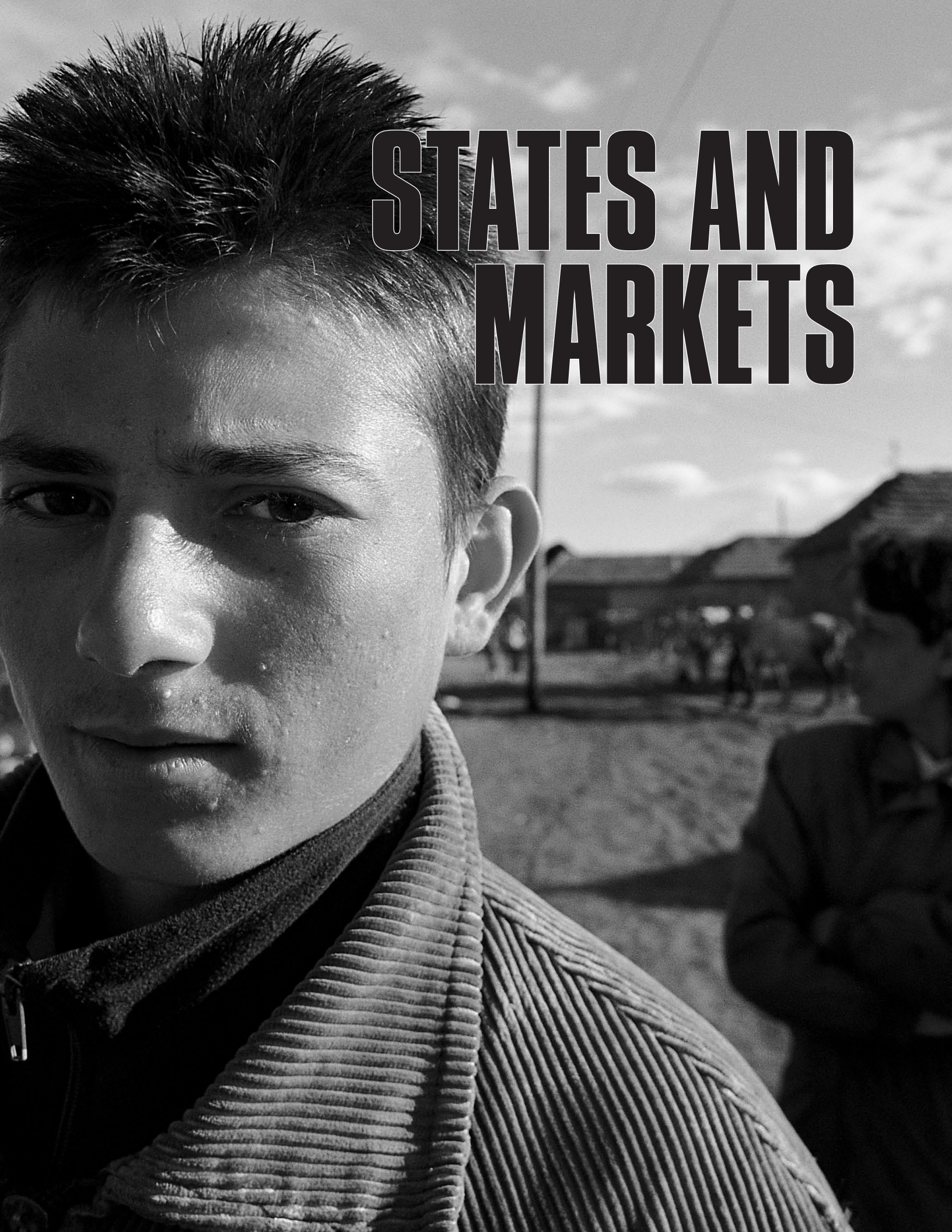


STATES AND MARKETS



Infrastructure is the missing link of the Millennium Development Goals (MDGs). Infrastructure—the basic framework for delivering energy, transport, water and sanitation, and information and communication technology services to people—directly or indirectly affects people’s lives everywhere. That relationship is reflected in the MDGs. Yet only two MDG targets touch on infrastructure services: water and sanitation (target 7.C) and telephones and the Internet (target 8.F); energy and transport are missing entirely. And no goal or target addresses the comprehensive role of infrastructure in achieving the MDGs.

Although income influences performance on the MDGs, it has long been recognized that growth in productivity and incomes and improvements in health and education outcomes require investment in infrastructure. The MDGs are designed to make economic growth more inclusive. Since a large share of people live in rural areas, often far from employment opportunities, policies to reduce poverty require investment in infrastructure and transport. By improving productivity, investments in infrastructure reduce poverty. Access to clean water and sanitation reduces infant mortality. Electricity powers hospitals and refrigerators for vaccines. Roads in rural areas boost school attendance and use of medical clinics. And information and communication technologies can improve teacher training and promote better health practices.

How infrastructure affects the Millennium Development Goals

The results of infrastructure investments are reflected in progress toward the MDGs. Infrastructure that reaches poor people raises their income and welfare by increasing the value of their assets or lowering the costs of inputs and providing better access to markets for their products.

Access to energy improves health and raises household and business productivity. Modern, clean, efficient fuels and electricity power lights that extend livelihood activities beyond daylight hours and power manufacturing equipment that lowers unit costs and increases labor productivity. Modern energy also reduces the cost of home cooking, heating, and lighting, freeing resources for other essential needs, and relieves girls of the need to collect water and wood

for fuel, enabling them to attend school. A household energy and universal access project in Mali is extending electricity to semi-urban and rural areas, improving the quality and efficiency of health and education services and helping sustainably manage forest resources and biomass energy. The project has connected 40,000 homes, 1,080 enterprises, 1,025 rural schools, and 107 health clinics.

Clean cooking fuels and efficient, ventilated stoves improve indoor air quality by reducing particulate matter, a risk factor for acute respiratory infections and other health problems. The World Health Organization estimates that the indoor air pollution created by the more than 3 billion people who use wood, dung, coal, and other traditional fuels inside their homes for cooking and heating is responsible for 1.5 million deaths a year. A rural energy project in Vietnam connected 976 communes with 555,327 households and 2.7 million people to the national power grid, providing some of the poorest rural areas with reliable electricity. However, some energy production, transformation, and transportation has detrimental effects on people and the environment; these can be mitigated by using cleaner, more efficient fuels.

Improved transport can boost income and improve health and education outcomes. Transport infrastructure and services—the roads, bridges, rails,

Improved infrastructure not only improves the living conditions of the poor, but also reduces the costs of business and further encourages business to invest in productive assets. It enlarges markets. It is not surprising that the poor of Africa perceive the isolation associated with the lack of infrastructure to be the cause of their poverty and marginalization. Too far from markets, too far from arable land, too far from hospitals and clinics.

—Trevor Manuel, Finance Minister, South Africa



waterways, ports, and equipment and services they provide—can eliminate growth-constraining bottlenecks and shortages, increase agricultural productivity, improve poor rural farmers' incomes and nutrition, and expand nonfarm employment. Lower transportation costs enable farmers to use fertilizers, mechanized equipment, and new seed varieties, boosting yields and lowering costs. A rural road project in Bangladesh reduced transport costs by 36–38 percent, lowered fertilizer prices, and increased output. Extreme poverty fell 5 percent. In Vietnam rehabilitating rural roads increased the availability of food, boosted wages for agricultural workers, raised completion rates of primary school students, and lifted more than 200,000 people out of poverty (Calderon and Servin 2008).

Timely and affordable delivery of basic services for health, education, water, and sanitation depends on transportation systems. There is a clear association between infant, child, and maternal mortality rates and distance to health care services. Some 40–60 percent of people in developing countries live more than 8 kilometers from a health care facility. In Morocco the number of visits to primary health care facilities doubled in areas with an expanded rural road network compared with a control area. In Pakistan women in villages without an all-weather road have less access to health services (figure 5a).

Improved and affordable transportation systems and safer roads raise school attendance by reducing travel time from home to school. Better accessibility also makes it easier to hire teachers who commute between rural and urban areas. In the Philippines school enrollment rose 10 percent and dropout rates fell 55 percent after rural roads were built. A similar project in Morocco raised girls' enrollments from 28 percent to 68 percent in less than 10 years.

Transportation services contribute strongly to growth and poverty reduction, but emissions from the transport sector have a deleterious impact on the health and environmental MDG targets. The transport sector generates about 13 percent of global greenhouse gas emissions. Transport policy measures can reduce emissions through greater use of railways and inland waterways for freight, better urban public transport services, management of urban road traffic demand to reduce congestion, support of nonmotorized transport, and management of vehicle emissions. Improving energy efficiency in

transport has added benefits for development—more energy savings, less local air pollution, greater energy security, more employment in local industry, and greater competitiveness from higher productivity. Many countries are setting targets and policies for clean energy technologies. China has achieved a vehicle fuel economy standard of 35 miles per gallon of gas and plans to be the world leader in electric vehicles.

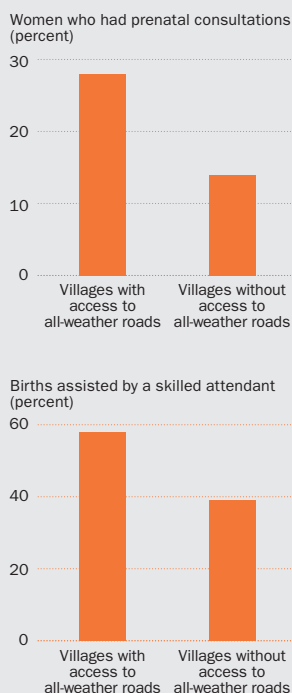
Water and sanitation services promote health, increase productivity, and raise school enrollment. Water and sanitation are crucial for promoting health, enabling people to work productively, and contributing to human dignity and social development. Worldwide, more than 1.1 billion people lack clean water, and about 2.6 billion lack access to basic sanitation. About 90 percent of diarrhea cases are attributable to inadequate sanitation, hygiene, and water supply, causing 1.7 million deaths a year, mostly in children under age 5.

Water and sanitation services at home and in schools increase learning capacity because students are healthier. School attendance also rises for girls if they can spend less time fetching water and if separate sanitation facilities are provided in schools. In a village in Morocco girls' primary school attendance more than doubled a year after a new water supply system began operating, with separate sanitation facilities for girls. An improved water quality project for Uganda's small towns reduced water-borne diseases and benefited women and children by saving time associated with collecting water (World Bank 2007b).

The number of countries that are off track to meet the sanitation MDG target is second only to the number off track in reducing child mortality. Investment in water and sanitation with private participation remains low compared with other infrastructure sectors, accounting for about 2–3 percent of investment in infrastructure (figure 5b).

Information and communication technologies reach into all sectors to improve living conditions. Information and communication technologies (ICTs) are enabling tools used in all sectors, ranging from telecommunication infrastructure (voice, data, and media services) to information applications in banking and finance, land management, education, health, and electronic government services. ICT use has grown

Pakistani women without access to an all-weather road have fewer prenatal consultations and fewer births attended by skilled health staff, 2001–02 5a



Source: Babinard and Roberts 2006.

dramatically since 2000—mobile cellular subscriptions in developing countries increased from 220 million to about 2.9 billion by the end of 2008. Worldwide, more than 1.5 billion people have access to the Internet. But even within the same region, access is uneven. In 2008 mobile phone penetration was about 60 percent in Equatorial Guinea, the Gambia, and Mauritania but just 4 percent in Eritrea and Ethiopia.

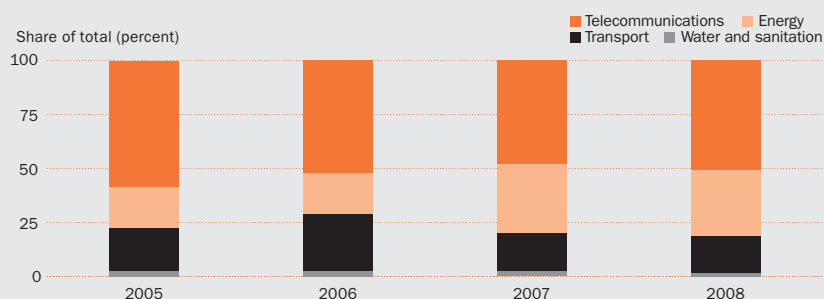
There is a strong association between ICT adoption (such as mobile phones and Internet access) and GDP growth. Mobile communications have a particularly important impact in rural areas, home to half the world's population and 75 percent of poor people. The mobility, ease of use, and relatively low and declining roll-out costs of wireless technologies enable them to reach rural populations with low incomes and literacy rates. Farmers with mobile phones are more likely to have better information on market prices and therefore to get better prices from traders. For farmers in rural areas of the Philippines, having a mobile phone increased income 11–17 percent during 2003–06. India's e-Choupal program, which expanded broadband to millions of small farmers through centers set up by a large agricultural exporter, enabled farmers to access information on local weather, crop prices, and farming techniques, increasing productivity and incomes (World Bank 2009).

Information and communication technologies also contribute to women's economic opportunities. In the Philippines 65 percent of professional and technical workers in ICT-enabled services are women. Information and communication technologies can improve health outcomes and combat diseases. In rural Niger the number of emergency evacuations from outlying health centers to the district hospital increased from 10 to 197 following the introduction of a radio-ambulance system. Good communications and information sharing help to deliver diagnostic information and drugs and to spread information on reproductive health and communicable diseases. Through the Global Media AIDS Initiative more than 50 broadcast networks are promoting AIDS prevention messages. In the fight against malaria satellite monitoring identifies and targets mosquito breeding areas for control.

Information and communication technologies are also used for early disaster warning and for mitigation and relief following natural disasters. Remote sensing is used in managing resources

Private investment in water and sanitation is only about 2–3 percent of the total, 2005–08

5b



Source: World Bank Private Participation in Infrastructure database and World Development Indicators table 5.1.

and monitoring environmental risks. Telecommuting and attending virtual meetings through video conferencing can reduce travel and energy use, helping lower greenhouse gases. Smart grids and building construction using information and communication technologies lower energy consumption and greenhouse gases, leading to a more sustainable environment and way of life.

Bridging the infrastructure gap through public and private financing and better management of infrastructure services

Meeting the world's infrastructure needs involves enormous challenges. More than 1.1 billion people do not have safe water to drink and 2.6 billion lack access to adequate sanitation services. Some 1.6 billion have no electricity in their homes. And 1 billion rural residents live more than 2 kilometers from an all-weather road. World Bank Enterprise Surveys, completed in more than 100 countries, find that the three main deterrents to private investment are the regulatory environment, access to finance, and infrastructure. In many developing countries inadequate infrastructure constrains businesses as much as crime, red tape, corruption, and underdeveloped financial markets. In South Asia and Sub-Saharan Africa more than half of firms report that lack of reliable electricity is a major constraint to doing business (figure 5c).

Job creation and economic growth in the private sector require a supportive investment climate. Developing countries need about \$900 billion (7–9 percent of GDP) to maintain existing infrastructure and to build new infrastructure, but only half that amount is available. The global financial and economic crisis is expected to severely curtail infrastructure services as



governments face shrinking budgets and declining private financial flows. Capital market financing for developing country infrastructure has contracted from \$200 billion in 2007 to \$135 billion in 2008, with a further decline expected for 2009 (World Bank 2009j).

As budgets shrink, priorities are to protect poor and vulnerable groups by strengthening social safety nets and supporting economic growth. But there is also a need to invest in infrastructure, which can create jobs and lay the groundwork for productivity and growth. Infrastructure spending can provide an important

countercyclical stimulus by increasing demand and employment while supporting longer term growth. Over time, inadequate infrastructure slows economic development and poverty reduction. During a crisis countries under financial stress often cut infrastructure more than other government spending. In Latin America and the Caribbean during the fiscal austerity of the 1980s and 1990s, half the fiscal adjustment came from cuts in public infrastructure, reducing long-term growth by 1–3 percent (Schwartz, Andres, and Dragoiu 2009).

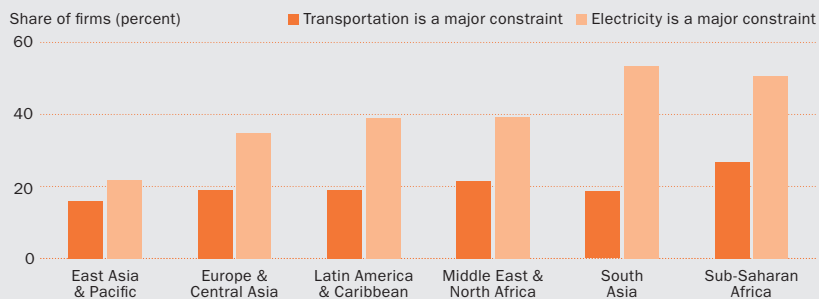
The World Bank has focused its response to the crisis on protecting the most vulnerable groups, maintaining long-term infrastructure investment, and supporting private sector-led economic growth, microfinance, and employment creation, especially among small and medium-size enterprises. The World Bank Infrastructure Recovery and Assets platform mobilizes finance to support infrastructure spending critical for growth. The International Finance Corporation's Infrastructure Crisis Facility supports and refinances public-private partnerships at risk; it is investing about \$300 million to mobilize \$1.5–\$10 billion from other sources.

Governments can leverage the benefits of private investment in infrastructure by introducing competition. Regional collaboration on infrastructure projects, by sharing scarce resources such as energy, capital, knowledge, and services, can lower unit costs, improve international competitiveness, and increase connectivity (box 5d). Private companies can better manage infrastructure services by operating efficiently (improving bill collection, reducing corruption and red tape, improving labor productivity, reducing transmission losses) and getting infrastructure prices right (prices should also cover basic operations and maintenance). If countries in Sub-Saharan Africa addressed these inefficiencies, the funding required to close the infrastructure gap might be halved.

Despite the financial crisis, private sector investment in infrastructure remains strong. Commitments to infrastructure projects with private participation fell in 2008, but they were still at the second highest level since 1990. In 48 low- and middle-income economies, 216 projects reached financial or contractual closure. Infrastructure investments, including new commitments for projects implemented in previous years, totaled \$154.4 billion in 2008. Investment grew in all developing country regions

More than half of firms in South Asia and Sub-Saharan Africa say that lack of reliable electricity is a major constraint to business

5c



Source: World Bank Enterprise Surveys.

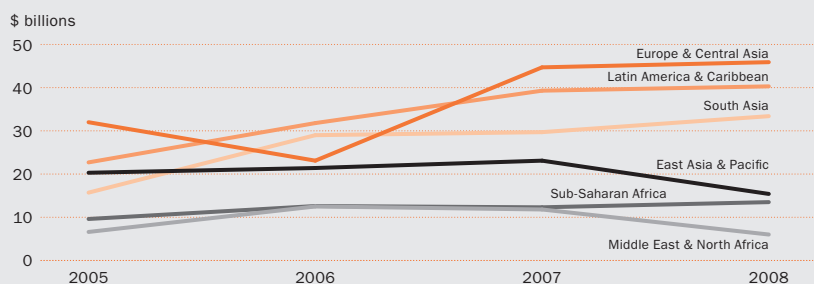
Regional collaboration in infrastructure—the Greater Mekong Subregion program

5d

In East Asia and Pacific, where countries are increasingly interconnected through land, sea, and air transportation networks, national economic development plans are often supplemented by regional and subregional programs. With support from the Asian Development Bank since 1992 and the World Bank since 2007, Greater Mekong Subregion countries (Cambodia, China, Lao PDR, Myanmar, Thailand, and Vietnam) have established priority transport corridors, laid the groundwork for power interconnection and trade, and developed an information superhighway network. These projects have improved market access, increased trade and investment, and enabled businesses to take advantage of regional and global production chains.

In 2008 investment in infrastructure with private participation grew in all but two developing country regions

5e



Source: World Bank Private Participation in Infrastructure database and *World Development Indicators* table 5.1.

except East Asia and Pacific and the Middle East and North Africa. But there were large disparities. Five countries accounted for almost half the investment in infrastructure with private participation over 1990–2008—Brazil, India, China, Mexico, and the Russian Federation (figures 5e and 5f).

Telecommunications was the only infrastructure sector with increasing investment in 2008, up 1 percent over 2007. Investment was down 7 percent in energy, 10 percent in transport, and 27 percent in water and sanitation. Over 1990–2008 water and sanitation had the lowest share of infrastructure investment with private participation, attracting only 4.4 percent (World Bank Private Participation in Infrastructure Project Database 2008) (figures 5g and 5h).

Special focus on Africa's infrastructure

With 15 landlocked countries, transport costs in Sub-Saharan Africa are high, hampering trade and slowing growth. Sub-Saharan Africa also has the lowest population density and the second lowest urbanization rate of all developing country regions, raising the cost of infrastructure investments. Not surprisingly, Africa has a major infrastructure deficit—unreliable power supplies, only about 12 percent of roads paved, and the lowest rates of access to water and sanitation among developing country regions. Sub-Saharan Africa is farthest behind in achieving the MDGs and is expected to fall short of meeting most targets related to poverty, health, education, and water and sanitation—which all depend on infrastructure services.

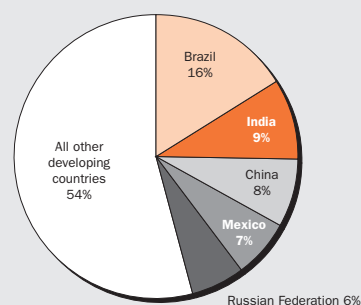
Inadequate infrastructure in Sub-Saharan Africa also contributes to the region's poor economic performance and competitiveness. Business managers report that the main infrastructure deficiencies hampering business activity are electricity (48 percent), transportation (25 percent), and telecommunications (22 percent). Improvements in infrastructure sectors, such as rural roads in Guinea, have raised incomes and increased food supplies for farming families, reducing poverty and hunger.

Expanding information and communications services in Sub-Saharan Africa is connecting the region to the rest of the world and is a key factor in fostering long-term growth. Many governments are beginning to provide affordable ICT services more broadly. Mobile phones, used in all walks of

life (by farmers to receive crop price information and health workers to increase the effectiveness and reach of health programs), increased almost 20-fold on a per capita subscription basis over 2000–08. In 2008 almost a third of Sub-Saharan Africa's people had mobile phone subscriptions. Despite this impressive expansion, a “digital divide” remains: Eritrea has 2 subscriptions per 100 people while South Africa has more than 90.

Five countries accounted for almost half of investment in infrastructure with private participation, 1990–2008

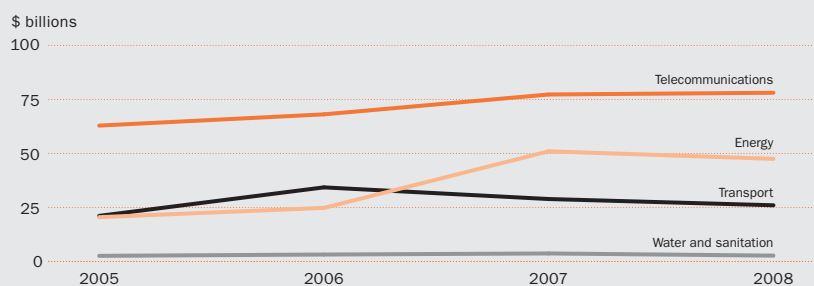
5f



Source: World Bank Private Participation in Infrastructure database and World Development Indicators table 5.1.

Investment rose in energy, telecommunications, and transport, but remained flat in water and sanitation, 2005–08

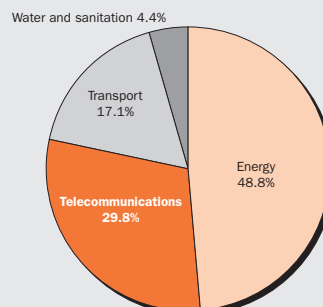
5g



Source: World Bank Private Participation in Infrastructure database and World Development Indicators table 5.1.

Investment in water and sanitation with private participation accounted for only 4.4 percent of the total, 1990–2008

5h



Source: World Bank Private Participation in Infrastructure database and World Development Indicators table 5.1.



	Investment commitments in infrastructure projects with private participation ^a								Domestic credit to private sector	Businesses registered	
	Telecommunications		Energy		Transport		Water and sanitation		% of GDP 2008	New 2007	Total 2007
	2000-05	2006-08	2000-05	2006-08	2000-05	2006-08	2000-05	2006-08			
	\$ millions										
Afghanistan	466.1	980.4	1.6	..	..	..	..	..	8.9	..	..
Albania	569.2	331.0	790.6	..	308.0	..	8.0	0.0	36.0	2,176	16,110
Algeria	3,422.5	1,527.0	962.0	2,320.0	120.9	161.0	510.0	1,104.0	13.5	10,662	105,128
Angola	278.7	775.0	45.0	9.4	..	53.0	..	..	12.5	..	..
Argentina	5,836.8	3,714.2	3,826.9	3,126.5	203.6	1,396.7	791.6	..	13.7	16,400	218,700
Armenia	317.1	214.6	74.0	57.0	63.0	585.0	0.0	0.0	17.4	3,822	56,461
Australia	..	..	..	..	..	..	..	..	121.5	89,960	641,538
Austria	..	..	..	..	..	..	..	..	119.1	3,484	76,374
Azerbaijan	355.6	1,075.6	375.2	..	..	..	0.0	..	16.5	4,945	69,309
Bangladesh	1,294.3	3,357.8	501.5	48.8	0.0	0.0	..	..	39.2	5,328	67,459
Belarus	735.4	2,011.3	..	..	..	4.0	..	..	28.8	..	..
Belgium	..	..	..	..	..	..	..	..	94.5	28,016	354,489
Benin	116.9	272.7	590.0	..	..	..	..	..	20.9	..	..
Bolivia	520.5	247.3	884.4	137.3	16.6	..	..	..	34.7	1,625	24,649
Bosnia and Herzegovina	0.0	916.0	..	800.0	..	..	..	..	57.8	314	23,634
Botswana	104.0	97.9	..	..	..	..	..	..	21.1	7,301	..
Brazil	41,053.8	21,365.2	25,625.6	17,490.8	4,469.3	10,625.9	1,215.3	1,507.5	55.7	490,542	5,668,003
Bulgaria	2,179.1	1,526.8	3,062.1	1,547.8	2.1	531.6	152.0	..	74.5	49,328	315,037
Burkina Faso	41.9	487.6	..	..	..	..	..	..	18.6	639	..
Burundi	53.6	0.0	..	..	..	..	..	..	21.5	..	..
Cambodia	136.1	205.9	82.1	695.8	125.3	200.0	..	..	23.5	..	..
Cameroon	394.4	423.4	91.8	440.0	0.0	..	..	0.0	10.4	..	..
Canada	..	..	..	..	..	..	..	..	128.4	207,000	2,500,000
Central African Republic	0.0	14.8	..	..	..	..	..	..	7.0	..	..
Chad	11.0	178.4	0.0	..	..	..	..	..	3.7	..	..
Chile	3,561.6	3,060.2	1,590.5	1,370.8	4,821.2	830.1	1,495.2	3.1	97.7	25,124	223,345
China	8,548.0	0.0	10,970.9	4,075.5	15,350.1	13,320.1	3,505.2	3,904.8	108.3	..	..
Hong Kong SAR, China	..	..	..	..	..	..	..	..	142.8	80,935	524,445
Colombia	1,570.9	4,395.0	351.6	709.7	1,005.4	2,344.4	314.3	305.0	34.2	28,801	497,778
Congo, Dem. Rep.	473.4	729.0	..	..	..	..	..	..	7.1	..	..
Congo, Rep.	61.8	220.7	..	..	..	735.0	0.0	..	3.5	237	..
Costa Rica	..	..	80.0	80.0	465.2	373.0	..	..	50.8	10,567	102,311
Côte d'Ivoire	134.9	567.4	0.0	0.0	176.4	..	..	0.0	16.3	..	..
Croatia	1,205.7	3,035.0	7.1	85.0	451.0	492.0	298.7	..	64.9	11,055	200,955
Cuba	60.0	0.0	116.0	60.0	0.0	..	600.0	..	..	..	..
Czech Republic	..	..	..	..	..	..	..	..	52.8	16,395	244,417
Denmark	..	..	..	..	..	..	..	..	218.0	28,811	200,060
Dominican Republic	393.0	110.1	1,306.6	0.0	898.9	250.0	..	..	20.9	..	20,808
Ecuador	357.8	1,505.6	302.0	129.0	685.0	1,166.0	500.0	..	26.1	3,196	37,434
Egypt, Arab Rep.	3,471.9	7,073.0	678.0	469.0	821.5	1,370.0	..	..	42.9	9,595	367,559
El Salvador	1,110.6	822.1	85.0	0.0	..	..	..	..	41.3	1,802	..
Eritrea	40.0	0.0	..	..	..	..	..	..	18.4	..	..
Estonia	..	..	..	..	..	..	..	..	97.4	..	..
Ethiopia	..	..	..	..	..	..	..	..	18.0	..	..
Finland	..	..	..	..	..	..	..	..	85.8	10,424	120,294
France	..	..	..	..	..	..	..	..	107.8	137,481	1,267,419
Gabon	26.6	187.8	0.0	0.0	177.4	3.9	..	..	8.5	..	..
Gambia, The	6.6	35.0	..	0.0	..	..	..	..	17.6	..	..
Georgia	173.8	564.7	40.0	607.3	..	573.0	..	435.0	33.3	5,260	59,641
Germany	..	..	..	..	..	..	..	..	107.8	66,747	573,985
Ghana	156.5	2,069.0	590.0	100.0	10.0	..	0.0	..	17.8	..	..
Greece	..	..	..	..	..	..	..	..	93.5	..	..
Guatemala	560.1	1,305.1	110.0	263.8	..	..	..	6.7	27.2	4,251	..
Guinea	50.6	155.2	..	..	..	..	..	..	..	..	..
Guinea-Bissau	21.9	68.4	..	..	..	..	..	..	9.1	..	..
Haiti	18.0	306.0	5.5	..	..	..	..	..	12.1	9	300
Honduras	135.0	653.9	358.8	..	120.0	..	207.9	..	51.4	..	..

Private sector in the economy

5.1

	Investment commitments in infrastructure projects with private participation ^a								Domestic credit to private sector	Businesses registered		
	\$ millions									% of GDP	New	Total
	Telecommunications		Energy		Transport		Water and sanitation					
2000-05	2006-08	2000-05	2006-08	2000-05	2006-08	2000-05	2006-08	2008	2007	2007		
Hungary	5,172.8	1,523.3	851.6	1,707.0	3,297.5	1,588.0	0.0	0.0	69.6	28,153	273,549	
India	20,642.0	24,702.2	8,369.2	28,507.7	4,281.3	19,009.2	112.9	218.2	51.4	20,000	732,000	
Indonesia	6,557.2	8,068.7	1,828.5	3,779.3	159.2	1,433.9	44.8	20.2	26.5	18,960	271,255	
Iran, Islamic Rep.	695.0	1,023.0	650.0	..	..	..	..	..	49.2	..	..
Iraq	984.0	4,074.0	..	590.0	..	..	..	..	..	..	..
Ireland	..	..	..	..	..	..	..	..	217.0	18,704	180,891
Israel	..	..	..	..	..	..	..	..	90.1	18,814	162,910
Italy	..	..	..	..	..	..	..	..	105.1	77,587	638,987
Jamaica	700.3	241.2	201.0	78.0	565.0	..	..	..	28.3	2,023	54,116
Japan	..	..	..	..	..	..	..	..	163.5	145,151	2,572,088
Jordan	1,589.0	484.6	..	524.0	0.0	1,380.0	169.0	..	83.8	2,361	..	
Kazakhstan	1,153.7	2,619.8	300.0	0.0	231.0	31.0	..	..	49.6	..	..
Kenya	1,434.0	2,695.8	..	306.7	..	404.0	..	..	30.0	7,371	125,102
Korea, Dem. Rep.	..	400.0	..	..	..	..	..	..	..	..	..
Korea, Rep.	..	..	..	..	..	..	..	..	109.1	..	..
Kosovo	..	..	..	..	..	..	..	..	34.3	..	..
Kuwait	..	..	..	..	..	..	..	..	66.4	..	..
Kyrgyz Republic	11.5	115.9	..	..	..	..	0.0	..	15.1	3,987	..
Lao PDR	87.7	10.0	1,250.0	1,465.0	0.0	..	..	..	9.5	..	..
Latvia	700.0	428.1	71.1	..	..	135.0	..	..	90.2	12,017	..
Lebanon	138.1	0.0	..	..	153.0	..	0.0	..	75.9	1,030	..
Lesotho	88.4	19.6	0.0	..	..	..	..	..	10.9	..	..
Liberia	70.3	49.8	..	..	..	..	..	..	12.5	..	..
Libya	..	..	..	..	..	..	..	..	6.8	..	..
Lithuania	993.0	489.2	514.3	350.6	..	..	..	..	62.7	6,578	67,095
Macedonia, FYR	706.6	256.6	..	391.0	..	295.0	..	..	43.8	..	..
Madagascar	12.6	221.8	0.0	..	61.0	17.5	..	..	11.1	1,234	19,305
Malawi	36.3	124.7	0.0	..	..	..	..	..	11.4	420	5,595
Malaysia	3,777.0	1,494.0	6,637.6	203.0	4,263.0	1,379.0	6,502.2	0.0	100.6	43,279	..	
Mali	82.6	154.0	365.9	..	55.4	..	..	..	17.1	..	..
Mauritania	92.1	90.1	..	..	..	..	..	..	..	..	..
Mauritius	413.0	67.1	0.0	..	..	..	0.0	..	87.7	..	..
Mexico	18,191.4	9,278.7	6,749.3	1,883.0	2,970.4	10,113.5	523.7	303.8	21.1	306,400	4,290,000	
Moldova	46.1	278.3	127.2	434.0	0.0	60.0	..	..	36.5	6,806	73,532
Mongolia	22.1	0.0	..	..	..	..	..	..	43.6	..	..
Morocco	6,139.5	2,309.6	1,049.0	..	200.0	200.0	..	..	77.4	24,811	..
Mozambique	123.0	104.2	1,205.8	..	334.6	0.0	..	..	18.4	..	..
Myanmar	..	..	..	556.1	..	..	..	..	..	..	..
Namibia	35.0	8.5	1.0	..	..	..	0.0	..	45.6	..	..
Nepal	109.3	26.0	15.1	..	..	..	..	..	40.8	..	..
Netherlands	..	..	..	..	..	..	..	..	193.2	116,000	1,030,000
New Zealand	..	..	..	..	..	..	..	..	150.4	74,247	474,212
Nicaragua	218.5	327.2	126.3	95.0	104.0	..	..	..	36.4	2,070	..
Niger	85.5	164.7	..	..	..	..	3.4	..	11.0	..	..
Nigeria	6,949.7	8,291.1	1,920.0	280.0	2,355.4	644.1	..	..	33.9	..	..
Norway	..	..	..	..	..	..	..	..	..	18,082	132,788
Oman	..	..	..	..	..	..	..	..	35.9	6,362	38,864
Pakistan	6,595.1	7,868.4	375.4	2,578.7	153.8	923.7	..	..	29.5	4,840	..
Panama	211.4	1,141.5	429.8	495.7	51.4	..	..	..	89.7	..	..
Papua New Guinea	..	150.0	..	..	..	..	..	..	24.8	..	..
Paraguay	199.0	498.5	..	..	..	..	..	..	24.5	..	..
Peru	2,241.4	1,959.4	2,498.9	743.8	522.5	2,329.8	152.0	..	24.8	..	..
Philippines	4,616.4	3,353.0	3,428.4	5,076.8	943.5	515.3	0.0	503.9	28.8	18,189	..	
Poland	16,800.1	6,158.7	2,555.5	1,410.4	1,672.0	1,439.3	64.3	0.8	49.8	26,388	523,584	
Portugal	..	..	..	..	..	..	..	..	179.7	30,934	423,719
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..
Qatar	..	..	..	..	..	..	..	..	46.7	..	..



	Investment commitments in infrastructure projects with private participation ^a								Domestic credit to private sector % of GDP 2008	Businesses registered	
	Telecommunications		Energy		Transport		Water and sanitation			New 2007	Total 2007
	2000-05	2006-08	2000-05	2006-08	2000-05	2006-08	2000-05	2006-08			
	\$ millions										
Romania	3,793.9	4,921.5	1,240.8	4,090.5	..	116.8	116.0	41.0	38.5	103,733	870,195
Russian Federation	22,049.4	20,675.1	1,726.0	25,376.2	109.4	191.0	904.7	1,212.3	41.0	489,955	3,267,325
Rwanda	72.3	168.0	1.6	..	..	..	..	..	..	..	455
Saudi Arabia	..	..	..	..	..	..	..	..	55.4	..	..
Senegal	593.1	1,077.0	93.3	..	55.4	134.0	0.0	0.0	24.2	23	1,000
Serbia	563.5	3,107.4	..	..	..	..	0.0	..	38.4	10,876	83,499
Sierra Leone	48.8	88.2	..	1.2	..	..	..	..	7.1	..	..
Singapore	..	..	..	..	..	..	..	..	107.9	25,904	133,235
Slovak Republic	..	..	..	..	..	..	..	..	44.7	16,025	135,330
Slovenia	..	..	..	..	..	..	..	..	85.6	4,957	47,312
Somalia	13.4	0.0	..	..	..	..	..	..	..	..	..
South Africa	10,519.5	5,327.0	1,251.3	9.9	504.7	3,483.0	31.3	0.0	145.2	41,356	553,425
Spain	..	..	..	..	..	..	..	..	201.4	145,593	2,435,689
Sri Lanka	766.1	1,024.4	270.8	..	..	..	..	..	28.9	4,529	..
Sudan	747.7	1,391.3	..	..	..	30.0	..	120.7	10.9	..	..
Swaziland	27.7	23.3	..	..	..	..	..	..	23.6	..	..
Sweden	..	..	..	..	..	..	..	..	129.6	27,994	326,052
Switzerland	..	..	..	..	..	..	..	..	168.2	18,284	162,326
Syrian Arab Republic	583.0	199.7	..	..	..	37.0	..	..	15.6	216	2,268
Tajikistan	8.5	64.0	16.0	..	..	..	..	..	29.0	794	..
Tanzania	515.3	962.5	348.0	28.4	27.7	134.0	8.5	..	16.3	3,933	59,163
Thailand	5,602.7	2,567.0	4,693.3	2,341.0	939.0	..	522.7	18.8	113.1	25,184	297,084
Timor-Leste	0.0	0.0	..	..	..	..	..	..	20.6	..	..
Togo	0.0	0.0	657.7	190.0	..	..	..	..	18.7	..	..
Trinidad and Tobago	..	..	..	..	..	..	..	..	28.9	..	..
Tunisia	751.0	2,518.0	30.0	..	..	840.0	..	..	66.6	6,675	63,584
Turkey	12,788.6	8,160.7	6,754.8	3,762.7	3,118.6	4,441.0	..	..	32.6	93,634	764,240
Turkmenistan	20.0	106.1	..	..	..	..	..	..	..	..	..
Uganda	387.6	1,180.0	113.9	964.6	..	404.0	0.0	..	13.9	8,906	89,503
Ukraine	3,162.9	3,574.8	160.0	..	..	..	100.0	..	73.7	41,809	528,864
United Arab Emirates	..	..	..	..	..	..	..	..	72.7	..	..
United Kingdom	..	..	..	..	..	..	..	..	211.1	449,700	2,546,200
United States	..	..	..	..	..	..	..	..	187.1	676,830	5,156,000
Uruguay	114.2	113.8	330.0	..	251.1	..	368.0	..	26.3	..	..
Uzbekistan	285.6	680.9	..	..	..	25.0	0.0	..	..	10,264	56,465
Venezuela, RB	3,337.0	2,074.0	39.5	..	34.0	..	15.0	..	21.5	..	..
Vietnam	430.0	1,326.7	2,360.6	287.0	20.0	765.0	174.0	..	90.6	..	52,506
West Bank and Gaza	279.8	0.0	150.0	..	..	..	..	..	..	..	..
Yemen, Rep.	376.8	342.2	..	15.8	..	220.0	..	..	7.8	50	..
Zambia	208.3	510.0	3.0	..	15.6	..	0.0	..	15.3	5,300	..
Zimbabwe	72.0	143.0	..	..	..	..	..	..	..	..	..
World	.. S	.. S	.. S	.. S	.. S	.. S	.. S	.. S	129.7 W		
Low income	8,043.3	19,559.7	8,201.6	4,659.3	705.4	2,303.5	185.9	0.0	36.5		
Middle income	243,326.2	196,510.7	106,361.7	116,921.3	53,504.4	83,650.3	18,975.5	9,705.6	62.6		
Lower middle income	84,659.7	88,720.8	38,070.8	50,571.3	26,894.4	43,175.4	5,220.1	5,228.2	82.6		
Upper middle income	158,666.6	107,789.9	68,290.9	66,350.1	26,610.0	40,474.9	13,755.5	4,477.4	44.6		
Low & middle income	251,369.6	216,070.4	114,563.3	121,580.7	54,209.9	85,953.8	19,161.4	9,705.6	61.9		
East Asia & Pacific	29,862.2	17,755.8	31,258.4	18,479.5	21,800.1	17,613.3	10,748.9	4,447.7	99.8		
Europe & Central Asia	67,661.7	58,420.5	17,807.6	38,827.4	5,504.1	8,427.7	1,345.0	1,689.1	43.0		
Latin America & Carib.	80,834.5	53,217.6	45,116.5	26,889.7	17,221.2	29,429.3	6,232.5	2,126.1	38.8		
Middle East & N. Africa	18,430.6	19,551.1	3,519.0	3,918.8	1,475.4	4,508.0	679.0	1,104.0	35.8		
South Asia	29,926.2	37,976.7	9,533.6	31,135.2	4,435.1	19,932.9	112.9	218.2	49.5		
Sub-Saharan Africa	24,654.4	29,148.6	7,328.3	2,330.2	3,774.1	6,042.5	43.2	120.7	58.5		
High income	..	..	..	..	..	..	..	..	155.9		
Euro area	..	..	..	..	..	..	..	..	126.4		

a. Data refer to total for the period shown. Includes infrastructure projects with private sector participation that reached financial closure in 1990-2008.

About the data

Private sector development and investment—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 are the engine of productivity growth, creating productive jobs and higher incomes. And with government playing a complementary role of regulation, funding, and service provision, private initiative and investment can help provide the basic services and conditions that empower poor people—by improving health, education, and infrastructure.

Investment in infrastructure projects with private participation has made important contributions to easing fiscal constraints, improving the efficiency of infrastructure services, and extending delivery to poor people. Developing countries have been in the forefront, pioneering better approaches to infrastructure services and reaping the benefits of greater competition and customer focus.

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 development and operating risk during the contract period. Investment refers to commitments not disbursements. Foreign state-owned companies are considered private entities for the purposes of this measure.

Investments are classified into two types: investments in physical assets—the resources a company commits to invest in expanding and modernizing facilities—and payments to the government to acquire state-owned enterprises or rights to provide services in a specific area or to use part of the radio spectrum.

The data are from the World Bank's Private Participation in Infrastructure (PPI) Project database, which tracks infrastructure projects with private participation in developing countries. It provides information on more than 4,300 infrastructure projects in 137 developing economies from 1984 to 2008. The database contains more than 30 fields per project record, including country, financial closure year, infrastructure services provided, type of private participation, investment, technology, capacity, project location, contract duration, private sponsors, bidding process, and development bank support. Data on the projects are compiled from publicly available information. The database aims to be as comprehensive as possible, but some projects—particularly those involving local

and small-scale operators—may be omitted because they are not publicly reported. The database is a joint product of the World Bank's Finance, Economics, and Urban Development Department and the Public-Private Infrastructure Advisory Facility. Geographic and income aggregates are calculated by the World Bank's Development Data Group. For more information, see <http://ppi.worldbank.org/>.

Credit is an important link in money transmission; it finances production, consumption, and capital formation, which in turn affect 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 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. Credit to the private sector may sometimes include credit to state-owned or partially state-owned enterprises.

Entrepreneurship is essential to the dynamism of the modern market economy, and a greater entry rate of new businesses can foster competition and economic growth. The table includes data on business registrations from the 2008 World Bank Group Entrepreneurship Survey, which includes entrepreneurial activity in more than 100 countries for 2000–08. Survey data are used to analyze firm creation, its relationship to economic growth and poverty reduction, and the impact of regulatory and institutional reforms. The 2008 survey improves on earlier surveys' methodology and country coverage for better cross-country comparability. Data on total and newly registered businesses were collected directly from national registrars of companies. For cross-country comparability, only limited liability corporations that operate in the formal sector are included. For additional information on sources, methodology, calculation of entrepreneurship rates, and data limitations see <http://econ.worldbank.org/research/entrepreneurship>.

Definitions

• **Investment commitments in infrastructure projects with private participation** refers to 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, standalone solid waste projects, and small projects such as windmills are excluded. Included are operation and management contracts, operation and management contracts with major capital expenditure, greenfield projects (new facilities built and operated by a private entity or a public-private joint venture), and divestitures. Investment commitments are the sum of investments in facilities and investments in government assets. Investments in facilities are resources the project company commits to invest during the contract period in new facilities or in expansion and modernization of existing facilities. Investments in government assets are the resources the project company spends on acquiring government assets such as state-owned enterprises, rights to provide services in a specific area, or use of specific radio spectrums. • **Domestic credit to private sector** is 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. • **New businesses registered** are the number of limited liability firms registered in the calendar year. • **Total businesses registered** are the year-end stock of total registered limited liability firms.

Data sources

Data on investment commitments in infrastructure projects with private participation are from the World Bank's PPI Project database (<http://ppi.worldbank.org>). Data on domestic credit are from the IMF's *International Financial Statistics*. Data on business registration and are from the World Bank's Entrepreneurship Survey and database (<http://econ.worldbank.org/research/entrepreneurship>).



5.2

Business environment: enterprise surveys

Survey year	Regulations and tax		Permits and licenses	Corruption	Crime	Informality	Gender	Finance	Infrastructure	Innovation	Trade	Workforce	
	Time dealing with officials % of management time	Average number of times meeting with tax officials											Time required to obtain operating license days	Informal payments to public officials % of firms	Losses due to theft, robbery, vandalism, and arson % of sales	Firms formally registered when operations started % of firms	Firms with female participation in ownership % of firms	Firms using banks to finance investment % of firms	Value lost due to electrical outages % of sales	Inter-nationally recognized quality certification ownership % of firms	Average time to clear direct exports through customs days	Firms offering formal training % of firms
Afghanistan	2008	6.8	1.2	13.8	41.5	1.5	88.0	2.8	1.4	6.5	8.5	14.6	14.6
Albania	2007	18.7	3.9	21.2	57.7	0.5	89.4	10.8	12.4	13.7	24.6	1.9	19.9
Algeria	2007	25.1	2.3	19.3	64.7	0.9	98.3	15.0	8.9	4.0	5.0	14.1	17.3
Angola	2006	7.1	3.3	24.1	46.8	0.4	..	23.4	2.1	3.7	5.1	16.5	19.4
Argentina	2006	13.8	2.5	116.0	18.7	1.3	93.8	30.3	6.9	1.4	26.9	5.5	52.2
Armenia	2009	10.3	2.1	20.0	11.6	0.6	96.2	31.8	31.9	1.8	26.9	3.3	30.4
Australia	..	..	..	..	..	..	..	..	..	..	..	..	..
Austria	..	..	..	..	..	..	..	..	..	..	..	..	..
Azerbaijan	2009	3.0	2.1	15.8	32.0	0.3	85.1	10.8	19.0	1.8	18.2	1.9	10.5
Bangladesh	2007	3.2	1.3	6.0	85.1	0.1	..	16.1	24.7	10.6	7.8	8.4	16.2
Belarus	2008	13.6	1.1	38.2	13.5	0.4	98.5	52.9	35.8	0.8	13.9	2.6	44.4
Belgium	..	..	..	..	..	..	..	..	..	..	..	..	..
Benin	2009	20.7	1.2	64.3	54.5	1.9	87.9	43.9	4.2	7.5	7.3	9.6	32.4
Bolivia	2006	13.5	1.7	26.0	32.4	0.9	90.5	41.1	22.2	4.4	13.8	15.3	53.9
Bosnia and Herzegovina	2009	11.2	1.0	21.4	8.1	0.2	98.6	32.8	59.7	1.9	30.1	1.4	66.5
Botswana	2006	5.0	0.9	13.7	27.6	1.3	..	40.9	11.3	1.4	12.7	1.4	37.7
Brazil	2009	18.7	1.2	83.5	9.7	1.7	95.8	59.3	48.4	3.0	25.7	15.9	52.9
Bulgaria	2009	10.6	2.2	20.8	8.5	0.5	98.5	33.9	34.7	1.6	19.9	4.2	30.7
Burkina Faso	2009	22.2	1.5	35.8	8.5	0.3	77.7	19.2	25.6	5.8	14.4	7.4	24.8
Burundi	2006	5.7	1.8	27.3	56.5	1.1	..	34.8	12.3	10.7	7.1	..	22.1
Cambodia	2007	5.6	1.0	..	61.2	1.6	87.5	..	11.3	2.4	2.8	1.5	48.4
Cameroon	2009	7.0	4.4	30.0	50.8	1.7	82.1	15.7	31.4	4.9	20.4	15.1	25.5
Canada	..	..	..	..	..	..	..	..	..	..	..	..	..
Central African Republic	..	..	..	..	..	..	..	..	..	..	..	..	..
Chad	2009	20.8	3.4	24.3	41.8	2.5	77.1	40.1	4.2	3.3	43.3	11.9	43.4
Chile	2006	9.0	3.0	67.7	8.2	0.6	97.8	27.8	29.1	1.8	22.0	5.8	46.9
China	2003	18.3	14.4	11.6	72.6	0.1	..	..	28.8	1.3	35.9	6.6	84.8
Hong Kong SAR, China	..	..	..	..	..	..	..	..	..	..	..	..	..
Colombia	2006	14.3	0.6	28.2	8.2	0.7	85.6	43.0	30.6	2.3	5.9	7.0	39.5
Congo, Dem. Rep.	2006	6.3	8.4	17.8	83.8	2.0	..	21.2	3.3	5.6	4.3	3.6	11.4
Congo, Rep.	2009	6.0	2.7	..	49.2	3.3	84.3	31.8	7.7	16.4	19.6	..	37.5
Costa Rica ^a	2005	9.6	0.5	..	33.8	0.4	..	65.3	14.9	1.9	10.5	3.5	46.4
Côte d'Ivoire	2009	1.8	3.6	14.5	30.6	3.4	56.4	61.9	13.9	5.0	4.3	16.6	19.1
Croatia	2007	10.9	0.7	26.5	14.5	0.2	98.1	33.5	60.0	0.8	16.5	1.3	28.0
Cuba	..	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	2009	10.4	1.5	19.9	8.7	0.4	98.0	25.0	33.4	0.6	43.5	5.7	70.7
Denmark	..	..	..	..	..	..	..	..	..	..	..	..	..
Dominican Republic ^a	2005	8.8	0.5	..	26.3	0.7	..	..	12.5	15.2	9.6	11.4	53.3
Ecuador	2006	17.3	0.6	19.9	21.5	0.9	91.1	32.7	24.0	2.7	18.2	7.0	61.6
Egypt, Arab Rep.	2008	8.8	3.4	90.6	98.3	3.0	14.3	34.0	5.6	3.4	21.1	6.2	21.7
El Salvador	2006	9.2	2.7	35.4	34.3	2.6	79.5	39.6	17.3	2.9	11.0	2.5	49.6
Eritrea	2009	0.5	0.2	..	0.0	..	100.0	4.2	11.9	0.2	15.1	9.6	26.1
Estonia	2009	5.5	0.4	8.3	1.6	0.9	97.4	36.3	41.5	0.5	21.2	1.8	69.3
Ethiopia	2006	3.8	1.1	11.4	12.4	1.4	..	30.9	11.0	0.9	4.2	4.3	38.2
Finland	..	..	..	..	..	..	..	..	..	..	..	..	..
France	..	..	..	..	..	..	..	..	..	..	..	..	..
Gabon	2009	2.8	15.2	12.1	26.1	0.4	63.7	33.1	6.3	1.7	18.6	3.8	30.9
Gambia, The	2006	7.3	2.5	8.4	52.4	2.7	..	21.3	7.6	11.8	22.2	5.0	25.6
Georgia	2008	2.1	0.6	11.8	4.1	0.7	99.6	40.8	38.2	1.4	16.0	3.8	14.5
Germany	2005	1.2	1.3	..	..	0.5	..	20.3	45.0	..	..	4.7	35.4
Ghana	2007	4.0	4.1	6.4	38.8	0.9	66.4	44.0	16.0	6.0	6.8	7.8	33.0
Greece	2005	1.8	1.7	..	21.6	0.0	..	24.4	25.9	..	11.7	5.5	20.0
Guatemala	2006	9.2	2.1	75.4	15.7	1.5	91.3	28.4	12.8	4.5	8.0	4.5	28.1
Guinea	2006	2.7	2.8	13.0	84.8	2.0	..	25.4	0.9	14.0	5.2	4.3	21.1
Guinea-Bissau	2006	2.9	3.4	30.4	62.7	1.1	..	19.9	0.7	5.3	8.4	5.6	12.4
Haiti	..	..	..	..	..	..	..	..	..	..	..	..	..
Honduras	2006	4.6	1.5	31.6	16.7	2.2	89.4	39.9	8.5	3.8	16.5	6.0	33.3

Business environment: enterprise surveys

5.2

Survey year	Regulations and tax		Permits and licenses	Corruption	Crime	Informality	Gender	Finance	Infrastructure	Innovation	Trade	Workforce	
	Time dealing with officials % of management time	Average number of times meeting with tax officials	Time required to obtain operating license days	Informal payments to public officials % of firms	Losses due to theft, robbery, vandalism, and arson % of sales	Firms formally registered when operations started % of firms	Firms with female participation in ownership % of firms	Firms using banks to finance investment % of firms	Value lost due to electrical outages % of sales	Inter-nationally recognized quality certification ownership % of firms	Average time to clear direct exports through customs days	Firms offering formal training % of firms	
Hungary	2009	13.5	0.8	35.6	4.0	0.1	100.0	42.4	48.7	0.9	39.4	4.3	14.8
India	2006	6.7	2.6	..	47.5	0.1	..	9.1	46.7	6.6	22.5	15.1	15.9
Indonesia ^a	2003	4.0	1.0	..	44.2	0.2	..	..	34.0	3.3	22.1	3.7	23.8
Iran, Islamic Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..
Iraq	..	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	2005	2.3	1.3	..	8.3	0.3	..	41.6	37.4	1.5	17.2	2.6	73.2
Israel	..	..	..	..	..	..	..	..	..	..	..	..	..
Italy	..	..	..	..	..	..	..	..	..	..	..	..	..
Jamaica ^a	2005	6.3	1.8	..	17.7	1.1	..	32.2	37.0	11.8	16.4	4.3	53.5
Japan	..	..	..	..	..	..	..	..	..	..	..	..	..
Jordan	2006	6.7	1.7	6.4	18.1	0.1	..	13.1	8.6	1.7	15.5	3.8	23.9
Kazakhstan	2009	4.7	2.6	30.8	23.3	1.0	97.4	34.4	31.0	3.7	10.8	8.5	40.9
Kenya	2007	5.1	6.7	23.4	79.2	3.9	..	37.1	22.9	6.4	9.8	5.6	40.7
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep. ^a	2005	0.1	2.2	..	14.1	0.0	..	19.1	39.9	..	17.6	7.2	39.5
Kosovo	2009	9.8	4.5	18.8	2.2	0.3	89.2	10.9	25.3	17.1	7.9	1.7	24.6
Kuwait	..	..	..	..	..	..	..	..	..	..	..	..	..
Kyrgyz Republic	2009	4.9	2.1	18.0	37.5	0.3	95.9	60.4	17.9	10.5	16.2	15.8	29.7
Lao PDR	2009	1.6	4.4	13.6	39.8	0.1	93.5	39.4	0.0	0.0	7.2	7.5	11.1
Latvia	2009	9.7	1.5	11.5	11.3	0.3	98.5	46.3	37.3	1.1	18.2	1.9	43.4
Lebanon	2006	12.0	3.2	..	51.2	0.5	..	27.9	53.5	6.0	20.9	6.7	67.8
Lesotho	2009	5.6	1.8	16.4	14.0	2.9	86.8	18.4	32.7	6.7	24.7	5.4	42.5
Liberia	2009	7.5	6.5	16.0	55.2	2.8	73.8	53.0	10.1	2.9	2.4	0.0	17.0
Libya	..	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	2009	9.3	0.8	65.5	8.5	0.4	97.1	38.7	47.4	0.7	15.6	2.4	46.0
Macedonia, FYR	2009	14.5	3.0	33.8	11.5	0.7	99.2	36.4	47.0	5.9	21.5	2.5	19.0
Madagascar	2009	17.1	0.9	41.3	19.2	1.2	97.5	50.0	12.2	7.7	8.7	14.2	27.0
Malawi	2009	3.5	2.7	15.0	10.8	5.7	78.6	23.9	20.6	17.0	17.9	4.9	48.4
Malaysia ^a	2007	7.8	2.6	22.4	..	1.0	53.0	13.1	48.6	3.0	54.1	2.7	50.1
Mali	2007	2.4	1.6	41.0	28.9	0.6	85.4	18.4	7.0	1.8	8.6	4.8	22.5
Mauritania	2006	5.8	1.8	10.7	82.1	0.6	..	17.3	3.2	1.6	5.9	3.9	25.5
Mauritius	2009	9.4	0.5	19.1	1.6	1.4	84.2	16.9	37.5	2.2	11.1	10.3	25.6
Mexico	2006	20.5	0.6	11.2	22.6	0.7	94.1	24.8	2.6	2.4	20.3	5.2	24.6
Moldova	2009	7.0	1.9	13.9	25.4	0.4	97.9	53.1	30.8	2.0	9.1	2.4	33.1
Mongolia	2009	12.1	2.0	43.5	30.4	0.6	90.1	52.0	26.5	0.8	16.7	18.6	61.2
Morocco	2007	11.4	0.9	3.4	13.4	0.0	86.0	13.1	12.3	1.3	17.3	1.8	24.7
Mozambique	2007	3.3	1.9	35.2	14.8	1.8	85.9	24.4	10.5	2.4	18.7	10.1	22.1
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..	..
Namibia	2006	2.9	0.3	9.6	11.4	1.3	..	33.4	8.1	0.7	17.6	1.4	44.5
Nepal	2009	6.5	1.3	14.5	15.2	0.9	94.0	27.4	17.5	27.0	3.1	5.6	8.8
Netherlands	..	..	..	..	..	..	..	..	..	..	..	..	..
New Zealand	..	..	..	..	..	..	..	..	..	..	..	..	..
Nicaragua	2006	9.3	1.3	19.7	17.2	0.9	85.4	41.4	13.0	8.7	18.7	5.0	28.9
Niger	2009	21.1	1.6	39.7	35.2	0.9	90.5	17.6	9.3	1.9	4.6	2.6	32.1
Nigeria	2007	6.1	3.0	12.1	40.9	4.1	..	20.0	2.7	8.9	8.5	7.5	25.7
Norway	..	..	..	..	..	..	..	..	..	..	..	..	..
Oman	..	..	4.4	11.8	33.2	..	..	..	31.0	4.2	10.8	3.4	20.9
Pakistan ^a	2007	2.2	1.6	16.4	27.2	0.5	..	6.7	9.7	9.9	9.6	4.8	6.7
Panama	2006	10.3	1.4	41.2	25.4	0.5	98.0	37.1	19.2	2.4	14.7	5.7	43.9
Papua New Guinea	..	..	..	..	..	..	..	..	..	..	..	..	..
Paraguay	2006	7.9	0.7	37.8	84.8	0.9	94.0	44.8	8.2	2.5	7.1	5.5	46.9
Peru	2006	13.5	1.4	81.1	11.3	0.4	99.2	32.8	30.9	3.2	14.6	5.4	57.7
Philippines ^a	2003	6.9	3.2	18.8	44.7	0.9	..	..	21.8	5.9	15.8	6.6	21.7
Poland	2009	12.8	0.6	14.6	5.0	0.5	99.3	47.9	40.7	1.9	17.3	6.0	60.9
Portugal	2005	1.1	1.6	..	14.5	0.2	..	50.8	24.4	..	12.7	7.2	31.9
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..	..
Qatar	..	..	..	..	..	..	..	..	..	..	..	..	..



5.2

Business environment: enterprise surveys

Country	Survey year	Regulations and tax		Permits and licenses	Corruption	Crime	Informality	Gender	Finance	Infrastructure	Innovation	Trade	Workforce
		Time dealing with officials % of management time	Average number of times meeting with tax officials	Time required to obtain operating license days	Informal payments to public officials % of firms	Losses due to theft, robbery, vandalism, and arson % of sales	Firms formally registered when operations started % of firms	Firms with female participation in ownership % of firms	Firms using banks to finance investment % of firms	Value lost due to electrical outages % of sales	Internationally recognized quality certification ownership % of firms	Average time to clear direct exports through customs days	Firms offering formal training % of firms
Romania	2009	9.2	2.3	23.7	9.8	0.3	98.7	47.9	37.3	2.2	26.1	2.0	24.9
Russian Federation	2009	19.9	1.6	57.4	29.4	0.8	94.7	33.1	30.6	1.2	11.7	4.6	52.2
Rwanda	2006	5.9	3.3	6.5	20.0	1.3	..	41.0	15.9	8.7	10.8	6.7	27.6
Saudi Arabia	..	..	..	..	..	..	..	..	..	..	..	..	..
Senegal	2007	2.9	1.3	21.4	18.1	0.5	78.9	26.3	19.8	5.0	6.1	7.4	16.3
Serbia	2009	12.2	1.4	28.0	18.0	0.6	95.0	28.8	42.8	1.3	21.8	1.6	36.5
Sierra Leone	2009	7.4	1.9	12.6	18.8	0.8	89.2	7.9	6.9	6.6	13.8	0.0	18.6
Singapore	..	..	..	..	..	..	..	..	..	..	..	..	..
Slovak Republic	2009	6.7	0.9	36.2	11.6	0.6	100.0	30.9	31.5	0.5	27.0	2.3	31.3
Slovenia	2009	7.3	0.3	56.1	5.4	0.4	99.9	42.2	52.2	0.5	28.0	2.2	47.5
Somalia	..	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	2007	6.0	0.8	36.2	15.1	1.0	91.0	22.6	34.8	1.6	26.4	4.5	36.8
Spain	2005	0.8	1.5	..	4.4	0.2	..	34.1	32.6	3.0	21.3	4.9	51.3
Sri Lanka ^a	2004	3.5	4.9	49.5	16.3	0.5	..	..	26.2	..	..	7.6	32.6
Sudan	..	..	..	..	..	..	..	..	..	..	..	..	..
Swaziland	2006	4.4	1.4	24.0	40.6	1.3	..	28.6	7.7	2.5	22.1	2.1	51.0
Sweden	..	..	..	..	..	..	..	..	..	..	..	..	..
Switzerland	..	..	..	..	..	..	..	..	..	..	..	..	..
Syrian Arab Republic ^a	2003	10.3	4.4	..	..	..	..	..	7.6	8.6	7.4	5.9	21.0
Tajikistan	2008	11.7	1.4	22.6	40.5	0.3	92.7	34.4	21.4	15.1	16.7	20.4	21.1
Tanzania	2006	4.0	2.7	15.9	49.5	1.2	..	30.9	6.8	9.6	14.7	5.7	36.5
Thailand ^a	2006	0.4	1.0	32.1	..	0.1	..	..	74.4	1.5	39.0	1.3	75.3
Timor-Leste	..	..	..	..	..	..	..	..	..	..	..	..	..
Togo	2009	2.7	1.2	56.4	16.7	2.4	75.8	31.8	16.9	10.5	6.6	6.7	31.0
Trinidad and Tobago	..	..	..	..	..	..	..	..	..	..	..	..	..
Tunisia	..	..	..	..	..	..	..	..	..	..	..	..	..
Turkey	2008	27.1	1.3	36.0	17.7	0.4	94.1	40.7	51.9	2.8	30.0	5.2	28.8
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	2006	5.2	2.4	9.3	51.7	1.0	..	34.7	7.7	10.2	15.5	3.2	35.0
Ukraine	2008	11.3	2.1	31.0	22.9	0.6	95.8	47.1	32.1	4.4	13.0	3.4	24.8
United Arab Emirates	..	..	..	..	..	..	..	..	..	..	..	..	..
United Kingdom	..	..	..	..	..	..	..	..	..	..	..	..	..
United States	..	..	..	..	..	..	..	..	..	..	..	..	..
Uruguay	2006	7.0	0.7	133.8	7.3	0.7	97.8	41.6	6.9	0.9	6.8	2.5	24.6
Uzbekistan	2008	11.1	0.7	9.1	56.2	0.7	100.0	39.8	8.2	5.4	1.3	5.1	9.6
Venezuela, RB	2006	33.6	2.9	41.6	..	1.4	97.3	..	35.7	4.4	12.5	14.1	42.3
Vietnam ^a	2005	0.8	1.9	..	67.2	0.1	..	27.4	29.4	..	11.4	4.9	44.0
West Bank and Gaza	2006	5.7	1.7	21.3	13.3	1.2	..	18.0	4.2	4.6	18.2	6.0	26.5
Yemen, Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..
Zambia	2007	4.6	1.9	48.3	14.3	1.0	96.2	37.2	10.2	3.7	17.2	2.3	26.0
Zimbabwe	..	..	..	..	..	..	..	..	..	..	..	..	..

Note: Enterprise surveys are updated several times a year; see www.enterprisesurveys.org for the most recent updates.

a. The sample was drawn from the manufacturing sector only.

About the data

The World Bank Group's Enterprise Survey gathers firm-level data on the business environment to assess constraints to private sector growth and enterprise performance. Standardized surveys are conducted all over the world, and data are available on more than 100,000 firms in 118 countries. The survey covers 11 dimensions of the business environment, including regulation, corruption, crime, informality, finance, infrastructure, and trade. For some countries, firm-level panel data are available, making it possible to track changes in the business environment over time.

Firms evaluating investment options, governments interested in improving business conditions, and economists seeking to explain economic performance have all grappled with defining and measuring the business environment. The firm-level data from Enterprise Surveys provide a useful tool for benchmarking economies across a large number of indicators measured at the firm level.

Most countries can improve regulation and taxation without compromising broader social interests. Excessive regulation may harm business performance and growth. For example, time spent with tax officials is a burden firms may face in paying taxes. The business environment suffers when governments increase uncertainty and risks or impose unnecessary costs and unsound regulation and taxation. Time to obtain licenses and permits and the associated red tape constrain firm operations.

In some countries doing business requires informal payments to "get things done" in customs, taxes, licenses, regulations, services, and the like. Such corruption harms the business environment by distorting policymaking, undermining government credibility, and diverting public resources. Crime, theft, and disorder also impose costs on businesses and society.

In many developing countries informal businesses operate without formal registration. These firms have less access to financial and public services and can engage in fewer types of contracts and investments, constraining growth.

Equal opportunities for men and women contribute to development. Female participation in firm ownership is a measure of women's integration as decisionmakers.

Financial markets connect firms to lenders and investors, allowing firms to grow their businesses: creditworthy firms can obtain credit from financial intermediaries at competitive prices. But too often market imperfections and government-induced

distortions limit access to credit and thus restrain growth.

The reliability and availability of infrastructure benefit households and support development. Firms with access to modern and efficient infrastructure—telecommunications, electricity, and transport—can be more productive. Firm-level innovation and use of modern technology may help firms compete.

Delays in clearing customs can be costly, deterring firms from engaging in trade or making them uncompetitive globally. Ill-considered labor regulations discourage firms from creating jobs, and while employed workers may benefit, unemployed, low-skilled, and informally employed workers will not. A trained labor force enables firms to thrive, compete, innovate, and adopt new technology.

The data in the table are from Enterprise Surveys implemented by the World Bank's Financial and Private Sector Development Enterprise Analysis Unit. All economies in East Asia and Pacific, Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, and Sub-Saharan Africa (for 2009) and Afghanistan, Bangladesh, and India draw a sample of registered nonagricultural businesses, excluding those in the financial and public sectors. Samples for other economies are drawn only from the manufacturing sector and are footnoted in the table. Typical Enterprise Survey sample sizes range from 150 to 1,800, depending on the size of the economy. In each country samples are selected by stratified random sampling, unless otherwise noted. Stratified random sampling allows indicators to be computed by sector, firm size, and region and increases the precision of economywide indicators compared with alternative simple random sampling. Stratification by sector of activity divides the economy into manufacturing and retail and other services sectors. For medium-size and large economies the manufacturing sector is further stratified by industry. Firm size is stratified into small (5–19 employees), medium-size (20–100 employees), and large (more than 100 employees). Geographic stratification divides the national economy into the main centers of economic activity.

Definitions

- **Survey year** is the year in which the underlying data were collected.
- **Time dealing with officials** is the average percentage of senior management's time that is spent in a typical week dealing with requirements imposed by government regulations.
- **Average number of times meeting with tax officials** is the average number of visits or required meetings with tax officials.
- **Time required to obtain operating license** is the average wait to obtain an operating license from the day applied for to the day granted.
- **Informal payments to public officials** are the percentage of firms that answered positively to the question "Was a gift or informal payment expected or requested during a meeting with tax officials?"
- **Losses due to theft, robbery, vandalism, and arson** are the estimated losses from those causes that occurred on establishments' premises as a percentage of annual sales.
- **Firms formally registered when operations started** are the percentage of firms formally registered when they started operations in the country. Firms not formally registered (the residual) are in the informal sector of the economy.
- **Firms with female participation in ownership** are the percentage of firms with a woman among the owners.
- **Firms using banks to finance investment** are the percentage of firms that invested in fixed assets during the last fiscal year that used banks to finance fixed assets.
- **Value lost due to electrical outages** is losses that resulted from power outages as a percentage of annual sales.
- **Internationally recognized quality certification ownership** is the percentage of firms that have an internationally recognized quality certification, such as International Organization for Standardization 9000, 9002, or 14000.
- **Average time to clear direct exports through customs** is the average number of days to clear direct exports through customs.
- **Firms offering formal training** are the percentage of firms offering formal training programs for their permanent, full-time employees.

Data sources

Data on the business environment are from the World Bank Group's Enterprise Surveys website (www.enterprisesurveys.org).



5.3

Business environment: Doing Business indicators

	Starting a business			Registering property		Dealing with construction permits		Employing workers	Enforcing contracts		Protecting investors	Closing a business
	Number of procedures June 2009	Time required days June 2009	Cost % of per capita income June 2009	Number of procedures June 2009	Time required days June 2009	Number of procedures to build a warehouse June 2009	Time required to build a warehouse days June 2009	Rigidity of employment index 0–100 (least to most rigid) June 2009	Number of procedures June 2009	Time required days June 2009	Disclosure index 0–10 (least to most disclosure) June 2009	Time to resolve insolvency years June 2009
Afghanistan	4	7	30.2	9	250	13	340	20	47	1,642	0	..
Albania	5	5	17.0	6	42	24	331	25	39	390	8	..
Algeria	14	24	12.1	11	47	22	240	41	46	630	6	2.5
Angola	8	68	151.1	7	184	12	328	66	46	1,011	5	6.2
Argentina	15	27	11.0	6	52	28	338	21	36	590	6	2.8
Armenia	6	15	2.6	3	4	20	137	21	48	285	5	1.9
Australia	2	2	0.8	5	5	16	221	0	28	395	8	1.0
Austria	8	28	5.1	3	32	14	194	24	25	397	3	1.1
Azerbaijan	6	10	2.9	4	11	31	207	10	39	237	7	2.7
Bangladesh	7	44	36.2	8	245	14	231	28	41	1,442	6	4.0
Belarus	5	6	1.7	3	18	15	161	11	28	225	5	5.8
Belgium	3	4	5.3	7	79	14	169	17	25	505	8	0.9
Benin	7	31	155.5	4	120	15	410	40	42	825	6	4.0
Bolivia	15	50	99.2	7	92	17	249	77	40	591	1	1.8
Bosnia and Herzegovina	12	60	15.8	7	84	16	255	33	38	595	3	3.3
Botswana	10	61	2.1	5	16	24	167	13	29	687	7	1.7
Brazil	16	120	6.9	14	42	18	411	46	45	616	6	4.0
Bulgaria	4	18	1.7	8	15	24	139	19	39	564	10	3.3
Burkina Faso	4	14	50.3	4	59	15	132	21	37	446	6	4.0
Burundi	11	32	151.6	5	94	22	212	28	44	832	4	..
Cambodia	9	85	138.4	7	56	23	709	36	44	401	5	..
Cameroon	12	34	121.1	5	93	15	426	39	43	800	6	3.2
Canada	1	5	0.4	6	17	14	75	4	36	570	8	0.8
Central African Republic	8	22	244.9	5	75	21	239	50	43	660	6	4.8
Chad	19	75	176.7	6	44	9	181	33	41	743	6	..
Chile	9	27	6.9	6	31	18	155	18	36	480	7	4.5
China	14	37	4.9	4	29	37	336	31	34	406	10	1.7
Hong Kong SAR, China	3	6	1.8	5	45	7	67	0	24	280	10	1.1
Colombia	9	20	12.8	7	20	11	51	10	34	1,346	8	3.0
Congo, Dem. Rep.	13	149	391.0	8	57	14	322	63	43	625	3	5.2
Congo, Rep.	10	37	86.5	7	116	14	169	63	44	560	6	3.0
Costa Rica	12	60	20.0	6	21	23	191	39	40	852	2	3.5
Côte d'Ivoire	10	40	133.3	6	62	22	629	33	33	770	6	2.2
Croatia	7	22	8.4	5	104	14	420	50	38	561	1	3.1
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	8	15	9.2	4	78	36	150	11	27	611	2	6.5
Denmark	4	6	0.0	6	42	6	69	7	34	380	7	1.1
Dominican Republic	8	19	17.3	7	60	17	214	21	34	460	5	3.5
Ecuador	13	64	37.7	9	16	19	155	38	39	588	1	5.3
Egypt, Arab Rep.	6	7	16.1	7	72	25	218	27	41	1,010	8	4.2
El Salvador	8	17	38.7	5	31	34	155	24	30	786	5	4.0
Eritrea	13	84	76.5	12	101	..	..	20	39	405	4	..
Estonia	5	7	1.7	3	18	14	118	51	36	425	8	3.0
Ethiopia	5	9	18.9	10	41	12	128	28	37	620	4	3.0
Finland	3	14	0.9	3	14	18	38	41	32	375	6	0.9
France	5	7	0.9	8	98	13	137	52	29	331	10	1.9
Gabon	9	58	17.8	7	39	16	210	52	38	1,070	6	5.0
Gambia, The	8	27	215.1	5	371	17	146	27	32	434	2	3.0
Georgia	3	3	3.7	2	3	10	98	7	36	285	8	3.3
Germany	9	18	4.7	4	40	12	100	42	30	394	5	1.2
Ghana	8	33	26.4	5	34	18	220	27	36	487	7	1.9
Greece	15	19	10.9	11	22	15	169	50	39	819	1	2.0
Guatemala	11	29	45.4	4	27	22	178	28	31	1,459	3	3.0
Guinea	13	41	139.2	6	104	32	255	24	50	276	6	3.8
Guinea-Bissau	16	213	323.0	9	211	15	167	54	41	1,140	6	..
Haiti	13	195	227.9	5	405	11	1,179	10	35	508	2	5.7
Honduras	13	14	47.3	7	23	17	106	57	45	900	0	3.8

Business environment: Doing Business indicators

5.3

	Starting a business			Registering property		Dealing with construction permits		Employing workers	Enforcing contracts		Protecting investors	Closing a business
	Number of procedures June 2009	Time required days June 2009	Cost % of per capita income June 2009	Number of procedures June 2009	Time required days June 2009	Number of procedures to build a warehouse June 2009	Time required to build a warehouse days June 2009	Rigidity of employment index 0–100 (least to most rigid) June 2009	Number of procedures June 2009	Time required days June 2009	Disclosure index 0–10 (least to most disclosure) June 2009	Time to resolve insolvency years June 2009
Hungary	4	4	8.0	4	17	31	204	22	33	395	2	2.0
India	13	30	66.1	5	44	37	195	30	46	1,420	7	7.0
Indonesia	9	60	26.0	6	22	14	160	40	39	570	10	5.5
Iran, Islamic Rep.	7	9	3.9	9	36	17	322	29	39	520	5	4.5
Iraq	11	77	75.9	5	8	14	215	24	51	520	4	..
Ireland	4	13	0.3	5	38	11	185	10	20	515	10	0.4
Israel	5	34	4.2	7	144	20	235	17	35	890	7	4.0
Italy	6	10	17.9	8	27	14	257	38	40	1,210	7	1.8
Jamaica	6	8	5.3	6	55	10	156	4	35	655	4	1.1
Japan	8	23	7.5	6	14	15	187	16	30	360	7	0.6
Jordan	8	13	49.5	7	21	19	87	24	38	689	5	4.3
Kazakhstan	7	20	4.8	5	40	37	211	17	38	390	7	1.5
Kenya	12	34	36.5	8	64	11	120	17	40	465	3	4.5
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	8	14	14.7	7	11	13	34	38	35	230	7	1.5
Kosovo	..	..	..	..	..	..	..	..	..	..	..	..
Kuwait	13	35	1.0	8	55	25	104	0	50	566	7	4.2
Kyrgyz Republic	3	11	5.2	4	5	12	137	18	39	260	8	4.0
Lao PDR	7	100	12.3	9	135	24	172	20	42	443	0	..
Latvia	5	16	2.1	6	45	25	187	43	27	309	5	3.0
Lebanon	5	9	78.2	8	25	20	211	25	37	721	9	4.0
Lesotho	7	40	27.0	6	101	15	601	14	41	695	2	2.6
Liberia	5	20	52.9	10	50	24	77	27	41	1,280	4	3.0
Libya	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	7	26	2.4	2	3	17	162	38	30	275	5	1.5
Macedonia, FYR	4	4	2.5	5	58	21	146	14	37	370	9	2.9
Madagascar	2	7	7.1	7	74	16	178	56	38	871	5	..
Malawi	10	39	108.0	6	88	21	213	21	42	432	4	2.6
Malaysia	9	11	11.9	5	144	25	261	10	30	585	10	2.3
Mali	7	15	89.2	5	29	14	185	31	36	626	6	3.6
Mauritania	9	19	34.7	4	49	25	201	39	46	370	5	8.0
Mauritius	5	6	4.1	4	26	18	107	18	36	720	6	1.7
Mexico	8	13	11.7	5	74	12	138	41	38	415	8	1.8
Moldova	8	10	7.0	5	5	30	292	41	31	365	7	2.8
Mongolia	7	13	3.0	5	11	21	215	17	32	314	5	4.0
Morocco	6	12	16.1	8	47	19	163	60	40	615	6	1.8
Mozambique	10	26	19.3	8	42	17	381	40	30	730	5	5.0
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..
Namibia	10	66	20.4	9	23	12	139	13	33	270	5	1.5
Nepal	7	31	53.6	3	5	15	424	46	39	735	6	5.0
Netherlands	6	10	5.6	2	5	18	230	42	25	514	4	1.1
New Zealand	1	1	0.4	2	2	7	65	7	30	216	10	1.3
Nicaragua	6	39	111.7	8	124	17	219	27	35	540	4	2.2
Niger	9	17	118.7	4	35	17	265	68	39	545	6	5.0
Nigeria	8	31	76.7	13	82	18	350	7	39	457	5	2.0
Norway	5	7	1.9	1	3	14	252	44	33	280	7	0.9
Oman	5	12	2.2	2	16	16	242	13	51	598	8	4.0
Pakistan	10	20	5.8	6	50	12	223	43	47	976	6	2.8
Panama	6	12	10.3	7	32	20	116	66	31	686	1	2.5
Papua New Guinea	8	56	20.5	4	72	24	217	4	42	591	5	3.0
Paraguay	7	35	56.7	6	46	13	291	56	38	591	6	3.9
Peru	9	41	24.5	4	14	21	205	39	41	428	8	3.1
Philippines	15	52	28.2	8	33	24	203	29	37	842	2	5.7
Poland	6	32	17.9	6	197	30	308	25	38	830	7	3.0
Portugal	6	6	6.4	5	12	19	287	43	31	547	6	2.0
Puerto Rico	7	7	0.7	8	194	22	209	14	39	620	7	3.8
Qatar	19	76	0.6	10	16	19	76	13	43	570	5	2.8



5.3

Business environment: Doing Business indicators

	Starting a business			Registering property		Dealing with construction permits		Employing workers	Enforcing contracts		Protecting investors	Closing a business
	Number of procedures	Time required days	Cost % of per capita income	Number of procedures	Time required days	Number of procedures to build a warehouse	Time required to build a warehouse days	Rigidity of employment index 0–100 (least to most rigid)	Number of procedures	Time required days	Disclosure index 0–10 (least to most disclosure)	Time to resolve insolvency years
	June 2009	June 2009	June 2009	June 2009	June 2009	June 2009	June 2009	June 2009	June 2009	June 2009	June 2009	June 2009
Romania	6	10	2.9	8	48	17	243	46	31	512	9	3.3
Russian Federation	9	30	2.7	6	43	54	704	38	37	281	6	3.8
Rwanda	2	3	10.1	4	60	14	210	7	24	260	7	..
Saudi Arabia	4	5	7.7	2	2	17	94	13	43	635	9	1.5
Senegal	4	8	63.7	6	124	16	220	59	44	780	6	3.0
Serbia	7	13	7.1	6	111	20	279	35	36	635	7	2.7
Sierra Leone	6	12	118.8	7	236	25	283	41	40	515	6	2.6
Singapore	3	3	0.7	3	5	11	25	0	21	150	10	0.8
Slovak Republic	6	16	2.0	3	17	13	287	22	30	565	3	4.0
Slovenia	3	6	0.0	6	391	14	197	54	32	1,290	3	2.0
Somalia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	6	22	5.9	6	24	17	174	35	30	600	8	2.0
Spain	10	47	15.0	4	18	11	233	49	39	515	5	1.0
Sri Lanka	4	38	5.9	8	83	22	214	20	40	1,318	4	1.7
Sudan	10	36	36.0	6	9	19	271	36	53	810	0	..
Swaziland	13	61	33.9	11	46	13	93	10	40	972	0	2.0
Sweden	3	15	0.6	2	15	8	116	38	30	508	6	2.0
Switzerland	6	20	2.0	4	16	14	154	7	31	417	0	3.0
Syrian Arab Republic	7	17	27.8	4	19	26	128	20	55	872	6	4.1
Tajikistan	12	25	24.3	6	37	32	250	49	34	430	6	3.0
Tanzania	12	29	36.8	9	73	22	328	54	38	462	3	3.0
Thailand	7	32	6.3	2	2	11	156	11	35	479	10	2.7
Timor-Leste	10	83	4.1	..	..	22	208	32	51	1,435	3	..
Togo	7	75	205.0	5	295	15	277	54	41	588	6	3.0
Trinidad and Tobago	9	43	0.7	8	162	20	261	7	42	1,340	4	..
Tunisia	10	11	5.7	4	39	20	84	40	39	565	5	1.3
Turkey	6	6	14.2	6	6	25	188	35	35	420	9	3.3
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	18	25	84.4	13	77	16	143	0	38	510	2	2.2
Ukraine	10	27	5.8	10	93	30	476	31	30	345	5	2.9
United Arab Emirates	8	15	6.2	1	2	17	64	7	49	537	4	5.1
United Kingdom	6	13	0.7	2	8	11	95	10	30	399	10	1.0
United States	6	6	0.7	4	12	19	40	0	32	300	7	1.5
Uruguay	11	65	40.0	9	66	30	234	18	40	720	3	2.1
Uzbekistan	7	15	11.2	12	78	26	260	32	42	195	4	4.0
Venezuela, RB	16	141	24.0	8	47	11	395	69	29	510	3	4.0
Vietnam	11	50	13.3	4	57	13	194	21	34	295	6	5.0
West Bank and Gaza	11	49	55.0	7	47	21	199	31	44	600	6	..
Yemen, Rep.	6	12	83.0	6	19	15	107	24	36	520	6	3.0
Zambia	6	18	28.4	6	39	17	254	21	35	471	3	2.7
Zimbabwe	10	96	499.5	5	31	19	1,426	33	38	410	8	3.3
World	8 u	36 u	41.5 u	6 u	65 u	18 u	216 u	27 u	38 u	607 u	5 u	3.0 u
Low income	9	44	107.5	7	100	18	291	33	39	605	5	3.8
Middle income	8	40	31.0	6	61	19	209	27	39	649	5	3.1
Lower middle income	9	34	42.7	6	69	19	209	28	40	678	5	3.3
Upper middle income	8	47	16.0	6	52	20	209	26	37	612	6	2.9
Low & middle income	9	41	53.5	6	73	19	232	29	39	636	5	3.3
East Asia & Pacific	8	42	30.1	5	112	18	182	17	37	572	5	3.1
Europe & Central Asia	7	19	8.8	6	46	24	249	27	37	398	6	3.0
Latin America & Carib.	10	67	41.2	7	65	17	228	29	39	710	4	3.2
Middle East & N. Africa	9	23	51.5	7	35	19	181	33	42	707	6	3.5
South Asia	7	28	27.0	6	106	18	241	27	44	1,053	4	4.5
Sub-Saharan Africa	9	44	99.7	7	82	17	262	35	39	646	5	3.4
High income	6	19	6.7	5	43	16	169	24	35	526	6	2.1
Euro area	6	15	6.0	5	57	14	225	38	31	602	5	1.6

About the data

The economic health of a country is measured not only in macroeconomic terms but also by other factors that shape daily economic activity such as laws, regulations, and institutional arrangements. The Doing Business indicators measure business regulation, gauge regulatory outcomes, and measure the extent of legal protection of property, the flexibility of employment regulation, and the tax burden on businesses.

The table presents a subset of Doing Business indicators covering 7 of the 10 sets of indicators: starting a business, registering property, dealing with construction permits, employing workers, enforcing contracts, protecting investors, and closing a business. Table 5.5 includes Doing Business measures of getting credit, and table 5.6 presents data on paying taxes.

The fundamental premise of the Doing Business project is that economic activity requires good rules and regulations that are efficient, accessible to all who need to use them, and simple to implement. Thus some Doing Business indicators give a higher score for more regulation, such as stricter disclosure requirements in related-party transactions, and others give a higher score for simplified regulations, such as a one-stop shop for completing business startup formalities.

In constructing the indicators, it is assumed that entrepreneurs know about all regulations and comply with them; in practice, entrepreneurs may not be aware of all required procedures or may avoid legally required procedures altogether. But where regulation is particularly onerous, levels of informality are higher, which comes at a cost: firms in the informal sector usually grow more slowly, have less access to credit, and employ fewer workers—and those workers remain outside the protections of labor law. The indicators in the table can help policymakers understand the business environment in a country and—along with information from other sources such as the World Bank's Enterprise Surveys—provide insights into potential areas of reform.

Doing Business data are collected with a standardized survey that uses a simple business case to ensure comparability across economies and over time—with assumptions about the legal form of the business, its size, its location, and nature of its operation. Surveys in 183 countries are administered through more than 8,000 local experts, including lawyers, business consultants, accountants, freight forwarders, government officials, and other professionals who routinely administer or advise on legal and regulatory requirements.

The Doing Business project encompasses two types of data: data from readings of laws and regulations and data on time and motion indicators that measure efficiency in achieving a regulatory goal. Within the time and motion indicators cost estimates are recorded from official fee schedules where applicable. The data from surveys are subjected to numerous tests for robustness, which lead to revision or expansion of the information collected.

The Doing Business methodology has limitations that should be considered when interpreting the data. First, the data collected refer to businesses in the economy's largest city and may not represent regulations in other locations of the economy. To address this limitation, subnational indicators are being collected for selected economies. These subnational studies point to significant differences in the speed of reform and the ease of doing business across cities in the same economy. Second, the data often focus on a specific business form—generally a limited liability company of a specified size—and may not represent regulation for other types of businesses such as sole proprietorships. Third, transactions described in a standardized business case refer to a specific set of issues and may not represent the full set of issues a business encounters. Fourth, the time measures involve an element of judgment by the expert respondents. When sources indicate different estimates, the Doing Business time indicators represent the median values of several responses given under the assumptions of the standardized case. Fifth, the methodology assumes that a business has full information on what is required and does not waste time when completing procedures.

Definitions

- **Number of procedures for starting a business** is the number of procedures required to start a business, including interactions to obtain necessary permits and licenses and to complete all inscriptions, verifications, and notifications to start operations for businesses with specific characteristics of ownership, size, and type of production.
- **Time required for starting a business** is the number of calendar days to complete the procedures for legally operating a business using the fastest procedure, independent of cost.
- **Cost for starting a business** is normalized as a percentage of gross national income (GNI) per capita. It includes all official fees for professional or legal services if they are required by law.
- **Number of procedures for registering property** is the number of procedures required for a business to legally transfer property.
- **Time required for registering property** is the number of calendar days for a business to legally transfer property.
- **Number of procedures for dealing with licenses to build a warehouse** is the number of interactions of a company's employees or managers with external parties, including government staff, public inspectors, notaries, land registry and cadastre staff, and technical experts apart from architects and engineers.
- **Time required for dealing with construction permits to build a warehouse** is the number of calendar days to complete the required procedures for building a warehouse using the fastest procedure, independent of cost.
- **Rigidity of employment index**, a measure of employment regulation, is the average of three subindexes: a difficulty of hiring index, a rigidity of hours index, and a difficulty of firing index. Higher values indicate more rigid regulations.
- **Number of procedures for enforcing contracts** is the number of independent actions, mandated by law or court regulation, that demand interaction between the parties to a contract or between them and the judge or court officer.
- **Time required for enforcing contracts** is the number of calendar days from the time of the filing of a lawsuit in court to the final determination and payment.
- **Extent of disclosure index** measures the degree to which investors are protected through disclosure of ownership and financial information. Higher values indicate more disclosure.
- **Time to resolve insolvency** is the number of years from time of filing for insolvency in court until resolution of distressed assets and payment of creditors.

Data sources

Data on the business environment are from the World Bank's Doing Business project (www.doingbusiness.org).



5.4

Stock markets

	Market capitalization				Market liquidity		Turnover ratio		Listed domestic companies		S&P/Global Equity Indices	
	\$ millions		% of GDP		Value of shares traded % of GDP		Value of shares traded % of market capitalization		number		% change	
	2000	2009	2000	2008	2000	2008	2000	2009	2000	2009	2008	2009
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..
Albania	..	..	..	..	..	..	..	..	..	..	..	..
Algeria	..	..	..	..	..	..	..	..	..	..	..	..
Angola	..	..	..	..	..	..	..	..	..	..	..	..
Argentina	166,068	48,033	58.4	15.9	2.1	4.1	4.8	5.4	127	107	-56.2 ^a	97.8 ^a
Armenia	2	176	0.1	1.5	0.0	0.0	4.6	0.6	105	26	..	..
Australia	372,794	675,619	92.0	66.5	55.9	99.9	56.5	103.1	1,330	1,924	..	..
Austria	29,935	72,300	15.7	17.5	4.9	25.3	29.8	69.0	97	85	..	..
Azerbaijan	3	..	0.1	..	..	..	..	..	2	..	..	..
Bangladesh	1,186	7,068	2.5	8.4	1.6	11.6	74.4	212.6	221	295	4.3 ^a	38.6 ^a
Belarus	..	..	..	..	..	..	..	..	..	..	..	..
Belgium	182,481	167,447	78.7	33.2	16.4	41.9	20.7	76.1	174	167	..	..
Benin	..	..	..	..	..	..	..	..	..	..	..	..
Bolivia	1,742	2,672	20.7	16.0	0.8	0.0	0.1	..	26	37	..	..
Bosnia and Herzegovina	..	..	..	..	..	..	..	..	..	..	..	..
Botswana	978	4,283	15.8	26.5	0.8	1.1	4.8	2.6	16	20	-38.4 ^a	24.3 ^a
Brazil	226,152	1,337,723	35.1	37.4	15.7	46.2	43.5	67.4	459	425	-57.2	125.1
Bulgaria	617	7,330	4.9	17.8	0.5	3.3	9.2	4.9	503	337	-70.2 ^a	17.2 ^a
Burkina Faso	..	..	..	..	..	..	..	..	..	..	..	..
Burundi	..	..	..	..	..	..	..	..	..	..	..	..
Cambodia	..	..	..	..	..	..	..	..	..	..	..	..
Cameroon	..	..	..	..	..	..	..	..	..	..	..	..
Canada	841,385	1,002,215	116.1	66.8	87.6	117.3	77.3	123.7	1,418	3,755	..	..
Central African Republic	..	..	..	..	..	..	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..
Chile	60,401	230,732	80.3	78.1	8.1	21.6	9.4	20.7	258	232	-41.2	84.0
China	580,991	5,010,656	48.5	64.6	60.2	126.4	158.3	229.5	1,086	1,700	-52.7	66.3
Hong Kong SAR, China	623,398	468,595	368.6	217.6	223.4	288.7	61.3	81.8	779	1,017	..	..
Colombia	9,560	140,520	10.2	35.7	0.4	5.1	3.8	11.4	126	96	..	75.7 ^a
Congo, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Congo, Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Costa Rica	2,924	1,887	18.3	6.4	0.7	0.2	12.0	3.0	21	11	..	..
Côte d'Ivoire	1,185	6,141	11.4	30.2	0.3	1.3	2.6	2.0	41	38	-16.9 ^a	-10.7 ^a
Croatia	2,742	26,619	12.8	38.6	0.9	5.0	7.4	5.3	64	368	-59.3 ^a	31.1 ^a
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	11,002	54,477	19.4	22.7	11.6	20.0	60.3	39.9	131	25	-45.9	23.0
Denmark	107,666	131,526	67.3	38.5	57.2	62.1	86.0	104.8	225	216	..	..
Dominican Republic	..	..	..	..	..	..	..	..	..	..	..	..
Ecuador	704	4,248	4.4	8.3	0.1	0.3	5.5	30.7	30	39	-8.8 ^a	-13.1 ^a
Egypt, Arab Rep.	28,741	91,091	28.8	52.9	11.1	42.9	34.7	59.7	1,076	306	-55.8	35.6
El Salvador	2,041	4,656	15.5	21.1	0.2	0.9	1.3	..	40	51	..	..
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..
Estonia	1,846	170	32.5	8.3	5.7	3.3	18.9	0.8	23	16	-65.5 ^a	32.9 ^a
Ethiopia	..	..	..	..	..	..	..	..	..	..	..	..
Finland	293,635	154,367	241.1	56.6	169.7	143.2	64.3	155.1	154	126	..	..
France	1,446,634	1,492,327	108.9	52.2	81.6	114.0	74.1	152.4	808	966	..	22.0 ^b
Gabon	..	..	..	..	..	..	..	..	..	..	..	..
Gambia, The	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	24	327	0.8	2.6	0.1	0.1	..	4.4	269	161	..	..
Germany	1,270,243	1,107,957	66.8	30.4	56.3	84.8	79.1	191.5	1,022	638	..	18.0 ^c
Ghana	502	2,507	10.1	20.4	0.2	0.9	1.5	2.0	22	35	-10.4 ^a	-42.7 ^a
Greece	110,839	90,396	88.3	25.4	75.7	29.7	63.7	59.2	329	280	..	..
Guatemala	172	..	0.9	..	0.1	..	0.0	..	7	..	..	..
Guinea	..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..
Haiti	..	..	..	..	..	..	..	..	..	..	..	..
Honduras	458	..	8.8	..	..	..	..	..	94	..	..	..

	Market capitalization				Market liquidity		Turnover ratio		Listed domestic companies		S&P/Global Equity Indices	
	\$ millions		% of GDP		Value of shares traded % of GDP		Value of shares traded % of market capitalization		number		% change	
	2000	2009	2000	2008	2000	2008	2000	2009	2000	2009	2008	2009
Hungary	12,021	30,332	25.1	12.0	25.4	19.9	90.7	106.1	60	45	-62.5	73.0
India	148,064	1,226,676	32.2	55.7	110.8	90.6	133.6	116.3	5,937	4,946	-64.1	94.1
Indonesia	26,834	196,661	16.3	19.3	8.7	21.7	32.9	78.1	290	401	-61.1	130.1
Iran, Islamic Rep.	7,350	49,040	7.3	15.9	1.1	2.9	12.7	33.6	304	356	..	..
Iraq	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	81,882	49,401	84.8	18.5	14.9	30.8	19.2	85.0	76	58	..	..
Israel	64,081	188,734	51.4	66.5	18.8	54.0	36.3	54.6	654	622	-33.1	56.8
Italy	768,364	520,855	70.0	22.6	70.9	64.2	104.0	284.2	291	294	..	..
Jamaica	3,582	6,127	39.8	51.4	0.8	2.5	2.5	1.8	46	38	-38.2 ^a	-15.8 ^a
Japan	3,157,222	3,220,485	67.6	65.6	57.7	119.5	69.9	153.2	2,561	3,299	-40.0 ^d	6.0 ^d
Jordan	4,943	31,891	58.4	168.8	4.9	131.9	7.7	40.3	163	272	..	-13.9
Kazakhstan	1,342	57,273	7.3	23.3	0.5	2.6	25.1	9.1	23	72	-47.0 ^a	1.5 ^a
Kenya	1,283	10,967	10.1	36.0	0.4	4.7	3.6	4.5	57	53	-40.3 ^a	0.6 ^a
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	171,587	836,462	32.2	53.2	200.2	157.8	233.2	238.2	1,308	1,798	-55.6	67.2
Kosovo	..	..	..	..	..	..	..	..	..	..	..	..
Kuwait	20,772	96,317	55.1	72.4	11.2	82.9	21.3	23.7	77	207	..	-10.4 ^a
Kyrgyz Republic	4	94	0.3	1.9	1.7	2.2	..	131.2	80	8	..	..
Lao PDR	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	563	1,872	7.2	4.8	2.9	0.1	48.6	0.0	64	34	-58.7 ^a	2.2 ^a
Lebanon	1,583	12,885	9.2	32.9	0.7	2.4	6.7	14.4	12	11	-25.3 ^a	43.4 ^a
Lesotho	..	..	..	..	..	..	..	..	..	..	..	..
Liberia	..	..	..	..	..	..	..	..	..	..	..	..
Libya	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	1,588	4,619	13.9	7.7	1.8	1.0	14.8	4.3	54	40	-73.0 ^a	36.7 ^a
Macedonia, FYR	7	823	0.2	8.6	3.3	1.6	6.6	8.9	1	38	..	..
Madagascar	..	..	..	..	..	..	..	..	..	..	..	..
Malawi	..	1,771	..	41.5	..	1.4	13.8	3.9	..	14	..	..
Malaysia	116,935	263,362	124.7	84.4	62.4	38.4	44.6	54.7	795	957	-43.7	46.7
Mali	..	..	..	..	..	..	..	..	..	..	..	..
Mauritania	..	..	..	..	..	..	..	..	..	..	..	..
Mauritius	1,331	4,982	29.0	36.9	1.6	4.3	5.0	0.3	40	40	-49.2 ^a	44.2 ^a
Mexico	125,204	352,045	21.5	21.4	7.8	9.9	32.3	43.4	179	125	-45.1	55.8
Moldova	392	..	30.4	..	1.9	2.6	5.8	..	36	..	..	..
Mongolia	37	407	3.4	7.7	0.7	1.0	7.3	14.7	410	420	..	..
Morocco	10,899	64,479	29.4	74.0	3.0	24.7	9.2	12.0	53	78	-17.0	-1.7
Mozambique	..	..	..	..	..	..	..	..	..	..	..	..
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..
Namibia	311	968	8.0	7.0	0.6	0.2	4.5	0.1	13	7	-9.9 ^a	22.6 ^a
Nepal	790	4,894	14.4	38.8	0.6	2.9	6.9	7.5	110	149	..	..
Netherlands	640,456	387,906	166.3	44.5	175.9	130.9	101.4	169.2	234	110	..	..
New Zealand	18,866	24,166	37.1	18.6	21.2	12.7	45.9	46.1	142	149	..	..
Nicaragua	..	..	..	..	..	..	..	..	..	..	..	..
Niger	..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	4,237	33,374	9.2	24.0	0.6	9.6	7.3	26.9	195	216	..	-35.4
Norway	65,034	125,920	38.6	27.9	35.7	81.4	93.4	152.2	191	209	..	..
Oman	3,463	17,304	17.4	55.4	2.8	13.0	14.2	17.4	131	125	..	22.0 ^a
Pakistan	6,581	32,206	8.9	14.3	44.6	33.0	475.5	99.9	762	650	..	56.7
Panama	2,794	8,048	24.0	28.4	1.3	1.1	1.7	0.3	29	30	-15.7 ^a	15.4 ^a
Papua New Guinea	1,520	..	49.3	118.3	0.0	0.4	..	..	7	15	..	..
Paraguay	224	..	3.5	4.4	0.1	0.0	3.5	..	56	50	..	..
Peru	10,562	69,753	19.8	43.1	2.9	4.0	12.6	8.2	230	201	-41.1	79.3
Philippines	25,957	82,546	34.2	31.2	10.8	10.3	15.8	24.9	228	245	-53.7	71.5
Poland	31,279	147,178	18.3	17.1	8.5	12.9	49.9	56.0	225	354	-57.8	41.9
Portugal	60,681	68,713	53.9	28.2	48.3	33.9	85.5	81.8	109	49	..	..
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..
Qatar	5,152	87,843	29.0	134.4	1.3	42.1	4.5	28.7	22	44	..	5.1 ^a



5.4 | Stock markets

	Market capitalization				Market liquidity		Turnover ratio		Listed domestic companies		S&P/Global Equity Indices	
	\$ millions		% of GDP		Value of shares traded % of GDP		Value of shares traded % of market capitalization		number		% change	
	2000	2009	2000	2008	2000	2008	2000	2009	2000	2009	2008	2009
Romania	1,069	31,318	2.9	10.0	0.6	1.8	23.1	3.5	5,555	1,571	-72.2 ^a	26.1 ^a
Russian Federation	38,922	861,424	15.0	78.7	7.8	33.5	36.9	154.9	249	333	-73.4	106.6
Rwanda	..	..	..	..	..	..	..	..	..	..	..	..
Saudi Arabia	67,171	318,737	35.6	52.5	9.2	111.9	27.1	41.1	75	135	..	28.5
Senegal	..	..	..	..	..	..	..	..	..	..	..	..
Serbia	734	12,165	4.6	24.3	0.1	2.5	0.0	14.6	6	1,771	..	..
Sierra Leone	..	..	..	..	..	..	..	..	..	..	..	..
Singapore	152,827	180,021	164.8	98.9	98.7	148.9	52.1	101.3	418	455	..	..
Slovak Republic	1,217	4,672	4.2	5.2	3.1	0.0	129.8	0.1	493	111	-36.0 ^a	-23.1 ^a
Slovenia	2,547	12,141	12.8	21.6	2.3	2.6	20.7	11.9	38	80	-66.9 ^a	16.1 ^a
Somalia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	204,952	805,169	154.2	177.7	58.3	145.2	33.9	83.8	616	411	-41.7	53.7
Spain	504,219	946,113	86.8	59.0	169.8	152.1	210.7	177.6	1,019	3,536	..	..
Sri Lanka	1,074	8,172	6.6	10.7	0.9	2.5	11.0	14.2	239	232	..	118.0 ^a
Sudan	..	..	..	..	..	..	..	..	..	..	..	..
Swaziland	73	203	4.9	6.9	0.0	0.0	9.8	..	6	7	..	..
Sweden	328,339	252,542	133.7	52.7	158.8	133.4	111.2	157.0	292	341	..	..
Switzerland	792,316	862,663	317.0	175.4	243.7	307.1	82.0	145.6	252	253	..	..
Syrian Arab Republic	..	..	..	..	..	..	..	..	..	..	..	..
Tajikistan	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	233	1,293	2.6	6.3	0.4	0.1	2.4	..	4	7	..	..
Thailand	29,489	142,247	24.0	37.7	19.0	42.9	53.2	110.2	381	497	-50.5	72.8
Timor-Leste	..	..	..	..	..	..	..	..	..	..	..	..
Togo	..	..	..	..	..	..	..	..	..	..	..	..
Trinidad and Tobago	4,330	11,145	53.1	50.4	1.7	1.5	3.1	2.0	27	37	-9.9 ^a	-10.2 ^a
Tunisia	2,828	9,309	14.5	15.8	3.2	3.7	23.3	16.0	44	50	-3.1 ^a	40.6 ^a
Turkey	69,659	234,004	26.1	16.0	67.1	32.6	206.2	138.4	315	315	-62.4	99.6
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	35	..	0.6	1.2	0.0	0.1	..	..	2	6	..	..
Ukraine	1,881	16,859	6.0	13.5	0.9	1.4	19.6	2.9	139	149	-82.2 ^a	31.1 ^a
United Arab Emirates	5,727	109,613	8.1	113.1	0.2	75.7	3.9	63.3	54	101	..	24.6 ^a
United Kingdom	2,576,992	1,851,954	174.4	69.3	124.2	242.5	66.6	226.9	1,904	2,415	-40.0 ^e	22.0 ^e
United States	15,104,037	11,737,646	154.7	80.4	326.3	249.9	200.8	232.3	7,524	5,603	-39.0 ^f	23.0 ^f
Uruguay	161	159	0.7	0.7	0.0	0.1	0.5	12.0	16	8	..	..
Uzbekistan	32	..	0.2	4.2	0.1	0.3	..	..	5	114	..	..
Venezuela, RB	8,128	..	6.9	4.5	0.6	0.4	8.9	1.3	85	60	..	..
Vietnam	..	21,529	..	10.6	..	4.6	..	42.7	..	162	-68.2 ^a	46.9 ^a
West Bank and Gaza	765	2,123	18.6	..	4.6	..	10.0	31.3	24	35	..	..
Yemen, Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Zambia	236	2,346	7.3	20.6	0.2	0.6	20.8	4.1	9	15	..	16.7 ^a
Zimbabwe	2,432	5,333	32.9	..	3.8	..	10.8	5.1	69	81	..	..
World	32,187,516 s	..^g s	102.2 w	59.2 w	152.2 w	136.9 w	122.3 w	..^g w	47,787 s	..^g s		
Low income	..	..	..	..	..	..	..	..	..	..	..	..
Middle income	1,973,751	11,586,208	36.1	49.5	33.8	61.3	83.5	213.8	21,842	15,575		
Lower middle income	886,833	6,956,558	35.3	53.5	52.7	93.4	128.1	228.5	11,779	9,819		
Upper middle income	1,086,918	4,629,650	36.7	45.5	17.5	29.9	46.7	59.3	10,063	5,756		
Low & middle income	1,980,449	11,628,278	35.5	48.9	33.2	60.4	83.1	213.8	22,419	16,120		
East Asia & Pacific	780,487	5,717,001	47.1	58.0	49.8	103.7	125.0	229.5	3,190	3,962		
Europe & Central Asia	147,380	1,635,890	17.6	44.4	25.4	23.8	94.4	68.0	7,524	3,610		
Latin America & Carib.	620,023	1,178,104	31.8	31.9	8.5	24.9	27.2	46.1	1,672	1,471		
Middle East & N. Africa	57,110	209,656	19.9	55.9	5.1	18.8	12.4	28.7	1,676	717		
South Asia	157,695	1,274,122	26.1	47.0	90.2	76.5	167.9	88.9	7,269	6,123		
Sub-Saharan Africa	217,754	868,391	89.7	148.5	32.3	101.3	22.1	76.5	1,088	820		
High income	30,207,068	27,380,501	116.6	62.9	177.7	164.0	130.4	187.1	25,368	31,198		
Euro area	5,433,547	5,152,619	86.9	37.9	80.3	91.3	90.7	176.8	5,028	6,700		

a. Refers to the S&P Frontier BMI index. b. Refers to the CAC 40 index. c. Refers to the DAX index. d. Refers to the Nikkei 225 index. e. Refers to the FT 100 index. f. Refers to the S&P 500 index. g. Aggregates not preserved because data for high-income economies are not available for 2008.

About the data

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 modern 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 indicators in the table are from Standard & Poor's Emerging Markets Data Base. They include measures of size (market capitalization, number of listed domestic companies) and liquidity (value of shares traded as a percentage of gross domestic product, value of shares traded as a percentage of market capitalization). The comparability of such indicators across 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 for developing economies is from Standard & Poor's Global Equity Indices (S&P IFCI) and Standard & Poor's Frontier Broad Market Index (BMI). The percentage change for France, Germany, Japan, the United Kingdom, and the United States is from local stock market prices. The indicator 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 various 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 of shares traded by GDP. 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 of shares 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 Index Services, the source for all the data in the table, provides regular updates on 22 emerging stock markets and 36 frontier markets. Standard & Poor's maintains a series of indexes for investors interested in investing in stock markets in developing countries. The S&P/IFCI index, Standard & Poor's leading emerging markets index, is designed to be sufficiently investable to support index tracking portfolios in emerging market stocks that are legally and practically open to foreign portfolio investment. The S&P/Frontier BMI measures the performance of 36 smaller and less liquid markets. The individual country indexes include all publicly listed equities representing an aggregate of at least 80 percent or more of market capitalization in each market. These indexes are widely used benchmarks for international portfolio management. See www.standardandpoors.com 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 (1996), Beck and Levine (2001), and Claessens, Klingebiel, and Schmukler (2002).

Definitions

- **Market capitalization** (also known as market value) is the share price times the number of shares outstanding.
- **Market liquidity** is the total value of shares traded during the period divided by gross domestic product (GDP). This indicator complements the market capitalization ratio by showing whether market size is matched by trading.
- **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/Global Equity Indices** measure the U.S. dollar price change in the stock markets.

Data sources

Data on stock markets are from Standard & Poor's *Global Stock Markets Factbook 2009*, 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. Data on GDP are from the World Bank's national accounts data files.



	Getting credit				Bank capital to asset ratio	Ratio of bank nonperforming loans to total gross loans	Domestic credit provided by banking sector	Interest rate spread	Risk premium on lending		
	Strength of legal rights index	Depth of credit information index	% of adult population							Lending rate minus deposit rate	Prime lending rate minus treasury bill rate
	0–10 (weak to strong)	0–6 (low to high)	Public credit registry coverage	Private credit bureau coverage						percentage points	percentage points
June 2009	June 2009	June 2009	June 2009	% 2008	% 2008	% of GDP 2008	2008	2008			
Afghanistan	6	0	0.0	0.0	..	..	3.5	..	..
Albania	9	4	9.9	0.0	6.7	6.6	67.6	6.2	6.8		
Algeria	3	2	0.2	0.0	..	..	-13.0	6.3	7.7
Angola	4	4	2.5	0.0	..	..	9.3	6.3	..
Argentina	4	6	34.3	100.0	12.9	2.7	24.4	8.4	..		
Armenia	6	5	4.4	34.5	23.0	4.4	16.7	10.4	9.4		
Australia	9	5	0.0	100.0	4.2	0.5	137.8	3.7	..		
Austria	7	6	1.4	39.2	6.3	2.0	129.7	..	..
Azerbaijan	8	5	6.9	0.0	..	..	17.1	7.5	8.5
Bangladesh	7	2	0.9	0.0	6.5	11.2	59.4	6.7	..		
Belarus	2	5	23.4	0.0	17.4	0.6	31.5	0.0	..		
Belgium	7	4	56.5	0.0	3.3	1.7	113.8	..	4.8		
Benin	3	1	10.9	0.0	..	..	14.8	..	..
Bolivia	1	6	11.6	33.9	9.3	4.3	48.4	9.2	5.6		
Bosnia and Herzegovina	5	5	23.2	64.3	13.1	3.1	58.5	3.5	..		
Botswana	7	4	0.0	51.9	..	..	-11.2	7.9	..
Brazil	3	5	23.7	59.2	9.1	3.1	101.7	35.6	33.6		
Bulgaria	8	6	34.8	6.2	8.5	2.4	66.7	6.4	6.2		
Burkina Faso	3	1	1.9	0.0	..	..	15.5	..	..
Burundi	2	1	0.2	0.0	..	..	34.9	..	8.2
Cambodia	8	0	0.0	0.0	..	..	16.2	14.6	..
Cameroon	3	2	1.8	0.0	..	..	5.8	10.8	..
Canada	6	6	0.0	100.0	5.1	1.1	177.8	3.2	2.3		
Central African Republic	3	2	2.1	0.0	..	..	18.0	10.8	..
Chad	3	1	0.2	0.0	..	..	-2.7	10.8	..
Chile	4	5	32.9	33.9	6.9	1.0	98.3	5.8	..		
China	6	4	62.1	0.0	6.1	2.4	126.2	3.1	..		
Hong Kong SAR, China	10	4	0.0	71.9	12.0	0.9	124.6	4.6	5.0		
Colombia	5	5	0.0	60.5	12.2	4.0	43.1	7.4	..		
Congo, Dem. Rep.	3	0	0.0	0.0	..	..	9.1	..	..
Congo, Rep.	3	2	3.0	0.0	..	..	-18.5	10.8	..
Costa Rica	5	5	24.3	56.0	13.3	1.5	53.9	11.7	..		
Côte d'Ivoire	3	1	2.7	0.0	..	..	20.1	..	..
Croatia	6	4	0.0	77.0	13.5	4.9	75.1	7.2	..		
Cuba	..	..	..	..	..	..	..	..	..
Czech Republic	6	5	4.9	73.1	5.7	3.3	58.0	4.6	2.6		
Denmark	9	4	0.0	5.2	5.7	0.3	211.2	..	..
Dominican Republic	3	6	29.7	46.1	9.7	3.5	39.1	9.6	..		
Ecuador	3	5	37.2	46.0	8.8	2.5	17.3	7.1	..		
Egypt, Arab Rep.	3	6	2.5	8.2	5.3	14.8	78.0	5.7	1.0		
El Salvador	5	6	21.0	94.6	12.7	2.8	44.9	..	..
Eritrea	2	0	0.0	0.0	..	..	112.7	..	..
Estonia	6	5	0.0	20.6	9.3	1.9	97.3	2.8	..		
Ethiopia	4	2	0.1	0.0	..	..	37.6	3.4	7.3
Finland	7	5	0.0	14.7	7.4	0.4	87.7	..	..
France	7	4	32.5	0.0	4.2	2.8	126.1	..	..
Gabon	3	2	3.9	0.0	10.7	8.5	6.1	10.8	..		
Gambia, The	5	0	0.0	0.0	..	..	34.3	15.0	..
Georgia	6	6	0.0	12.2	17.1	4.1	32.9	10.9	..		
Germany	7	6	0.8	98.3	4.5	2.7	125.7	..	..
Ghana	7	0	0.0	0.0	12.8	7.7	32.9	..	..
Greece	3	5	0.0	46.9	4.5	5.0	109.0	..	..
Guatemala	8	6	16.9	28.4	10.3	2.4	36.8	8.3	..		
Guinea	3	0	0.0	0.0	..	..	..	..	..
Guinea-Bissau	3	1	1.1	0.0	..	..	13.5	..	..
Haiti	3	2	0.7	0.0	..	..	24.6	15.7	..
Honduras	6	6	21.7	58.7	..	..	50.4	8.4	..

Financial access, stability, and efficiency

5.5

	Getting credit				Bank capital to asset ratio	Ratio of bank nonperforming loans to total gross loans	Domestic credit provided by banking sector	Interest rate spread	Risk premium on lending
	Strength of legal rights index 0–10 (weak to strong) June 2009	Depth of credit information index 0–6 (low to high) June 2009	% of adult population Public credit registry coverage Private credit bureau coverage June 2009							% 2008	% 2008	% of GDP 2008	Lending rate minus deposit rate percentage points 2008	Prime lending rate minus treasury bill rate percentage points 2008
Hungary	7	5	0.0	10.3	8.0	3.0	80.7	0.3	1.3
India	8	4	0.0	10.2	6.4	2.3	71.6	..	..
Indonesia	3	4	22.0	0.0	9.2	3.2	36.7	5.1	..
Iran, Islamic Rep.	4	3	31.3	0.0	..	..	50.5	0.4	..
Iraq	3	0	0.0	0.0	..	..	..	8.4	-1.3
Ireland	8	5	0.0	100.0	4.7	2.6	204.3	..	..
Israel	9	5	0.0	89.8	5.7	1.5	79.9	2.8	2.2
Italy	3	5	12.2	77.5	6.6	4.9	132.4	..	3.1
Jamaica	8	0	0.0	0.0	..	..	54.1	9.3	0.9
Japan	7	6	0.0	76.2	3.6	1.7	293.0	1.3	1.6
Jordan	4	2	1.0	0.0	10.4	4.2	114.9	3.6	..
Kazakhstan	5	6	0.0	29.5	12.2	5.1	33.5	..	..
Kenya	10	4	0.0	2.3	11.4	9.0	40.1	8.7	6.3
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..
Korea, Rep.	7	6	0.0	93.8	8.8	1.1	112.6	1.3	..
Kosovo	8	3	18.9	0.0	..	3.7	10.9	..	..
Kuwait	4	4	0.0	30.4	11.6	3.1	68.1	2.8	..
Kyrgyz Republic	10	3	0.0	5.9	..	..	14.0	15.9	6.7
Lao PDR	4	0	0.0	0.0	..	..	10.5	23.5	11.5
Latvia	9	5	46.5	0.0	7.3	3.6	89.1	5.5	4.9
Lebanon	3	5	8.3	0.0	7.8	7.5	172.9	2.3	4.8
Lesotho	7	0	0.0	0.0	7.9	3.5	-18.4	8.5	6.4
Liberia	4	1	0.3	0.0	..	..	144.5	11.3	..
Libya	..	..	..	..	..	..	-50.0	3.5	..
Lithuania	5	6	12.1	18.4	7.6	4.6	64.2	0.8	2.6
Macedonia, FYR	7	4	28.1	0.0	..	6.8	42.7	3.8	..
Madagascar	2	1	0.1	0.0	..	..	9.3	33.5	36.2
Malawi	8	0	0.0	0.0	..	..	26.2	21.7	14.0
Malaysia	10	6	48.5	82.0	8.0	4.8	115.2	3.0	2.7
Mali	3	1	4.0	0.0	..	..	13.2	..	..
Mauritania	3	1	0.2	0.0	..	..	..	15.5	13.1
Mauritius	5	3	36.8	0.0	..	..	111.7	11.4	..
Mexico	4	6	0.0	77.5	9.6	3.2	37.5	5.7	1.0
Moldova	8	0	0.0	0.0	17.0	5.2	39.8	3.1	3.0
Mongolia	6	3	22.2	0.0	..	..	34.4	9.4	20.4
Morocco	3	5	0.0	14.0	7.3	6.0	95.5	..	..
Mozambique	2	4	2.3	0.0	6.7	2.8	14.2	7.3	4.6
Myanmar	..	..	..	..	..	..	..	5.0	..
Namibia	8	5	0.0	57.7	8.0	3.1	43.8	5.4	4.1
Nepal	5	2	0.0	0.3	..	..	52.7	5.8	4.4
Netherlands	6	5	0.0	83.5	3.2	0.8	196.0	0.2	..
New Zealand	9	5	0.0	100.0	..	..	156.3	4.7	5.2
Nicaragua	3	5	16.0	28.4	..	..	66.2	6.6	..
Niger	3	1	0.9	0.0	..	..	6.2	..	..
Nigeria	8	0	0.0	0.0	18.0	6.3	26.7	3.5	7.3
Norway	7	4	0.0	100.0	4.2	0.8	..	1.8	..
Oman	4	2	17.0	0.0	15.5	2.4	32.9	2.6	..
Pakistan	6	4	5.6	1.5	10.4	9.1	45.9	6.0	1.6
Panama	6	6	0.0	45.9	13.4	1.7	85.8	4.6	..
Papua New Guinea	5	0	0.0	0.0	..	..	24.9	8.0	3.1
Paraguay	3	6	10.9	47.4	11.2	1.2	22.0	22.7	..
Peru	7	6	23.0	31.8	8.3	2.2	18.5	20.2	..
Philippines	3	3	0.0	6.1	11.1	4.5	46.0	4.3	5.3
Poland	9	4	0.0	68.3	7.9	4.4	60.1	3.3	1.3
Portugal	3	5	81.3	16.4	6.1	2.0	183.8	..	..
Puerto Rico	7	5	0.0	73.8	..	..	..	..	..
Qatar	3	2	0.0	0.0	..	..	56.9	3.9	..



5.5

Financial access, stability, and efficiency

	Getting credit				Bank capital to asset ratio	Ratio of bank nonperforming loans to total gross loans	Domestic credit provided by banking sector	Interest rate spread	Risk premium on lending		
	Strength of legal rights index	Depth of credit information index	% of adult population							Lending rate minus deposit rate percentage points	Prime lending rate minus treasury bill rate percentage points
	0–10 (weak to strong)	0–6 (low to high)	Public credit registry coverage	Private credit bureau coverage							
June 2009	June 2009	June 2009	June 2009	% 2008	% 2008	% of GDP 2008	2008	2008			
Romania	8	5	5.7	30.2	7.0	13.8	40.9	5.5	4.6		
Russian Federation	3	5	0.0	14.3	13.6	3.8	25.9	6.5	..		
Rwanda	8	2	0.4	0.0	12.3	12.6	..	9.3	8.9		
Saudi Arabia	4	6	0.0	17.9	10.0	1.4	9.5	..	..
Senegal	3	1	4.4	0.0	9.1	19.1	24.7	..	..
Serbia	8	6	0.0	94.2	20.5	5.3	38.4	10.8	8.5		
Sierra Leone	6	0	0.0	0.0	18.7	23.3	7.4	14.8	9.0		
Singapore	10	4	0.0	40.3	8.5	1.4	84.1	5.0	4.5		
Slovak Republic	9	4	1.4	44.0	9.8	3.2	53.8	4.3	..		
Slovenia	6	2	2.7	0.0	8.4	1.6	87.5	2.6	2.8		
Somalia	..	..	..	..	..	..	..	..	..
South Africa	9	6	0.0	54.7	7.9	3.9	172.2	3.5	4.3		
Spain	6	5	45.3	7.6	6.4	3.4	212.9	..	..
Sri Lanka	4	5	0.0	14.3	..	..	42.8	8.0	0.0
Sudan	5	0	0.0	0.0	..	..	17.1	..	..
Swaziland	6	5	0.0	42.3	20.7	8.4	2.0	6.7	4.1		
Sweden	5	4	0.0	100.0	4.7	1.0	135.8	..	..
Switzerland	8	5	0.0	22.5	4.6	0.5	183.6	3.2	2.0		
Syrian Arab Republic	1	0	0.0	0.0	..	..	36.9	1.8	..
Tajikistan	3	0	0.0	0.0	..	..	27.5	14.4	..
Tanzania	8	0	0.0	0.0	..	..	17.2	6.9	6.9
Thailand	4	5	0.0	32.9	9.5	5.7	130.6	4.6	3.9		
Timor-Leste	1	0	0.0	0.0	..	..	-25.5	12.3	..
Togo	3	1	2.7	0.0	..	..	24.8	..	..
Trinidad and Tobago	8	4	0.0	41.7	..	..	12.8	5.1	5.4
Tunisia	3	5	19.9	0.0	..	15.5	73.0	..	..
Turkey	4	5	15.9	42.9	11.7	3.6	52.6	..	..
Turkmenistan	..	..	..	..	..	..	..	..	..
Uganda	7	0	0.0	0.0	13.8	2.2	11.4	9.8	11.9		
Ukraine	9	3	0.0	3.0	14.0	17.4	81.9	7.5	..		
United Arab Emirates	4	5	7.3	12.6	10.6	2.5	78.1	..	..
United Kingdom	9	6	0.0	100.0	4.4	1.6	212.3	..	0.3		
United States	8	6	0.0	100.0	9.3	3.0	216.1	..	3.6		
Uruguay	5	6	17.8	97.2	8.9	1.0	32.5	9.2	1.8		
Uzbekistan	2	3	2.6	2.1	..	..	..	..	..
Venezuela, RB	2	0	0.0	0.0	9.4	1.9	20.3	6.2	..		
Vietnam	8	4	19.0	0.0	..	..	95.0	3.1	7.0
West Bank and Gaza	0	3	6.5	0.0	..	..	..	4.8	..
Yemen, Rep.	2	2	0.2	0.0	..	..	11.4	5.0	2.8
Zambia	9	3	0.0	0.4	..	..	19.3	12.5	5.6
Zimbabwe	7	0	0.0	0.0	..	..	..	457.5	330.2
World	5.4 u	2.9 u	6.6 u	21.8 u	9.0 m	3.2 m	156.8 w	6.0 m			
Low income	4.7	1.2	1.4	0.3	..	..	43.7	10.8	
Middle income	5.2	3.1	9.2	18.6	9.7	3.9	76.1	6.4			
Lower middle income	4.7	2.6	7.1	9.6	10.2	4.4	98.7	6.6			
Upper middle income	5.8	3.7	11.9	30.3	9.4	3.6	55.7	6.2			
Low & middle income	5.0	2.5	6.9	13.2	..	4.1	75.2	6.5			
East Asia & Pacific	5.3	1.7	8.7	8.5	..	..	116.4	5.1	
Europe & Central Asia	6.6	4.2	11.3	18.5	12.2	4.4	41.5	6.2			
Latin America & Carib.	5.2	3.5	11.5	33.8	9.7	2.5	62.0	7.9			
Middle East & N. Africa	2.5	2.8	5.8	1.9	..	..	39.7	4.3	
South Asia	5.3	2.1	0.8	3.3	6.4	9.1	69.3	6.6			
Sub-Saharan Africa	4.7	1.4	2.3	4.7	..	..	65.5	10.0	
High income	6.6	4.1	5.7	46.5	6.3	1.9	188.4	..			
Euro area	6.3	4.1	15.6	35.2	6.1	2.6	142.7	..			

About the data

Financial sector development has positive impacts on economic growth and poverty. The size of the sector determines the resources mobilized for investment. Access to finance can expand opportunities for all with higher levels of access and use of banking services associated with lower financing obstacles for people and businesses. A stable financial system that promotes efficient savings and investment is also crucial for a thriving democracy and market economy. The banking system is the largest sector in the financial system in most countries, so most indicators in the table cover the banking system.

There are several aspects of access to financial services: availability, cost, and quality of services. The development and growth of credit markets depend on access to timely, reliable, and accurate data on borrowers' credit experiences. For secured transactions, such as mortgages or vehicle loans, rapid access to information in property registries is also vital, and for small business loans corporate registry data are needed. Access to credit can be improved by increasing information about potential borrowers' creditworthiness and making it easy to create and enforce collateral agreements. Lenders look at a borrower's credit history and collateral. Where credit registries and effective collateral laws are absent—as in many developing countries—banks make fewer loans. Indicators that cover financial access, or getting credit, include the strength of legal rights index (ranges from 0, weak, to 10, strong), depth of credit information index (ranges from 0, low, to 6, high), public registry coverage, and private bureau coverage.

The strength of legal rights index is based on eight aspects related to legal rights in collateral law and two aspects in bankruptcy law. It is based on a standardized case scenario and measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. The indicator focuses on revolving movable collateral, such as accounts receivable and inventory, rather than tangible movable collateral, such as equipment. The depth of credit information index assesses six features of the public registry or the private credit bureau (or both). For more information on these indexes, see www.doingbusiness.org/MethodologySurveys/.

The size and mobility of international capital flows make it increasingly important to monitor the strength of financial systems. Robust financial systems can increase economic activity and welfare, but instability in the financial system can disrupt

financial activity and impose widespread costs on the economy. The ratio of bank capital to assets, a measure of bank solvency and resiliency, shows the extent to which banks can deal with unexpected losses. Capital includes tier 1 capital (paid-up shares and common stock), a common feature in all countries' banking systems, and total regulatory capital, which includes several types of subordinated debt instruments that need not be repaid if the funds are required to maintain minimum capital levels (tier 2 and tier 3 capital). Total assets include all nonfinancial and financial assets. Data are from internally consistent financial statements.

The ratio of bank nonperforming loans to total gross loans, a measure of bank health and efficiency, helps to identify problems with asset quality in the loan portfolio. A high ratio may signal deterioration of the credit portfolio. International guidelines recommend that loans be classified as nonperforming when payments of principal and interest are 90 days or more past due or when future payments are not expected to be received in full. See the International Monetary Fund's (IMF) *Global Financial Stability Report* for details.

Domestic credit by the banking sector as a share of GDP is a measure of banking sector depth and financial sector development in terms of size. 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 of domestic credit provided by the banking sector.

The interest rate spread—the margin between the cost of mobilizing liabilities and the earnings on assets—is a measure of financial sector efficiency in intermediation. A narrow interest rate spread means low transaction costs, which lowers the cost of funds for investment, crucial to economic growth.

The risk premium on lending is the spread between the lending rate to the private sector and the “risk-free” government rate. Spreads are expressed as annual averages. A small spread indicates that the market considers its best corporate customers to be low risk. A negative rate indicates that the market considers its best corporate clients to be lower risk than the government.

Definitions

- **Strength of legal rights index** measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. Higher values indicate that the laws are better designed to expand access to credit.
- **Depth of credit information index** measures rules affecting the scope, accessibility, and quality of information available through public or private credit registries. Higher values indicate the availability of more credit information.
- **Public credit registry coverage** is the number of individuals and firms listed in a public credit registry with current information on repayment history, unpaid debts, or credit outstanding as a percentage of the adult population.
- **Private credit bureau coverage** is the number of individuals or firms listed by a private credit bureau with current information on repayment history, unpaid debts, or credit outstanding as a percentage of the adult population.
- **Bank capital to asset ratio** is the ratio of bank capital and reserves to total assets. Capital and reserves include funds contributed by owners, retained earnings, general and special reserves, provisions, and valuation adjustments.
- **Ratio of bank nonperforming loans to total gross loans** is the value of nonperforming loans divided by the total value of the loan portfolio (including nonperforming loans before the deduction of loan loss provisions). The amount recorded as nonperforming should be the gross value of the loan as recorded on the balance sheet, not just the amount overdue.
- **Domestic credit provided by banking sector** is all credit to various sectors on a gross basis, except 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.
- **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.

Data sources

Data on getting credit are from the World Bank's Doing Business project (www.doingbusiness.org). Data on bank capital and nonperforming loans are from the IMF's *Global Financial Stability Report*. Data on credit and interest rates are from the IMF's *International Financial Statistics*.



5.6

Tax policies

	Tax revenue collected by central government		Taxes payable by businesses			Highest marginal tax rate ^a		
	% of GDP		Number of payments June 2009	Time to prepare, file, and pay taxes hours June 2009	Total tax rate % of profit June 2009	Individual		Corporate % 2009
	2000	2008				% 2009	On income over \$ 2009	
Afghanistan ^b	..	5.8	8	275	36.4	..	..	20
Albania ^b	16.1	..	44	244	44.9	..	..	10
Algeria ^b	..	46.5	34	451	72.0	..	..	..
Angola	..	..	31	272	53.2	..	..	35
Argentina	9.8	..	9	453	108.1	35	32,434	35
Armenia ^b	..	17.0	50	958	36.2	20	2,577	20
Australia	22.1	23.1	12	107	48.0	45	133,560	30
Austria	19.9	20.1	22	170	55.5	50	80,268	25
Azerbaijan ^b	..	0.0	22	376	40.9	..	..	..
Bangladesh ^b	7.6	8.8	21	302	35.0	..	..	28
Belarus ^b	16.6	25.5	107	900	99.7	..	..	24
Belgium	27.4	25.6	11	156	57.3	50	45,926	34
Benin ^b	15.5	17.3	55	270	73.3	..	..	..
Bolivia	13.2	17.0	42	1,080	80.0	..	..	25
Bosnia and Herzegovina	..	21.0	51	422	27.1	..	..	10
Botswana ^b	..	..	19	140	17.1	25 ^c	17,647 ^c	25 ^c
Brazil ^b	..	16.4	10	2,600	69.2	28	20,218	34
Bulgaria ^b	18.3	24.2	17	616	31.4	10	..	10
Burkina Faso	..	12.5	46	270	44.9	..	..	..
Burundi ^b	13.6	..	32	140	278.6	..	..	..
Cambodia	8.2	8.2	39	173	22.7	..	..	..
Cameroon ^b	11.2	..	41	1,400	50.5	..	..	..
Canada ^b	15.0	14.2	9	119	43.6	29	107,542	33
Central African Republic ^b	..	..	54	504	203.8	..	..	..
Chad	..	..	54	122	60.9	..	..	..
Chile	16.7	19.8	10	316	25.3	40	109,484	17
China ^b	6.8	9.4	7	504	78.5	45	175,716	25
Hong Kong SAR, China	..	..	4	80	24.2	15	..	17
Colombia	11.7	12.6	20	208	78.7	33	43,467	33
Congo, Dem. Rep. ^b	3.5	..	32	308	322.0	50 ^c	14,304 ^c	38 ^c
Congo, Rep.	9.2	..	61	606	65.5	..	..	..
Costa Rica ^b	..	15.8	42	282	54.8	15	1,526	30
Côte d'Ivoire ^b	..	15.6	66	270	44.7	10 ^c	5,360 ^c	25 ^c
Croatia ^b	22.6	20.4	17	196	32.5	45	54,696	20
Cuba	..	..	..	..	..	..	..	..
Czech Republic ^b	15.4	14.8	12	613	47.2	15	..	20
Denmark	31.0	35.6	9	135	29.2	62	62,286	25
Dominican Republic ^b	..	15.9	9	324	39.0	..	..	25
Ecuador ^b	..	..	8	600	34.9	35	62,000	25
Egypt, Arab Rep. ^b	13.4	15.4	29	480	43.0	20	7,146	20
El Salvador	10.7	13.9	53	320	35.0	..	..	..
Eritrea	..	..	18	216	84.5	..	..	..
Estonia	15.8	16.8	10	81	49.1	21	..	21
Ethiopia ^b	10.2	..	19	198	31.1	35	..	30
Finland	24.6	21.7	8	243	47.7	31	86,288	26
France	23.2	21.8	7	132	65.8	40	92,983	33
Gabon	..	..	26	272	44.7	..	..	..
Gambia, The ^b	..	..	50	376	292.4	..	..	..
Georgia ^b	7.7	23.8	18	387	15.3	..	..	..
Germany	11.9	11.8	16	196	44.9	45	334,448	29
Ghana ^b	17.2	22.9	33	224	32.7	25 ^c	10,213 ^c	25 ^c
Greece	23.3	19.9	10	224	47.4	40	100,334	25
Guatemala ^b	10.1	11.3	24	344	40.9	31	37,389	31
Guinea ^b	11.1	..	56	416	49.9	..	..	..
Guinea-Bissau	..	..	46	208	45.9	..	..	..
Haiti	..	..	42	160	40.1	..	..	..
Honduras	..	15.8	47	224	48.3	..	..	30

	Tax revenue collected by central government		Taxes payable by businesses			Highest marginal tax rate ^a		
	% of GDP		Number of payments June 2009	Time to prepare, file, and pay taxes hours June 2009	Total tax rate % of profit June 2009	Individual		Corporate % 2009
	2000	2008				% 2009	On income over \$ 2009	
Hungary	21.9	23.6	14	330	57.5	36	8,014	16
India ^b	9.0	12.9	59	271	64.7	30	10,115	34
Indonesia ^b	11.6	..	51	266	37.6	30	47,500	28
Iran, Islamic Rep. ^b	6.3	7.3	22	344	44.2	..	..	25
Iraq	..	..	13	312	28.4	..	..	..
Ireland	26.0	25.4	9	76	26.5	46	48,697	13
Israel	28.7	25.3	33	230	32.6	46	110,230	26
Italy	23.2	22.6	15	334	68.4	43	100,334	31
Jamaica ^b	..	25.4	72	414	51.3	25	..	33
Japan	..	..	13	355	55.7	50	182,062	41
Jordan ^b	..	18.3	26	101	31.1	..	..	25
Kazakhstan ^b	10.2	12.7	9	271	35.9	10	..	20
Kenya ^b	16.8	18.9	41	417	49.7	..	..	..
Korea, Dem. Rep.	..	..	..	..	..	..	..	..
Korea, Rep. ^b	15.4	16.6	14	250	31.9	35	69,379	24
Kosovo	..	25.5	33	163	28.3	..	..	..
Kuwait	1.3	0.9	15	118	15.5	0	..	15
Kyrgyz Republic ^b	11.7	16.8	75	202	59.4	..	..	..
Lao PDR	..	10.1	34	362	33.7	..	..	..
Latvia ^b	14.2	15.0	7	279	33.0	23	..	15
Lebanon	11.9	16.3	19	180	30.2	..	..	..
Lesotho ^b	35.6	58.9	21	324	18.5	..	..	..
Liberia	..	..	32	158	43.7	..	..	..
Libya	..	..	..	..	..	..	..	40
Lithuania	14.6	17.4	12	166	42.7	15	..	20
Macedonia, FYR ^b	..	19.7	40	75	16.4	..	..	10
Madagascar	11.3	11.4	23	201	39.2	..	..	..
Malawi	..	..	19	157	25.8	..	..	..
Malaysia ^b	13.8	..	12	145	34.2	27	28,470	25
Mali	13.2	15.6	58	270	52.1	..	..	..
Mauritania	..	..	38	696	86.1	..	..	..
Mauritius ^b	17.3	18.2	7	161	22.9	15 ^c	..	15 ^c
Mexico ^b	11.7	..	6	517	51.0	28	29,591	28
Moldova ^b	14.7	20.5	48	228	31.1	..	..	..
Mongolia	14.5	23.2	43	192	22.8	..	..	..
Morocco ^b	19.9	27.5	28	358	41.7	..	..	..
Mozambique	..	..	37	230	34.3	32 ^c	58,514 ^c	32 ^c
Myanmar	3.0	..	..	..	..	..	..	..
Namibia ^b	27.5	27.2	37	375	9.6	37 ^c	90,361 ^c	35 ^c
Nepal ^b	8.7	10.4	34	338	38.8	..	..	..
Netherlands	22.3	23.6	9	164	39.3	52	73,279	26
New Zealand	29.5	31.7	8	70	32.8	38	40,498	30
Nicaragua ^b	13.8	17.0	64	240	63.2	..	..	..
Niger	..	11.5	41	270	46.5	..	..	..
Nigeria	..	..	35	938	32.2	..	..	30
Norway	27.4	28.1	4	87	41.6	40	110,229	28
Oman ^b	7.2	..	14	62	21.6	0	..	12
Pakistan ^b	10.1	9.8	47	560	31.6	20	107,838	35
Panama ^b	10.2	..	59	482	50.1	27	29,294	30
Papua New Guinea ^b	19.0	..	33	194	42.3	42	92,996	30
Paraguay ^b	..	12.5	35	328	35.0	10	31,600	10
Peru ^b	12.2	15.4	9	380	40.3	30	63,033	30
Philippines ^b	13.7	14.1	47	195	49.4	32	10,474	30
Poland	16.0	18.4	40	395	42.5	32	26,116	19
Portugal	21.3	22.2	8	328	42.9	42	85,766	25
Puerto Rico	..	..	16	218	64.7	..	..	..
Qatar	..	23.1	1	36	11.3	0	..	35



5.6

Tax policies

	Tax revenue collected by central government		Taxes payable by businesses			Highest marginal tax rate ^a		
	% of GDP		Number of payments June 2009	Time to prepare, file, and pay taxes hours June 2009	Total tax rate % of profit June 2009	Individual		Corporate %
	2000	2008				%	On income over \$ 2009	
Romania	11.7	17.9	113	202	44.6	16	..	16
Russian Federation	13.6	15.7	11	320	48.3	13	..	20
Rwanda ^b	..	..	34	160	31.3	..	..	..
Saudi Arabia	..	..	14	79	14.5	0	..	20
Senegal ^b	16.1	..	59	666	46.0	..	..	..
Serbia ^b	..	22.0	66	279	34.0	15	46,146	10
Sierra Leone ^b	10.2	..	29	357	235.6	..	..	..
Singapore ^b	15.4	14.6	5	84	27.8	20	217,317	18
Slovak Republic	..	13.4	31	257	48.6	19	..	19
Slovenia ^b	20.6	83.5	22	260	37.5	41	19,827	21
Somalia	..	..	..	..	..	..	..	..
South Africa	24.0	27.7	9	200	30.2	40 ^c	63,253 ^c	35 ^c
Spain	16.2	10.6	8	213	56.9	43	71,447	30
Sri Lanka ^b	14.5	14.2	62	256	63.7	35	13,346	35
Sudan ^b	6.4	..	42	180	36.1	..	..	35
Swaziland ^b	..	..	33	104	36.6	33 ^c	12,048 ^c	30 ^c
Sweden	20.6	..	2	122	54.6	57	66,419	26
Switzerland ^b	11.1	10.2	24	63	29.7	40	630,312	21
Syrian Arab Republic ^b	17.4	..	20	336	42.9	..	..	28
Tajikistan ^b	7.7	..	54	224	85.9	..	..	..
Tanzania	..	..	48	172	45.2	30 ^c	7,222 ^c	30 ^c
Thailand	..	16.5	23	264	37.2	37	113,147	30
Timor-Leste	..	..	6	276	0.2	..	..	..
Togo ^b	..	16.3	53	270	52.7	..	..	..
Trinidad and Tobago ^b	22.1	25.9	40	114	33.1	..	..	..
Tunisia ^b	21.3	22.8	22	228	62.8	..	..	30
Turkey ^b	..	18.6	15	223	44.5	35	28,564	20
Turkmenistan	..	..	..	..	..	..	..	..
Uganda ^b	10.4	12.8	32	161	35.7	30 ^c	2,855 ^c	45 ^c
Ukraine ^b	14.1	17.8	147	736	57.2	15	..	25
United Arab Emirates ^b	1.7	..	14	12	14.1	0	..	55
United Kingdom	28.4	28.6	8	110	35.9	40	66,047	28
United States	12.7	9.9	10	187	46.3	35	372,950	40
Uruguay ^b	14.7	17.2	53	336	46.7	25	96,076	25
Uzbekistan	..	..	106	356	94.9	..	..	..
Venezuela, RB ^b	13.3	..	71	864	61.1	34	156,000	34
Vietnam	..	..	32	1,050	40.1	35	4,447	25
West Bank and Gaza	..	..	27	154	16.8	..	..	16
Yemen, Rep. ^b	9.4	..	44	248	47.8	..	..	35
Zambia ^b	18.6	17.1	37	132	16.1	..	..	35
Zimbabwe ^b	..	..	51	270	39.4	..	..	31
World	15.6 w	17.5 w	31 u	286 u	48.3 u	..	..	..
Low income	..	..	41	291	74.4	..	..	..
Middle income	11.2	14.2	34	341	42.0	..	..	..
Lower middle income	8.1	10.9	36	332	40.1	..	..	..
Upper middle income	..	18.1	32	352	44.3	..	..	..
Low & middle income	11.2	14.1	36	326	51.5	..	..	..
East Asia & Pacific	7.7	10.1	27	243	38.0	..	..	..
Europe & Central Asia	14.5	17.0	51	365	44.5	..	..	..
Latin America & Carib.	..	..	33	419	48.5	..	..	..
Middle East & N. Africa	11.8	28.4	27	276	41.6	..	..	..
South Asia	9.3	12.3	31	285	40.0	..	..	..
Sub-Saharan Africa	..	..	38	306	67.6	..	..	..
High income	16.4	17.8	16	170	39.2	..	..	..
Euro area	19.1	21.4	15	197	45.9	..	..	..

a. Data are from KPMG's *Individual Income and Corporate Tax Rate Surveys 2009*, unless otherwise noted. b. Data on central government taxes were reported on a cash basis and have been adjusted to the accrual framework of the International Monetary Fund's *Government Finance Statistics Manual 2001*. c. Data are from PriceWaterhouseCooper's *Worldwide Tax Summaries* online.

About the data

Taxes are the main source of revenue for most governments. The sources of tax revenue and their relative contributions 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.

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. 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 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.

The indicators covering taxes payable by businesses measure all taxes and contributions that are government mandated (at any level—federal, state, or local), apply to standardized businesses, and have an impact in their income statements. The taxes covered go beyond the definition of a tax for government national accounts (compulsory, unrequited payments to general government) and also measure any imposts that affect business accounts. The main differences are in labor contributions and value added taxes. The indicators account for government-mandated contributions paid by the employer to a required private pension fund or workers insurance fund but exclude value added taxes because they do not affect the accounting profits of the business—that is, they are not reflected in the income statement.

To make the data comparable across countries, several assumptions are made about businesses. The main assumptions are that they are limited liability companies, they operate in the country's most populous city, they are domestically owned, they perform general industrial or commercial activities, and

they have certain levels of start-up capital, employees, and turnover. For details about the assumptions, see the World Bank's *Doing Business 2010*.

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. Data 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, and whether surtaxes or exemptions are included. The corporate tax rates in the table are general headline rates applied to domestic companies. For more detailed information, see the country's laws, regulations, and tax treaties; KPMG's *Corporate and Indirect Tax Rate Survey 2009* and *Individual Income Tax and Social Security Rate Survey 2009* (www.kpmg.com); and PricewaterhouseCoopers's *Worldwide Tax Summaries Online* (www.pwc.com).

Definitions

- **Tax revenue collected by central government** is 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. The analytic framework of the International Monetary Fund's (IMF) *Government Finance Statistics Manual 2001* (GFSM 2001) is based on accrual accounting and balance sheets. For countries still reporting government finance data on a cash basis, the IMF adjusts reported data to the GFSM 2001 accrual framework. These countries are footnoted in the table.
- **Number of tax payments by businesses** is the total number of taxes paid by businesses during one year. When electronic filing is available, the tax is counted as paid once a year even if payments are more frequent.
- **Time to prepare, file, and pay taxes** is the time, in hours per year, it takes to prepare, file, and pay (or withhold) three major types of taxes: the corporate income tax, the value-added or sales tax, and labor taxes, including payroll taxes and social security contributions.
- **Total tax rate** is the total amount of taxes payable by a standard business in the second year of operation after accounting for deductions and exemptions as a percentage of profit. Taxes withheld (such as personal income tax) or collected by the company and remitted to tax authorities but not borne by the company (such as value added tax, sales tax on goods, and taxes on services) are excluded. For further details on the method used for assessing the total tax payable, see the World Bank's *Doing Business 2010*.
- **Highest marginal tax rate** is the highest rate shown on the national 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.

Data sources

Data on central government tax revenue are from print and electronic editions of the IMF's *Government Finance Statistics Yearbook*. Data on taxes payable by businesses are from *Doing Business 2010* (www.doingbusiness.org). Data on individual and corporate tax rates are from KPMG's *Corporate and Indirect Tax Rate Survey 2009* and *Individual Income Tax and Social Security Rate Survey 2009* (www.kpmg.com), and PricewaterhouseCoopers's *Worldwide Tax Summaries Online* (www.pwc.com).



	Military expenditures				Armed forces personnel				Arms transfers			
	% of GDP		% of central government expenditure		thousands		% of labor force		1990 \$ millions			
	2000	2008	2000	2008	2000	2008	2000	2008	Exports	Imports	2000	2008
Afghanistan	..	2.2	..	9.7	400	53	5.4	0.6	..	..	33	134
Albania	1.2	2.0	5.4	..	68	15	5.2	1.0	..	..	..	13
Algeria	3.4	3.1	..	13.0	305	334	2.7	2.3	..	..	418	1,590
Angola	6.4	2.9	..	..	118	117	1.9	1.5	1	..	180	37
Argentina	1.3	0.8	6.2	..	102	107	0.6	0.6	2	..	228	32
Armenia	3.6	3.2	..	15.4	42	42	2.9	2.6	..	..	2	1
Australia	1.8	1.8	7.8	7.7	52	55	0.5	0.5	43	6	364	344
Austria	1.0	0.9	2.5	2.2	41	35	1.0	0.8	21	30	25	434
Azerbaijan	2.3	2.7	..	17.4	87	82	2.5	2.0	..	..	3	1
Bangladesh	1.4	1.1	14.9	10.4	137	221	0.2	0.3	..	..	205	10
Belarus	1.3	1.4	5.3	4.0	91	183	1.9	3.7	295	72	41	254
Belgium	1.4	1.1	3.2	2.6	39	39	0.9	0.8	24	408	39	171
Benin	0.6	1.0	4.7	6.8	7	8	0.3	0.2	..	..	6	2
Bolivia	1.9	1.5	7.6	8.0	70	83	2.0	1.9	..	..	19	5
Bosnia and Herzegovina	3.6	1.4	..	3.6	76	9	4.1	0.5	4	..	25	..
Botswana	3.0	3.4	..	..	10	11	1.3	1.1	..	..	52	..
Brazil	1.8	1.5	..	5.9	673	721	0.8	0.7	26	48	124	156
Bulgaria	2.8	2.2	8.6	7.1	114	75	3.2	2.0	2	5	7	127
Burkina Faso	1.2	1.8	..	14.0	11	11	0.2	0.2	..	..	..	4
Burundi	6.0	3.8	30.3	..	46	51	1.4	1.2	..	..	1	..
Cambodia	2.2	1.1	16.8	12.8	360	191	6.1	2.5	..	..	..	40
Cameroon	1.3	1.5	12.0	..	22	23	0.4	0.3	..	..	1	0
Canada	1.1	1.3	6.0	6.9	69	64	0.4	0.3	110	215	557	434
Central African Republic	1.0	1.6	..	..	5	3	0.3	0.1	..	..	..	9
Chad	1.9	1.0	..	..	35	35	1.1	0.8	..	..	15	36
Chile	3.7	3.5	17.7	17.9	117	103	1.9	1.3	1	133	176	543
China	1.8 ^a	2.0 ^a	19.8 ^a	18.0 ^a	3,910	2,885	0.5	0.4	268	428	1,960	1,241
Hong Kong SAR, China	..	..	..	..	..	..	..	..	..	..	..	..
Colombia	3.0	3.7	15.6	15.7	247	411	1.6	2.2	..	..	62	131
Congo, Dem. Rep.	1.0	1.4	11.4	..	93	151	0.5	0.6	..	..	41	17
Congo, Rep.	1.4	1.3	5.9	..	15	12	1.2	0.8	..	..	0	0
Costa Rica	..	..	..	..	15	10	1.0	0.5	..	0	..	..
Côte d'Ivoire	..	1.5	..	8.2	15	19	0.2	0.2	..	..	32	..
Croatia	3.1	1.8	7.8	4.7	101	22	5.1	1.1	2	..	70	99
Cuba	..	..	..	..	85	76	1.8	1.5	..	..	..	..
Czech Republic	2.0	1.5	6.1	4.3	63	27	1.2	0.5	78	20	16	17
Denmark	1.5	1.3	4.2	3.7	22	30	0.8	1.0	20	12	64	90
Dominican Republic	0.7	0.6	..	3.8	40	65	1.1	1.5	..	..	13	..
Ecuador	1.7	2.8	..	..	58	58	1.2	1.0	..	..	12	133
Egypt, Arab Rep.	3.2	2.3	12.3	7.6	679	866	3.1	3.3	38	..	810	119
El Salvador	0.9	0.5	4.3	2.9	29	33	1.3	1.3	..	..	16	4
Eritrea	36.4	..	..	..	200	202	14.5	9.8	0	..	4	10
Estonia	1.4	2.2	4.7	8.0	8	7	1.2	1.0	..	..	27	50
Ethiopia	7.6	1.5	18.0	..	353	138	1.2	0.4	..	..	125	..
Finland	1.3	1.3	3.7	3.6	35	32	1.3	1.2	9	76	516	142
France	2.5	2.3	5.7	5.3	389	353	1.5	1.2	1,052	1,585	106	68
Gabon	1.8	1.1	..	..	7	7	1.2	1.0	..	..	..	21
Gambia, The	0.8	0.7	..	..	1	1	0.1	0.1	..	..	..	..
Georgia	0.6	8.1	5.3	27.9	33	33	1.4	1.5	22	..	6	63
Germany	1.5	1.3	4.7	4.4	221	244	0.5	0.6	..	..	135	104
Ghana	1.0	0.7	3.3	2.9	8	14	0.1	0.1	..	..	1	13
Greece	4.3	3.5	9.8	7.9	163	161	3.3	3.1	2	23	710	518
Guatemala	0.8	0.5	7.5	4.1	53	35	1.3	0.7	..	..	1	12
Guinea	1.5	..	11.8	..	19	19	0.5	0.4	..	..	19	..
Guinea-Bissau	4.4	..	..	..	9	6	1.7	0.9	..	..	..	..
Haiti	..	..	..	..	5	0	0.1	0.0	..	..	..	1
Honduras	0.5	0.7	..	3.1	14	20	0.6	0.7	..	..	..	0

Military expenditures and arms transfers

5.7

	Military expenditures				Armed forces personnel				Arms transfers			
	% of GDP		% of central government expenditure		thousands		% of labor force		1990 \$ millions			
	2000	2008	2000	2008	2000	2008	2000	2008	Exports	Imports	2000	2008
Hungary	1.7	1.2	4.1	2.7	58	37	1.4	0.9	34	6	14	5
India	3.1	2.5	19.5	15.2	2,372	2,582	0.6	0.6	16	21	822	1,847
Indonesia	1.0	1.0	5.7	..	492	582	0.5	0.5	16	8	171	290
Iran, Islamic Rep.	3.8	2.9	22.5	12.6	753	563	3.4	2.0	0	2	411	87
Iraq	..	..	..	..	479	577	8.0	7.7	..	..	..	351
Ireland	0.7	0.6	2.6	1.6	12	10	0.7	0.5	..	..	0	16
Israel	7.8	8.0	17.6	19.7	181	185	7.2	5.9	354	410	350	524
Italy	2.0	1.8	5.2	4.4	503	436	2.2	1.7	176	484	241	270
Jamaica	0.5	0.5	..	1.7	3	3	0.3	0.2	..	..	5	2
Japan	1.0	0.9	..	..	249	242	0.4	0.4	..	..	431	578
Jordan	6.2	5.9	..	16.1	149	111	10.4	5.8	..	20	130	336
Kazakhstan	0.8	1.0	5.7	6.7	99	81	1.3	1.0	16	12	147	3
Kenya	1.3	2.0	7.8	9.1	27	29	0.2	0.2	..	..	9	8
Korea, Dem. Rep.	..	..	..	..	1,244	1,295	11.2	10.6	13	..	19	5
Korea, Rep.	2.4	2.6	14.4	13.1	688	692	3.0	2.8	8	141	1,262	1,898
Kosovo	..	..	..	..	..	..	..	..	..	..	..	..
Kuwait	7.1	3.2	18.9	13.2	20	23	1.8	1.6	99	..	238	276
Kyrgyz Republic	2.9	2.4	18.0	14.2	14	21	0.7	0.8	..	16	..	2
Lao PDR	0.8	0.3	..	3.3	129	129	5.2	4.3	..	..	7	..
Latvia	0.9	1.9	3.2	6.4	9	16	0.8	1.3	..	..	3	44
Lebanon	5.4	4.4	17.7	14.6	77	76	6.5	5.4	45	..	4	3
Lesotho	3.9	2.6	7.8	5.0	2	2	0.2	0.2	..	..	6	1
Liberia	..	0.5	..	..	15	2	1.3	0.1	..	..	8	..
Libya	3.2	1.2	..	..	77	76	4.2	3.3	11	9	145	3
Lithuania	1.7	1.6	6.5	5.0	17	24	1.0	1.5	3	..	5	26
Macedonia, FYR	1.9	2.0	..	6.5	24	19	2.8	2.1	..	..	11	0
Madagascar	1.2	1.1	11.5	10.0	29	22	0.4	0.2	..	..	..	..
Malawi	0.7	1.2	..	..	6	7	0.1	0.1	1	..	..	..
Malaysia	1.6	2.0	10.5	..	116	134	1.2	1.1	8	..	30	529
Mali	2.4	2.0	20.7	15.1	15	12	0.5	0.3	..	..	7	8
Mauritania	3.5	3.8	..	..	21	21	2.0	1.6	..	..	31	..
Mauritius	0.2	0.2	1.0	0.8	2	2	0.3	0.3	..	..	..	4
Mexico	0.5	0.4	3.4	..	208	286	0.5	0.6	..	..	227	11
Moldova	0.4	0.4	1.4	1.4	13	8	0.7	0.5	6	37	..	..
Mongolia	2.2	1.4	9.5	5.8	16	17	1.4	1.2	..	..	..	14
Morocco	2.3	3.3	12.0	11.0	241	246	2.4	2.1	..	..	123	32
Mozambique	1.3	0.9	..	..	6	11	0.1	0.1	..	..	0	..
Myanmar	2.3	..	..	..	429	513	1.7	1.9	..	..	3	1
Namibia	2.4	3.0	8.3	10.7	9	15	1.5	2.0	..	..	18	66
Nepal	1.0	1.5	..	..	90	131	0.9	1.0	..	..	11	..
Netherlands	1.6	1.4	4.0	3.7	57	47	0.7	0.5	258	554	141	152
New Zealand	1.2	1.1	3.5	3.1	9	9	0.5	0.4	1	..	45	4
Nicaragua	0.8	0.6	4.7	3.2	16	12	0.9	0.5	..	..	..	..
Niger	0.0	..	..	..	11	10	0.3	0.2	..	..	..	7
Nigeria	0.0	0.0	..	..	107	162	0.3	0.3	..	..	39	17
Norway	1.7	1.3	5.3	4.2	27	19	1.1	0.7	3	14	263	590
Oman	10.6	10.4	40.4	..	48	47	5.4	4.5	..	..	120	66
Pakistan	4.0	3.3	23.4	17.6	900	921	2.2	1.6	3	..	158	1,094
Panama	1.0	..	4.6	..	12	12	0.9	0.8	..	..	0	..
Papua New Guinea	0.9	0.4	2.9	..	4	3	0.2	0.1	..	..	..	..
Paraguay	1.1	0.8	..	5.0	35	26	1.5	0.9	..	..	6	..
Peru	1.7	1.2	9.7	7.5	193	191	1.7	1.4	10	..	24	172
Philippines	1.1	0.8	6.2	4.8	149	147	0.5	0.4	..	4	9	11
Poland	1.8	2.0	5.4	5.8	239	143	1.4	0.8	45	96	159	611
Portugal	2.0	2.0	5.1	4.6	91	91	1.7	1.6	..	87	2	183
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..
Qatar	..	..	..	..	12	12	3.6	1.3	9	6	11	..



5.7

Military expenditures and arms transfers

	Military expenditures				Armed forces personnel				Arms transfers					
	% of GDP		% of central government expenditure		thousands		% of labor force		1990 \$ millions		Exports		Imports	
	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008
Romania	2.5	1.5	8.9	4.4	283	153	2.4	1.5	3	32	23	37		
Russian Federation	3.7	3.5	19.3	16.4	1,427	1,476	2.0	1.9	4,302	5,953	..	100		
Rwanda	3.5	1.5	..	..	76	35	2.0	0.7	..	..	14	15
Saudi Arabia	10.6	8.2	..	..	217	238	3.1	2.6	..	..	80	56
Senegal	1.3	1.6	10.4	..	15	19	0.4	0.4	..	..	..	19
Serbia	5.4	2.3	..	6.1	136	24	..	..	..	6	..	..
Sierra Leone	3.7	2.3	12.8	..	4	11	0.2	0.5	..	..	13	10
Singapore	4.7	4.1	28.7	26.7	169	167	8.2	6.4	10	1	612	1,014		
Slovak Republic	1.7	1.6	..	5.0	41	17	1.6	0.6	92	3	2	1		
Slovenia	1.1	1.6	2.9	4.4	14	12	1.4	1.2	..	..	1	8
Somalia	..	..	..	..	50	..	1.7	..	..	..	1	..
South Africa	1.6	1.4	5.6	4.4	72	62	0.5	0.3	18	95	16	312		
Spain	1.2	1.2	3.9	4.6	242	223	1.3	1.0	46	623	334	363		
Sri Lanka	4.5	3.0	19.7	14.2	204	213	2.6	2.6	..	..	274	75
Sudan	4.7	4.2	53.0	..	120	127	1.1	1.0	..	..	146	94
Swaziland	1.6	2.1	..	..	3	..	0.8	..	..	..	1	..
Sweden	2.0	1.3	5.5	..	88	18	2.0	0.4	306	380	210	21		
Switzerland	1.1	0.8	4.2	4.6	28	23	0.7	0.5	111	378	14	32		
Syrian Arab Republic	5.3	3.4	..	..	425	401	8.6	6.0	..	3	439	81
Tajikistan	1.2	..	13.4	..	7	17	0.4	0.6	..	..	..	13
Tanzania	1.5	0.9	..	..	35	28	0.2	0.1	..	..	..	0
Thailand	1.4	1.5	..	8.3	417	421	1.2	1.1	..	..	90	12
Timor-Leste	..	..	..	..	..	1	..	0.2	..	..	..	..
Togo	..	2.0	..	13.0	8	10	0.4	0.3	..	..	..	..
Trinidad and Tobago	..	..	..	..	8	4	1.3	0.6	..	..	10	..
Tunisia	1.7	1.3	6.2	4.3	47	48	1.5	1.3	..	..	11	7
Turkey	3.7	2.2	..	9.5	828	613	3.6	2.4	15	29	1,148	723		
Turkmenistan	2.9	..	..	..	15	22	0.8	0.9	..	..	..	..
Uganda	2.5	2.3	16.0	13.7	51	47	0.5	0.3	..	..	6	3
Ukraine	3.6	2.7	13.5	7.2	420	215	1.8	0.9	288	233	..	..
United Arab Emirates	3.4	..	45.7	..	66	51	3.5	1.8	..	3	310	671		
United Kingdom	2.4	2.4	6.6	5.7	213	160	0.7	0.5	1,474	1,075	824	590		
United States	3.1	4.2	15.6	18.4	1,455	1,540	1.0	1.0	7,526	6,159	301	904		
Uruguay	1.3	1.2	5.0	5.1	25	26	1.6	1.6	1	..	4	63		
Uzbekistan	0.8	..	..	..	79	87	0.9	0.7	..	..	6	..
Venezuela, RB	1.5	1.1	7.1	..	79	115	0.8	0.9	..	1	85	733		
Vietnam	..	2.0	..	..	524	495	1.4	1.1	..	14	5	250
West Bank and Gaza	..	..	..	..	..	56	..	5.9	..	..	..	2
Yemen, Rep.	5.0	4.5	23.9	..	136	138	3.2	2.3	..	..	158	44
Zambia	1.8	1.8	10.3	5.7	23	16	0.6	0.3	..	..	27	3
Zimbabwe	4.7	..	..	..	62	51	1.2	1.0	3	..	2	20
World	2.3 w	2.4 w	10.2 w	10.2 w	29,353 s	27,469 s	1.1 w	0.9 w	.. s	.. s	18,556 s	22,681 s		
Low income	2.3	1.7	..	..	4,795	4,261	1.3	1.0	..	..	691	480
Middle income	2.1	2.0	15.6	12.9	18,417	17,484	1.0	0.8	..	..	8,598	11,720
Lower middle income	2.2	2.0	17.8	16.1	12,599	11,804	0.8	0.7	1,282	1,231	5,639	5,971		
Upper middle income	2.0	2.0	..	9.7	5,817	5,680	1.5	1.3	..	..	2,959	6,157
Low & middle income	2.1	2.0	..	12.9	23,212	21,745	1.0	0.8	..	..	9,289	12,224
East Asia & Pacific	1.7	1.8	18.6	17.0	7,794	6,817	0.8	0.6	367	428	2,285	2,352		
Europe & Central Asia	3.1	2.7	12.8	11.4	4,119	3,373	2.0	1.6	4,994	6,441	..	2,565		
Latin America & Carib.	1.4	1.3	..	..	2,084	2,399	0.9	0.9	..	..	963	2,067
Middle East & N. Africa	3.5	2.8	12.3	10.8	3,379	3,505	3.8	3.2	..	..	2,494	2,647
South Asia	3.1	2.5	19.9	15.3	4,114	4,121	0.8	0.7	19	21	1,459	3,160		
Sub-Saharan Africa	1.9	1.3	..	..	1,724	1,530	0.7	0.5	..	..	583	608
High income	2.3	2.6	10.1	10.2	6,141	5,724	1.2	1.0	11,681	..	9,267	10,457		
Euro area	1.8	1.6	4.8	4.5	1,862	1,714	1.3	1.1	..	..	2,254	2,429

Note: For some countries data are partial or uncertain or based on rough estimates; see SIPRI (2009).

a. Estimates differ from official statistics of the government of China, which has published the following estimates: military expenditure as 1.2 percent of GDP in 2000 and 1.4 percent in 2007 and 7.6 percent of central government expenditure in 2000 and 7.1 percent in 2007 (see National Bureau of Statistics of China, www.stats.gov.cn).

About the data

Although national defense is an important function of government and security from external threats that contributes to economic development, high levels of military expenditures for defense or civil conflicts burden the economy and may impede growth. 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 expenditures are not directly related to the “output” of military activities, capabilities, or security. Comparisons of military 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 spending reported by governments are not compiled using standard definitions. They are often incomplete and unreliable. Even in countries where the parliament vigilantly reviews budgets and spending, military expenditures and arms transfers rarely receive close scrutiny or full, public disclosure (see Ball 1984 and Happe and Wakeman-Linn 1994). Therefore, SIPRI has adopted a definition of military expenditure derived from the North Atlantic Treaty Organization (NATO) definition (see *Definitions*). The data on military expenditures as a share of GDP and as a share of central government expenditure are estimated by the Stockholm International Peace Research Institute (SIPRI). Central government expenditures are from the International Monetary Fund (IMF). Therefore the data in the table may differ from comparable data published by national governments.

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 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.

In the many cases where SIPRI cannot make independent estimates, it uses the national data provided. Because of the differences in definitions and the difficulty in verifying the accuracy and

completeness of data, data on military expenditures are not strictly comparable across countries. More information on SIPRI's military expenditure project can be found at www.sipri.org/contents/milap/.

Data on armed forces refer to military personnel on active duty, including paramilitary forces. Because data exclude personnel not on active duty, they underestimate the share of the labor force working for the defense establishment. Governments rarely report the size of their armed forces, so such data typically come from intelligence sources.

SIPRI's Arms Transfers Project collects data on arms transfers from open sources. Since publicly available information is inadequate for tracking all weapons and other military equipment, SIPRI covers only what it terms *major conventional weapons*. Data cover the supply of weapons through sales, aid, gifts, and manufacturing licenses; therefore the term *arms transfers* rather than *arms trade* is used. 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 acceptable certainty; these data are available in SIPRI's database.

SIPRI's estimates of arms transfers are designed as a trend-measuring device in which similar weapons have similar values, reflecting both the value and quality of weapons transferred. SIPRI cautions that the estimated values do not reflect financial value (payments for weapons transferred) because reliable data on the value of the transfer are not available, and even when values are known, the transfer usually includes more than the actual conventional weapons, such as spares, support systems, and training, and 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 military 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 secondhand weapons. More information on SIPRI's Arms Transfers Project is available at www.sipri.org/contents/armstrad/.

Definitions

- **Military expenditures** are SIPRI data 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 judged to be trained and equipped for military operations; and military space activities. Such expenditures include military and civil personnel, including retirement pensions and social services for military 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, and weapons conversion and destruction. This definition cannot be applied for all countries, however, since that would require more detailed information than is available about military budgets and off-budget military expenditures (for example, whether military budgets cover civil defense, reserves and auxiliary forces, police and paramilitary forces, and military pensions).

- **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. Reserve forces, which are not fully staffed or operational in peace time, are not included. The data also exclude civilians in the defense establishment and so are not consistent with the data on military expenditures on personnel.
- **Arms transfers** cover the supply of military weapons through sales, aid, gifts, and manufacturing licenses. Weapons must be transferred voluntarily by the supplier, have a military purpose, and be destined for the armed forces, paramilitary forces, or intelligence agencies of another country. The trends shown in the table are based on actual deliveries only. 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.

Data sources

Data on military expenditures are from SIPRI's *Yearbook 2009: Armaments, Disarmament, and International Security*. Data on armed forces personnel are from the International Institute for Strategic Studies' *The Military Balance 2010*. Data on arms transfers are from SIPRI's Arms Transfer Project (www.sipri.org/contents/armstrad/).



5.8

Fragile situations

	International Development Association Resource Allocation Index 1–6 (low to high) 2008	Peacebuilding and peacekeeping		Battle-related deaths number 2000–08 ^b	Intentional homicides per 100,000 people WHO 2004 2004		Military expenditures % of GDP 2008	Business environment			
		Operation name ^a December 2009	Troops, police, and military observers number December 2009		CTS and national sources	Survey year		Losses due to theft, robbery, vandalism, and arson % of sales	Firms formally registered when operations started % of firms		
										per 100,000 people	
Afghanistan	2.6	UNAMA	20	26,589	3.4	..	2.2	2008	1.5	88.0	
Angola	2.7	..	..	3,534	36.0	5.2 ^e	2.9	2006	0.4	..
Bosnia and Herzegovina	3.7	..	..	0	1.9	1.8 ^f	1.4	2009	0.2	98.6
Burundi	3.0	BINUB	15	4,937	35.4	..	3.8	2006	1.1	..	
Cameroon	3.2	..	..	0	16.1	5.8 ^g	1.5	2009	1.3	82.1
Central African Republic	2.5	MINURCAT ^h	2,777	350	29.1	..	1.6	..	..	..
Chad	2.5	MINURCAT	..	4,328	19.0	..	1.0	2009	2.5	77.1	
Comoros	2.3	..	..	0	9.3	..	..	..	..	..
Congo, Rep.	2.7	..	..	116	18.8	..	1.3	2009	3.3	84.3
Côte d'Ivoire	2.7	UNOCI	8,536	1,265	45.7	..	1.5	2009	3.4	56.4	
Congo, Dem. Rep.	2.7	MONUC	20,509	75,118	35.2	..	1.4	2006	2.0	..	
Djibouti	3.1	..	..	0	3.5	..	4.1	..	..	..
Eritrea	2.3	..	..	57	15.9	..	..	2009	..	100.0
Gambia, The	3.2	..	..	0	13.5	..	0.7	2006	2.7	..
Georgia	4.4	..	..	648	3.7	6.2 ⁱ	8.1	2008	0.7	99.6
Guinea	3.0	..	..	1,174	17.3	..	..	2006	2.0	..
Guinea-Bissau	2.6	..	..	0	16.3	..	..	2006	1.1	..
Haiti	2.9	MINUSTAH	9,057	244	5.3	33.9 ^j	..	..	..	..
Kiribati	3.0	..	..	0	6.5	..	..	..	..	..
Kosovo	..	UNMIK	17	0	..	..	..	2009	0.3	89.2
Liberia	..	UNMIL	10,947	2,487	16.8	..	0.5	2009	2.8	73.8	
Myanmar	..	..	..	2,833	15.7	..	..	..	..	..
Nepal	3.3	UNMIN	72	11,520	8.0	2.1 ^f	1.5	2009	0.9	94.0	
Papua New Guinea	3.3	..	..	0	15.2	..	0.4	..	..	..
São Tomé and Príncipe	3.0	..	..	0	5.4	..	..	..	..	..
Sierra Leone	3.1	..	..	212	34.0	2.1 ^k	2.3	2009	0.8	89.2
Solomon Islands	2.8	RAMSI ^l	572	0	1.5	..	..	..	..	..
Somalia	..	..	..	3,983	3.3	..	..	..	..	..
Sudan	2.5	UNMIS ^m	10,262	12,363	28.6	..	4.2	..	..	..
Tajikistan	3.2	..	..	0	2.2	2.4 ⁱ	..	2008	0.3	92.7
Timor-Leste	2.8	UNMIT	1,552	0	11.7	..	..	..	..	..
Togo	2.7	..	..	0	13.7	..	2.0	2009	2.4	75.8
Tonga	3.2	..	..	0	1.0	..	1.5	..	..	..
West Bank and Gaza	..	..	..	0	..	4.0	..	2006	1.2	..
Western Sahara ⁿ	..	MINURSO	232	..	..	..	..	..	..	..
Yemen, Rep.	3.2	..	..	0	2.5	3.2 ^o	4.5	..	..	..
Zimbabwe	1.4	..	..	0	32.9	8.4 ⁱ	..	..	..	..
Fragile situations		..	..	151,759 s	..	..	3.0 w			
Low income		..	..	147,275	..	..	1.7			

Note: The countries with fragile situations in the table are International Development Association–eligible countries with a 3.2 or lower harmonized average of the World Bank's Country Policy and Institutional Assessment (CPIA) rating and the corresponding rating by a regional development bank or that have had a UN or regional peacebuilding mission (for example, by the African Union, European Union, or Organization of American States) or peacekeeping mission (for example, by the African Union, European Union, North Atlantic Treaty Organization, or Organization of American States) during the last three years. Because fragility is an evolving concept, this definition will be updated as understanding changes.

a. UNAMA is United Nations Assistance Mission in Afghanistan, BINUB is Bureau Intégré des Nations Unies au Burundi (United Nations Integrated Office in Burundi), MINURCAT is United Nations Mission in the Central African Republic and Chad, UNOCI is United Nations Operation in Côte d'Ivoire, MONUC is United Nations Organization Mission in DR Congo, MINUSTAH is United Nations Stabilization Mission in Haiti, UNMIK is Interim Administration Mission in Kosovo, UNMIL is United Nations Mission in Liberia, UNMIN is United Nations Mission in Nepal, RAMSI is Regional Assistance Mission to Solomon Islands, UNMIS is United Nations Missions in Sudan, UNMIT is United Nations Integrated Mission in Timor-Leste, and MINURSO is United Nations Mission for the Referendum in Western Sahara. b. Total over the period. c. Data are for the most recent year available. d. Average over the period. e. Data are from Interpol. f. Data are from UNODC's 10th UN Survey of Crime Trends and are for 2005. g. National Statistical Office of Cameroon. h. Includes peacekeepers in Chad. i. Data are from UNODC's 9th UN Survey of Crime Trends. j. Data are for 2001. k. National Statistical Office of Sierra Leone. l. Data are for 2007. m. Does not include 19,949 troops, police, and military observers from the African Union-UN Hybrid Operation in Darfur. n. The designation Western Sahara is used instead of Former Spanish Sahara (the designation used on the maps on the front and back cover flaps) because it is the designation used by the UN operation established there by Security Council resolution 690/1991. Neither designation expresses any World Bank view on the status of the territory so-identified. o. National Statistical Office of Yemen.

	Children in employment		Refugees		Internally displaced persons	Access to an improved water source	Access to improved sanitation facilities	Maternal mortality ratio		Under-five mortality rate	Depth of hunger	Primary gross enrollment ratio
	Survey year	% of children ages 7–14	By country of origin	By country of asylum	number	% of population	% of population	per 100,000 live births		per 1,000	kilocalories per person per day	% of relevant age group
			2008	2008				National estimates	Modeled estimates				2004–06^{d}	2008
Afghanistan	..	..	37	2,833,128	230,670	22	30	1,600	1,800	257	..	106
Angola	2001	30.1	12,710	171,393	..	51	50	..	1,400	220	290	..
Bosnia and Herzegovina	2005	10.6	7,257	74,366	124,529	99	95	23	3	15	140	111
Burundi	2000	37.0	21,093	281,592	100,000	71	41	615	1,100	168	360	136
Cameroon	2001	15.9	81,037	13,870	..	70	51	669	1,000	131	160	111
Central African Republic	2000	67.0	7,429	125,106	197,000	66	31	543	980	173	280	77
Chad	2004	60.4	330,510	55,105	166,718	48	9	1,099	1,500	209	290	83
Comoros	..	..	1	378	..	85	35	380	400	105	340	..
Congo, Rep.	2005	30.1	24,779	19,925	3,492	71	20	781	740	127	250	114
Côte d'Ivoire	2006	45.7	24,811	22,227	683,956	81	24	543	810	114	190	74
Congo, Dem. Rep.	2000	39.8	155,162	367,995	1,460,102	46	31	1,838	1,100	199	430	90
Djibouti	..	..	9,228	650	..	92	67	546	650	95	220	55
Eritrea	..	..	4,862	186,398	..	60	5	..	450	58	350	52
Gambia, The	2005	43.5	14,836	1,352	..	86	52	730	690	106	240	86
Georgia	..	..	996	12,598	293,048	99	93	98	66	30	180	107
Guinea	..	..	21,488	9,495	..	70	19	980	910	146	130	90
Guinea-Bissau	2000	67.5	7,884	1,065	..	57	33	405	1,100	195	240	120
Haiti	2005	33.4	3	23,066	..	58	19	1,150	670	72	430	..
Kiribati	..	..	..	38	..	65	33	56	..	48	140	..
Kosovo	..	..	..	..	..	..	..	..	..	..	..	..
Liberia	2007	37.4	10,224	75,213	..	64	32	994	1,200	145	310	91
Myanmar	..	..	..	184,413	67,290	80	82	316	380	98	300	115
Nepal	1999	47.2	124,832	4,189	50,000	89	27	281	830	51	190	124
Papua New Guinea	..	..	10,006	46	..	40	45	..	470	69	..	55
São Tomé and Príncipe	..	..	..	35	..	86	24	248	..	98	110	130
Sierra Leone	2005	62.7	7,826	32,536	..	53	11	2,657	2,100	194	390	158
Solomon Islands	..	..	..	52	..	70	32	..	220	36	130	107
Somalia	2006	43.5	1,842	561,155	1,277,200	29	23	1,044	1,400	200	..	..
Sudan	..	..	181,605	419,248	1,201,040	70	35	1,107	450	109	240	69
Tajikistan	2005	8.9	1,799	544	..	67	92	179	170	64	190	102
Timor-Leste	..	..	1	7	15,860	62	41	..	380	93	230	107
Togo	2006	39.6	9,377	16,750	..	59	12	..	510	98	280	105
Tonga	..	..	..	7	..	100	96	214	..	19	..	112
West Bank and Gaza	..	..	1,836,123	340,026	..	89	80	..	..	27	180	80
Western Sahara ^h	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	..	..	140,169	1,777	100,000	66	46	365	430	69	270	85
Zimbabwe	..	..	3,468	16,841	..	81	46	1,655	880	96	310	104
Fragile situations			3,051,394 s	5,852,585 s	..	63 w	41 w	..	958 w	148 w	285 w	.. w
Low income			2,024,889	5,386,084	..	67	38	..	790	118	277	101

About the data

The table focuses on countries with fragile situations and highlights the links among weak institutions, poor development outcomes, fragility, and risk of conflict. These countries often have weak institutions that are ill-equipped to handle economic shocks, natural disasters, and illegal trade or to resist conflict, which increasingly spills across borders. Organized violence, including violent crime, interrupts economic and social development through lost human and social capital, disrupted services, displaced populations and reduced confidence for future investment. As a result, countries with fragile situations achieve lower development outcomes and

make slower progress toward the Millennium Development Goals.

According to the Geneva Declaration on Armed Violence and Development, more than 740,000 people die each year because of the violence associated with armed conflict and large- and small-scale criminality. Recovery and rebuilding can take years, and the challenges are numerous: infrastructure to be rebuilt, persistently high crime, widespread health problems, education systems in disrepair, and landmines to be cleared. Most countries emerging from conflict lack the capacity to rebuild the economy. Thus, capacity building is one of the first tasks for restoring growth

and is linked to building peace and creating the conditions that lead to sustained poverty reduction. The World Bank and other international development agencies can help, but countries with fragile situations have to build their own institutions tailored to their own needs. Peacekeeping operations in post-conflict situations have been effective in reducing the risks of reversion to conflict.

The countries with fragile situations in the table are International Development Association-eligible countries with a 3.2 or lower harmonized average of the World Bank's Country Policy and Institutional Assessment (CPIA) rating and the corresponding rating by a

**About the data (continued)**

regional development bank or that have had a UN or regional peacebuilding mission (for example, by the African Union, European Union, or Organization of American States) or peacekeeping mission (for example, by the African Union, European Union, North Atlantic Treaty Organization, or Organization of American States) during the last three years. Peacebuilding and peacekeeping involve many elements—military, police, and civilian—working together to lay the foundations for sustainable peace. Because fragility is an evolving concept, this definition will be updated as understanding changes.

An armed conflict is a contested incompatibility that concerns a government or territory where the use of armed force between two parties (one of them the government) results in at least 25 battle-related deaths in a calendar year. There were 36 active armed conflicts in 26 locations in 2008. Separate measures are presented for intentional homicides—unlawful deaths purposefully inflicted on a person by another person—which exclude deaths arising from armed conflict. One measure draws from public health data sources, while the other draws from estimates by the United Nations Office on Drugs and Crime, which obtains data from criminal justice sources. Data from these two sources measure different phenomena and are therefore unlikely to provide identical numbers.

Data on military expenditures reported by governments are not compiled using standard definitions and are often incomplete and unreliable. Even in countries where the parliament vigilantly reviews budgets and spending, military expenditures and arms transfers rarely receive close scrutiny or full public disclosure. Data in the table are from the Stockholm International Peace Research Institute (SIPRI), which has adopted a definition of military expenditure derived from the North Atlantic Treaty Organization (NATO) definition (see *Definitions*). Therefore, the data in the table may differ from comparable data published by national governments. For a more detailed discussion of military expenditures, see *About the data* for table 5.7.

Along with public sector efforts, private sector development and investment, especially in competitive markets, has tremendous potential to contribute to growth and poverty reduction. The World Bank's Enterprise Surveys review the business environment, assessing constraints to private sector growth and enterprise performance. In some countries doing business requires informal payments to "get things done" in customs, taxes, licenses, regulations, services, and the like. Crime, theft, and disorder also

impose costs on businesses and society. And in many developing countries informal businesses operate without licenses. These firms have less access to financial and public services and can engage in fewer types of contracts and investments, constraining growth. The table presents data on the loss of sales due to theft, robbery, vandalism, and arson and on the percentage of firms operating informally. For further information on enterprise surveys, see *About the data* for table 5.2.

As the table shows, the human toll of armed violence across various contexts is severe. Additionally, in countries with fragile situations weak institutional capacity often results in poor performance and failure to meet expectations of effective service delivery. Failure to deliver water, health, and education services can weaken struggling governments. The table includes several indicators related to living conditions in fragile situations: children in employment, refugees, internally displaced persons, access to water and sanitation, maternal and under-five mortality, depth of hunger, and primary school enrollment. For more detailed information on these indicators, see *About the data* for table 2.6 (children in employment), table 6.18 (refugees), table 2.18 (access to improved water and sanitation), table 2.19 (maternal mortality), table 2.22 (under-five mortality), and table 2.12 (primary school enrollment).

Definitions

• **International Development Association Resource Allocation Index** is from the Country Policy and Institutional Assessment rating, which is the average score of four clusters of indicators designed to measure macroeconomic, governance, social, and structural dimensions of development: economic management, structural policies, policies for social inclusion and equity, and public sector management and institutions (see table 5.9). Countries are rated on a scale of 1 (low) to 6 (high). • **Peacebuilding and peacekeeping** refer to operations that engage in peacebuilding (reducing the risk of lapsing or relapsing into conflict by strengthening national capacities for conflict management and laying the foundation for sustainable peace and development) or peacekeeping (providing essential security to preserve the peace where fighting has been halted and to assist in implementing agreements achieved by the peacemakers). UN peacekeeping operations are authorized by the UN Secretary-General and planned, managed, directed, and supported by the United Nations Department of Peacekeeping Operations and the

Department of Field Support. The UN Charter gives the Security Council primary responsibility for maintaining international peace and security, including the establishment of a UN peacekeeping operation.

• **Troops, police, and military observers in peacebuilding and peacekeeping** refer to people active in peacebuilding and peacekeeping as part of an official operation. Peacekeepers deploy to war-torn regions where no one else is willing or able to go to prevent conflict from returning or escalating. • **Battle-related deaths** are deaths of members of warring parties in battle-related conflicts. Typically, battle-related deaths occur in warfare involving the armed forces of the warring parties (battlefield fighting, guerrilla activities, and all kinds of bombardments of military units, cities, and villages). The targets are usually the military and its installations or state institutions and state representatives, but there is often substantial collateral damage of civilians killed in cross-fire, indiscriminate bombings, and other military activities. All deaths—civilian as well as military—incurred in such situations are counted as battle-related deaths. • **Intentional homicides** are estimates of unlawful homicides purposely inflicted as a result of domestic disputes, interpersonal violence, violent conflicts over land resources, intergang violence over turf or control, and predatory violence and killing by armed groups. Intentional homicide does not include all intentional killing; the difference is usually in the organization of the killing. Individuals or small groups usually commit homicide, whereas killing in armed conflict is usually committed by fairly cohesive groups of up to several hundred members and is thus usually excluded. Data from the World Health Organization (WHO) are from public health sources; data from the United Nations Survey of Crime Trends and Operations of Criminal Justice Systems (CTS) and national sources are based on criminal justice sources. • **Military expenditures** are SIPRI data 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 judged to be trained and equipped for military operations; and military space activities. Such expenditures include military and civil personnel, including retirement pensions and social services for military 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, and weapons conversion and destruction. This definition cannot be applied to all countries, however, since the necessary detailed information is missing in some cases for military budgets and off-budget military expenditures (for example, whether military budgets cover civil defense, reserves and auxiliary forces, police and paramilitary forces, and military pensions).

- **Survey year** is the year in which the underlying data were collected.
- **Losses due to theft, robbery, vandalism, and arson** are the estimated losses from those causes that occurred on business establishment premises calculated as a percentage of annual sales.
- **Firms formally registered when operations started** are the percentage of firms formally registered when they started operations in the country.
- **Children in employment** are children involved in any economic activity for at least one hour in the reference week of the survey.
- **Refugees** are people who are recognized as refugees under the 1951 Convention Relating to the Status of Refugees or its 1967 Protocol, the 1969 Organization of African Unity Convention Governing the Specific Aspects of Refugee Problems in Africa, people recognized as refugees in accordance with the UN Refugee Agency (UNHCR) statute, people granted refugee-like humanitarian status, and people provided temporary protection. Asylum seekers—people who have applied for asylum or refugee status and who have not yet received a decision, or who are registered as asylum seekers—are excluded. Palestinian refugees are people (and their descendants) whose residence was Palestine between June 1946 and May 1948 and who lost their homes and means of livelihood as a result of the 1948 Arab-Israeli conflict.
- **Country of origin** refers to the nationality or country of citizenship of a claimant.
- **Country of asylum** is the country where an asylum claim was filed and granted.
- **Internally displaced persons** are people or groups of people who have been forced to leave their homes or places of habitual residence, in particular as a result of armed conflict, or to avoid the effects of armed conflict, situations of generalized violence, violations of human rights, or natural or human-made disasters and who have not crossed an international border. UNHCR statistics for this population include conflict-generated internally displaced persons to whom UNHCR extends protection or assistance and people in an internally displaced person-like situation.
- **Access to an improved water source** refers to people with reasonable access to water from an

improved source, such as piped water into a dwelling, public tap, tubewell, protected dug well, and rainwater collection. Reasonable access is the availability of at least 20 liters a person a day from a source within 1 kilometer of the dwelling.

- **Access to improved sanitation facilities** refers to people with at least adequate access to excreta disposal facilities that can effectively prevent human, animal, and insect contact with excreta. Improved facilities range from protected pit latrines to flush toilets.
- **Maternal mortality ratio** is the number of women who die from pregnancy-related causes during pregnancy and childbirth per 100,000 live births. National estimates are based on national surveys, vital registration records, and surveillance data or are derived from community and hospital records. Modeled estimates are based on an exercise by the WHO, United Nations Children's Fund (UNICEF), United Nations Population Fund (UNFPA), and the World Bank. See *About the data* for table 2.19 for further details.
- **Under-five mortality rate** is the probability per 1,000 that a newborn baby will die before reaching age 5, if subject to current age-specific mortality rates
- **Depth of hunger**, or the intensity of food deprivation, indicates how much people who are food-deprived fall short of minimum food needs in terms of dietary energy. It is measured by comparing the average amount of dietary energy that undernourished people get from the foods they eat with the minimum amount of dietary energy they need to maintain body weight and undertake light activity. Depth of hunger is low when it is less than 200 kilocalories per person per day and high when it is above 300.
- **Primary gross enrollment ratio** is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the primary level of education. Primary education provides children with basic reading, writing, and mathematics skills along with an elementary understanding of such subjects as history, geography, natural science, social science, art, and music.

Data sources

Data on the International Development Association Resource Allocation Index are from the World Bank Group's International Development Association database (www.worldbank.org/ida). Data on peacebuilding and peacekeeping operations are from the UN Department of Peacekeeping Operations. Data on battle-related deaths are

from the Uppsala Conflict Data Program (www.pcr.uu.se/research/UCDP/index.htm). Data on intentional homicides are from the UN Office on Drugs and Crime's International Homicide Statistics database. Data on military expenditures are from SIPRI's *Yearbook 2009: Armaments, Disarmament, and International Security* and database (www.sipri.org/databases/milex). Data on the business environment are from the World Bank's Enterprise Surveys (www.enterprisesurveys.org). Data on children in employment are estimates produced by the Understanding Children's Work project based on household survey data sets made available by the International Labour Organization's International Programme on the Elimination of Child Labour under its Statistical Monitoring Programme on Child Labour, UNICEF under its Multiple Indicator Cluster Survey program, the World Bank under its Living Standards Measurement Study program, and national statistical offices (see table 2.6). Data on refugees and internally displaced persons are from the UNHCR's *Statistical Yearbook 2008*, complemented by statistics on Palestinian refugees under the mandate of the United Nations Relief and Works Agency for Palestine Refugees in the Near East as published on its website (www.unrwa.org). Data on access to water and sanitation are from the WHO and UNICEF's *Progress on Drinking Water and Sanitation (2008)*. National estimates of maternal mortality are from UNICEF's *The State of the World's Children 2009* and Childinfo and Demographic and Health Surveys by Macro International. Modeled estimates for maternal mortality are from WHO, UNICEF, UNFPA, and the World Bank's *Maternal Mortality in 2005 (2007)*. Data on under-five mortality estimates by the Inter-agency Group for Child Mortality Estimation (which comprises UNICEF, WHO, the World Bank, United Nations Population Division, and other universities and research institutes) and are based mainly on household surveys, censuses, and vital registration data, supplemented by the World Bank's Human Development Network estimates based on vital registration and sample registration data (see table 2.22). Data on depth of hunger are from the Food and Agriculture Organization's Food Security Statistics (www.fao.org/economic/ess/food-security-statistics/en/). Data on primary gross enrollment are from the United Nations Educational, Scientific, and Cultural Organization's Institute for Statistics.



	International Development Association Resource Allocation Index 1-6 (low to high)	Economic management 1-6 (low to high)				Structural policies 1-6 (low to high)			
		Macroeconomic management	Fiscal policy	Debt policy	Average	Trade	Financial sector	Business regulatory environment	Average
		2008	2008	2008	2008	2008	2008	2008	2008
Afghanistan	2.6	3.5	3.0	3.0	3.2	2.5	2.5	2.5	2.5
Angola	2.7	3.0	3.0	3.0	3.0	4.0	2.5	2.0	2.8
Armenia	4.4	5.5	5.0	6.0	5.5	4.5	4.0	4.0	4.2
Azerbaijan	3.8	4.0	4.5	5.0	4.5	4.0	3.5	4.0	3.8
Bangladesh	3.5	4.0	4.0	4.5	4.2	3.5	3.0	3.5	3.3
Benin	3.6	4.5	4.0	3.5	4.0	4.0	3.5	3.5	3.7
Bhutan	3.9	4.5	4.5	4.5	4.5	3.0	3.0	3.5	3.2
Bolivia	3.8	4.0	4.0	4.5	4.2	5.0	4.0	2.5	3.8
Bosnia and Herzegovina	3.7	4.0	3.5	4.0	3.8	4.0	4.0	4.0	4.0
Burkina Faso	3.7	4.5	4.5	4.0	4.3	4.0	3.0	3.5	3.5
Burundi	3.0	3.5	3.5	3.0	3.3	3.5	2.5	2.5	2.8
Cambodia	3.3	4.5	3.5	3.5	3.8	4.0	2.5	3.5	3.3
Cameroon	3.2	4.0	4.0	3.0	3.7	3.5	3.0	3.0	3.2
Cape Verde	4.2	4.5	4.5	4.5	4.5	4.0	4.0	3.5	3.8
Central African Republic	2.5	3.5	3.0	2.0	2.8	3.5	2.5	2.0	2.7
Chad	2.5	2.5	2.5	3.0	2.7	3.0	3.0	2.5	2.8
Comoros	2.3	2.5	1.5	2.0	2.0	3.0	2.5	2.5	2.7
Congo, Dem. Rep.	2.7	3.5	3.5	2.5	3.2	4.0	2.0	2.0	2.7
Congo, Rep.	2.7	3.5	2.5	2.5	2.8	3.5	2.5	2.5	2.8
Côte d'Ivoire	2.7	3.0	2.5	2.0	2.5	4.0	3.0	3.0	3.3
Djibouti	3.1	3.5	3.0	2.5	3.0	4.0	3.5	3.5	3.7
Dominica	3.9	4.0	4.5	3.0	3.8	4.0	4.0	4.5	4.2
Eritrea	2.3	2.0	2.0	2.5	2.2	1.5	1.0	2.0	1.5
Ethiopia	3.4	2.5	4.0	3.5	3.3	3.0	3.0	3.5	3.2
Gambia, The	3.2	4.0	3.5	3.0	3.5	3.5	3.0	3.5	3.3
Georgia	4.4	4.5	4.5	5.0	4.7	6.0	3.5	5.5	5.0
Ghana	3.9	3.5	3.5	4.0	3.7	4.0	4.0	4.0	4.0
Grenada	3.7	3.5	2.5	3.0	3.0	4.5	4.0	4.0	4.2
Guinea	3.0	3.0	3.5	2.5	3.0	4.0	3.0	3.0	3.3
Guinea-Bissau	2.6	2.0	2.5	1.0	1.8	4.0	3.0	2.5	3.2
Guyana	3.4	3.5	3.5	4.0	3.7	4.0	3.5	3.0	3.5
Haiti	2.9	3.5	3.5	2.5	3.2	4.0	3.0	2.5	3.2
Honduras	3.7	3.5	3.5	4.0	3.7	4.5	3.0	4.0	3.8
India	3.8	4.5	3.5	4.5	4.2	3.5	4.0	3.5	3.7
Kenya	3.6	4.0	4.0	4.0	4.0	4.0	3.5	4.0	3.8
Kiribati	3.0	2.5	2.0	5.0	3.2	3.0	3.0	3.0	3.0
Kyrgyz Republic	3.7	4.5	4.0	4.0	4.2	5.0	3.5	4.0	4.2
Lao PDR	3.3	4.5	4.0	3.5	4.0	3.5	2.0	3.0	2.8

About the data

The International Development Association (IDA) is the part of the World Bank Group that helps the poorest countries reduce poverty by providing concessional loans and grants for programs aimed at boosting economic growth and improving living conditions. IDA funding helps these countries deal with the complex challenges they face in meeting the Millennium Development Goals.

The World Bank's IDA Resource Allocation Index (IRAI), presented in the table, is based on the results of the annual Country Policy and Institutional Assessment (CPIA) exercise, which covers the IDA-eligible countries. The table does not include Kosovo, Liberia, Myanmar, and Somalia because they were not rated in the 2008 exercise even though they are

IDA eligible. Country assessments have been carried out annually since the mid-1970s by World Bank staff. Over time the criteria have been revised from a largely macroeconomic focus to include governance aspects and a broader coverage of social and structural dimensions. Country performance is assessed against a set of 16 criteria grouped into four clusters: economic management, structural policies, policies for social inclusion and equity, and public sector management and institutions. IDA resources are allocated to a country on per capita terms based on its IDA country performance rating and, to a limited extent, based on its per capita gross national income. This ensures that good performers receive a

higher IDA allocation in per capita terms. The IRAI is a key element in the country performance rating.

The CPIA exercise is intended to capture the quality of a country's policies and institutional arrangements, focusing on key elements that are within the country's control, rather than on outcomes (such as economic growth rates) that are influenced by events beyond the country's control. More specifically, the CPIA measures the extent to which a country's policy and institutional framework supports sustainable growth and poverty reduction and, consequently, the effective use of development assistance.

All criteria within each cluster receive equal weight, and each cluster has a 25 percent weight in the over-

	International Development Association Resource Allocation Index 1–6 (low to high)	Economic management 1–6 (low to high)				Structural policies 1–6 (low to high)			
		Macroeconomic management	Fiscal policy	Debt policy	Average	Trade	Financial sector	Business regulatory environment	Average
		2008	2008	2008	2008	2008	2008	2008	2008
Lesotho	3.5	4.0	4.0	4.0	4.0	3.5	3.5	3.0	3.3
Madagascar	3.7	4.0	3.5	4.0	3.8	4.0	3.0	3.5	3.5
Malawi	3.4	3.5	3.5	3.0	3.3	4.0	3.0	3.5	3.5
Maldives	3.4	2.5	2.0	3.0	2.5	4.0	3.5	4.0	3.8
Mali	3.7	4.5	4.0	4.5	4.3	4.0	3.0	3.5	3.5
Mauritania	3.3	3.5	3.0	4.0	3.5	4.0	2.5	3.5	3.3
Moldova	3.8	4.0	4.0	4.0	4.0	4.5	3.5	3.5	3.8
Mongolia	3.3	3.0	2.5	3.0	2.8	4.5	2.5	3.5	3.5
Mozambique	3.7	4.5	4.0	4.5	4.3	4.5	3.5	3.0	3.7
Nepal	3.3	4.0	3.5	3.5	3.7	3.5	3.0	3.0	3.2
Nicaragua	3.8	4.0	4.0	4.5	4.2	4.5	3.5	3.5	3.8
Niger	3.3	4.0	3.5	3.5	3.7	4.0	3.0	3.0	3.3
Nigeria	3.4	4.0	4.5	4.5	4.3	3.5	3.5	3.0	3.3
Pakistan	3.3	2.5	2.5	4.0	3.0	4.0	4.0	4.0	4.0
Papua New Guinea	3.3	4.0	3.5	4.5	4.0	4.5	3.0	3.0	3.5
Rwanda	3.7	4.0	4.0	3.5	3.8	3.5	3.5	3.5	3.5
Samoa	4.0	4.0	4.0	4.5	4.2	4.5	4.0	3.5	4.0
São Tomé and Príncipe	3.0	3.0	3.0	2.5	2.8	4.0	2.5	3.0	3.2
Senegal	3.6	4.0	3.5	4.0	3.8	4.0	3.5	4.0	3.8
Sierra Leone	3.1	4.0	3.5	3.5	3.7	3.5	3.0	3.0	3.2
Solomon Islands	2.8	3.5	2.5	2.5	2.8	3.0	3.0	3.0	3.0
Sri Lanka	3.4	2.5	3.0	3.5	3.0	3.5	3.5	4.0	3.7
St. Lucia	3.9	4.0	3.5	3.5	3.7	4.0	4.0	4.5	4.2
St. Vincent & Grenadines	3.8	4.0	3.5	3.5	3.7	4.0	4.0	4.5	4.2
Sudan	2.5	3.5	3.0	1.5	2.7	2.5	2.5	3.0	2.7
Tajikistan	3.2	3.5	3.5	3.5	3.5	4.0	2.5	3.0	3.2
Tanzania	3.8	4.5	4.5	4.0	4.3	4.0	4.0	3.5	3.8
Timor-Leste	2.8	2.5	3.0	3.5	3.0	4.5	2.5	1.5	2.8
Togo	2.7	3.0	3.0	2.0	2.7	4.0	2.5	3.0	3.2
Tonga	3.2	3.0	3.0	3.0	3.0	3.5	3.0	3.0	3.2
Uganda	3.9	4.5	4.5	4.5	4.5	4.0	3.5	4.0	3.8
Uzbekistan	3.3	4.0	4.0	4.0	4.0	2.5	3.0	3.0	2.8
Vanuatu	3.3	4.0	3.5	4.0	3.8	3.5	3.0	3.0	3.2
Vietnam	3.8	4.5	4.5	4.0	4.3	3.5	3.0	3.5	3.3
Yemen, Rep.	3.2	3.5	3.0	4.0	3.5	4.0	2.0	3.5	3.2
Zambia	3.5	4.0	3.5	3.5	3.7	4.0	3.5	3.5	3.7
Zimbabwe	1.4	1.0	1.0	1.0	1.0	2.0	1.0	1.5	1.5

all score, which is obtained by averaging the average scores of the four clusters. For each of the 16 criteria countries are rated on a scale of 1 (low) to 6 (high). The scores depend on the level of performance in a given year assessed against the criteria, rather than on changes in performance compared with the previous year. All 16 CPIA criteria contain a detailed description of each rating level. In assessing country performance, World Bank staff evaluate the country's performance on each of the criteria and assign a rating. The ratings reflect a variety of indicators, observations, and judgments based on country knowledge and on relevant publicly available indicators. In interpreting the assessment scores, it

should be noted that the criteria are designed in a developmentally neutral manner. Accordingly, higher scores can be attained by a country that, given its stage of development, has a policy and institutional framework that more strongly fosters growth and poverty reduction.

The country teams that prepare the ratings are very familiar with the country, and their assessments are based on country diagnostic studies prepared by the World Bank or other development organizations and on their own professional judgment. An early consultation is conducted with country authorities to make sure that the assessments are informed by up-to-date information. To ensure that scores are

consistent across countries, the process involves two key phases. In the benchmarking phase a small representative sample of countries drawn from all regions is rated. Country teams prepare proposals that are reviewed first at the regional level and then in a Bankwide review process. A similar process is followed to assess the performance of the remaining countries, using the benchmark countries' scores as guideposts. The final ratings are determined following a Bankwide review. The overall numerical IRAI score and the separate criteria scores were first publicly disclosed in June 2006.

See IDA's website at www.worldbank.org/ida for more information.



	Policies for social inclusion and equity 1–6 (low to high)						Public sector management and institutions 1–6 (low to high)					
	Gender equality 2008	Equity of public resource use 2008	Building human resources 2008	Social protection and labor 2008	Policies and institutions for environmental sustainability 2008	Average 2008	Property rights and rule-based governance 2008	Quality of budgetary and financial management 2008	Efficiency of revenue mobilization 2008	Quality of public administration 2008	Transparency, accountability, and corruption in the public sector 2008	Average 2008
Afghanistan	2.0	2.5	3.0	2.5	2.5	2.5	1.5	3.0	2.5	2.0	2.0	2.2
Angola	3.0	2.5	2.5	2.5	3.0	2.7	2.0	2.5	2.5	2.5	2.5	2.4
Armenia	4.5	4.5	4.0	4.5	3.0	4.1	3.5	4.5	3.5	4.0	3.0	3.7
Azerbaijan	4.0	4.0	4.0	4.0	3.0	3.8	3.0	4.0	3.5	3.0	2.5	3.2
Bangladesh	4.0	3.5	4.0	3.5	3.0	3.6	3.0	3.0	3.0	3.0	3.0	3.0
Benin	3.5	3.0	3.5	3.0	3.5	3.3	3.0	3.5	3.5	3.0	3.5	3.3
Bhutan	4.0	4.0	4.0	3.5	4.5	4.0	3.5	3.5	4.0	4.0	4.0	3.8
Bolivia	4.0	4.0	4.0	3.5	3.5	3.8	2.5	3.5	4.0	3.0	3.5	3.3
Bosnia and Herzegovina	4.5	3.0	3.5	3.5	3.5	3.6	3.0	3.5	4.0	3.0	3.0	3.3
Burkina Faso	3.5	4.0	3.5	3.5	3.5	3.6	3.5	4.0	3.5	3.5	3.0	3.5
Burundi	4.0	3.5	3.0	3.0	3.0	3.3	2.5	3.0	3.0	2.5	2.0	2.6
Cambodia	4.0	3.0	3.5	3.0	3.0	3.3	2.5	3.0	3.0	2.5	2.5	2.7
Cameroon	3.0	3.0	3.5	3.0	3.0	3.1	2.5	3.0	3.5	3.0	2.5	2.9
Cape Verde	4.5	4.5	4.5	4.5	3.5	4.3	4.0	4.0	3.5	4.0	4.5	4.0
Central African Republic	2.5	2.0	2.0	2.0	2.5	2.2	2.0	2.0	2.5	2.5	2.5	2.3
Chad	2.5	2.5	2.5	2.5	2.0	2.4	2.0	2.0	2.5	2.5	2.0	2.2
Comoros	3.0	2.5	2.5	2.5	2.0	2.5	2.5	1.5	2.5	2.0	2.5	2.2
Congo, Dem. Rep.	3.0	3.0	3.0	3.0	2.5	2.9	2.0	2.5	2.5	2.0	2.0	2.2
Congo, Rep.	3.0	2.5	3.0	2.5	2.5	2.7	2.5	2.5	3.0	2.5	2.5	2.6
Côte d'Ivoire	2.5	1.5	2.5	2.5	2.5	2.3	2.0	2.0	4.0	2.0	2.5	2.5
Djibouti	2.5	3.0	3.5	3.0	3.0	3.0	2.5	3.0	3.5	2.5	2.5	2.8
Dominica	3.5	3.5	4.0	3.5	3.5	3.6	4.0	3.5	4.0	3.5	4.0	3.8
Eritrea	3.5	3.0	3.5	3.0	2.0	3.0	2.5	2.5	3.5	3.0	2.0	2.7
Ethiopia	3.0	4.5	4.0	3.5	3.0	3.6	3.0	4.0	4.0	3.0	2.5	3.3
Gambia, The	3.5	3.0	3.5	2.5	3.5	3.2	3.0	3.0	3.5	3.0	2.0	2.9
Georgia	4.5	4.5	4.5	4.5	3.0	4.2	3.5	4.0	4.5	4.0	3.0	3.8
Ghana	4.0	4.0	4.5	4.0	3.5	4.0	3.5	4.0	4.5	3.5	4.0	3.9
Grenada	5.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	3.5	4.0	3.7
Guinea	3.5	3.0	3.0	3.0	2.5	3.0	2.0	3.0	3.0	3.0	2.0	2.6
Guinea-Bissau	2.5	3.0	2.5	2.5	2.5	2.6	2.5	2.5	3.0	2.5	2.5	2.6
Guyana	4.0	3.5	4.0	3.0	3.0	3.5	3.0	3.5	3.5	2.5	3.0	3.1
Haiti	3.0	3.0	2.5	2.5	2.5	2.7	2.0	3.0	2.5	2.5	2.0	2.4
Honduras	4.0	4.0	4.0	3.5	3.5	3.8	3.0	4.0	4.0	3.0	3.0	3.4
India	3.5	4.0	4.0	3.5	3.5	3.7	3.5	4.0	4.0	3.5	3.5	3.7
Kenya	3.0	3.0	3.5	3.0	3.5	3.2	2.5	3.5	4.0	3.5	3.0	3.3
Kiribati	2.5	3.0	2.5	3.0	3.0	2.8	3.5	3.0	3.0	3.0	3.0	3.1
Kyrgyz Republic	4.5	3.5	3.5	3.5	3.0	3.6	2.5	3.5	3.5	3.0	2.5	3.0
Lao PDR	3.5	4.0	3.0	2.5	4.0	3.4	3.0	3.5	3.0	3.0	2.0	2.9

Definitions

• **International Development Association Resource Allocation Index** is obtained by calculating the average score for each cluster and then by averaging those scores. For each of 16 criteria countries are rated on a scale of 1 (low) to 6 (high) • **Economic management** cluster: **Macroeconomic management** assesses the monetary, exchange rate, and aggregate demand policy framework. • **Fiscal policy** assesses the short- and medium-term sustainability of fiscal policy (taking into account monetary and exchange rate policy and the sustainability of the public debt) and its impact on growth. • **Debt policy** assesses whether the debt management strategy is conducive to minimizing budgetary risks and ensuring

long-term debt sustainability. • **Structural policies** cluster: **Trade** assesses how the policy framework fosters trade in goods. • **Financial sector** assesses the structure of the financial sector and the policies and regulations that affect it. • **Business regulatory environment** assesses the extent to which the legal, regulatory, and policy environments help or hinder private businesses in investing, creating jobs, and becoming more productive. • **Policies for social inclusion and equity** cluster: **Gender equality** assesses the extent to which the country has installed institutions and programs to enforce laws and policies that promote equal access for men and women in education, health, the economy, and

protection under law. • **Equity of public resource use** assesses the extent to which the pattern of public expenditures and revenue collection affects the poor and is consistent with national poverty reduction priorities. • **Building human resources** assesses the national policies and public and private sector service delivery that affect the access to and quality of health and education services, including prevention and treatment of HIV/AIDS, tuberculosis, and malaria. • **Social protection and labor** assess government policies in social protection and labor market regulations that reduce the risk of becoming poor, assist those who are poor to better manage further risks, and ensure a minimal level of welfare

	Policies for social inclusion and equity 1–6 (low to high)						Public sector management and institutions 1–6 (low to high)					
	Gender equality 2008	Equity of public resource use 2008	Building human resources 2008	Social protection and labor 2008	Policies and institutions for environmental sustainability 2008	Average 2008	Property rights and rule-based governance 2008	Quality of budgetary and financial manage- ment 2008	Efficiency of revenue mobilization 2008	Quality of public administration 2008	Transparency, accountability, and corruption in the public sector 2008	Average 2008
Lesotho	4.0	3.0	3.5	3.0	3.0	3.3	3.5	3.0	4.0	3.0	3.5	3.4
Madagascar	3.5	4.0	3.5	3.5	4.0	3.7	3.5	3.5	4.0	3.5	3.5	3.6
Malawi	3.5	3.5	3.0	3.5	3.5	3.4	3.5	3.0	4.0	3.5	3.0	3.4
Maldives	4.0	4.0	4.0	3.5	4.0	3.9	4.0	3.0	4.0	4.0	2.5	3.5
Mali	3.5	3.5	3.5	3.5	3.0	3.4	3.5	3.5	3.5	3.0	3.5	3.4
Mauritania	4.0	3.5	3.5	3.0	3.5	3.5	3.0	3.0	3.5	3.0	2.5	3.0
Moldova	5.0	3.5	4.0	3.5	3.5	3.9	3.5	4.0	3.5	3.5	3.0	3.5
Mongolia	3.5	3.5	4.0	3.5	3.0	3.5	3.0	4.0	3.0	3.5	3.0	3.3
Mozambique	3.5	3.5	4.0	3.0	3.0	3.4	3.0	3.5	4.0	3.0	3.0	3.3
Nepal	3.5	3.5	4.0	3.0	3.0	3.4	2.5	3.0	3.5	3.0	3.0	3.0
Nicaragua	3.5	4.0	3.5	3.5	3.5	3.6	3.0	4.0	4.0	3.0	3.0	3.4
Niger	2.5	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.0	3.2
Nigeria	3.0	3.5	3.0	3.5	3.0	3.2	2.5	3.0	3.0	3.0	3.0	2.9
Pakistan	2.0	3.5	3.5	3.0	3.0	3.0	2.5	3.5	3.0	3.5	2.5	3.0
Papua New Guinea	2.5	3.0	2.5	3.0	2.0	2.6	2.0	3.5	3.5	2.5	3.0	2.9
Rwanda	3.5	4.5	4.5	3.5	3.5	3.9	3.0	4.0	3.5	3.5	3.5	3.5
Samoa	3.5	4.0	4.0	4.0	4.0	3.9	4.0	3.5	4.0	4.0	4.0	3.9
São Tomé and Príncipe	3.0	3.0	3.0	2.5	2.5	2.8	2.5	3.0	3.5	3.0	3.5	3.1
Senegal	3.5	3.5	3.5	3.0	3.5	3.4	3.5	3.0	4.0	3.5	3.0	3.4
Sierra Leone	3.0	3.0	3.5	3.0	2.0	2.9	2.5	3.5	2.5	2.5	2.5	2.7
Solomon Islands	3.0	2.5	3.0	2.5	2.0	2.6	3.0	2.5	2.5	2.0	3.0	2.6
Sri Lanka	4.0	3.5	4.5	3.5	3.5	3.8	3.0	4.0	3.5	3.0	3.0	3.3
St. Lucia	3.5	4.0	4.0	4.0	3.5	3.8	4.0	3.5	4.0	3.5	4.5	3.9
St. Vincent & Grenadines	4.0	3.5	4.0	3.5	3.5	3.7	4.0	3.5	4.0	3.5	4.0	3.8
Sudan	2.0	2.5	2.5	2.5	2.0	2.3	2.0	2.0	3.0	2.5	2.0	2.3
Tajikistan	4.0	3.5	3.0	3.5	3.0	3.4	2.5	3.0	3.0	2.5	2.0	2.6
Tanzania	3.5	4.0	4.0	3.5	3.5	3.7	3.5	3.5	4.0	3.5	3.0	3.5
Timor-Leste	3.5	3.0	2.5	2.0	2.5	2.7	2.0	3.0	3.0	2.5	3.0	2.7
Togo	3.0	2.0	3.0	3.0	2.5	2.7	2.5	2.0	2.5	2.0	2.0	2.2
Tonga	3.0	3.5	4.0	3.0	3.0	3.3	3.5	3.0	3.0	3.5	3.5	3.3
Uganda	3.5	4.0	4.0	3.5	4.0	3.8	3.5	4.0	3.5	3.0	3.0	3.4
Uzbekistan	4.0	3.5	4.0	3.5	3.5	3.7	2.5	3.0	3.5	3.0	1.5	2.7
Vanuatu	3.5	3.5	2.5	2.0	3.0	2.9	3.5	3.5	3.5	3.0	3.0	3.3
Vietnam	4.5	4.5	4.0	3.5	3.5	4.0	3.5	4.0	4.0	3.5	3.0	3.6
Yemen, Rep.	2.0	3.5	3.0	3.5	3.5	3.1	2.5	3.5	3.0	3.0	3.0	3.0
Zambia	3.5	3.5	4.0	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.0	3.2
Zimbabwe	2.5	1.0	1.0	1.0	2.0	1.5	1.0	1.5	3.5	1.0	1.0	1.6

to all people. • **Policies and institutions for environmental sustainability** assess the extent to which environmental policies foster the protection and sustainable use of natural resources and the management of pollution. • **Public sector management and institutions** cluster: **Property rights and rule-based governance** assess the extent to which private economic activity is facilitated by an effective legal system and rule-based governance structure in which property and contract rights are reliably respected and enforced. • **Quality of budgetary and financial management** assesses the extent to which there is a comprehensive and credible budget linked to policy priorities, effective financial management systems,

and timely and accurate accounting and fiscal reporting, including timely and audited public accounts.

• **Efficiency of revenue mobilization** assesses the overall pattern of revenue mobilization—not only the de facto tax structure, but also revenue from all sources as actually collected. • **Quality of public administration** assesses the extent to which civilian central government staff is structured to design and implement government policy and deliver services effectively. • **Transparency, accountability, and corruption in the public sector** assess the extent to which the executive can be held accountable for its use of funds and for the results of its actions by the electorate, the legislature, and the judiciary and the

extent to which public employees within the executive are required to account for administrative decisions, use of resources, and results obtained. The three main dimensions assessed are the accountability of the executive to oversight institutions and of public employees for their performance, access of civil society to information on public affairs, and state capture by narrow vested interests.

Data sources

Data on public policies and institutions are from the World Bank Group's CPIA database available at www.worldbank.org/ida.



	Roads				Railways			Ports	Air		
	Total road network km	Paved roads %	Passengers carried million passenger-km	Goods hauled million ton-km	Rail lines total route-km	Passengers carried million passenger-km	Goods hauled million ton-km	Port container traffic thousand TEU	Registered carrier departures worldwide thousands	Passengers carried thousands	Air freight million ton-km
	2000-07 ^a	2000-07 ^a	2000-07 ^a	2000-07 ^a	2000-08 ^a	2000-08 ^a	2000-08 ^a	2008	2008	2008	2008
Afghanistan	42,150	29.3	..	..	..	..	..	..	..	..	..
Albania	18,000	39.0	197	2,200	423	51	53	..	..	..	0
Algeria	108,302	70.2	..	..	3,572	937	1,562	311	31	2,885	17
Angola	51,429	10.4	166,045	4,709	..	..	..	..	3	284	71
Argentina	231,374	30.0	..	..	35,753	..	12,871	1,997	75	6,147	132
Armenia	7,515	89.8	2,693	434	845	27	354	..	..	..	7
Australia	815,074	..	301,550	173,000	9,661	1,526	61,019	6,143	393	51,488	2,212
Austria	107,206	100.0	69,000	26,411	5,755	10,275	18,710	..	151	9,141	421
Azerbaijan	59,141	49.4	11,786	8,222	2,099	1,047	10,021	..	12	756	12
Bangladesh	239,226	9.5	..	..	2,835	5,609	870	1,070	11	1,224	84
Belarus	94,797	88.6	9,353	15,779	5,491	8,188	47,933	..	6	500	66
Belgium	153,070	78.2	130,868	51,572	3,513	10,403	7,882	10,938	179	5,879	982
Benin	19,000	9.5	..	..	758	..	36	..	..	..	..
Bolivia	62,479	7.0	..	..	2,866	313	1,060	..	21	1,718	9
Bosnia and Herzegovina	21,846	52.3	..	300	1,016	78	1,237	..	..	..	..
Botswana	25,798	32.6	..	..	888	94	674	..	6	236	0
Brazil	1,751,868	5.5	..	..	29,817	..	267,700	6,879	648	58,763	1,807
Bulgaria	40,231	98.4	13,688	11,843	4,159	2,335	4,673	..	16	1,073	2
Burkina Faso	92,495	4.2	..	..	622	..	..	..	1	81	0
Burundi	12,322	10.4	..	..	..	..	..	..	..	..	..
Cambodia	38,257	6.3	201	3	..	..	..	..	4	211	1
Cameroon	51,346	8.4	..	..	977	379	978	..	9	471	26
Canada	1,409,000	39.9	493,814	184,774	57,216	3,056	358,154	4,721	1,200	53,719	1,389
Central African Republic	24,307	..	..	..	..	..	..	..	..	..	..
Chad	40,000	0.8	..	..	..	..	..	..	..	..	..
Chile	79,814	20.2	..	..	5,898	759	4,296	3,123	109	8,022	1,308
China	3,583,715	70.7	1,150,677	975,420	60,809	772,834	2,511,804	115,061	1,853	191,001	11,386
Hong Kong SAR, China	2,009	100.0	..	..	..	..	..	24,494	..	..	8,326
Colombia	164,278	..	157	39,726	1,663	..	9,049	1,955	187	12,339	1,100
Congo, Dem. Rep.	153,497	1.8	..	..	4,007	95	352	..	..	..	..
Congo, Rep.	17,289	5.0	..	..	795	211	234	..	..	..	..
Costa Rica	36,654	25.5	27	..	..	..	..	1,005	37	1,024	11
Côte d'Ivoire	80,000	8.1	..	..	639	..	675	710	..	..	..
Croatia	29,038	89.1	3,277	10,175	2,722	1,810	3,312	113	25	1,753	2
Cuba	60,856	49.0	5,266	2,133	5,076	1,285	1,351	..	12	861	32
Czech Republic	128,511	100.0	90,055	46,600	9,487	6,759	15,961	..	78	4,975	27
Denmark	72,412	100.0	70,635	11,495	2,133	5,843	..	680	..	..	1
Dominican Republic	12,600	49.4	..	..	..	..	..	1,092	..	..	..
Ecuador	43,670	14.8	11,819	5,453	..	..	..	671	49	2,927	5
Egypt, Arab Rep.	92,370	81.0	..	..	5,063	40,830	4,188	6,115	58	6,689	195
El Salvador	10,029	19.8	..	..	..	..	..	..	21	2,280	18
Eritrea	4,010	21.8	..	..	..	..	..	..	..	..	..
Estonia	58,034	28.8	3,190	7,641	816	274	5,683	..	11	686	1
Ethiopia	42,429	12.8	219,113	2,456	..	..	..	..	40	2,715	228
Finland	78,889	65.4	71,300	26,400	5,919	4,052	10,777	1,605	114	7,916	543
France	951,125	100.0	775,000	313,000	29,901	88,283	41,530	4,619	828	61,215	6,188
Gabon	9,170	10.2	..	..	810	99	2,502	..	6	546	68
Gambia, The	3,742	19.3	16	..	..	..	..	..	..	..	..
Georgia	20,329	38.6	5,269	586	1,513	774	6,928	..	..	..	3
Germany	644,471	100.0	966,692	461,900	33,862	76,997	91,178	17,177	1,154	107,942	8,353
Ghana	57,614	14.9	..	..	953	85	181	..	..	..	..
Greece	117,533	91.8	..	18,360	2,552	2,003	786	1,769	128	9,443	78
Guatemala	14,095	34.5	..	..	..	..	..	910	..	..	..
Guinea	44,348	9.8	..	..	..	..	..	..	..	..	..
Guinea-Bissau	3,455	27.9	..	..	..	..	..	..	..	..	..
Haiti	4,160	24.3	..	..	..	..	..	..	..	..	..
Honduras	13,600	20.4	..	..	..	..	..	553	..	..	..

	Roads				Railways			Ports	Air		
	Total road network km	Paved roads %	Passengers carried million passenger-km	Goods hauled million ton-km	Rail lines total route-km	Passengers carried million passenger-km	Goods hauled million ton-km	Port container traffic thousand TEU	Registered carrier departures worldwide thousands	Passengers carried thousands	Air freight million ton-km
	2000-07 ^a	2000-07 ^a	2000-07 ^a	2000-07 ^a	2000-08 ^a	2000-08 ^a	2000-08 ^a	2008	2008	2008	2008
Hungary	195,719	37.7	11,784	30,495	7,942	5,927	7,786	..	..	..	20
India	3,316,452	47.4	..	..	63,327	769,956	521,371	6,623	592	49,878	1,234
Indonesia	391,009	55.4	..	..	3,370	14,344	4,390	6,788	345	29,766	395
Iran, Islamic Rep.	172,927	72.8	..	..	7,335	13,900	21,829	2,000	122	12,029	97
Iraq	45,550	84.3	..	..	2,032	61	640	..	..	..	..
Ireland	96,602	100.0	..	15,900	1,919	1,976	103	1,044	..	..	131
Israel	17,870	100.0	..	..	1,005	1,968	1,055	2,090	45	4,563	902
Italy	487,700	100.0	97,560	192,700	16,862	46,998	19,918	10,520	383	30,672	1,279
Jamaica	22,121	73.3	..	..	..	..	..	1,916	..	..	15
Japan	1,196,999	79.3	947,562	327,632	20,048	255,865	23,032	18,795	655	97,022	8,173
Jordan	7,768	100.0	..	..	251	..	789	..	31	2,355	141
Kazakhstan	93,123	90.3	103,381	53,816	14,205	14,450	214,907	..	19	1,276	16
Kenya	63,265	14.1	..	22	1,917	250	1,399	..	32	2,881	295
Korea, Dem. Rep.	25,554	2.8	..	..	..	..	..	..	..	..	2
Korea, Rep.	102,061	77.6	97,854	12,545	3,381	32,025	11,566	17,774	250	36,078	8,727
Kosovo	..	..	..	..	..	..	..	..	..	..	..
Kuwait	5,749	85.0	..	..	..	..	..	750	..	..	239
Kyrgyz Republic	34,000	91.1	6,468	819	417	60	849	..	4	205	2
Lao PDR	29,811	13.4	..	..	..	..	..	..	10	323	3
Latvia	69,687	100.0	2,664	2,729	2,263	951	17,704	..	..	..	13
Lebanon	6,970	..	..	..	..	..	..	945	..	..	74
Lesotho	5,940	18.3	..	..	..	..	..	..	..	..	..
Liberia	10,600	6.2	..	..	..	..	..	..	..	..	..
Libya	83,200	57.2	..	..	..	..	..	..	10	1,214	0
Lithuania	80,715	28.6	42,739	18,134	1,765	398	14,748	..	12	610	1
Macedonia, FYR	13,840	..	1,027	8,299	699	148	743	..	..	..	0
Madagascar	49,827	11.6	..	..	854	10	1	..	12	559	12
Malawi	15,451	45.0	..	..	797	44	33	..	4	160	2
Malaysia	93,109	79.8	..	..	1,665	2,268	1,350	15,742	177	22,421	2,444
Mali	18,709	18.0	..	..	..	..	..	..	..	..	..
Mauritania	11,066	26.8	..	..	728	47	7,622	..	1	154	0
Mauritius	2,028	98.0	..	..	..	..	..	381	12	1,257	191
Mexico	360,075	38.2	449,917	209,392	26,677	84	71,136	3,161	266	18,826	483
Moldova	12,755	85.7	1,640	1,577	1,156	485	3,092	..	..	..	1
Mongolia	49,250	3.5	557	242	1,810	1,400	8,261	..	6	364	6
Morocco	57,799	62.0	..	1,212	1,989	3,836	4,959	561	61	4,927	55
Mozambique	30,400	18.7	..	..	3,116	114	695	..	11	461	7
Myanmar	27,000	11.9	..	..	..	4,163	885	..	30	1,638	3
Namibia	42,237	12.8	47	591	..	..	..	..	5	452	0
Nepal	17,280	56.9	..	..	..	..	..	..	7	520	7
Netherlands	126,100	90.0	..	77,100	2,896	15,313	..	11,362	263	29,601	4,903
New Zealand	93,748	65.4	..	..	..	..	..	2,296	220	12,951	921
Nicaragua	18,669	11.4	..	..	..	..	..	..	..	..	..
Niger	18,951	20.7	..	..	..	..	..	..	..	..	..
Nigeria	193,200	15.0	..	..	3,528	174	77	513	18	1,461	10
Norway	92,920	79.6	60,597	14,966	4,114	2,705	..	..	..	..	..
Oman	48,874	41.3	..	..	..	..	..	3,428	..	..	..
Pakistan	260,420	65.4	263,788	129,249	7,791	24,731	6,187	1,938	52	5,606	320
Panama	11,643	34.6	..	..	..	..	..	5,127	..	..	36
Papua New Guinea	19,600	3.5	..	..	..	..	..	..	22	905	22
Paraguay	29,500	50.8	..	..	..	..	..	..	11	466	0
Peru	78,986	13.9	..	..	2,020	55	627	1,396	68	6,184	230
Philippines	200,037	9.9	..	..	479	83	..	4,466	72	9,508	277
Poland	258,910	90.3	27,359	136,490	19,627	17,958	39,200	859	90	4,635	79
Portugal	82,900	86.0	..	45,032	2,842	3,814	2,550	1,238	159	11,171	347
Puerto Rico	25,645	95.0	..	10	..	..	..	1,685	..	..	..
Qatar	7,790	90.0	..	..	..	..	..	..	..	..	888



	Roads				Railways			Ports	Air		
	Total road network km	Paved roads %	Passengers carried million passenger-km	Goods hauled million ton-km	Rail lines total route-km	Passengers carried million passenger-km	Goods hauled million ton-km	Port container traffic thousand TEU	Registered carrier departures worldwide thousands	Passengers carried thousands	Air freight million ton-km
	2000-07 ^a	2000-07 ^a	2000-07 ^a	2000-07 ^a	2000-08 ^a	2000-08 ^a	2000-08 ^a	2008	2008	2008	2008
Romania	198,817	30.2	7,985	51,531	10,784	6,880	12,861	1,381	55	3,253	6
Russian Federation	933,000	80.9	78,000	199,000	84,158	175,800	2,400,000	3,303	523	37,940	2,400
Rwanda	14,008	19.0	..	..	..	..	..	..	..	..	..
Saudi Arabia	221,372	21.5	..	..	2,758	337	1,748	4,652	148	16,708	1,383
Senegal	13,576	29.3	..	..	..	129	384	..	0	567	0
Serbia	39,184	62.7	3,865	452	4,058	749	4,214	..	..	..	4
Sierra Leone	11,300	8.0	..	..	..	..	..	..	..	..	10
Singapore	3,297	100.0	..	..	..	..	..	29,918	..	..	7,981
Slovak Republic	43,761	87.0	7,816	22,114	3,592	2,279	9,004	..	24	2,690	46
Slovenia	38,708	100.0	817	12,112	1,228	834	3,520	..	..	..	2
Somalia	22,100	11.8	..	..	..	..	..	..	..	..	..
South Africa	362,099	17.3	..	434	24,487	13,865	106,014	3,797	157	13,135	761
Spain	666,292	99.0	397,117	132,868	15,046	23,344	10,224	13,248	617	55,214	1,306
Sri Lanka	97,286	81.0	21,067	..	1,463	4,767	135	3,687	..	..	325
Sudan	11,900	36.3	..	..	4,578	34	766	..	7	618	47
Swaziland	3,594	30.0	..	..	300	0	2	..	..	..	..
Sweden	427,045	31.7	109,300	40,123	9,830	7,156	11,500	1,312	..	..	..
Switzerland	71,354	100.0	94,250	16,337	3,499	18,367	16,227	..	159	14,353	1,182
Syrian Arab Republic	40,032	100.0	589	..	2,139	1,120	2,370	..	19	1,358	14
Tajikistan	27,767	..	150	14,572	616	53	1,274	..	8	683	5
Tanzania	78,891	8.6	..	..	2,600 ^b	475 ^b	728 ^b	..	5	203	1
Thailand	180,053	98.5	..	..	4,429	8,037	3,161	6,586	126	19,993	2,289
Timor-Leste	..	..	..	..	..	..	..	..	..	..	..
Togo	7,520	31.6	..	..	..	..	..	..	..	..	..
Trinidad and Tobago	8,320	51.1	..	..	..	..	..	440	15	1,103	49
Tunisia	19,232	65.8	..	16,611	2,218	1,487	2,197	..	..	..	19
Turkey	426,951	..	209,115	177,399	8,699	5,097	10,104	5,218	215	25,505	481
Turkmenistan	24,000	81.2	..	..	3,181	1,570	10,973	..	16	1,823	11
Uganda	70,746	23.0	..	..	..	..	..	..	..	..	34
Ukraine	169,422	97.8	55,446	26,625	21,676	53,056	257,006	1,112	53	3,456	63
United Arab Emirates	4,030	100.0	..	..	..	..	..	12,254	..	..	..
United Kingdom	420,009	100.0	736,000	166,728	16,321	51,759	12,512	7,081	1,056	104,714	6,284
United States	6,544,257	65.3	7,940,003	1,889,923	227,058	9,935	2,788,230 ^c	40,345	9,054 ^d	701,780 ^d	39,314 ^d
Uruguay	77,732	10.0	2,032	..	2,993	15	284	302	..	..	4
Uzbekistan	81,600	87.3	..	1,200	4,230	2,264	21,594	..	22	2,034	72
Venezuela, RB	96,155	33.6	..	..	336	..	81	1,325	138	5,767	2
Vietnam	160,089	47.6	49,372	20,537	3,147	4,659	3,910	4,394	75	9,991	296
West Bank and Gaza	5,147	100.0	..	..	..	..	..	..	..	..	..
Yemen, Rep.	71,300	8.7	..	..	..	..	..	377	14	1,065	33
Zambia	66,781	22.0	..	..	..	..	..	..	4	62	0
Zimbabwe	97,267	19.0	..	..	2,583	..	1,580	..	6	264	7
World		37.6 m	.. m	.. m	.. s	2,003 m	4,343 m	486,792 s	24,225 s	2,049,275 s	124,557 s
Low income		12.1	..	..	..	..	..	..	302	26,002	1,057
Middle income		37.6	..	..	..	1,120	4,296	215,508	6,565	588,155	28,431
Lower middle income		37.6	..	..	..	1,400	3,127	155,286	3,622	351,921	16,708
Upper middle income		41.8	..	..	..	944	9,049	60,222	2,942	236,233	11,723
Low & middle income		24.3	..	..	..	937	3,127	220,972	6,867	614,156	29,488
East Asia & Pacific		34.3	..	..	..	4,248	3,447	153,036	2,795	287,490	17,220
Europe & Central Asia		..	11,786	15,779	193,080	999	10,063	11,874	1,051	83,250	3,151
Latin America & Carib.		22.0	..	..	..	..	..	29,887	1,646	125,654	5,163
Middle East & N. Africa		75.6	..	..	..	1,487	2,284	..	346	32,523	554
South Asia		56.9	..	..	..	15,170	3,529	13,319	663	57,228	1,645
Sub-Saharan Africa		11.9	..	..	..	..	..	..	366	28,012	1,754
High income		87.0	..	41,824	..	6,343	10,777	265,820	17,358	1,435,119	95,069
Euro area		100.0	97,840	45,032	126,162	10,275	9,614	74,159	4,000	330,883	24,446

a. Data are for the latest year available in the period shown. b. Includes Tazara railway. c. Refers to class 1 railways only. d. Covers only carriers designated by the U.S. Department of Transportation as major and national air carriers.

About the data

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 widely 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 as well as 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 where a national road association is lacking or does not respond, other agencies are contacted, such as road directorates, ministries of transport or public works, or central statistical offices. As a result, definitions and data collection methods and quality differ, and the compiled data are of uneven quality. 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.

Unlike the road sector, where numerous qualified motor vehicle operators can operate anywhere on the road network, railways are a restricted transport system with vehicles confined to a fixed guideway. Considering the 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 and sea transport for freight tend to be more competitive. The railways indicators in the table focus on scale and output measures: total 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 represent the 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 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.

Definitions

- **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 millions of 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.
- **Registered carrier departures worldwide** are domestic takeoffs and takeoffs abroad of air carriers registered in the country.
- **Passengers carried by air** 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 on each flight stage (operation of an aircraft from takeoff to its next landing), measured in metric tons times kilometers traveled.

Data sources

Data on roads are from the IRF’s *World Road Statistics*, supplemented by World Bank staff estimates. Data on railways are from a database maintained by the World Bank’s Transport and Urban Development Department, Transport Division, based on data from the International Union of Railways. Data on port container traffic are from Containerisation International’s *Containerisation International Yearbook*. Data on air transport are from the ICAO’s *Civil Aviation Statistics of the World* and ICAO staff estimates.



	Electric power		Telephones							
	Consumption per capita kWh	Transmission and distribution losses % of output	Access and use			Quality Population covered by mobile cellular network ^a %	Affordability and efficiency			
			per 100 people		International voice traffic ^a minutes per person		Residential fixed-line tariff ^a	Mobile cellular prepaid tariff ^a	Telecommunications revenue ^a % of GDP	Mobile cellular and fixed-line subscribers per employee ^a
			Fixed lines ^a	Mobile cellular subscriptions ^a						
2007	2007	2008	2008	2008	2008	2008	2008	2008	2008	2008
Afghanistan	..	..	0	27	1	75	..	..	..	58
Albania	1,186	69	11	100	127	99	4.3	22.7	6.0	871
Algeria	902	18	10	93	18	82	4.6	8.2	2.7	285
Angola	185	14	1	38	..	40	20.2	11.8	..	..
Argentina	2,659	16	24	117	42	94	4.8	12.5	3.1	1,929
Armenia	1,692	13	20	100	..	88	5.1	8.4	..	..
Australia	11,249	7	44	103	..	99	27.5	26.5	3.3	346
Austria	8,033	6	39	130	..	99	28.7	24.3	1.7	843
Azerbaijan	2,394	14	15	75	..	99	2.4	15.2	2.4	484
Bangladesh	144	7	1	28	6	90	1.3	1.3	..	..
Belarus	3,345	12	38	84	..	99	..	..	2.1	..
Belgium	8,614	5	42	110	..	100	36.4	21.9	2.8	732
Benin	72	87	2	40	12	80	7.5	15.5	1.0	1,539
Bolivia	515	14	7	50	80	46	22.7	5.9	6.8	376
Bosnia and Herzegovina	2,381	19	27	84	109	99	9.5	9.9	5.5	567
Botswana	1,435	15	7	77	115	99	16.9	8.3	3.0	1,018
Brazil	2,171	16	21	78	..	91	29.1	37.0	4.6	358
Bulgaria	4,456	11	29	138	27	100	9.2	18.6	5.3	565
Burkina Faso	..	..	1	17	11	61	10.3	16.9	4.0	..
Burundi	..	..	0	6	..	80	..	..	3.1	492
Cambodia	94	12	0	29	..	87	8.0	5.0	..	1,712
Cameroon	265	14	1	32	4	58	14.8	17.8	3.1	1,050
Canada	16,995	8	55	66	..	98	32.8	19.2	2.5	..
Central African Republic	..	..	0	4	..	19	10.6	12.6	..	293
Chad	..	..	0	17	..	24	..	..	..	..
Chile	3,318	8	21	88	35	100	27.0	13.7	..	592
China	2,332	6	26	48	9	97	3.7	3.6	2.9	1,310
Hong Kong SAR, China	5,899	13	59	166	1,435	100	11.3	2.6	3.6	980
Colombia	977	20	18	92	142	83	7.6	9.6	3.7	..
Congo, Dem. Rep.	97	4	..	..	..	..	..	..	..	..
Congo, Rep.	135	93	1	50	..	53	..	..	..	..
Costa Rica	1,863	10	32	42	120	69	4.6	4.5	1.8	497
Côte d'Ivoire	178	23	2	51	..	59	22.8	14.8	5.5	1,445
Croatia	3,738	17	42	133	229	100	16.4	18.7	4.6	892
Cuba	1,309	17	10	3	..	77	13.2	22.7	..	..
Czech Republic	6,496	6	22	132	136	100	30.9	18.6	3.8	812
Denmark	6,670	5	45	125	210	114	28.5	5.8	2.4	543
Dominican Republic	1,378	9	10	72	..	..	14.4	9.1	..	..
Ecuador	788	44	14	86	3	84	1.1	9.0	4.1	513
Egypt, Arab Rep.	1,384	11	15	51	27	95	3.0	4.7	3.7	856
El Salvador	939	2	18	113	578	95	10.4	10.5	4.8	2,275
Eritrea	..	..	1	2	17	80	..	..	3.0	117
Estonia	6,273	11	37	188	..	100	13.7	13.6	4.5	742
Ethiopia	40	9	1	2	2	10	1.5	3.1	1.3	233
Finland	17,162	4	31	129	..	100	19.3	14.1	2.3	708
France	7,772	6	56	93	242	99	30.9	35.7	2.0	695
Gabon	1,066	18	2	90	..	79	..	..	2.0	..
Gambia, The	..	..	3	70	..	85	4.0	6.0	..	466
Georgia	1,620	13	14	64	44	98	7.3	8.5	6.9	355
Germany	7,184	5	63	129	..	99	28.8	10.1	2.5	789
Ghana	259	18	1	50	6	73	4.7	5.9	..	1,780
Greece	5,628	8	53	123	..	100	26.7	25.1	3.7	813
Guatemala	558	14	11	109	..	76	8.7	4.5	..	..
Guinea	..	..	0	39	..	80	3.4	3.5	..	..
Guinea-Bissau	..	..	0	32	..	65	..	..	..	..
Haiti	30	37	1	32	..	..	..	..	..	..
Honduras	692	22	11	85	39	90	..	..	7.1	391

Power and communications

5.11

	Electric power		Telephones							
	Consumption per capita kWh	Transmission and distribution losses % of output	Access and use				Affordability and efficiency			
			per 100 people		International voice traffic ^a minutes per person	Quality Population covered by mobile cellular network ^a %	\$ per month		Telecom- munications revenue ^a % of GDP	Mobile cellular and fixed-line subscribers per employee ^a
			Fixed lines ^a	Mobile cellular subscriptions ^a			Residential fixed-line tariff ^a	Mobile cellular prepaid tariff ^a		
2007	2007	2008	2008	2008	2008	2008	2008	2008	2008	
Hungary	3,977	10	31	122	120	99	30.2	16.1	3.8	1,127
India	542	25	3	30	..	61	3.5	1.6	2.0	..
Indonesia	566	11	13	62	..	90	4.5	5.3	..	..
Iran, Islamic Rep.	2,325	19	34	60	..	95	0.2	3.8	..	913
Iraq	1,080	7	4	57	0	72	..	..	..	1,098
Ireland	6,263	8	50	121	..	99	42.2	18.7	2.5	..
Israel	7,002	3	44	123	413	100	..	..	1.1	..
Italy	5,713	7	36	151	..	100	27.4	17.1	2.9	1,657
Jamaica	2,542	13	12	101	39	101	10.8	7.0	1.4	..
Japan	8,474	5	38	86	..	100	18.3	32.2	3.0	12
Jordan	1,956	14	9	90	66	99	8.3	4.5	6.7	1,105
Kazakhstan	4,448	10	22	95	47	94	..	..	2.9	253
Kenya	151	15	1	42	3	83	11.6	13.4	6.3	2,298
Korea, Dem. Rep.	764	16	5	0	..	0	..	..	..	..
Korea, Rep.	8,502	4	44	94	33	94	6.4	14.6	4.7	657
Kosovo	..	..	..	..	..	..	..	..	..	..
Kuwait	16,198	12	20	107	..	100	9.3	7.9	..	..
Kyrgyz Republic	1,772	28	9	64	..	24	..	..	4.8	311
Lao PDR	..	..	2	33	..	..	3.9	3.0	..	748
Latvia	3,064	17	28	99	..	99	11.9	7.3	4.0	697
Lebanon	2,154	17	18	34	..	100	10.9	22.2	..	..
Lesotho	..	..	3	28	..	55	12.5	12.6	..	..
Liberia	..	..	0	19	..	..	..	..	8.2	..
Libya	3,871	7	16	77	65	71	..	..	..	1,717
Lithuania	3,414	8	23	150	57	100	15.0	8.7	2.8	402
Macedonia, FYR	3,780	22	22	123	159	100	8.7	13.2	6.3	1,065
Madagascar	..	..	1	25	1	23	18.3	12.4	3.9	2,427
Malawi	..	..	1	12	..	93	3.3	12.0	3.4	..
Malaysia	3,667	2	16	103	..	92	5.1	5.9	..	..
Mali	..	..	1	27	2	22	9.9	10.0	4.3	2,059
Mauritania	..	..	2	65	4	62	12.9	9.9	7.7	2,842
Mauritius	..	..	29	81	100	99	5.5	4.4	3.6	..
Mexico	2,036	16	19	71	174	100	22.3	15.0	2.7	840
Moldova	1,319	50	31	67	155	98	3.1	8.9	10.1	294
Mongolia	1,369	12	8	67	5	66	..	..	6.0	393
Morocco	707	19	9	72	21	98	27.4	22.2	5.1	..
Mozambique	472	14	0	20	..	44	17.7	10.1	1.2	..
Myanmar	94	29	2	1	..	10	..	..	..	90
Namibia	1,541	28	7	49	..	95	14.5	11.5	..	..
Nepal	80	22	3	15	..	10	3.4	2.9	1.0	565
Netherlands	7,097	4	44	125	..	98	31.2	17.7	0.7	..
New Zealand	9,622	7	41	108	310	97	34.4	23.1	2.9	605
Nicaragua	446	24	6	55	39	..	5.1	13.8	..	..
Niger	..	..	0	13	..	45	13.6	13.8	..	..
Nigeria	137	12	1	42	1	83	10.3	12.1	3.4	..
Norway	24,980	7	40	110	..	..	37.6	9.7	1.2	..
Oman	4,484	15	10	116	30	96	32.6	5.5	3.4	967
Pakistan	474	19	3	53	..	90	3.6	1.9	2.7	50
Panama	1,592	16	15	115	61	83	9.1	5.1	3.2	380
Papua New Guinea	..	..	1	9	..	..	4.0	12.8	..	..
Paraguay	958	5	8	95	35	..	7.2	5.7	4.8	799
Peru	961	8	10	73	..	95	15.4	8.0	3.1	624
Philippines	586	13	5	75	..	99	14.2	5.7	..	..
Poland	3,662	9	25	115	..	99	28.0	12.5	3.9	396
Portugal	4,860	7	39	140	..	99	25.7	26.4	4.6	1,534
Puerto Rico	..	..	26	..	..	..	..	..	..	..
Qatar	12,915	9	21	131	..	100	..	..	1.8	597



	Electric power			Telephones						
	Consumption per capita kWh	Transmission and distribution losses % of output	Access and use			Quality Population covered by mobile cellular network ^a %	Affordability and efficiency			
			per 100 people Fixed lines ^a	Mobile cellular subscriptions ^a	International voice traffic ^a minutes per person		\$ per month		Telecommunications revenue ^a % of GDP	Mobile cellular and fixed-line subscribers per employee ^a
							Residential fixed-line tariff ^a	Mobile cellular prepaid tariff ^a		
2007	2007	2008	2008	2008	2008	2008	2008	2008	2008	
Romania	2,452	11	23	114	41	98	12.2	11.9	3.4	561
Russian Federation	6,317	10	32	141	..	95	11.7	8.6	2.6	..
Rwanda	..	..	0	14	11	92	7.3	10.0	3.1	1,952
Saudi Arabia	7,247	7	17	146	..	98	9.2	8.8	2.7	1,618
Senegal	128	25	2	44	27	85	17.4	8.4	9.8	1,859
Serbia	4,155	16	42	131	142	93	4.9	4.9	5.3	872
Sierra Leone	..	..	1	18	..	70	..	..	..	..
Singapore	8,514	5	38	132	1,531	100	7.1	4.0	2.8	..
Slovak Republic	5,250	5	20	102	123	100	24.5	16.1	3.3	665
Slovenia	7,138	6	50	102	96	100	20.5	12.4	3.3	644
Somalia	..	..	1	7	..	..	..	..	..	..
South Africa	4,986	8	9	92	..	100	22.4	12.3	7.4	..
Spain	6,296	5	44	109	..	99	30.8	33.3	4.0	855
Sri Lanka	417	16	17	55	34	95	4.8	2.4	..	919
Sudan	90	20	1	29	6	66	4.4	4.8	3.3	2,168
Swaziland	..	..	4	46	..	91	4.8	12.1	4.5	1,118
Sweden	15,238	7	58	118	..	98	22.8	7.5	2.7	894
Switzerland	8,164	6	63	116	..	100	29.0	35.5	3.3	601
Syrian Arab Republic	1,469	24	18	34	78	96	1.2	9.1	3.0	409
Tajikistan	2,176	17	4	54	..	..	..	..	..	..
Tanzania	82	19	0	31	0	65	10.9	11.1	..	..
Thailand	2,055	6	10	92	..	38	5.8	3.9	4.0	1,957
Timor-Leste	..	..	..	..	..	..	..	..	7.9	..
Togo	96	53	2	24	6	85	13.1	18.0	7.4	1,059
Trinidad and Tobago	5,642	2	23	113	..	100	19.7	7.9	2.5	..
Tunisia	1,248	13	12	83	79	100	3.0	7.2	4.3	1,004
Turkey	2,238	14	24	89	39	100	..	..	2.3	2,145
Turkmenistan	2,279	14	9	23	..	14	..	..	..	..
Uganda	..	..	1	27	7	100	12.6	10.4	..	..
Ukraine	3,529	12	28	120	0	100	4.2	8.2	5.7	..
United Arab Emirates	16,165	7	34	209	..	100	5.0	4.1	3.1	924
United Kingdom	6,120	7	54	126	..	100	27.3	20.5	4.3	..
United States	13,652	6	51	89	..	100	17.2	15.3	..	..
Uruguay	2,197	20	29	105	0	100	13.0	13.8	3.1	692
Uzbekistan	1,658	9	7	47	..	93	..	..	2.5	758
Venezuela, RB	3,077	27	23	97	..	90	7.0	24.7	3.5	914
Vietnam	728	11	34	81	..	70	2.3	4.2	..	..
West Bank and Gaza	..	..	9	29	..	95	..	..	..	880
Yemen, Rep.	202	25	5	16	..	68	0.8	4.9	..	..
Zambia	720	7	1	28	..	50	27.7	12.3	2.6	..
Zimbabwe	898	7	3	13	22	75	..	..	..	711
World	2,846 w	8 w	19 w	61 w	.. w	80 w	10.9 m	10.1 m	.. w	651 m
Low income	324	13	5	28	..	56	9.0	10.0	..	..
Middle income	1,666	11	15	57	..	80	8.5	9.0	3.2	595
Lower middle income	1,310	11	14	47	..	77	4.8	8.4	3.0	685
Upper middle income	3,052	13	22	95	..	94	11.7	9.9	3.3	559
Low & middle income	1,478	11	13	52	..	76	8.5	9.1	3.2	559
East Asia & Pacific	1,883	6	22	53	9	93	4.5	5.0	3.0	..
Europe & Central Asia	3,958	11	26	110	..	92	8.7	8.9	2.8	462
Latin America & Carib.	1,866	17	19	80	..	92	10.4	9.6	3.8	550
Middle East & N. Africa	1,435	16	16	58	27	93	3.0	7.2	..	880
South Asia	482	24	3	33	..	61	3.5	1.9	2.1	565
Sub-Saharan Africa	550	10	2	33	..	56	11.6	11.8	..	..
High income	9,753	6	47	106	..	99	27.0	16.1	..	801
Euro area	6,963	5	49	122	..	99	28.7	18.7	2.6	789

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.

About the 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, improving quality, and easing access to services around the globe.

An economy's production and consumption of electricity are basic indicators 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 3.10). Electricity consumption is equivalent to production less power plants' own use and transmission, distribution, and transformation losses less exports plus imports. 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. With the rapid development of mobile telephony and the global expansion of the Internet, information and communication technologies are increasingly recognized as essential tools of development, contributing to global integration and enhancing public sector effectiveness, efficiency, and transparency. The table presents telecommunications indicators covering access and use, quality, and affordability and efficiency.

Access to telephone services rose on an unprecedented scale over the past 15 years. This growth was driven primarily by wireless technologies and liberalization of telecommunications markets, which have enabled faster and less costly network rollout. In 2002 the number of mobile phones in the world surpassed the number of fixed telephones; by the end of 2008 there were an estimated 4 billion mobile phones globally. No technology has ever spread faster around the world. Mobile communications have had a particularly important impact in rural areas. The mobility, ease of use, flexible deployment, and relatively low and declining rollout costs of wireless technologies enable them to reach rural populations with low levels of income and literacy. The next billion mobile subscribers will consist mainly of the rural poor.

Access is the key to delivering telecommunications services to people. If the service is not affordable to most people, goals of universal usage will not be met. Two indicators of telecommunications affordability are presented in the table: fixed-line telephone service tariff and prepaid mobile cellular service tariff. Telecommunications efficiency is measured by total telecommunications revenue divided by GDP and by mobile cellular and fixed-line telephone subscribers per employee.

Operators have traditionally been the main source of telecommunications data, so information on subscribers has been 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. During the past few years more information on information and communication technology use has become available from household and business surveys. Also important are data on actual use of telecommunications equipment. Ideally, statistics on telecommunications (and other information and communications technologies) should be compiled for all three measures: subscription and possession, access, and use. The quality of data varies among reporting countries as a result of differences in regulations covering data provision and availability.

Definitions

- **Electric power consumption per capita** 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 divided by midyear population.
- **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.
- **Fixed telephone lines** are telephone lines connecting a subscriber to the telephone exchange equipment.
- **Mobile cellular telephone subscriptions** are subscriptions to a public mobile telephone service using cellular technology, which provide access to the public switched telephone network. Post-paid and prepaid subscriptions are included.
- **International voice traffic** is the sum of international incoming and outgoing telephone traffic (in minutes) divided by total population.
- **Population covered by mobile cellular network** is the percentage of people that live in areas served by a mobile cellular signal regardless of whether they use it.
- **Residential fixed-line tariff** is the monthly subscription charge plus the cost of 30 three-minute local calls (15 peak and 15 off-peak).
- **Mobile cellular prepaid tariff** is based on the Organisation for Economic Co-operation and Development's low-user definition, which includes the cost of monthly mobile use for 25 outgoing calls per month spread over the same mobile network, other mobile networks, and mobile to fixed-line calls and during peak, off-peak, and weekend times as well as 30 text messages per month.
- **Telecommunications revenue** is the revenue from the provision of telecommunications services such as fixed-line, mobile, and data divided by GDP.
- **Mobile cellular and fixed-line subscribers per employee** are telephone subscribers (fixed-line plus mobile) divided by the total number of telecommunications employees.

Data sources

Data on electricity consumption and losses are from the IEA's *Energy Statistics and Balances of Non-OECD Countries 2009*, the IEA's *Energy Statistics of OECD Countries 2009*, and the United Nations Statistics Division's *Energy Statistics Yearbook*. Data on telecommunications are from the International Telecommunication Union's World Telecommunication Development Report database and World Bank estimates.



	Daily newspapers per 1,000 people 2000-07 ^b	Households with television ^a % 2007	Personal computers and the Internet							Information and communications technology trade		
			Access and use		Quality		Affordability	Application		Exports % of total goods exports 2008	Imports % of total goods imports 2008	Services Exports % of total service exports 2008
			Personal computers ^a per 100 people 2008	Internet users ^a per 100 people 2008	Fixed broadband Internet subscribers ^a per 100 people 2008	International Internet bandwidth ^a bits per second per capita 2008	Fixed broadband Internet access tariff ^a \$ per month 2008	Secure Internet servers per million people December 2009	Information and communications technology expenditures % of GDP 2008			
										2008	2008	2008
Afghanistan	..	..	0.4	1.7	0.00	1	..	0	..	..	0.4	..
Albania	24	..	4.6	23.9	2.04	220	31	7	..	0.8	4.0	6.8
Algeria	..	..	..	11.9	1.41	..	17	1	2.3	0.0	5.8	..
Angola	2	34	0.6	3.1	0.09	17	164	2	..	..	..	..
Argentina	36	..	..	28.1	7.99	2,320	38	20	4.8	0.5	9.4	9.1
Armenia	8	85	..	6.2	0.16	..	39	7	..	1.3	5.9	17.4
Australia	155	..	..	70.8	23.98	5,457	28	1,212	4.9	1.5	10.0	4.9
Austria	311	97	..	71.2	20.74	20,323	61	553	5.5	5.8	6.9	6.3
Azerbaijan	16	99	8.0	28.2	0.69	1,180	85	2	..	0.0	5.0	3.6
Bangladesh	..	..	2.3	0.3	0.03	4	54	0	9.0	0.6	5.7	6.2
Belarus	81	93	..	32.1	4.94	748	..	3	..	0.6	2.7	7.2
Belgium	165	99	..	68.1	27.66	24,945	31	310	5.2	2.9	4.0	8.7
Benin	0	23	0.7	1.8	0.03	18	105	0	..	0.1	3.5	0.8
Bolivia	..	63	..	10.8	0.68	225	34	4	4.9	0.0	4.2	12.4
Bosnia and Herzegovina	..	..	6.4	34.7	4.99	529	15	8	..	0.5	4.1	..
Botswana	41	..	6.2	6.2	0.46	220	30	4	..	0.2	4.3	3.1
Brazil	36	97	..	37.5	5.26	2,108	47	26	5.3	1.8	10.9	2.2
Bulgaria	79	98	11.0	34.7	11.07	37,657	16	35	6.3	2.6	6.1	5.5
Burkina Faso	..	..	0.6	0.9	0.03	15	1,861	0	..	..	..	..
Burundi	..	..	0.9	0.8	0.00	2	..	0	..	0.8	8.3	0.0
Cambodia	..	63	0.4	0.5	0.11	19	91	1	..	..	..	2.8
Cameroon	..	..	..	3.8	0.00	8	184	1	4.6	0.0	3.2	6.4
Canada	175	99	94.3	75.3	29.55	16,193	20	984	6.6	3.8	8.8	10.4
Central African Republic	..	..	..	0.4	0.00	..	1,396	0	..	..	..	..
Chad	..	..	..	1.2	0.00	1	..	..	..	..	..	..
Chile	51	100	..	32.5	8.49	4,076	53	39	5.1	0.2	6.4	2.5
China	74	..	5.7	22.5	6.29	483	19	1	6.0	27.5	23.2	5.3
Hong Kong SAR, China	222	99	69.3	67.0	28.13	548,318	25	350	9.2	42.6	40.8	1.3
Colombia	23	85	11.2	38.5	4.23	2,233	36	12	4.7	0.2	11.2	7.3
Congo, Dem. Rep.	..	..	..	..	..	..	..	0	..	..	..	..
Congo, Rep.	..	25	..	4.3	0.00	0	..	1	..	..	..	..
Costa Rica	65	94	..	32.3	2.38	857	17	98	6.2	23.8	19.0	17.9
Côte d'Ivoire	..	38	..	3.2	0.05	40	47	1	..	0.3	3.9	11.0
Croatia	..	..	..	50.5	11.83	15,892	21	117	..	5.0	6.1	3.1
Cuba	65	88	5.6	12.9	0.02	27	1,630	0	..	1.9	2.9	..
Czech Republic	183	..	..	57.8	16.88	7,075	29	185	7.6	15.2	15.2	8.6
Denmark	353	98	54.9	83.3	36.88	34,506	30	1,167	5.0	5.0	8.1	..
Dominican Republic	39	77	..	21.6	2.27	1,407	28	14	..	6.0	5.2	3.5
Ecuador	99	90	13.0	28.8	0.26	443	40	12	5.3	0.2	8.2	8.1
Egypt, Arab Rep.	..	97	3.9	16.6	0.94	332	8	1	5.7	1.8	4.4	7.3
El Salvador	38	..	..	10.6	2.01	33	18	12	..	2.5	5.3	10.2
Eritrea	..	..	1.0	4.1	0.00	5	..	..	..	..	..	..
Estonia	191	98	25.5	66.2	23.71	126,802	39	315	..	6.5	7.2	7.1
Ethiopia	5	5	0.7	0.4	0.00	3	644	0	..	0.5	7.9	3.9
Finland	431	93	..	82.5	30.45	17,221	38	802	6.5	16.5	12.0	27.4
France	164	97	65.2	67.9	28.41	29,356	38	210	5.2	5.4	7.2	3.7
Gabon	..	..	3.4	6.2	0.15	141	..	7	..	0.1	6.6	..
Gambia, The	..	..	3.5	6.9	0.02	38	384	3	..	2.9	3.8	10.4
Georgia	4	..	27.2	23.8	2.23	752	48	9	..	0.4	7.8	2.2
Germany	267	95	65.6	75.5	27.52	25,654	38	641	5.4	6.9	8.8	8.3
Ghana	..	..	1.1	4.3	0.10	86	64	1	..	0.1	7.3	0.0
Greece	..	100	9.4	43.1	13.41	4,537	25	79	4.5	3.2	5.6	1.7
Guatemala	..	..	..	14.3	0.58	186	34	9	..	0.5	6.3	16.1
Guinea	..	11	..	0.9	0.00	0	800	0	..	0.0	5.8	11.2
Guinea-Bissau	..	..	..	2.4	0.00	1	..	..	..	..	..	..
Haiti	..	25	5.1	10.1	0.00	16	..	1	..	..	..	5.1
Honduras	..	64	2.5	13.1	0.00	241	..	7	8.6	0.2	6.4	14.4

	Daily newspapers per 1,000 people 2000-07 ^b	Households with television ^a % 2007	Personal computers and the Internet							Information and communications technology trade		
			Access and use		Quality		Affordability	Application		Goods	Services	
			per 100 people		Fixed broadband Internet subscribers ^a	International Internet bandwidth ^a	Fixed broadband Internet access tariff ^a	Secure Internet servers	Information and communications technology expenditures % of GDP	Exports % of total goods exports	Imports % of total goods imports	Exports % of total service exports
			Personal computers ^a	Internet users ^a	per 100 people	bits per second per capita	\$ per month	per million people	December 2009	2008	2008	2008
Hungary	217	99	25.6	58.5	17.43	5,977	25	113	8.9	24.6	18.8	8.3
India	71	46	3.3	4.5	0.46	32	6	2	4.5	1.3	5.0	50.3
Indonesia	..	..	2.0	7.9	0.18	120	22	1	3.3	4.6	9.8	8.4
Iran, Islamic Rep.	..	..	10.6	32.0	0.42	151	43	0	3.5	0.1	1.9	..
Iraq	..	..	..	1.0	0.00	1	..	0	..	..	..	3.3
Ireland	182	98	58.2	62.7	20.14	15,261	38	737	4.6	16.3	17.5	34.4
Israel	..	..	..	47.9	23.04	2,003	..	291	5.4	13.5	9.1	29.6
Italy	137	94	..	41.8	18.86	12,989	26	109	4.9	2.8	5.7	3.0
Jamaica	..	..	..	57.3	3.62	744	30	36	3.3	0.3	3.9	5.9
Japan	551	..	..	75.2	23.58	5,770	32	519	6.7	14.3	10.3	1.1
Jordan	..	..	7.5	27.0	2.32	781	31	12	7.3	5.5	7.2	0.0
Kazakhstan	..	..	..	10.9	4.22	702	..	3	..	0.1	3.3	2.4
Kenya	..	..	..	8.7	0.01	21	168	1	5.8	1.3	6.2	13.5
Korea, Dem. Rep.	..	..	..	0.0	0.00	0	..	0	..	..	..	..
Korea, Rep.	..	..	57.6	75.8	31.84	4,528	20	927	9.1	26.2	15.2	1.3
Kosovo	..	..	..	..	..	..	..	..	..	..	..	..
Kuwait	..	..	..	36.7	1.47	871	46	85	3.2	0.3	6.0	45.9
Kyrgyz Republic	1	..	..	16.1	0.09	113	..	1	..	0.8	5.1	2.0
Lao PDR	3	..	..	8.5	0.10	129	268	0	..	..	..	..
Latvia	154	99	32.7	60.4	8.83	3,537	26	114	..	5.1	6.6	5.2
Lebanon	54	..	10.2	22.5	5.03	223	23	15	..	..	..	1.9
Lesotho	..	..	..	3.6	0.01	5	49	0	..	..	..	..
Liberia	..	7	..	0.5	..	..	..	0	..	..	..	..
Libya	..	..	..	5.1	0.16	50	..	1	..	..	..	2.5
Lithuania	108	98	24.2	54.4	17.57	9,751	16	121	..	3.2	5.1	3.1
Macedonia, FYR	89	99	36.8	41.5	8.87	17	15	17	..	0.4	5.0	12.9
Madagascar	..	..	..	1.7	0.02	8	120	0	..	0.3	4.2	..
Malawi	..	..	..	2.1	0.02	5	900	0	..	0.2	3.4	..
Malaysia	109	..	23.1	55.8	4.93	2,374	20	34	9.7	26.2	25.3	5.4
Mali	..	22	0.8	1.6	0.04	51	58	1	..	0.2	3.6	..
Mauritania	..	..	4.5	1.9	0.18	76	62	2	..	..	1.6	..
Mauritius	77	96	17.6	22.2	7.23	364	51	62	..	4.0	5.9	3.6
Mexico	93	93	14.4	22.2	7.14	285	37	17	4.6	20.9	17.2	2.3
Moldova	..	..	11.4	23.4	3.17	966	23	10	..	6.8	3.4	16.8
Mongolia	20	86	24.6	12.5	1.37	947	..	8	..	0.1	5.1	3.7
Morocco	12	77	5.7	33.0	1.53	795	20	2	12.5	5.7	6.7	5.9
Mozambique	3	..	..	1.6	0.05	3	100	0	..	0.2	3.9	6.1
Myanmar	..	..	0.9	0.2	0.02	20	..	0	..	..	..	..
Namibia	28	..	23.9	5.3	0.02	27	46	9	..	0.6	4.9	2.3
Nepal	..	28	..	1.7	0.03	5	23	1	..	..	..	..
Netherlands	307	98	91.2	87.0	35.31	78,156	38	1,416	6.3	11.8	12.6	10.6
New Zealand	182	99	52.6	71.4	21.43	4,544	31	1,059	5.5	1.8	8.4	4.9
Nicaragua	..	..	..	3.3	0.64	144	30	6	..	0.2	6.2	8.2
Niger	0	6	..	0.5	0.00	11	58	0	..	0.7	3.6	32.8
Nigeria	..	..	..	15.9	0.04	5	690	1	3.1	0.0	10.2	..
Norway	516	95	62.9	82.5	33.26	26,904	57	1,011	3.7	2.0	8.2	5.7
Oman	..	..	16.9	20.0	1.15	894	31	11	..	1.6	3.2	..
Pakistan	50	56	..	11.1	0.10	43	18	1	4.4	0.5	5.7	6.7
Panama	65	83	2.8	27.5	5.76	15,964	15	86	5.5	0.0	6.9	4.5
Papua New Guinea	9	..	..	1.8	0.00	2	144	1	..	..	..	..
Paraguay	..	79	..	14.3	1.43	481	35	6	..	0.2	21.3	1.3
Peru	..	69	..	24.7	2.52	2,646	36	10	3.4	0.1	5.3	3.9
Philippines	79	..	7.2	6.2	1.16	113	23	5	6.1	54.1	34.7	7.9
Poland	114	98	16.9	49.0	12.57	2,748	27	123	5.5	7.5	8.9	4.5
Portugal	..	99	18.2	42.1	15.39	4,790	30	136	6.0	7.4	7.9	5.0
Puerto Rico	..	..	..	25.3	5.42	..	..	61	..	..	..	..
Qatar	..	..	15.7	34.0	8.07	2,044	..	64	..	0.0	8.2	..



	Daily newspapers per 1,000 people 2000-07 ^b	Households with television ^a % 2007	Personal computers and the Internet							Information and communications technology trade		
			Access and use		Quality		Affordability	Application		Goods	Imports	Services
			per 100 people		Fixed broadband Internet subscribers ^a	International Internet bandwidth ^a	Fixed broadband Internet access tariff ^a	Secure Internet servers	Information and communications technology expenditures % of GDP	Exports % of total goods exports	% of total goods imports	Exports % of total service exports
			Personal computers ^a	Internet users ^a	per 100 people	second per capita	\$ per month	per million people	2008	2008	2008	
Romania	70	97	19.2	28.8	11.65	9,111	23	21	4.9	5.3	7.5	15.8
Russian Federation	92	..	13.3	31.9	6.54	573	14	11	3.5	0.4	8.9	6.1
Rwanda	..	2	0.3	3.1	0.04	27	92	1	..	0.5	12.5	1.9
Saudi Arabia	..	..	69.8	31.5	4.25	1,224	40	11	5.2	0.4	8.0	..
Senegal	9	43	..	8.4	0.39	237	29	1	10.8	0.6	3.4	15.5
Serbia	..	..	25.8	44.9	6.14	4,506	9	2	..	2.2	5.4	6.7
Sierra Leone	..	..	..	0.3	..	..	..	0	..	..	..	0.2
Singapore	361	..	74.3	69.6	20.73	22,783	22	421	7.1	35.9	28.2	3.5
Slovak Republic	126	99	58.1	66.0	11.18	5,555	28	79	6.4	17.5	14.7	7.2
Slovenia	173	99	42.5	55.7	21.11	6,720	27	210	4.7	3.5	5.1	6.7
Somalia	..	..	..	1.1	0.00	..	..	0	..	..	..	..
South Africa	30	..	..	8.6	0.87	71	26	40	10.1	1.6	8.8	3.2
Spain	144	100	39.3	55.4	19.75	11,008	29	192	4.8	3.2	7.9	5.8
Sri Lanka	26	..	..	5.8	0.51	190	21	4	4.3	1.8	4.6	15.5
Sudan	..	16	10.7	10.2	0.11	322	29	0	..	0.0	2.3	1.2
Swaziland	24	35	3.7	6.9	0.07	31	1,877	4	..	0.1	3.6	1.4
Sweden	481	94	88.1	87.7	41.12	49,828	32	858	5.7	9.5	10.1	13.6
Switzerland	420	..	96.2	75.9	33.68	29,413	32	1,118	7.2	3.5	6.6	..
Syrian Arab Republic	..	..	9.0	17.3	0.05	102	51	0	..	0.6	2.0	4.5
Tajikistan	..	..	..	8.8	0.05	37	..	0	..	..	..	21.6
Tanzania	2	6	..	1.2	0.02	2	68	0	..	0.4	6.2	2.0
Thailand	..	..	..	23.9	1.41	818	18	10	6.2	19.4	15.4	..
Timor-Leste	..	..	..	..	..	..	..	..	..	..	..	..
Togo	2	..	..	5.4	0.03	8	106	2	..	0.1	4.2	..
Trinidad and Tobago	149	..	13.2	17.0	4.58	678	13	46	..	0.1	3.4	..
Tunisia	23	..	9.7	27.1	2.20	1,115	13	12	5.4	5.0	5.6	2.4
Turkey	..	98	6.1	34.4	7.78	2,794	..	66	4.1	2.1	4.7	2.1
Turkmenistan	9	..	..	1.5	0.05	48	..	0	..	..	..	..
Uganda	..	6	1.7	7.9	0.02	12	170	0	..	4.9	9.3	7.2
Ukraine	131	..	4.5	10.5	3.46	206	21	6	5.9	1.3	2.6	3.3
United Arab Emirates	..	..	33.1	65.2	12.43	8,686	22	165	4.9	2.0	5.3	..
United Kingdom	290	99	80.2	76.0	28.13	39,648	29	905	6.3	7.7	10.1	8.0
United States	193	98	80.6	75.9	24.05	11,289	15	1,234	7.1	12.8	12.5	4.0
Uruguay	..	91	..	40.2	7.33	903	24	36	4.3	0.1	6.2	9.0
Uzbekistan	..	..	3.1	9.0	0.24	30	..	0	..	..	..	..
Venezuela, RB	93	92	..	25.7	4.76	628	31	7	3.5	0.0	11.6	7.4
Vietnam	..	..	9.6	24.2	2.38	581	17	2	4.9	5.6	8.2	..
West Bank and Gaza	10	95	..	9.0	2.54	313	..	2	..	..	..	7.6
Yemen, Rep.	4	..	2.8	1.6	0.00	28	226	0	..	0.3	1.8	18.9
Zambia	5	..	..	5.5	0.04	8	91	1	..	0.1	3.4	8.1
Zimbabwe	..	31	7.6	11.4	0.14	10	..	1	..	0.3	2.1	..
World	105 w	.. m	15.3 w	23.9 w	6.21 w	3,546 w	31.4 m	114 w	6.0 w	12.2 w	12.5 w	8.3 w
Low income	..	..	..	4.6	0.26	24	102.4	1	..	2.5	6.3	..
Middle income	70	..	5.6	17.3	3.26	377	29.4	7	5.1	14.4	14.6	12.6
Lower middle income	72	..	4.5	13.9	2.59	153	31.4	2	5.5	19.7	17.0	18.6
Upper middle income	61	..	..	30.6	5.88	1,281	26.3	28	4.8	10.1	12.7	5.2
Low & middle income	59	..	5.2	15.3	2.78	320	36.4	6	5.2	14.3	14.4	12.4
East Asia & Pacific	74	..	5.6	19.4	4.63	470	21.7	2	5.9	25.5	22.4	5.6
Europe & Central Asia	94	..	10.7	28.6	6.34	1,244	22.7	30	4.2	2.1	6.5	5.4
Latin America & Carib.	64	88	..	28.9	4.88	1,391	34.0	20	4.8	10.9	13.5	4.8
Middle East & N. Africa	..	..	5.7	18.9	0.84	323	23.0	2	5.8	..	..	..
South Asia	68	46	3.3	4.7	0.36	31	21.0	1	4.7	1.2	5.1	47.3
Sub-Saharan Africa	..	..	..	6.5	0.11	34	100.1	3	8.5	0.9	7.5	..
High income	261	98	67.8	69.1	24.05	20,143	29.8	715	6.3	11.7	12.0	7.3
Euro area	201	98	56.1	62.6	23.96	32,540	30.5	380	5.3	7.0	8.2	9.1

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 for the most recent year available.

About the data

The digital and information revolution has changed the way the world learns, communicates, does business, and treats illnesses. New information and communications technologies (ICT) 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.

Comparable statistics on access, use, quality, and affordability of ICT are needed to formulate growth-enabling policies for the sector and to monitor and evaluate the sector's impact on development. Although basic access data are available for many countries, in most developing countries little is known about who uses ICT; what they are used for (school, work, business, research, government); and how they affect people and businesses. The global Partnership on Measuring ICT for Development is helping to set standards, harmonize information and communications technology statistics, and build statistical capacity in developing countries. For more information see www.itu.int/ITU-D/ict/partnership/.

Data on daily newspapers in circulation are from United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics surveys on circulation, online newspapers, journalists, community newspapers, and news agencies.

Estimates of households with television are derived from household surveys. Some countries report only the number of households with a color television set, and so the true number may be higher than reported.

Estimates of personal computers are from an annual International Telecommunication Union (ITU) questionnaire sent to member states, supplemented by other sources. Many governments lack the capacity to survey all places where personal computers are used (homes, schools, businesses, government offices, libraries, Internet cafes) so most estimates are derived from the number of personal computers sold each year. Annual shipment data can also be multiplied by an estimated average useful lifespan before replacement to approximate the number of personal computers. There is no precise method for determining replacement rates, but in general personal computers are replaced every three to five years.

Data on Internet users and related indicators (broadband and bandwidth) are based on nationally reported data to the ITU. Some countries derive these data from surveys, but since survey questions and definitions differ, the estimates may not be strictly comparable. Countries without surveys generally derive their estimates by multiplying subscriber counts reported by Internet service providers by a multiplier. This method may undercount actual users,

particularly in developing countries, where many commercial subscribers rent out computers connected to the Internet or prepaid cards are used to access the Internet.

Broadband refers to technologies that provide Internet speeds of at least 256 kilobits a second of upstream and downstream capacity and includes digital subscriber lines, cable modems, satellite broadband Internet, fiber-to-home Internet access, ethernet local access networks, and wireless area networks. Bandwidth refers to the range of frequencies available for signals. The higher the bandwidth, the more information that can be transmitted at one time. Reporting countries may have different definitions of broadband, so data are not strictly comparable.

The number of secure Internet servers, from the Netcraft Secure Server Survey, indicates how many companies conduct encrypted transactions over the Internet. The survey examines the use of encrypted transactions through extensive automated exploration, tallying the number of Web sites using a secure socket layer (SSL). The country of origin of about a third of the 1.2 million distinct valid third-party certificates is unknown. Some countries, such as the Republic of Korea, use application layers to establish the encryption channel, which is SSL equivalent.

According to the World Information Technology and Services Alliance's (WITSA) *Digital Planet 2009*, the global marketplace for information and communications technologies was estimated to be about \$3.4 trillion in 2009 and to rise to about \$3.6 trillion in 2010. The data on information and communications technology expenditures cover the world's 75 largest buyers among countries and regions.

Information and communication technology goods exports and imports are defined by the Working Party on Indicators for the Information Society and are reported in the Organisation for Economic Co-operation and Development's *Guide to Measuring the Information Society* (2005). Information and communication technology service exports data are based on the International Monetary Fund's (IMF) *Balance of Payments Statistics Yearbook* classification.

Definitions

- **Daily newspapers** are newspapers issued at least four times a week that report mainly on events in the 24-hour period before going to press. The indicator is average circulation (or copies printed) per 1,000 people.
- **Households with television** are the percentage of households with a television set.
- **Personal computers** are self-contained computers designed for use by a single individual, including laptops and notebooks and excluding terminals connected to mainframe and

- minicomputers intended primarily for shared use and devices such as smart phones and personal digital assistants.
- **Internet users** are people with access to the worldwide network.
- **Fixed broadband Internet subscribers** are the number of broadband subscribers with a digital subscriber line, cable modem, or other high-speed technology.
- **International Internet bandwidth** is the contracted capacity of international connections between countries for transmitting Internet traffic.
- **Fixed broadband Internet access tariff** is the lowest sampled cost per 100 kilobits a second per month and are calculated from low- and high-speed monthly service charges. Monthly charges do not include installation fees or modem rentals.
- **Secure Internet 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.
- **Information and communication technology goods exports and imports** include telecommunications, audio and video, computer and related equipment; electronic components; and other information and communication technology goods. Software is excluded.
- **Information and communication technology service exports** include computer and communications services (telecommunications and postal and courier services) and information services (computer data and news-related service transactions).

Data sources

Data on newspapers are compiled by the UNESCO Institute for Statistics. Data on televisions, personal computers, Internet users, Internet broadband users and cost, and Internet bandwidth are from the ITU's World Telecommunication Development Report database. Data on secure Internet servers are from Netcraft (www.netcraft.com/) and official government sources. Data on information and communication technology goods trade are from the United Nations Statistics Division's Commodity Trade (Comtrade) database. Data on information and communication technology expenditures are from WITSA's *Digital Planet 2009* and Global Insight, Inc. Data on information and communication technology service exports are from the IMF's Balance of Payments Statistics database.



	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,b}		Trademark applications filed ^{a,c}
	per million people 2000-07 ^d	per million people 2000-07 ^d	2005	% of GDP 2000-07 ^d	\$ millions 2008	% of manu- factured exports 2008	\$ millions		Residents	Non- residents	Total
							Receipts 2008	Payments 2008	2008	2008	2008
Afghanistan	..	..	..	..	..	..	..	..	..	..	..
Albania	..	..	..	..	7	4	39	12	..	..	4,596
Algeria	170	35	350	0.07	7	1	..	..	84	765	2,489
Angola	..	..	..	..	..	..	12	0	..	..	..
Argentina	980	196	3,058	0.51	1,949	9	94	1,274	..	..	73,717
Armenia	..	..	180	0.21	11	2	..	..	226	4	4,735
Australia	4,231	993	15,957	2.17	4,154	12	703	3,026	2,718	24,122	59,370
Austria	3,774	1,792	4,566	2.52	15,230	11	905	1,598	2,298	329	5,216
Azerbaijan	..	..	116	0.18	6	1	0	5	222	5	5,609
Bangladesh	..	..	193	..	97	1	0	19	29	270	8,232
Belarus	..	..	490	0.97	405	2	5	75	1,188	337	11,454
Belgium	3,413	1,445	6,841	1.91	29,163	8	1,188	2,133	575	133	28,897 ^e
Benin	..	..	..	..	0	0	0	2	..	..	..
Bolivia	120	..	..	0.28	17	4	2	18	..	..	6,081
Bosnia and Herzegovina	197	71	..	0.03	125	4	5	11	59	12	5,538
Botswana	..	..	..	0.38	21	1	1	13	..	..	920
Brazil	629	..	9,889	1.02	10,572	12	465	2,697	3,810	20,264	119,841
Bulgaria	1,466	500	764	0.48	755	7	11	95	249	22	10,853
Burkina Faso	..	..	..	0.11	..	..	..	..	..	..	..
Burundi	..	..	..	..	1	8	0	..	..	..	..
Cambodia	17	13	..	0.05	..	..	1	6	..	..	2,866
Cameroon	..	..	131	..	3	3	0	17	..	..	..
Canada	4,157	1,595	25,836	2.03	29,388	14	3,432	8,766	5,061	37,028	45,619
Central African Republic	..	..	..	..	..	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..
Chile	833	302	1,559	0.67	515	6	64	526	291	2,924	44,320
China	1,071	..	41,596	1.49	381,345	29	571	10,319	194,579	95,259	669,088
Hong Kong SAR, China	2,650	459	..	0.81	2,164	22	358	1,504	173	13,489	24,230
Colombia	151	..	400	0.18	445	4	30	263	121	1,860	23,994
Congo, Dem. Rep.	..	..	..	0.48	..	..	..	..	..	..	..
Congo, Rep.	34	37	..	..	..	..	..	..	..	..	..
Costa Rica	122	..	105	0.37	2,378	39	1	62	..	..	11,754
Côte d'Ivoire	66	..	..	..	180	16	0	22	..	..	..
Croatia	1,384	643	953	0.93	898	9	44	257	330	71	10,324
Cuba	..	..	261	0.44	248	35	..	..	69	189	3,041
Czech Republic	2,715	1,503	3,169	1.59	18,200	14	55	726	712	142	13,106
Denmark	5,431	2,006	5,040	2.57	11,850	16	..	..	1,634	195	8,015
Dominican Republic	..	..	..	..	315	8	0	33	..	..	5,208
Ecuador	69	20	..	0.15	71	5	0	47	..	794	12,605
Egypt, Arab Rep.	617	378	1,658	0.23	85	1	122	322	516	1,589	3,340
El Salvador	49	..	..	..	146	4	1	34	..	..	..
Eritrea	..	..	..	..	..	..	..	..	..	..	..
Estonia	2,748	599	439	1.12	950	10	27	50	62	10	4,652
Ethiopia	21	12	88	0.17	8	6	0	2	12	25	719
Finland	7,382	..	4,811	3.47	16,664	21	1,495	2,047	1,799	147	7,328
France	3,440	1,768	30,309	2.10	93,209	20	10,269	4,916	14,743	1,962	79,206
Gabon	..	..	..	..	71	32	..	..	..	..	..
Gambia, The	..	..	..	..	0	14	..	..	0	0	327
Georgia	..	..	145	0.18	21	3	6	8	221	26	5,441
Germany	3,453	1,200	44,145	2.55	162,421	14	8,792	11,958	49,240	13,177	80,865
Ghana	..	..	81	..	6	1	0	..	..	..	61
Greece	1,873	764	4,291	0.50	1,380	10	44	713	803	3,675	10,598
Guatemala	25	12	..	0.05	150	4	12	80	5	306	11,003
Guinea	0	0	0	0
Guinea-Bissau	6
Haiti	0
Honduras	0.04	8	1	..	18	7,403

Science and technology

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	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,b}		Trademark applications filed ^{a,c}
	per million people 2000-07 ^d	per million people 2000-07 ^d	2005	% of GDP 2000-07 ^d	\$ millions 2008	% of manu- factured exports 2008	\$ millions Receipts 2008	\$ millions Payments 2008	Residents 2008	Non- residents 2008	Total 2008
Hungary	1,733	512	2,614	0.97	20,990	24	803	2,007	683	89	7,903
India	137	86	14,608	0.80	6,497	6	148	1,578	5,314	23,626	103,419
Indonesia	205	..	205	0.05	5,625	11	27	1,328	282	4,324	52,649
Iran, Islamic Rep.	706	..	2,635	0.67	375	6	..	..	..	..	3,468
Iraq	..	..	..	..	0	0	0	204	..	..	..
Ireland	2,849	734	2,120	1.34	28,606	26	1,321	30,082	931	76	5,183
Israel	..	..	6,309	4.74	9,239	16	804	1,107	1,528	6,214	13,801
Italy	1,499	..	24,645	1.14	29,814	7	864	1,811	9,255	870	6,181
Jamaica	..	..	..	0.07	6	0	17	48	21	132	1,708
Japan	5,573	589	55,471	3.45	123,733	18	25,701	18,312	330,110	60,892	119,448
Jordan	..	..	275	0.34	41	1	0	0	59	507	..
Kazakhstan	..	..	96	0.21	2,250	22	..	87	11	162	8,407
Kenya	..	..	226	..	78	5	33	28	38	33	1,729
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	6,846	76	2,007
Korea, Rep.	4,627	720	16,396	3.47	110,633	33	2,403	5,543	127,114	43,518	137,461
Kosovo	..	..	..	..	..	..	..	..	..	..	..
Kuwait	166	33	233	0.09	9	0	0	0	..	..	..
Kyrgyz Republic	..	..	..	0.25	8	2	3	15	135	3	3,966
Lao PDR	16	..	..	0.04	..	..	..	..	..	..	..
Latvia	1,861	496	134	0.63	419	7	13	36	114	37	5,101
Lebanon	..	..	234	..	4	0	..	..	..	..	..
Lesotho	10	11	..	0.06	..	..	20	..	..	..	910
Liberia	..	..	..	..	..	..	..	..	..	..	781
Libya	..	..	..	..	..	..	..	0	..	..	..
Lithuania	2,529	530	406	0.83	1,493	11	1	34	87	18	6,332
Macedonia, FYR	521	75	..	0.21	21	1	6	25	34	406	4,890
Madagascar	50	15	..	0.14	7	1	..	..	14	63	1,318
Malawi	..	..	..	..	2	2	..	..	..	..	804
Malaysia	372	44	615	0.64	42,764	40	199	1,268	818	4,485	26,027
Mali	42	13	..	..	3	3	0	1	..	..	..
Mauritania	..	..	..	..	..	..	..	..	..	..	..
Mauritius	..	..	..	0.38	99	7	0	6	..	..	..
Mexico	460	257	3,902	0.50	41,201	19	440	503	685	15,896	84,287
Moldova	724	116	89	0.55	13	4	4	15	273	22	6,643
Mongolia	..	..	..	0.23	7	8	..	..	103	110	1,936
Morocco	647	48	443	0.64	858	9	0	15	177	834	4,367
Mozambique	..	..	..	0.50	6	4	0	2	18	22	1,240
Myanmar	18	137	..	0.16	..	..	..	..	..	..	..
Namibia	..	..	..	..	21	1	..	15	..	..	1,139
Nepal	59	137	..	..	..	..	..	..	..	..	1,132
Netherlands	2,680	1,677	13,885	1.75	67,056	22	4,870	3,529	2,421	311	..
New Zealand	4,365	894	2,983	1.26	616	9	178	573	1,256	4,468	17,582
Nicaragua	..	..	..	0.05	5	4	0	..	..	..	5,975
Niger	8	10	..	..	2	8	0	0	..	..	..
Nigeria	..	..	362	..	15	0	..	178	..	..	..
Norway	5,247	..	3,644	1.67	5,729	20	642	712	1,223	5,431	16,324
Oman	..	..	111	..	18	1	..	..	..	..	1,847
Pakistan	152	64	492	0.67	275	2	38	117	91	1,647	14,872
Panama	62	20	..	0.25	0	0	0	38	..	371	10,716
Papua New Guinea	..	..	..	..	..	..	..	..	1	45	612
Paraguay	71	..	..	0.09	32	9	282	2	..	..	..
Peru	..	..	133	0.15	92	2	3	140	31	1,504	24,825
Philippines	81	10	178	0.12	26,875	66	5	382	216	3,095	15,834
Poland	1,610	226	6,844	0.57	7,172	5	204	1,770	2,488	290	20,609
Portugal	2,630	389	2,910	1.19	3,355	8	80	496	381	24	20,325
Puerto Rico
Qatar	0	0



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Science and technology

	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,b}		Trademark applications filed ^{a,c}
	per million people	per million people		% of GDP	\$ millions	% of manufactured exports	\$ millions		Residents	Non-residents	Total
	2000-07 ^d	2000-07 ^d	2005	2000-07 ^d	2008	2008	Receipts 2008	Payments 2008	2008	2008	2008
Romania	877	203	887	0.54	2,744	7	240	346	995	36	15,578
Russian Federation	3,305	516	14,412	1.12	5,107	7	453	4,595	27,712	14,137	57,165
Rwanda	..	..	..	..	1	7	62	1	..	..	238
Saudi Arabia	..	..	575	0.05	121	1	0	0	128	642	..
Senegal	276	..	83	0.09	46	5	1	8	..	..	..
Serbia	1,190	298	849	0.34	..	..	27	192	386	237	9,479
Sierra Leone	..	..	..	..	..	..	..	1	..	..	1,017
Singapore	6,088	529	3,609	2.61	120,345	51	839	9,148	793	8,899	18,263
Slovak Republic	2,290	415	919	0.46	3,171	5	164	182	167	75	7,267
Slovenia	3,109	1,537	1,035	1.48	1,558	6	41	250	301	6	5,192
Somalia	..	..	..	..	..	..	..	..	..	..	..
South Africa	382	130	2,392	0.96	2,011	5	54	1,676	..	5,781	29,833
Spain	2,784	1,029	18,336	1.28	9,916	5	801	3,251	3,632	252	55,586
Sri Lanka	93	65	136	0.17	101	2	0	0	201	264	5,916
Sudan	..	..	..	0.29	0	0	..	0	3	13	1,075
Swaziland	..	..	..	..	0	0	0	121	..	..	1,004
Sweden	5,215	..	10,012	3.68	21,778	16	4,938	2,005	2,527	398	14,998
Switzerland	3,436	2,317	8,749	2.93	41,111	23	..	..	1,594	439	31,514
Syrian Arab Republic	..	..	77	..	51	1	0	25	124	133	2,757
Tajikistan	..	..	..	0.06	..	..	1	0	26	..	2,284
Tanzania	..	..	107	..	5	1	0	0	..	..	556
Thailand	311	160	1,249	0.25	32,370	25	101	2,559	802	5,939	35,422
Timor-Leste	..	..	..	..	..	..	..	..	..	..	..
Togo	34	17	..	..	0	0	0	5	..	..	..
Trinidad and Tobago	..	..	..	0.10	36	1	..	..	..	551	..
Tunisia	1,588	43	571	1.02	674	5	32	12	..	..	..
Turkey	680	102	7,815	0.71	1,807	2	..	729	2,221	176	76,333
Turkmenistan	..	..	..	..	..	..	..	..	..	..	2,819
Uganda	..	..	93	0.41	5	1	3	2	6	1	..
Ukraine	1,458	325	2,105	0.87	1,519	3	72	754	2,825	2,872	33,019
United Arab Emirates	..	..	229	..	207	3	..	..	..	..	..
United Kingdom	2,881	879	45,572	1.84	61,767	19	13,904	10,615	16,523	6,856	35,705
United States	4,663	..	205,320	2.67	231,126	27	91,600	26,615	231,588	224,733	294,070
Uruguay	373	..	204	0.36	72	4	0	8	33	706	11,501
Uzbekistan	..	..	157	..	..	..	..	..	262	186	5,007
Venezuela, RB	..	..	534	..	122	4	0	349	..	..	..
Vietnam	115	..	221	0.19	2,376	9	..	..	..	..	4,971
West Bank and Gaza	..	..	..	..	..	..	0	1	..	..	..
Yemen, Rep.	..	..	..	..	0	0	9	-5	11	24	4,375
Zambia	..	..	..	0.03	8	2	0	1	..	..	1,159
Zimbabwe	..	..	..	..	48	3	..	..	..	..	..
World	1,270 w	.. w	708,086 s	2.21 w	1,856,930 s	17 w	181,285 s	187,563 s	988,514 s	633,066 s	2,963,306 s
Low income	..	..	..	..	..	6	111	73	..	..	..
Middle income	613	..	123,584	0.96	540,759	16	3,751	34,266	175,013	192,993	1,750,931
Lower middle income	479	..	67,251	1.23	339,779	22	1,420	17,845	134,138	130,987	1,096,947
Upper middle income	1,252	..	56,333	0.81	124,869	9	2,331	16,421	40,875	62,006	558,047
Low & middle income	595	..	124,833	0.96	467,925	16	3,862	34,339	181,806	193,656	1,815,399
East Asia & Pacific	1,071	..	44,064	1.49	..	28	898	15,864	196,416	108,823	755,285
Europe & Central Asia	2,013	336	35,489	0.83	23,854	6	1,090	8,805	38,406	18,614	317,547
Latin America & Carib.	495	..	20,045	0.66	58,093	12	1,453	5,669	..	..	440,687
Middle East & N. Africa	..	..	6,243	0.48	1,528	4	41	345	..	..	16,421
South Asia	129	86	15,429	0.79	..	5	196	1,714	5,580	25,831	132,894
Sub-Saharan Africa	..	..	..	..	3,260	3	184	1,942	..	..	..
High income	3,948	..	583,253	2.47	1,313,457	18	177,423	153,224	796,585	427,519	1,223,790
Euro area	2,872	1,313	158,985	2.04	454,048	14	31,349	63,603	77,364	20,234	316,397

a. Original information 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. b. Excludes applications filed under the auspices of the African Regional Intellectual Property Organization (11 by residents, 424 by nonresidents), the European Patent Office (146,150 by nonresidents), and the Eurasian Patent Organization (3,066 by nonresidents). c. Excludes applications filed under the auspices of the Office for Harmonization in the Internal Market (87,640). d. Data are for the most recent year available. e. Includes Luxembourg and the Netherlands.

About the data

Science and technology is too broad and complex to quantify with a single set of indicators, but those in the table shed light on countries' technology base. Technological innovation, often fueled by government-led research and development (R&D), has been the driving force for industrial growth. The best opportunities to improve living standards come from science and technology. Countries able to access, generate, and apply scientific knowledge have a competitive edge. And high-quality scientific input improves public policy.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics collects data on researchers, technicians, and expenditure on R&D through surveys and from other international sources. R&D covers basic research, applied research, and experimental development. Data on researchers and technicians are calculated as full-time equivalents.

Scientific and technical article counts are from journals classified by the Institute for Scientific Information's Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Counts are based on fractional assignments; articles with authors from different countries are allocated proportionally to each country (see *Definitions* for fields covered). The SCI and SSCI databases cover the core set of scientific journals but may exclude some of local importance and may reflect some bias toward English-language journals.

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

The method for determining high-technology exports was developed by the Organisation for Economic Co-operation and Development in collaboration with Eurostat. It takes a "product approach" (as distinguished from a "sectoral approach") based on R&D intensity (R&D expenditure divided by total sales) for groups of products from Germany, Italy, Japan, the Netherlands, Sweden, and the United States. Because industrial sectors specializing in a few high-technology products may also produce low-technology products, the product approach is more appropriate for analyzing international trade. This method takes only R&D intensity into account, but other characteristics of high technology are also important, such as know-how, scientific personnel, and technology embodied in patents. Considering these characteristics would yield a different list (see Hatzichronoglou 1997).

A patent is an exclusive right granted for a specified period (generally 20 years) for a new way of doing something or a new technical solution to a problem—an invention. The invention must be of practical use and display a characteristic unknown in the existing body of knowledge in its field.

Most countries have systems to protect patentable inventions. The Patent Cooperation Treaty provides a two-phase system for filing patent applications. An applicant files an international application and designates the countries in which protection is sought (all eligible countries are automatically designated in every application under the treaty). The application is searched and published, and, optionally, an international preliminary examination is conducted. In the national (or regional) phase the applicant requests national processing of the application and initiates the national search and granting procedure. International applications under the treaty provide for a national patent grant only—there is no international patent. The national filing represents the applicant's seeking of patent protection for a given territory, whereas international filings, while representing a legal right, do not accurately reflect where patent protection is sought. Resident filings are those from residents of the country or region concerned. Nonresident filings are from outside applicants. For regional offices such as the European Patent Office, applications from residents of any member state of the regional patent convention are considered a resident filing. Some offices (notably the U.S. Patent and Trademark Office) use the residence of the inventor rather than the applicant to classify filings.

A trademark is a distinctive sign identifying goods or services as produced or provided by a specific person or enterprise. A trademark protects the owner of the mark by ensuring exclusive right to use it to identify goods or services or to authorize another to use it. The period of protection varies, but a trademark can be renewed indefinitely for an additional fee. Detailed components of trademark filings, available on the *World Development Indicators* CD-ROM and *WDI Online*, include applications filed by direct residents (domestic applicants filing directly at a given national intellectual property [IP] office); direct nonresident (foreign applicants filing directly at a given national IP office); aggregate direct (applicants not identified as direct resident or direct nonresident by the national office); and Madrid (international applications filed via the World Intellectual Property Organization (WIPO)—administered Madrid System to the national or regional IP office). Data are based on information supplied to WIPO by IP offices in annual surveys, supplemented by data in national IP office reports. Data may be missing for some offices or periods.

Definitions

- **Researchers in R&D** are professionals engaged in conceiving of or creating new knowledge, products, processes, methods, and systems and in managing the projects concerned. Postgraduate doctoral students (ISCED97 level 6) engaged in R&D are considered researchers.
- **Technicians in R&D** and equivalent staff are people whose main tasks require technical knowledge and experience in engineering, physical and life sciences (technicians), and social sciences and humanities (equivalent staff). They engage in R&D by performing scientific and technical tasks involving the application of concepts and operational methods, normally under researcher supervision.
- **Scientific and technical journal articles** are published 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 to increase the stock of knowledge, including on humanity, culture, and society, and the use of knowledge to devise new applications.
- **High-technology exports** are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.
- **Royalty and license fees** are payments and receipts between residents and nonresidents for authorized use of intangible, nonproduced, nonfinancial assets and proprietary rights (such as patents, copyrights, trademarks, and industrial processes) and for the use, through licensing, of produced originals of prototypes (such as films and manuscripts).
- **Patent applications filed** are worldwide patent applications filed through the Patent Cooperation Treaty procedure or with a national patent office.
- **Trademark applications filed** are annual applications to register a trademark with a national or regional IP office.

Data sources

Data on R&D are provided by the UNESCO Institute for Statistics. Data on scientific and technical journal articles are from the U.S. National Science Board's *Science and Engineering Indicators 2008*. Data on high-technology exports are from the United Nations Statistics Division's Commodity Trade (Comtrade) database. Data on royalty and license fees are from the International Monetary Fund's *Balance of Payments Statistics Yearbook*. Data on patents and trademarks are from the World Intellectual Property Organization's *WIPO Patent Report: Statistics on Worldwide Patent Activity* (2009) and www.wipo.int.