..	..	..	..	..	..	..	..	..	..
Iraq		..	..	..	..	..	..	..	..	..	..	..	..
Ireland		..	..	..	..	..	..	..	..	..	..	..	..
Israel		..	..	..	..	..	..	..	..	..	..	..	..
Italy		..	..	..	..	..	..	..	..	..	..	..	..
Jamaica		..	..	..	..	..	..	..	..	..	..	..	..
Japan		..	..	..	..	..	..	..	..	..	..	..	..
Jordan		..	..	..	..	..	..	..	..	..	..	..	..
Kazakhstan	2002	18.5	14.2	4.0	48.5	8.4	13.8	14.6	5.3	14.1	3.6	6.3	0.8
Kenya	2003	51.5	73.8	..	51.3	69.8	68.2	13.8	8.9	58.3	48.1	27.6	22.5
Korea, Dem. Rep.		..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.		..	..	..	..	..	..	..	..	..	..	..	..
Kuwait		..	..	..	..	..	..	..	..	..	..	..	..
Kyrgyz Republic	2002/03	34.7	31.4	15.7	66.3	18.5	32.5	13.2	3.3	27.7	4.7	7.7	4.5
Lao PDR		..	..	..	..	..	..	..	..	..	..	..	..
Latvia	2002	27.4	11.7	3.2	49.1	6.4	27.3	10.7	1.2	7.7	4.0	15.5	4.1
Lebanon		..	..	..	..	..	..	..	..	..	..	..	..
Lesotho		..	..	..	..	..	..	..	..	..	..	..	..
Liberia		..	..	..	..	..	..	..	..	..	..	..	..
Libya		..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	2002	33.5	15.6	12.0	59.5	16.2	36.5	10.0	2.4	7.0	4.5	7.5	8.5
Macedonia, FYR	2002	37.3	31.2	27.1	50.6	20.4	21.0	13.5	4.9	16.6	5.4	3.7	4.6
Madagascar		..	..	..	..	..	..	..	..	..	..	..	..
Malawi		..	..	..	..	..	..	..	..	..	..	..	..
Malaysia	2003	22.4	14.5	..	19.1	11.4	21.7	10.2	3.7	17.8	14.8	25.0	14.5
Mali		..	..	..	..	..	..	..	..	..	..	..	..
Mauritania		..	..	..	..	..	..	..	..	..	..	..	..
Mauritius		..	..	..	..	..	..	..	..	..	..	..	..
Mexico		..	..	..	..	..	..	..	..	..	..	..	..
Moldova	2002/03	57.0	40.2	19.8	72.1	26.5	54.9	7.1	2.1	39.6	5.4	11.0	5.2
Mongolia		..	..	..	..	..	..	..	..	..	..	..	..
Morocco	2001	..	..	..	..	..	..	..	2.7	..	..	..	..
Mozambique		..	..	..	..	..	..	..	..	..	..	..	..
Myanmar		..	..	..	..	..	..	..	..	..	..	..	..
Namibia		..	..	..	..	..	..	..	..	..	..	..	..
Nepal		..	..	..	..	..	..	..	..	..	..	..	..
Netherlands		..	..	..	..	..	..	..	..	..	..	..	..
New Zealand		..	..	..	..	..	..	..	..	..	..	..	..
Nicaragua	2003	58.2	65.7	33.3	60.4	39.2	34.7	17.3	5.8	57.6	34.7	17.0	6.9
Niger		..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	2001	..	..	..	..	36.3	..	..	17.8	..	97.4	..	..
Norway		..	..	..	..	..	..	..	..	..	..	..	..
Oman		..	..	..	..	..	..	..	..	..	..	..	..
Pakistan	2002	40.1	40.4	..	62.6	21.5	45.6	10.6	17.1	40.1	39.2	12.8	15.0
Panama		..	..	..	..	..	..	..	..	..	..	..	..
Papua New Guinea		..	..	..	..	..	..	..	..	..	..	..	..
Paraguay		..	..	..	..	..	..	..	..	..	..	..	..
Peru	2002	71.1	59.6	..	34.7	51.6	..	..	7.9	55.8	11.1	12.5	..
Philippines	2003	29.5	35.2	..	33.8	26.5	30.4	11.0	2.8	18.2	33.4	11.9	24.7
Poland	2002/03	59.1	27.6	27.0	46.2	24.9	64.7	12.3	3.1	42.6	5.8	12.2	25.2
Portugal		..	..	..	..	..	..	..	..	..	..	..	..
Puerto Rico		..	..	..	..	..	..	..	..	..	..	..	..

	Survey year	Policy uncertainty — Major constraint %	Corruption — Major constraint %	Courts — Major constraint %	Courts — Lack confidence courts uphold property rights %	Crime — Major constraint %	Regulation and tax administration — Tax rates as a major constraint %	Regulation and tax administration — Time dealing with officials % of management time	Regulation and tax administration — Average time to clear customs days	Finance — Major constraint %	Electricity — Major constraint %	Labor — Major constraint % Skills	Labor — Major constraint % Regulation
Romania	2002	43.3	34.9	20.9	45.8	19.8	51.6	10.7	1.4	32.3	9.5	10.8	8.1
Russian Federation	2002	31.5	13.7	9.5	65.3	12.4	24.6	14.1	6.9	17.0	4.6	9.9	3.3
Rwanda	..	..	..	..	..	..	..	..	..	..	..	..	..
Saudi Arabia	..	..	..	..	..	..	..	..	..	..	..	..	..
Senegal	2004	31.3	39.9	13.3	40.5	15.4	50.8	13.8	6.5	60.0	30.7	18.5	16.3
Serbia and Montenegro	2002	47.8	16.3	13.8	28.6	8.9	35.3	15.1	5.5	28.3	6.2	11.9	6.9
Sierra Leone	..	..	..	..	..	..	..	..	..	..	..	..	..
Singapore	..	..	..	..	..	..	..	..	..	..	..	..	..
Slovak Republic	2002	44.6	27.5	25.3	53.9	15.4	31.7	9.5	2.2	30.1	3.0	9.7	7.4
Slovenia	2002	11.8	6.1	8.0	45.6	3.3	11.2	7.7	3.1	11.2	0.5	4.3	2.7
Somalia	..	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	..	..	..	..	..	..	..	..	..	..	..	..	..
Spain	..	..	..	..	..	..	..	..	..	..	..	..	..
Sri Lanka	..	..	..	..	..	..	..	..	..	..	..	..	..
Sudan	..	..	..	..	..	..	..	..	..	..	..	..	..
Swaziland	..	..	..	..	..	..	..	..	..	..	..	..	..
Sweden	..	..	..	..	..	..	..	..	..	..	..	..	..
Switzerland	..	..	..	..	..	..	..	..	..	..	..	..	..
Syrian Arab Republic	..	..	..	..	..	..	..	..	..	..	..	..	..
Tajikistan	2002/03	24.4	21.0	9.1	48.2	3.0	26.2	8.3	9.6	20.1	17.1	2.4	2.3
Tanzania	2003	31.5	51.1	20.0	55.1	25.5	73.4	16.2	17.5	53.0	58.9	25.0	12.1
Thailand	..	..	..	..	..	..	..	..	..	..	..	..	..
Togo	..	..	..	..	..	..	..	..	..	..	..	..	..
Trinidad and Tobago	..	..	..	..	..	..	..	..	..	..	..	..	..
Tunisia	..	..	..	..	..	..	..	..	..	..	..	..	..
Turkey	2002	53.8	23.7	11.9	33.0	12.9	38.1	8.0	3.7	23.2	17.3	12.8	8.7
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	2003	27.6	38.2	..	30.1	26.8	48.3	5.0	..	52.8	44.5	30.8	10.8
Ukraine	2002	46.9	27.8	15.3	49.0	19.6	39.6	15.4	5.8	29.1	5.9	13.0	5.8
United Arab Emirates	..	..	..	..	..	..	..	..	..	..	..	..	..
United Kingdom	..	..	..	..	..	..	..	..	..	..	..	..	..
United States	..	..	..	..	..	..	..	..	..	..	..	..	..
Uruguay	..	..	..	..	..	..	..	..	..	..	..	..	..
Uzbekistan	2002/03	27.2	8.7	7.6	25.4	7.0	19.9	12.1	6.0	20.6	4.8	4.9	1.7
Venezuela, RB	..	..	..	..	..	..	..	..	..	..	..	..	..
Vietnam	..	..	..	..	..	..	..	..	..	..	..	..	..
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..
Zambia	2003	57.0	46.4	38.6	36.0	48.8	57.5	14.1	4.8	67.7	39.6	35.7	16.9
Zimbabwe	..	..	..	..	..	..	..	..	..	..	..	..	..

Note: Data are based on enterprise surveys conducted by the World Bank and its partners during 2001–03. While averages are reported, there are significant variations across firms.

This year the table includes recently available data from World Bank–sponsored Investment Climate Surveys covering more than 26,000 firms in 53 developing countries for 2001–03. The new data provide fresh insights into how investment climates vary around the world.

A good investment climate requires government policies that provide an environment in which firms and entrepreneurs can invest productively, create jobs, and contribute to growth and poverty reduction. The goal is an investment climate that benefits society as a whole, not just firms.

Governments face four primary challenges in improving the investment climate and getting the balance right between society's interests and firms' incentives to invest. One is establishing credibility by maintaining economic and political stability and restraining arbitrary behavior by the key agencies of the state. Two is restraining corruption by public officials, firms, and other interest groups. Three is fostering public trust and legitimacy through participatory policymaking, transparency, and equity. Four is ensuring that government policies realistically reflect current conditions and adapt to changing economic and business conditions.

Firms evaluating alternative investment options, governments interested in improving the investment climate, and economists seeking to understand how different factors influence economic performance have all grappled with defining and measuring the investment climate. The World Bank, working with client governments and others, recently pioneered new indicators of the investment climate. The Investment Climate Surveys measure specific constraints facing firms and relate them to indicators of firm performance, growth, and investment.

The investment climate indicators in the table cover eight dimensions of the investment climate. Firms in developing countries rate policy uncertainty as their dominant concern among investment climate constraints. It measures the credibility of governments and their policies and their ability to deliver what they promise. Corruption—the exploitation of public office for private gain—harms the investment climate in several ways. It can distort policymaking, undermine the credibility of government, act as a tax on entrepreneurial activities, and divert resources from public coffers. Better courts reduce the risks firms face, making investment more attractive. The importance of courts grows as the number of large and complex long-term transactions increases. Robbery, fraud, and other crimes against property

and people undermine the investment climate and stifle entrepreneurial activity. For example, in Latin America, more than half of surveyed firms considered crime to be a serious obstacle to doing business.

Most countries have room to improve regulation and taxation without compromising broader social interests. The investment climate is harmed when governments impose unnecessary costs by increasing uncertainty and risk and by erecting unjustified barriers to competition. Improvements in the tax system include broadening the tax base, simplifying tax structures, increasing the autonomy of tax agencies, and improving compliance through computerization. When financial markets work well, they connect firms to lenders and investors, allowing firms to seize business opportunities and expand their businesses. But too often government distortions introduced by state ownership or directed credit undermine financial sector development, productivity, and economic growth. Firms that have access to modern infrastructure—telecommunications, reliable electricity supplies, and efficient transportation—are more productive. Ill-considered labor regulations can discourage firms from creating more jobs, and while some employees may benefit, the unemployed, low-skilled, and those in the informal economy will not.

Whenever possible, Investment Climate Surveys draw from sampling frames from a well-defined universe of firms and follow a stratified random sampling methodology. At a minimum, both manufacturing and services sectors are included. In addition, because the distribution of establishments in most countries is overwhelmingly populated by small and medium-size enterprises, surveys generally oversample large establishments. The target unit for the surveys is the business establishment, rather than the firm. Sample sizes for most recent surveys range from 200 to 1,500 establishments. Note that unavoidable departures from the ideal sample design in some countries can affect comparability across countries. In a typical survey of about 500 firms, the sampling error is about ±4.5 percentage points.

The World Development Report survey of micro and informal firms was also conducted in 11 countries: Bangladesh, Brazil, Cambodia, Guatemala, India, Indonesia, Kenya, Pakistan, Senegal, Tanzania, and Uganda. The findings of these surveys are not reflected in table 5.2. For more information, see Hallward-Driemeier and Stone (2004). Additional information on the investment climate is available at: http://econ.worldbank.org/wdr/wdr2005 and http://iresearch.worldbank.org/ics.

• Policy uncertainty measures the share of senior managers who ranked economic and regulatory policy uncertainty as a major or very severe constraint. • Corruption measures the share of senior managers who ranked corruption as a major or very severe constraint. • Courts measure the share of senior managers who ranked courts and dispute resolution systems as a major or very severe constraint. • Lack confidence that courts uphold property rights is the share of senior managers who do not agree with the statement: "I am confident that the judicial system will enforce my contractual and property rights in business disputes." • Crime measures the share of senior managers who ranked crime, theft, and disorder as a major or very severe constraint. • Tax rates as a major constraint measure the share of senior managers who ranked tax rates as a major or very severe constraint. • Time dealing with officials is the percentage of management time in a given week spent on requirements imposed by government regulations (taxes, customs, labor regulations, licensing and registration). • Average time to clear customs is the number of days to clear an imported good through customs. • Finance is the average of the shares of senior managers who ranked access to finance or cost of finance as a major or very severe constraint. • Electricity is the share of senior managers who ranked electricity as a major or severe constraint. • Skills are the share of senior managers who ranked skills of available workers as a major or severe constraint. • Labor regulations are the share of senior managers who ranked labor regulations as a major or severe constraint.

	Starting a business		Registering property		Getting credit			Hiring and firing workers	Enforcing contracts		Protecting investors	Closing a business
					Index of borrower and lender legal rights 0 (less access) to 10 (more access)	borrowers per 1,000 adults		Rigidity of employment index 0 (less rigid) to 100 (more rigid)			Disclosure index 0 (less disclosure) to 10 (more disclosure)	Time to resolve insolvency years
	Number of start-up procedures January 2004	Time required days January 2004	Number of procedures January 2004	Time required days January 2004	January 2004	Public registry coverage January 2004	Private bureau coverage January 2004	January 2004	Number of procedures January 2004	Time required days January 2004	January 2004	January 2004
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..
Albania	11	47	7	47	9	0	0	30	39	390	3	4.0
Algeria	14	26	16	52	3	0	0	55	49	407	2	3.5
Angola	14	146	8	335	3	7	0	75	47	1,011	2	4.7
Argentina	15	32	5	44	3	201	733	51	33	520	5	2.8
Armenia	10	25	4	18	4	0	0	36	24	195	3	1.9
Australia	2	2	5	7	9	0	954	17	11	157	6	1.0
Austria	9	29	3	32	5	11	393	40	20	374	6	1.0
Azerbaijan	14	123	7	61	6	0	0	38	25	267	2	2.7
Bangladesh	8	35	..	..	..	7	0	24	29	365	3	4.0
Belarus	16	79	7	231	5	..	0	54	28	250	1	5.8
Belgium	4	34	2	132	7	533	0	20	27	112	4	0.9
Benin	8	32	3	50	4	2	0	61	49	570	1	3.1
Bolivia	15	59	7	92	3	96	0	40	47	591	2	1.8
Bosnia and Herzegovina	12	54	7	331	5	0	156	49	36	330	2	3.3
Botswana	11	108	4	69	9	0	309	20	26	154	5	2.2
Brazil	17	152	14	42	2	78	425	72	25	566	5	10.0
Bulgaria	10	32	9	19	6	13	0	28	34	440	2	3.3
Burkina Faso	13	135	8	107	4	2	0	90	41	458	..	4.0
Burundi	11	43	5	94	..	2	0	50	51	512	1	4.0
Cambodia	11	94	7	56	4	0	0	48	31	401	0	..
Cameroon	12	37	5	93	4	1	0	74	58	585	1	3.2
Canada	2	3	6	20	7	0	1,000	4	17	346	7	0.8
Central African Republic	10	14	3	69	3	1	0	76	45	660	..	4.8
Chad	19	75	6	44	3	0	0	80	52	526	..	10.0
Chile	9	27	6	31	4	290	220	19	28	305	6	5.6
China	12	41	3	32	2	4	0	30	25	241	4	2.4
Hong Kong, China	5	11	3	56	10	0	615	0	16	211	6	1.1
Colombia	14	43	7	23	4	0	300	51	37	363	2	3.0
Congo, Dem. Rep.	13	155	8	106	3	0	0	77	51	909	1	5.2
Congo, Rep.	8	67	6	103	3	1	0	86	47	560	3	3.0
Costa Rica	11	77	6	21	4	10	1,000	35	34	550	1	3.5
Côte d'Ivoire	11	58	7	340	2	2	0	69	25	525	2	2.2
Croatia	12	49	5	956	4	0	0	57	22	415	4	3.1
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	10	40	4	122	6	21	249	28	22	300	6	9.2
Denmark	4	4	6	42	7	0	71	17	15	83	5	3.4
Dominican Republic	10	78	7	107	4	..	294	40	29	580	1	3.5
Ecuador	14	92	12	21	3	124	0	51	41	388	1	4.3
Egypt, Arab Rep.	13	43	7	193	0	102	0	53	55	410	2	4.2
El Salvador	12	115	5	52	5	198	823	52	41	275	1	4.0
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..
Estonia	6	72	4	65	..	0	95	44	25	150	4	3.0
Ethiopia	7	32	15	56	5	0	0	43	30	420	2	2.4
Finland	3	14	3	14	6	0	148	44	27	240	5	0.9
France	7	8	10	193	3	17	0	66	21	75	6	1.9
Gabon	..	..	..	..	..	..	..	..	..	..	..	..
Gambia, The	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	9	25	8	39	7	0	0	49	18	375	5	3.2
Germany	9	45	4	41	8	6	856	55	26	184	5	1.2
Ghana	12	85	7	382	5	0	1	34	23	200	2	1.9
Greece	15	38	12	23	1	0	111	66	14	151	5	2.0
Guatemala	15	39	5	55	4	0	124	40	37	1,459	1	4.0
Guinea	13	49	6	104	2	0	0	59	44	306	4	3.8
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..
Haiti	12	203	5	195	2	3	0	24	35	368	1	5.7

	Starting a business		Registering property		Getting credit			Hiring and firing workers	Enforcing contracts		Protecting investors	Closing a business
					Index of borrower and lender legal rights 0 (less access) to 10 (more access) January 2004	borrowers per 1,000 adults		Rigidity of employment index 0 (less rigid) to 100 (more rigid) January 2004			Disclosure index 0 (less disclosure) to 10 (more disclosure) January 2004	Time to resolve insolvency years January 2004
	Number of start-up procedures January 2004	Time required days January 2004	Number of procedures January 2004	Time required days January 2004		Public registry coverage January 2004	Private bureau coverage January 2004		Number of procedures January 2004	Time required days January 2004		
Honduras	13	62	7	36	5	61	0	31	36	545	0	3.7
Hungary	6	52	4	79	5	0	33	40	21	365	5	2.0
India	11	89	6	67	4	0	0	48	40	425	4	10.0
Indonesia	12	151	6	33	5	4	0	57	34	570	4	6.0
Iran, Islamic Rep.	9	48	9	36	5	..	0	40	23	545	2	4.5
Iraq	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	4	24	5	38	8	0	1,000	29	16	217	6	0.4
Israel	5	34	7	144	8	0	11	33	27	585	7	4.0
Italy	9	13	8	27	3	79	571	50	18	1,390	5	1.2
Jamaica	7	31	5	54	6	0	0	10	18	202	2	1.1
Japan	11	31	6	14	6	0	615	24	16	60	6	0.5
Jordan	11	36	8	22	6	5	0	34	43	342	3	4.3
Kazakhstan	9	25	8	52	5	0	0	27	41	400	5	3.3
Kenya	12	47	7	39	8	0	1	24	25	360	2	4.5
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	12	22	7	11	6	0	1,000	34	29	75	6	1.5
Kuwait	13	35	8	75	5	0	166	20	52	390	1	4.2
Kyrgyz Republic	8	21	7	15	8	0	0	38	46	492	3	3.5
Lao PDR	9	198	9	135	2	0	0	50	53	443	1	5.0
Latvia	7	18	10	62	8	6	0	49	23	189	5	1.1
Lebanon	6	46	8	25	4	31	0	28	39	721	1	4.0
Lesotho	9	92	6	101	..	0	0	27	49	285	4	2.6
Liberia	..	..	..	..	..	..	..	..	..	..	..	..
Libya	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	8	26	3	3	4	44	0	41	17	154	6	1.2
Macedonia, FYR	13	48	6	74	6	6	0	38	27	509	4	3.7
Madagascar	13	44	6	114	4	3	0	49	29	280	1	..
Malawi	10	35	6	118	..	0	0	21	16	277	2	2.6
Malaysia	9	30	4	143	8	339	676	3	31	300	5	2.3
Mali	13	42	5	44	3	1	0	66	28	340	..	3.6
Mauritania	11	82	4	49	7	2	0	70	28	410	..	8.0
Mauritius	..	..	..	..	..	..	..	..	..	..	..	..
Mexico	8	58	5	74	2	0	382	72	37	421	5	1.8
Moldova	10	30	5	81	6	0	0	54	37	280	3	2.8
Mongolia	8	20	4	10	5	23	0	37	26	314	3	4.0
Morocco	5	11	3	82	2	6	0	70	17	240	4	1.8
Mozambique	14	153	7	33	4	5	0	64	38	580	2	5.0
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..
Namibia	10	85	9	28	..	0	353	33	31	270	1	1.0
Nepal	7	21	..	..	4	1	0	44	28	350	3	5.0
Netherlands	7	11	4	5	9	0	645	43	22	48	5	1.7
New Zealand	2	12	2	2	9	0	978	7	19	50	5	2.0
Nicaragua	9	45	7	65	4	62	0	51	18	155	1	2.2
Niger	11	27	5	49	4	1	0	90	33	330	1	5.0
Nigeria	10	44	21	274	8	0	0	44	23	730	6	1.5
Norway	4	23	1	1	6	0	1,000	30	14	87	5	0.9
Oman	9	34	4	16	3	0	0	35	41	455	1	7.0
Pakistan	11	24	5	49	4	2	3	49	46	395	4	2.8
Panama	7	19	7	44	6	0	530	63	45	355	1	2.0
Papua New Guinea	8	56	4	72	..	0	0	17	22	295	4	2.8
Paraguay	17	74	7	48	3	90	..	59	46	285	4	3.9
Peru	10	98	5	31	2	143	271	55	35	441	4	3.1
Philippines	11	50	8	33	5	0	34	41	25	380	6	5.6
Poland	10	31	6	204	2	0	380	34	41	1,000	4	1.4
Portugal	11	78	5	83	5	637	79	58	24	320	5	2.5
Puerto Rico	7	7	..	..	6	0	643	21	43	270	..	3.8

	Starting a business		Registering property		Getting credit			Hiring and firing workers	Enforcing contracts		Protecting investors	Closing a business
					Index of borrower and lender legal rights 0 (less access) to 10 (more access)	borrowers per 1,000 adults		Rigidity of employment index 0 (less rigid) to 100 (more rigid)			Disclosure index 0 (less disclosure) to 10 (more disclosure)	Time to resolve insolvency years
	Number of start-up procedures January 2004	Time required days January 2004	Number of procedures January 2004	Time required days January 2004	January 2004	Public registry coverage January 2004	Private bureau coverage January 2004	January 2004	Number of procedures January 2004	Time required days January 2004	January 2004	January 2004
Romania	5	28	8	170	4	4	0	63	43	335	2	4.6
Russian Federation	9	36	6	37	3	0	0	27	29	330	3	1.5
Rwanda	9	21	5	354	5	1	0	76	29	395	0	..
Saudi Arabia	12	64	4	4	..	1	0	13	44	360	2	2.8
Senegal	9	57	6	114	3	3	0	64	36	485	1	3.0
Serbia and Montenegro	11	51	6	186	5	1	0	23	36	1,028	3	2.6
Sierra Leone	9	26	8	58	5	0	0	76	58	305	1	2.5
Singapore	7	8	3	9	10	0	335	0	23	69	5	0.8
Slovak Republic	9	52	5	22	9	6	0	10	27	565	6	4.7
Slovenia	10	61	6	391	6	25	0	53	25	1,003	4	3.6
Somalia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	9	38	6	20	6	0	636	52	26	277	6	2.0
Spain	6	108	3	25	5	394	65	69	23	169	7	1.0
Sri Lanka	8	50	8	63	3	0	19	40	17	440	4	2.2
Sudan	..	..	..	..	..	..	..	..	..	..	..	..
Swaziland	..	..	..	..	..	..	..	..	..	..	..	..
Sweden	3	16	1	2	6	0	980	43	23	208	6	2.0
Switzerland	6	20	4	16	6	0	233	17	22	170	5	4.6
Syrian Arab Republic	12	47	4	23	5	0	0	37	48	672	1	4.1
Tajikistan	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	13	35	12	61	5	0	0	65	21	242	1	3.0
Thailand	8	33	2	2	5	0	150	42	26	390	6	2.6
Togo	13	53	6	212	2	3	0	76	37	535	2	3.0
Trinidad and Tobago	..	..	..	..	..	..	..	..	..	..	..	..
Tunisia	9	14	5	57	4	93	0	54	14	27	6	1.3
Turkey	8	9	8	9	1	32	300	55	22	330	2	2.9
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	17	36	8	48	5	0	0	7	15	209	2	2.1
Ukraine	15	34	9	93	6	0	0	64	28	269	3	2.6
United Arab Emirates	12	54	3	9	4	18	0	33	53	614	2	5.1
United Kingdom	6	18	2	21	10	0	1,000	20	14	288	7	1.0
United States	5	5	4	12	7	0	1,000	3	17	250	7	3.0
Uruguay	11	45	8	66	4	72	756	31	39	620	1	2.1
Uzbekistan	9	35	12	97	5	0	0	58	35	368	4	4.0
Venezuela, RB	13	116	8	34	4	286	0	56	41	445	1	4.0
Vietnam	11	56	5	78	4	8	0	51	37	404	1	5.5
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	12	63	6	21	2	12	0	37	37	360	..	3.0
Zambia	6	35	6	70	6	0	0	27	16	274	1	2.7
Zimbabwe	10	96	4	30	7	0	0	24	33	350	6	2.2
World	10 u	50 u	6 u	80 u	5 u	31 u	167 u	41 u	31 u	381 u	3 u	3.3 u
Low income	11	63	7	100	4	3	0	52	35	418	2	3.9
Middle income	10	51	7	80	5	33	137	38	31	401	3	3.4
Lower middle income	11	53	7	67	4	25	91	40	31	398	3	3.4
Upper middle income	9	46	5	108	5	51	247	34	31	408	4	3.4
Low & middle income	10	56	7	88	4	21	80	44	33	408	3	3.6
East Asia & Pacific	8	59	5	59	4	22	23	27	29	347	2	3.8
Europe & Central Asia	10	42	7	123	5	6	49	41	30	389	4	3.3
Latin America & Carib.	12	71	7	58	4	79	325	45	35	473	2	3.6
Middle East & N. Africa	10	39	7	48	3	25	0	41	37	413	2	3.7
South Asia	9	47	6	56	4	1	3	42	30	349	3	5.1
Sub-Saharan Africa	11	63	7	107	5	1	41	56	35	431	2	3.6
High income	7	27	5	50	6	68	499	32	23	280	5	2.0
Europe EMU	8	37	5	56	5	152	352	49	22	298	5	1.3

The table presents key indicators on the environment for doing business. The indicators, covering starting a business, registering property, getting credit, hiring and firing workers, enforcing contracts, protecting investors, and closing a business, identify regulations that enhance or constrain business investment, productivity, and growth. The data are from the World Bank's Doing Business database.

A vibrant private sector is central to promoting growth and expanding opportunities for poor people. But encouraging firms to invest, improve productivity, and create jobs requires a legal and regulatory environment that fosters access to credit, protection of property rights, and efficient judicial, taxation, and customs systems. The indicators in the table point to the administrative and regulatory reforms and institutions needed to create a favorable environment for doing business.

When entrepreneurs start a business, the first obstacles they face are the administrative and legal procedures required to register the new firm. Countries differ widely in how they regulate the entry of new businesses. In some countries the process is straightforward and affordable. But in others the procedures are so burdensome that entrepreneurs may opt to run their business informally. The data on starting a business cover the number of procedures and the time required.

Property registries were first developed to help raise tax revenue, and they have proven useful for entrepreneurs as well. Securing rights to land and buildings, a major source of wealth in most countries, strengthens incentives to invest and facilitates trade. More complex procedures to register property are associated with less perceived security of property rights, more informality, and more corruption. The data cover the number of procedures and time required to secure rights to property.

Lack of access to credit is one of the biggest barriers entrepreneurs face in starting and operating a business. Information on credit histories made available in credit registries is one way for creditors to assess risk and allocate credit more efficiently.

The index of legal rights of borrowers and lenders measures how well collateral and bankruptcy laws facilitate lending. It is based on research on collateral and insolvency laws supported by responses to a survey on secured transactions laws. It includes three aspects related to legal rights in bankruptcy and seven aspects found in collateral law. The indicators related to creditor rights in bankruptcy are based on the methodology of La Porta and others (1998). A public credit registry is a database owned by a public authority (usually the central bank or banking supervisory) that collects information on the standing of borrowers in the financial system and makes it available to financial institutions. A private credit bureau is a private firm or nonprofit organization that maintains a database on the standing of borrowers in the financial system. Its primary role is to facilitate exchange of information among banks and financial institutions. Coverage of public credit registries and private credit bureaus provides an indication of how many borrowers, as a share of the adult population, have information on their payment histories available in credit registries.

Every economy has a complex system of laws and institutions to protect the interests of workers and guarantee a minimum standard of living for its population. The rigidity of employment index focuses on the regulation of employment, specifically the hiring and firing of workers and the rigidity of working hours. This index is the average of three subindexes: a difficulty of hiring index, a rigidity of hours index, and a difficulty of firing index. All subindexes have several components and take values between 0 and 100, with higher values indicating more rigid regulation.

Contract enforcement is critical to enable businesses to engage with new borrowers or customers. Without good contract enforcement, trade and credit will be restricted to a small community of people who have developed relationships through repeated dealings or through the security of assets. The institution that enforces contracts between debtors and creditors, and suppliers and customers, is the court. The efficiency of contract enforcement is reflected in two indicators: the number of judicial procedures to resolve a dispute and the time required to enforce a commercial contract.

What companies must disclose to the public has a large impact on legal protection for investors. Both investors and entrepreneurs benefit greatly from this protection. The disclosure index is based on several measures of ownership disclosure that reduce expropriation and help investors.

Unviable businesses prevent assets and human capital from being allocated to more productive uses in new companies or in viable companies that are financially distressed. The time it takes to resolve an insolvency measures the average time to complete the procedures needed to close an insolvent business, as estimated by insolvency lawyers. Information is collected on the sequence of the bankruptcy procedures and whether any procedures can be carried out simultaneously. Delays due to legal derailment tactics used by parties to an insolvency, in particular extension of response periods or appeals, are taken into account.

For cross-country comparability, such standard characteristics of a company as size, ownership, location, legal status, and type of activities undertaken, are defined in all surveys. The data were collected through studies of laws and regulations in each country, surveys of regulators or private sector professionals, and cooperative arrangements with private consulting firms and business and law associations.

• Start-up procedures are those required to start a business, including interactions to obtain necessary permits and licenses and to complete all inscriptions, verifications, and notifications to start operations. Data are for businesses with specific characteristics of ownership, size, and type of production. • Time required to start a business is the number of calendar days needed to complete the procedures to legally operate a business. If a procedure can be speeded up at additional cost, the fastest procedure, independent of cost, is chosen. • Number of procedures to register property is the number of procedures required for a businesses to secure rights to property • Time required to register property is the number of calendar days needed for businesses to secure rights to property • Index of borrower and lender legal rights measures the degree to which collateral and bankruptcy laws facilitate lending. It includes three aspects related to legal rights in bankruptcy and seven aspects found in collateral law. The index ranges from 0 to 10, with higher scores indicating that collateral and bankruptcy laws are better designed to expand access to credit. • Public registry coverage and private bureau coverage measure the number of borrowers per 1,000 adults with records contained in the public credit registry and any private credit bureaus. A score of 0 indicates that a public registry or private bureau does not operate in the country. The maximum score is 1,000. • The rigidity of employment index measures the regulation of employment, specifically the hiring and firing of workers and the rigidity of working hours. This index is the average of three subindexes: a difficulty of hiring index, a rigidity of hours index, and a difficulty of firing index. The index ranges from 0 to 100, with higher values indicating more rigid regulations. • Number of procedures to enforce a contract are the number of independent actions, mandated by law or courts, that demand interaction between the parties of a contract or between them and the judge or court officer. • Time required to enforce a contract is the number of calendar days from the filing of the lawsuit in court until the final determination and, in appropriate cases, payment. • Disclosure index measures the degree to which investors are protected through disclosure of ownership and financial information. The index ranges from 0 to 7, with higher values indicating more disclosure. • Time to resolve insolvency is the number of years from the filing for insolvency in court until the resolution of distressed assets.

| | Market capitalization | | | | Market liquidity | | Turnover ratio | | Listed domestic companies | | S&P/IFC Investable index | |
| | $ millions | | % of GDP | | value traded as % of GDP | | value of shares traded as % of market capitalization | | number | | % change in price index | |
	1990	2004	1990	2003	1990	2003	1990	2004	1990	2004	2003	2004
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..
Albania	..	..	..	..	..	..	..	..	..	..	..	..
Algeria	..	..	..	..	..	..	..	..	..	..	..	..
Angola	..	..	..	..	..	..	..	..	..	..	..	..
Argentina	3,270	46,432	2.3	30.0	0.6	3.8	33.6	17.8	179	104	131.4	24.6
Armenia	..	28	..	1.0	..	..	..	3.9	..	213	..	..
Australia	109,000	585,475	35.1	112.1	12.9	70.8	31.6	76.5	1,089	1,405	..	..
Austria	11,500	54,528	7.1	21.5	11.5	4.3	110.3	25.1	97	86	..	..
Azerbaijan	..	..	..	..	..	..	..	..	..	..	..	..
Bangladesh	321	3,317	1.1	3.1	0.0	0.6	1.5	36.1	134	250	15.4ª	104.3ª
Belarus	..	..	..	..	..	..	..	..	..	..	..	..
Belgium	65,400	173,612	33.2	57.5	3.3	12.4	..	24.9	182	152	..	..
Benin	..	..	..	..	..	..	..	..	..	..	..	..
Bolivia	..	1,282	..	16.3	..	0.0	..	0.2	..	32	..	..
Bosnia and Herzegovina	..	..	..	..	..	..	..	..	..	..	..	..
Botswana	261	2,548	6.6	28.3	0.2	1.2	6.1	2.3	9	18	25.6ª	21.1ª
Brazil	16,400	330,347	3.6	47.6	1.2	12.3	23.6	34.8	581	357	105.4	33.7
Bulgaria	..	2,804	..	8.8	..	1.0	..	22.8	..	332	189.2ª	82.7ª
Burkina Faso	..	..	..	..	..	..	..	..	..	..	..	..
Burundi	..	..	..	..	..	..	..	..	..	..	..	..
Cambodia	..	..	..	..	..	..	..	..	..	..	..	..
Cameroon	..	..	..	..	..	..	..	..	..	..	..	..
Canada	242,000	893,950	42.1	104.4	12.4	54.6	26.7	63.7	1,144	3,578	..	..
Central African Republic	..	..	..	..	..	..	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..
Chile	13,600	117,065	44.9	119.2	2.6	9.0	6.3	12.1	215	239	79.5	18.3
China	2,030	639,765	0.5	48.1	0.2	33.6	158.9	113.3	14	1,384	77.7	−2.1
Hong Kong, China	83,400	714,597	110.6	456.1	45.9	211.7	43.1	56.3	284	1,029	..	..
Colombia	1,420	25,223	3.5	18.1	0.2	0.5	5.6	7.7	80	114	27.3ª	115.4ª
Congo, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Congo, Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Costa Rica	475	1,723	5.5	9.9	..	..	5.8	..	82	..	..	..
Côte d'Ivoire	549	2,083	5.1	12.0	0.2	0.2	3.4	2.7	23	39	27.4ª	41.1ª
Croatia	..	10,959	..	21.3	..	0.8	..	5.9	2	145	12.8ª	−7.7ª
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	..	30,863	..	19.7	..	9.8	..	78.5	..	54	54.4	76.3
Denmark	39,100	127,997	29.3	60.4	8.3	31.6	28.0	65.4	258	187	..	..
Dominican Republic	..	..	..	..	..	..	..	..	..	..	..	..
Ecuador	69	2,581	0.6	7.9	..	0.1	..	4.2	65	30	14.6ª	46.7ª
Egypt, Arab Rep.	1,760	38,516	4.1	32.8	0.3	4.0	..	17.3	573	792	79.3	126.4
El Salvador	..	3,286	..	22.1	..	0.1	..	0.3	..	34	..	..
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..
Estonia	..	6,203	..	41.7	..	6.2	..	17.5	..	13	41.5ª	70.5ª
Ethiopia	..	..	..	..	..	..	..	..	..	..	..	..
Finland	22,700	170,283	16.6	105.2	2.9	101.0	..	105.8	73	142	..	..
France	314,000	1,355,643	25.8	77.1	9.6	56.6	..	85.7	578	723	..	..
Gabon	..	..	..	..	..	..	..	..	..	..	..	..
Gambia, The	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	..	203	..	5.1	..	..	..	0.5	..	278	..	..
Germany	355,000	1,079,026	21.2	44.9	30.0	47.7	139.3	130.0	413	684	..	..
Ghana	76	2,644	1.2	18.7	..	0.6	..	3.2	13	29	65.4ª	32.7ª
Greece	15,200	106,845	18.1	62.0	4.7	22.4	36.3	44.0	145	339	−31.2	..
Guatemala	..	..	..	1.1	..	0.0	..	3.1	..	5	..	..
Guinea	..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..
Haiti	..	..	..	..	..	..	..	..	..	..	..	..

	Market capitalization				Market liquidity		Turnover ratio		Listed domestic companies		S&P/IFC Investable index	
							value of shares traded as % of market capitalization				% change in price index	
	$ millions		% of GDP		value traded as % of GDP				number			
	1990	2004	1990	2003	1990	2003	1990	2004	1990	2004	2003	2004
Honduras	40	..	1.3	..	..	..	..	..	26	..	..	..
Hungary	505	28,711	1.5	20.2	0.3	10.0	6.3	59.9	21	47	28.6	93.7
India	38,600	387,851	12.2	46.5	6.9	47.4	65.9	115.5	2,435	4,730	76.5	20.1
Indonesia	8,080	73,251	7.1	26.2	3.5	7.1	75.8	43.3	125	331	69.7	39.3
Iran, Islamic Rep.	34,300	34,444	..	25.1	..	3.9	30.4	21.7	97	370	..	..
Iraq	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	..	85,070	..	55.3	..	28.6	..	60.7	..	55	..	..
Israel	3,320	95,505	6.3	68.7	10.5	37.7	95.8	55.6	216	571	59.5	13.4
Italy	149,000	614,842	13.5	41.9	3.9	45.2	26.8	121.5	220	271	..	..
Jamaica	911	14,415	19.8	104.3	0.7	3.1	3.4	4.2	44	38	−3.4[a]	107.4[a]
Japan	2,920,000	3,040,665	96.1	70.7	52.7	52.8	43.8	88.0	2,071	3,116	37.8[b]	12.5[b]
Jordan	2,000	18,383	49.7	111.2	10.1	26.4	20.0	36.3	105	192	65.4[a]	55.0[a]
Kazakhstan	..	2,425	..	8.2	..	1.4	..	22.0	..	41	..	..
Kenya	453	3,891	5.3	29.1	0.1	1.5	2.2	8.1	54	47	186.2[a]	−15.0[a]
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	111,000	428,649	42.1	54.5	28.8	112.8	61.3	174.0	669	1,573	33.3	25.7
Kuwait	..	..	..	..	..	..	..	..	..	..	..	..
Kyrgyz Republic	..	31	..	1.6	..	..	..	58.1	..	17	..	..
Lao PDR	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	..	1,655	..	10.3	..	1.3	..	8.1	..	39	62.6[a]	49.8[a]
Lebanon	..	2,321	..	7.9	..	0.7	..	10.3	..	13	0.9	53.5[a]
Lesotho	..	..	..	..	..	..	..	..	..	..	..	..
Liberia	..	..	..	..	..	..	..	..	..	..	..	..
Libya	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	..	6,463	..	19.3	..	1.1	..	9.8	..	43	117.9[a]	56.2[a]
Macedonia, FYR	..	362	..	7.8	..	0.5	..	8.1	..	92	..	..
Madagascar	..	..	..	..	..	..	..	..	..	..	..	..
Malawi	..	..	..	9.2	..	1.3	..	13.8	..	8	..	..
Malaysia	48,600	190,011	110.4	162.3	24.7	48.3	24.6	33.4	282	962	25.5	12.7
Mali	..	..	..	..	..	..	..	..	..	..	..	..
Mauritania	..	..	..	113.3	..	..	..	..	..	..	..	..
Mauritius	268	2,379	11.2	37.4	0.3	1.9	1.9	4.4	13	41	43.7[a]	17.8[a]
Mexico	32,700	171,940	12.4	19.6	4.6	3.8	44.0	29.4	199	152	30.4	47.9
Moldova	..	507	..	25.8	..	1.8	..	7.7	..	23	..	..
Mongolia	..	42	..	3.3	..	..	..	2.2	..	402	..	..
Morocco	966	25,064	3.7	30.1	0.2	1.6	..	9.1	71	52	44.0	18.3
Mozambique	..	..	..	..	..	..	..	..	..	..	..	..
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..
Namibia	21	442	0.7	7.2	..	0.0	..	4.8	3	13	37.1	36.7[a]
Nepal	..	..	..	..	..	..	..	..	..	73	..	..
Netherlands	120,000	488,647	40.7	95.5	13.6	90.6	29.0	104.1	260	183	..	..
New Zealand	8,840	33,052	20.3	41.5	4.4	13.2	17.3	38.3	171	157	..	..
Nicaragua	..	..	..	..	..	..	..	..	..	..	..	..
Niger	..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	1,370	14,464	4.8	16.3	0.0	1.5	0.9	13.7	131	207	57.5[a]	23.9[a]
Norway	26,100	94,679	22.5	42.9	12.1	31.7	54.4	86.4	112	156	..	..
Oman	1,060	6,325	9.4	19.7	0.9	2.6	12.3	31.5	55	96	47.0	25.2[a]
Pakistan	2,850	29,002	7.1	20.1	0.6	80.9	8.7	322.5	487	661	50.4[a]	20.7[a]
Panama	226	3,075	3.4	23.9	0.0	0.3	0.9	1.5	13	25	..	..
Papua New Guinea	..	..	..	..	..	..	..	..	..	..	..	..
Paraguay	..	..	..	..	..	..	..	..	..	..	..	..
Peru	812	20,115	3.1	26.5	0.4	1.3	19.3	6.3	294	194	88.1	−0.7
Philippines	5,930	28,948	13.4	29.2	2.7	3.3	13.6	14.0	153	233	41.4	25.0
Poland	144	71,102	0.2	17.7	0.0	4.1	89.7	33.1	9	225	29.5	59.3
Portugal	9,200	58,285	12.9	39.4	2.4	14.5	16.9	42.4	181	59	..	..
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..

	Market capitalization				Market liquidity		Turnover ratio		Listed domestic companies		S&P/IFC Investable index	
	$ millions		% of GDP		value traded as % of GDP		value of shares traded as % of market capitalization		number		% change in price index	
	1990	2004	1990	2003	1990	2003	1990	2004	1990	2004	2003	2004
Romania	..	11,786	..	9.8	..	0.8	..	11.6	..	4,030	42.5[a]	99.3[a]
Russian Federation	244	267,957	0.0	53.3	..	18.7	..	53.0	13	215	68.5	12.8
Rwanda	..	..	..	..	..	..	..	..	..	..	..	..
Saudi Arabia	48,200	306,248	36.7	73.2	1.7	74.1	..	204.1	59	73	49.5[a]	83.6[a]
Senegal	..	..	..	..	..	..	..	..	..	..	..	..
Serbia and Montenegro	..	142	..	0.7	..	2.6	..	122.3	..	342	..	..
Sierra Leone	..	..	..	..	..	..	..	..	..	..	..	..
Singapore	34,300	145,117	93.0	158.9	55.0	96.2	..	71.1	150	475	..	..
Slovak Republic	..	4,410	..	8.5	..	2.0	..	19.8	..	258	57.2[a]	41.0[a]
Slovenia	..	9,677	..	25.7	..	2.6	..	14.6	24	140	42.1[a]	128.5[a]
Somalia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	138,000	455,536	123.2	167.5	7.3	64.3	..	47.4	732	403	37.6	50.1
Spain	111,000	726,243	21.8	86.6	8.0	111.5	..	157.5	427	3,191	..	..
Sri Lanka	917	3,657	11.4	14.9	0.5	4.2	5.8	18.4	175	245	35.6[a]	−59.2[a]
Sudan	..	..	..	..	..	..	..	..	..	..	..	..
Swaziland	17	172	2.0	9.3	..	0.6	..	0.0	1	5	..	..
Sweden	97,900	287,500	40.8	95.3	7.3	90.6	14.9	113.6	258	264	..	..
Switzerland	160,000	725,659	67.9	226.7	28.8	179.8	..	90.0	182	289	..	..
Syrian Arab Republic	..	..	..	..	..	..	..	..	..	..	..	..
Tajikistan	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	..	..	..	4.2	..	0.1	..	1.9	..	..	..	..
Thailand	23,900	115,099	28.0	83.0	26.8	67.6	92.6	95.3	214	439	147.2	-6.4
Togo	..	..	..	..	..	..	..	..	..	..	..	..
Trinidad and Tobago	696	17,051	13.7	100.9	1.1	3.8	10.0	3.8	30	37	46.7[a]	36.8[a]
Tunisia	533	2,641	4.3	9.8	0.2	0.7	3.3	9.2	13	44	14.9[a]	4.2[a]
Turkey	19,100	98,299	12.7	28.4	3.9	41.4	42.5	182.3	110	296	113.2	32.9
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	..	..	..	0.6	..	..	..	..	..	..	..	..
Ukraine	..	11,778	..	8.7	..	0.2	..	2.5	..	155	40.3[a]	170.3[a]
United Arab Emirates	..	..	..	11.4	..	0.0	..	3.4	..	..	..	..
United Kingdom	849,000	2,412,434	85.8	134.4	28.2	119.8	33.4	100.6	1,701	2,311	26.3[c]	15.3[c]
United States	3,060,000	14,266,266	53.2	130.3	30.4	142.0	53.4	122.8	6,599	5,295	26.4[d]	9.0[d]
Uruguay	..	170	..	1.5	..	0.0	..	0.4	36	11	..	..
Uzbekistan	..	14	..	0.1	..	..	..	108.7	..	478	..	..
Venezuela, RB	8,360	6,117	17.2	4.5	4.6	0.2	43.0	9.0	76	59	14.3[a]	−50.4[a]
Vietnam	..	..	..	..	..	..	..	..	..	..	..	..
West Bank and Gaza	..	6,292	..	182.1	..	1.7	..	1.7	..	27	..	..
Yemen, Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Zambia	..	..	..	6.0	..	1.3	..	22.5	..	..	..	..
Zimbabwe	2,400	1,941	27.3	87.9	0.6	14.0	2.9	9.2	57	79	−74.8[a]	−26.7[a]
World	9,403,525 s	32,436,350 s	48.0 w	89.7 w	28.5 w	83.4 w	57.2 w	72.4 w	25,424 s	50,038 s		
Low income	46,543	319,611	10.5	37.3	5.0	42.5	48.2	130.5	3,321	7,988		
Middle income	328,522	2,534,088	19.4	44.5	5.1	21.6	..	60.9	4,370	14,456		
Lower middle income	220,746	1,838,275	14.8	47.3	8.5	24.5	..	70.8	3,271	11,866		
Upper middle income	107,776	695,813	29.6	38.4	6.1	15.3	50.3	21.2	1,099	2,590		
Low & middle income	375,065	2,853,699	18.8	43.5	5.2	24.3	..	72.4	7,691	22,444		
East Asia & Pacific	86,510	1,047,309	16.4	53.5	6.6	32.8	118.1	103.5	774	3,582		
Europe & Central Asia	19,100	403,420	2.2	29.7	..	15.7	..	37.9	110	7,776		
Latin America & Carib.	78,451	550,731	7.7	33.2	2.1	6.0	29.8	22.0	1,748	1,468		
Middle East & N. Africa	5,259	258,200	27.4	47.3	2.2	32.0	..	64.4	817	1,803		
South Asia	42,688	300,004	10.8	39.8	5.6	46.8	54.0	131.2	3,231	6,909		
Sub-Saharan Africa	143,057	294,034	52.3	105.9	..	31.7	..	39.3	1,011	906		
High income	9,028,460	29,582,653	51.6	100.1	31.4	96.8	59.4	110.1	17,733	27,594		
Europe EMU	1,183,500	4,950,359	21.7	60.4	14.2	55.3	..	107.5	2,630	5,929		

Note: Because aggregates for market capitalization are unavailable for 2004, those shown refer to 2003. a. Data refer to the S&P/IFC Global index. b. Data refer to the Nikkei 225 index. c. Data refer to the FT 100 index. d. Data refer to the S&P 500 index.

The development of an economy's financial markets is closely related to its overall development. Well functioning financial systems provide good and easily accessible information. That lowers transaction costs, which in turn improves resource allocation and boosts economic growth. Both banking systems and stock markets enhance growth, the main factor in poverty reduction. At low levels of economic development commercial banks tend to dominate the financial system, while at higher levels domestic stock markets tend to become more active and efficient relative to domestic banks.

Open economies with sound macroeconomic policies, good legal systems, and shareholder protection attract capital and therefore have larger financial markets. Recent research on stock market development shows that new communications technology and increased financial integration have resulted in more cross-border capital flows, a stronger presence of financial firms around the world, and the migration of stock exchange activities to international exchanges. Many firms in emerging markets now cross-list on international exchanges, which provides them with lower cost capital and more liquidity-traded shares. However, this also means that exchanges in emerging markets may not have enough financial activity to sustain them, putting pressure on them to rethink their operations.

The stock market indicators in the table include measures of size (market capitalization, number of listed domestic companies) and liquidity (value traded as a percentage of gross domestic product, value of shares traded as a percentage of market capitalization). The comparability of such indicators between countries may be limited by conceptual and statistical weaknesses, such as inaccurate reporting and differences in accounting standards. The percentage change in stock market prices in U.S. dollars, from the Standard & Poor's Investable (S&P/IFCI) and Global (S&P/IFCG) country indexes, is an important measure of overall performance. Regulatory and institutional factors that can affect investor confidence, such as entry and exit restrictions, the existence of a securities and exchange commission, and the quality of laws to protect investors, may influence the functioning of stock markets but are not included in the table.

Stock market size can be measured in a number of ways, and each may produce a different ranking of countries. Market capitalization shows the overall size of the stock market in U.S. dollars and as a percentage of GDP. The number of listed domestic companies is another measure of market size. Market size is positively correlated with the ability to mobilize capital and diversify risk.

Market liquidity, the ability to easily buy and sell securities, is measured by dividing the total value traded by GDP. This indicator complements the market capitalization ratio by showing whether market size is matched by trading. The turnover ratio—the value of shares traded as a percentage of market capitalization—is also a measure of liquidity as well as of transaction costs. (High turnover indicates low transaction costs.) The turnover ratio complements the ratio of value traded to GDP, because the turnover ratio is related to the size of the market and the value traded ratio to the size of the economy. A small, liquid market will have a high turnover ratio but a low value traded ratio. Liquidity is an important attribute of stock markets because, in theory, liquid markets improve the allocation of capital and enhance prospects for long-term economic growth. A more comprehensive measure of liquidity would include trading costs and the time and uncertainty in finding a counterpart in settling trades.

Standard & Poor's maintains a series of indexes for investors interested in investing in stock markets in developing countries. At the core of the Standard & Poor's family of emerging market indexes, the S&P/IFCG index is intended to represent the most active stocks in the markets it covers and to be the broadest possible indicator of market movements. The S&P/IFCI index, which applies the same calculation methodology as the S&P/IFCG index, is designed to measure the returns foreign portfolio investors might receive from investing in emerging market stocks that are legally and practically open to foreign portfolio investment.

Standard & Poor's Emerging Markets Data Base, the source for all the data in the table, provides regular updates on 55 emerging stock markets encompassing more than 2,613 stocks. The S&P/IFCG index includes 33 markets and 1,702 stocks, and the S&P/IFCI index covers 22 markets and 911 stocks. In addition, 289 companies from 20 "frontier" markets are covered. These indexes are widely used benchmarks for international portfolio management. See Standard & Poor's (2001b) for further information on the indexes.

Because markets included in Standard & Poor's emerging markets category vary widely in level of development, it is best to look at the entire category to identify the most significant market trends. And it is useful to remember that stock market trends may be distorted by currency conversions, especially when a currency has registered a significant devaluation.

About the data is based on Demirgüç-Kunt and Levine (1996a), Beck and Levine (2001), and Claessens, Klingebiel, and Schmukler (2002).

• Market capitalization (also known as market value) is the share price times the number of shares outstanding. • Market liquidity is the total value traded divided by GDP. Value traded is the total value of shares traded during the period. • Turnover ratio is the total value of shares traded during the period divided by the average market capitalization for the period. Average market capitalization is calculated as the average of the end-of-period values for the current period and the previous period. • Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year. This indicator does not include investment companies, mutual funds, or other collective investment vehicles. • S&P/IFC Investable index price change is the U.S. dollar price change in the stock markets covered by the S&P/IFCI country index, supplemented by the S&P/IFCG country index.

The data on stock markets are from Standard & Poor's Global Stock Markets Factbook 2004, which draws on the Emerging Markets Data Base, supplemented by other data from Standard & Poor's. The firm collects data through an annual survey of the world's stock exchanges, supplemented by information provided by its network of correspondents and by Reuters. The GDP data are from the World Bank's national accounts data files.

	Domestic credit provided by banking sector		Liquid liabilities		Quasi-liquid liabilities		Ratio of bank liquid reserves to bank assets		Interest rate spread		Risk premium on lending	
	% of GDP		% of GDP		% of GDP		%		Lending minus deposit rate percentage points		Prime lending rate minus treasury bill rate percentage points	
	1990	2003	1990	2003	1990	2003	1990	2003	1990	2003	1990	2003
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..
Albania	..	44.1	..	60.1	..	40.7	..	10.3	2.1	5.9	..	5.5
Algeria	74.5	35.0	73.5	63.9	24.8	32.2	1.3	27.9	..	2.8	..	6.8
Angola	..	6.6	..	18.2	..	11.1	..	14.7	..	69.9	..	..
Argentina	32.4	50.6	11.5	30.1	7.1	18.7	7.4	16.2	..	9.0	..	..
Armenia	58.7	5.5	79.9	14.4	42.9	6.8	13.6	11.1	..	14.0	..	8.9
Australia	71.4	104.5	55.0	75.2	43.2	46.5	1.5	0.8	4.4	5.1	3.7	3.9
Austria	121.4	122.7	..	..	..	..	2.1	..	..	..	..	..
Azerbaijan	65.9	9.4	38.6	14.7	13.4	7.6	4.5	11.5	..	5.9	..	7.5
Bangladesh	23.9	38.4	23.4	40.2	16.8	31.1	12.8	8.8	4.0	8.2	..	..
Belarus	..	21.2	..	17.2	..	10.9	..	8.5	..	6.5	..	..
Belgium	73.1	112.2	..	..	..	..	0.2	..	6.9	5.2	3.4	4.7
Benin	22.4	9.8	26.7	22.0	5.9	7.3	29.3	16.8	9.0	..	..	..
Bolivia	30.7	60.0	24.5	53.3	18.0	44.0	18.8	6.0	18.0	6.3	..	7.7
Bosnia and Herzegovina	..	41.6	..	48.7	..	21.5	..	15.1	..	6.8	..	..
Botswana	−46.0	−9.3	21.9	29.5	13.6	21.9	11.0	4.4	1.8	6.3	..	..
Brazil	89.8	61.1	26.4	30.0	18.5	22.7	7.6	18.9	..	45.1	..	45.0
Bulgaria	118.5	29.8	74.5	48.7	56.2	25.4	6.7	9.3	13.0	5.9	8.6	6.0
Burkina Faso	12.1	13.7	18.8	19.4	6.6	7.6	12.7	12.4	9.0	..	..	..
Burundi	23.2	36.6	18.2	26.8	6.5	8.2	2.8	4.4	..	..	..	..
Cambodia	..	7.2	..	19.7	..	14.1	..	58.8	..	16.5	..	..
Cameroon	31.2	16.0	22.6	18.7	10.1	8.1	3.4	22.8	11.0	13.0	..	..
Canada	82.3	92.3	74.3	78.5	59.8	54.8	1.6	0.5	4.2	3.6	1.3	1.8
Central African Republic	12.9	14.7	15.3	13.9	1.8	1.6	2.8	3.7	11.0	13.0	..	..
Chad	11.5	11.4	14.6	12.1	0.6	0.7	3.3	15.1	11.0	13.0	..	..
Chile	73.0	70.6	40.8	38.2	32.8	28.3	3.6	4.7	8.5	3.4	..	..
China	90.0	177.9	79.2	190.6	41.4	116.9	15.7	12.2	0.7	3.3	..	..
Hong Kong, China	154.9	147.8	179.4	262.1	164.7	235.6	0.1	0.8	3.3	4.9	2.7	5.1
Colombia	35.9	35.2	29.8	32.0	19.3	20.9	27.4	6.4	8.8	7.4	..	..
Congo, Dem. Rep.	25.3	1.4	12.9	5.4	2.1	2.3	49.0	5.9	..	..	..	..
Congo, Rep.	29.1	12.8	22.0	13.7	6.1	2.4	2.0	31.4	11.0	13.0	..	..
Costa Rica	29.9	39.0	42.7	40.5	30.0	26.6	68.5	11.5	11.4	15.2	..	..
Côte d'Ivoire	44.5	18.9	28.8	28.1	10.9	7.8	2.1	11.3	9.0	..	..	..
Croatia	..	65.5	..	66.5	..	48.9	..	16.1	499.3	10.1	..	..
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	..	49.5	..	72.9	..	34.8	..	3.3	..	4.6	..	3.9
Denmark	63.0	161.9	59.0	52.9	29.4	19.3	1.1	0.7	6.2	4.7	..	..
Dominican Republic	31.5	44.0	28.6	48.9	13.3	34.8	31.2	27.1	15.2	10.9	..	..
Ecuador	15.5	19.7	21.1	21.7	11.8	14.4	19.0	3.3	−6.0	7.6	..	..
Egypt, Arab Rep.	106.8	117.2	87.9	106.6	60.7	84.1	17.1	25.1	7.0	5.3	..	6.6
El Salvador	23.6	50.5	26.0	42.0	16.7	33.9	27.3	13.1	3.2	..	..	..
Eritrea	..	148.2	..	169.5	..	103.0	..	23.6	..	..	..	..
Estonia	66.7	54.8	136.0	40.0	95.2	15.5	43.1	10.5	..	3.1	..	..
Ethiopia	55.4	62.4	42.1	59.4	12.2	26.8	23.9	15.1	6.0	4.7	3.0	6.7
Finland	83.0	69.5	54.4	..	..	..	4.1	..	4.1	3.3	..	..
France	104.4	107.2	..	..	..	..	1.0	..	6.1	3.9	0.4	4.3
Gabon	20.0	17.5	17.8	16.8	6.6	7.0	2.0	15.3	11.0	13.0	..	..
Gambia, The	3.4	25.3	20.7	43.5	8.8	19.6	8.8	13.7	15.2	11.3	..	..
Georgia	..	19.5	..	12.5	..	6.4	..	13.9	..	23.0	..	−12.0
Germany	104.4	142.9	68.8	..	..	..	3.2	..	4.5	7.0	3.5	6.7
Ghana	17.5	25.9	14.1	30.4	3.4	14.2	20.2	12.3	..	..	..	..
Greece	99.3	105.1	..	..	..	..	13.9	..	8.1	4.3	3.6	4.4
Guatemala	17.4	15.5	21.2	32.6	11.8	18.9	31.8	17.8	5.1	10.2	..	..
Guinea	6.1	15.2	0.8	15.2	0.8	2.9	6.2	17.0	0.2	..	..	..
Guinea-Bissau	77.5	12.8	68.9	71.2	4.4	0.4	10.8	22.2	13.1	..	..	..
Haiti	34.3	36.9	32.6	48.5	16.6	34.8	74.9	42.5	..	16.6	..	10.1

	Domestic credit provided by banking sector		Liquid liabilities		Quasi-liquid liabilities		Ratio of bank liquid reserves to bank assets		Interest rate spread		Risk premium on lending	
									Lending minus deposit rate percentage points		Prime lending rate minus treasury bill rate percentage points	
	% of GDP		% of GDP		% of GDP		%					
	1990	2003	1990	2003	1990	2003	1990	2003	1990	2003	1990	2003
Honduras	40.9	37.7	33.6	56.4	18.8	42.2	6.7	18.4	8.3	9.3	..	..
Hungary	105.5	58.3	43.8	48.0	19.0	28.4	11.2	3.6	4.1	−1.4	−1.4	1.4
India	51.5	57.3	43.1	63.9	28.1	45.7	14.8	5.3	..	..	..	..
Indonesia	45.5	55.7	40.4	53.4	29.1	41.1	4.2	12.0	3.3	6.3	..	..
Iran, Islamic Rep.	70.8	46.8	57.6	42.0	31.1	25.6	66.0	21.6	..	..	..	..
Iraq	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	55.2	118.4	44.5	..	..	..	4.8	..	5.0	2.8	0.4	..
Israel	106.2	86.9	70.2	102.2	63.6	93.6	11.9	7.9	12.0	4.0	11.4	3.7
Italy	89.4	105.3	70.5	..	..	..	12.0	..	7.3	4.1	1.7	2.8
Jamaica	32.2	37.9	47.2	44.2	35.0	30.8	37.4	19.5	6.6	10.4	4.3	−7.1
Japan	260.7	157.3	183.2	135.8	156.0	62.8	1.6	4.5	3.4	1.8	..	..
Jordan	117.9	90.3	131.2	132.2	77.8	91.7	20.5	34.9	2.2	6.2	..	..
Kazakhstan	..	13.7	..	21.1	..	10.3	..	5.3	..	..	..	..
Kenya	52.9	40.6	43.3	41.5	29.3	23.7	9.9	6.8	5.1	12.4	4.0	13.1
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	62.9	105.6	52.3	89.3	43.7	80.2	6.3	2.7	0.0	2.0	..	..
Kuwait	243.0	106.0	0.0	83.6	0.0	62.6	1.2	1.3	0.0	3.0	0.0	..
Kyrgyz Republic	..	11.4	..	17.6	..	4.9	..	7.6	..	14.1	..	11.9
Lao PDR	5.1	10.1	7.2	18.8	3.1	15.1	3.4	29.5	2.5	23.9	..	5.6
Latvia	..	45.5	..	36.6	..	17.1	..	4.3	..	2.4	..	2.1
Lebanon	132.6	188.0	193.7	225.7	170.9	215.7	3.9	48.2	23.1	4.7	21.1	5.7
Lesotho	32.8	4.4	39.2	26.7	22.6	8.8	23.0	7.7	7.4	10.9	4.1	4.1
Liberia	319.5	196.1	0.0	11.2	0.0	1.7	67.3	45.8	0.0	11.8	..	..
Libya	104.1	50.3	68.1	41.3	13.7	9.0	26.4	30.9	1.5	4.0	1.5	1.5
Lithuania	..	23.7	..	31.5	..	12.6	..	11.3	..	4.6	..	3.2
Macedonia, FYR	..	17.9	..	31.5	..	20.7	..	9.0	..	8.0	..	..
Madagascar	26.2	18.0	17.8	23.4	5.3	6.1	8.5	15.5	5.3	12.8	..	12.3
Malawi	19.7	22.6	20.2	25.8	10.8	15.2	32.9	20.1	8.9	23.8	8.1	9.6
Malaysia	75.7	152.1	0.0	130.7	−21.3	103.9	5.9	3.3	3.1	3.2	2.7	3.5
Mali	13.7	16.3	20.5	30.4	5.5	6.9	50.8	21.7	9.0	..	..	..
Mauritania	54.7	−7.2	28.5	16.2	7.0	5.0	6.1	3.5	5.0	13.0	..	..
Mauritius	48.4	78.6	67.9	88.0	52.7	74.3	8.8	5.0	5.4	11.5	..	..
Mexico	36.3	38.5	22.4	29.1	16.0	19.1	3.2	7.4	..	3.8	..	0.7
Moldova	62.8	29.8	70.3	32.1	35.4	16.0	8.3	14.2	..	6.7	..	4.2
Mongolia	72.4	38.0	56.2	48.1	14.7	33.6	2.0	11.5	..	12.3	..	..
Morocco	60.1	84.5	61.0	92.3	18.4	20.9	11.3	11.0	0.5	8.8	..	..
Mozambique	15.6	11.0	26.5	32.0	5.2	18.1	61.5	17.4	..	12.5	..	9.4
Myanmar	32.8	35.1	27.9	33.5	7.8	13.1	286.7	25.5	2.1	5.5	..	..
Namibia	20.3	55.8	24.3	41.6	14.2	17.3	4.4	3.3	10.6	5.9	6.3	4.2
Nepal	28.9	..	32.2	37.7	18.5	37.7	12.7	19.8	2.5	2.9	6.5	2.7
Netherlands	103.4	166.9	..	..	..	..	0.3	..	8.4	0.5	..	..
New Zealand	80.6	118.6	77.0	90.8	65.5	75.0	0.8	0.5	4.4	4.7	2.2	4.6
Nicaragua	206.6	96.5	56.9	42.0	23.1	35.2	20.2	27.3	12.5	10.0	..	..
Niger	16.2	9.2	0.0	7.4	−11.5	2.8	42.9	23.5	9.0	..	..	..
Nigeria	23.7	23.4	23.6	26.3	10.3	10.1	11.9	18.1	5.5	6.5	6.9	5.9
Norway	89.0	94.6	59.5	56.0	26.8	8.2	0.5	2.5	4.5	2.6	..	..
Oman	16.6	40.3	28.9	35.4	19.3	25.5	6.9	3.2	1.4	5.9	..	..
Pakistan	50.9	35.8	39.8	48.6	10.0	19.8	8.9	8.7	..	..	..	..
Panama	52.7	88.0	41.1	76.4	33.0	65.1	..	..	3.6	5.9	..	..
Papua New Guinea	35.7	22.2	35.2	27.0	24.0	11.5	3.2	11.9	6.9	5.2	4.1	−5.3
Paraguay	14.9	18.8	22.3	32.4	13.7	22.6	31.0	38.1	8.1	34.2	..	..
Peru	20.2	20.8	24.8	29.8	11.8	19.6	22.0	26.9	2,335.0	10.4	..	..
Philippines	26.9	59.5	37.0	60.4	28.4	48.5	20.9	7.5	4.6	4.3	0.4	3.6
Poland	19.5	37.0	34.0	42.7	17.2	26.3	20.6	4.4	462.5	3.6	−5.0	..
Portugal	69.4	151.1	..	..	..	..	29.0	..	7.8	..	8.3	..
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..

	Domestic credit provided by banking sector		Liquid liabilities		Quasi-liquid liabilities		Ratio of bank liquid reserves to bank assets		Interest rate spread		Risk premium on lending	
	% of GDP		% of GDP		% of GDP		%		Lending minus deposit rate percentage points		Prime lending rate minus treasury bill rate percentage points	
	1990	2003	1990	2003	1990	2003	1990	2003	1990	2003	1990	2003
Romania	79.7	15.9	60.4	24.4	32.7	18.7	1.2	62.1	..	..	..	..
Russian Federation	..	27.6	..	29.8	..	13.4	..	17.8	..	8.5	..	7.6
Rwanda	17.1	13.9	14.9	18.7	7.0	9.4	4.3	8.2	6.3	..	..	..
Saudi Arabia	52.7	70.3	42.9	51.5	19.6	23.7	5.6	5.5	..	..	..	..
Senegal	33.8	22.5	22.9	29.5	9.7	11.8	14.1	16.8	9.0	..	..	..
Serbia and Montenegro	..	..	..	..	..	..	..	..	..	..	..	..
Sierra Leone	36.3	47.3	18.1	24.7	3.6	8.9	64.1	6.8	12.0	11.6	5.0	4.3
Singapore	75.2	88.4	122.7	122.4	99.9	98.1	3.7	2.5	2.7	4.8	3.7	4.7
Slovak Republic	..	44.7	..	64.3	..	34.7	..	5.2	..	3.1	..	..
Slovenia	36.8	49.9	34.2	54.2	25.8	40.9	2.7	3.6	142.0	4.8	..	4.2
Somalia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	97.8	158.2	44.6	53.8	27.2	22.8	3.3	2.3	2.1	5.2	3.2	4.3
Spain	107.0	138.7	..	..	..	..	8.7	..	5.4	1.8	1.8	1.0
Sri Lanka	38.0	42.1	34.9	49.9	22.6	40.8	9.9	6.9	−6.4	4.3	−1.1	2.3
Sudan	20.4	11.9	20.1	15.8	2.9	5.9	79.5	19.8	..	..	..	..
Swaziland	7.7	11.5	29.0	21.4	20.3	13.9	21.5	6.6	5.8	7.0	3.4	4.0
Sweden	139.2	110.7	51.9	..	..	..	1.9	0.6	6.8	3.3	3.0	1.8
Switzerland	173.4	174.7	140.6	161.0	114.9	105.9	1.1	0.9	−0.9	3.1	−0.9	3.1
Syrian Arab Republic	56.6	30.1	54.7	82.6	10.5	24.2	46.0	10.0	5.0	5.0	..	..
Tajikistan	..	14.0	..	8.3	..	3.6	..	15.7	..	6.9	..	..
Tanzania	34.6	8.4	19.9	22.7	6.3	12.2	5.3	12.4	0.0	11.4	..	8.2
Thailand	91.1	113.0	74.9	112.4	66.0	97.8	3.1	4.9	2.2	4.6	..	..
Togo	21.3	18.0	0.0	24.3	−17.0	10.3	59.0	16.2	9.0	..	..	..
Trinidad and Tobago	58.5	38.3	54.6	46.8	42.7	35.1	13.5	12.5	6.9	8.3	5.4	6.5
Tunisia	62.5	71.7	0.0	59.1	−24.8	36.6	1.6	3.2	..	..	..	..
Turkey	19.5	53.9	24.1	43.6	16.4	37.8	16.4	7.9	..	..	..	..
Turkmenistan	..	19.1	..	16.5	..	7.8	..	6.9	..	..	..	..
Uganda	17.8	12.5	7.6	20.5	1.4	10.1	15.2	8.1	7.4	9.1	−2.3	2.1
Ukraine	83.2	32.7	50.1	35.8	9.0	15.6	49.0	8.9	..	10.9	..	..
United Arab Emirates	34.7	47.6	46.3	66.6	37.7	48.6	4.4	9.4	..	..	..	..
United Kingdom	121.0	150.4	..	..	..	..	0.5	0.3	2.2	..	0.7	0.1
United States	174.5	261.8	65.4	67.8	49.4	51.6	2.7	1.2	..	..	2.5	3.1
Uruguay	46.7	71.1	58.1	67.7	51.5	61.6	31.2	22.7	76.6	37.4	..	..
Uzbekistan	..	..	..	..	..	..	..	..	..	..	..	..
Venezuela, RB	37.4	10.3	38.8	22.3	29.4	8.4	21.9	31.9	7.7	8.0	..	..
Vietnam	4.7	52.5	22.7	62.4	9.3	36.5	25.3	8.1	..	2.9	..	3.7
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	60.6	4.8	55.1	39.5	10.4	22.0	121.2	21.4	..	5.0	..	5.1
Zambia	67.8	38.2	21.8	20.8	10.6	13.4	33.7	17.9	9.4	18.6	9.2	10.6
Zimbabwe	41.7	58.7	41.8	61.3	30.3	24.8	12.2	22.5	2.9	61.4	3.3	44.6
World	**139.0 w**	**162.1 w**	**83.2 w**	**85.4 w**	**.. w**	**55.1 w**	**10.3 m**	**11.3 m**	**5.5 m**	**6.3 m**	**.. m**	**.. m**
Low income	44.3	45.3	36.2	51.9	20.6	34.1	12.8	15.6	8.2	12.4	..	..
Middle income	64.3	85.3	42.2	81.4	24.7	51.5	13.5	10.8	5.0	6.3	..	..
Lower middle income	73.0	99.6	48.3	96.8	28.7	61.1	17.1	11.1	5.3	6.9	..	..
Upper middle income	45.5	53.5	29.0	46.9	16.0	30.2	9.9	7.4	6.2	4.7	..	..
Low & middle income	60.8	79.3	41.1	76.9	24.0	48.9	13.2	12.3	6.6	8.0	..	..
East Asia & Pacific	76.4	150.9	63.1	158.8	37.1	102.0	5.1	11.9	3.1	5.2	..	..
Europe & Central Asia	..	37.7	..	39.9	..	23.8	..	9.8	..	6.5	..	..
Latin America & Carib.	59.0	45.0	25.2	31.0	17.6	21.3	21.9	18.1	8.2	9.3	..	..
Middle East & N. Africa	70.4	69.9	59.0	68.4	26.9	40.0	14.2	21.5	2.2	5.2	..	..
South Asia	48.8	53.2	41.0	60.1	25.2	41.7	12.7	8.7	2.5	7.3	..	..
Sub-Saharan Africa	56.6	74.6	32.1	37.4	16.8	16.6	11.9	15.1	8.2	12.4	..	..
High income	153.1	181.9	92.8	104.3	..	74.8	2.0	1.2	4.5	3.9	2.4	3.2
Europe EMU	99.5	125.1	..	..	..	..	4.1	..	6.5	4.0	2.6	3.6

The organization and performance of financial activities in a country affect economic growth through their impact on how businesses raise and manage funds. These funds come from savings: savers accumulate claims on financial institutions, which pass the funds to their final users. But even if a country has savings, growth may not materialize—because the financial system may fail to direct the savings to where they can be invested most efficiently. Enabling it to do so requires established payments systems, the availability of price information, a way to manage uncertainty and control risk, and mechanisms to deal with problems of asymmetric information between parties to a financial transaction.

As an economy develops, the indirect lending by savers to investors becomes more efficient and gradually increases financial assets relative to gross domestic product (GDP). More specialized savings and financial institutions emerge and more financing instruments become available, spreading risks and reducing costs to liability holders. Securities markets mature, allowing savers to invest their resources directly in financial assets issued by firms. Financial systems vary widely across countries: banks, nonbank financial institutions, and stock markets are larger, more active, and more efficient in richer countries.

The ratio of domestic credit provided by the banking sector to GDP is used to measure the growth of the banking system because it reflects the extent to which savings are financial. In a few countries governments may hold international reserves as deposits in the banking system rather than in the central bank. Since the claims on the central government are a net item (claims on the central government minus central government deposits), this net figure may be negative, resulting in a negative figure for domestic credit provided by the banking sector.

Liquid liabilities are a general indicator of the size of financial intermediaries relative to the size of the economy, or an overall measure of financial sector development. Quasi-liquid liabilities are long-term deposits and assets—such as bonds, commercial paper, and certificates of deposit—that can be converted into currency or demand deposits, but at a cost. The ratio of bank liquid reserves to bank assets captures the banking system's liquidity. In countries whose banking system is liquid, adverse macroeconomic conditions should be less likely to lead to banking and financial crises. Data on domestic credit and liquid and quasi-liquid liabilities are cited on an end-of-year basis.

No less important than the size and structure of the financial sector is its efficiency, as indicated by the margin between the cost of mobilizing liabilities and the earnings on assets—or the interest rate spread. A narrowing of the interest rate spread reduces transaction costs, which lowers the overall cost of investment and is therefore crucial to economic growth. Interest rates reflect the responsiveness of financial institutions to competition and price incentives. The interest rate spread, also known as the intermediation margin, is a summary measure of a banking system's efficiency (although if governments set interest rates, the spreads become less reliable measures of efficiency). The risk premium on lending can be approximated by the spread between the lending rate to the private sector (line 60p in the International Monetary Fund's International Financial Statistics, or IFS) and the "risk free" treasury bill interest rate (IFS line 60c). A small spread indicates that the market considers its best corporate customers to be low risk. Interest rates are expressed as annual averages.

In some countries financial markets are distorted by restrictions on foreign investment, selective credit controls, and controls on deposit and lending rates. Interest rates may reflect the diversion of resources to finance the public sector deficit through statutory reserve requirements and direct borrowing from the banking system. And where state-owned banks dominate the financial sector, noncommercial considerations may unduly influence credit allocation. The indicators in the table provide quantitative assessments of each country's financial sector, but qualitative assessments of policies, laws, and regulations are needed to analyze overall financial conditions. Recent international financial crises highlight the risks of weak financial intermediation, poor corporate governance, and deficient government policies.

The accuracy of financial data depends on the quality of accounting systems, which are weak in some developing countries. Some indicators in the table are highly correlated, particularly the ratios of domestic credit, liquid liabilities, and quasi-liquid liabilities to GDP, because changes in liquid and quasi-liquid liabilities flow directly from changes in domestic credit. Moreover, the precise definition of the financial aggregates presented varies by country.

The indicators reported here do not capture the activities of the informal sector, which remains an important source of finance in developing economies. Personal credit or credit extended through community-based pooling of assets may be the only source of credit for small farmers, small businesses, and home-based producers. And in financially repressed economies the rationing of formal credit forces many borrowers and lenders to turn to the informal market, which is very expensive, or to self-financing and family savings.

• Domestic credit provided by banking sector includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. The banking sector includes monetary authorities, deposit money banks, and other banking institutions for which data are available (including institutions that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other banking institutions include savings and mortgage loan institutions and building and loan associations. • Liquid liabilities are also known as broad money, or M3. They include bank deposits of generally less than one year plus currency. Liquid liabilities are the sum of currency and deposits in the central bank (M0); plus transferable deposits and electronic currency (M1); plus time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase agreements (M2); plus travelers' checks, foreign currency time deposits, commercial paper, and shares of mutual funds or market funds held by residents. The ratio of liquid liabilities to GDP indicates the relative size of these readily available forms of money—money that the owners can use to buy goods and services without incurring any cost. • Quasi-liquid liabilities are the M3 money supply less M1. • Ratio of bank liquid reserves to bank assets is the ratio of domestic currency holdings and deposits with the monetary authorities to claims on other governments, nonfinancial public enterprises, the private sector, and other banking institutions. • Interest rate spread is the interest rate charged by banks on loans to prime customers minus the interest rate paid by commercial or similar banks for demand, time, or savings deposits. • Risk premium on lending is the interest rate charged by banks on loans to prime private sector customers minus the "risk free" treasury bill interest rate at which short-term government securities are issued or traded in the market. In some countries this spread may be negative, indicating that the market considers its best corporate clients to be lower risk than the government.

	Tax revenue	Taxes on income, profits, and capital gains		Taxes on goods and services		Taxes on exports		Customs and other import duties		Highest marginal tax rate[a]		
				% of value added in industry and services						Individual		Corporate
	% of GDP	% of total taxes				% of tax revenue		% of tax revenue		%	on income over $	%
	2003	1995	2003	1995	2003	1995	2003	1995	2003	2004	2004	2004
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..
Albania[b]	..	13.3	..	19.0	..	..	..	20.9	..	..	..	..
Algeria[b]	32.0	68.5	74.0	3.8	3.8	..	..	19.5	14.6	..	..	..
Angola	..	..	..	..	..	..	..	..	..	..	..	..
Argentina	9.4	..	19.5	..	4.6	..	16.1	..	4.2	35	41,667	35
Armenia[b]	14.0	..	15.1	..	13.0	..	..	..	4.7	..	..	..
Australia	24.1	..	67.6	..	7.4	..	..	..	2.9	47	46,538	30
Austria	21.0	..	47.1	..	11.0	..	..	..	0.0	50	64,052	34
Azerbaijan[b]	..	30.9	..	9.1	..	16.2	..	8.6	..	35	7,307	24
Bangladesh[b]	8.1	..	15.7	..	4.8	..	0.0	..	34.9	..	..	..
Belarus[b]	14.2	24.6	12.3	13.4	12.7	3.0	..	4.4	..	..	..	..
Belgium	26.7	..	60.8	..	11.5	..	..	..	..	50	30,210	33
Benin	..	..	..	..	..	..	..	..	..	..	..	..
Bolivia	13.3	..	11.1	..	12.2	..	..	..	5.7	13	..	25
Bosnia and Herzegovina	..	..	..	..	..	..	..	..	..	..	..	..
Botswana[b]	..	51.3	..	2.0	..	0.0	..	37.7	..	25	20,950	15
Brazil[b]	..	35.4	..	6.8	..	0.0	..	5.3	..	28	8,843	15
Bulgaria[b]	19.0	29.9	22.6	13.2	18.6	0.4	0.0	11.1	3.5	29	4,550	20
Burkina Faso	..	..	..	..	..	..	..	..	..	..	..	..
Burundi[b]	..	21.7	..	17.3	..	11.8	..	18.5	..	..	..	..
Cambodia	..	..	..	..	..	..	..	..	..	20	36,356	20
Cameroon[b]	..	31.5	..	4.4	..	4.5	..	23.9	..	..	..	..
Canada[b]	14.1	72.5	73.6	3.9	..	..	..	2.6	1.7	29	80,972	21
Central African Republic	..	..	..	..	..	..	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..
Chile	16.2	..	27.1	..	13.7	..	..	..	..	40	6,127	17
China[b]	8.3	12.0	12.5	5.1	7.3	..	..	9.6	..	45	12,082	..
Hong Kong, China	9.3	..	61.8	..	2.0	..	..	..	0.6	17	13,462	18
Colombia	13.9	..	48.6	..	6.7	..	..	..	7.1	35	29,426	37
Congo, Dem. Rep.[b]	6.3	35.8	32.0	2.3	4.6	2.6	1.8	32.8	32.9	50	6,056	40
Congo, Rep.[b]	8.4	12.6	..	5.8	6.9	..	..	40.3	20.5	..	..	..
Costa Rica[b]	13.5	18.5	24.9	8.4	10.4	4.4	0.3	19.4	5.8	30	16,860	30
Côte d'Ivoire[b]	14.9	16.8	23.1	4.0	4.8	17.2	16.8	33.9	30.3	10	3,837	35
Croatia[b]	24.4	16.9	13.3	25.2	24.7	..	..	14.8	10.4	45	35,171	..
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	16.4	..	41.6	..	10.2	..	..	..	2.5	32	12,910	28
Denmark	30.1	..	44.4	..	18.9	..	..	..	..	59	51,162	30
Dominican Republic[b]	15.7	18.0	23.6	6.2	6.9	0.0	0.0	38.7	33.8	25	23,734	25
Ecuador[b]	..	56.5	..	..	..	0.4	..	11.8	..	25	57,600	25
Egypt, Arab Rep.[b]	..	33.8	..	6.0	..	..	..	20.5	..	..	..	..
El Salvador	11.3	..	29.7	..	0.8	..	..	..	10.7	..	..	..
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..
Estonia[b]	15.5	32.8	24.2	16.0	13.9	..	..	0.7	0.2	26	1,354	35
Ethiopia[b]	..	31.0	..	6.3	..	5.2	..	29.2	..	..	..	..
Finland	23.0	..	36.7	..	16.7	..	..	..	0.0	34	68,517	29
France	22.6	..	45.5	..	12.2	..	..	..	0.0	48	60,673	33
Gabon	..	..	..	..	..	..	..	..	..	..	..	..
Gambia, The[b]	..	..	..	..	..	..	..	..	..	..	..	..
Georgia[b]	7.0	11.1	5.3	9.2	7.9	..	..	15.5	11.0	..	..	..
Germany	11.5	47.3	42.2	6.5	7.5	..	..	..	..	45	65,224	25
Ghana[b]	..	21.7	..	9.1	..	7.0	..	26.1	..	30	5,647	33
Greece	..	..	..	..	..	..	..	..	..	40	29,464	35
Guatemala[b]	10.3	20.8	27.6	5.1	8.0	0.0	0.0	24.6	11.7	31	35,853	31
Guinea[b]	..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..
Haiti	..	..	..	..	..	..	..	..	..	..	..	..

	Tax revenue	Taxes on income, profits, and capital gains		Taxes on goods and services		Taxes on exports		Customs and other import duties		Highest marginal tax rate[a]		
										Individual		Corporate
	% of GDP	% of total taxes		% of value added in industry and services		% of tax revenue		% of tax revenue		%	on income over $	%
	2003	1995	2003	1995	2003	1995	2003	1995	2003	2004	2004	2004
Honduras	..	..	..	..	..	..	..	..	..	25	27,778	25
Hungary	22.2	..	32.3	..	16.4	..	..	..	3.2	38	7,214	16
India[b]	9.1	29.9	38.0	5.4	5.5	0.1	0.1	31.6	19.6	30	3,283	36
Indonesia[b]	13.0	54.5	49.6	7.1	6.4	0.3	0.3	4.5	4.7	35	22,371	30
Iran, Islamic Rep.[b]	6.7	42.4	42.6	1.6	0.7	0.3	..	9.8	43.2	35	125,345	25
Iraq	..	..	..	..	..	..	..	..	..	..	..	..
Ireland[b]	..	49.6	..	11.3	..	..	..	..	..	42	35,443	13
Israel	29.9	..	45.8	..	..	..	..	..	0.9	49	90,040	36
Italy	..	..	..	..	..	..	..	..	..	45	88,608	33
Jamaica[b]	25.2	38.2	37.9	10.6	11.5	..	..	12.3	9.8	25	1,993	33
Japan[b]	..	62.9	..	3.0	..	..	..	1.7	..	37	167,395	30
Jordan[b]	18.8	15.6	14.8	9.1	11.0	..	..	32.6	15.9	..	..	..
Kazakhstan[b]	13.6	23.5	45.2	4.8	7.5	0.0	0.7	4.7	5.0	20	47,552	30
Kenya[b]	..	39.9	..	17.0	..	0.0	..	17.1	..	30	5,841	30
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.[b]	15.4	39.3	37.2	6.1	7.3	..	..	8.2	6.2	36	66,644	27
Kuwait[b]	..	24.7	..	0.0	..	..	..	69.9	..	..	..	..
Kyrgyz Republic[b]	12.4	29.6	21.9	18.4	16.0	..	..	..	..	..	..	..
Lao PDR	..	..	..	..	..	..	..	..	..	..	..	..
Latvia[b]	14.3	14.2	21.9	13.2	12.6	..	..	5.4	2.1	..	..	15
Lebanon	15.1	..	14.2	..	11.0	..	..	..	14.3	..	..	..
Lesotho[b]	33.5	19.5	29.5	9.1	9.6	0.0	..	68.0	..	..	..	..
Liberia	..	..	..	..	..	..	..	..	..	..	..	..
Libya	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	17.4	..	33.9	..	13.4	..	..	..	1.5	..	..	15
Macedonia, FYR	..	..	..	..	..	..	..	..	..	..	..	..
Madagascar	7.7	..	22.9	..	3.6	..	..	..	32.1	..	..	..
Malawi	..	..	..	..	..	..	..	..	..	..	..	..
Malaysia[b]	17.6	46.3	63.9	7.2	5.6	2.4	1.9	12.9	5.6	28	65,789	28
Mali	..	..	..	..	..	..	..	..	..	..	..	..
Mauritania	..	..	..	..	..	..	..	..	..	..	..	..
Mauritius[b]	17.5	15.9	15.4	6.9	11.4	3.4	..	44.0	25.0	25	951	25
Mexico[b]	..	38.9	..	9.6	..	0.0	..	5.7	..	33	9,555	33
Moldova[b]	14.8	12.3	5.2	15.5	18.6	..	..	3.6	9.8	..	..	..
Mongolia	22.6	..	28.2	..	17.5	..	0.5	..	9.4	..	..	..
Morocco[b]	..	26.0	..	12.9	..	0.0	..	19.4	..	..	..	..
Mozambique	..	..	..	..	..	..	..	..	..	32	42,314	32
Myanmar[b]	2.3	34.4	40.5	4.2	..	..	..	20.7	4.7	..	..	..
Namibia[b]	29.6	30.2	47.6	13.1	8.5	..	0.0	..	27.9	35	29,851	35
Nepal[b]	9.4	14.0	15.7	7.5	7.5	1.7	2.1	33.9	31.6	..	..	..
Netherlands	22.8	..	43.3	..	13.1	..	..	..	..	52	63,777	35
New Zealand	30.8	..	62.4	..	..	..	..	..	1.8	39	39,242	33
Nicaragua[b]	15.3	13.7	26.0	11.7	12.5	..	..	10.6	6.7	..	..	..
Niger	..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	..	..	..	..	..	..	..	..	..	..	..	..
Norway	27.5	..	50.8	..	15.0	..	..	..	0.4	..	..	28
Oman[b]	7.4	77.5	77.1	..	..	..	..	11.5	10.3	0	..	12
Pakistan[b]	10.9	24.3	27.5	7.1	7.1	..	..	31.4	13.2	35	11,746	41
Panama[b]	9.3	39.3	41.5	4.7	2.5	1.0	0.0	20.2	23.7	30	200,000	30
Papua New Guinea[b]	22.3	52.6	54.0	2.9	4.1	10.9	4.4	24.0	24.4	..	..	..
Paraguay[b]	9.5	20.2	17.0	7.4	8.1	..	..	24.9	18.1	0	..	30
Peru[b]	12.9	21.5	30.8	10.2	10.9	..	..	13.1	9.2	30	49,899	30
Philippines[b]	12.3	35.8	45.4	5.8	4.4	..	..	31.4	19.7	32	8,995	32
Poland[b]	17.4	42.8	29.0	12.3	13.6	..	..	12.0	2.8	40	19,211	19
Portugal	22.0	40.8	41.2	14.5	14.6	..	..	0.0	0.0	40	67,139	25
Puerto Rico	..	..	..	..	..	..	..	..	..	33	50,000	20

	Tax revenue	Taxes on income, profits, and capital gains		Taxes on goods and services		Taxes on exports		Customs and other import duties		Highest marginal tax rate[a]		
	% of GDP	% of total taxes		% of value added in industry and services		% of tax revenue		% of tax revenue		Individual %	Individual on income over $	Corporate %
	2003	1995	2003	1995	2003	1995	2003	1995	2003	2004	2004	2004
Romania[b]	11.8	47.2	23.4	9.6	10.6	..	..	9.1	6.6	40	4,617	25
Russian Federation	13.2	..	9.5	..	10.1	..	16.8	..	9.0	13	..	24
Rwanda[b]	..	..	..	..	..	..	..	..	..	..	..	..
Saudi Arabia	..	..	..	..	..	..	..	..	..	0	..	0
Senegal[b]	17.0	22.9	22.8	5.0	7.4	..	..	..	..	..	..	..
Serbia and Montenegro[b]	22.8	..	21.0	..	..	..	..	..	10.8	..	..	..
Sierra Leone[b]	..	17.0	..	6.1	..	..	..	43.2	..	..	..	..
Singapore[b]	13.3	41.5	51.7	5.8	4.4	..	..	2.0	3.3	22	188,191	20
Slovak Republic	16.8	..	35.5	..	10.8	..	..	..	2.0	38	14,087	25
Slovenia[b]	21.6	23.2	27.1	15.3	16.4	..	..	15.9	2.8	50	..	25
Somalia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa[b]	25.1	54.0	56.1	10.0	10.7	..	..	4.5	2.3	40	38,060	30
Spain	12.9	..	61.3	..	5.7	..	..	..	0.0	29	56,962	35
Sri Lanka[b]	14.0	14.5	17.0	15.6	13.4	0.0	..	20.6	12.8	30	8,083	30
Sudan[b]	..	..	..	..	..	..	..	..	..	..	..	..
Swaziland[b]	..	..	..	..	..	..	..	..	..	33	5,496	30
Sweden	19.0	..	8.6	..	15.1	..	..	..	..	25	59,756	28
Switzerland[b]	10.2	30.6	30.3	..	..	..	..	2.3	2.4	..	..	9
Syrian Arab Republic[b]	..	28.9	..	11.8	..	3.0	..	12.5	..	..	..	..
Tajikistan[b]	8.3	..	3.7	..	9.4	..	..	..	21.4	..	..	..
Tanzania	..	..	..	..	..	..	..	..	..	30	6,090	30
Thailand	15.4	..	36.4	..	8.7	..	0.3	..	12.0	37	101,420	30
Togo	..	..	..	..	..	..	..	..	..	..	..	..
Trinidad and Tobago[b]	..	60.2	..	7.3	..	..	..	6.9	..	30	7,937	30
Tunisia[b]	20.6	23.1	32.8	6.8	11.8	0.2	0.1	39.6	10.8	..	..	..
Turkey[b]	..	40.2	..	9.4	..	..	..	4.8	..	40	100,298	30
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda[b]	11.8	..	21.4	..	8.7	..	..	..	..	30	2,523	30
Ukraine[b]	14.0	..	26.1	..	12.0	..	0.0	..	7.5	13	..	25
United Arab Emirates[b]	..	..	..	..	..	..	..	..	..	..	..	..
United Kingdom	27.2	..	48.8	..	13.4	..	..	..	..	40	51,358	30
United States	9.9	..	89.8	..	0.7	..	..	..	2.0	35	319,100	35
Uruguay[b]	17.5	15.5	22.1	9.7	10.5	0.1	0.1	5.3	4.1	..	..	35
Uzbekistan	..	..	..	..	..	..	..	..	..	30	666	18
Venezuela, RB[b]	11.3	49.3	27.9	6.0	6.1	..	..	12.0	7.3	34	60,324	34
Vietnam[b]	16.4	19.4	32.0	8.8	9.0	..	..	30.9	22.8	..	..	28
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.[b]	..	35.2	..	2.3	..	..	..	36.6	..	..	..	..
Zambia[b]	..	31.4	..	6.3	..	0.3	..	42.0	..	30	368	35
Zimbabwe[b]	..	46.2	..	8.8	..	..	..	18.8	..	45	26,249	30

a. These data are from PricewaterhouseCoopers' Individual Taxes: Worldwide Summaries 2004–2005 and Corporate Taxes: Worldwide Summaries 2004–2005, copyright 2004 by PricewaterhouseCoopers by permission of John Wiley and Sons, Inc. b. Data were reported on a cash basis and have been adjusted to the accrual framework.

For the first time the data in this table are based on the concepts and recommendations of the second edition of the International Monetary Fund's (IMF) Government Finance Statistics Manual 2001. Previous editions of World Development Indicators used data derived on the basis of 1986 manual. The 2001 manual, which is harmonized with the 1993 System of National Accounts, recommends an accrual accounting method instead of the cash-based method of the 1986 manual. The new manual focuses on all economic events affecting assets, liabilities, revenues, and expenses, instead of only those represented by cash transactions. See About the data for tables 4.11 and 4.13 for more detailed information.

Taxes are the main source of revenue for many governments. The sources of tax revenue and the relative contributions of these sources are determined by government policy choices about where and how to impose taxes and by changes in the structure of the economy. Tax policy may reflect concerns about distributional effects, economic efficiency (including corrections for externalities), and the practical problems of administering a tax system. There is no ideal level of taxation. But taxes influence incentives and thus the behavior of economic actors and the economy's competitiveness.

Taxes are compulsory transfers to governments from individuals, businesses, and institutions. Certain compulsory transfers, such as fines, penalties, and most social security contributions, are excluded from tax revenue.

The level of taxation is typically measured by tax revenue as a share of gross domestic product (GDP). Comparing levels of taxation across countries provides a quick overview of the fiscal obligations and incentives facing the private sector. In this table tax data in local currencies are normalized by scaling values in the same units to ease cross-country comparisons. The table shows only central government data, which may significantly understate the total tax burden, particularly in countries where provincial and municipal governments are large or have considerable tax authority.

Low ratios of tax revenue to GDP may reflect weak administration and large-scale tax avoidance or evasion. Low ratios may also reflect the presence of a sizable parallel economy with unrecorded and undisclosed incomes. Tax revenue ratios tend to rise with income, with higher income countries relying on taxes to finance a much broader range of social services and social security than lower income countries are able to provide.

As economies develop, their capacity to tax residents' income, profits, and capital gains typically expands and other taxes become less important as a source of revenue. Thus the share of taxes on income, profits, and capital gains is one measure of an economy's (and tax system's) level of development. In the early stages of development governments tend to rely on other taxes because the administrative costs of collecting them are relatively low. The two main other categories of taxes are taxes on goods and services and taxes on international trade and transactions (including customs and other import duties). The table shows taxes on goods and services as a percentage of value added in industry and services.

Taxes on exports and customs and other import duties are shown separately because the burden they impose on the economy (and thus growth) is likely to be large. Taxes on exports, typically levied on primary (particularly agricultural) products, often take the place of taxes on income and profits, but they reduce the incentive to export and encourage a shift to other products. High customs and other import duties penalize consumers, create protective barriers—which promote higher priced output and inefficient production—and implicitly tax exports. By contrast, lower trade taxes enhance openness—to foreign competition, knowledge, technologies, and resources—energizing development in many ways. Seeing this pattern, some of the fastest growing economies have lowered import tariffs in recent years. In some countries, such as members of the European Union, most customs duties are collected by a supranational authority; these revenues are not reported in the individual countries' accounts.

The tax revenues collected by governments are the outcomes of systems that are often complex, containing many exceptions, exemptions, penalties, and other inducements that affect the incidence of taxes and thus influence the decisions of workers, managers, and entrepreneurs. A potentially important influence on both domestic and international investors is a tax system's progressivity, as reflected in the highest marginal tax rate levied at the national level on individual and corporate income. Figures for individual marginal tax rates generally refer to employment income. In some countries the highest marginal tax rate is also the basic or flat rate, and other surtaxes, deductions, and the like may apply. And in many countries several different corporate tax rates may be levied, depending on the type of business (mining, banking, insurance, agriculture, manufacturing), ownership (domestic or foreign), volume of sales, or whether surtaxes or exemptions are included. The corporate tax rates in the table are mainly general rates applied to domestic companies. For more detailed information, see the country's laws, regulations, and tax treaties.

• Tax revenue refers to compulsory transfers to the central government for public purposes. Certain compulsory transfers such as fines, penalties, and most social security contributions are excluded. Refunds and corrections of erroneously collected tax revenue are treated as negative revenue. • Taxes on income, profits, and capital gains are levied on wages, salaries, tips, fees, commissions, and other compensation for labor services; interest, dividends, rent, and royalties; profits of businesses, estates, and trusts; and capital gains and losses. Social security contributions based on gross pay, payroll, or number of employees are not included, but taxable portions of social security, pension, and other retirement account distributions are included. • Taxes on goods and services are all taxes and duties levied on the production, extraction, sale, transfer, leasing, or delivery of goods and rendering of services, or on the use of goods or permission to use goods or perform activities. These include value added taxes, general sales taxes, turnover and other general taxes on goods and services, excise taxes, profits on fiscal monopolies, taxes on specific services, taxes on use of goods and on permission to use goods or perform activities, motor vehicle taxes, and other taxes such as on extraction of minerals, fossil fuels, and other exhaustible resources. • Taxes on exports are all levies on goods being transported out of the country or services being delivered to nonresidents by residents. Rebates on exported goods that are repayments of previously paid general consumption taxes, excise taxes, or import duties are deducted from the gross amounts receivable from these taxes, not from amounts receivable from export taxes. • Customs and other import duties are all levies collected on goods that are entering the country or services delivered by nonresidents to residents. They include levies imposed for revenue or protection purposes and determined on a specific or ad valorem basis as long as they are restricted to imported goods or services. • Highest marginal tax rate is the highest rate shown on the national level schedule of tax rates applied to the annual taxable income of individuals and corporations. Also presented are the income levels for individuals above which the highest marginal tax rates levied at the national level apply.

	Exchange rate arrangements[a]		Official exchange rate	Purchasing power parity (PPP) conversion factor		Ratio of PPP conversion factor to official exchange rate	Real effective exchange rate	Interest rate		
			local currency units to $	local currency units to international $			Index 2000 = 100	Deposit	% Lending	Real
	Classification 2003	Structure 2003	2003	1990	2003	2003	2003	2003	2003	2003
Afghanistan	MF	U	3,000.00	..	..	..	..	..	..	..
Albania	IF	U	121.86	2.0	51.4	0.4	..	8.4	14.3	10.0
Algeria	MF	U	77.39	5.0	26.5	0.3	85.3	5.3	8.0	−0.2
Angola	MF	U	74.61	0.0	31.0	0.4	..	26.2	96.1	2.0
Argentina	MF	U	2.90	0.3	0.8	0.3	..	10.2	19.1	7.6
Armenia	IF	U	578.76	0.0	144.7	0.3	77.2	6.9	20.8	15.5
Australia	IF	U	1.54	1.4	1.4	0.9	113.7	3.3	8.4	5.4
Austria	Euro	U	0.89	0.9	0.9	1.0	104.3	..	..	..
Azerbaijan	MF	U	4,910.73	..	1,177.0	0.2	..	9.5	15.5	11.0
Bangladesh	MF	U	58.15	9.5	12.3	0.2	..	7.8	16.0	11.0
Belarus	P	U	2,051.27	0.0	600.8	0.3	..	17.4	24.0	−3.7
Belgium	Euro	U	0.89	0.9	0.9	1.0	105.4	1.6	6.9	5.1
Benin	EA/Euro	U	581.20	159.8	269.7	0.5	..	3.5	..	..
Bolivia	P	U	7.66	1.3	2.6	0.3	86.1	11.4	17.7	11.9
Bosnia and Herzegovina	CB/Euro	U	1.73	..	0.5	0.3	..	4.0	10.9	9.6
Botswana	P	D	4.95	1.2	2.5	0.5	..	10.0	16.3	12.3
Brazil	IF	U	3.08	0.0	1.1	0.4	..	22.0	67.1	48.2
Bulgaria	CB/Euro	U	1.73	0.0	0.6	0.3	115.6	2.9	8.8	6.6
Burkina Faso	EA/Euro	U	581.20	135.4	170.9	0.3	..	3.5	..	..
Burundi	MF	U	1,082.62	49.3	138.1	0.1	65.5	..	18.2	5.9
Cambodia	M	D	3,973.33	..	604.8	0.2	..	2.0	18.5	15.9
Cameroon	EA/Euro	U	581.20	170.9	213.0	0.4	112.3	5.0	18.0	16.9
Canada	IF	U	1.40	1.3	1.2	0.9	106.7	1.1	4.7	3.3
Central African Republic	EA/Euro	U	581.20	135.1	164.8	0.3	114.4	5.0	18.0	14.5
Chad	EA/Euro	U	581.20	107.7	145.7	0.3	..	5.0	18.0	18.5
Chile	IF	U	691.43	148.7	308.9	0.4	78.5	2.7	6.2	1.7
China	P	U	8.28	1.3	1.8	0.2	96.7	2.0	5.3	3.0
Hong Kong, China	CB	U	7.79	6.4	6.6	0.8	..	0.1	5.0	10.7
Colombia	IF	U	2,877.65	119.8	757.5	0.3	82.0	7.8	15.2	6.4
Congo, Dem. Rep.	IF	U	405.34	0.0	62.1	0.2	35.1	..	66.8	31.5
Congo, Rep.	EA/Euro	U	581.20	385.8	571.6	1.0	..	5.0	18.0	23.0
Costa Rica	P	U	398.66	32.6	180.6	0.5	94.2	10.4	25.6	16.5
Côte d'Ivoire	EA/Euro	U	581.20	167.1	321.1	0.6	115.8	3.5	..	..
Croatia	MF	U	6.70	0.0	3.9	0.6	103.4	1.5	11.6	8.1
Cuba	..	..	..	..	..	..	..	..	..	..
Czech Republic	MF	U	28.21	8.2	15.2	0.5	114.2	1.3	5.9	4.2
Denmark	P	U	6.59	8.1	8.2	1.3	108.5	2.4	7.1	5.4
Dominican Republic	MF	U	30.83	2.6	8.6	0.3	74.8	20.5	31.4	3.1
Ecuador	EA/Other	U	1.00	0.4	0.6	0.6	153.4	5.5	13.1	3.8
Egypt, Arab Rep.	MF	U	5.85	0.8	1.6	0.3	..	8.2	13.5	9.4
El Salvador	EA/Other	U	8.75	2.4	4.2	0.5	..	..	..	..
Eritrea	P	D	13.88	1.1	2.8	0.2	..	..	..	..
Estonia	CB	U	13.86	0.1	6.9	0.5	..	2.4	5.5	3.0
Ethiopia	MF	U	8.60	0.7	1.2	0.1	..	3.4	8.0	−5.7
Finland	Euro	U	0.89	1.0	1.0	1.1	106.5	1.5	4.8	3.9
France	Euro	U	0.89	1.0	0.9	1.1	106.4	2.7	6.6	5.0
Gabon	EA/Euro	U	581.20	339.4	409.3	0.7	107.8	5.0	18.0	19.4
Gambia, The	MF	U	19.92	1.8	3.9	0.2	52.1	12.7	24.0	6.9
Georgia	MF	U	2.15	0.0	0.6	0.3	..	9.3	32.3	27.8
Germany	Euro	U	0.89	1.0	0.9	1.0	106.7	2.7	9.7	8.0
Ghana	MF	U	8,677.37	94.3	1,430.3	0.2	101.4	14.3	..	..
Greece	Euro	U	0.89	0.3	0.7	0.8	109.3	2.5	6.8	3.2
Guatemala	IF	U	7.94	1.4	3.8	0.5	..	4.8	15.0	8.7
Guinea	P	D	1,984.93	223.9	434.8	0.2	..	6.5	..	..
Guinea-Bissau	EA/Euro	U	581.20	10.9	131.0	0.2	..	3.5	..	..
Haiti	MF	U	42.37	1.1	8.0	0.2	..	14.0	30.6	4.1

	Exchange rate arrangements[a]		Official exchange rate	Purchasing power parity (PPP) conversion factor		Ratio of PPP conversion factor to official exchange rate	Real effective exchange rate	Interest rate		
	Classification 2003	Structure 2003	local currency units to $ 2003	local currency units to international $ 1990	2003	2003	Index 2000 = 100 2003	Deposit 2003	% Lending 2003	Real 2003
Honduras	P	U	17.35	1.3	6.5	0.4	..	11.5	20.8	11.2
Hungary	P/Euro	U	224.31	22.1	125.7	0.6	121.7	11.0	9.6	1.6
India	MF	U	46.58	4.8	9.0	0.2	..	..	11.5	7.5
Indonesia	MF	U	8,577.13	639.3	2,476.2	0.3	..	10.6	16.9	9.8
Iran, Islamic Rep.	MF	U	8,193.89	179.5	2,419.8	0.3	124.1	..	..	..
Iraq	MF	U	0.31	..	..	..	..	..	..	..
Ireland	Euro	U	0.89	0.8	0.9	1.0	117.4	0.0	2.8	−1.5
Israel	P	U	4.55	1.8	3.7	0.8	83.2	6.6	10.6	10.5
Italy	Euro	U	0.89	0.7	0.8	0.9	109.3	0.9	5.0	2.0
Jamaica	MF	U	57.74	4.4	43.4	0.8	..	8.5	18.9	5.6
Japan	IF	U	115.93	187.9	139.8	1.2	81.4	0.0	1.8	4.4
Jordan	P	U	0.71	0.3	0.3	0.4	..	3.1	9.3	7.3
Kazakhstan	MF	U	149.58	0.0	44.8	0.3	..	..	..	..
Kenya	MF	U	75.94	9.0	33.0	0.4	..	4.1	16.6	4.7
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	IF	U	1,191.61	579.8	837.8	0.7	..	4.3	6.2	3.9
Kuwait	P	U	0.30	..	0.3	1.0	..	2.4	5.4	3.0
Kyrgyz Republic	MF	U	43.65	0.0	9.4	0.2	..	5.0	19.1	14.8
Lao PDR	MF	U	10,569.04	174.2	2,264.0	0.2	..	6.6	30.5	11.8
Latvia	P	U	0.57	0.0	0.3	0.5	..	3.0	5.4	6.5
Lebanon	P	U	1,507.50	305.4	1,255.2	0.8	..	8.7	13.4	12.0
Lesotho	P	U	7.56	1.0	1.9	0.2	104.3	5.2	16.0	8.1
Liberia	IF	U	59.38	..	..	..	..	5.3	17.1	44.2
Libya	P	U	1.29	..	..	..	..	3.0	7.0	..
Lithuania	CB	U	3.06	0.0	1.4	0.5	..	1.3	5.8	4.4
Macedonia, FYR	P	U	54.32	0.0	18.2	0.3	100.0	8.0	16.0	14.0
Madagascar	IF	U	6,191.64	513.4	2,479.6	0.4	..	11.5	24.3	20.9
Malawi	IF	U	97.43	1.4	25.3	0.3	79.7	25.1	48.9	33.9
Malaysia	P	U	3.80	1.5	1.7	0.4	97.1	3.1	6.3	2.7
Mali	EA/Euro	U	581.20	140.7	217.1	0.4	..	3.5	..	..
Mauritania	MF	U	263.03	36.2	57.2	0.2	..	8.0	21.0	18.9
Mauritius	MF	U	27.90	6.5	10.8	0.4	..	9.5	21.0	14.6
Mexico	IF	U	10.79	1.4	7.2	0.7	..	3.1	6.9	0.4
Moldova	MF	U	13.94	0.0	4.3	0.3	87.7	12.6	19.3	4.8
Mongolia	MF	U	1,146.54	2.2	318.5	0.3	..	14.0	26.3	20.6
Morocco	P	U	9.57	3.2	3.5	0.4	94.3	3.8	12.6	12.6
Mozambique	MF	U	23,782.27	319.4	4,896.8	0.2	..	12.1	24.7	10.7
Myanmar	MF	D	6.08	..	..	..	..	9.5	15.0	−6.2
Namibia	P	U	7.56	1.0	2.6	0.3	..	8.8	14.7	16.2
Nepal	P	U	76.14	6.8	13.0	0.2	..	4.8	7.7	4.9
Netherlands	Euro	U	0.89	0.9	1.0	1.1	111.6	2.5	3.0	0.6
New Zealand	IF	U	1.72	1.6	1.5	0.9	120.5	5.1	9.8	9.5
Nicaragua	P	U	15.10	0.0	3.4	0.2	87.1	5.6	15.5	9.4
Niger	EA/Euro	U	581.20	121.5	161.7	0.3	..	3.5	..	..
Nigeria	MF	M	129.22	3.7	52.7	0.4	104.5	14.2	20.7	−0.3
Norway	IF	U	7.08	8.0	9.1	1.3	110.2	2.1	4.7	2.4
Oman	P	U	0.38	0.3	0.2	0.6	..	2.4	8.2	6.6
Pakistan	MF	U	57.75	6.2	15.5	0.3	92.6	..	..	..
Panama	EA/Other	U	1.00	0.6	0.6	0.6	..	4.0	9.9	8.4
Papua New Guinea	IF	U	3.56	0.5	0.8	0.2	97.1	8.2	13.4	7.1
Paraguay	MF	U	6,424.34	405.4	1,468.3	0.2	71.1	15.8	50.0	26.7
Peru	MF	U	3.48	0.1	1.5	0.4	..	3.8	14.2	..
Philippines	IF	U	54.20	5.6	12.4	0.2	85.9	5.2	9.5	5.6
Poland	IF	U	3.89	0.2	1.9	0.5	98.9	3.7	7.3	6.6
Portugal	Euro	U	0.89	0.5	0.7	0.8	109.1	..	..	..
Puerto Rico	..	..	..	0.7	0.7	..	..	..	..	..

	Exchange rate arrangements[a]		Official exchange rate	Purchasing power parity (PPP) conversion factor		Ratio of PPP conversion factor to official exchange rate	Real effective exchange rate	Interest rate		
			local currency units to $	local currency units to international $			Index 2000 = 100	Deposit	% Lending	Real
	Classification 2003	Structure 2003	2003	1990	2003	2003	2003	2003	2003	2003
Romania	P	U	33,200.07	6.9	11,949.3	0.4	105.3	..	..	..
Russian Federation	MF	U	30.69	0.0	10.0	0.3	127.0	4.5	13.0	−1.3
Rwanda	MF	U	537.66	31.2	82.7	0.2	..	8.1	..	..
Saudi Arabia	P	U	3.74	2.9	2.7	0.7	89.1	1.6	..	..
Senegal	EA/Euro	U	581.20	185.1	223.3	0.4	..	3.5	..	..
Serbia and Montenegro	MF	U	..	..	..	..	..	..	..	..
Sierra Leone	IF	D	2,347.94	29.8	636.5	0.3	82.4	8.4	20.0	12.8
Singapore	MF	U	1.74	1.8	1.5	0.9	93.8	0.5	5.3	5.7
Slovak Republic	MF	U	36.77	5.8	16.4	0.4	98.0	5.3	8.5	5.7
Slovenia	P	U	207.11	16.2	150.4	0.7	..	5.9	10.8	9.8
Somalia	IF	D	..	..	..	..	..	..	..	..
South Africa	IF	U	7.56	1.0	2.6	0.3	98.0	9.8	15.0	8.5
Spain	Euro	U	0.89	0.6	0.8	0.9	109.5	2.5	4.3	−0.1
Sri Lanka	IF	U	96.52	10.2	24.2	0.3	..	6.0	10.3	5.1
Sudan	MF	U	260.98	0.7	72.5	0.3	..	..	..	..
Swaziland	P	U	7.56	0.8	2.7	0.4	..	7.6	14.6	5.1
Sweden	IF	U	8.09	9.6	10.2	1.3	99.8	1.5	4.8	2.5
Switzerland	IF	U	1.35	2.1	1.9	1.4	106.4	0.2	3.3	2.9
Syrian Arab Republic	P	M	11.23	10.2	17.3	1.5	..	4.0	9.0	7.4
Tajikistan	MF	U	3.06	0.0	0.7	0.2	..	9.7	16.6	6.1
Tanzania	IF	U	1,038.42	75.7	479.5	0.5	..	3.0	14.5	8.3
Thailand	MF	U	41.48	10.8	12.6	0.3	..	1.3	5.9	3.8
Togo	EA/Euro	U	581.20	93.9	124.0	0.2	110.3	3.5	..	..
Trinidad and Tobago	MF	U	6.30	3.1	4.7	0.7	104.9	2.9	11.2	5.3
Tunisia	P	U	1.29	0.4	0.5	0.4	93.3	..	..	..
Turkey	IF	U	1,500,885.25	1,629.0	751,242.0	0.5	..	37.7	..	..
Turkmenistan	P	D	5,200.00	0.0	2,048.9	0.3	..	..	..	..
Uganda	IF	U	1,963.72	110.7	322.0	0.2	80.3	9.8	18.9	8.0
Ukraine	P	U	5.33	0.0	1.0	0.2	86.6	7.0	17.9	10.3
United Arab Emirates	P	U	3.67	3.4	..	..	..	..	8.1	13.5
United Kingdom	IF	U	0.61	0.6	0.7	1.1	95.4	..	3.7	0.6
United States	IF	U	1.00	1.0	1.0	1.0	98.0	..	4.1	3.1
Uruguay	IF	U	28.21	0.6	11.3	0.4	60.3	14.3	126.1	90.5
Uzbekistan	MF	U	..	0.0	216.5	..	..	..	..	..
Venezuela, RB	P	U	1,606.96	24.4	1,087.8	0.7	68.8	17.2	25.2	−8.5
Vietnam	MF	U	15,509.58	641.1	2,990.5	0.2	..	6.6	9.5	3.9
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	IF	U	183.45	20.3	116.6	0.6	..	13.0	18.0	8.1
Zambia	MF	U	4,733.27	18.6	2,249.9	0.5	101.3	22.0	40.6	17.1
Zimbabwe	P	D	697.42	0.9	16.4	0.3	..	35.9	97.3	−34.2

a. Exchange rate arrangements are given for the end of the year in 2003. Exchange rate classifications include independent floating (IF), managed floating (MF), pegged (P), currency board (CB), and several exchange arrangements (EA): Euro that the currency is pegged to the Euro, and other that the currency of another country is used as legal tender. Exchange rate structures include dual exchange rates (D), multiple exchange rates (M), and unitary rate (U).

5.7

In a market-based economy the choices households, producers, and governments make about the allocation of resources are influenced by relative prices, including the real exchange rate, real wages, real interest rates, and a host of other prices in the economy. Relative prices also reflect, to a large extent, the choices of these agents. Thus relative prices convey vital information about the interaction of economic agents in an economy and with the rest of the world.

The exchange rate is the price of one currency in terms of another. Official exchange rates and exchange rate arrangements are established by governments. (Other exchange rates fully recognized by governments include market rates, which are determined largely by legal market forces, and for countries maintaining multiple exchange arrangements, principal rates, secondary rates, and tertiary rates.) Also see Statistical methods for information on alternative conversion factors used in the Atlas method of calculating gross national income (GNI) per capita in U.S. dollars.

The official or market exchange rate is often used to compare prices in different currencies. Since exchange rates reflect at best the relative prices of tradable goods, the volume of goods and services that a U.S. dollar buys in the United States may not correspond to what a U.S. dollar converted to another country's currency at the official exchange rate would buy in that country. Since identical volumes of goods and services in different countries correspond to different values (and vice versa) when official exchange rates are used, an alternative method of comparing prices across countries has been developed. In this method national currency estimates of GNI are converted to a common unit of account by using conversion factors that reflect equivalent purchasing power. Purchasing power parity (PPP) conversion factors are based on price and expenditure surveys conducted by the International Comparison Program and represent the conversion factors applied to equalize price levels across countries. See About the data for table 1.1 for further discussion of the PPP conversion factor.

The ratio of the PPP conversion factor to the official exchange rate (also referred to as the national price level) makes it possible to compare the cost of the bundle of goods that make up gross domestic product (GDP) across countries. These national price levels vary systematically, rising with GNI per capita.

Real effective exchange rates represent a nominal effective exchange rate index adjusted for relative movements in national price or cost indicators of the home country, selected countries, and the euro area. A nominal effective exchange rate index represents the ratio (expressed on the base 2000 = 100) of an index of a currency's period-average exchange rate to a weighted geometric average of exchange rates for currencies of selected countries and the euro area. For most high-income countries, weights are derived from trade in manufactured goods among industrial countries. The data are compiled from the nominal effective exchange rate index and a cost indicator of relative normalized unit labor costs in manufacturing. For selected other countries the nominal effective exchange rate index is based on each country's trade in both manufactured goods and primary products with its partner or competitor countries. For these countries the real effective exchange rate index is derived from the nominal index adjusted for relative changes in consumer prices. An increase in the real effective exchange rate represents an appreciation of the local currency. Because of conceptual and data limitations, changes in real effective exchange rates should be interpreted with caution.

Many interest rates coexist in an economy, reflecting competitive conditions, the terms governing loans and deposits, and differences in the position and status of creditors and debtors. In some economies interest rates are set by regulation or administrative fiat. In economies with imperfect markets, or where reported nominal rates are not indicative of effective rates, it may be difficult to obtain data on interest rates that reflect actual market transactions. Deposit and lending rates are collected by the International Monetary Fund (IMF) as representative interest rates offered by banks to resident customers. The terms and conditions attached to these rates differ by country, however, limiting their comparability. Real interest rates are calculated by adjusting nominal rates by an estimate of the inflation rate in the economy. A negative real interest rate indicates a loss in the purchasing power of the principal. The real interest rates in the table are calculated as $(i - P)/(1 + P)$, where i is the nominal interest rate and P is the inflation rate (as measured by the GDP deflator).

• Exchange rate arrangements describe the arrangements furnished to the IMF by each member country under article IV, section 2(a) of the IMF's Articles of Agreement. • Classification indicates how the exchange rate is determined in the main market when there is more than one market: floating (managed or independent), pegged (conventional, within horizontal bands, crawling peg, or crawling band), currency board (implicit legislative commitment to exchange domestic currency for a specified foreign currency at a fixed exchange rate), and exchange arrangement (currency is pegged to the French franc, or another country's currency is used as legal tender). • Structure shows whether countries have a unitary exchange rate or dual or multiple rates. • Official exchange rate is the exchange rate determined by national authorities or the rate determined in the legally sanctioned exchange market. It is calculated as an annual average based on monthly averages (local currency units relative to the U.S. dollar). • Purchasing power parity (PPP) conversion factor is the number of units of a country's currency required to buy the same amount of goods and services in the domestic market as a U.S. dollar would buy in the United States. • Ratio of PPP conversion factor to official exchange rate is the result obtained by dividing the PPP conversion factor by the official exchange rate. • Real effective exchange rate is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs. • Deposit interest rate is the rate paid by commercial or similar banks for demand, time, or savings deposits. • Lending interest rate is the rate charged by banks on loans to prime customers. • Real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator.

Defense expenditures and arms transfers

	Military expenditures				Armed forces personnel				Arms transfers			
	% of GDP		% of central government expenditure		Total thousands		% of labor force		Exports		$ millions 1990 prices Imports	
	1995	2003	1995	2003	1995	2003	1995	2003	1995	2003	1995	2003
Afghanistan	..	..	..	..	383	130	4.3	1.1	0	0	0	17
Albania	2.1	1.2	8.2	..	87	22	5.6	1.4	..	..	21	1
Algeria	3.0	3.3	12.2	15.2	163	309	1.9	2.6	..	..	342	513
Angola	18.1	4.9	..	..	122	130	2.4	2.1	0	0	1	0
Argentina	1.7	1.1	..	6.2	99	103	0.7	0.7	3	0	67	127
Armenia	4.1	2.7	..	16.7	61	46	3.8	2.8	..	..	47	0
Australia	2.0	1.9	..	7.2	57	54	0.6	0.5	20	30	147	485
Austria	0.9	0.8	..	1.9	56	35	1.5	0.9	0	2	38	55
Azerbaijan	2.3	1.9	11.7	..	127	82	3.9	2.1	..	..	0	0
Bangladesh	1.4	1.2	..	12.8	171	189	0.3	0.3	..	..	121	0
Belarus	1.6	1.2	5.5	5.7	106	183	2.0	3.4	8	60	0	0
Belgium	1.6	1.3	..	3.0	47	41	1.1	1.0	297	6	16	27
Benin	..	..	..	..	7	7	0.3	0.2	..	..	0	6
Bolivia	1.9	1.7	..	6.0	64	69	2.1	1.9	..	..	0	0
Bosnia and Herzegovina	..	9.0	..	..	92	19	5.9	1.0	0	0	0	0
Botswana	3.5	4.0	11.4	..	9	11	1.3	1.4	..	..	7	0
Brazil	1.5	1.5	6.3	..	681	673	0.9	0.8	40	0	226	87
Bulgaria	2.6	2.6	6.6	7.6	136	85	3.2	2.1	2	18	0	2
Burkina Faso	1.5	1.3	..	..	10	15	0.2	0.3	..	..	0	0
Burundi	4.2	6.2	17.8	..	15	56	0.4	1.5	..	..	0	0
Cambodia	5.5	2.3	..	..	309	192	5.7	2.9	0	0	0	0
Cameroon	1.4	1.5	..	..	24	32	0.4	0.5	..	..	0	0
Canada	1.6	1.2	6.3	6.4	76	62	0.5	0.4	387	556	146	94
Central African Republic	1.2	1.1	..	..	5	4	0.3	0.2	..	..	0	0
Chad	1.4	1.5	..	..	35	35	1.1	0.9	0	0	1	0
Chile	3.3	3.5	..	18.9	130	114	2.3	1.7	0	0	464	156
China	1.8	2.3	..	..	4,130	3,750	0.6	0.5	845	404	419	2,548
Hong Kong, China	..	..	..	..	..	..	..	..	..	..	..	..
Colombia	2.6	4.0	..	17.4	233	305	1.5	1.5	..	..	37	48
Congo, Dem. Rep.	1.5	1.0	..	11.4	65	98	0.3	0.5	..	..	0	0
Congo, Rep.	..	1.4	..	..	17	12	1.4	0.8	..	..	0	0
Costa Rica	..	..	..	..	16	17	1.2	1.0	..	..	0	0
Côte d'Ivoire	0.8	1.6	..	..	15	..	0.3	..	..	..	2	22
Croatia	9.4	2.1	22.2	6.0	150	31	6.8	1.5	0	0	22	0
Cuba	..	..	..	..	124	73	2.4	1.3	..	..	0	0
Czech Republic	1.7	2.1	..	5.4	92	63	1.6	1.1	156	48	0	111
Denmark	1.7	1.6	..	4.4	33	23	1.1	0.8	0	3	127	7
Dominican Republic	..	..	..	..	40	40	1.2	1.0	..	..	0	76
Ecuador	2.4	2.4	..	..	57	60	1.4	1.1	..	..	10	0
Egypt, Arab Rep.	3.5	2.8	12.5	..	610	780	2.9	2.9	16	0	1,738	504
El Salvador	0.1	0.1	..	4.6	39	28	1.7	1.0	0	0	3	0
Eritrea	20.8	19.4	..	..	55	202	3.1	9.2	0	0	3	180
Estonia	1.0	1.8	3.0	5.9	6	8	0.7	1.1	0	0	19	16
Ethiopia	2.2	4.5	13.3	..	120	162	0.5	0.5	0	0	0	0
Finland	1.5	1.2	..	3.3	35	30	1.3	1.2	21	10	159	125
France	3.1	2.6	..	5.4	502	360	1.9	1.3	679	1,753	43	120
Gabon	..	..	..	..	10	7	1.8	1.1	..	..	0	0
Gambia, The	0.8	0.6	..	..	1	1	0.1	0.1	..	..	0	0
Georgia	2.2	1.1	8.2	10.0	14	29	0.5	1.1	0	0	0	0
Germany	1.7	1.5	4.9	4.4	365	285	0.9	0.7	1,456	1,549	175	69
Ghana	0.8	0.7	..	..	13	7	0.2	0.1	..	..	0	0
Greece	4.3	4.1	..	10.7	202	182	4.5	3.7	0	0	901	1,957
Guatemala	1.0	0.5	13.1	3.8	57	50	1.6	1.1	..	..	3	0
Guinea	1.2	2.9	..	..	19	12	0.6	0.3	..	..	0	0
Guinea-Bissau	0.9	3.1	..	..	9	14	1.7	2.1	..	..	0	0
Haiti	..	..	..	..	7	5	0.2	0.1	..	..	..	..

Defense expenditures and arms transfers

	Military expenditures				Armed forces personnel				Arms transfers			
	% of GDP		% of central government expenditure		Total thousands		% of labor force		$ millions 1990 prices Exports		Imports	
	1995	2003	1995	2003	1995	2003	1995	2003	1995	2003	1995	2003
Honduras	..	0.8	..	..	24	18	1.2	0.7	..	..	0	0
Hungary	1.6	1.8	..	4.4	73	47	1.5	1.0	6	0	1	0
India	2.2	2.3	15.2	14.2	2,150	2,415	0.5	0.5	2	0	918	3,621
Indonesia	1.6	1.2	16.2	..	461	497	0.5	0.5	30	20	334	333
Iran, Islamic Rep.	2.3	4.5	15.2	22.5	763	580	4.1	2.4	2	0	290	323
Iraq	..	..	..	..	407	432	7.3	6.2	0	0	0	0
Ireland	1.0	0.6	3.6	..	13	10	0.9	0.6	0	0	0	2
Israel	8.3	8.7	..	17.7	178	175	7.8	6.0	116	212	280	318
Italy	1.8	1.9	..	5.3	585	454	2.3	1.8	265	277	238	348
Jamaica	..	..	..	..	4	3	0.3	0.2	..	..	0	0
Japan	0.9	1.0	..	..	252	252	0.4	0.4	16	0	782	210
Jordan	12.4	8.5	47.5	28.0	129	111	10.3	6.4	0	0	19	258
Kazakhstan	1.1	0.9	5.7	6.6	75	100	1.0	1.3	27	0	99	62
Kenya	1.6	1.7	7.1	7.7	29	29	0.2	0.2	..	..	0	0
Korea, Dem. Rep.	..	..	..	..	1,243	1,271	11.2	10.9	48	0	41	0
Korea, Rep.	2.8	2.4	19.4	13.3	641	691	2.9	2.8	25	36	1,630	299
Kuwait	13.9	12.5	29.3	..	22	22	3.2	2.1	0	0	657	21
Kyrgyz Republic	1.7	1.4	6.5	8.7	7	16	0.4	0.7	61	76	0	9
Lao PDR	2.9	2.1	..	..	137	129	6.0	4.5	..	..	0	0
Latvia	0.9	1.8	3.1	6.4	11	8	0.8	0.6	0	0	12	29
Lebanon	6.7	4.3	..	14.9	63	85	4.7	5.0	0	0	35	0
Lesotho	3.7	2.7	10.7	6.7	2	2	0.3	0.3	..	..	0	0
Liberia	..	7.5	..	..	21	15	2.2	1.1	..	..	0	0
Libya	4.1	2.4	..	..	81	77	5.3	4.0	0	23	0	0
Lithuania	0.5	1.9	..	6.7	9	27	0.5	1.5	0	0	4	0
Macedonia, FYR	3.0	2.8	..	..	18	20	2.0	2.1	..	..	0	0
Madagascar	0.9	1.4	..	13.9	29	22	0.4	0.3	..	..	..	..
Malawi	0.8	0.8	..	..	10	7	0.2	0.1	0	0	0	0
Malaysia	2.8	2.3	16.0	11.5	140	124	1.7	1.2	0	0	900	242
Mali	2.2	2.0	..	..	15	12	0.3	0.2	..	..	0	0
Mauritania	2.6	1.8	..	..	21	21	2.0	1.7	..	..	1	0
Mauritius	0.4	0.2	1.8	1.0	2	2	0.4	0.4	..	..	0	0
Mexico	0.6	0.5	3.8	3.3	189	204	0.5	0.5	..	..	43	43
Moldova	0.9	0.4	2.4	1.8	15	10	0.7	0.5	0	0	6	0
Mongolia	1.7	2.1	..	..	31	16	2.8	1.2	..	..	0	0
Morocco	4.6	4.2	16.1	..	238	246	2.4	2.0	..	..	30	0
Mozambique	2.5	2.4	..	..	12	8	0.1	0.1	..	..	0	0
Myanmar	3.7	2.3	..	..	371	595	1.6	2.2	..	..	216	31
Namibia	1.9	2.8	..	9.3	8	15	1.2	1.9	..	..	2	5
Nepal	0.9	1.5	..	..	63	103	0.6	0.9	..	..	1	5
Netherlands	1.9	1.6	..	3.7	78	60	1.1	0.8	367	268	34	132
New Zealand	1.4	1.0	..	3.1	10	9	0.6	0.4	0	0	4	71
Nicaragua	1.1	0.9	6.8	4.1	12	14	0.7	0.6	5	0	0	0
Niger	1.0	0.9	..	..	11	11	0.3	0.2	..	..	0	0
Nigeria	0.7	1.0	..	..	89	161	0.2	0.3	0	0	2	51
Norway	2.4	2.0	..	5.2	31	27	1.4	1.1	46	150	83	0
Oman	16.7	12.3	45.2	45.2	48	46	8.1	6.1	0	0	157	14
Pakistan	6.0	4.1	31.4	23.9	846	909	1.9	1.6	0	0	..	..
Panama	1.2	..	5.6	..	12	12	1.1	0.9	..	..	0	0
Papua New Guinea	1.2	0.9	4.7	2.9	4	3	0.2	0.1	..	..	0	0
Paraguay	..	0.7	..	5.5	28	33	1.6	1.5	..	..	0	4
Peru	2.0	1.5	13.6	8.7	178	177	2.1	1.7	0	0	32	0
Philippines	1.4	1.0	..	6.2	149	150	0.5	0.4	..	..	32	8
Poland	2.0	1.9	5.5	5.4	302	184	1.6	0.9	187	89	125	420
Portugal	2.5	2.1	5.7	5.1	104	93	2.1	1.7	0	0	18	68
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..

	Military expenditures				Armed forces personnel				Arms transfers $ millions 1990 prices			
	% of GDP		% of central government expenditure		Total thousands		% of labor force		Exports		Imports	
	1995	2003	1995	2003	1995	2003	1995	2003	1995	2003	1995	2003
Romania	2.8	2.4	9.2	8.6	297	177	2.8	1.7	6	22	0	46
Russian Federation	4.4	4.3	..	18.8	1,800	1,370	2.3	1.7	3,133	6,980	40	0
Rwanda	4.4	3.0	..	..	47	61	1.6	1.3	..	..	0	0
Saudi Arabia	9.3	8.7	..	..	178	215	3.4	3.1	0	0	983	487
Senegal	1.8	1.4	..	9.7	17	19	0.5	0.4	..	..	2	0
Serbia and Montenegro	5.3	4.2	..	10.2	165	109	3.3	2.8	0	0	21	0
Sierra Leone	2.7	2.1	..	..	7	13	0.4	0.7	..	..	15	0
Singapore	4.4	5.2	35.1	30.3	66	169	3.7	8.0	0	0	240	121
Slovak Republic	3.2	1.8	..	4.9	51	22	1.8	0.7	114	0	220	0
Slovenia	1.7	1.5	4.7	3.5	13	11	1.3	1.1	..	..	18	14
Somalia	..	..	..	..	225	0	7.0	0.0	..	..	0	0
South Africa	2.2	1.7	7.3	5.8	277	56	1.7	0.3	18	23	38	13
Spain	1.5	1.2	..	3.8	282	224	1.7	1.2	65	124	357	97
Sri Lanka	5.3	2.5	20.3	13.6	236	241	3.2	2.7	..	..	49	8
Sudan	1.9	2.2	..	..	134	115	1.2	0.9	..	..	3	0
Swaziland	2.4	1.7	..	7.9	3	..	0.9	..	..	..	0	0
Sweden	2.3	1.7	..	4.9	100	63	2.1	1.3	185	186	70	23
Switzerland	1.3	1.0	5.2	5.6	31	28	0.8	0.7	77	35	93	41
Syrian Arab Republic	7.1	6.9	..	..	531	427	12.6	7.4	0	0	43	15
Tajikistan	1.0	1.3	..	12.2	18	7	0.8	0.3	..	..	0	0
Tanzania	1.5	1.5	..	..	36	28	0.2	0.2	..	..	0	0
Thailand	2.1	1.3	..	8.4	421	427	1.2	1.2	0	5	522	163
Togo	2.4	1.6	..	..	8	9	0.5	0.4	..	..	3	0
Trinidad and Tobago	..	..	..	..	7	3	1.3	0.4	..	..	0	0
Tunisia	1.9	1.6	6.7	5.8	59	47	1.8	1.1	..	..	59	0
Turkey	3.9	4.9	18.6	..	690	665	2.5	2.0	0	61	1,271	504
Turkmenistan	2.3	..	..	..	11	29	0.6	1.3	..	..	..	..
Uganda	2.2	2.5	..	12.3	52	62	0.5	0.5	..	..	39	19
Ukraine	3.1	2.9	..	9.6	519	403	2.0	1.6	218	234	..	..
United Arab Emirates	5.5	3.6	49.2	..	71	51	5.7	2.4	27	0	429	922
United Kingdom	3.0	2.4	..	6.0	233	213	0.8	0.7	1,122	525	135	555
United States	3.8	4.1	..	19.4	1,636	1,480	1.2	1.0	9,215	4,385	390	515
Uruguay	1.7	1.1	6.3	5.9	27	25	1.9	1.6	0	0	7	0
Uzbekistan	1.1	0.8	..	..	42	72	0.5	0.6	0	510	0	0
Venezuela, RB	1.5	1.3	8.7	5.4	80	105	0.9	1.0	0	0	0	0
Vietnam	..	..	..	..	622	524	1.7	1.2	..	..	270	7
West Bank and Gaza	..	..	..	..	0	0	0.0	0.0	..	..	1	0
Yemen, Rep.	7.0	7.0	36.4	..	70	137	1.5	2.4	..	..	120	30
Zambia	2.2	0.6	..	..	23	20	0.6	0.4	0	0	0	0
Zimbabwe	3.6	3.5	11.2	..	68	51	1.3	0.9	..	..	0	23
World	2.5 w	2.6 w	.. w	10.8 w	30,182 t	28,161 t	1.1 w	0.9 w				
Low income	2.6	2.3	17.3	14.8	7,891	8,189	0.9	0.8				
Middle income	2.5	2.5	..	..	16,113	14,497	1.2	0.9				
Lower middle income	2.4	2.7	..	..	14,328	12,955	1.1	0.9				
Upper middle income	2.8	2.3	..	..	1,785	1,542	1.4	1.1				
Low & middle income	2.5	2.5	..	..	24,004	22,686	1.1	0.9				
East Asia & Pacific	1.9	2.2	..	..	8,021	7,682	0.8	0.7				
Europe & Central Asia	3.4	3.2	..	11.1	4,971	3,835	2.2	1.6				
Latin America & Carib.	1.5	1.2	6.1	..	2,112	2,136	1.1	0.9				
Middle East & N. Africa	5.8	6.1	..	..	3,350	3,503	3.9	3.1				
South Asia	2.7	2.4	17.8	15.0	3,852	3,986	0.7	0.6				
Sub-Saharan Africa	2.3	1.8	..	..	1,698	1,544	0.7	0.5				
High income	2.4	2.6	..	10.7	6,178	5,476	1.3	1.1				
Europe EMU	2.0	1.8	..	4.5	2,270	1,775	1.7	1.3				

Note: Data for some countries are based on partial or uncertain data or rough estimates; see SIPRI (2004).

Although national defense is an important function of government and security from external threats contributes to economic development, high levels of defense spending burden the economy and may impede growth. Comparisons of defense spending between countries should take into account the many factors that influence perceptions of vulnerability and risk, including historical and cultural traditions, the length of borders that need defending, the quality of relations with neighbors, and the role of the armed forces in the body politic.

Data on military expenditures as a share of gross domestic product (GDP) are a rough indicator of the portion of national resources used for military activities and of the burden on the national economy. As an "input" measure, military spending is not directly related to the "output" of military activities, capabilities, or military security. Data on defense spending from governments are often incomplete and unreliable. Even in countries where the parliament vigilantly reviews government budgets and spending, defense spending and arms transfers often do not receive close scrutiny. For a detailed critique of the quality of such data, see Ball (1984) and Happe and Wakeman-Linn (1994).

This and the previous two editions of World Development Indicators use data on military expenditures and arms transfers from the Stockholm International Peace Research Institute (SIPRI). The data on military expenditures as a percentage of GDP are from SIPRI, and military expenditures as a percentage of central government expenditure are calculated from SIPRI data on military expenditures and International Monetary Fund (IMF) data on central government expenditures.

SIPRI's primary source of military expenditure data is official data provided by national governments. These data are derived from national budget documents, defense white papers, and other public documents from official government agencies, including governments' responses to questionnaires sent by SIPRI, the United Nations, or the Organization for Security and Co-operation in Europe. Secondary sources include international statistics, such as those of the North Atlantic Treaty Organization (NATO) and the IMF's Government Finance Statistics Yearbook. Other secondary sources include country reports of the Economist Intelligence Unit, country reports by IMF staff, and specialist journals and newspapers. Data on military expenditures presented in the table may therefore differ from national source data.

Lack of sufficiently detailed data makes it difficult to apply a common definition of military expenditure globally, so SIPRI has adopted a definition (derived from the NATO definition) as a guideline (see Definitions). This definition cannot be applied for all countries, however, since that would require much more detailed information than is available about what is included in military budgets and off-budget military expenditure items. In the many cases where SIPRI cannot make independent estimates, it uses the national data provided. Because of the differ-

ences in definitions and the difficulty in verifying the accuracy and completeness of data, the data on military spending are not strictly comparable across countries.

The data on armed forces are from the International Institute for Strategic Studies' The Military Balance 2004–2005. These data refer to military personnel on active duty, including paramilitary forces. Reserve forces, which are units that are not fully staffed or operational in peace time, are not included. These data also exclude civilians in the defense establishment and so are not consistent with the data on military spending on personnel. Moreover, because data exclude personnel not on active duty, they underestimate the share of the labor force working for the defense establishment. Because governments rarely report the size of their armed forces, such data typically come from intelligence sources.

The data on arms transfers are from SIPRI's Arms Transfers Project, which reports on international flows of conventional weapons. Data are collected from open sources, and since publicly available information is inadequate for tracking all weapons and other military equipment, SIPRI covers only what it terms major conventional weapons.

SIPRI's data on arms transfers cover sales of weapons, manufacturing licenses, aid, and gifts; therefore the term arms transfers rather than arms trade is used. The transferred weapons must be transferred voluntarily by the supplier, must have a military purpose, and must be destined for the armed forces, paramilitary forces, or intelligence agencies of another country. SIPRI data also cover weapons supplied to or from rebel forces in an armed conflict as well as arms deliveries for which neither the supplier nor the recipient can be identified with an acceptable degree of certainty; these data are available in SIPRI's database.

SIPRI's estimates of arms transfers, presented in 1990 constant price U.S. dollars, are designed as a trend-measuring device in which similar weapons have similar values, reflecting both the value and quality of weapons transferred. The trends presented in the tables are based on actual deliveries only. SIPRI cautions that these estimated values do not reflect financial value (payments for weapons transferred) for three reasons: reliable data on the value of the transfer are not available; even when the value of a transfer is known, it usually includes more than the actual conventional weapons such as spares, support systems, and training; and even when the value of the transfer is known, details of the financial arrangements such as credit and loan conditions and discounts are usually not known.

Given these measurement issues, SIPRI's method of estimating the transfer of military resources includes an evaluation of the technical parameters of the weapons. Weapons for which a price is not known are compared with the same weapons for which actual acquisition prices are available ("core weapons") or for the closest match. These weapons are assigned a value in an index that reflects their mili-

tary resource value in relation to the "core weapons." These matches are based on such characteristics as size, performance, and type of electronics, and adjustments are made for second-hand weapons. More information on SIPRI's estimation methods and sources of arms transfers is available at http://projects.sipri.se/armstrade/atmethods.html.

• Military expenditures data from SIPRI are derived from the NATO definition, which includes all current and capital expenditures on the armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces, if these are judged to be trained and equipped for military operations; and military space activities. Such expenditures include military and civil personnel, including retirement pensions of military personnel and social services for personnel; operation and maintenance; procurement; military research and development; and military aid (in the military expenditures of the donor country). Excluded are civil defense and current expenditures for previous military activities, such as for veterans' benefits, demobilization, conversion, and destruction of weapons. This definition cannot be applied for all countries, however, since that would require much more detailed information than is available about what is included in military budgets and off-budget military expenditure items. (For example, military budgets might or might not cover civil defense, reserves and auxiliary forces, police and paramilitary forces, dual-purpose forces such as military and civilian police, military grants in kind, pensions for military personnel, and social security contributions paid by one part of government to another.) • Armed forces personnel are active duty military personnel, including paramilitary forces if the training, organization, equipment and control suggest they may be used to support or replace regular military forces. • Arms transfers cover the supply of military weapons through sales, aid, gifts, and those made through manufacturing licenses. Data cover major conventional weapons such as aircraft, armored vehicles, artillery, radar systems, missiles, and ships designed for military use. Excluded are transfers of other military equipment such as small arms and light weapons, trucks, small artillery, ammunition, support equipment, technology transfers, and other services. See About the data for more detail.

The data on military expenditures and arms transfers are from SIPRI's Yearbook 2004: Armaments, Disarmament and International Security. The data on armed forces personnel are from the International Institute for Strategic Studies' The Military Balance 2004–2005.

	Roads				Railways			Ports	Air		
	Total road network km 1997–2002[a]	Paved roads % 1997–2002[a]	Passengers carried passenger-km millions 1997–2002[a]	Goods hauled ton-km millions 1997–2002[a]	Rail lines total route-km 2000–03[a]	Passengers carried passenger-km millions 2000–03[a]	Goods hauled ton-km millions 2000–03[a]	Container traffic TEU thousands 2003	Aircraft departures thousands 2003	Passengers carried thousands 2003	Air freight ton-km millions 2003
Afghanistan	21,000	13.3	..	..	..	..	..	..	..	..	..
Albania	18,000	39.0	197	1,830	447	123	21	..	4	159	0
Algeria	104,000	68.9	..	..	3,572	954	2,246	311.1	44	3,293	19
Angola	51,429	10.4	166,045	..	2,761	..	..	..	5	198	57
Argentina	215,471	29.4	..	..	35,754	..	..	718.6	92	6,030	113
Armenia	8,431	96.8	1,716	75	711	47	344	..	4	367	5
Australia	811,603	38.7	..	..	41,286	12,100	158,100	4,769.1	530	41,386	1,355
Austria	200,000	100.0	..	16,100	5,693	8,415	17,644	..	128	6,903	431
Azerbaijan	28,030	92.4	9,603	5,534	2,122	584	6,980	..	9	684	67
Bangladesh	207,486	9.5	..	..	2,791	3,972	952	625.2	7	1,579	179
Belarus	79,990	86.7	9,090	7,945	5,512	14,349	34,169	..	6	234	1
Belgium	149,028	78.2	..	17,487	3,518	8,260	8,363	6,556.6	133	2,904	605
Benin	6,787	20.0	..	..	438	66	86	..	1	46	7
Bolivia	60,282	6.6	..	..	3,698	..	..	..	29	1,768	25
Bosnia and Herzegovina	21,846	52.3	..	..	1,032	53	293	..	5	73	1
Botswana	10,217	55.0	2,602	..	888	171	842	..	8	183	0
Brazil	1,724,929	5.5	..	..	30,403	..	..	4,333.4	487	32,372	1,478
Bulgaria	37,077	92.0	8,596	168	4,318	2,598	4,627	..	1	75	0
Burkina Faso	12,506	16.0	..	..	622	..	..	..	1	55	0
Burundi	..	..	..	..	..	..	..	..	..	..	..
Cambodia	12,323	16.2	201	412	603	45	92	..	4	116	3
Cameroon	34,300	12.5	..	..	1,016	308	1,186	..	10	315	20
Canada	1,408,800	..	..	87,522	49,422	..	323,600	3,631.1	1,036	35,884	1,496
Central African Republic	23,810	2.7	..	..	..	..	..	..	1	46	7
Chad	33,400	0.8	..	..	..	..	..	..	1	46	7
Chile	79,605	20.2	..	..	4,923	769	1,317	1,249.5	83	5,247	1,130
China	1,765,222	..	780,577	633,040	60,627	489,971	1,508,686	61,621.5[b]	946	86,041	5,651
Hong Kong, China	1,831	100.0	..	..	..	..	..	..	87	13,025	5,781
Colombia	112,988	14.4	..	31	3,154	..	..	995.2	172	9,143	646
Congo, Dem. Rep.	157,000	..	..	..	3,641	160	429	..	5	95	7
Congo, Rep.	12,800	9.7	..	..	1,026	76	307	..	5	52	0
Costa Rica	35,303	12.0	..	..	848	..	..	669.3	35	781	10
Côte d'Ivoire	50,400	9.7	..	..	639	148	606	612.6	1	46	7
Croatia	28,344	84.6	3,557	7,413	2,726	1,195	2,420	..	20	1,267	3
Cuba	60,858	49.0	..	..	4,382	..	..	..	9	611	41
Czech Republic	127,204	100.0	90,055	45,059	9,499	6,562	17,042	..	52	3,392	36
Denmark	71,847	100.0	61,258	11,810	2,273	5,528	1,867	638.7	91	5,886	171
Dominican Republic	12,600	49.4	..	..	1,743	..	..	480.7	..	..	..
Ecuador	43,197	18.9	7,769	4,646	966	..	..	515.6	13	1,123	8
Egypt, Arab Rep.	64,000	78.1	..	..	5,150	40,837	4,188	1,458.0	42	4,172	229
El Salvador	10,029	19.8	..	..	283	..	..	..	25	2,966	3
Eritrea	4,010	21.8	..	..	306	..	..	..	..	..	..
Estonia	55,944	24.8	2,330	4,387	967	177	9,330	..	8	395	2
Ethiopia	33,297	12.0	219,113	..	681	..	..	..	27	1,147	94
Finland	78,650	64.0	66,900	29,000	5,850	3,305	9,664	1,162.4	107	6,184	256
France	893,100	100.0	..	245,400	29,352	73,227	50,036	3,553.5	696	47,259	5,067
Gabon	8,464	9.9	..	..	731	63	1,834	..	8	386	54
Gambia, The	2,700	35.4	..	..	..	..	..	..	..	..	..
Georgia	20,229	93.5	4,987	543	1,565	401	5,065	..	2	124	2
Germany	230,735	..	76,186	226,982	35,868	69,848	73,971	10,504.8	845	72,693	7,298
Ghana	46,179	18.4	..	..	977	85	242	..	3	241	17
Greece	117,000	91.8	5,889	13,909	2,383	1,836	327	1,914.8	114	7,519	63
Guatemala	14,118	34.5	..	..	886	..	..	726.0	..	..	..
Guinea	30,500	16.5	..	..	837	..	..	..	..	..	..
Guinea-Bissau	4,400	10.3	..	..	..	..	..	..	..	..	..
Haiti	4,160	24.3	..	..	..	..	..	..	..	..	..

	Roads				Railways			Ports	Air		
	Total road network km 1997–2002[a]	Paved roads % 1997–2002[a]	Passengers carried passenger-km millions 1997–2002[a]	Goods hauled ton-km millions 1997–2002[a]	Rail lines total route-km 2000–03[a]	Passengers carried passenger-km millions 2000–03[a]	Goods hauled ton-km millions 2000–03[a]	Container traffic TEU thousands 2003	Aircraft departures thousands 2003	Passengers carried thousands 2003	Air freight ton-km millions 2003
Honduras	13,603	20.4	..	..	699	..	..	470.6	..	..	..
Hungary	159,568	43.9	13,300	11,200	7,729	7,548	7,703	..	35	2,369	28
India	3,315,231	57.3	..	958	63,140	493,489	333,228	3,916.1	264	19,456	580
Indonesia	368,362	58.0	..	..	6,458	16,381	4,474	4,560.4	156	12,221	424
Iran, Islamic Rep.	167,157	56.3	..	..	6,151	8,582	15,842	1,147.7	85	9,554	80
Iraq	45,550	84.3	..	..	2,339	570	1,682	..	..	..	..
Ireland	95,736	100.0	..	5,900	1,919	1,628	426	869.5	231	28,864	122
Israel	16,903	100.0	..	..	676	1,116	1,107	1,605.0	36	3,672	1,394
Italy	479,688	100.0	26,075	219,800	16,307	47,177	23,420	8,473.2	328	34,953	1,359
Jamaica	18,700	70.1	..	..	272	..	..	1,137.8	24	1,838	49
Japan	1,171,647	77.1	954,294	313,072	20,096	239,246	21,900	14,567.0	639	103,606	7,985
Jordan	7,301	100.0	..	..	292	..	522	..	15	1,353	190
Kazakhstan	82,980	93.9	19,928	6,962	13,597	10,449	133,088	..	20	1,010	21
Kenya	63,942	12.1	..	..	2,634	288	1,538	..	27	1,678	142
Korea, Dem. Rep.	31,200	6.4	..	..	5,214	..	..	..	1	75	2
Korea, Rep.	86,990	76.7	66,853	74,504	3,129	28,787	10,784	12,993.4	240	33,334	8,312
Kuwait	4,450	80.6	..	..	..	..	..	..	18	2,198	219
Kyrgyz Republic	18,500	91.1	5,081	875	417	50	331	..	5	206	5
Lao PDR	21,716	44.5	..	..	..	..	..	..	7	219	2
Latvia	60,472	94.6	2,361	6,160	2,269	744	15,020	..	10	340	1
Lebanon	7,300	84.9	..	..	401	..	..	299.4	11	935	75
Lesotho	5,940	18.3	..	..	..	..	..	..	..	..	..
Liberia	10,600	6.2	..	..	490	..	..	..	..	..	..
Libya	83,200	57.2	..	..	2,757	..	..	..	6	627	0
Lithuania	77,148	89.7	2,046	10,709	1,775	498	9,767	..	10	329	1
Macedonia, FYR	8,684	63.8	..	..	699	98	334	..	2	201	0
Madagascar	49,827	11.6	..	..	883	10	12	..	9	404	10
Malawi	28,400	18.5	..	..	797	..	..	..	5	109	1
Malaysia	65,877	77.9	..	..	1,636	1,123	1,106	10,072.1	152	15,214	2,176
Mali	15,100	12.1	..	..	733	196	189	..	1	46	7
Mauritania	7,660	11.3	..	..	717	..	..	..	2	116	0
Mauritius	2,000	98.0	..	..	..	..	..	381.5	15	1,035	195
Mexico	329,532	32.8	385,296	197,958	26,656	..	..	1,690.9	287	20,688	350
Moldova	12,719	86.3	1,298	1,152	1,120	355	2,715	..	4	179	1
Mongolia	49,250	..	761	134	1,810	1,073	6,452	..	7	295	8
Morocco	57,694	56.4	3	2,952	1,907	2,145	4,974	346.7	35	2,565	51
Mozambique	30,400	18.7	..	..	2,072	137	808	..	8	281	7
Myanmar	..	..	..	..	3,955	..	..	..	21	1,117	2
Namibia	42,237	12.8	47	145,044	2,382	..	..	..	6	266	46
Nepal	15,308	30.8	..	..	59	..	..	..	13	625	19
Netherlands	116,500	90.0	193,900	32,700	2,806	14,288	3,685	7,232.4	248	23,455	4,331
New Zealand	92,382	64.0	..	..	3,898	..	3,853	1,530.3	247	12,259	801
Nicaragua	18,712	11.4	..	..	6	..	..	..	..	..	..
Niger	10,100	7.9	..	..	..	..	..	..	1	46	7
Nigeria	194,394	30.9	..	..	3,505	..	..	..	9	520	10
Norway	91,852	77.5	55,330	13,287	4,077	2,477	2,668	..	249	12,779	175
Oman	32,800	30.0	..	..	..	..	..	2,246.8	28	2,777	190
Pakistan	257,683	59.0	209,959	111,323	7,791	20,782	4,572	878.9	45	4,477	351
Panama	11,643	34.6	..	..	355	..	..	1,605.1	26	1,264	20
Papua New Guinea	19,600	3.5	..	..	..	..	..	..	18	691	17
Paraguay	29,500	50.8	..	1	441	..	..	..	11	313	0
Peru	78,230	13.4	..	..	2,123	..	..	627.0	36	2,233	114
Philippines	202,124	9.5	..	..	429	123	..	3,468.8	56	6,467	274
Poland	364,697	68.3	30,997	74,403	20,223	17,310	46,560	261.4	73	3,252	71
Portugal	17,135	86.0	87,150	14,200	2,880	3,683	2,585	860.0	117	7,590	206
Puerto Rico	24,023	94.0	..	..	96	..	..	1,669.2	..	..	..

	Roads				Railways			Ports	Air		
	Total road network km 1997–2002[a]	Paved roads % 1997–2002[a]	Passengers carried passenger-km millions 1997–2002[a]	Goods hauled ton-km millions 1997–2002[a]	Rail lines total route-km 2000–03[a]	Passengers carried passenger-km millions 2000–03[a]	Goods hauled ton-km millions 2000–03[a]	Container traffic TEU thousands 2003	Aircraft departures thousands 2003	Passengers carried thousands 2003	Air freight ton-km millions 2003
Romania	198,755	50.4	5,283	25,350	11,364	8,502	14,867	..	27	1,251	7
Russian Federation	537,289	67.4	164	139	85,542	152,900	1,510,200	946.6	351	22,723	1,113
Rwanda	12,000	8.3	..	..	..	..	..	..	..	..	..
Saudi Arabia	152,044	29.9	..	..	1,078	239	772	2,440.3	108	13,822	852
Senegal	14,576	29.3	..	..	906	138	371	..	2	130	0
Serbia and Montenegro	50,414	59.3	..	1,063	3,809	1,023	2,408	..	22	1,298	47
Sierra Leone	11,300	8.0	..	..	..	..	..	..	0	14	7
Singapore	3,130	100.0	..	..	..	..	..	18,441.0	64	14,737	6,683
Slovak Republic	42,970	87.3	33,234	22,347	3,657	2,682	10,679	..	7	208	0
Slovenia	20,250	100.3	1,143	4,611	1,229	749	3,078	..	16	758	4
Somalia	22,100	11.8	..	..	..	..	..	..	..	..	..
South Africa	275,971	20.9	..	..	20,041	12,873	105,719	1,942.3	147	9,481	891
Spain	664,852	99.0	411,379	114,011	13,856	20,733	13,781	7,364.8	519	42,507	876
Sri Lanka	97,286	81.0	21,067	..	1,449	..	..	1,959.4	13	1,958	238
Sudan	11,900	36.3	..	..	4,578	73	993	..	8	421	36
Swaziland	3,107	..	..	..	301	..	..	..	2	89,500	0
Sweden	213,237	78.6	95,800	39,609	9,857	6,621	12,002	858.3	184	11,586	253
Switzerland	71,212	..	94,750	24,500	3,223	12,835	9,732	..	189	10,589	1,248
Syrian Arab Republic	64,697	14.2	589	..	2,450	364	1,812	..	7	908	16
Tajikistan	27,767	..	..	..	617	41	1,087	..	7	413	7
Tanzania	88,200	4.2	..	..	4,460[c]	471[c]	1,350[c]	..	6	150	2
Thailand	57,403	98.5	..	..	4,071	..	..	4,410.0	94	16,623	1,764
Togo	7,520	31.6	..	..	568	..	..	..	1	46	7
Trinidad and Tobago	8,320	51.1	..	..	..	..	..	440.4	18	1,084	34
Tunisia	18,997	65.4	..	..	1,909	1,265	2,252	..	19	1,720	19
Turkey	354,421	41.6	163,327	150,912	8,671	5,204	7,169	2,773.9	104	10,701	379
Turkmenistan	24,000	81.2	..	..	2,523	1,118	6,437	..	25	1,412	14
Uganda	27,000	6.7	..	..	259	..	218	..	0	40	23
Ukraine	169,679	96.8	36,612	20,593	22,079	50,544	193,141	..	33	1,477	18
United Arab Emirates	1,088	100.0	..	..	..	..	..	6,955.8	70	11,384	2,686
United Kingdom	371,913	100.0	666,000	150,700	17,052	40,442	19,585	7,135.3	891	76,377	5,251
United States	6,378,254	58.8	..	1,534,430	141,961	..	2,200,123[d]	32,641.6	7,789[e]	588,997[e]	34,206[e]
Uruguay	8,983	90.0	..	..	2,993	..	..	301.6	7	464	23
Uzbekistan	81,600	87.3	..	..	4,126	2,163	18,428	..	22	1,466	71
Venezuela, RB	96,155	33.6	..	..	433	..	32	924.1	106	3,824	2
Vietnam	93,300	25.1	..	..	2,545	3,426	2,000	2,195.9	48	4,553	165
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	67,000	11.5	..	..	..	..	..	377.4	15	844	49
Zambia	91,440	22.0	..	..	1,273[c]	186[c]	554[c]	..	5	51	0
Zimbabwe	18,338	47.4	..	..	3,077	..	..	..	4	201	19
World		47.4 m	.. m	.. m	.. s	1,265 m	3,078 m	291,801 s	21,372 s	1,679,838 s	129,570 s
Low income		13.3	..	..	..	160	707	..	637	42,573	1,902
Middle income		54.0	..	..	458,110	1,123	5,020	115,089	4,447	340,444	19,413
Lower middle income		53.0	7,291	..	332,569	1,265	4,974	93,575	3,159	252,690	14,025
Upper middle income		72.3	..	..	..	946	7,703	17,415	1,289	87,754	5,388
Low & middle income		30.8	..	..	592,154	577	2,123	122,439	5,084	383,016	21,315
East Asia & Pacific		22.5	..	..	..	..	..	86,329	1,576	145,040	10,558
Europe & Central Asia		89.7	5,283	7,413	219,116	1,118	7,169	..	867	55,604	1,899
Latin America & Carib.		26.9	..	..	..	..	..	15,660	1,530	93,435	4,071
Middle East & N. Africa		63.8	..	..	25,249	1,110	2,246	..	416	42,570	1,770
South Asia		42.9	..	..	..	..	..	6,501	347	28,192	1,367
Sub-Saharan Africa		13.3	..	..	..	143	554	..	348	18,174	1,651
High income		94.8	..	19,504	..	8,260	10,784	169,362	16,289	1,296,821	108,255
Europe EMU		99.5	76,186	32,700	120,432	8,415	9,664	48,492	3,507	281,684	24,960

a. Data are for the latest year available in the period shown. b. Includes Hong Kong, China. c. Excludes Tazara railway. d. Refers to Class 1 railways only. e. Data cover only carriers designated by the U.S. Department of Transportation as major and national air carriers.

Transport infrastructure—highways, railways, ports and waterways, and airports and air traffic control systems—and the services that flow from it are crucial to the activities of households, producers, and governments. Because performance indicators vary significantly by transport mode and focus (whether physical infrastructure or the services flowing from that infrastructure), highly specialized and carefully specified indicators are required. The table provides selected indicators of the size, extent, and productivity of roads, railways, and air transport systems and of the volume of traffic in these modes and in ports.

Data for transport sectors are not always internationally comparable. Unlike for demographic statistics, national income accounts, and international trade data, the collection of infrastructure data has not been "internationalized." But data on roads are collected by the International Road Federation (IRF), and data on air transport by the International Civil Aviation Organization (ICAO).

National road associations are the primary source of IRF data. In countries without such an association or where it does not respond, IRF contacts other agencies, such as road directorates, ministries of transport or public works, or central statistical offices. As a result, there are differences in definitions, data collection methods, and quality of the compiled data. Moreover, the quality of transport service (reliability, transit time, and condition of goods delivered) is rarely measured, though it may be as important as quantity in assessing an economy's transport system. Several new initiatives are under way to improve data availability and consistency. The IRF is collaborating with national and international development agencies to improve the quality and coverage of road statistics. To improve measures of progress and performance, the World Bank is also working on better measures of access, affordability, efficiency, quality, and fiscal and institutional aspects of infrastructure.

Unlike the road sector, where qualified motor vehicle operators can operate anywhere on the network, railways are a restricted transport system with vehicles confined to a fixed guideway. Considering their cost and service characteristics, railways generally are best suited to carry—and can effectively compete for—bulk commodities and containerized freight for distances of 500–5,000 kilometers, and passengers for distances of 50–1,000 kilometers. Below these limits road transport tends to be more competitive, while above these limits air transport for passengers and freight or sea transport for freight tend to be more competitive. The railways indicators in the table focus on scale and output measures: route-kilometers, passenger-kilometers, and goods (freight) hauled in ton-kilometers.

Measures of port container traffic, much of it commodities of medium to high value added, give some indication of economic growth in a country. But when traffic is merely transshipment, much of the economic benefit goes to the terminal operator and ancillary services for ships and containers rather than to the country more broadly. In transshipment centers empty containers may account for as much as 40 percent of traffic.

The air transport data cover total (international and domestic) scheduled traffic carried by the air carriers registered in a country. Countries submit air transport data to ICAO on the basis of standard instructions and definitions issued by ICAO. In many cases, however, the data include estimates by ICAO for nonreporting carriers. Where possible, these estimates are based on previous submissions supplemented by information published by the air carriers, such as flight schedules.

The data cover the air traffic carried on scheduled services, but changes in air transport regulations in Europe have made it more difficult to classify traffic as scheduled or nonscheduled. Thus recent increases shown for some European countries may

be due to changes in the classification of air traffic rather than to actual growth. For countries with few air carriers or only one, the addition or discontinuation of a home-based air carrier may cause significant changes in air traffic.

• Total road network covers motorways, highways, main or national roads, secondary or regional roads, and all other roads in a country. • Paved roads are roads surfaced with crushed stone (macadam) and hydrocarbon binder or bituminized agents, with concrete, or with cobblestones. • Passengers carried by road are the number of passengers transported by road times kilometers traveled. • Goods hauled by road are the volume of goods transported by road vehicles, measured in metric tons times kilometers traveled. • Rail lines are the length of railway route available for train service, irrespective of the number of parallel tracks. • Passengers carried by railway are the number of passengers transported by rail times kilometers traveled. • Goods hauled by railway are the volume of goods transported by railway, measured in metric tons times kilometers traveled. • Port container traffic measures the flow of containers from land to sea transport modes and vice versa in twenty-foot-equivalent units (TEUs), a standard-size container. Data cover coastal shipping as well as international journeys. Transshipment traffic is counted as two lifts at the intermediate port (once to off-load and again as an outbound lift) and includes empty units. • Aircraft departures are domestic and international takeoffs of air carriers registered in the country. • Air passengers carried include both domestic and international passengers of air carriers registered in the country. • Air freight is the volume of freight, express, and diplomatic bags carried by air carriers registered in the country on each flight stage (operation of an aircraft from takeoff to its next landing), measured in metric tons times kilometers traveled.

5.9a

World airline passenger traffic is expected to rebound in 2004 after two years of stagnation

Passengers carried (millions)

Legend: 2000, 2001, 2002, 2003
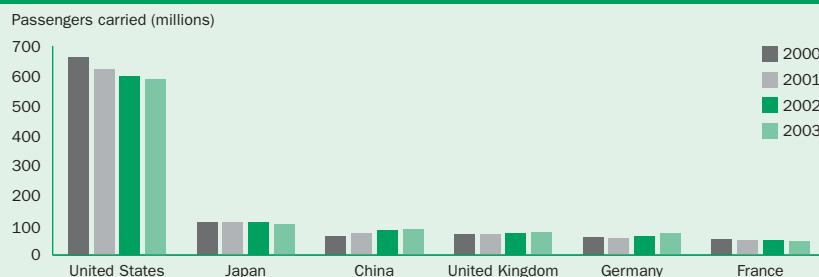
Source: International Civil Aviation Organization.

The data on roads are from the IRF's World Road Statistics. The data on railways are from a database maintained by the World Bank's Transport and Urban Development Department, Transport Division. The data on port container traffic are from Containerisation International's Containerisation International Yearbook. And the data on air transport are from the ICAO's Civil Aviation Statistics of the World and ICAO staff estimates.

	Electric power		Telephone mainlines[a]							Mobile phones[a]	International communications[a]	
	Consumption per capita kwh 2002	Transmission and distribution losses % of output 2002	per 1,000 people 2003	In largest city per 1,000 people 2002	Waiting list thousands 2003	Faults per 100 mainlines 2003	per employee 2003	Revenue per line $ 2003	Cost of local call $ per 3 minutes 2003	per 1,000 people 2003	Outgoing traffic minutes per subscriber 2003	Cost of call to U.S. $ per 3 minutes 2003
Afghanistan	..	..	2	8	..	..	..	..	..	10	..	..
Albania	1,390	35	83	94	98.5	57.2	65	1,139	0.02	358	282	2.47
Algeria	662	16	69	124	727.0	6.0	105	192	0.04	46	111	..
Angola	109	14	7	21	240.3	..	38	..	0.09	9	404	1.34
Argentina	2,024	17	219	..	..	..	337	931	0.02	178	53	..
Armenia	1,113	26	148	224	60.8	52.9	98	142	0.02	30	66	0.00
Australia	9,663	7	542	..	0.0	8.0	216	1,377	0.19	719	215	0.68
Austria	6,838	5	481	..	0.0	5.4	228	1,459	0.19	879	371	..
Azerbaijan	1,878	20	114	299	55.4	45.2	106	108	0.10	128	45	5.55
Bangladesh	100	21	5	30	153.1	..	29	593	0.03	10	77	2.07
Belarus	2,657	13	311	397	292.8	24.8	115	72	0.01	113	87	2.25
Belgium	7,592	5	489	..	..	5.6	206	1,615	0.17	793	352	..
Benin	76	..	9	42	..	6.0	48	1,044	0.11	34	294	5.76
Bolivia	419	13	72	109	..	..	187	742	..	152	68	..
Bosnia and Herzegovina	1,633	17	245	502	..	..	130	247	0.02	274	106	3.02
Botswana	..	..	75	..	..	..	83	1,238	0.02	297	425	..
Brazil	1,776	17	223	311	200.0	1.7	400	546	0.03	264	21	..
Bulgaria	3,060	15	380	..	114.6	2.6	110	394	0.03	466	31	1.46
Burkina Faso	..	..	5	42	12.4	19.7	51	1,022	0.10	19	307	2.58
Burundi	..	..	3	..	4.7	..	27	718	0.07	9	127	3.71
Cambodia	..	..	3	19	..	..	37	515	0.03	35	147	..
Cameroon	161	23	7	..	..	..	50	..	0.06	66	208	..
Canada	15,613	8	629	..	0.0	..	237	1,040	0.00	417	0	..
Central African Republic	..	..	2	..	1.2	..	23	1,196	0.43	10	466	13.59
Chad	..	..	2	8	..	60.8	16	..	0.11	8	363	9.11
Chile	2,617	6	221	333	32.3	25.0	179	698	0.10	511	79	2.18
China	987	7	209	584	..	..	..	211	0.03	215	4	..
Hong Kong, China	5,612	12	559	580	0.0	1.3	184	1,700	0.00	1,079	1,156	2.62
Colombia	817	19	179	327	1,174.7	33.0	229	499	0.03	141	44	..
Congo, Dem. Rep.	43	4	0	..	..	..	..	..	..	19	..	..
Congo, Rep.	82	70	2	..	..	..	..	..	..	94	..	..
Costa Rica	1,611	10	251	..	15.8	4.2	213	351	0.02	111	125	..
Côte d'Ivoire	..	..	14	68	3.4	81.0	70	2,267	0.09	77	274	6.38
Croatia	2,855	17	417	..	0.0	12.0	171	679	0.10	584	198	..
Cuba	1,094	15	51	121	..	9.6	34	1,370	0.09	2	65	7.35
Czech Republic	4,982	6	360	666	27.3	6.8	159	1,103	0.15	965	95	0.83
Denmark	6,024	6	669	..	0.0	9.0	177	1,521	0.11	883	225	..
Dominican Republic	853	33	115	4	..	..	..	..	0.06	271	245	..
Ecuador	665	24	122	133	14.5	35.3	275	336	0.03	189	48	1.75
Egypt, Arab Rep.	1,073	13	127	264	99.5	1.0	164	321	0.02	84	35	2.57
El Salvador	595	13	116	..	38.2	..	168	903	0.07	176	243	1.23
Eritrea	..	..	9	43	46.2	51.1	60	458	0.03	0	127	3.55
Estonia	3,882	15	341	593	4.5	16.3	136	1,195	0.11	777	190	0.74
Ethiopia	25	10	6	60	146.1	100.0	53	295	0.02	1	36	7.05
Finland	15,326	4	492	..	0.0	..	147	1,944	0.16	910	172	1.06
France	6,606	6	566	..	0.0	..	232	938	0.15	696	139	..
Gabon	804	18	29	..	..	0.5	18	3,712	0.26	224	854	10.88
Gambia, The	..	..	28	97	10.6	..	34	760	0.03	73	352	3.46
Georgia	1,032	17	133	233	138.8	17.2	39	208	0.03	107	108	0.68
Germany	6,046	5	657	696	0.0	..	240	1,313	0.11	785	167	0.35
Ghana	297	24	13	83	154.8	67.4	57	460	0.03	36	213	1.13
Greece	4,231	7	454	731	1.7	13.6	208	1,312	0.09	902	173	0.67
Guatemala	361	22	71	..	..	..	236	593	0.08	131	172	..
Guinea	..	..	3	..	1.4	..	33	1,119	0.08	14	734	4.61
Guinea-Bissau	..	..	8	..	..	..	..	..	..	1	..	..
Haiti	36	51	17	..	..	..	28	..	..	38	..	..

	Electric power		Telephone mainlines[a]							Mobile phones[a]	International communications[a]	
	Consumption per capita kwh	Transmission and distribution losses % of output	per 1,000 people	In largest city per 1,000 people	Waiting list thousands	Faults per 100 mainlines	per employee	Revenue per line $	Cost of local call $ per 3 minutes	per 1,000 people	Outgoing traffic minutes per subscriber	Cost of call to U.S. $ per 3 minutes
	2002	2002	2003	2002	2003	2003	2003	2003	2003	2003	2003	2003
Honduras	537	23	48	..	342.2	3.6	62	1,210	0.06	49	..	2.85
Hungary	3,099	12	349	588	28.0	..	176	1,294	0.16	769	44	0.79
India	380	26	46	136	1,648.8	126.0	92	198	0.02	25	16	3.20
Indonesia	411	16	39	261	..	20.0	181	300	0.03	87	37	..
Iran, Islamic Rep.	1,677	16	220	381	1,654.8	..	316	118	0.01	51	23	1.95
Iraq	1,213	6	28	..	..	..	..	..	..	3	..	..
Ireland	5,555	8	491	..	..	6.0	133	2,081	0.17	880	441	..
Israel	5,857	3	458	..	..	..	249	1,228	0.02	961	385	..
Italy	4,901	7	484	..	..	..	..	1,288	0.11	1,018	169	..
Jamaica	2,406	9	170	..	168.6	39.7	192	1,050	0.02	535	310	..
Japan	7,718	5	472	554	0.0	..	526	2,805	0.07	679	37	..
Jordan	1,317	12	114	183	1.1	12.6	115	1,330	0.05	242	380	1.96
Kazakhstan	2,911	16	130	..	168.3	..	65	289	0.00	64	63	..
Kenya	120	21	10	77	134.0	..	17	1,563	0.07	50	75	4.36
Korea, Dem. Rep.	..	..	41	..	..	..	..	..	..	0	..	..
Korea, Rep.	6,171	6	538	632	0.0	1.0	249	958	0.03	701	45	1.74
Kuwait	10,888	5	198	46	0.0	4.0	66	1,778	0.00	578	503	1.48
Kyrgyz Republic	1,269	37	76	168	41.5	..	53	110	0.09	27	66	9.04
Lao PDR	..	..	12	65	..	..	50	448	0.06	20	104	6.37
Latvia	2,088	25	285	500	16.2	20.3	228	376	0.12	526	76	2.02
Lebanon	1,951	16	199	..	..	..	..	..	0.10	227	149	..
Lesotho	..	..	13	64	21.1	72.8	80	415	0.11	42	64	2.31
Liberia	..	..	2	..	..	..	..	..	..	1	868	..
Libya	2,250	20	136	..	..	..	..	..	..	23	68	..
Lithuania	1,938	8	239	427	1.3	16.3	217	804	0.16	630	43	2.31
Macedonia, FYR	..	..	271	..	..	..	143	406	0.01	177	116	..
Madagascar	2,204	..	4	9	1.8	26.6	105	1,614	0.07	17	147	7.41
Malawi	..	..	8	41	17.4	..	17	620	0.06	13	435	0.06
Malaysia	2,832	6	182	..	49.0	40.0	222	948	0.02	442	144	2.37
Mali	..	..	5	24	..	..	37	1,159	0.07	23	300	12.28
Mauritania	..	..	14	..	..	..	52	2,390	0.11	128	393	..
Mauritius	..	..	285	376	13.5	56.8	219	499	0.04	267	125	2.50
Mexico	1,660	15	158	156	..	1.9	139	1,134	0.16	291	134	3.04
Moldova	909	50	219	350	88.0	5.2	106	157	0.02	132	79	2.21
Mongolia	..	..	56	99	35.6	20.6	35	452	0.02	130	33	..
Morocco	475	7	40	..	..	..	94	1,612	0.17	243	226	1.63
Mozambique	341	8	5	..	12.7	70.0	39	1,533	0.08	23	274	..
Myanmar	108	19	7	32	102.6	155.0	46	86	0.06	1	26	0.36
Namibia	..	..	66	157	2.6	40.4	81	1,542	0.04	116	499	..
Nepal	64	20	16	315	319.5	88.1	78	257	0.01	2	102	..
Netherlands	6,179	4	614	..	..	..	..	1,313	0.11	768	260	..
New Zealand	8,832	10	448	..	0.0	..	357	1,757	0.00	648	313	..
Nicaragua	279	29	37	..	..	4.6	102	744	0.08	85	108	3.20
Niger	..	..	2	24	..	104.6	16	848	0.10	2	292	8.77
Nigeria	68	38	7	12	..	..	58	..	0.10	26	124	..
Norway	23,855	7	713	..	0.0	..	221	1,535	0.15	909	165	0.31
Oman	3,177	17	84	..	2.1	..	105	2,237	0.07	229	729	0.78
Pakistan	363	26	27	..	190.3	..	73	394	0.02	18	35	..
Panama	1,375	22	122	284	..	8.3	62	..	0.12	268	120	..
Papua New Guinea	..	..	12	115	..	..	..	..	0.08	3	402	..
Paraguay	842	3	46	91	..	3.4	25	1,069	0.09	299	104	0.82
Peru	723	10	67	..	33.0	..	372	888	0.08	106	82	..
Philippines	459	16	41	265	..	..	273	884	0.00	270	52	..
Poland	2,514	10	319	..	501.6	17.2	76	786	0.09	451	147	1.79
Portugal	4,000	8	411	..	..	10.1	278	1,842	0.13	898	124	0.93
Puerto Rico	..	..	346	..	..	..	261	1,583	..	316	..	..

	Electric power		Telephone mainlines[a]							Mobile phones[a]	International communications[a]	
	Consumption per capita kwh 2002	Transmission and distribution losses % of output 2002	per 1,000 people 2003	In largest city per 1,000 people 2002	Waiting list thousands 2003	Faults per 100 mainlines 2003	per employee 2003	Revenue per line $ 2003	Cost of local call $ per 3 minutes 2003	per 1,000 people 2003	Outgoing traffic minutes per subscriber 2003	Cost of call to U.S. $ per 3 minutes 2003
Romania	1,632	13	199	..	465.0	8.9	100	410	0.12	324	39	1.82
Russian Federation	4,291	12	242	..	5,809.6	..	..	209	..	249	34	..
Rwanda	..	..	3	..	..	..	61	934	0.09	16	245	..
Saudi Arabia	5,275	8	155	214	73.6	26.2	155	1,893	0.05	321	578	2.40
Senegal	135	7	22	71	9.8	17.3	152	852	0.20	56	294	1.81
Serbia and Montenegro	..	..	243	424	313.5	..	181	146	0.01	338	121	2.08
Sierra Leone	..	..	5	..	..	..	19	..	0.03	13	336	..
Singapore	7,039	9	450	471	0.0	99.2	221	1,738	0.02	852	1,020	..
Slovak Republic	4,222	3	241	665	7.0	27.0	106	604	0.12	684	134	0.79
Slovenia	5,907	5	407	..	0.5	22.5	227	839	0.07	871	106	0.52
Somalia	..	..	10	..	..	..	..	..	..	3	..	..
South Africa	3,860	8	107	..	..	48.2	116	1,102	0.15	364	117	0.58
Spain	5,048	8	434	..	..	..	209	2,198	0.07	909	183	..
Sri Lanka	297	18	49	299	257.7	99.6	72	379	0.03	73	58	2.33
Sudan	74	15	27	80	444.0	..	150	368	0.03	20	80	3.92
Swaziland	..	..	44	131	15.6	..	67	784	0.05	84	657	2.42
Sweden	14,742	8	736	..	..	..	304	1,189	0.11	980	..	0.32
Switzerland	7,381	6	744	..	0.0	..	231	1,799	0.15	843	481	..
Syrian Arab Republic	1,000	32	123	156	2,805.9	50.0	84	238	0.01	65	90	4.81
Tajikistan	2,236	15	37	133	5.9	144.0	48	37	0.01	7	47	6.95
Tanzania	62	23	4	23	8.0	24.0	46	1,471	0.12	25	73	5.28
Thailand	1,626	7	105	452	582.7	91.7	222	636	0.07	394	52	1.54
Togo	..	..	12	37	27.5	6.2	57	823	0.10	44	349	2.15
Trinidad and Tobago	4,330	5	250	..	..	..	100	958	0.04	278	218	2.22
Tunisia	1,019	11	118	99	108.7	29.0	143	451	0.02	192	164	2.28
Turkey	1,458	18	268	388	77.2	30.4	309	334	0.14	394	50	2.09
Turkmenistan	1,371	14	77	183	36.8	86.4	52	145	..	2	64	..
Uganda	..	..	2	..	..	..	23	5,002	0.21	30	125	3.51
Ukraine	2,229	19	216	..	2,158.7	..	86	211	..	136	36	..
United Arab Emirates	9,656	9	281	348	0.4	0.3	115	1,994	0.00	736	1,732	1.73
United Kingdom	5,618	8	591	..	0.0	11.0	148	2,087	0.18	841	258	..
United States	12,183	6	621	..	..	12.4	170	1,568	0.00	543	217	..
Uruguay	1,834	17	280	335	..	..	168	751	..	193	87	..
Uzbekistan	1,670	9	67	248	38.9	87.4	69	118	0.01	13	36	..
Venezuela, RB	2,472	25	111	..	..	2.0	192	864	0.02	273	104	..
Vietnam	374	14	54	..	..	..	49	366	0.02	34	17	..
West Bank and Gaza	..	..	87	..	0.7	97.0	188	353	0.05	133	132	0.15
Yemen, Rep.	152	15	28	95	704.8	..	100	266	0.02	35	81	4.10
Zambia	583	3	8	22	11.6	90.8	28	808	0.09	22	178	6.45
Zimbabwe	831	21	26	74	131.0	..	62	817	0.04	32	309	..
World	**2,225 w**	**9 w**	**183 w**	**294 w**	**.. w**	**.. m**	**113 m**	**831 m**	**0.05 m**	**223 w**	**123 m**	**2.63 m**
Low income	312	24	32	111	4,380.3	..	43	718	0.07	24	108	4.53
Middle income	1,422	12	178	386	..	25.0	141	579	0.04	225	93	2.37
Lower middle income	1,289	11	175	490	..	29.0	116	398	0.03	207	68	2.65
Upper middle income	2,496	12	199	..	..	17.1	165	881	0.09	395	129	2.18
Low & middle income	970	13	112	321	..	..	75	612	0.05	137	104	3.04
East Asia & Pacific	891	8	161	502	..	..	49	448	0.03	195	42	..
Europe & Central Asia	2,808	13	228	..	10,859.2	27.3	113	318	0.10	301	66	2.08
Latin America & Carib.	1,506	16	170	..	..	4.7	174	888	0.08	246	106	..
Middle East & N. Africa	1,412	13	135	..	6,099.3	..	140	1,128	0.05	102	132	1.96
South Asia	344	26	39	127	2,623.8	99.6	64	379	0.02	23	35	2.66
Sub-Saharan Africa	457	11	11	39	..	..	43	850	0.09	52	208	4.53
High income	8,693	6	560	..	..	..	224	1,351	0.10	708	214	..
Europe EMU	5,912	6	544	..	..	..	208	1,728	0.16	842	183	..

a. Data are from the International Telecommunication Union's (ITU) World Telecommunication Development Report database. Please cite the ITU for third-party use of these data.

The quality of an economy's infrastructure, including power and communications, is an important element in investment decisions for both domestic and foreign investors. Government effort alone is not enough to meet the need for investments in modern infrastructure; public-private partnerships, especially those involving local providers and financiers, are critical for lowering costs and delivering value for money. In telecommunications, competition in the marketplace, along with sound regulation, is lowering costs and improving the quality of and access to services around the globe.

An economy's production and consumption of electricity is a basic indicator of its size and level of development. Although a few countries export electric power, most production is for domestic consumption. Expanding the supply of electricity to meet the growing demand of increasingly urbanized and industrialized economies without incurring unacceptable social, economic, and environmental costs is one of the great challenges facing developing countries.

Data on electric power production and consumption are collected from national energy agencies by the International Energy Agency (IEA) and adjusted by the IEA to meet international definitions (for data on electricity production, see table 3.9). Electricity consumption is equivalent to production less power plants' own use and transmission, distribution, and transformation losses. It includes consumption by auxiliary stations, losses in transformers that are considered integral parts of those stations, and electricity produced by pumping installations. Where data are available, it covers electricity generated by primary sources of energy—coal, oil, gas, nuclear, hydro, geothermal, wind, tide and wave, and combustible renewables. Neither production nor consumption data capture the reliability of supplies, including breakdowns, load factors, and frequency of outages.

Over the past decade new financing and technology, along with privatization and liberalization, have spurred dramatic growth in telecommunications in many countries. The table presents some common performance indicators for telecommunications, including measures of supply and demand, service quality, productivity, economic and financial performance, and tariffs. The quality of data varies among reporting countries as a result of differences in regulations covering the provision of data.

Operators are the main source of telecommunications data, so information on subscribers is widely available for most countries. This gives a general idea of access, but a more precise measure is the penetration rate—the share of households with access to telecommunications. Also important are data on actual use of the telecommunications equipment. Ideally, statistics on telecommunications (and other information and communications technologies) should be compiled for all three measures: subscription/possession, access, and use.

Demand for telecommunications is often measured by the sum of telephone mainline subscribers and registered applicants for new connections. (A mainline is normally identified by a unique number that is the one billed.) In some countries the list of registered applicants does not reflect real current pending demand, which is often hidden or suppressed, reflecting an extremely short supply that has discouraged potential applicants from applying for telephone service. And in some countries the waiting list may overstate demand because applicants have placed their names on the list several times to improve their chances. The number of mainlines no longer reflects a telephone system's full capacity because mobile telephones—whose use has been expanding rapidly in most countries, rich and poor—provide an alternative point of access.

Telephone mainline faults refer to the number of reported faults per 100 main telephone lines. It is calculated by the total number of reported faults for the year divided by the number of telephone mainlines and multiplied by 100. The definition of fault varies among countries: some operators define faults as including malfunctioning customer equipment while others include only technical faults.

In addition to waiting list and mainline faults, the table includes two other measures of efficiency in telecommunications: mainlines per employee and revenue per mainline. Caution should be used in interpreting the estimates of mainlines per employee because firms often subcontract part of their work. The cross-country comparability of revenue per mainline may also be limited because, for example, some countries do not require telecommunications providers to submit financial information; the data usually do not include revenues from mobile phones or from radio, paging, and data services; and there are definitional and accounting differences among countries.

• Electric power consumption measures the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants. • Electric power transmission and distribution losses are losses in transmission between sources of supply and points of distribution and in distribution to consumers, including pilferage. • Telephone mainlines are telephone lines connecting a subscriber to the telephone exchange equipment. Data are presented for the entire country and for the largest city. • Waiting list shows the number of applications for a connection to a mainline that have been held up by a lack of technical capacity. • Telephone mainline faults is the number of reported faults per 100 telephone mainlines. • Telephone mainlines per employee are calculated by dividing the number of mainlines by the number of telecommunications staff (with part-time staff converted to full-time equivalents) employed by enterprises providing public telecommunications services. • Revenue per line is the revenue received by firms per mainline for providing telecommunications services. • Cost of local call is the cost of a three-minute, peak rate, fixed-line call within the same exchange area using the subscriber's equipment (that is, not from a public phone). • Mobile phones refer to portable telephone subscribers to an automatic public mobile telephone service using cellular technology that provides access to the telephone exchange equipment, per 1,000 people. • International telecommunications outgoing traffic is the telephone traffic, measured in minutes per subscriber, that originates in the country and has a destination outside the country. • Cost of call to U.S. is the cost of a three-minute, peak rate, fixed line call from the country to the United States.

5.10a

Mobile phone access outpaced fixed-line access in some developing country regions in 2003

Subscribers per 1,000 people, 1995 and 2003

Telephone mainlines, 1995
Mobile phones, 1995
Telephone mainlines, 2003
Mobile phones, 2003

Source: Table 5.10, based on International Telecommunication Union data.

	Daily newspapers	Radios	Television[a]		Personal computers[a]	Internet				Information and communications technology expenditures	
			per 1,000 people				Total monthly price				
						Users per 1,000 people[a]	20 hours of use $	% of monthly GNI per capita $	Secure servers number		per capita $
	per 1,000 people	per 1,000 people	Sets	Cable subscribers	per 1,000 people					% of GDP	
	2000	1997–2003[b]	2003	2003	2003	2003	2003	2003	2004	2003	2003
Afghanistan	5	114	14	0.0	..	1	..	..	1	..	..
Albania	35	260	318	2.3	11.7	10	29	24.8	2	..	..
Algeria	27	244	114	0.0	7.7	16	18	12.4	3	..	..
Angola	11	78	52	..	1.9	3	79	143.3	3	..	..
Argentina	40	697	326	162.9	82.0	112	13	3.9	386	5.7	200
Armenia	23	264	229	1.2	15.8	37	45	68.0	4	..	..
Australia	161	1,996	722	76.3	565.1	567	18	1.1	8,224	5.9	1,560
Austria	309	763	637	156.9	369.3	462	33	1.7	1,586	5.3	1,664
Azerbaijan	10	22	334	0.6	..	37	108	183.0	3	..	..
Bangladesh	9	49	59	27.0	7.8	2	20	66.8	3	2.7	10
Belarus	154	199	362	77.2	..	141	13	11.3	4	..	..
Belgium	153	793	541	377.7	318.1	386	29	1.5	946	5.5	1,601
Benin	5	445	12	..	3.7	10	46	146.5	..	..	..
Bolivia	99	671	..	7.4	22.8	32	22	29.8	16	5.8	52
Bosnia and Herzegovina	152	243	..	19.4	..	26	7	6.9	15	..	..
Botswana	25	150	44	..	40.7	35	27	10.9	1	..	..
Brazil	46	433	369	13.4	74.8	82	28	11.8	2,001	6.9	193
Bulgaria	173	543	..	133.5	51.9	206	12	8.3	46	3.9	100
Burkina Faso	1	433	12	0.0	2.1	4	45	247.5	2	..	..
Burundi	2	220	35	0.0	1.8	2	81	971.3	2	..	..
Cambodia	2	113	8	..	2.3	2	57	245.8	2	..	..
Cameroon	6	161	75	..	5.7	4	52	110.7	3	4.9	38
Canada	168	1,047	691	252.9	487.0	513	13	0.7	15,441	5.8	1,575
Central African Republic	2	80	6	..	2.0	1	175	807.9	..	..	..
Chad	0	233	2	..	1.7	2	69	375.6	..	..	..
Chile	98	759	523	57.4	119.3	272	22	6.1	274	6.7	306
China	59	339	350	75.0	27.6	63	10	13.0	293	5.3	58
Hong Kong, China	218	686	504	124.8	422.0	472	4	0.2	965	8.4	1,921
Colombia	26	548	319	..	49.3	53	19	12.2	159	9.0	159
Congo, Dem. Rep.	3	385	2	..	..	..	74	986.7	..	..	..
Congo, Rep.	6	109	13	..	4.3	4	121	207.8	..	..	..
Costa Rica	70	816	..	..	197.2	193	26	7.6	216	7.5	326
Côte d'Ivoire	16	185	61	0.0	9.3	14	67	132.1	3	..	..
Croatia	134	330	..	8.1	173.8	232	17	4.4	146	..	..
Cuba	54	185	251	..	31.8	11	58	32.2	1	..	..
Czech Republic	254	803	538	94.4	177.4	308	21	4.5	316	6.6	576
Denmark	283	1,400	859	236.7	576.8	513	18	0.7	1,724	5.7	2,224
Dominican Republic	28	181	..	..	..	64	33	17.1	33	..	..
Ecuador	98	422	252	13.9	31.1	46	32	26.3	38	3.7	76
Egypt, Arab Rep.	31	339	229	0.0	21.9	39	5	4.5	28	1.2	15
El Salvador	29	481	233	..	25.2	84	48	27.8	35	..	..
Eritrea	..	464	53	0.0	2.9	7	27	200.9	..	..	..
Estonia	192	1,136	507	117.0	440.4	444	14	3.9	113	..	..
Ethiopia	0	189	6	..	2.2	1	27	329.1	1	..	..
Finland	445	1,624	679	210.6	441.7	534	23	1.2	1,283	6.9	2,137
France	143	950	632	57.5	347.1	366	14	0.8	3,855	5.9	1,726
Gabon	29	488	308	11.5	22.4	26	122	46.9	6	..	..
Gambia, The	2	394	15	..	13.8	..	27	116.2	..	..	..
Georgia	5	568	357	12.4	31.6	31	26	48.4	11	..	..
Germany	291	570	675	250.8	484.7	473	14	0.7	13,847	5.7	1,647
Ghana	14	695	53	0.3	3.8	8	44	194.8	1	..	..
Greece	153	466	519	0.0	81.7	150	38	3.9	290	4.3	665
Guatemala	33	79	145	..	14.4	33	31	21.4	50	..	..
Guinea	..	52	47	0.0	5.5	5	63	185.2	..	..	..
Guinea-Bissau	5	178	36	..	..	15	105	840.7	..	..	..
Haiti	3	18	60	7.2	..	18	130	354.5	5	..	..

	Daily newspapers	Radios	Television[a]		Personal computers[a]	Internet				Information and communications technology expenditures	
			per 1,000 people				Total monthly price	% of monthly			
	per 1,000 people	per 1,000 people	Sets	Cable subscribers	per 1,000 people	Users per 1,000 people[a]	20 hours of use $	GNI per capita $	Secure servers number	% of GDP	per capita $
	2000	1997–2003[b]	2003	2003	2003	2003	2003	2003	2004	2003	2003
Honduras	55	411	119	21.6	13.6	25	41	52.9	31	4.5	45
Hungary	162	690	475	190.7	108.4	232	10	2.3	210	6.1	499
India	60	120	83	38.9	7.2	17	9	21.9	462	3.7	21
Indonesia	23	159	153	0.3	11.9	38	22	37.6	85	3.4	33
Iran, Islamic Rep.	28	281	173	..	90.5	72	6	4.2	13	2.2	46
Iraq	19	222	..	..	8.3	1	..	..	..	..	..
Ireland	148	695	694	134.0	420.8	317	28	1.4	1,245	3.9	1,491
Israel	290	526	330	1467.7	242.6	301	30	2.1	869	7.9	1,298
Italy	109	878	..	1.4	230.7	337	17	1.0	1,994	4.1	1,055
Jamaica	62	795	374	..	53.9	228	44	18.5	24	11.5	353
Japan	566	956	785	193.4	382.2	483	21	0.8	20,465	7.4	2,489
Jordan	74	372	177	..	44.7	81	26	18.0	21	8.8	164
Kazakhstan	..	411	338	6.6	..	16	34	27.4	6	..	..
Kenya	8	221	26	0.5	6.4	13	46	152.4	8	3.1	14
Korea, Dem. Rep.	208	154	160	0.0	..	..	..	..	..	..	..
Korea, Rep.	393	1,034	458	282.2	558.0	610	10	1.2	894	6.7	842
Kuwait	374	570	418	..	162.8	228	25	2.0	52	1.7	304
Kyrgyz Republic	15	110	49	3.6	12.7	38	15	62.1	2	..	..
Lao PDR	4	148	52	0.0	3.5	..	32	123.4	..	..	..
Latvia	138	700	859	176.8	188.0	404	58	20.0	80	..	..
Lebanon	63	182	357	29.9	80.5	117	37	11.1	29	..	..
Lesotho	9	61	35	..	..	10	43	110.7	..	..	..
Liberia	14	274	..	..	..	0	..	..	..	..	..
Libya	14	273	..	..	23.4	29	19	3.8	..	..	..
Lithuania	31	524	487	76.9	109.7	202	34	11.2	47	..	..
Macedonia, FYR	54	205	..	..	..	..	19	13.3	1	..	..
Madagascar	5	216	25	..	4.9	4	67	336.7	1	..	..
Malawi	2	499	4	0.0	1.5	3	62	465.0	1	..	..
Malaysia	95	420	210	0.0	166.9	344	8	2.9	284	6.9	289
Mali	1	180	33	..	1.4	2	58	289.8	..	..	..
Mauritania	0	148	44	..	10.8	4	39	113.1	..	..	..
Mauritius	116	379	299	..	116.5	123	15	4.7	19	..	..
Mexico	94	330	282	24.3	82.0	118	23	4.6	634	3.1	191
Moldova	153	758	296	24.6	17.5	80	19	49.6	9	..	..
Mongolia	18	50	81	20.5	77.3	58	18	48.6	5	..	..
Morocco	30	243	167	..	19.9	33	25	25.5	17	5.6	82
Mozambique	3	44	14	..	4.5	3	51	290.2	1	..	..
Myanmar	9	66	7	..	5.6	1	43	180.9	2	..	..
Namibia	17	134	269	16.0	99.3	34	33	22.5	9	..	..
Nepal	12	39	8	..	3.7	3	13	70.3	8	..	..
Netherlands	279	980	648	401.4	466.6	522	24	1.2	3,779	6.4	2,009
New Zealand	202	991	574	7.1	413.8	526	13	1.1	1,733	10.0	1,984
Nicaragua	30	270	123	..	27.9	17	51	138.6	14	..	..
Niger	0	122	10	..	0.6	1	97	683.6	..	..	..
Nigeria	25	200	103	0.5	7.1	6	85	353.7	13	..	..
Norway	569	3,324	884	184.5	528.3	346	26	0.8	1,130	5.1	2,480
Oman	29	621	553	0.0	35.0	71	24	3.8	6	..	..
Pakistan	39	105	150	26.7	4.2	10	16	45.7	37	7.3	40
Panama	62	300	191	..	38.3	62	36	10.7	149	9.2	395
Papua New Guinea	14	86	23	4.2	58.7	14	20	45.3	1	..	..
Paraguay	43	188	..	21.3	34.6	20	36	37.3	9	..	..
Peru	23	269	172	16.6	43.0	104	33	19.2	129	6.9	153
Philippines	67	161	182	37.0	27.7	44	17	20.1	161	5.8	57
Poland	102	523	229	94.0	142.0	232	16	4.1	565	4.5	249
Portugal	102	299	413	128.2	134.4	194	21	2.3	458	4.2	601
Puerto Rico	126	761	339	91.2	..	175	..	..	116	..	..

	Daily newspapers	Radios	Television[a]		Personal computers[a]	Internet				Information and communications technology expenditures	
							Total monthly price				
			per 1,000 people					% of monthly			
	per 1,000 people	per 1,000 people	Sets	Cable subscribers	per 1,000 people	Users per 1,000 people[a]	20 hours of use $	GNI per capita $	Secure servers number	% of GDP	per capita $
	2000	1997–2003[b]	2003	2003	2003	2003	2003	2003	2004	2003	2003
Romania	300	358	697	172.5	96.6	184	26	17.1	65	2.8	74
Russian Federation	105	418	..	43.6	88.7	..	10	5.6	297	3.7	111
Rwanda	1	85	..	..	..	3	67	348.3	..	..	..
Saudi Arabia	59	326	265	0.3	130.2	67	35	4.9	57	2.5	239
Senegal	5	126	78	0.1	21.2	22	41	103.7	3	7.4	47
Serbia and Montenegro	107	297	..	..	27.1	79	13	11.3	9	..	..
Sierra Leone	4	259	13	..	..	2	12	102.9	..	..	..
Singapore	273	672	303	84.5	622.0	509	11	0.6	981	10.5	2,254
Slovak Republic	14	965	409	127.3	180.4	256	21	6.3	63	5.3	319
Slovenia	168	405	366	160.3	300.6	376	25	3.1	130	..	..
Somalia	1	60	14	..	..	9	..	..	..	..	..
South Africa	26	336	177	0.0	72.6	68	33	15.4	909	8.0	281
Spain	98	330	564	24.3	196.0	239	21	1.7	2,837	3.8	773
Sri Lanka	29	215	117	0.3	13.2	12	15	21.5	30	5.7	54
Sudan	26	461	386	0.0	6.1	9	161	550.8	..	..	..
Swaziland	26	162	34	..	28.7	26	21	21.0	2	..	..
Sweden	410	2,811	965	246.0	621.3	573	22	1.1	2,354	7.0	2,365
Switzerland	372	1,002	552	376.2	708.7	351	22	0.7	2,821	7.2	3,150
Syrian Arab Republic	20	276	182	0.0	19.4	..	55	58.6	..	..	..
Tajikistan	20	141	357	0.1	..	1	54	362.3	..	..	..
Tanzania	4	406	45	0.2	5.7	7	117	501.4	1	..	..
Thailand	197	235	300	12.9	39.8	111	7	4.2	258	3.5	82
Togo	2	263	123	..	32.0	42	30	134.9	1	..	..
Trinidad and Tobago	123	534	345	..	79.5	106	13	2.5	15	..	..
Tunisia	19	158	207	..	40.5	64	17	10.4	19	5.2	132
Turkey	111	470	423	14.8	44.6	85	20	9.5	882	7.3	250
Turkmenistan	7	279	182	..	..	2	20	20.2	..	..	..
Uganda	3	122	18	0.3	4.0	5	97	464.4	2	..	..
Ukraine	175	889	..	38.6	19.0	19	17	26.0	53	7.1	73
United Arab Emirates	156	309	252	..	129.0	275	13	0.8	173	..	..
United Kingdom	326	1,445	950	57.2	405.7	423	24	1.1	21,034	7.3	2,223
United States	196	2,109	938	255.0	658.9	551	15	0.5	198,098	8.8	3,309
Uruguay	293	603	..	..	110.1	119	26	7.3	79	7.1	234
Uzbekistan	3	456	280	3.7	..	19	20	53.8	1	..	..
Venezuela, RB	206	292	186	32.4	60.9	60	19	5.7	114	5.2	173
Vietnam	6	109	197	..	9.8	43	20	55.4	10	..	..
West Bank and Gaza	..	..	148	..	36.2	40	25	32.8	..	..	..
Yemen, Rep.	15	65	308	..	7.4	..	31	75.3	1	..	..
Zambia	22	179	51	1.2	8.5	6	33	118.7	2	..	..
Zimbabwe	18	362	56	..	52.7	43	23	58.3	7	11.8	92
World	76 w	419 w	275 w	65.5 w	100.8 w	150 u	37 u	88.7 u	322,041 s		
Low income	44	137	84	27.2	6.9	16	58	254.8	618		
Middle income	55	345	280	57.3	42.9	116	30	21.0	9,882		
Lower middle income	51	330	326	58.5	35.6	63	30	28.9	5,806		
Upper middle income	88	467	326	47.0	100.6	208	29	8.3	4,076		
Low & middle income	34	257	190	40.2	28.4	75	41	113.2	10,500		
East Asia & Pacific	60	287	317	70.1	26.3	68	31	66.1	1,139		
Europe & Central Asia	102	447	..	47.5	73.4	161	26	39.5	2,950		
Latin America & Carib.	61	411	289	33.5	67.4	106	33	30.0	4,657		
Middle East & N. Africa	33	277	200	..	38.2	48	31	29.9	194		
South Asia	59	112	84	37.3	6.8	10	30	58.6	541		
Sub-Saharan Africa	12	198	69	..	11.9	20	64	268.8	1,019		
High income	262	1,265	735	190.9	466.5	377	23	1.6	311,541		
Europe EMU	188	812	597	157.9	317.2	378	24	1.5	32,303		

a. Data are from the International Telecommunication Union's (ITU) World Telecommunication Development Report database. Please cite the ITU for third-party use of these data. b. Data are the latest year available in the period shown.

The digital and information revolution has changed the way the world learns, communicates, does business, and treats illnesses. New information and communications technologies offer vast opportunities for progress in all walks of life in all countries—opportunities for economic growth, improved health, better service delivery, learning through distance education, and social and cultural advances. This table presents indicators of the penetration of the information economy (newspapers, radios, televisions, personal computers, and Internet use) as well as some of the economics of the information age (Internet access charges, the number of secure servers, and spending on information and communications technology).

The data on the number of daily newspapers in circulation and radio receivers in use are from statistical surveys by the United Nations Educational, Scientific, and Cultural Organization (UNESCO). In some countries definitions, classifications, and methods of enumeration do not entirely conform to UNESCO standards. For example, newspaper circulation data should refer to the number of copies distributed, but in some cases the figures reported are the number of copies printed. In addition, many countries impose radio and television license fees to help pay for public broadcasting, discouraging radio and television owners from declaring ownership. Because of these and other data collection problems, estimates of the number of newspapers and radios vary widely in reliability and should be interpreted with caution.

The data for other electronic communications and information technology are from the International Telecommunication Union (ITU), the Internet Software Consortium, Netcraft, the World Information Technology and Services Alliance (WITSA), and Global Insights. The ITU collects data on television sets and cable television subscribers through annual questionnaires sent to national broadcasting authorities and industry associations. Some countries require that television sets be registered. To the extent that households do not register their televisions or do not register all of them, the data on licensed sets may understate the true number.

The estimates of personal computers are derived from an annual ITU questionnaire, supplemented by other sources. In many countries mainframe computers are used extensively. Since thousands of users can be connected to a single mainframe computer, the number of personal computers understates the total use of computers.

The data on Internet users are based on nationally reported data. Some countries derive these data from Internet surveys, but since survey questions and definitions differ across countries, the estimates may not be strictly comparable. For example, questions on the age of Internet users and frequency of use vary by country. Countries that do not have surveys generally derive their estimates from reported Internet service provider (ISP) subscriber counts, calculated by multiplying the number of subscribers by a selected multiplier. This method may undercount the actual number of people using the Internet, particularly in developing countries, where many commercial subscribers rent out computers connected to the Internet or pre-paid cards are used to access the Internet.

The total monthly Internet price is shown as the sum of monthly ISP charges and telephone usage charges and as a percentage of monthly GNI per capita. Data are generally derived from the prices listed by the largest ISP and incumbent telephone company. The number of secure servers, from the Netcraft Secure Server Survey, gives an indication of how many companies are conducting encrypted transactions over the Internet.

The data on information and communications technology expenditures cover the world's 70 largest buyers of such technology among countries and regions.

Ensuring universal access to information and communication technology is a goal of many countries, but not all countries regularly track accessibility. There is no common set of information and communication technology indicators and definitions, and data are often drawn from administrative records rather than from specific surveys. Access needs to be accurately measured in three major areas: individual, household, and community access.

• Daily newspapers refer to those published at least four times a week and calculated as average circulation (or copies printed) per 1,000 people. • Radios refer to radio receivers in use for broadcasts to the general public. • Television sets refer to those in use. • Cable television subscribers are households that subscribe to a multichannel television service delivered by a fixed line connection. Some countries also report subscribers to pay-television using wireless technology or those cabled to community antenna systems. • Personal computers are self-contained computers designed for use by a single individual. • Internet users are people with access to the worldwide network. • Total monthly price refers to the sum of ISP and telephone usage charges for 20 hours of use and as a percentage of monthly GNI per capita. • Secure servers are servers using encryption technology in Internet transactions. • Information and communications technology expenditures include computer hardware (computers, storage devices, printers, and other peripherals); computer software (operating systems, programming tools, utilities, applications, and internal software development); computer services (information technology consulting, computer and network systems integration, web hosting, data processing services, and other services); and communications services (voice and data communications services) and wired and wireless communications equipment.

The data on newspapers and radios are compiled by the UNESCO Institute for Statistics. The data on television sets, cable television subscribers, personal computers, Internet users, and Internet access charges are from the ITU and are reported in the ITU's World Telecommunication Development Report database. The data on information and communications technology expenditures are from Digital Planet 2004: The Global Information Economy by the World Information Technology and Services Alliance (WITSA), and Global Insight, Inc. The data on secure servers are from Netcraft (www.netcraft.com/).

5.11a

Six of the top ten world spenders on information and communications technology are developing economies

Information and communications technology spending as a share of GDP, 2003 (%)
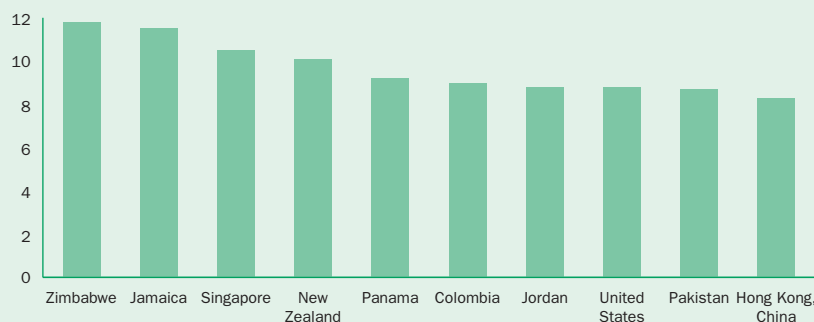
Source: Table 5.11.

	Researchers in R&D	Technicians in R&D	Scientific and technical journal articles	Expenditures for R&D	High-technology exports		Royalty and license fees		Patent applications filed[a]		Trademark applications filed[b]	
	per million people	per million people		% of GDP	$ millions	% of manu-factured exports	Receipts $ millions	Payments $ millions	Residents	Non-residents	Residents	Non-residents
	1996–2002[c]	1996–2002[c]	2001	1996–2002[c]	2003	2003	2002	2002	2002	2002	2002	2002
Afghanistan	..	..	0	..	..	..	..	..	..	..	..	..
Albania	..	..	17	..	4	1	5	8	0	89,821	0	1,758
Algeria	..	..	225	..	12	2	..	..	42	88,839	1,313	3,088
Angola	..	..	3	..	..	..	4	0	..	..	..	..
Argentina	715	166	2,930	0.39	692	9	32	342	0	6,634	30,839	12,007
Armenia	1,606	147	152	0.25	5	1	..	..	204	89,361	388	2,084
Australia	3,446	..	14,788	1.54	2,760	14	394	1,268	10,823	96,434	26,831	17,113
Austria	2,346	993	4,526	2.19	9,283	13	155	1,117	3,313	250,719	7,272	9,996
Azerbaijan	1,248	197	68	0.30	8	5	..	0	0	89,337	144	2,051
Bangladesh	..	..	177	..	1	0	0	4	..	..	..	..
Belarus	1,870	207	528	0.62	223	4	1	6	908	89,686	1,730	4,548
Belgium	3,180	1,462	5,984	2.24	17,268	8	887	1,246	2,122	161,472	21,010[d]	10,695[d]
Benin	..	..	20	..	0	2	0	1	..	..	..	..
Bolivia	118	6	33	0.28	21	8	2	8	..	..	..	..
Bosnia and Herzegovina	..	..	9	..	..	..	..	..	0	89,872	0	3,283
Botswana	..	..	41	..	6	0	0	8	0	10	..	..
Brazil	324	129	7,205	1.04	4,505	12	108	1,228	6,521	95,225	81,036	13,218
Bulgaria	1,158	466	784	0.49	213	4	5	25	306	158,051	4,043	5,576
Burkina Faso	17	16	23	0.17	1	2	..	0	..	..	..	..
Burundi	..	..	3	..	0	22	0	0	..	..	20	132
Cambodia	..	..	5	..	..	..	..	6	..	..	333	1,305
Cameroon	..	..	75	..	3	2	..	..	..	..	..	..
Canada	3,487	1,105	22,626	1.91	23,129	14	2,555	4,821	5,934	102,418	17,068	19,664
Central African Republic	47	27	4	..	0	0	..	..	..	..	..	..
Chad	..	..	2	..	..	..	..	..	..	..	..	..
Chile	419	307	1,203	0.54	110	3	45	266	241	2,879	..	..
China	633	..	20,978	1.23	107,543	27	107	3,548	40,346	140,910		57,597
Hong Kong, China	1,568	226	1,817	0.60	1,845	13	196	491	112	9,018	5,903	14,543
Colombia	81	46	324	0.10	292	7	6	72	52	87,859	7,265	7,096
Congo, Dem. Rep.	..	..	6	..	..	..	..	..	..	..	..	..
Congo, Rep.	29	32	13	..	..	..	..	..	..	..	..	..
Costa Rica	533	..	92	0.39	1,700	45	0	64	0	89,225	..	..
Côte d'Ivoire	..	..	40	..	93	8	0	6	..	..	..	..
Croatia	1,920	444	710	1.12	543	12	35	130	444	89,877	843	5,600
Cuba	538	2,510	299	0.53	49	29	..	..	13	89,468	0	1,551
Czech Republic	1,467	792	2,622	1.22	5,800	13	50	176	608	158,592	8,114	9,756
Denmark	4,822	3,153	4,988	2.52	8,402	20	..	..	3,875	250,103	3,914	6,744
Dominican Republic	..	..	6	..	4	1	0	30	..	..	..	..
Ecuador	84	73	20	0.08	41	6	0	43	13	85,290	4,219	4,634
Egypt, Arab Rep.	..	..	1,548	0.19	9	0	121	165	627	798	0	2,496
El Salvador	47	..	0	0.01	39	5	0	22	..	..	..	..
Eritrea	..	..	2	..	..	..	..	..	..	..	..	..
Estonia	2,253	386	339	0.75	528	13	5	14	33	157,901	1,017	5,213
Ethiopia	..	..	93	..	0	0	0	0	3	4	..	..
Finland	7,431	3,471	5,098	3.46	10,485	24	502	615	2,941	248,668	2,830	6,095
France	3,134	..	31,317	2.26	56,336	19	3,941	2,436	21,959	160,056	58,035	12,774
Gabon	..	..	20	..	..	..	..	..	..	..	..	..
Gambia, The	..	..	17	..	..	..	..	..	0	177,146	..	..
Georgia	2,317	241	110	0.29	34	24	6	10	202	89,881	202	2,438
Germany	3,222	1,435	43,623	2.53	102,869	16	4,262	5,242	80,661	230,066	53,817	12,827
Ghana	..	..	90	..	5	3	0	0	0	177,371	..	..
Greece	1,357	406	3,329	0.65	962	12	18	335	614	162,387	5,290	6,075
Guatemala	..	..	14	..	78	7	0	0	0	0	3,048	5,040
Guinea	286	104	2	..	0	0	0	1	..	..	..	..
Guinea-Bissau	..	..	6	..	..	..	..	0	..	..	..	..
Haiti	..	..	1	..	..	..	0	0	..	..	..	..

	Researchers in R&D	Technicians in R&D	Scientific and technical journal articles	Expenditures for R&D	High-technology exports		Royalty and license fees		Patent applications filed[a]		Trademark applications filed[b]	
	per million people	per million people		% of GDP	$ millions	% of manu-factured exports	Receipts $ millions	Payments $ millions	Residents	Non-residents	Residents	Non-residents
	1996–2002[c]	1996–2002[c]	2001	1996–2002[c]	2003	2003	2002	2002	2002	2002	2002	2002
Honduras	74	261	11	0.05	0	0	0	12	7	161	..	..
Hungary	1,473	486	2,479	1.02	9,631	26	313	440	962	91,497	4,316	9,546
India	120	102	11,076	0.85	2,292	5	29	356	220	91,704	..	..
Indonesia	..	..	207	..	4,580	14	..	..	0	90,922	..	..
Iran, Islamic Rep.	484	391	995	..	51	2	..	..	0	0	9,858	1,224
Iraq	..	..	21	..	..	..	..	..	..	..	..	..
Ireland	2,315	686	1,665	1.13	27,578	34	206	16,160	1,255	162,170	1,167	4,577
Israel	1,570	518	6,487	5.08	5,322	18	425	435	2,323	94,961	2,842	4,827
Italy	1,156	1,346	22,313	1.11	20,027	8	525	1,698	4,086	159,865	0	9,385
Jamaica	..	..	44	..	1	0	12	11	15	54	663	1,433
Japan	5,085	..	57,420	3.12	105,454	24	12,271	11,003		115,411		16,827
Jordan	1,977	728	240	..	28	2	..	..	..	..	..	..
Kazakhstan	744	305	116	0.32	200	9	0	20	2	89,421	1,809	2,902
Kenya	..	..	230	..	23	4	12	39	0	177,559	0	1,166
Korea, Dem. Rep.	..	..	1	..	..	..	..	..	0	88,052	0	1,913
Korea, Rep.	2,979	..	11,037	2.53	57,161	32	1,325	3,597	76,860	126,836	90,014	17,862
Kuwait	73	180	257	0.20	11	1	0	0	..	..	..	..
Kyrgyz Republic	413	51	10	0.20	2	2	2	3	123	89,357	67	1,850
Lao PDR	..	..	2	..	..	..	..	..	..	..	25	656
Latvia	1,476	282	157	0.42	76	4	4	10	8	140,637	1,262	5,699
Lebanon	..	..	202	..	17	2	..	..	0	104	..	..
Lesotho	42	26	1	..	..	..	11	0	0	177,309	0	774
Liberia	..	..	1	..	..	..	..	..	0	89,507	0	760
Libya	361	493	19	..	..	..	..	..	..	..	..	..
Lithuania	1,824	430	272	0.67	211	5	1	18	91	140,674	1,540	5,602
Macedonia, FYR	500	69	74	0.26	13	1	2	7	42	140,588	411	3,541
Madagascar	15	47	..	0.12	1	0	1	13	4	89,526	162	293
Malawi	..	..	36	..	1	1	0	0	0	177,315	138	440
Malaysia	294	57	494	0.69	47,042	58	20	782	..	..	..	..
Mali	..	..	11	..	2	8	0	1	..	..	..	..
Mauritania	..	..	2	..	..	..	..	..	..	..	..	..
Mauritius	..	..	16	0.29	72	5	0	2	..	..	..	..
Mexico	259	184	3,209	0.39	28,734	21	84	608	627	94,116	40,141	18,509
Moldova	171	201	77	0.87	7	3	1	3	240	89,396	1,391	2,690
Mongolia	710	72	8	0.28	0	0	0	..	121	89,864	255	3,260
Morocco	..	..	469	..	680	11	26	29	0	89,300	0	2,849
Mozambique	..	..	14	..	2	3	15	1	0	176,319	0	931
Myanmar	..	..	10	..	..	..	0	0	..	..	..	..
Namibia	..	..	13	..	15	3	0	4	..	..	..	..
Nepal	62	145	39	0.66	..	..	..	..	..	..	..	..
Netherlands	2,826	1,424	12,602	1.89	49,546	31	1,885	2,829	7,496	158,485	..	..
New Zealand	2,593	..	2,903	1.16	471	10	118	436	2,137	91,240	8,818	11,276
Nicaragua	73	33	8	0.08	3	4	0	0	..	..	..	..
Niger	..	..	21	..	1	3	..	..	..	..	..	..
Nigeria	..	..	332	..	..	..	..	..	..	..	..	..
Norway	4,442	1,524	3,252	1.67	2,662	19	195	394	504	90,712	0	6,981
Oman	..	..	96	..	26	2	..	..	0	75,825	..	..
Pakistan	88	14	282	0.22	120	1	8	36	0	0	5,342	1,560
Panama	95	213	37	0.38	1	1	0	42	7	153	..	..
Papua New Guinea	..	..	36	..	47	39	..	..	..	..	..	..
Paraguay	83	118	4	0.10	10	6	193	2	..	..	..	..
Peru	225	1	93	0.10	27	2	2	65	..	..	6,940	6,983
Philippines	..	..	158	..	23,942	74	2	273	0	81,697	..	..
Poland	1,469	296	5,686	0.59	1,334	3	28	745	2,324	92,176	12,355	11,607
Portugal	1,745	283	2,142	0.93	2,340	9	36	283	185	251,752	6,929	7,829
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..

	Researchers in R&D per million people 1996–2002c	Technicians in R&D per million people 1996–2002c	Scientific and technical journal articles 2001	Expenditures for R&D % of GDP 1996–2002c	High-technology exports $ millions 2003	High-technology exports % of manufactured exports 2003	Royalty and license fees Receipts $ millions 2002	Royalty and license fees Payments $ millions 2002	Patent applications filed[a] Residents 2002	Patent applications filed[a] Non-residents 2002	Trademark applications filed[b] Residents 2002	Trademark applications filed[b] Non-residents 2002
Romania	910	289	997	0.38	530	4	3	80	1,486	141,294	6,026	6,485
Russian Federation	3,415	2,315	15,846	1.25	5,327	19	174	711	24,049	96,315	29,279	14,215
Rwanda	..	..	4	..	1	25	0	0	..	..	..	..
Saudi Arabia	..	..	580	..	24	0	0	0	61	552	..	..
Senegal	..	..	62	..	36	9	0	3	..	..	..	..
Serbia and Montenegro	1,330	568	547	0.00	..	..	..	..	507	90,893	0	4,758
Sierra Leone	..	..	3	..	1	31	0	0	0	177,366	0	787
Singapore	4,352	381	2,603	2.15	71,421	59	197	3,334	511	93,748	3,344	20,282
Slovak Republic	1,707	564	955	0.58	716	4	50	91	276	157,652	2,350	7,742
Slovenia	2,364	1,599	876	1.53	719	6	11	90	332	136,912	1,086	6,612
Somalia	..	..	0	..	..	..	..	..	..	..	..	..
South Africa	192	74	2,327	0.67	908	5	49	266	184	90,471	..	..
Spain	2,036	742	15,570	1.03	8,889	7	539	2,505	4,330	251,260	66,471	12,460
Sri Lanka	197	48	76	0.18	19	1	..	..	0	89,759	..	..
Sudan	..	..	43	..	4	7	..	..	2	177,336	0	795
Swaziland	..	..	6	..	4	1	0	46	0	88,379	0	828
Sweden	5,171	..	10,314	4.27	12,717	15	2,336	1,277	9,443	246,886	0	5,976
Switzerland	3,594	2,315	8,107	2.57	20,472	22	..	..	7,977	246,451	0	10,592
Syrian Arab Republic	29	24	55	0.18	5	1	..	10	0	30	0	0
Tajikistan	..	..	20	..	..	..	1	0	40	89,352	0	1,522
Tanzania	..	..	87	..	3	2	0	0	0	176,850	0	16
Thailand	289	116	727	0.24	18,203	30	7	1,268	1,117	4,548	..	..
Togo	..	..	11	..	2	1	0	0	..	..	..	..
Trinidad and Tobago	347	886	37	0.10	25	2	..	..	2	89,901	340	1,317
Tunisia	1,013	34	344	0.63	244	4	18	6	0	72,604	..	..
Turkey	345	..	4,098	0.66	815	2	0	167	550	250,492	28,209	7,611
Turkmenistan	..	..	0	..	..	..	..	..	0	89,333	0	1,648
Uganda	25	15	91	0.81	1	8	4	4	0	177,305	0	14
Ukraine	1,749	456	2,256	1.16	572	5	14	292	37	90,563	0	5,285
United Arab Emirates	..	..	159	..	17	2	..	..	0	89,666	..	..
United Kingdom	2,691	..	47,660	1.88	64,511	26	10,245	7,382	33,671	251,239	51,399	17,135
United States	4,526	..	200,870	2.66	160,212	31	48,227	20,049	198,339	183,398	181,693	30,944
Uruguay	370	51	155	0.24	16	2	0	10	44	572	5,863	9,514
Uzbekistan	..	..	204	..	..	..	..	..	717	89,902	756	2,166
Venezuela, RB	222	..	535	0.44	130	4	0	183	56	2,292	..	..
Vietnam	..	..	158	..	145	2	..	..	2	90,135	0	1,929
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	..	..	10	..	..	..	..	..	..	..	..	..
Zambia	47	16	26	0.01	2	2	..	..	0	157,720	0	554
Zimbabwe	..	..	113	..	21	3	..	..	0	177,483	1	17
World	.. w	.. w	648,500 s	2.36 w	1,043,222 s	18 w	92,116 s	99,946 s	936,630 s	12,882,065 s	1,316,564 s	604,897 s
Low income	..	..	13,147	..		4	44	111	1,469	3,003,874	8,489	26,165
Middle income	806	..	84,507	0.75	198,304	21	1,570	12,353	81,554	4,790,264	589,487	258,839
Lower middle income	820	..	61,791	0.85	103,213	20	902	8,404	76,113	2,876,674	480,507	155,982
Upper middle income	705	275	22,716	0.51	88,846	22	668	3,948	5,441	1,913,590	108,980	102,857
Low & middle income	..	..	97,654	0.72	..	20	1,614	12,464	83,023	7,794,138	597,976	285,004
East Asia & Pacific	627	..	22,722	1.11	..	33	136	5,877	40,469	581,580	321,648	66,765
Europe & Central Asia	1,952	1,190	39,077	0.90	26,221	12	700	2,956	34,159	3,071,921	106,252	137,176
Latin America & Carib.	..	..	16,045	0.58	36,799	14	518	3,050	7,255	1,166,254	163,101	62,928
Middle East & N. Africa	..	..	4,699	..	993	2	164	210	730	327,948	1,313	8,433
South Asia	120	102	11,611	0.75	..	4	14	40	220	181,463	5,342	2,242
Sub-Saharan Africa	..	..	3,500	..	..	..	81	330	190	2,464,972	320	7,460
High income	3,575	..		2.54	834,168	18	90,502	87,482	853,607	5,087,927	718,588	319,893
Europe EMU	2,511	1,266	148,169	2.20	306,581	14	12,188	33,325	129,155	2,448,271	222,821	92,713

Note: The original information on patent and trademark applications was provided by the World Intellectual Property Organization (WIPO). The International Bureau of WIPO assumes no responsibility with respect to the transformation of these data.
a. Other patent applications filed in 2002 include those filed under the auspices of the African Regional Industrial Property Organization (3 by residents, 88,378 by nonresidents), European Patent Office (67,677 by residents, 97,737 by nonresidents), and the Eurasian Patent Organization (549 by residents, 88,857 by nonresidents). b. Other trademark applications filed in 2002 include those filed under the auspices of the Office for Harmonization in the Internal Market (29,345 by residents, 15,669 by nonresidents). c. Data are for the latest year available. d. Includes Luxembourg and the Netherlands.

The best opportunities to improve living standards, including new ways of reducing poverty, will come from science and technology. Science, advancing rapidly in virtually all fields—particularly in biotechnology—is playing a growing economic role: countries able to access, generate, and apply relevant scientific knowledge will have a competitive edge over those that cannot. And there is greater appreciation of the need for high-quality scientific input into public policy issues such as regional and global environmental concerns. Technological innovation, often fueled by government-led research and development (R&D), has been the driving force for industrial growth around the world.

Science and technology cover a range of issues too complex and too broad to be quantified by any single set of indicators, but those in the table shed light on countries' "technological base"—the availability of skilled human resources, the number of scientific and technical articles published, the competitive edge countries enjoy in high-technology exports, sales and purchases of technology through royalties and licenses, and the number of patent and trademark applications filed.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics collects data on researchers, technicians, and R&D expenditure from countries and territories around the world through questionnaires and special surveys, supplemented by information from other international sources. Data for researchers and technicians are normally calculated in terms of full-time equivalents.

R&D expenditures are all expenditures for R&D performed within a country, including both capital expenditures and current costs (annual wages, salaries, and associated costs of researchers, technicians, and supporting staff and noncapital purchases of materials, supplies, and R&D equipment such as utilities, books, journals, reference materials, subscriptions to libraries and scientific societies, and materials for laboratories).

The information does not reflect the quality of training and education, which varies widely. Similarly, R&D expenditures are no guarantee of progress; governments need to pay close attention to the practices that make R&D expenditures effective.

Article counts are from a set of journals classified and covered by the Institute for Scientific Information's Science Citation Index (SCI) and the Social Sciences Citation Index (SSCI). Article counts are based on fractional assignments; for example, an article with two authors from different countries is counted as half an article for each country (see Definitions for the fields covered). The SCI and SSCI databases cover the core set of scientific journals but may exclude some of regional or local importance. They may also reflect some bias toward English-language journals.

The method used for determining a country's high-technology exports was developed by the Organisation for Economic Co-operation and Development in collaboration with Eurostat. Termed the "product approach" to distinguish it from a "sectoral approach," the method is based on the calculation of R&D intensity (R&D expenditure divided by total sales) for groups of products from six countries (Germany, Italy, Japan, the Netherlands, Sweden, and the United States). Because industrial sectors characterized by a few high-technology products may also produce many low-technology products, the product approach is more appropriate for analyzing international trade than is the sectoral approach. To construct a list of high-technology manufactured products (services are excluded), the R&D intensity was calculated for products classified at the three-digit level of the Standard International Trade Classification revision 3. The final list was determined at the four- and five-digit levels. At these levels, since no R&D data were available, final selection was based on patent data and expert opinion. This method takes only R&D intensity into account. Other characteristics of high technology are also important, such as know-how, scientific and technical personnel, and technology embodied in patents; considering these characteristics would result in a different list. (See Hatzichronoglou 1997 for further details.) Moreover, the R&D for high-technology exports may not have occurred in the reporting country.

Most countries have adopted systems that protect patentable inventions. Most patent legislation requires that an idea, to be protected by law (patentable), be new in the sense that it has not already been published or publicly used; nonobvious (involve an inventive step) in the sense that it would not have occurred to any specialist in the industrial field had such a specialist been asked to find a solution to the problem; and capable of industrial application in the sense that it can be industrially manufactured or used. Information on patent applications filed is shown separately for residents and nonresidents.

A trademark provides protection to its owner by ensuring the exclusive right to use it to identify goods or services or to authorize another to use it in return for payment. The period of protection varies, but a trademark can be renewed indefinitely by paying additional fees. The trademark system helps consumers identify and purchase a product or service whose nature and quality, indicated by its unique trademark, meet their needs.

• Researchers in R&D are professionals engaged in the conception or creation of new knowledge, products, processes, methods, or systems and in the management of the projects concerned. Postgraduate PhD students (ISCED97 level 6) engaged in R&D are included. • Technicians in R&D and equivalent staff are people whose main tasks require technical knowledge and experience in engineering, physical and life sciences (technicians), or social sciences and humanities (equivalent staff). They participate in R&D by performing scientific and technical tasks involving the application of concepts and operational methods, normally under the supervision of researchers. • Scientific and technical journal articles refer to published scientific and engineering articles in physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences. • Expenditures for R&D are current and capital expenditures on creative work undertaken systematically to increase knowledge, including knowledge of humanity, culture, and society, and the use of knowledge for new applications. R&D covers basic research, applied research, and experimental development. • High-technology exports are products with high R&D intensity, as in aerospace, computers, pharmaceuticals, and scientific instruments. • Royalty and license fees are payments and receipts between residents and nonresidents for the authorized use of intangible, nonproduced, nonfinancial assets and proprietary rights (patents, copyrights, trademarks, franchises, industrial processes) and for the use, through licensing agreements, of produced originals of prototypes (films, manuscripts). • Patent applications filed are those filed with a national patent office for exclusive rights to an invention—a product or process that provides a new way of doing something or a new technical solution to a problem. A patent protects the invention for the patent owner for a set period, generally 20 years. • Trademark applications filed are applications to register a trademark with a national or regional trademark office. Trademarks are distinctive signs identifying goods or services as produced or provided by a specific person or enterprise. Trademarks protect owners of the mark by ensuring exclusive right to use it to identify goods or services or to authorize its use in return for payment.

The data on researchers, technicians, and expenditures in R&D are from the UNESCO Institute for Statistics. The data on journal articles are from the National Science Foundation's Science and Engineering Indicators 2004. The data on high-technology exports are from the United Nations Statistics Division's Commodity Trade (COMTRADE) database. The data on royalty and license fees are from the International Monetary Fund's Balance of Payments Statistics Yearbook, and the data on patents and trademarks are from the World Intellectual Property Organization's Industrial Property Statistics.