STATES & MARKETS

5

Effective governments improve people's standard of living by ensuring access to essential services, such as health, education, water and sanitation, electricity, and transport, and the opportunity to live and work in peace and security. Countries confront different development challenges and face unique constraints. The main elements to get right are economic management, regulation, and taxation; efficient financial and labor markets; public safety and security; and the building and maintenance of infrastructure. Together, they provide an environment of incentives and opportunities in which firms and individuals can invest and work productively. This section brings together indicators that measure the actions of governments and the responses of markets through three cross-cutting development themes: managing the public sector, developing the private sector, and providing infrastructure.

Without good governance, other reforms have limited impact

In successful, high-growth economies such as Botswana, China, India, the Republic of Korea, Mauritius, and Singapore, the state has played an important role in attracting investment; improving productivity, technology, and competitiveness; and promoting property rights, contract enforcement, and economic and political stability. Institutions differ in each of these countries, as do the choices of legal regimes, balance between regulation and competition, size of the public sector, and flexibility of fiscal and monetary policies. Solutions that work in one place may not work in another. And while an accountable and capable state with strong institutions has come to be recognized as fundamental to economic and social development, it is still difficult to quantify what is meant by good governance or to measure the quality of institutions. More research is needed to understand the role of institutions and how to improve them in countries with weak institutions.

Many African leaders recognize that building strong institutions and improving public sector management are needed to encourage investment and economic growth and that poverty reduction is impossible without that. Improving public revenue and expenditure management is on the agenda of several African countries and is also a priority of the New Partnership for Africa's Development.

Many countries are using public expenditure tracking surveys to identify shortcomings in the delivery of public services, including Cameron, Ghana, Madagascar, Mozambique, Rwanda, Senegal, Tanzania, Uganda, and Zambia. Expenditure transactions can be complex, with leakages and diversions common in a range of processes, including procurement. Such surveys map and track specific expenditure flows from allocation through intended use. In Uganda a survey conducted in 1996–99 increased intended resources arriving at a school from an average of 13 percent to 78 percent (World Bank 2005c). Although such surveys are not a substitute for broad strengthening of public sector financial management, they can help in understanding weaknesses in public financial management capacity and accountability mechanisms at various levels.

Improving the investment climate for increased private sector investment, growth, and poverty reduction

Better policies, institutions, physical infrastructure, and human resources are needed to attract domestic and foreign investors and to improve the efficiency of firms. But the goal is an investment climate that benefits society, not just firms.

What can governments do to attract the investment needed for its citizens? They can create stability. Combat corruption by public officials, firms, and other interest groups. Foster trust and legitimacy through participatory policymaking and transparency. And develop policies that address current economic and business conditions. Investment climate surveys draw data directly from firms and cover both objective and subjective indicators. Investment climate indicators cover eight factors that influence investment decisions, from policy uncertainty and corruption to reliability of electricity and the availability of skilled labor and labor regulations (table 5.2).

In investment climate surveys senior managers ranked policy uncertainty as the main business constraint. These surveys tell us that, compared with other developing country regions, Sub-Saharan Africa is a high-cost, high-risk place to do business, resulting in less investment, less employment, lower incomes, less growth and competitiveness, and higher poverty. Overall, doing business in Africa costs about 20–40 percent more than in other developing country regions. Costs are higher because of burdensome regulations, difficulty securing property rights, ineffective courts, weak infrastructure, and uncompetitive services. Because 80 percent of investment is from domestic sources, institutions and policies in Africa need to focus on the domestic investment climate, especially for agriculture and in rural areas. In 14 African countries with investment climate surveys, the high cost of financing for firms is the number one complaint.

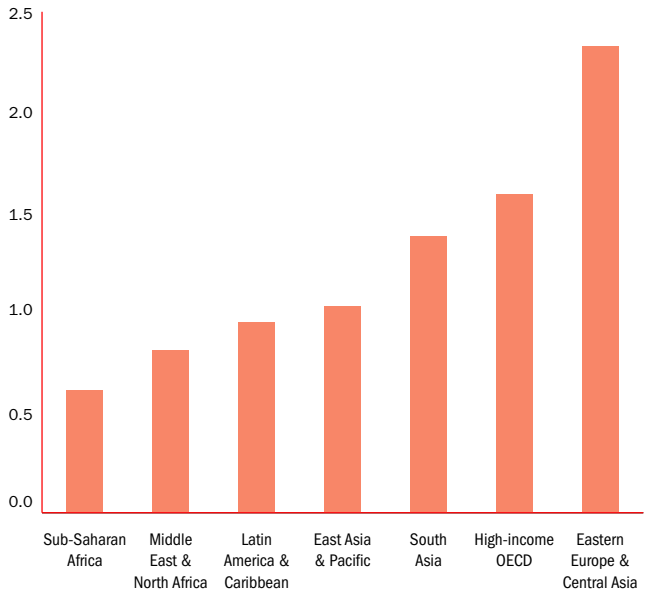
New studies of business regulations and their enforcement have been conducted in 155 countries jointly by the International Finance Corporation and World Bank through the Doing Business survey program. The Doing Business findings are based on responses to objective questions using standardized surveys of experts, usually lawyers and accountants. These surveys complement the investment climate surveys by comparing the ease of doing business in 10 areas ranging from starting a business and dealing with licenses to hiring and firing, protecting investors, trading across borders, enforcing contracts, and closing a business. Data on most of these dimensions of doing business are presented in tables 5.3 and 5.6 .

Doing Business surveys have been conducted in 33 African countries. One conclusion of the *Doing Business 2006* report: more reform is needed in Africa (figure 5a). Entrepreneurs face greater regulatory obstacles in Africa than in any other region. Of the 16 countries surveyed in West Africa just 2 carried out business regulation reforms. In the region as a whole for every three countries that improved regulation, one made it more burdensome.

5a

Africa had the lowest business environment reform intensity in 2004

Average number of reforms



Source: Doing Business database.

But in some African countries, like Rwanda, reforms are paying off. In 2001 Rwanda introduced new company and labor laws. Land titling reforms followed in 2002. In 2004 Rwanda was among the top reformers: it streamlined customs procedures, improved credit registries, and simplified judicial procedures. Since initiating reform, Rwanda has had economic growth averaging 3.6 percent a year—among the highest for non-oil-producing states in Africa. Uganda has also benefited from an improved investment climate, posting GDP growth of about 7 percent a year during 1993–2002 and reducing poverty measured by a national poverty line from 55 percent in 1993 to 37.7 percent in 2000. Other African countries that have made progress in business reform include Mauritius, Namibia, Nigeria, and South Africa.

Infrastructure for development

Infrastructure services affect people in many ways—what they consume and produce; how they heat and light their homes; how they travel to work, to school, or to visit friends and family; and how they communicate, share information, and learn at home, school, and work. And the profitability and competitiveness of businesses depend on the cost and availability of infrastructure services such as the power and fuel used to operate machines or the transportation services needed to deliver raw materials to factories and finished products to market.

Physical isolation is a strong contributor to poverty. Populations without reliable access to social and economic services are poorer than those with reliable access. Problems of access are particularly severe in rural areas far from roads

used regularly for motorized transport services. An estimated 900 million rural dwellers in developing countries, most of them poor, are without reliable access.

In many developing countries increasing agricultural productivity is central to rural development and poverty reduction strategies. Improved rural transport makes it easier for farmers to obtain inputs and advice at reasonable cost and to sell their products at good prices. Farmers with difficult access to local markets earn less for their products than farmers with easier access, and increases in output are associated with agricultural areas with improved roads.

An indicator has been developed to measure rural transport access based on the proportion of the rural populations that lives within 2 kilometers of an all-season road (a road that can be used all year by the prevailing means of rural transport, often a pick-up or other truck without four-wheel drive). Predictable interruptions of short duration during inclement weather (for example, heavy rainfall) are accepted, particularly on low-volume roads. The rural access index, calculated from representative household surveys, is shown for selected International Development Association (IDA)–eligible countries, in table 5b.

Values of the rural access index were also calculated on the basis of rural population, road length, and arable land area for more that 30 other countries (mainly non-IDA recipients) for which there are no suitable household survey results. The values for 64 countries (representing 85 percent of the world's rural population) show that 57 percent of rural inhabitants in IDA countries enjoy adequate access compared with 87 percent in non-IDA countries. Among developing country regions, Sub-Saharan Africa had the lowest level of rural access (30 percent), followed by Middle East and North Africa (34 percent), Latin America and the Caribbean (54 percent), South Asia (58 percent), Europe and Central Asia (75 percent), and East Asia (94 percent).

Improvements in roads and transport services generally have significant positive effects on school attendance. In Morocco in the early 1990s a paved road in the community more than doubled girls' school attendance rates from 21 percent to 48 percent and raised boys' attendance rates from 58 percent to 76 percent, according to survey findings. In health, transport services play several important roles: ensuring adequate and reliable availability of food, providing medical supplies, transporting health personnel to facilities, and the most difficult role, bringing people to medical stations, whether for urgent care or regular treatment.

Information and communication technology has the potential for reducing poverty and fostering growth in developing countries. Mobile phones provide market information for farmers and businesspeople, the Internet delivers information to schools and hospitals, and computers improve public and private services and increase productivity and participation. Firms that use information and communication technology grow faster, invest more, and are more productive and profitable than those that do not. A survey of firms in developing countries found that sales growth is 3.4 percentage points higher and value added per employee is $3,400 higher in firms that use email to do business with clients and suppliers. And by making information accessible to more people, information and communication technology enhances social inclusion and promotes more effective, accountable governments.

Africa lags behind other regions in most infrastructure indicators. The high cost and poor quality of infrastructure services—transport, energy, water and sanitation, and information and communication technology—have limited growth potential. For Africa to reach the Millennium Development Goal of halving poverty by 2015, average growth rates need to reach 7 percent a year. That will require annual investment of $20 billion in infrastructure, about twice as much as Africa has historically invested. About 40 percent of that needs to go into roads and 20 percent each into energy and water (World Bank 2005c).

Financing these infrastructure needs in Africa will require a concerted effort from all funding sources, public and private. Led by the African Union and the New Partnership for Africa's Development, and including the African Development Bank and the World Bank, the Africa Infrastructure Consortium is working to mobilize and allocate infrastructure resources to support country and regional projects. The goal is to improve infrastructure, whether services are delivered by public or private providers or jointly. Reformers need to consider multiple factors—the strength of institutions, regulatory rules, fiscal health, investor interest, the competitiveness of markets, and other specific characteristics that influence the performance of public and private operators.

5b

Rural access index for selected low-income countries (% of rural population)

Country	Index	Country	Index
Albania	31	Kenya	44
Azerbaijan	67	Lao PDR[a]	59
Bangladesh	37	Madagascar	25
Benin	32	Malawi	38
Burkina Faso	25	Mongolia	36
Burundi	19	Nicaragua	28
Cambodia[a]	87	Niger	37
Cameroon	20	Nigeria	47
Chad	5	Pakistan	77
Congo, Dem. Rep	26	Papua New Guinea	68
Ethiopia	17	Tajikistan	74
Gambia, The[b]	77	Tanzania	38
Ghana	34	Uzbekistan	57
Guinea[c]	22	Vietnam	73
India	60	Yemen, Rep.	21
Indonesia	94		

Note: Based on surveys between 1997 and 2003.
a. Nonstandard measurement process resulting in a higher index value.
b. Survey conducted during 1994–96.
c. Survey conducted in 2004.
Source: World Bank Transport Technical Paper based on household surveys.

5.1 Private sector in the economy

	Investment in infrastructure projects with private participation[a]								Domestic credit to private sector		Micro, small, and medium-size enterprises[b]	
	$ millions											
	Telecommunications		Energy		Transport		Water and sanitation		% of GDP		number of firms	Employment % of total
	1995–99	2000–04	1995–99	2000–04	1995–99	2000–04	1995–99	2000–04	1990	2004	2000–04	2000–04
Afghanistan	..	204.0	..	..	..	..	..	..	..	..	..	..
Albania	..	443.2	0.0	8.0	..	..	..	0.0	..	9.9	35,694	56.7
Algeria	..	2,052.5	..	..	..	..	..	..	44.4	11.0	580,000	..
Angola	..	278.7	..	45.0	..	55.0	..	..	..	5.4	..	..
Argentina	10,498.6	5,130.2	13,093.6	3,389.5	8,848.1	200.2	3,473.6	688.9	15.6	10.5	..	..
Armenia	442.0	94.1	0.0	47.0	..	50.0	..	0.0	..	7.8	34,000	31.3
Australia	..	..	..	..	..	..	..	..	61.6	102.4	1,269,000	52.3
Austria	..	..	..	..	..	..	..	..	89.7	*105.6*	252,399	65.3
Azerbaijan	122.0	232.6	..	375.2	..	..	..	0.0	..	9.1	21,178	5.0
Bangladesh	438.1	651.3	554.9	501.5	0.0	0.0	..	..	16.7	30.1	177,000	80.0
Belarus	20.0	534.3	500.0	..	..	..	..	..	..	14.0	237,467	9.7
Belgium	..	..	..	..	..	..	..	..	37.0	*73.1*	437,000	69.3
Benin	..	106.9	..	..	..	..	..	..	20.3	14.5	..	..
Bolivia	528.0	471.5	2,777.3	679.8	168.7	16.6	682.0	..	24.0	42.2	..	..
Bosnia and Herzegovina	0.0	0.0	..	..	..	..	..	..	..	43.8	75,000	62.6
Botswana	97.0	85.0	..	..	..	..	..	..	9.4	19.0	16,466	..
Brazil	45,052.4	36,039.1	34,196.8	24,638.9	17,460.5	3,082.6	2,137.0	1,587.6	38.9	35.1	4,667,609	56.5
Bulgaria	202.5	1,418.6	..	1,246.0	..	..	..	152.0	..	37.1	224,211	64.7
Burkina Faso	..	41.9	5.6	..	..	..	..	..	16.8	14.9	..	..
Burundi	..	53.6	..	..	..	..	..	..	8.6	22.6	..	..
Cambodia	102.4	79.3	143.0	38.1	120.0	125.3	..	..	..	9.3	..	..
Cameroon	12.7	365.4	..	91.9	95.0	0.0	..	..	26.7	9.9	..	..
Canada	..	..	..	..	..	..	..	..	75.9	86.0	2,374,247	65.0
Central African Republic	1.1	..	..	..	..	..	..	..	7.2	7.2	..	..
Chad	2.0	11.0	..	0.0	..	..	..	..	7.3	3.3	..	..
Chile	3,489.0	3,134.6	6,808.6	1,224.2	3,104.1	4,499.0	3,111.2	1,563.0	47.2	63.1	700,000	95.0
China	5,970.0	8,495.0	16,916.2	5,359.1	10,802.8	5,201.1	719.8	2,332.8	87.7	120.1	25,110,000	78.0
Hong Kong, China	..	..	..	..	..	..	..	..	163.7	150.2	284,000	60.0
Colombia	1,384.3	715.5	6,964.8	107.6	995.5	1,160.5	233.0	237.3	30.8	22.8	967,315	49.0
Congo, Dem. Rep.	68.0	431.4	..	..	0.0	..	..	..	1.8	1.5	..	..
Congo, Rep.	12.2	61.8	325.0	..	..	..	..	..	15.7	3.2	..	..
Costa Rica	..	..	301.2	80.0	..	161.0	..	..	15.8	32.3	40,921	54.3
Côte d'Ivoire	752.3	114.9	260.6	..	178.0	140.0	..	..	36.5	14.4	..	..
Croatia	978.0	926.5	368.5	7.1	672.2	405.0	..	298.7	..	57.5	96,146	40.0
Cuba	..	60.0	165.0	..	..	0.0	..	600.0	..	..	..	..
Czech Republic	6,178.5	4,751.6	944.1	3,865.3	283.7	106.7	44.9	318.3	..	33.4	2,350,584	62.2
Denmark	..	..	..	..	..	..	..	..	52.2	160.3	205,000	78.4
Dominican Republic	163.0	306.8	979.0	1,264.1	..	898.9	..	..	27.5	27.9	..	..
Ecuador	696.4	197.0	30.0	302.0	686.8	20.0	..	550.0	13.6	22.5	..	..
Egypt, Arab Rep.	1,914.5	2,049.9	700.0	678.0	123.9	735.3	..	..	30.6	54.5	2,500,000	..
El Salvador	610.5	668.1	900.2	85.0	..	..	..	..	19.1	40.5	465,969	..
Eritrea	..	40.0	..	..	..	..	..	..	..	*32.8*	..	..
Estonia	628.2	244.7	26.5	..	1.0	298.4	..	81.0	..	42.4	32,801	55.0
Ethiopia	..	..	..	300.0	..	..	..	..	19.5	24.3	..	..
Finland	..	..	..	..	..	..	..	..	86.6	*68.7*	221,000	59.2
France	..	..	..	..	..	..	..	..	94.3	*90.8*	2,971,178	62.7
Gabon	8.4	26.6	624.8	..	46.7	85.6	..	..	13.0	8.6	..	..
Gambia, The	..	6.6	..	..	..	..	..	..	11.0	11.7	..	..
Georgia	61.0	142.8	159.0	13.0	..	..	..	..	..	9.7	25,593	50.6
Germany	..	..	..	..	..	..	..	..	88.7	*112.3*	3,008,000	70.4
Ghana	491.1	101.3	383.8	184.0	..	10.0	..	..	4.9	13.1	25,679	66.0
Greece	..	..	..	..	..	..	..	..	36.3	*78.6*	771,000	74.0
Guatemala	1,366.3	440.2	1,223.2	110.0	33.8	..	..	..	14.2	19.8	..	..
Guinea	120.3	18.0	36.4	..	..	..	0.0	..	..	3.6	..	..
Guinea-Bissau	..	21.3	..	..	..	..	..	..	22.0	1.5	..	..
Haiti	1.5	18.0	4.7	..	..	..	..	..	12.6	15.6	..	..

Private sector in the economy

5.1

	Investment in infrastructure projects with private participation[a]								Domestic credit to private sector		Micro, small, and medium-size enterprises[b]	
	$ millions											
	Telecommunications		Energy		Transport		Water and sanitation		% of GDP		number of firms	Employment % of total
	1995–99	2000–04	1995–99	2000–04	1995–99	2000–04	1995–99	2000–04	1990	2004	2000–04	2000–04
Honduras	51.3	94.3	112.1	358.8	10.5	120.0	..	220.0	31.1	42.0	257,422	..
Hungary	6,430.2	4,632.7	3,812.1	260.6	135.0	..	178.5	0.0	46.6	46.5	855,058	55.8
India	7,456.8	14,321.9	7,165.6	7,559.8	1,272.8	1,854.3	..	223.2	25.2	37.1	..	..
Indonesia	9,103.9	4,989.6	9,942.1	315.6	2,223.1	590.3	882.8	36.7	46.9	23.6	41,362,315	..
Iran, Islamic Rep.	28.0	345.0	..	650.0	..	..	..	..	32.5	38.3	..	..
Iraq	..	420.0	..	..	..	..	..	..	..	..	..	..
Ireland	..	..	..	..	..	..	..	..	47.6	*136.9*	97,000	72.1
Israel	..	..	..	..	..	..	..	..	57.6	92.2	391,106	44.0
Italy	..	..	..	..	..	..	..	..	56.5	*87.8*	4,486,000	73.0
Jamaica	235.5	700.3	43.0	201.0	0.0	565.0	..	..	36.1	18.1	..	..
Japan	..	..	..	..	..	..	..	..	175.7	99.5	5,712,191	88.0
Jordan	39.9	1,351.0	..	..	182.0	0.0	0.0	169.0	72.3	72.1	139,844	54.5
Kazakhstan	1,633.5	669.2	1,825.0	300.0	..	..	..	40.0	..	28.3	..	..
Kenya	193.0	787.0	189.0	..	53.4	..	..	..	32.7	26.8	22,014	74.2
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	..	..	..	..	..	..	..	..	62.8	98.2	2,948,171	86.7
Kuwait	..	..	..	..	..	..	..	..	0.0	71.6	..	..
Kyrgyz Republic	100.0	9.1	..	..	..	..	..	..	..	7.1	22,670	62.2
Lao PDR	157.1	77.7	535.5	..	..	0.0	..	..	1.0	6.5	..	..
Latvia	600.9	609.4	106.0	71.1	75.0	..	..	..	..	44.8	32,571	36.6
Lebanon	485.7	138.1	..	..	..	153.0	..	0.0	79.4	75.9	..	..
Lesotho	15.7	85.4	..	0.0	..	..	..	..	15.8	6.5	..	..
Liberia	..	50.0	..	..	..	..	..	..	*0.0*	6.1	..	..
Libya	..	..	..	..	..	..	..	..	31.0	16.9	..	..
Lithuania	832.7	933.0	10.0	399.3	..	..	..	..	..	25.9	55,825	70.6
Macedonia, FYR	..	706.6	..	..	..	..	..	..	..	23.2	27,938	..
Madagascar	10.1	12.6	..	..	..	20.3	..	..	16.9	10.0	..	..
Malawi	23.1	11.3	..	..	6.0	..	..	..	10.9	8.4	747,396	38.0
Malaysia	4,187.6	2,253.0	1,610.2	5,048.1	8,200.1	3,347.3	1,084.4	48.1	69.4	130.1	204,669	..
Mali	..	82.6	..	747.0	..	..	..	..	12.8	20.1	..	..
Mauritania	..	119.7	..	..	..	..	..	..	43.5	*25.9*	..	..
Mauritius	..	406.0	109.3	..	42.6	..	..	..	35.6	59.5	75,267	..
Mexico	10,757.5	14,743.6	2,095.8	6,494.3	4,988.5	1,047.3	276.5	520.7	17.5	16.7	2,891,300	71.9
Moldova	84.6	..	60.0	25.3	..	..	..	..	..	21.3	20,518	8.2
Mongolia	21.9	21.6	..	..	..	..	..	..	..	32.0	..	..
Morocco	1,240.0	5,233.0	5,819.9	1,049.0	..	..	1,000.0	..	34.1	56.7	450,000	..
Mozambique	29.0	109.0	..	1,200.0	441.0	797.1	0.6	..	17.6	2.1	..	..
Myanmar	4.0	..	394.0	..	50.0	..	..	..	4.7	*12.1*	..	..
Namibia	53.2	35.2	4.0	1.0	..	450.0	..	0.0	22.6	50.4	..	..
Nepal	..	20.0	98.2	39.0	..	..	..	..	12.8	..	..	..
Netherlands	..	..	..	..	..	..	..	..	79.9	*166.3*	570,000	58.5
New Zealand	..	..	..	..	..	..	..	..	76.0	121.1	323,998	29.2
Nicaragua	24.5	240.3	232.4	115.0	..	104.0	..	..	*112.6*	26.8	..	..
Niger	..	99.9	..	..	..	..	..	4.9	12.3	6.2	..	..
Nigeria	69.0	4,639.7	..	709.0	..	22.8	..	..	9.4	15.6	..	..
Norway	..	..	..	..	..	..	..	..	81.7	9.9	288,368	56.9
Oman	..	..	183.0	1,364.3	77.5	473.8	..	..	20.6	*34.9*	..	..
Pakistan	75.5	1,877.7	4,298.3	..	421.3	47.0	..	..	24.2	29.3	..	..
Panama	1,429.2	10.7	669.2	395.7	994.6	51.4	25.0	..	46.7	91.2	..	..
Papua New Guinea	..	..	65.0	..	..	..	175.0	..	28.6	11.0	..	..
Paraguay	199.3	77.6	..	..	58.0	..	..	..	15.8	15.4	..	..
Peru	4,774.5	1,948.4	3,004.9	2,092.6	86.3	239.5	..	56.0	11.8	18.6	509,424	..
Philippines	5,154.6	3,719.0	6,998.0	2,793.7	1,364.0	1,060.5	5,847.7	0.0	22.3	34.8	806,866	70.4
Poland	4,751.1	15,673.7	628.1	2,277.5	169.4	657.5	6.1	21.8	21.1	27.7	1,654,822	68.0
Portugal	..	..	..	..	..	..	..	..	49.1	*150.3*	693,000	81.6
Puerto Rico	..	..	..	..	..	..	..	..	..	..	2,069	43.6

5.1 Private sector in the economy

	Investment in infrastructure projects with private participation[a]								Domestic credit to private sector		Micro, small, and medium-size enterprises[b]	
	$ millions											
	Telecommunications		Energy		Transport		Water and sanitation		% of GDP		number of firms	Employment % of total
	1995–99	2000–04	1995–99	2000–04	1995–99	2000–04	1995–99	2000–04	1990	2004	2000–04	2000–04
Romania	2,072.8	2,355.9	100.0	..	23.4	..	..	1,134.0	..	10.0	347,064	..
Russian Federation	4,665.6	13,404.3	2,281.3	14.0	406.0	109.4	108.0	480.5	..	24.5	8,441,000	49.0
Rwanda	8.0	39.3	..	0.0	..	..	..	..	6.9	*10.7*	..	..
Saudi Arabia	..	8,537.0	..	..	55.0	190.0	..	52.0	54.7	55.9	..	..
Senegal	273.9	342.6	124.0	..	..	..	6.3	0.0	26.5	21.2	..	..
Serbia and Montenegro	1,590.0	830.6	..	..	..	..	..	0.0	..	..	68,220	70.4
Sierra Leone	7.0	48.5	..	..	..	..	..	..	3.2	4.7	..	..
Singapore	..	..	..	..	..	..	..	..	96.8	106.9	134,098	51.2
Slovak Republic	488.5	2,359.8	..	3,323.6	..	..	0.0	..	..	31.2	70,553	66.0
Slovenia	..	..	..	..	..	..	..	..	..	46.3	93,392	64.1
Somalia	0.0	3.0	..	..	..	..	..	..	..	..	..	..
South Africa	5,978.3	9,144.0	3.0	1,244.3	1,386.4	504.7	209.3	3.2	81.0	141.3	..	..
Spain	..	..	..	..	..	..	..	..	77.7	*125.4*	3,058,631	..
Sri Lanka	601.9	524.3	176.3	132.0	240.0	..	..	..	19.6	31.5	131,387	27.6
Sudan	6.0	991.1	..	..	..	..	..	..	4.8	7.7	..	..
Swaziland	21.2	24.7	..	..	..	..	..	..	20.7	*19.5*	..	..
Sweden	..	..	..	..	..	..	..	..	127.4	105.9	868,497	39.3
Switzerland	..	..	..	..	..	..	..	..	162.6	161.2	343,000	75.3
Syrian Arab Republic	..	191.0	..	..	..	..	..	..	7.5	*10.2*	..	..
Tajikistan	1.2	8.5	..	16.0	..	..	..	..	..	17.4	92,964	25.0
Tanzania	100.2	391.1	150.0	340.0	16.5	6.5	..	4.8	13.9	9.0	2,700,000	..
Thailand	4,190.5	2,788.0	6,550.4	3,950.4	1,791.4	939.0	239.4	261.1	83.4	97.4	842,360	18.0
Togo	5.0	0.0	0.0	67.7	0.0	..	..	..	22.6	16.0	..	..
Trinidad and Tobago	146.7	..	207.0	..	..	..	0.0	120.0	40.0	27.8	..	..
Tunisia	..	610.0	265.0	..	..	..	..	..	55.1	65.2	..	..
Turkey	3,269.7	5,372.8	2,992.2	4,835.0	610.0	359.8	942.0	..	16.7	20.5	210,134	64.3
Turkmenistan	..	..	..	..	..	..	..	..	..	*1.9*	..	..
Uganda	119.3	242.6	..	18.1	..	..	..	0.0	0.0	6.8	160,453	..
Ukraine	1,094.6	1,473.5	..	160.0	..	..	..	..	..	25.0	283,398	20.2
United Arab Emirates	..	..	..	..	..	..	..	..	38.0	*53.5*	..	..
United Kingdom	..	..	..	..	..	..	..	..	115.8	156.3	4,352,275	39.5
United States	..	..	..	..	..	..	..	..	144.0	249.2	5,680,914	50.1
Uruguay	63.7	105.8	86.0	330.0	20.0	280.2	..	351.0	32.4	30.4	..	..
Uzbekistan	503.8	189.7	..	..	..	..	..	..	..	..	237,500	57.0
Venezuela, RB	4,877.9	2,639.5	103.0	30.0	268.0	34.0	29.0	15.0	26.2	11.2	11,314	..
Vietnam	248.0	380.0	435.5	2,192.0	85.0	30.0	38.8	174.0	..	58.9	59,831	85.7
West Bank and Gaza	265.0	256.7	..	150.0	..	..	9.5	..	..	..	..	..
Yemen, Rep.	..	358.0	..	..	190.0	..	..	..	6.1	7.7	..	..
Zambia	32.8	81.4	277.0	12.4	..	..	..	..	8.9	8.0	..	..
Zimbabwe	46.0	59.0	600.0	..	85.0	..	..	..	23.0	22.3	..	..
World	**.. s**	**.. s**	**.. s**	**.. s**	**.. s**	**.. s**	**.. s**	**.. s**	**108.1 w**	**138.1 w**	**25,102,874 s**	**.. w**
Low income	11,627.2	28,029.4	16,349.4	14,156.8	3,014.0	3,157.8	220.7	406.9	22.1	31.2	224,693	..
Middle income	162,329.7	171,333.8	137,624.9	81,914.1	66,579.6	28,069.2	21,239.7	11,956.8	43.1	59.7	7,160,980	..
Lower middle income	91,141.3	84,325.1	100,450.1	47,260.2	36,250.7	15,234.3	11,751.2	7,376.5	51.3	75.9	100,593	71.0
Upper middle income	71,188.4	87,008.7	37,174.8	34,653.9	30,328.9	12,834.9	9,488.5	4,580.3	32.4	37.7	7,060,387	..
Low & middle income	173,956.9	199,363.2	153,974.3	96,070.9	69,593.6	31,227.0	21,460.4	12,363.7	39.2	55.6	7,385,673	..
East Asia & Pacific	29,304.5	23,042.7	43,589.9	19,697.0	24,636.4	11,293.5	8,987.9	2,852.7	73.7	105.2	43,073,436	75.2
Europe & Central Asia	36,751.4	58,017.2	13,812.8	17,244.0	2,375.7	1,986.8	1,279.5	2,526.3	..	26.6	3,528,759	..
Latin America & Carib.	86,705.0	68,076.9	74,159.1	41,898.5	37,723.4	12,517.8	9,967.3	6,579.6	28.6	25.7	3,632,221	..
Middle East & N. Africa	3,973.1	13,005.2	6,967.9	3,891.3	573.4	1,412.1	1,009.5	169.0	34.5	39.8	139,844	..
South Asia	8,604.5	17,612.5	12,293.3	8,232.3	1,934.1	1,901.3	..	223.2	24.2	35.7	177,000	..
Sub-Saharan Africa	8,618.4	19,608.7	3,151.3	5,107.8	2,350.6	2,115.5	216.2	12.9	42.4	67.0	47,693	..
High income	..	8,537.0	..	..	55.0	190.0	..	52.0	119.8	159.1	17,717,201	60.4
Europe EMU	..	..	..	..	..	..	..	..	78.6	106.0	6,306,542	68.6

a. Data refer to total for the period shown. b. Data are for the most recent year available.

Private sector in the economy 5.1

About the data

Private sector development and investment—that is, tapping private sector initiative and investment for socially useful purposes—are critical for poverty reduction. In parallel with public sector efforts, private investment, especially in competitive markets, has tremendous potential to contribute to growth. Private markets 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.

Private participation in infrastructure has made important contributions to easing fiscal constraints, improving the efficiency of infrastructure services, and extending their delivery to poor people. The privatization trend in infrastructure that began in the 1970s and 1980s took off in the 1990s, peaking in 1997. Developing countries have been at the head of this wave, pioneering better approaches to providing infrastructure services and reaping the benefits of greater competition and customer focus. Between 1990 and 2004 more than 2,900 projects in more than 130 developing countries introduced private participation in at least one infrastructure sector, with $866 billion in investments.

In 2004, 132 new infrastructure projects with private participation valued at $23 billion were implemented. In addition, $41 billion in investment projects reached financial closure between 1990 and 2003. Telecommunications attracted $45 billion in investment in 2004, mostly in standalone mobile operations. Except for water and sanitation, with $1.9 billion in investment in 2004 (up from about $1.4 billion in 2003), investment in other infrastructure sectors declined in 2004.

The data on investment in infrastructure projects with private participation refer to all investment (public and private) in projects in which a private company assumes operating risk during the operating period or assumes development and operating risk during the contract period. Foreign state-owned companies are considered private entities for the purposes of this measure. The data are from the World Bank's Private Participation in Infrastructure (PPI) Project Database, which tracks more than 3,200 projects, newly owned or managed by private companies, that reached financial closure in low- and middle-income economies in 1990–2004. Aggregates for geographic regions and income groups are calculated by the World Bank's Development Data Group. For more information, see http://ppi.worldbank.org/.

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

Formal and informal micro, small, and medium-size enterprises employ more than half of the working population in many market economies and account for about 90 percent of all firms. And they contribute significantly to innovation. If small businesses are allowed to compete on an equal playing field, the good ones can become larger, workers can earn higher wages, and productivity will increase. A good investment climate—one that provides opportunities and incentives for firms, reduces legal and regulatory costs, lowers the costs of financial institutions in providing financial services, and facilitates the transfer of technology and knowledge and the upgrading of capabilities in small and medium-size firms—is important for economic progress, better jobs, and a more inclusive society.

Data on the activities of micro, small, and medium-size enterprises are collected by governments, international organizations, foundations, and small business organizations. These data have been collated by the International Finance Corporation (IFC) and are available in the Micro, Small, and Medium Enterprises: A Collection of Published Data database. This IFC initiative is a work in progress, improved and updated as new data become available. Because the concepts and definitions of micro, small, and medium-size enterprises vary by source, using these data for precise country rankings may be inappropriate. See www.ifc.org/ifcext/sme.nsf/Content/Resources for additional information on sources and precise firm size.

Definitions

• **Investment 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, stand-alone 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 (in which a private entity or a public-private joint venture builds and operates a new facility), and divestitures. • **Domestic credit to private sector** refers to financial resources provided to the private sector—such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable—that establish a claim for repayment. For some countries these claims include credit to public enterprises. • **Micro, small, and medium-size enterprises** are business that may be defined by the number of employees. There is no international standard definition of firm size; however, many institutions that collect information use the following size categories: micro enterprises have 0–9 employees, small enterprises have 10–49 employees, and medium-size enterprises have 50–249 employees.

Data sources

Data on investment 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 micro, small, and medium-size enterprises are from the International Finance Corporation's micro, small, and medium-size enterprises database (www.ifc.org/ifcext/sme.nsf/Content/Resources).

5.2 Investment climate

		Policy uncertainty	Corruption	Courts		Crime	Regulation and tax administration			Finance	Electricity	Labor	
	Survey year	Major constraint %	Major constraint %	Major constraint %	Lack confidence courts uphold property rights %	Major constraint %	Tax rates as major constraint %	Time dealing with officials % of management time	Average time to clear customs days	Major constraint %	Major constraint %	Major constraint % Skills	Major constraint % Regulation
Afghanistan		..	..	..	..	..	..	..	..	..	..	..	..
Albania	2005	19.1	31.8	23.9	43.6	8.6	40.9	12.2	2.1	19.5	34.7	10.4	2.5
Algeria	2003	..	35.2	..	27.3	..	44.8	..	21.6	51.3	11.5	25.5	12.9
Angola		..	..	..	..	..	..	..	..	..	..	..	..
Argentina		..	..	..	..	..	..	..	..	..	..	..	..
Armenia	2005	12.2	20.1	12.4	47.5	2.3	38.4	10.4	4.4	20.8	3.2	2.3	2.9
Australia		..	..	..	..	..	..	..	..	..	..	..	..
Austria		..	..	..	..	..	..	..	..	..	..	..	..
Azerbaijan	2005	2.9	21.3	4.4	30.8	2.4	22.9	16.6	1.6	7.0	4.9	1.8	1.5
Bangladesh	2000	45.4	57.9	..	83.0	39.4	35.8	4.6	11.5	45.7	73.2	19.8	10.8
Belarus	2005	23.4	6.6	3.0	33.4	2.9	20.4	8.3	4.4	22.5	0.9	6.6	3.4
Belgium		..	..	..	..	..	..	..	..	..	..	..	..
Benin		..	..	..	..	..	..	..	..	..	..	..	..
Bolivia	2004	..	..	..	..	..	..	..	9.3	..	..	..	..
Bosnia and Herzegovina	2005	35.1	24.7	21.5	41.6	19.9	15.6	9.5	2.6	25.8	8.2	3.6	3.2
Botswana		..	..	..	..	..	..	..	..	..	..	..	..
Brazil	2003	75.9	67.2	32.8	39.6	52.2	84.5	9.4	13.8	71.7	20.3	39.6	56.9
Bulgaria	2005	27.6	19.0	17.2	56.7	11.5	20.4	7.4	2.9	22.0	6.4	10.4	7.8
Burkina Faso		..	..	..	..	..	..	..	..	..	..	..	..
Burundi		..	..	..	..	..	..	..	..	..	..	..	..
Cambodia	2003	40.1	55.9	31.4	61.0	41.7	18.6	14.6	..	9.9	12.7	6.6	5.9
Cameroon		..	..	..	..	..	..	..	..	..	..	..	..
Canada		..	..	..	..	..	..	..	..	..	..	..	..
Central African Republic		..	..	..	..	..	..	..	..	..	..	..	..
Chad		..	..	..	..	..	..	..	..	..	..	..	..
Chile		..	..	..	..	..	..	..	..	..	..	..	..
China	2002	32.9	27.3	..	17.5	20.0	36.8	12.6	7.9	22.3	29.7	30.7	20.7
Hong Kong, China		..	..	..	..	..	..	..	..	..	..	..	..
Colombia		..	..	..	..	..	..	..	..	..	..	..	..
Congo, Dem. Rep.		..	..	..	..	..	..	..	..	..	..	..	..
Congo, Rep.		..	..	..	..	..	..	..	..	..	..	..	..
Costa Rica		..	..	..	..	..	..	..	..	..	..	..	..
Côte d'Ivoire		..	..	..	..	..	..	..	..	..	..	..	..
Croatia	2005	17.9	18.5	29.3	26.0	3.9	12.0	7.5	3.7	12.7	2.1	7.2	3.0
Cuba		..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	2005	22.0	20.5	25.2	53.1	15.8	59.1	7.1	5.1	17.4	15.5	12.5	15.6
Denmark		..	..	..	..	..	..	..	..	..	..	..	..
Dominican Republic		..	..	..	..	..	..	..	..	..	..	..	..
Ecuador	2003	60.7	49.2	34.1	70.8	27.8	38.1	17.7	16.4	42.2	28.3	22.3	14.1
Egypt, Arab Rep.	2004	65.8	51.3	27.4	..	..	81.8	..	9.9	39.0	26.5	29.8	28.1
El Salvador	2004	28.4	35.1	16.4	46.6	49.0	22.6	9.3	6.2	29.6	21.5	20.0	3.9
Eritrea	2002	31.5	2.7	..	..	1.3	31.1	5.9	9.1	53.7	38.2	41.0	5.2
Estonia	2005	5.3	4.3	2.0	29.6	1.9	3.0	5.7	1.9	6.1	3.3	7.1	18.8
Ethiopia	2002	39.3	39.0	..	..	9.5	73.6	5.7	13.5	40.2	42.5	17.9	4.6
Finland		..	..	..	..	..	..	..	..	..	..	..	..
France		..	..	..	..	..	..	..	..	..	..	..	..
Gabon		..	..	..	..	..	..	..	..	..	..	..	..
Gambia, The		..	..	..	..	..	..	..	..	..	..	..	..
Georgia	2005	45.2	20.1	13.5	29.0	24.5	35.7	12.2	2.8	25.4	33.5	14.1	7.6
Germany	2005	5.8	3.9	2.3	10.3	1.9	29.6	3.5	5.7	16.7	1.0	6.9	9.6
Ghana		..	..	..	..	..	..	..	..	..	..	..	..
Greece	2005	9.3	10.0	4.7	18.2	5.2	27.5	8.4	5.9	16.3	4.6	8.6	7.7
Guatemala	2003	66.4	80.9	31.2	71.3	80.4	56.5	17.4	9.3	38.7	26.6	31.4	16.7
Guinea		..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau		..	..	..	..	..	..	..	..	..	..	..	..
Haiti		..	..	..	..	..	..	..	..	..	..	..	..

Investment climate 5.2

		Policy uncertainty	Corruption	Courts		Crime	Regulation and tax administration			Finance	Electricity	Labor	
	Survey year	Major constraint %	Major constraint %	Major constraint %	Lack confidence courts uphold property rights %	Major constraint %	Tax rates as major constraint %	Time dealing with officials % of management time	Average time to clear customs days	Major constraint %	Major constraint %	Major constraint % Skills	Major constraint % Regulation
Honduras	2003	47.0	62.8	21.8	56.1	60.9	35.6	14.2	5.1	55.4	36.4	26.4	14.2
Hungary	2005	26.3	9.4	7.4	49.8	5.6	50.6	8.3	7.7	27.9	2.1	12.9	10.3
India	2003	20.9	37.4	..	29.4	15.6	27.9	15.3	6.7	19.2	28.9	12.5	16.7
Indonesia	2004	48.2	41.5	24.7	40.8	22.0	29.5	14.6	5.8	23.0	22.3	18.9	25.9
Iran, Islamic Rep.		..	..	..	..	..	..	..	..	..	..	..	..
Iraq		..	..	..	..	..	..	..	..	..	..	..	..
Ireland	2005	5.6	3.0	2.8	28.3	4.8	17.4	5.8	3.3	9.0	6.4	15.6	9.6
Israel		..	..	..	..	..	..	..	..	..	..	..	..
Italy		..	..	..	..	..	..	..	..	..	..	..	..
Jamaica		..	..	..	..	..	..	..	..	..	..	..	..
Japan		..	..	..	..	..	..	..	..	..	..	..	..
Jordan		..	..	..	..	..	..	..	..	..	..	..	..
Kazakhstan	2005	9.2	12.7	8.2	42.7	5.3	15.6	10.7	6.0	14.9	2.7	8.6	2.5
Kenya	2003	51.5	73.8	..	51.3	69.8	68.2	13.8	8.9	58.3	48.1	27.6	22.5
Korea, Dem. Rep.	2005	40.9	8.5	3.6	37.2	3.5	15.1	1.3	8.0	12.5	8.3	6.8	4.1
Korea, Rep.		..	..	..	..	..	..	..	..	..	..	..	..
Kuwait		..	..	..	..	..	..	..	..	..	..	..	..
Kyrgyz Republic	2005	33.2	32.8	17.1	50.8	19.4	31.3	16.1	5.4	23.1	4.0	18.9	2.5
Lao PDR		..	..	..	..	..	..	..	..	..	..	..	..
Latvia	2005	22.3	9.6	5.8	51.3	3.1	29.4	8.0	3.3	6.5	4.5	17.8	3.5
Lebanon		..	..	..	..	..	..	..	..	..	..	..	..
Lesotho		..	..	..	..	..	..	..	..	..	..	..	..
Liberia		..	..	..	..	..	..	..	..	..	..	..	..
Libya		..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	2005	23.2	14.0	15.3	49.7	9.5	40.9	8.3	2.0	10.3	3.9	15.3	8.9
Macedonia, FYR	2005	27.9	34.7	31.0	55.4	12.8	20.7	15.6	3.1	31.6	12.0	6.1	9.2
Madagascar	2005	41.5	46.6	34.8	44.6	37.7	44.9	25.4	7.0	62.9	41.3	30.5	14.8
Malawi		..	..	..	..	..	..	..	..	..	..	..	..
Malaysia	2005	22.4	14.5	..	19.1	11.4	21.7	10.2	3.7	17.8	14.8	25.0	14.5
Mali	2004	21.9	48.7	16.9	33.1	22.1	36.6	10.8	10.0	57.0	24.2	20.8	3.9
Mauritania		..	..	..	..	..	..	..	..	..	..	..	..
Mauritius		..	..	..	..	..	..	..	..	..	..	..	..
Mexico		..	..	..	..	..	..	..	..	..	..	..	..
Moldova	2005	31.6	17.6	22.1	64.2	10.1	37.8	10.9	2.8	31.9	2.9	12.0	8.2
Mongolia		..	..	..	..	..	..	..	..	..	..	..	..
Morocco	2004	..	16.9	29.1	23.5	7.6	62.6	10.5	3.0	78.5	8.9	21.1	16.2
Mozambique		..	..	..	..	..	..	..	..	..	..	..	..
Myanmar		..	..	..	..	..	..	..	..	..	..	..	..
Namibia		..	..	..	..	..	..	..	..	..	..	..	..
Nepal	2000	..	..	..	..	..	..	..	..	..	41.7	..	..
Netherlands		..	..	..	..	..	..	..	..	..	..	..	..
New Zealand		..	..	..	..	..	..	..	..	..	..	..	..
Nicaragua	2003	58.2	65.7	33.3	60.4	39.2	34.7	17.3	5.8	57.6	34.7	17.0	6.9
Niger		..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	2001	..	..	..	..	36.3	..	..	17.8	..	97.4	..	..
Norway		..	..	..	..	..	..	..	..	..	..	..	..
Oman	2004	20.7	11.9	14.9	12.9	8.6	20.7	..	8.0	29.4	10.1	34.6	34.8
Pakistan	2002	40.1	40.4	..	62.6	21.5	45.6	10.6	17.1	40.1	39.2	12.8	15.0
Panama		..	..	..	..	..	..	..	..	..	..	..	..
Papua New Guinea		..	..	..	..	..	..	..	..	..	..	..	..
Paraguay		..	..	..	..	..	..	..	..	..	..	..	..
Peru	2002	71.1	59.6	..	34.7	51.6	..	..	7.9	55.8	11.1	12.5	..
Philippines	2003	29.5	35.2	..	33.8	26.5	30.4	11.0	9.1	18.2	33.4	11.9	24.7
Poland	2005	42.7	18.2	21.0	47.4	15.0	57.7	7.2	3.8	39.6	4.1	15.3	17.9
Portugal	2005	22.2	15.4	17.8	47.7	15.7	20.5	5.8	6.0	18.3	7.8	12.4	18.1
Puerto Rico		..	..	..	..	..	..	..	..	..	..	..	..

5.2 Investment climate

		Policy uncertainty	Corruption	Courts		Crime	Regulation and tax administration			Finance	Electricity	Labor	
	Survey year	Major constraint %	Major constraint %	Major constraint %	Lack confidence courts uphold property rights %	Major constraint %	Tax rates as major constraint %	Time dealing with officials % of management time	Average time to clear customs days	Major constraint %	Major constraint %	Major constraint % Skills	Major constraint % Regulation
Romania	2005	33.9	30.1	19.7	44.3	15.3	34.1	3.6	3.0	22.6	8.1	14.2	16.4
Russian Federation	2005	26.2	16.5	9.5	63.9	9.3	21.8	14.8	9.5	15.7	5.1	13.1	3.1
Rwanda		..	..	..	..	..	..	..	..	..	..	..	..
Saudi Arabia		..	..	..	..	..	..	..	..	..	..	..	..
Senegal	2004	31.3	39.9	13.3	40.5	15.4	50.8	13.8	7.0	60.3	30.7	18.5	16.3
Serbia and Montenegro	2005	61.2	25.5	30.0	43.1	13.5	29.5	12.4	5.7	43.9	4.7	10.7	13.4
Sierra Leone		..	..	..	..	..	..	..	..	..	..	..	..
Singapore		..	..	..	..	..	..	..	..	..	..	..	..
Slovak Republic	2005	13.0	10.6	13.1	44.4	5.1	8.3	9.3	3.9	7.9	2.7	8.2	4.6
Slovenia	2005	11.5	3.7	8.1	34.4	0.9	12.7	6.4	3.2	9.5	2.7	5.4	4.5
Somalia		..	..	..	..	..	..	..	..	..	..	..	..
South Africa	2004	17.9	16.1	8.8	20.8	29.0	18.6	10.7	6.5	14.5	9.0	35.5	32.9
Spain	2005	10.3	7.8	7.9	16.6	9.8	18.8	5.1	5.5	13.3	8.3	13.8	11.8
Sri Lanka	2003	34.0	16.9	..	31.2	14.0	19.1	4.7	4.1	20.4	41.3	21.3	25.6
Sudan		..	..	..	..	..	..	..	..	..	..	..	..
Swaziland		..	..	..	..	..	..	..	..	..	..	..	..
Sweden		..	..	..	..	..	..	..	..	..	..	..	..
Switzerland		..	..	..	..	..	..	..	..	..	..	..	..
Syrian Arab Republic	2004	27.0	57.6	..	..	..	62.5	14.5	15.8	24.8	57.5	36.3	33.8
Tajikistan	2005	5.6	15.7	4.9	35.9	4.1	22.2	8.1	5.9	7.2	10.1	4.6	1.5
Tanzania	2003	31.5	51.1	20.0	55.1	25.5	73.4	16.2	17.5	53.0	58.9	25.0	12.1
Thailand	2004	29.1	18.3	..	25.8	10.3	24.4	2.9	4.6	15.2	25.6	30.0	11.4
Togo		..	..	..	..	..	..	..	..	..	..	..	..
Trinidad and Tobago		..	..	..	..	..	..	..	..	..	..	..	..
Tunisia		..	..	..	..	..	..	..	..	..	..	..	..
Turkey	2005	31.5	17.0	12.4	28.5	14.7	37.8	11.7	6.4	17.5	9.2	9.8	12.2
Turkmenistan		..	..	..	..	..	..	..	..	..	..	..	..
Uganda	2003	27.6	38.2	..	30.1	26.8	48.3	5.0	..	52.8	44.5	30.8	10.8
Ukraine	2005	31.3	22.6	15.2	48.2	12.3	45.7	13.7	6.8	29.9	4.9	19.8	6.5
United Arab Emirates		..	..	..	..	..	..	..	..	..	..	..	..
United Kingdom		..	..	..	..	..	..	..	..	..	..	..	..
United States		..	..	..	..	..	..	..	..	..	..	..	..
Uruguay		..	..	..	..	..	..	..	..	..	..	..	..
Uzbekistan	2005	11.5	8.9	6.6	41.7	8.9	18.3	7.7	8.7	12.5	7.2	4.6	3.0
Venezuela, RB		..	..	..	..	..	..	..	..	..	..	..	..
Vietnam	2005	14.7	12.8	5.5	23.1	4.0	13.8	6.9	4.5	30.3	15.7	22.3	10.9
West Bank and Gaza		..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	2005	31.1	62.8	32.0	58.4	28.7	71.9	21.3	13.3	31.8	47.6	23.6	12.8
Zambia	2003	57.0	46.4	38.6	36.0	48.8	57.5	14.1	4.8	67.7	39.6	35.7	16.9
Zimbabwe		..	..	..	..	..	..	..	..	..	..	..	..

Note: Data are based on enterprise surveys conducted by the World Bank and its partners during 2001–05. While averages are reported, there are significant variations across firms. Surveys of Eastern Europe and Central Asia were conducted under the joint World Bank–European Bank for Reconstruction and Development Business Environment and Enterprise Performance Surveys Initiative.

Investment climate 5.2

About the data

The table includes recently available data from World Bank–sponsored firm-level Investment Climate Surveys covering more than 50,000 firms in 63 developing countries for 2001–05. The data provide fresh insights into how investment climates vary around the world. In addition to these surveys, data from the Doing Business project, which benchmarks regulatory regimes in 155 countries, are presented in table 5.3.

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

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

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

The indicators included in the table cover eight dimensions of the investment climate: policy uncertainty, corruption, courts, crime, regulation and tax administration, finance, infrastructure, and labor.

Firms in developing countries rate policy uncertainty as their dominant concern among investment climate constraints. It measures the credibility of governments and their policies and the ability to deliver what is promised. Corruption—the exploitation of public office for private gain—can harm the investment climate in several ways. It can distort policymaking, undermine government credibility, tax entrepreneurial activities, and divert resources from public coffers. Better courts reduce the risks firms face, so that firms are willing to invest more. And the importance of courts grows as the number of large and complex long-term transactions increases. Robbery, fraud, and other crimes against property and against the person undermine the investment climate. Crime retards entrepreneurial activity. In Latin America, more than 50 percent of surveyed firms judged crime to be a serious obstacle to doing business.

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

The Investment Climate Surveys follow a stratified random sampling methodology, drawing from registered establishments with at least 10 employees. Samples are stratified on sectors and size of firms. Sectors are selected based on their contribution to GDP and for comparability with sectors in other countries. Because the distribution of establishments in most countries is overwhelmingly populated by small and medium-size enterprises, surveys generally oversample large establishments. Sample sizes for recent surveys range from 250 to 1,800 businesses and average 550 establishments.

For more information on the investment climate, see http://econ.worldbank.org/wdr/wdr2005 and http://iresearch.worldbank.org/ics.

Definitions

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

Data sources

Data on the investment climate are from the World Bank's Investment Climate Surveys (http://iresearch.worldbank.org/ics).

5.3 Business environment

	Starting a business			Registering property		Dealing with licenses		Hiring and firing workers	Enforcing contracts		Protecting investors	Closing a business
	Number of procedures January 2005	Time required days January 2005	Cost % of per capita income January 2005	Number of procedures January 2005	Time required days January 2005	Number of procedures to build a warehouse January 2005	Time required days January 2005	Rigidity of employment index 0 (less rigid) to 100 (more rigid) January 2005	Number of procedures January 2005	Time required days January 2005	Disclosure index 0 (less disclosure) to 10 (more disclosure) January 2005	Time to resolve insolvency years January 2005
Afghanistan	1	7	52.8	11	252	..	..	39	..	400	0	..
Albania	11	41	31.1	7	47	22	344	48	39	390	0	4.0
Algeria	14	26	25.3	16	52	25	244	51	49	407	8	3.5
Angola	14	146	642.8	7	334	15	326	64	47	1,011	5	6.2
Argentina	15	32	13.4	5	44	23	288	48	33	520	7	2.8
Armenia	10	25	6.1	4	6	20	176	49	24	185	..	1.9
Australia	2	2	1.9	5	5	16	121	17	11	157	8	1.0
Austria	9	29	5.7	3	32	14	195	44	20	374	2	1.1
Azerbaijan	14	115	12.5	7	61	28	212	38	25	267	0	2.7
Bangladesh	8	35	81.4	11	363	13	185	24	29	365	6	4.0
Belarus	16	79	22.9	7	231	18	354	27	28	225	1	5.8
Belgium	4	34	11.1	7	132	15	184	20	27	112	8	0.9
Benin	8	32	190.8	3	50	22	335	53	49	570	5	3.1
Bolivia	15	50	154.8	7	92	13	187	40	47	591	1	1.8
Bosnia and Herzegovina	12	54	40.9	7	331	17	476	42	36	330	3	3.3
Botswana	11	108	10.9	6	69	42	160	30	26	154	8	2.2
Brazil	17	152	10.1	15	47	19	460	56	24	546	5	10.0
Bulgaria	11	32	9.6	9	19	24	212	44	34	440	8	3.3
Burkina Faso	12	45	149.9	8	107	46	241	84	41	446	6	4.0
Burundi	11	43	200.7	5	94	18	302	69	47	433	..	4.0
Cambodia	10	86	276.1	7	56	28	247	59	31	401	5	..
Cameroon	12	37	172.8	5	93	15	444	56	58	585	8	3.2
Canada	2	3	0.9	6	10	15	87	14	17	346	8	0.8
Central African Republic	10	14	211.6	3	69	21	237	76	45	660	..	4.8
Chad	19	75	360.8	6	44	16	199	72	52	526	3	10.0
Chile	9	27	10.3	6	31	12	191	24	28	305	8	5.6
China	13	48	13.6	3	32	30	363	30	25	241	10	2.4
Hong Kong, China	5	11	3.4	5	83	22	230	0	16	211	10	1.1
Colombia	12	43	25.3	7	23	12	150	57	37	363	7	3.0
Congo, Dem. Rep.	13	155	503.3	8	106	16	306	90	51	909	3	5.2
Congo, Rep.	8	67	288.8	6	103	15	174	80	47	560	4	3.0
Costa Rica	11	77	23.8	6	21	19	120	39	34	550	2	3.5
Côte d'Ivoire	11	45	134.0	7	369	22	569	45	25	525	6	2.2
Croatia	12	49	13.4	5	956	28	278	57	22	415	2	3.1
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	10	40	9.5	4	123	31	245	24	21	290	2	9.2
Denmark	3	5	0.0	6	42	7	70	20	15	83	7	3.3
Dominican Republic	10	75	30.9	7	107	12	150	44	29	580	3	3.5
Ecuador	14	69	38.1	10	21	19	149	58	41	388	1	4.3
Egypt, Arab Rep.	10	34	104.9	7	193	30	263	53	55	410	5	4.2
El Salvador	12	40	118.0	5	52	22	144	41	41	275	6	4.0
Eritrea	13	91	128.6	6	91	19	187	27	27	385	4	1.7
Estonia	6	35	6.2	4	65	12	116	51	25	150	8	3.0
Ethiopia	7	32	65.1	15	56	12	133	41	30	420	1	2.4
Finland	3	14	1.2	3	14	17	56	48	27	228	6	0.9
France	7	8	1.2	9	183	10	185	66	21	75	10	1.9
Gabon	..	..	..	..	..	..	..	..	..	..	..	..
Gambia, The	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	8	21	13.7	6	9	29	282	43	18	375	4	3.3
Germany	9	24	4.7	4	41	11	165	55	26	175	5	1.2
Ghana	12	81	78.6	7	382	16	127	34	23	200	7	1.9
Greece	15	38	24.6	12	23	17	176	66	14	151	1	2.0
Guatemala	15	39	58.4	5	69	22	294	40	37	1,459	1	4.0
Guinea	13	49	178.8	6	104	29	278	48	44	306	5	3.8
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..
Haiti	12	203	153.1	5	683	12	186	24	35	368	4	5.7

Business environment 5.3

	Starting a business			Registering property		Dealing with licenses		Hiring and firing workers	Enforcing contracts		Protecting investors	Closing a business
	Number of procedures January 2005	Time required days January 2005	Cost % of per capita income January 2005	Number of procedures January 2005	Time required days January 2005	Number of procedures to build a warehouse January 2005	Time required days January 2005	Rigidity of employment index 0 (less rigid) to 100 (more rigid) January 2005	Number of procedures January 2005	Time required days January 2005	Disclosure index 0 (less disclosure) to 10 (more disclosure) January 2005	Time to resolve insolvency years January 2005
Honduras	13	62	64.1	7	36	14	199	34	36	545	1	3.8
Hungary	6	38	22.4	4	78	25	213	37	21	365	1	2.0
India	11	71	61.7	6	67	20	270	62	40	425	7	10.0
Indonesia	12	151	101.7	7	42	19	224	57	34	570	8	5.5
Iran, Islamic Rep.	8	47	6.3	9	36	21	668	49	23	545	3	4.5
Iraq	11	77	37.4	5	8	14	210	69	65	320	4	..
Ireland	4	24	5.3	5	38	10	181	33	16	217	9	0.4
Israel	5	34	5.3	7	144	21	219	33	27	585	8	4.0
Italy	9	13	15.7	8	27	17	284	57	18	1,390	7	1.2
Jamaica	6	9	8.3	5	54	13	242	10	18	202	3	1.1
Japan	11	31	10.7	6	14	11	87	19	16	60	6	0.6
Jordan	11	36	45.9	8	22	17	122	34	43	342	5	4.3
Kazakhstan	7	24	8.6	8	52	32	258	23	47	380	7	3.3
Kenya	13	54	48.2	8	73	11	170	28	25	360	4	4.5
Korea, Dem. Rep.	12	22	15.2	7	11	14	60	45	29	75	7	1.5
Korea, Rep.	12	..	15.2	..	..	..	..	..	..	..	..	..
Kuwait	13	35	2.2	8	75	26	149	20	52	390	5	4.2
Kyrgyz Republic	8	21	10.4	7	10	16	152	38	46	492	8	3.5
Lao PDR	9	198	15.1	9	135	24	208	50	53	443	4	5.0
Latvia	7	18	4.2	9	54	21	160	59	20	186	5	1.1
Lebanon	6	46	110.6	8	25	16	275	24	39	721	8	4.0
Lesotho	9	92	56.1	6	101	12	254	42	49	285	2	2.6
Liberia	..	..	..	..	..	..	..	..	..	..	..	..
Libya	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	8	26	3.3	3	3	14	151	44	17	154	5	1.2
Macedonia, FYR	13	48	11.3	6	74	18	214	54	27	509	5	3.7
Madagascar	11	38	54.3	8	134	19	356	59	29	280	5	..
Malawi	10	35	139.6	6	118	23	205	21	16	277	4	2.6
Malaysia	9	30	20.9	4	143	25	226	10	31	300	10	2.2
Mali	13	42	190.7	5	44	17	260	66	28	340	6	3.6
Mauritania	11	82	143.6	4	49	19	152	73	28	410	..	8.0
Mauritius	6	46	8.8	5	210	21	132	37	17	367	6	2.0
Mexico	9	58	15.6	5	74	12	222	51	37	421	6	1.8
Moldova	10	30	17.1	6	48	20	122	68	37	340	7	2.8
Mongolia	8	20	6.2	5	11	18	96	34	26	314	..	4.0
Morocco	5	11	12.0	3	82	21	217	60	17	240	6	1.8
Mozambique	14	153	95.0	8	42	14	212	61	38	580	..	5.0
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..
Namibia	10	95	18.8	9	28	11	169	27	31	270	8	1.0
Nepal	7	21	69.9	2	2	12	147	44	28	350	4	5.0
Netherlands	7	11	13.0	2	2	18	184	49	22	48	4	1.7
New Zealand	2	12	0.2	2	2	7	65	7	19	50	10	2.0
Nicaragua	8	42	139.1	7	65	12	192	47	20	155	4	2.2
Niger	13	35	465.4	5	49	27	165	90	33	330	6	5.0
Nigeria	9	43	73.8	21	274	16	465	38	23	730	6	1.5
Norway	4	13	2.7	1	1	13	97	38	14	87	7	0.9
Oman	9	34	4.8	4	16	16	271	35	41	455	8	7.0
Pakistan	11	24	18.6	5	49	12	218	46	46	395	6	2.8
Panama	7	19	24.8	7	44	22	128	63	45	355	3	2.0
Papua New Guinea	8	56	30.2	4	72	20	218	21	22	440	5	2.8
Paraguay	17	74	147.8	7	48	15	273	59	46	285	6	3.9
Peru	10	102	38.0	5	33	19	201	48	35	381	7	3.1
Philippines	11	48	20.3	8	33	23	197	45	25	360	1	5.7
Poland	10	31	22.2	6	197	25	322	37	41	980	7	1.4
Portugal	11	54	13.4	5	83	20	327	58	24	320	7	2.0
Puerto Rico	7	7	1.0	8	15	20	137	35	43	270	..	3.8

5.3 Business environment

	Starting a business			Registering property		Dealing with licenses		Hiring and firing workers	Enforcing contracts		Protecting investors	Closing a business
	Number of procedures January 2005	Time required days January 2005	Cost % of per capita income January 2005	Number of procedures January 2005	Time required days January 2005	Number of procedures to build a warehouse January 2005	Time required days January 2005	Rigidity of employment index 0 (less rigid) to 100 (more rigid) January 2005	Number of procedures January 2005	Time required days January 2005	Disclosure index 0 (less disclosure) to 10 (more disclosure) January 2005	Time to resolve insolvency years January 2005
Romania	5	11	5.3	8	170	15	291	59	43	335	8	4.6
Russian Federation	8	33	5.0	6	52	22	528	30	29	330	7	3.8
Rwanda	9	21	280.2	5	371	17	252	59	27	310	..	..
Saudi Arabia	13	64	68.5	4	4	18	131	13	44	360	8	2.8
Senegal	9	57	108.7	6	114	18	185	64	33	485	7	3.0
Serbia and Montenegro	10	15	6.0	6	111	21	212	28	33	635	7	2.7
Sierra Leone	9	26	835.4	8	58	48	236	80	58	305	3	2.6
Singapore	6	6	1.1	3	9	11	129	0	23	69	10	0.8
Slovak Republic	9	25	5.1	3	17	13	272	39	27	565	2	4.8
Slovenia	9	60	10.1	6	391	14	207	64	25	913	3	3.6
Somalia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	9	38	8.6	6	23	18	176	52	26	277	8	2.0
Spain	10	47	16.5	3	25	12	277	66	23	169	4	1.0
Sri Lanka	8	50	10.4	8	63	18	167	40	17	440	4	2.2
Sudan	10	38	68.1	..	..	..	..	43	67	915	..	..
Swaziland	..	..	..	..	..	..	..	..	..	..	..	..
Sweden	3	16	0.7	1	2	8	116	43	23	208	2	2.0
Switzerland	6	20	8.7	4	16	15	152	17	22	170	1	3.0
Syrian Arab Republic	12	47	34.5	4	34	20	134	40	47	672	5	4.1
Tajikistan	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	13	35	161.3	12	61	26	313	69	21	242	3	3.0
Thailand	8	33	6.1	2	2	9	147	18	26	390	10	2.7
Togo	13	53	218.3	6	212	14	273	79	37	535	4	3.0
Trinidad and Tobago	..	..	..	..	..	..	..	..	..	..	..	..
Tunisia	9	14	10.0	5	57	21	154	54	14	27	0	1.3
Turkey	8	9	27.7	8	9	32	232	55	22	330	8	5.9
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	17	36	117.8	8	48	19	155	13	15	209	7	2.2
Ukraine	15	34	10.6	10	93	18	265	61	28	269	1	2.9
United Arab Emirates	12	54	44.3	3	9	21	125	33	53	614	4	5.1
United Kingdom	6	18	0.7	2	21	19	115	14	14	288	10	1.0
United States	5	5	0.5	4	12	19	70	3	17	250	7	2.0
Uruguay	11	45	43.9	8	66	17	146	31	39	620	3	2.1
Uzbekistan	9	35	15.5	12	97	..	..	34	35	368	4	4.0
Venezuela, RB	13	116	15.7	7	33	13	276	38	41	445	3	4.0
Vietnam	11	50	50.6	5	67	14	143	51	37	343	4	5.0
West Bank and Gaza	11	106	275.4	7	58	18	144	38	26	465	..	..
Yemen, Rep.	12	63	240.2	6	21	13	131	37	37	360	6	3.0
Zambia	6	35	18.1	6	70	16	165	10	16	274	10	3.1
Zimbabwe	10	96	1,442.5	4	30	21	481	24	33	350	8	2.2
World	**10 u**	**48 u**	**77.3 u**	**6 u**	**86 u**	**18 u**	**209 u**	**41 u**	**32 u**	**394 u**	**5 u**	**3.2 u**
Low income	10	60	167.6	7	114	19	231	50	36	421	5	3.7
Middle income	10	49	42.3	6	82	19	216	38	32	424	5	3.5
Lower middle income	10	52	54.2	6	74	18	216	39	32	433	4	3.6
Upper middle income	9	42	18.4	6	99	20	216	38	30	405	5	3.5
Low & middle income	10	53	94.8	6	95	19	222	43	34	423	5	3.6
East Asia & Pacific	9	56	47.2	5	64	17	147	28	31	426	5	3.7
Europe & Central Asia	10	36	13.6	6	117	22	254	44	30	372	5	3.5
Latin America & Carib.	12	66	58.8	7	79	16	210	41	35	470	4	3.5
Middle East & N. Africa	10	45	75.6	7	50	19	236	45	38	414	5	3.8
South Asia	8	35	39.7	7	124	16	195	39	30	386	5	5.1
Sub-Saharan Africa	11	64	215.3	7	118	20	251	53	36	439	5	3.3
High income	7	24	9.4	5	47	16	157	34	24	282	6	1.9
Europe EMU	8	27	10.2	6	55	15	201	51	22	296	6	1.3

Business environment 5.3

About the data

The table presents key indicators on the environment for doing business. The indicators identify regulations that enhance or constrain business investment, productivity, and growth. The data are from the World Bank's Doing Business database.

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

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

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

Lack of access to credit is one of the biggest barriers entrepreneurs face in starting and operating a business. Indicators covering financial access and financial information are presented in table 5.5.

There are many types of business licenses required, and striking the right balance between the ease of doing business and consumer safety requires continuous reform. Since construction is a large sector in most economies, the procedures required for a business in the construction industry to build a standardized warehouse are recorded. These include obtaining all necessary licenses and permits, completing all required notifications and inspections, and submitting the relevant documents to the authorities. The data cover the number of procedures and time needed by the construction firm to complete all procedures.

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

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

What companies disclose to the public has a large impact on investor protection. Both investors and entrepreneurs benefit greatly from such legal protection. The disclosure index is based on measures that cover ownership disclosure, measures that reduce expropriation, and disclosures to help investors.

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

To ensure cross-country comparability, several standard characteristics of a company are defined in all surveys, such as size, ownership, location, legal status, and type of activities. The data were collected through a study of laws and regulations in each country, surveys of regulators or private sector professionals on each topic, and cooperative arrangements with private consulting firms and business and law associations. These standard characteristics include limited liability company; operates in the country's most populous city; 100 percent domestically owned and has five owners, none of whom is a legal entity; start-up capital of 10 times income per capita at the end of 2004, paid in cash; performs general industrial or commercial activities, such as production or sale of products or services to the public; does not perform foreign trade activities or handle products subject to a special tax regime; does not use heavily polluting production processes; leases the commercial plant and offices and is not a proprietor of real estate; does not qualify for investment incentives or any special benefits; up to 50 employees within one month of commencement of operations, all of them nationals; turnover at least 100 times income per capita; and company deed 10 pages long.

Definitions

• **Number of procedures for starting a business** is the number of procedures required to start a business, including interactions required to obtain necessary permits and licenses and to complete all inscriptions, verifications, and notifications to start operations. Data are for businesses with specific characteristics of ownership, size, and type of production. • **Time required for starting a business** is the number of calendar days needed to complete the required procedures for legally operating a business. If a procedure can be speeded up at additional cost, the fastest procedure, independent of cost, is chosen. • **Cost for starting a business** is normalized by presenting it as a percentage of gross national income (GNI) per capita. • **Number of procedures to register property** is the number of procedures required for a business to secure rights to property. • **Time required for registering property** is the number of calendar days needed for a business to secure rights to property. • **Number of procedures to build a warehouse** is the number of interactions of a company's employees or managers with external parties, including government agency staff, public inspectors, notaries, land registry and cadastre staff, and technical experts apart from architects and engineers. • **Time required to build a warehouse** is the number of calendar days needed to complete the required procedures for building a warehouse. If a procedure can be speeded up at additional cost, the fastest procedure, independent of cost, is chosen. • **Rigidity of employment index** measures the regulation of employment, specifically the hiring and firing of workers and the rigidity of working hours. This index is the average of three subindexes: a difficulty of hiring index, a rigidity of hours index, and a difficulty of firing index. The index ranges from 0 to 100, with higher values indicating more rigid regulations. • **Number of procedures 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 filing of the lawsuit in court to the final determination and, in appropriate cases, payment. • **Disclosure index** measures the degree to which investors are protected through disclosure of ownership and financial information. The index ranges from 0 to 7, with higher values indicating more disclosure. • **Time to resolve insolvency** is the number of years from the time of filing for insolvency in court until resolution of distressed assets.

Data sources

Data on the business environment are from the World Bank's Doing Business project (http://rru.worldbank.org/DoingBusiness/).

5.4 Stock markets

	Market capitalization				Market liquidity		Turnover ratio		Listed domestic companies		S&P/EMDB indexes	
	$ millions		% of GDP		Value traded % of GDP		Value of shares traded % of market capitalization		number		% change	
	2000	2005	2000	2004	2000	2004	2000	2005	2000	2005	2004	2005
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..
Albania	..	..	..	..	..	..	..	..	..	..	..	..
Algeria	..	..	..	..	..	..	..	..	..	..	..	..
Angola	..	..	..	..	..	..	..	..	..	..	..	..
Argentina	166,068	61,478	58.4	30.3	2.1	5.0	4.8	29.7	127	101	24.6[a]	45.4[a]
Armenia	..	*18*	..	*0.6*	..	0.1	*4.6*	*3.9*	..	*194*	..	..
Australia	372,794	*776,403*	96.2	121.8	58.4	80.7	56.5	*75.5*	1,330	*1,515*	..	..
Austria	29,935	*85,815*	15.4	29.4	4.8	8.2	29.8	*34.0*	97	*99*	..	..
Azerbaijan	*4*	..	*0.1*	..	..	..	..	..	*2*	..	..	..
Bangladesh	1,186	3,035	2.6	5.9	1.7	1.6	74.4	32.3	221	262	104.3[b]	–27.7[b]
Belarus	..	..	..	..	..	..	..	..	..	..	..	..
Belgium	182,481	*768,377*	79.9	218.1	16.6	20.0	20.7	*14.9*	174	*170*	..	..
Benin	..	..	..	..	..	..	..	..	..	..	..	..
Bolivia	*1,742*	*1,988*	*20.7*	*22.7*	*0.0*	0.1	*1.0*	*0.2*	*26*	*34*	..	..
Bosnia and Herzegovina	..	..	..	..	..	..	..	..	..	..	..	..
Botswana	978	2,437	18.6	28.4	0.9	0.6	4.8	2.0	16	18	21.1[b]	–3.2[b]
Brazil	226,152	474,647	37.6	54.7	16.8	15.5	43.5	37.2	459	381	33.7[a]	47.6[a]
Bulgaria	617	5,086	4.9	11.6	0.5	2.1	9.2	35.2	503	331	82.7[b]	16.4[b]
Burkina Faso	..	..	..	..	..	..	..	..	..	..	..	..
Burundi	..	..	..	..	..	..	..	..	..	..	..	..
Cambodia	..	..	..	..	..	..	..	..	..	..	..	..
Cameroon	..	..	..	..	..	..	..	..	..	..	..	..
Canada	841,385	*1,177,518*	117.8	120.4	88.8	66.9	77.3	*63.1*	1,418	*3,597*	..	..
Central African Republic	..	..	..	..	..	..	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..
Chile	60,401	136,446	79.7	124.4	8.0	12.3	9.4	15.5	258	245	18.3[a]	14.7[a]
China	580,991	780,763	48.5	33.1	60.2	38.7	158.3	82.6	1,086	1,387	–2.1[a]	13.3[a]
Hong Kong, China	623,398	*861,463*	377.0	528.5	228.5	269.3	61.3	*55.7*	779	*1,086*	..	..
Colombia	9,560	46,016	11.4	25.8	0.5	1.5	3.8	17.8	126	114	115.4[b]	108.1[b]
Congo, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Congo, Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Costa Rica	*2,924*	*1,920*	*18.3*	*10.4*	..	0.7	*12.0*	..	*21*	23	..	..
Côte d'Ivoire	1,185	2,327	11.4	13.5	0.3	0.3	2.6	1.5	41	39	41.1[b]	16.9[b]
Croatia	2,742	12,918	14.9	31.9	1.0	1.4	7.4	6.6	64	145	–7.7[b]	7.4[b]
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	11,002	38,345	19.7	28.8	11.8	16.5	60.3	120.7	131	36	76.3[a]	43.5[a]
Denmark	107,666	*151,342*	68.0	62.7	57.9	40.4	86.0	*71.4*	225	*178*	..	..
Dominican Republic	*141*	..	*0.8*	..	..	..	..	..	*6*	..	..	..
Ecuador	704	3,214	4.4	8.5	0.1	0.3	5.5	5.0	30	32	46.7[b]	26.0[b]
Egypt, Arab Rep.	28,741	79,672	28.1	48.9	10.9	7.1	34.7	42.4	1,076	744	126.4[a]	158.0[a]
El Salvador	2,041	*2,643*	15.5	*16.7*	0.2	3.1	*2.7*	*0.3*	40	*32*	..	..
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..
Estonia	1,846	3,495	33.7	55.2	6.0	7.4	18.9	51.5	23	15	70.5[b]	22.8[b]
Ethiopia	..	..	..	..	..	..	..	..	..	..	..	..
Finland	293,635	*183,765*	244.9	98.8	172.3	118.4	64.3	*124.3*	154	*134*	..	..
France	1,446,634	*1,857,235*	108.9	90.7	81.6	64.1	74.1	*81.7*	808	*701*	..	..
Gabon	..	..	..	..	..	..	..	..	..	..	..	..
Gambia, The	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	24	*186*	0.8	*3.6*	..	0.5	..	*0.5*	269	*277*	..	..
Germany	1,270,243	*1,194,517*	66.8	43.6	56.3	51.3	79.1	*123.7*	1,022	*660*	..	..
Ghana	502	1,661	10.1	29.8	0.2	0.7	1.5	3.2	22	30	32.7[b]	–33.9[b]
Greece	110,839	*125,242*	98.9	61.0	84.8	21.2	63.7	*37.5*	329	*340*	..	..
Guatemala	240	..	1.2	..	0.0	..	*2.9*	..	44	*5*	..	..
Guinea	..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..
Haiti	..	..	..	..	..	..	..	..	..	..	..	..

5.4 Stock markets

	Market capitalization				Market liquidity		Turnover ratio		Listed domestic companies		S&P/EMDB indexes	
	$ millions		% of GDP		Value traded % of GDP		Value of shares traded % of market capitalization		number		% change	
	2000	2005	2000	2004	2000	2004	2000	2005	2000	2005	2004	2005
Honduras	*458*	..	*8.7*	..	..	..	..	..	46	..	..	..
Hungary	12,021	32,576	25.8	28.5	26.0	12.9	90.7	79.2	60	44	93.7[a]	16.1[a]
India	148,064	553,074	32.4	56.1	111.5	54.8	133.6	93.6	5,937	4,763	20.1[a]	33.6[a]
Indonesia	26,834	81,428	16.3	28.4	8.7	10.7	32.9	54.8	290	335	39.3[a]	9.1[a]
Iran, Islamic Rep.	7,350	*46,995*	7.3	*28.8*	4.9	8.1	*12.4*	*21.7*	304	*411*	..	..
Iraq	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	81,882	*114,085*	86.2	62.8	15.2	24.4	19.2	*44.5*	76	*53*	..	..
Israel	64,081	120,114	55.5	81.7	20.3	39.6	36.3	55.4	654	572	13.4[a]	24.1[a]
Italy	768,364	*789,563*	71.5	47.1	72.4	47.9	104.0	*114.5*	291	*269*	..	..
Jamaica	3,582	13,028	44.6	162.6	0.9	5.4	2.5	3.1	46	39	107.4[b]	–14.1[b]
Japan	3,157,222	*3,678,262*	66.5	79.6	56.8	74.2	69.9	*103.5*	2,561	*3,220*	12.5[c]	21.7[c]
Jordan	4,943	37,639	58.4	159.6	4.9	46.3	7.7	85.0	163	201	55.0[b]	117.8[b]
Kazakhstan	1,342	*3,941*	7.3	*9.7*	0.5	2.4	*1.2*	*22.0*	23	*54*	..	..
Kenya	1,283	6,384	10.1	24.2	0.4	2.0	3.6	9.7	57	47	–15.0[b]	60.0[b]
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	171,587	718,180	33.5	63.1	208.7	94.0	233.2	210.8	1,308	1,620	25.7[a]	58.8[a]
Kuwait	20,772	..	56.3	..	11.4	..	21.3	..	77	..	..	..
Kyrgyz Republic	4	*34*	0.3	1.5	1.7	3.0	..	*205.3*	80	*6*	..	..
Lao PDR	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	563	2,527	7.3	12.2	3.0	0.8	48.6	4.6	64	45	49.8[b]	32.8[b]
Lebanon	1,583	4,929	9.5	10.7	0.7	0.9	6.7	25.5	12	11	53.5[b]	111.8[b]
Lesotho	..	..	..	..	..	..	..	..	..	..	..	..
Liberia	..	..	..	..	..	..	..	..	..	..	..	..
Libya	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	1,588	8,183	13.9	29.0	1.8	2.1	14.8	10.2	54	43	56.2[b]	6.2[b]
Macedonia, FYR	7	*413*	0.2	*7.7*	0.1	*0.5*	*348.3*	*8.1*	*1*	*68*	..	..
Madagascar	..	..	..	..	..	..	..	..	..	..	..	..
Malawi	126	..	7.2	..	0.5	..	..	..	7	*8*	..	..
Malaysia	116,935	180,346	129.5	160.6	64.8	50.6	44.6	26.9	795	1,020	12.7[a]	–2.9[a]
Mali	..	..	..	..	..	..	..	..	..	..	..	..
Mauritania	..	..	..	..	..	..	..	..	..	..	..	..
Mauritius	1,331	2,617	30.1	39.4	1.7	1.6	5.0	6.1	40	42	17.8[b]	10.5[b]
Mexico	125,204	239,128	21.5	25.4	7.8	6.3	32.3	25.7	179	151	47.9[a]	43.9[a]
Moldova	*392*	*574*	*30.4*	*22.1*	1.9	2.1	*97.9*	*7.7*	*36*	*23*	..	..
Mongolia	*37*	*25*	*3.9*	*1.5*	..	0.0	*7.3*	*2.2*	*410*	*395*	..	..
Morocco	10,899	27,220	32.7	50.1	3.3	3.4	9.2	16.4	53	56	18.3[a]	8.4[a]
Mozambique	..	..	..	..	..	..	..	..	..	..	..	..
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..
Namibia	311	415	9.1	7.7	0.6	0.3	4.5	1.6	13	13	36.7[b]	–1.1[b]
Nepal	790	576	14.4	8.6	0.6	0.4	*6.9*	..	110	*114*	..	..
Netherlands	640,456	*622,284*	172.8	*107.5*	182.7	104.4	101.4	*104.1*	234	*177*	..	..
New Zealand	18,866	*43,731*	36.2	44.2	20.7	15.6	45.9	*40.1*	142	*158*	..	..
Nicaragua	..	..	..	..	..	..	..	..	..	..	..	..
Niger	..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	4,237	19,356	10.1	20.1	0.6	2.3	7.3	11.5	195	214	23.9[b]	20.7[b]
Norway	65,034	*141,430*	39.0	56.6	36.0	54.2	93.4	*114.7*	191	*148*	..	..
Oman	3,463	15,269	17.4	26.0	2.8	7.4	14.2	29.8	131	96	25.2[b]	38.0[b]
Pakistan	6,581	45,937	9.0	30.2	45.0	76.9	475.5	375.7	762	661	20.7[b]	58.5[b]
Panama	2,794	*3,401*	24.0	*24.8*	1.3	0.4	*1.5*	*1.5*	29	*22*	..	..
Papua New Guinea	..	2,942	..	75.3	..	0.1	..	..	..	9	..	..
Paraguay	*423*	212	*5.5*	2.9	..	0.0	*3.5*	..	*55*	52	..	..
Peru	10,562	35,995	19.9	29.3	2.9	1.6	12.6	7.1	230	196	–0.7[a]	29.8[a]
Philippines	25,957	40,153	34.2	34.2	10.8	4.3	15.8	20.4	228	235	25.0[a]	21.3[a]
Poland	31,279	93,873	18.8	29.3	8.8	6.8	49.9	37.3	225	248	59.3[a]	20.8[a]
Portugal	60,681	*73,404*	57.0	43.8	51.1	20.6	85.5	*52.5*	109	*56*	..	..
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..

5.4 Stock markets

	Market capitalization				Market liquidity		Turnover ratio		Listed domestic companies		S&P/EMDB indexes	
	$ millions		% of GDP		Value traded % of GDP		Value of shares traded % of market capitalization		number		% change	
	2000	2005	2000	2004	2000	2004	2000	2005	2000	2005	2004	2005
Romania	1,069	20,588	2.9	16.1	0.6	1.3	23.1	28.8	5,555	3,747	99.3[b]	58.7[b]
Russian Federation	38,922	548,579	15.0	46.1	7.8	22.5	36.9	39.0	249	296	12.8[a]	64.9[a]
Rwanda	..	..	..	..	..	..	..	..	..	..	..	..
Saudi Arabia	67,171	646,104	35.6	122.2	9.2	188.8	27.1	231.7	75	77	83.6[b]	111.0[b]
Senegal	..	..	..	..	..	..	..	..	..	..	..	..
Serbia and Montenegro	..	*3,281*	..	*13.7*	0.3	1.8	*0.0*	*122.3*	6	*404*	..	..
Sierra Leone	..	..	..	..	..	..	..	..	..	..	..	..
Singapore	152,827	*171,555*	167.1	160.6	100.0	76.1	52.1	*51.2*	418	*489*	..	..
Slovak Republic	1,217	4,393	6.0	10.7	4.4	1.6	129.8	1.6	493	209	41.0[b]	16.6[b]
Slovenia	2,547	7,899	13.4	30.1	..	3.6	20.7	9.1	38	116	128.5[b]	–6.9[b]
Somalia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	204,952	565,408	154.2	214.1	58.3	76.5	33.9	41.6	616	388	50.1[a]	24.8[a]
Spain	504,219	*940,673*	86.8	90.5	169.8	114.9	210.7	*143.3*	1,019	*3,272*	..	..
Sri Lanka	1,074	5,720	6.6	18.2	0.9	2.9	11.0	23.7	239	239	–59.2[b]	29.3[b]
Sudan	..	..	..	..	..	..	..	..	..	..	..	..
Swaziland	*73*	*225*	*5.3*	*9.4*	0.0	0.0	*0.2*	*0.0*	6	*6*	..	..
Sweden	328,339	*376,781*	137.1	108.8	162.8	119.1	111.2	*123.7*	292	*256*	..	..
Switzerland	792,316	*825,849*	322.0	231.0	247.6	203.4	82.0	*93.7*	252	*282*	..	..
Syrian Arab Republic	..	..	..	..	..	..	..	..	..	..	..	..
Tajikistan	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	233	670	2.6	6.2	0.4	0.2	*3.4*	..	4	6	..	..
Thailand	29,489	123,539	24.0	71.4	19.0	67.5	53.2	75.2	381	468	–6.4[a]	3.8[a]
Togo	..	..	..	..	..	..	..	..	..	..	..	..
Trinidad and Tobago	4,330	16,972	53.1	135.9	1.7	4.2	3.1	4.0	27	37	36.8[b]	–1.3[b]
Tunisia	2,828	2,876	14.5	9.4	3.2	0.8	23.3	16.8	44	46	4.2[b]	11.1[b]
Turkey	69,659	161,537	35.0	32.5	89.9	48.7	206.2	153.9	315	302	32.9[a]	49.5[a]
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	..	96	..	1.4	..	0.0	..	..	..	5	..	..
Ukraine	1,881	24,976	6.0	18.2	0.9	0.3	19.6	3.6	139	221	170.3[b]	52.8[b]
United Arab Emirates	5,727	30,363	8.1	34.3	0.2	4.3	..	..	54	30	..	..
United Kingdom	2,576,992	*2,815,928*	179.2	132.6	127.6	174.5	66.6	*140.5*	1,904	*2,486*	15.3[d]	4.4[d]
United States	15,104,037	*16,323,726*	154.7	139.4	326.3	165.3	200.8	*126.5*	7,524	*5,231*	9.0[e]	3.0[e]
Uruguay	*161*	*330*	*0.8*	*2.5*	*0.0*	0.0	*0.9*	*0.4*	*16*	*10*	..	..
Uzbekistan	32	*4*	0.2	*0.0*	0.1	0.0	..	*108.7*	5	*145*	..	..
Venezuela, RB	8,128	5,017	6.9	5.6	0.6	0.4	8.9	4.6	85	50	–50.4[b]	–22.0[b]
Vietnam	..	..	..	..	..	..	..	..	..	..	..	..
West Bank and Gaza	765	*1,097*	16.5	*18.8*	4.1	*1.7*	*20.9*	*1.7*	24	*27*	..	..
Yemen, Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Zambia	236	430	7.3	8.0	0.2	0.1	*4.7*	..	9	11	..	..
Zimbabwe	2,432	2,402	32.9	41.3	3.8	2.9	10.8	6.4	69	79	–26.7[b]	36.6[b]
World	**32,187,883 s**	***38,904,431* s**	**103.1 w**	**96.3 w**	**153.6 w**	**97.0 w**	**122.3 w**	**53.7 w**	**47,884 s**	***48,874* s**	**..**	**..**
Low income	167,320	*450,544*	24.2	44.5	78.9	45.0	152.7	107.6	7,965	*6,756*	..	..
Middle income	1,851,805	*2,982,006*	37.5	43.7	26.9	23.9	71.5	41.6	15,497	*14,117*	..	..
Lower middle income	980,024	*1,426,779*	35.5	36.7	32.3	26.2	91.3	37.1	11,450	*10,584*	..	..
Upper middle income	871,781	*1,555,228*	40.0	52.8	20.1	20.9	47.4	44.3	4,047	*3,533*	..	..
Low & middle income	2,019,125	*3,432,550*	35.9	43.8	33.3	26.7	81.4	53.7	23,462	*20,873*	..	..
East Asia & Pacific	780,487	*1,050,879*	47.2	41.0	50.0	37.0	125.2	50.0	3,190	*3,794*	..	..
Europe & Central Asia	176,208	*561,440*	19.3	32.8	25.6	19.4	82.1	59.0	8,295	*7,023*	..	..
Latin America & Carib.	626,283	*767,136*	32.6	39.6	8.6	8.3	26.9	26.1	1,806	*1,525*	..	..
Middle East & N. Africa	60,573	*141,343*	19.8	*37.1*	6.3	7.4	*18.7*	*16.5*	1,807	*1,627*	..	..
South Asia	157,695	*424,403*	26.4	48.7	90.9	52.2	168.0	120.6	7,269	*6,000*	..	..
Sub-Saharan Africa	217,880	*487,349*	91.2	129.6	32.8	43.9	22.5	27.6	1,095	*904*	..	..
High income	30,168,757	*35,471,881*	117.8	108.9	179.9	113.9	130.9	*114.0*	24,422	*28,001*	..	..
Europe EMU	5,423,385	*6,805,103*	88.5	71.6	81.8	60.6	90.8	*102.0*	4,367	*5,973*	..	..

Note: Because aggregates for market capitalization are unavailable for 2005, those shown refer to 2004.

a. Data refer to the S&P/IFC Investable index. b. Data refer to the S&P/IFC Global index c. Data refer to the Nikkei 225 index. d. Data refer to the FT 100 index. e. Data refer to the S&P 500 index.

Stock markets 5.4

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 new communications technology and increased financial integration have resulted in more cross-border capital flows, a stronger presence of financial firms around the world, and the migration of stock exchange activities to international exchanges. Many firms in emerging markets now cross-list on international exchanges, which provides them with lower cost capital and more liquidity-traded shares. However, this also means that exchanges in emerging markets may not have enough financial activity to sustain them, putting pressure on them to rethink their operations.

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

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

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

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

The S&P/EMDB, the source for all the data in the table, provides regular updates on 53 emerging stock markets encompassing more than 2,613 stocks. The S&P/IFCG index includes 32 markets and 2,125 stocks, and the S&P/IFCI index covers 22 markets and 1,377 stocks. In addition 251 companies from 21 "frontier" markets are covered. These indexes are widely used benchmarks for international portfolio management. See Standard & Poor's (2001b) for further information on the indexes.

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

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

Definitions

• **Market capitalization** (also known as market value) is the share price times the number of shares outstanding. • **Market liquidity** is the total value traded divided by GDP. Value traded is the total value of shares traded during the period. 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/EMDB indexes** measure the U.S. dollar price change in the stock markets covered by the S&P/IFCI and S&P/IFCG country indexes.

Data sources

Data on stock markets are from Standard & Poor's *Global Stock Markets Factbook 2005,* 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.

5.5 Financial access, stability, and efficiency

	Bank branches per 100,000 people 2001–04[a]	Bank deposit accounts per 1,000 people 2001–04[a]	Financial information infrastruture index 0 (less developed) to 10 (more developed) 2005	Banking system ownership % of total banking assets Held by foreign-owned banks 2001	Banking system ownership % of total banking assets Held by government-owned banks 2001	Bank capital to asset ratio % 2004	Bank non-performing loans to total gross loans % 2004	Deposit insurance coverage % of GDP per capita 2003	Domestic credit provided by banking sector % of GDP 2004	Interest rate spread Lending rate minus deposit rate percentage points 2004	Risk premium on lending Prime lending rate minus treasury bill rate percentage points 2004
Afghanistan	..	..	..	..	..	..	..	..	..	..	..
Albania	2.1	161	..	46.0	54.0	..	..	3.0	45.7	5.2	5.0
Algeria	..	..	..	3.9	95.7	..	..	3.7	24.8	5.5	7.9
Angola	..	..	..	..	..	11.3	13.3	..	4.5	66.9	..
Argentina	10.0	369	7.5	31.8	31.9	..	18.6	3.1	45.5	4.2	..
Armenia	7.6	111	4.5	59.0	0.0	17.8	7.2	..	7.2	13.7	13.4
Australia	29.9	..	..	17.0	0.0	5.9	0.3	..	109.0	5.2	..
Austria	53.9	3,120	..	..	0.0	6.0	*2.2*	0.7	121.9	..	..
Azerbaijan	4.1	..	..	4.6	58.3	11.9	9.5	..	11.2	6.5	11.1
Bangladesh	4.5	229	..	..	..	2.7	17.6	4.6	41.1	7.6	..
Belarus	4.8	..	..	26.0	74.0	20.0	4.6	0.6	21.2	4.2	..
Belgium	53.2	3,080	..	..	0.0	3.2	2.2	0.8	104.9	5.2	4.7
Benin	..	..	3.0	91.0	0.0	..	..	..	9.9	..	..
Bolivia	1.5	41	5.5	36.3	0.0	11.5	14.0	..	52.5	7.1	7.1
Bosnia and Herzegovina	3.9	429	..	73.0	10.0	13.2	3.5	1.7	43.5	6.6	..
Botswana	3.8	..	..	100.0	0.0	9.7	2.8	..	–3.0	5.9	..
Brazil	14.6	631	4.0	29.9	32.0	16.0	3.9	2.3	98.8	39.5	37.8
Bulgaria	13.9	1,351	7.0	74.6	17.6	11.0	7.1	3.4	36.2	5.8	6.1
Burkina Faso	..	..	..	56.0	0.0	..	..	..	13.5	..	..
Burundi	..	..	..	..	..	..	..	..	38.4	..	..
Cambodia	..	..	1.0	..	..	..	..	..	8.2	15.8	..
Cameroon	..	..	3.0	..	..	..	..	..	15.2	13.0	..
Canada	45.6	..	..	4.8	0.0	4.4	0.7	1.6	97.0	3.2	1.8
Central African Republic	..	..	..	..	..	..	..	..	16.7	13.0	..
Chad	..	..	..	..	..	..	..	..	7.9	13.0	..
Chile	9.4	1,045	6.5	46.8	13.3	7.0	1.2	0.7	70.2	3.2	..
China	1.3	..	5.5	..	..	3.9	15.6	..	142.6	3.3	..
Hong Kong, China	..	..	..	..	0.0	12.3	2.2	..	149.3	5.0	4.9
Colombia	8.7	612	7.0	21.5	18.3	12.1	3.3	4.0	41.2	7.3	..
Congo, Dem. Rep.	..	..	..	..	..	..	..	..	1.2	..	..
Congo, Rep.	..	..	1.0	..	..	..	..	..	12.0	13.0	..
Costa Rica	9.6	..	6.5	23.3	62.2	11.9	2.0	..	42.3	13.9	..
Côte d'Ivoire	..	..	..	84.2	10.6	..	..	..	18.6	..	..
Croatia	23.4	..	..	89.3	5.0	8.5	4.5	2.3	68.2	9.9	..
Cuba	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	11.2	1,923	3.5	90.0	3.8	5.6	4.1	3.4	45.8	4.7	3.5
Denmark	37.6	2,706	..	0.0	0.0	..	..	1.2	167.0	4.7	..
Dominican Republic	6.0	720	..	..	..	7.4	7.3	*0.2*	37.3	11.5	..
Ecuador	9.3	420	..	7.0	14.0	9.9	6.4	..	20.1	5.6	..
Egypt, Arab Rep.	3.6	..	3.5	13.3	64.7	5.1	24.2	..	106.3	5.7	3.5
El Salvador	4.6	457	5.5	12.3	4.2	8.0	12.0	3.0	49.2	..	..
Eritrea	..	..	..	..	..	..	..	..	141.9	..	..
Estonia	15.2	..	..	98.9	0.0	9.8	0.3	1.2	62.9	3.5	..
Ethiopia	0.4	..	..	..	..	..	..	..	61.1	3.6	6.4
Finland	19.1	..	..	6.2	0.0	8.2	0.4	0.9	70.7	2.7	..
France	43.2	1,801	..	..	0.0	6.5	*4.8*	2.7	106.4	4.4	*4.3*
Gabon	..	..	1.0	..	..	..	15.8	..	12.7	13.0	..
Gambia, The	..	..	..	95.8	..	..	..	..	19.9	14.5	..
Georgia	3.1	..	5.5	..	..	..	..	..	18.4	24.0	12.1
Germany	49.4	..	..	4.3	42.2	4.4	*5.3*	0.8	138.0	7.0	*6.7*
Ghana	1.6	..	..	53.5	12.1	12.4	16.1	..	30.5	..	..
Greece	30.8	2,418	..	10.8	22.8	7.9	7.1	1.4	106.0	4.3	*4.4*
Guatemala	10.1	404	7.0	9.0	3.0	..	..	1.3	16.1	9.6	..
Guinea	..	..	..	90.0	0.0	..	..	..	15.5	..	..
Guinea-Bissau	..	..	..	100.0	0.0	..	..	..	8.1	..	..
Haiti	..	..	..	..	..	..	..	..	31.7	23.3	21.8

Financial access, stability, and efficiency

5.5

	Bank branches	Bank deposit accounts	Financial information infrastruture index	Banking system ownership		Bank capital to asset ratio	Bank non-performing loans to total gross loans	Deposit insurance coverage	Domestic credit provided by banking sector	Interest rate spread	Risk premium on lending
				% of total banking assets							
	per 100,000 people	per 1,000 people	0 (less developed) to 10 (more developed)	Held by foreign-owned banks	Held by government-owned banks	%	%	% of GDP per capita	% of GDP	Lending rate minus deposit rate percentage points	Prime lending rate minus treasury bill rate percentage points
	2001–04[a]	2001–04[a]	2005	2001	2001	2004	2004	2003	2004	2004	2004
Honduras	0.7	287	5.5	18.5	0.0	8.4	6.4	9.5	45.1	8.8	..
Hungary	28.3	..	5.5	88.8	9.0	8.9	2.7	1.6	59.0	3.7	1.5
India	6.3	..	5.5	7.3	75.3	5.9	6.6	3.9	60.1	..	..
Indonesia	8.4	..	6.5	..	..	9.3	13.4	..	48.8	7.7	..
Iran, Islamic Rep.	8.4	2,249	5.0	..	..	..	..	..	46.2	5.0	..
Iraq	..	..	..	..	..	..	..	..	..	..	..
Ireland	23.4	..	..	..	..	4.9	0.8	0.6	137.0	2.6	..
Israel	14.7	..	..	1.2	46.1	7.1	10.5	..	83.3	3.8	2.7
Italy	52.1	976	..	5.7	10.0	6.9	6.5	4.6	106.5	4.1	*2.8*
Jamaica	..	..	..	..	..	..	3.0	1.7	28.4	10.2	2.7
Japan	10.0	..	..	6.7	0.0	4.2	2.9	2.5	154.9	1.7	..
Jordan	10.0	465	..	64.3	0.0	*6.4*	*19.9*	7.6	91.5	5.8	..
Kazakhstan	2.5	..	5.5	17.9	0.5	8.0	29.9	1.3	18.6	..	..
Kenya	1.4	70	3.5	39.3	1.1	11.4	22.9	3.1	39.7	10.1	9.4
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	13.4	..	7.5	29.5	40.0	4.8	1.9	3.3	100.8	2.0	..
Kuwait	8.3	..	..	0.0	0.0	11.0	5.4	..	85.3	3.0	..
Kyrgyz Republic	3.1	..	..	24.7	16.0	..	..	..	8.4	22.6	24.3
Lao PDR	..	..	2.5	..	..	..	..	..	9.5	21.4	8.9
Latvia	..	..	4.5	65.2	3.2	8.2	1.1	*1.3*	54.7	4.2	*2.1*
Lebanon	18.0	383	6.0	15.9	2.0	5.7	10.1	0.8	179.0	3.4	5.6
Lesotho	..	..	..	100.0	0.0	..	..	..	–1.3	8.1	3.8
Liberia	..	..	..	..	..	..	..	..	219.7	14.3	..
Libya	..	..	..	..	..	..	..	..	–0.5	4.0	0.6
Lithuania	3.4	1,166	6.0	78.2	12.2	9.5	2.3	2.8	30.0	4.5	*3.2*
Macedonia, FYR	..	..	..	51.1	1.3	..	..	9.9	22.1	5.9	..
Madagascar	0.7	14	4.0	67.8	0.0	6.2	11.4	..	15.0	10.3	12.6
Malawi	..	..	..	..	..	..	..	..	22.8	23.1	8.3
Malaysia	9.8	1,250	6.5	19.0	0.0	8.1	11.8	..	138.7	3.0	3.7
Mali	..	..	..	67.0	21.8	..	..	..	17.7	..	..
Mauritania	..	..	..	..	..	..	..	..	–5.9	13.0	..
Mauritius	11.9	1,586	..	24.5	0.0	..	..	..	84.6	12.9	..
Mexico	7.6	310	8.0	82.7	0.0	11.5	2.5	489.1	38.4	4.5	0.4
Moldova	..	..	..	36.7	13.6	20.2	6.5	..	32.0	5.8	9.0
Mongolia	..	..	..	..	..	..	..	..	34.8	11.2	..
Morocco	6.6	..	3.0	20.8	35.0	7.6	19.4	..	82.6	7.9	..
Mozambique	..	..	5.0	..	..	6.5	6.4	..	5.4	12.2	9.7
Myanmar	..	..	..	..	..	..	..	..	..	5.5	..
Namibia	4.5	423	..	70.0	0.0	..	..	..	53.6	5.0	3.6
Nepal	1.7	..	3.5	..	..	..	..	..	..	5.8	6.1
Netherlands	34.2	..	..	2.2	3.9	3.9	1.8	0.7	178.8	0.4	..
New Zealand	28.0	..	..	99.1	0.0	..	..	..	121.5	4.6	4.5
Nicaragua	2.8	96	4.0	..	..	..	9.3	27.5	85.2	8.8	..
Niger	..	..	3.5	73.4	0.0	..	..	..	11.4	..	..
Nigeria	1.6	..	1.0	..	4.7	9.9	21.6	1.0	13.2	5.5	4.8
Norway	22.9	1,611	..	19.2	0.0	6.1	1.0	5.8	11.1	2.6	..
Oman	..	..	..	11.9	0.0	..	..	*6.5*	34.9	5.3	..
Pakistan	4.7	192	5.0	20.1	53.8	6.2	9.0	..	41.8	..	..
Panama	12.9	..	8.5	59.3	11.8	13.2	2.6	..	90.8	6.6	..
Papua New Guinea	1.6	120	..	..	..	..	..	..	21.9	11.5	4.4
Paraguay	..	..	..	83.5	9.2	10.5	10.8	9.7	18.3	28.4	..
Peru	4.2	316	7.5	42.5	0.0	9.8	9.5	8.8	17.4	11.5	..
Philippines	7.8	302	6.0	15.0	11.2	12.8	24.7	1.9	59.8	3.9	2.8
Poland	8.2	..	7.5	68.7	23.5	8.2	15.5	5.0	34.6	3.8	..
Portugal	51.6	..	..	17.7	22.8	6.1	2.2	1.9	153.9	..	..
Puerto Rico	..	..	..	30.4	0.7	..	..	..	..	..	..

5.5 Financial access, stability, and efficiency

	Bank branches per 100,000 people 2001–04[a]	Bank deposit accounts per 1,000 people 2001–04[a]	Financial information infrastruture index 0 (less developed) to 10 (more developed) 2005	Banking system ownership % of total banking assets Held by foreign-owned banks 2001	Banking system ownership % of total banking assets Held by government-owned banks 2001	Bank capital to asset ratio % 2004	Bank non-performing loans to total gross loans % 2004	Deposit insurance coverage % of GDP per capita 2003	Domestic credit provided by banking sector % of GDP 2004	Interest rate spread Lending rate minus deposit rate percentage points 2004	Risk premium on lending Prime lending rate minus treasury bill rate percentage points 2004
Romania	13.8	1,208	8.0	47.3	41.8	8.5	8.1	1.4	15.3	..	..
Russian Federation	2.2	1,892	2.0	8.8	35.5	14.0	3.8	1.1	25.9	7.6	*7.6*
Rwanda	..	..	2.0	0.0	6.6	..	..	..	13.5	..	..
Saudi Arabia	5.4	214	..	20.7	21.4	8.0	3.1	..	64.2	..	..
Senegal	..	..	3.5	78.7	0.0	8.4	14.2	..	21.8	..	..
Serbia and Montenegro	..	..	..	13.2	3.8	..	22.8	0.0	..	..	..
Sierra Leone	..	..	..	..	..	11.6	14.8	..	30.3	11.9	–4.1
Singapore	9.1	1,671	..	..	0.0	9.7	2.9	..	80.2	4.9	4.3
Slovak Republic	10.3	..	3.5	85.5	4.4	7.2	5.4	4.2	44.0	4.9	..
Slovenia	2.2	..	..	20.6	12.2	7.5	5.7	1.8	55.7	4.8	4.5
Somalia	..	..	..	..	..	..	..	..	..	..	..
South Africa	6.0	..	6.0	7.7	0.0	7.0	1.8	..	86.7	4.7	3.8
Spain	95.9	2,076	..	8.5	0.0	8.5	0.8	1.1	140.6	1.8	*1.0*
Sri Lanka	6.9	..	4.0	..	..	..	..	1.1	44.6	4.4	1.8
Sudan	..	..	..	4.0	12.0	..	..	..	11.5	..	..
Swaziland	..	..	..	85.8	14.2	..	..	..	15.6	6.7	3.4
Sweden	21.8	..	..	..	0.0	6.3	0.9	0.9	113.1	3.0	*1.7*
Switzerland	38.0	1,986	..	10.7	14.1	5.0	1.6	0.5	176.1	2.8	2.8
Syrian Arab Republic	..	..	..	..	..	..	..	..	30.3	5.0	..
Tajikistan	..	..	..	50.0	4.6	..	..	..	16.5	10.6	..
Tanzania	0.6	..	2.0	..	..	..	..	0.9	9.2	9.7	5.6
Thailand	7.2	1,423	5.5	6.8	30.6	8.7	11.9	..	105.3	4.5	..
Togo	..	..	..	17.5	51.0	..	..	..	16.7	..	..
Trinidad and Tobago	9.2	1,073	..	2.4	14.5	..	..	1.0	18.8	6.5	4.5
Tunisia	..	..	3.5	15.7	42.7	..	23.7	..	70.9	..	..
Turkey	8.5	1,114	5.0	3.5	31.8	14.3	6.0	*12.6*	54.9	..	..
Turkmenistan	..	..	..	0.0	96.0	..	..	..	..	..	..
Uganda	0.5	47	..	..	..	10.1	2.2	6.5	11.0	12.9	11.6
Ukraine	..	..	3.5	10.5	12.0	13.1	30.0	0.3	30.8	9.6	..
United Arab Emirates	..	..	..	27.0	35.0	12.1	12.5	..	50.6	..	..
United Kingdom	18.3	..	..	46.0	0.0	*6.8*	2.2	1.9	159.1	..	0.0
United States	30.9	..	..	19.0	0.0	10.3	0.8	2.7	215.5	..	3.0
Uruguay	6.4	..	5.5	43.3	42.5	..	3.6	..	53.3	17.5	8.9
Uzbekistan	..	..	..	..	..	..	..	..	..	..	..
Venezuela, RB	4.4	487	4.5	43.2	6.9	12.5	2.8	1.9	11.0	5.9	..
Vietnam	..	..	5.5	..	..	..	..	4.0	58.4	*2.9*	*3.7*
West Bank and Gaza	3.3	254	..	..	..	..	..	..	..	..	..
Yemen, Rep.	..	..	3.5	..	..	..	..	..	5.2	5.5	4.7
Zambia	1.5	..	1.5	..	..	..	7.6	..	35.2	19.2	18.1
Zimbabwe	3.3	174	..	28.0	6.1	10.7	*4.7*	..	49.8	175.7	153.2
World	**9.8 w**	**.. w**	**.. m**	**25.4 m**	**5.5 m**	**8.5 m**	**6.4 m**	**.. m**	**143.7 w**	**6.5 m**	**.. m**
Low income	4.9	..	..	..	..	..	..	..	47.7	11.9	..
Middle income	5.0	..	..	30.9	10.6	9.7	7.1	2.3	78.5	6.5	..
Lower middle income	4.4	..	..	21.2	13.0	10.2	10.8	2.3	101.3	6.7	..
Upper middle income	7.1	1,096	..	45.0	5.9	8.9	3.2	2.1	47.4	5.8	5.3
Low & middle income	4.9	..	..	40.9	9.1	..	7.6	..	74.1	7.4	..
East Asia & Pacific	2.9	..	..	..	..	..	..	..	125.9	6.3	..
Europe & Central Asia	6.6	..	5.3	50.0	12.0	9.8	5.7	1.7	36.8	5.8	..
Latin America & Carib.	9.9	500	..	31.8	11.8	11.0	5.2	3.0	56.6	7.6	5.0
Middle East & N. Africa	..	..	..	15.7	35.0	..	..	..	59.4	5.5	..
South Asia	5.9	..	4.5	..	..	5.9	9.0	3.9	56.4	6.5	..
Sub-Saharan Africa	..	..	..	68.9	0.0	..	..	..	47.1	12.5	..
High income	33.0	..	..	10.8	0.0	6.4	2.2	1.4	161.3	4.1	..
Europe EMU	53.1	..	..	6.2	2.0	6.1	2.0	0.9	124.8	4.0	3.6

a. Data are for the most recent year available in the period shown.

Financial access, stability, and efficiency 5.5

About the data

This year the table includes new indicators from the World Bank and the International Monetary Fund (IMF) covering financial access, stability, and efficiency.

Financial sector development has positive impacts on economic growth and poverty. The size of the sector determines the amount of resources mobilized for investment. Access to finance can expand opportunities for all—not just the rich and well connected—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 of the indicators in the table cover the banking system.

There are several aspects of access to financial services: availability, cost, and quality of services. Two measures of access and use are presented in the table: number of bank branches and bank deposit accounts. The number of bank branches measures the physical outreach of the banking sector to a country's population. As a measure of access to bank outlets, this indicator has limitations: it assumes a uniform distribution of bank outlets across a country's population. But in many countries bank branches are concentrated in urban areas, with accessibility limited for people who live in rural areas. The number of bank deposit accounts is an indicator of actual use of banking services. An individual can have more than one account, so it is still an imperfect measure. Further analysis and detailed explanation of the data can be found in Beck, Demirgüç-Kunt, and Martinez Peria (2005).

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, having rapid access to information in property registries is also vital, and for small business loans, corporate registry data are needed.

The financial information infrastructure index is based on both the quality and availability of data in credit reports, public registries, corporate registries, and court records. Basic consumer protections are also included in the index. The index ranges from 0 (less developed financial information infrastructure) to 10 (more developed financial information infrastructure). Data are from the World Bank's Financial Sector Operations and Policy Department.

The type of bank ownership—foreign, government, or domestic private—has important implications for the efficiency and stability of financial intermediation. Studies show that banking systems with more foreign-owned (more than half of assets owned by foreigners) and domestic private banks tend to be more efficient and resilient to crises than banking systems with mostly government-owned (more than half of assets owned by the government) banks. These data were collected through a survey of bank regulators conducted by Barth, Caprio, and Levine (2006).

The frequency and magnitude of financial crises over the past two decades have made it clear how important it is to monitor the strength of financial systems. Robust financial systems help increase economic activity and welfare, but unstable financial systems can disrupt financial activity and impose huge and widespread costs on the economy. The ratio of a bank's capital to its total assets measures the extent to which a bank can deal with unexpected losses. Aggregating the ratios across banks provides a measure of the solvency and resiliency of a country's banking system.

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

Deposit insurance is a tool used by governments to promote financial stability and to protect small depositors from losses due to bank failures. Almost all countries have financial safety nets that include explicit or implicit deposit insurance, bank regulation and supervision, central bank lender of last resort facilities, and bank insolvency resolution procedures. But deposit insurance can lead banks to take too much risk. Countries with excessive explicit deposit insurance are more likely to experience a financial crisis and to have poorer financial intermediation. Deposit insurance coverage as a percentage of GDP is presented in the table.

Domestic credit provided 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 the efficiency by which the financial sector intermediates funds. A narrow interest rate spread means low transaction costs, which lowers the overall 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. A small spread indicates that the market considers its best corporate customers to be low risk. Interest rate spreads are expressed as annual averages. In some countries this spread may be negative, indicating that the market considers its best corporate clients to be lower risk than the government.

Definitions

• **Bank branches** are deposit money bank branches. • **Bank deposit accounts** are deposit accounts, including checking, savings, and time deposit accounts for businesses, individuals, and others. • **Financial information infrastructure index** is based on 10 measures, 6 covering the scope, quality, and availability of credit reporting data (in private and public registries) and the existence of a basic legal framework for credit reporting, and 4 covering the availability of public registry data for collateral (fixed and moveable) and corporate registries and court records. • **Banking system ownership** refers to the shares of assets of foreign-owned banks and government-owned banks as percentages of total banking system assets in a country. • **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. Capital includes tier 1 capital (paid-up shares and common stock), which is a common feature in all countries' banking systems, and total regulatory capital, which includes several specified types of subordinated debt instruments that need not be repaid if the funds are required to maintain minimum capital levels (these comprise tier 2 and tier 3 capital). Total assets include all nonfinancial and financial assets. • **Bank nonperforming loans to total gross loans** are the value of nonperforming loans divided by the total value of the loan portfolio (including nonperforming loans before the deduction of specific loan-loss provisions). The loan amount recorded as nonperforming should be the gross value of the loan as recorded on the balance sheet, not just the amount that is overdue. • **Deposit insurance coverage** is the value of deposits per depositor protected by a formal deposit insurance scheme as a percentage of GDP per capita. • **Domestic credit provided by the banking sector** includes all credit to various sectors on a gross basis, except credit to the central government, which is net. The banking sector includes monetary authorities, deposit money banks, and other banking institutions for which data are available (including institutions that do not accept transferable deposits but do incur such liabilities as time and savings deposits). • **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 bank branches, deposit accounts, financial information infrastructure, bank ownership, and deposit insurance coverage are collected from surveys of banking and regulatory institutions by the World Bank's Research Department and Financial Sector and Operations Policy Department. 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		Tax payments by businesses			Highest marginal tax rate[a]		
	% of GDP		Number of payments	Time to prepare and pay taxes hours	Total tax payable % of gross profit	Individual		Corporate
	2000	2004	January 2005	January 2005	January 2005	% 2004	On income over $ 2004	% 2004
Afghanistan	..	3.5	2	80	21.4	..	..	..
Albania[b]	*13.6*	..	53	240	71.6	..	..	..
Algeria[b]	37.9	*32.0*	63	504	58.5	..	..	..
Angola	..	..	30	656	32.5	..	..	..
Argentina	*9.8*	14.2	35	580	97.9	35	41,667	35
Armenia[b]	..	15.3	50	1,120	53.8	..	..	..
Australia	22.8	24.1	12	107	37.0	47	46,538	30
Austria	19.3	*20.5*	20	272	50.8	50	64,052	34
Azerbaijan[b]	*12.7*	..	35	756	41.4	35	7,307	24
Bangladesh[b]	*7.6*	8.1	17	640	50.4	..	..	..
Belarus[b]	16.6	18.6	113	1,188	121.8	..	..	..
Belgium	27.8	*25.8*	10	160	44.6	50	30,210	33
Benin	..	..	75	270	53.1	..	..	..
Bolivia	*13.2*	15.0	41	1,080	64.0	13	..	25
Bosnia and Herzegovina	..	22.4	73	100	19.7	..	..	..
Botswana[b]	..	..	24	140	52.9	25	20,950	15
Brazil[b]	*12.2*	..	23	2,600	147.9	28	8,843	15
Bulgaria[b]	18.3	22.3	27	616	38.6	29	4,550	20
Burkina Faso	..	..	40	270	48.3	..	..	..
Burundi[b]	*15.4*	..	41	140	173.5	..	..	..
Cambodia	*8.6*	8.6	27	97	31.1	20	36,356	20
Cameroon[b]	..	..	51	1,300	47.6	*60*	*10,726*	*39*
Canada[b]	15.3	14.2	10	119	32.5	29	809,718	21
Central African Republic	..	..	66	504	60.9	..	..	..
Chad	..	..	65	122	51.3	..	..	..
Chile	*16.6*	15.9	8	432	46.7	40	6,127	17
China[b]	6.8	*8.5*	34	584	46.9	45	12,082	*30*
Hong Kong, China	..	..	1	80	14.3	17	13,462	18
Colombia	*13.3*	13.8	54	432	75.1	35	29,426	37
Congo, Dem. Rep.[b]	3.5	*6.3*	34	312	134.7	50	6,056	40
Congo, Rep.[b]	*9.2*	*8.5*	94	576	66.9	..	..	..
Costa Rica[b]	12.1	13.4	41	402	54.3	30	16,860	30
Côte d'Ivoire[b]	14.6	*14.9*	71	270	46.9	10	3,837	35
Croatia[b]	26.2	24.1	39	232	47.1	45	35,171	..
Cuba	..	..	..	..	..	..	..	..
Czech Republic	15.7	16.1	14	930	40.1	32	12,910	28
Denmark	31.3	31.1	18	135	63.4	59	51,162	30
Dominican Republic	15.7[b]	15.1[c]	85	124	57.2	25	23,734	25
Ecuador[b]	..	..	33	600	33.9	25	57,600	25
Egypt, Arab Rep.[b]	..	..	39	504	32.1	*32*	*10,823*	*40*
El Salvador	*10.7*	11.0	65	224	32.2	..	..	..
Eritrea	..	..	18	216	66.3	..	..	..
Estonia[b]	16.0	..	11	104	39.5	26	1,354	35
Ethiopia[b]	*13.2*	*13.2*	20	52	43.6	..	..	..
Finland	25.0	23.0	19	..	52.1	34	68,517	29
France	23.6	22.4	29	72	42.8	48	60,673	33
Gabon	..	..	..	..	..	*50*	..	*35*
Gambia, The[b]	..	..	..	..	..	..	..	..
Georgia[b]	7.7	9.8	49	448	49.7	..	..	..
Germany	11.9	10.9	32	105	50.3	45	65,224	25
Ghana[b]	*17.2*	22.4	35	304	45.3	30	5,647	33
Greece	26.0	..	32	204	47.9	40	29,464	35
Guatemala[b]	10.1	10.1	50	260	53.4	31	35,853	31
Guinea[b]	..	..	55	416	51.2	..	..	..
Guinea-Bissau	..	..	..	..	..	..	..	..
Haiti	..	..	53	..	31.7	..	..	..

Tax policies 5.6

	Tax revenue collected by central government		Tax payments by businesses			Highest marginal tax rate[a]		
	% of GDP		Number of payments	Time to prepare and pay taxes hours	Total tax payable % of gross profit	Individual		Corporate
	2000	2004	January 2005	January 2005	January 2005	% 2004	On income over $ 2004	% 2004
Honduras	..	..	48	424	43.2	25	27,778	25
Hungary	22.7	*22.1*	24	304	56.8	38	7,214	16
India[b]	9.0	10.2	59	264	43.2	30	3,283	36
Indonesia[b]	*11.3*	12.3	52	560	38.8	35	22,371	30
Iran, Islamic Rep.[b]	6.4	6.0	28	292	14.6	35	125,345	25
Iraq	..	..	13	48	5.6	..	..	..
Ireland[b]	..	..	8	76	45.3	42	35,443	13
Israel	31.0	28.8	33	210	57.5	49	90,040	36
Italy	23.6	*22.9*	20	360	59.8	45	88,608	33
Jamaica[b]	24.7	*24.8*	72	414	49.4	25	1,993	33
Japan[b]	..	..	26	315	34.6	37	167,395	30
Jordan[b]	19.0	20.8	10	101	39.8	..	..	..
Kazakhstan[b]	10.2	14.7	34	156	41.6	20	47,552	30
Kenya[b]	18.8	*17.2*	17	372	68.2	30	5,841	30
Korea, Dem. Rep.	..	..	..	..	..	..	..	..
Korea, Rep.[b]	16.1	..	26	290	29.6	36	66,644	27
Kuwait[b]	*1.3*	*1.5*	14	..	8.2	*0*	..	*0*
Kyrgyz Republic[b]	11.7	..	95	204	59.4	..	..	..
Lao PDR	..	..	31	180	24.7	*40*	*7,894*	..
Latvia[b]	14.4	13.8	39	320	38.7	*25*	..	15
Lebanon	12.4	*15.5*	33	208	30.4	..	..	..
Lesotho[b]	32.4	43.5	19	564	37.7	..	..	..
Liberia	..	..	..	..	..	..	..	..
Libya	..	..	..	..	..	..	..	..
Lithuania	14.6	17.2	13	162	41.6	..	..	15
Macedonia, FYR	..	..	54	96	40.1	..	..	..
Madagascar	56.6	54.4	29	400	58.9	..	..	..
Malawi	..	..	33	782	56.5	..	..	..
Malaysia[b]	14.3	*17.6*	28	..	11.6	28	65,789	28
Mali	..	..	60	270	44.0	..	..	..
Mauritania	..	..	61	696	75.8	..	..	..
Mauritius[b]	18.4	17.8	7	158	38.2	25	951	25
Mexico	11.7	..	49	536	31.3	33	9,555	33
Moldova[b]	14.7	16.4	44	250	44.7	..	..	..
Mongolia	..	*22.6*	43	..	45.3	..	..	..
Morocco	*23.5*[b]	*21.9*[d]	28	690	54.8	*44*	*5,243*	*35*
Mozambique	..	..	35	230	50.9	32	42,314	32
Myanmar[b]	3.0	..	..	..	..	..	..	..
Namibia[b]	30.0	*25.9*	23	50	43.9	35	29,851	35
Nepal[b]	8.7	9.8	23	408	31.8	..	..	..
Netherlands	23.1	22.8	22	700	53.3	52	63,777	35
New Zealand	*29.8*	30.3	8	70	44.2	39	39,242	33
Nicaragua[b]	13.8	15.5	64	240	54.3	*25*	*31,545*	*25*
Niger	..	..	44	270	49.4	..	..	..
Nigeria	..	..	36	1,120	27.1	*25*	*1,553*	*30*
Norway	27.7	29.0	3	87	60.1	..	..	28
Oman[b]	7.2	..	13	52	5.2	0	..	12
Pakistan[b]	10.2	10.5	32	560	57.4	35	11,746	41
Panama[b]	10.2	..	45	424	32.9	30	200,000	30
Papua New Guinea[b]	19.4	*22.3*	43	198	36.7	*47*	*24,842*	*25*
Paraguay[b]	9.9	11.2	33	328	37.9	0	..	30
Peru[b]	12.3	13.3	53	424	50.7	30	49,899	30
Philippines[b]	13.7	12.6	62	94	46.4	32	8,995	32
Poland[b]	*16.4*	*17.3*	43	175	55.6	40	19,211	19
Portugal	22.7	*22.6*	7	328	45.4	40	67,139	25
Puerto Rico	..	..	41	140	17.8	33	50,000	20

5.6 Tax policies

	Tax revenue collected by central government		Tax payments by businesses			Highest marginal tax rate[a]		
	% of GDP		Number of payments	Time to prepare and pay taxes hours	Total tax payable % of gross profit	Individual		Corporate
						%	On income over $	%
	2000	2004	January 2005	January 2005	January 2005	2004	2004	2004
Romania[b]	*11.7*	*11.7*	62	188	51.1	40	4,617	25
Russian Federation	*13.7*	13.5	27	256	40.8	13	..	24
Rwanda[b]	..	..	42	168	53.9	..	..	..
Saudi Arabia	..	..	13	70	1.4	0	..	0
Senegal[b]	17.3	..	59	696	45.0	0	*22,469*	*35*
Serbia and Montenegro[b]	*23.0*	*23.0*	41	168	46.3	..	..	..
Sierra Leone[b]	*6.8*	..	20	399	163.9	..	..	..
Singapore[b]	15.6	12.5	16	30	19.5	22	188,191	20
Slovak Republic	..	*16.7*	31	344	39.5	38	14,087	25
Slovenia[b]	21.4	21.5	29	272	47.3	50	..	25
Somalia	..	..	..	..	..	..	..	..
South Africa[b]	24.0	26.0	32	350	43.8	40	38,060	30
Spain	15.9	*11.8*	7	56	48.4	29	56,962	35
Sri Lanka[b]	14.5	*14.0*	42	..	49.4	30	8,083	30
Sudan[b]	*6.3*	..	..	..	..	..	..	..
Swaziland	26.7	*24.9*	..	..	..	33	5,496	30
Sweden	19.9	*19.7*	5	122	52.6	25	59,756	28
Switzerland[b]	11.3	*10.0*	25	63	22.0	..	..	9
Syrian Arab Republic[b]	*17.4*	..	22	336	20.8	..	..	..
Tajikistan[b]	7.7	9.8	..	..	..	..	..	..
Tanzania	..	..	48	248	51.3	30	6,090	30
Thailand	..	15.9	44	52	29.2	37	101,420	30
Togo	..	..	51	270	50.9	..	..	..
Trinidad and Tobago[b]	..	..	..	..	..	30	7,937	30
Tunisia[b]	21.3	20.7	31	112	52.7	..	..	..
Turkey[b]	*20.2*	..	18	254	51.1	40	100,298	30
Turkmenistan	..	..	..	..	..	..	..	..
Uganda[b]	10.9	*11.9*	31	237	42.9	30	2,523	30
Ukraine[b]	14.1	13.3	84	2,185	51.0	13	*3,826*	25
United Arab Emirates[b]	*1.7*	..	15	12	8.9	*0*	..	*0*
United Kingdom	29.1	27.4	22	..	52.9	40	51,358	30
United States	*12.7*	9.8	9	325	21.5	35	319,100	35
Uruguay	16.7	18.5	54	300	80.2	*0*	..	35
Uzbekistan	..	..	118	152	75.6	30	666	18
Venezuela, RB[b]	13.3	*11.5*	68	864	48.9	34	60,324	34
Vietnam[b]	..	..	44	1,050	31.5	..	..	28
West Bank and Gaza	..	..	49	..	42.0	..	..	..
Yemen, Rep.[b]	*9.4*	..	32	248	128.8	..	..	..
Zambia[b]	*18.4*	..	36	132	38.6	30	368	35
Zimbabwe[b]	..	..	59	216	48.6	45	26,249	30
World	***15.7*** **w**	***14.5*** **w**	**35 u**	**354 u**	**46.5 u**			
Low income	10.0	10.5	44	385	54.4			
Middle income	*12.3*	*12.4*	38	406	44.5			
Lower middle income	*9.6*	*10.1*	42	444	44.5			
Upper middle income	..	..	30	333	44.4			
Low & middle income	*11.9*	*12.0*	40	398	48.5			
East Asia & Pacific	7.7	*10.0*	31	270	33.1			
Europe & Central Asia	*15.6*	*15.8*	48	438	50.3			
Latin America & Carib.	*11.8*	..	49	549	54.5			
Middle East & N. Africa	..	..	30	281	40.4			
South Asia	9.3	10.1	26	332	35.3			
Sub-Saharan Africa	..	..	41	394	58.1			
High income	*16.5*	14.6	18	181	38.8			
Europe EMU	19.2	*17.9*	19	233	49.2			

a. These data are from PricewaterhouseCoopers' *Individual Taxes: Worldwide Summaries 2004–2005* and *Corporate Taxes: Worldwide Summaries 2004–2005,* copyright 2004 by PricewaterhouseCoopers and used by permission of John Wiley and Sons, Inc. b. Data on central government tax revenue were reported on a cash basis and have been adjusted to the accrual framework of the *Government Finance Statistics Manual 2001*. c. World Bank staff estimate. d. International Monetary Fund staff estimate.

Tax policies 5.6

About the data

The table includes new information on taxes that businesses must pay and measures of the administrative burden in paying taxes. Data are from the World Bank's *Doing Business 2006*.

Taxes are the main source of revenue for many 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.

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

The level of taxation is typically measured by tax revenue as a share of gross domestic product (GDP). Comparing levels of taxation across countries provides a quick overview of the fiscal obligations and incentives facing the private sector. 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 new indicators covering taxes paid by businesses go beyond the usual measures of tax rates, which capture only part of the taxpayer burden. In some countries tax systems are so complex that businesses must make more than 100 payments and spend up to 2,600 hours a year to prepare and pay taxes.

Taxes are measured at all levels of government and include corporate income tax, personal income tax withheld by businesses, value added or sales taxes, property transfer taxes, financial transactions taxes, dividend taxes, waste collection taxes, and vehicle and road taxes. To make the data comparable across countries, several assumptions are made about the business. 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 a certain level of start-up capital, employees, and turnover. For details about the assumptions, see *Doing Business 2006*.

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

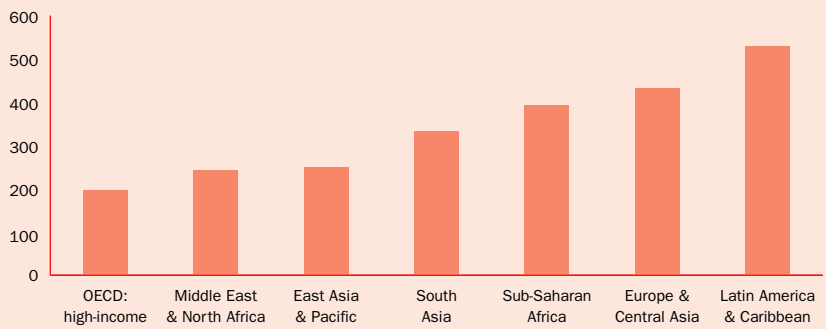
Definitions

• **Tax revenue collected by central government** refers to compulsory transfers to the central government for public purposes. Certain compulsory transfers such as fines, penalties, and most social security contributions are excluded. Refunds and corrections of erroneously collected tax revenue are treated as negative revenue. 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. • **Tax payments by businesses** are the total number of taxes paid by businesses, including electronic filing. The tax is counted as paid once a year even if payments are more frequent. • **Time to prepare 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 payable** is the total amount of taxes payable by the business (except for labor taxes) after accounting for deductions and exemptions as a percentage of gross profit. For further details on the method used for assessing the total tax payable, see *Doing Business 2006*. • **Highest marginal tax rate** is the highest rate shown on the national level schedule of tax rates applied to the annual taxable income of individuals and corporations. Also presented are the income levels for individuals above which the highest marginal tax rates levied at the national level apply.

5.6a

Excessive paperwork adds to the time that businesses spend complying with taxes

Time to prepare and pay taxes, 2005 (hours per year)



Source: Table 5.6.

Data sources

Data on central government tax revenues are from print and electronic editions of the IMF's *Government Finance Statistics Yearbook*. Data on taxes paid by businesses are from *Doing Business 2006*. Data on individual and corporate tax rates are from PricewaterhouseCoopers's *Individual Taxes: Worldwide Summaries 2004–2005* and *Corporate Taxes: Worldwide Summaries 2004–2005*.

5.7 Defense expenditures and arms transfers

	Military expenditures				Armed forces personnel				Arms transfers			
	% of GDP		% of central government expenditure		thousands		% of labor force		$ millions 1990 prices Exports		Imports	
	1995	2004	1995	2004	1995	2004	1995	2004	1995	2004	1995	2004
Afghanistan	..	..	..	..	383	27	5.5	0.3	0	..	*0*	*0*
Albania	2.1	1.2	8.2	..	87	22	6.0	1.6	..	..	21	6
Algeria	3.0	3.3	12.2	*15.2*	163	318	1.8	2.5	..	..	342	282
Angola	18.1	9.1	..	..	122	118	2.3	1.7	*0*	*0*	1	5
Argentina	1.6	1.0	..	5.6	99	102	0.7	0.6	3	0	67	129
Armenia	4.1	2.9	..	15.5	61	49	4.2	3.8	..	..	49	68
Australia	2.0	1.8	..	7.2	57	52	0.6	0.5	20	52	147	334
Austria	0.9	0.7	..	*1.9*	56	39	1.4	1.0	*0*	1	23	46
Azerbaijan	2.3	1.8	11.7	..	127	81	3.8	2.0	..	..	*0*	*0*
Bangladesh	1.4	1.2	..	13.2	171	251	0.3	0.4	..	..	121	26
Belarus	1.6	1.2	5.5	4.1	106	182	2.1	3.8	8	50	*0*	0
Belgium	1.6	1.4	..	*2.9*	47	36	1.1	0.8	297	*0*	16	12
Benin	..	..	..	..	7	6	0.3	0.2	..	..	*0*	*0*
Bolivia	1.9	1.6	..	5.9	64	68	2.2	1.7	..	..	*0*	1
Bosnia and Herzegovina	..	2.4	..	6.2	92	24	5.2	1.2	*0*	*0*	*0*	0
Botswana	3.5	3.6	11.5	..	9	10	1.4	1.6	..	..	7	10
Brazil	2.1	1.4	*4.8*	..	681	687	0.9	0.8	40	100	226	38
Bulgaria	2.6	2.4	6.6	6.9	136	85	3.5	2.7	2	*0*	*0*	12
Burkina Faso	1.5	1.4	..	..	10	10	0.2	0.2	..	..	0	..
Burundi	4.2	5.8	17.8	..	15	81	0.5	2.2	..	..	*0*	*0*
Cambodia	5.4	2.2	..	24.1	309	192	6.2	2.9	*0*	0	*0*	0
Cameroon	1.4	1.5	11.7	..	24	23	0.5	0.4	..	..	*0*	*0*
Canada	1.6	1.2	6.3	6.5	76	71	0.5	0.4	378	543	146	340
Central African Republic	1.2	*1.1*	..	..	5	2	0.3	0.1	..	..	0	..
Chad	1.4	1.1	..	..	35	34	1.3	1.0	0	..	1	0
Chile	3.3	3.9	..	21.0	130	116	2.3	1.8	*0*	*0*	461	43
China	1.7[a]	1.9[a]	..[a]	*19.3*[a]	4,130	3,755	0.6	0.5	897	125	419	2,238
Hong Kong, China	..	..	..	..	..	..	..	..	..	..	..	..
Colombia	2.6	4.3	..	18.9	233	336	1.4	1.5	..	..	37	17
Congo, Dem. Rep.	*1.5*	..	*13.5*	..	65	64	0.4	0.3	..	..	*0*	*0*
Congo, Rep.	..	*1.4*	..	*6.9*	17	12	1.4	0.8	..	..	*0*	0
Costa Rica	..	..	..	..	16	0	1.2	*0.0*	..	..	0	*0*
Côte d'Ivoire	*0.8*	*1.6*	..	*8.9*	15	18	0.3	0.3	..	..	2	14
Croatia	9.4	1.7	22.2	4.1	150	30	7.2	1.5	*0*	0	22	8
Cuba	..	..	..	..	124	75	2.5	1.4	..	..	0	*0*
Czech Republic	1.7	*1.8*	..	*5.1*	92	27	1.8	0.5	156	*0*	*0*	18
Denmark	1.7	1.5	..	4.2	33	21	1.2	0.7	*0*	6	127	194
Dominican Republic	..	..	..	..	40	39	1.3	1.0	..	..	*0*	21
Ecuador	2.4	1.9	*20.1*	..	57	46	1.3	0.8	..	..	10	22
Egypt, Arab Rep.	3.5	2.8	12.5	..	610	798	3.5	3.6	16	0	1,696	398
El Salvador	1.0	0.7	..	3.9	39	15	1.8	0.6	0	..	3	*0*
Eritrea	20.8	*19.4*	..	..	55	201	4.4	11.7	*0*	0	3	382
Estonia	1.0	1.8	3.0	..	6	6	0.8	0.9	*0*	0	18	5
Ethiopia	2.2	4.3	..	*21.8*	120	182	0.5	0.6	0	..	*0*	162
Finland	1.5	1.2	..	3.3	35	31	1.4	1.2	20	17	159	57
France	3.0	2.5	..	5.4	502	358	2.0	1.3	681	2,122	43	89
Gabon	..	..	..	..	10	6	2.0	1.0	..	..	*0*	0
Gambia, The	0.8	0.4	..	..	1	1	0.2	0.1	..	..	0	*0*
Georgia	*2.2*	1.4	*8.2*	9.4	14	22	0.5	1.0	*0*	20	*0*	*0*
Germany	1.6	1.4	8.3	4.4	365	284	0.9	0.7	1,435	1,091	218	190
Ghana	0.8	0.8	..	3.8	13	7	0.2	0.1	..	..	*0*	27
Greece	4.3	*4.1*	..	..	202	167	4.5	3.3	*0*	*0*	865	1,434
Guatemala	1.0	0.4	13.1	3.6	57	48	1.8	1.2	..	..	3	0
Guinea	*1.4*	*2.9*	..	..	19	11	0.5	0.3	..	..	*0*	*0*
Guinea-Bissau	0.9	..	..	..	9	9	1.9	1.5	..	..	0	..
Haiti	..	..	..	..	7	0	0.2	*0.0*	..	..	..	..

Defense expenditures and arms transfers 5.7

	Military expenditures				Armed forces personnel				Arms transfers			
	% of GDP		% of central government expenditure		thousands		% of labor force		$ millions 1990 prices			
									Exports		Imports	
	1995	2004	1995	2004	1995	2004	1995	2004	1995	2004	1995	2004
Honduras	..	0.7	..	..	24	20	1.2	0.7	..	..	0	..
Hungary	1.6	1.7	..	*4.4*	73	46	1.8	1.1	6	0	21	15
India	2.2	2.3	15.1	14.8	2,150	2,617	0.6	0.6	2	22	945	2,375
Indonesia	1.6	1.4	16.2	8.3	461	582	0.5	0.6	30	50	334	85
Iran, Islamic Rep.	2.3	3.4	15.2	17.0	763	460	4.4	1.8	1	1	306	283
Iraq	..	..	..	..	407	179	7.0	2.2	0	..	*0*	82
Ireland	1.0	0.6	2.8	..	13	10	0.9	0.5	0	..	*0*	25
Israel	9.0	9.3	..	19.1	178	176	8.5	6.6	110	283	244	724
Italy	1.8	1.9	..	*4.7*	585	445	2.5	1.9	305	261	270	317
Jamaica	..	..	..	..	4	2	0.3	0.2	..	..	*0*	0
Japan	0.9	1.0	..	..	252	251	0.4	0.4	16	0	757	195
Jordan	12.4	7.6	47.5	24.0	129	110	10.2	6.1	*0*	72	19	132
Kazakhstan	1.1	1.0	*5.7*	7.0	75	99	1.0	1.2	24	5	99	27
Kenya	1.6	1.6	6.5	*7.9*	29	29	0.2	0.2	..	..	*0*	0
Korea, Dem. Rep.	..	..	..	..	1,243	1,295	12.4	12.2	52	*0*	72	5
Korea, Rep.	2.8	2.5	19.4	..	641	696	3.0	2.9	25	50	1,638	737
Kuwait	13.6	*7.5*	29.3	*20.9*	22	21	2.5	1.6	*0*	0	630	*0*
Kyrgyz Republic	1.6	2.9	6.1	..	7	17	0.4	0.8	61	*0*	*0*	5
Lao PDR	*2.9*	..	..	..	137	129	7.7	5.6	..	..	*0*	0
Latvia	0.9	1.7	3.1	6.0	11	5	0.9	0.5	*0*	0	12	14
Lebanon	6.7	3.8	..	*12.8*	63	85	5.5	6.2	*0*	*0*	34	0
Lesotho	3.7	2.6	10.7	6.8	2	2	0.3	0.3	..	..	*0*	1
Liberia	*31.2*	*7.5*	..	..	21	0	2.7	*0.0*	..	..	*0*	0
Libya	*4.1*	1.9	..	..	81	76	5.2	3.4	*0*	*0*	*0*	74
Lithuania	0.4	1.7	..	5.8	9	28	0.5	1.7	*0*	*0*	4	31
Macedonia, FYR	*3.0*	2.5	..	..	18	17	2.2	2.0	0	29	*0*	0
Madagascar	4.3	..	..	..	29	21	0.5	0.3	..	..	*0*	0
Malawi	0.8	..	..	..	10	6	0.2	0.1	*0*	0	*0*	0
Malaysia	2.8	2.3	16.0	*13.8*	140	130	1.7	1.2	*0*	0	900	277
Mali	2.2	1.9	..	..	15	11	0.4	0.2	..	..	*0*	*0*
Mauritania	2.6	1.2	..	..	21	20	2.3	1.7	..	..	1	0
Mauritius	0.4	0.2	1.8	0.9	2	0	0.4	*0.0*	..	..	*0*	0
Mexico	0.6	0.4	3.8	..	189	203	0.5	0.5	..	..	43	265
Moldova	0.9	0.4	*2.4*	1.3	15	9	0.8	0.4	*0*	0	6	0
Mongolia	1.7	*2.1*	..	..	31	15	3.3	1.3	..	..	0	*0*
Morocco	4.6	4.5	16.1	..	238	250	2.7	2.3	..	..	30	*0*
Mozambique	1.5	1.2	..	..	12	11	0.2	0.1	..	..	*0*	*0*
Myanmar	3.7	..	..	..	371	482	1.7	1.8	..	..	216	65
Namibia	2.0	2.4	..	*8.5*	8	15	1.5	2.3	..	..	2	53
Nepal	0.9	1.7	..	..	63	131	0.8	1.3	..	..	1	32
Netherlands	1.9	1.6	..	3.8	78	53	1.0	0.6	350	211	33	183
New Zealand	1.4	1.0	..	3.2	10	8	0.6	0.4	*0*	1	4	42
Nicaragua	1.1	0.7	6.8	3.5	12	14	0.8	0.7	5	0	0	*0*
Niger	1.0	*0.9*	..	..	11	10	0.3	0.2	..	..	*0*	0
Nigeria	0.7	0.8	..	..	89	160	0.2	0.3	0	..	2	10
Norway	2.4	1.9	..	5.0	31	25	1.4	1.0	22	51	83	1
Oman	14.6	*10.4*	45.2	..	48	45	6.2	4.8	*0*	0	157	123
Pakistan	6.0	4.1	31.4	28.1	846	921	2.2	1.7	*0*	10	..	..
Panama	1.2	..	5.6	..	12	0	1.1	*0.0*	..	..	*0*	0
Papua New Guinea	1.0	*0.6*	3.9	*2.1*	4	3	0.2	0.1	..	..	*0*	0
Paraguay	*1.1*	0.7	*10.0*	5.4	28	24	1.4	0.9	..	..	*0*	4
Peru	1.9	1.2	10.9	7.1	178	157	1.8	1.2	*0*	5	32	14
Philippines	1.4	0.9	*8.5*	..	149	146	0.5	0.4	..	..	32	59
Poland	2.0	1.9	..	*5.0*	302	162	1.7	0.9	187	86	125	256
Portugal	2.5	2.1	..	*5.1*	104	91	2.1	1.7	0	..	18	59
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..

5.7 Defense expenditures and arms transfers

	Military expenditures				Armed forces personnel				Arms transfers			
	% of GDP		% of central government expenditure		thousands		% of labor force		$ millions 1990 prices Exports		Imports	
	1995	2004	1995	2004	1995	2004	1995	2004	1995	2004	1995	2004
Romania	2.8	2.2	..	*8.9*	297	176	2.4	1.7	6	*0*	*0*	276
Russian Federation	4.4	*3.9*	..	*17.9*	1,800	1,452	2.5	2.0	3,181	6,197	40	0
Rwanda	4.4	2.1	..	..	47	53	2.0	1.3	..	..	*0*	0
Saudi Arabia	9.3	7.7	..	..	178	214	3.0	2.8	*0*	0	974	838
Senegal	1.8	1.4	..	..	17	18	0.5	0.4	..	..	2	0
Serbia and Montenegro	*5.3*	3.4	..	*11.0*	165	110	3.5	*2.8*	*0*	0	18	0
Sierra Leone	2.9	1.6	..	..	7	13	0.4	0.6	..	..	15	0
Singapore	4.4	4.7	35.1	30.5	66	165	3.7	7.6	*0*	70	225	456
Slovak Republic	3.2	1.7	..	*5.2*	51	20	2.1	0.8	114	*0*	220	*0*
Slovenia	1.7	1.6	4.7	3.9	13	10	1.3	1.0	..	..	18	14
Somalia	..	..	..	..	225	0	8.3	0.0	..	..	*0*	0
South Africa	2.2	1.5	..	5.0	277	55	1.7	0.3	16	35	38	8
Spain	1.4	1.0	..	*3.7*	282	220	1.7	1.1	65	75	348	261
Sri Lanka	5.3	2.8	20.3	*13.6*	236	239	3.3	2.9	..	..	49	6
Sudan	1.9	*2.2*	..	..	134	121	1.6	1.2	..	..	3	270
Swaziland	2.4	..	..	..	3	..	1.1	..	..	..	*0*	0
Sweden	2.3	1.7	..	*4.7*	100	28	2.2	0.6	185	260	70	13
Switzerland	1.3	1.0	5.2	*5.4*	31	4	0.8	0.1	77	154	93	125
Syrian Arab Republic	7.1	*7.0*	..	..	531	415	11.2	5.7	*0*	0	43	*0*
Tajikistan	1.0	2.2	..	15.8	18	12	0.9	0.6	..	..	*0*	0
Tanzania	1.5	3.0	..	..	36	28	0.2	0.1	..	..	*0*	*0*
Thailand	2.3	1.2	..	6.7	421	419	1.3	1.2	*0*	5	562	105
Togo	2.4	1.5	..	..	8	9	0.4	0.4	..	..	3	0
Trinidad and Tobago	..	..	..	..	7	2	1.3	0.3	..	..	*0*	0
Tunisia	1.9	1.5	6.7	5.4	59	47	2.1	1.3	..	..	59	*0*
Turkey	3.9	3.9	18.6	..	690	616	3.0	2.3	*0*	18	1,288	418
Turkmenistan	2.3	..	..	..	11	26	0.7	1.2	..	..	0	20
Uganda	2.2	2.5	..	*11.1*	52	55	0.6	0.5	..	..	39	19
Ukraine	2.8	2.6	..	7.9	519	271	2.0	1.2	218	452	0	29
United Arab Emirates	5.2	*2.8*	49.2	..	71	50	5.5	1.9	27	3	432	1,246
United Kingdom	3.0	2.6	..	6.5	233	205	0.8	0.7	1,109	985	635	171
United States	3.8	4.0	..	19.0	1,636	1,473	1.2	1.0	9,690	5,453	389	533
Uruguay	1.7	1.4	6.3	5.0	27	25	1.8	1.4	*0*	0	7	*0*
Uzbekistan	1.1	*0.5*	..	..	42	75	0.5	0.7	*0*	170	*0*	*0*
Venezuela, RB	1.6	1.2	8.7	*5.4*	80	82	0.9	0.7	*0*	1	*0*	12
Vietnam	*2.6*	..	..	..	622	5,564	1.8	12.9	..	..	270	247
West Bank and Gaza	..	..	..	..	..	0	..	..	..	..	1	0
Yemen, Rep.	6.4	6.6	33.4	..	70	136	1.8	2.4	..	..	120	309
Zambia	2.2	..	..	..	23	16	0.6	0.3	0	*0*	*0*	*0*
Zimbabwe	3.6	3.4	11.2	..	68	50	1.4	0.9	..	..	*0*	*0*
World	**2.4 w**	**2.5 w**	**.. w**	**10.9 w**	**30,182 s**	**32,645 s**	**1.2 w**	**1.1 w**	**19,837 s**	**19,152 s**	**19,528 s**	**18,814 s**
Low income	2.4	2.3	17.0	15.6	7,768	13,185	1.0	1.4	120	202	1,822	3,949
Middle income	2.2	1.9	..	13.6	16,059	13,882	1.2	0.9	4,905	7,251	7,868	5,989
Lower middle income	2.1	2.0	..	16.4	11,683	10,550	1.0	0.8	1,242	914	4,404	4,283
Upper middle income	2.3	1.8	..	..	4,376	3,332	1.9	1.3	3,663	6,337	3,464	1,706
Low & middle income	2.2	2.0	..	13.7	23,826	27,067	1.1	1.1	5,025	7,453	9,690	9,938
East Asia & Pacific	1.8	1.8	..	17.3	8,021	12,716	0.9	1.2	979	180	2,813	3,081
Europe & Central Asia	2.8	2.3	..	11.0	4,971	3,669	2.3	1.7	3,963	7,027	1,943	1,208
Latin America & Carib.	1.8	1.3	5.3	..	2,112	2,066	1.1	0.8	48	106	889	566
Middle East & N. Africa	4.1	3.7	17.6	..	3,172	2,930	4.2	2.8	17	73	2,810	1,683
South Asia	2.7	2.5	17.8	15.9	3,852	4,186	0.8	0.7	2	32	1,116	2,439
Sub-Saharan Africa	2.3	1.9	..	..	1,698	1,500	0.7	0.5	16	35	119	961
High income	2.5	2.6	..	10.5	6,356	5,578	1.3	1.1	14,812	11,699	9,838	8,876
Europe EMU	2.0	1.7	..	4.4	2,270	1,736	1.7	1.2	3,153	3,778	1,993	2,673

Note: For some countries data are partial or uncertain or based on rough estimates; see SIPRI (2005).

a. Estimate differs from official statistics of the government of China, which has published the following estimates: military expenditure as 1.1 percent of GDP in 1995 and 1.6 percent in 2003 and 9.3 percent of central government expenditure in 1995 and 7.7 percent in 2003 (see National Bureau of Statistics of China, www.stats.gov.cn).

Defense expenditures and arms transfers 5.7

About the data

Although national defense is an important function of government and security from external threats contributes to economic development, high levels of defense spending burden the economy and may impede growth. 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. Comparisons of defense spending between countries should take into account the many factors that influence perceptions of vulnerability and risk, including historical and cultural traditions, the length of borders that need defending, the quality of relations with neighbors, and the role of the armed forces in the body politic. As an "input" measure, military spending is not directly related to the "output" of military activities, capabilities, or military security.

Data on defense 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, defense spending and arms transfers rarely receive close scrutiny and full, public disclosure (see Ball 1984 and Happe and Wakeman-Linn 1994). The data on military expenditures as a share of GDP and 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 shown in the table may differ from comparable data published by national governments.

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

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

The data on armed forces are from the International Institute for Strategic Studies' *The Military Balance 2005–2006*. These data refer to military personnel on active duty, including paramilitary forces. Reserve forces, which are units that are not fully staffed or operational in peace time, are not included. These data also exclude civilians in the defense establishment and so are not consistent with the data on military spending on personnel. Moreover, because data exclude personnel not on active duty, they underestimate the share of the labor force working for the defense establishment. Because governments rarely report the size of their armed forces, such data typically come from intelligence sources.

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

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

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

Given these measurement issues, SIPRI's method of estimating the transfer of military resources includes an evaluation of the technical parameters of the weapons. Weapons for which a price is not known are compared with the same weapons for which actual acquisition prices are available ("core weapons") or for the closest match. These weapons are assigned a value in an index that reflects their 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 second-hand weapons. More information on SIPRI's arms transfers project is available at www.sipri.org/contents/armstrad/.

Definitions

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

Data sources

Data on military expenditures and arms transfers are from SIPRI's *Yearbook 2005: Armaments, Disarmament and International Security.* Data on armed forces personnel are from the International Institute for Strategic Studies' *The Military Balance 2005–2006.*

5.8 Transport services

	Roads				Railways			Ports	Air		
	Total road network km 1999–2003[a]	Paved roads % 1999–2003[a]	Passengers carried million passenger-km 1999–2003[a]	Goods hauled million ton-km 1999–2003[a]	Rail lines total route-km 2000–04[a]	Passengers carried million passenger-km 2000–04[a]	Goods hauled million ton-km 2000–04[a]	Port container traffic thousand TEU 2004	Registered carrier departures worldwide thousands 2004	Passengers carried thousands 2004	Air freight million ton-km 2004
Afghanistan	34,789	23.7	..	..	..	..	..	..	*3*	*150*	*8*
Albania	18,000	39.0	197	..	447	89	32	..	5	189	0
Algeria	104,000	68.9	..	..	3,572	950	1,945	*311.1*	49	3,236	21
Angola	51,429	10.4	166,045	4,709	2,761	..	..	..	5	223	64
Argentina	215,471	29.4	..	..	35,754	..	..	1,251.9	100	6,851	115
Armenia	7,633	..	1,867	280	711	48	452	..	6	510	7
Australia	811,601	..	..	..	9,474	1,347	41,314	5,129.8	325	41,597	1,898
Austria	133,718	100.0	82,330	26,411	5,801	8,375	19,047	..	137	7,619	502
Azerbaijan	27,016	47.0	9,862	53,738	2,122	584	6,980	..	11	1,007	34
Bangladesh	239,226	9.5	..	..	2,745	..	..	*625.2*	7	1,647	180
Belarus	93,055	100.0	10,739	12,710	5,498	13,893	40,331	..	6	274	1
Belgium	149,757	78.2	118,340	32,450	3,536	8,676	8,725	7,292.9	154	3,265	713
Benin	6,787	20.0	..	..	438	66	86	..	*1*	*46*	*7*
Bolivia	60,762	7.1	..	..	3,698	..	..	..	29	1,853	24
Bosnia and Herzegovina	21,846	52.3	..	332	1,032	53	293	..	*5*	*73*	0
Botswana	25,233	35.1	..	..	888	171	842	..	8	214	0
Brazil	1,724,929	5.5	..	..	30,403	..	..	5,058.6	486	35,264	1,499
Bulgaria	102,016	92.0	8,596	..	4,259	2,628	5,212	..	8	476	3
Burkina Faso	12,506	16.0	..	..	622	..	..	..	1	62	0
Burundi	14,480	7.1	..	..	..	..	..	..	..	..	..
Cambodia	12,323	16.2	201	308	650	45	92	..	4	163	4
Cameroon	80,932	6.7	..	..	974	308	1,115	..	10	358	23
Canada	1,408,900	..	..	184,774	49,422	3,122	323,600	3,926.1	989	40,701	1,657
Central African Republic	23,810	..	..	..	..	..	..	..	*1*	*46*	*7*
Chad	33,400	0.8	..	..	..	..	..	..	*1*	*46*	*7*
Chile	79,604	20.2	..	..	2,035	820	1,935	1,473.5	86	5,464	1,094
China	1,809,829	79.5	769,560	709,950	61,015	551,196	1,828,548	74,540.1[b]	1,216	119,789	8,188
Hong Kong, China	1,831	100.0	..	..	..	..	..	..	111	17,893	6,932
Colombia	112,988	14.4	..	..	3,154	..	..	1,073.1	156	8,965	1,079
Congo, Dem. Rep.	157,000	..	..	..	4,499	140	491	..	*5*	*95*	*7*
Congo, Rep.	12,800	9.7	..	..	1,026	76	307	..	*5*	*52*	0
Costa Rica	35,889	22.5	..	..	848	..	..	734.1	34	884	10
Côte d'Ivoire	50,400	9.7	..	..	639	148	129	670.0	*1*	*46*	*7*
Croatia	28,588	84.6	3,716	8,241	2,726	1,213	2,733	..	20	1,336	2
Cuba	60,856	49.0	..	..	4,382	..	..	..	11	773	33
Czech Republic	127,672	100.0	90,055	475	9,511	6,553	16,214	..	66	4,219	41
Denmark	71,847	100.0	61,258	17,766	2,141	5,390	1,888	997.5	100	6,429	175
Dominican Republic	12,600	49.4	..	..	1,743	..	..	537.3	..	..	..
Ecuador	43,197	16.9	10,276	5,170	966	..	..	564.1	12	478	1
Egypt, Arab Rep.	64,000	78.1	..	..	5,150	40,837	4,188	1,422.2	42	4,584	248
El Salvador	10,029	19.8	..	..	283	..	..	..	26	2,535	25
Eritrea	4,010	21.8	..	..	306	..	..	..	..	..	..
Estonia	56,849	23.4	2,299	6,364	959	192	9,567	..	8	510	1
Ethiopia	33,856	12.9	219,113	2,456	..	..	..	..	30	1,403	117
Finland	78,216	61.0	67,300	27,800	5,741	3,352	10,105	1,308.1	112	7,201	325
France	891,290	100.0	744,900	266,500	29,246	74,014	45,121	3,947.0	685	48,583	5,584
Gabon	32,333	3.7	..	..	650	92	1,949	..	8	433	62
Gambia, The	3,742	19.3	16	..	..	..	..	..	..	..	..
Georgia	20,247	39.4	4,987	22,500	1,565	401	5,065	..	4	203	3
Germany	231,581	100.0	1,062,700	227,197	34,729	70,286	77,640	12,457.7	942	82,156	8,064
Ghana	47,787	17.9	..	..	977	85	242	..	1	96	7
Greece	116,470	91.8	5,889	18,360	2,449	1,668	588	1,877.7	138	9,277	58
Guatemala	14,095	34.5	..	..	886	..	..	817.3	..	..	..
Guinea	44,348	9.8	..	..	837	..	..	..	..	..	..
Guinea-Bissau	4,400	10.3	..	..	..	..	..	..	..	..	..
Haiti	4,160	24.3	..	..	..	..	..	..	..	..	..

5.8 Transport services

	Roads				Railways			Ports	Air		
	Total road network km 1999–2003[a]	Paved roads % 1999–2003[a]	Passengers carried million passenger-km 1999–2003[a]	Goods hauled million ton-km 1999–2003[a]	Rail lines total route-km 2000–04[a]	Passengers carried million passenger-km 2000–04[a]	Goods hauled million ton-km 2000–04[a]	Port container traffic thousand TEU 2004	Registered carrier departures worldwide thousands 2004	Passengers carried thousands 2004	Air freight million ton-km 2004
Honduras	13,600	20.4	..	..	699	..	..	555.5	..	..	..
Hungary	159,568	43.9	13,300	12,505	8,000	7,380	8,713	..	47	2,546	24
India	3,851,440	62.6	..	..	63,221	541,208	381,241	4,266.9	302	23,797	689
Indonesia	368,360	58.0	..	..	..	..	..	5,566.6	319	26,785	434
Iran, Islamic Rep.	178,152	66.3	..	..	6,405	10,012	18,182	1,220.7	104	12,234	98
Iraq	45,550	84.3	..	..	2,339	570	1,682	..	..	..	..
Ireland	95,736	100.0	39,440	6,500	1,919	1,582	399	924.9	262	34,783	124
Israel	17,237	100.0	..	..	493	1,423	1,173	1,607.9	34	4,954	1,355
Italy	479,688	100.0	759,200	184,756	16,235	46,768	21,581	*8,473.2*	384	35,932	1,393
Jamaica	18,700	70.1	..	..	272	..	..	1,360.6	23	2,008	38
Japan	1,177,278	77.7	955,412	312,028	20,060	242,300	22,200	15,937.5	646	103,116	8,938
Jordan	7,364	100.0	..	..	291	..	522	..	18	1,660	254
Kazakhstan	258,029	95.9	55,676	382	13,770	11,816	163,420	..	12	843	13
Kenya	63,942	12.1	..	22	1,917	226	1,399	..	26	2,005	193
Korea, Dem. Rep.	31,200	6.4	..	..	5,214	..	..	..	2	95	2
Korea, Rep.	97,252	76.8	9,404	565	3,129	28,641	10,641	14,299.4	233	33,390	7,969
Kuwait	4,450	80.6	..	..	..	..	..	..	19	2,317	224
Kyrgyz Republic	18,500	91.1	5,274	797	424	50	561	..	6	246	5
Lao PDR	32,620	14.1	1,290	121	..	..	..	..	9	276	2
Latvia	69,919	100.0	2,550	2,324	2,270	810	16,877	..	16	594	1
Lebanon	7,300	84.9	..	..	401	..	..	*299.4*	12	1,087	85
Lesotho	5,940	18.3	..	..	..	..	..	..	..	..	..
Liberia	10,600	6.2	..	..	490	..	..	..	..	..	..
Libya	83,200	57.2	..	..	2,757	..	..	..	8	850	0
Lithuania	78,893	27.4	20,982	11,462	1,782	443	11,637	..	11	448	1
Macedonia, FYR	8,684	63.8	..	..	699	94	426	..	2	211	0
Madagascar	49,827	11.6	..	..	883	10	12	..	18	514	13
Malawi	28,400	18.5	..	..	710	25	88	..	6	114	1
Malaysia	71,814	77.9	..	..	1,667	1,931	1,224	11,264.4	171	19,268	2,599
Mali	15,100	12.1	..	..	733	196	189	..	*1*	*46*	*7*
Mauritania	7,660	11.3	..	..	717	..	..	..	2	128	0
Mauritius	2,015	100.0	..	..	..	..	..	*381.5*	15	1,089	220
Mexico	349,038	33.5	399,000	195,200	26,656	..	..	1,905.9	333	21,240	403
Moldova	12,730	86.2	1,640	1,577	1,120	355	2,715	..	5	201	1
Mongolia	49,250	3.5	761	1,889	1,810	1,073	6,452	..	7	318	6
Morocco	57,694	56.4	..	18	1,907	2,614	5,535	560.7	42	3,004	62
Mozambique	30,400	18.7	..	..	2,072	137	808	..	9	299	5
Myanmar	27,966	78.0	2,028	9,493	..	..	..	..	25	1,408	3
Namibia	42,237	12.8	47	591	..	..	..	..	7	281	56
Nepal	15,905	53.9	..	..	59	..	..	..	6	449	7
Netherlands	116,500	90.0	193,900	481	2,811	14,097	4,026	8,482.4	250	25,304	4,773
New Zealand	92,662	63.8	..	..	3,898	..	3,853	1,614.9	197	11,305	749
Nicaragua	18,658	11.4	..	..	6	..	..	..	*1*	*61*	*1*
Niger	10,100	7.9	..	..	..	..	..	..	*1*	*46*	*7*
Nigeria	194,394	30.9	..	..	3,505	973	39	512.6	10	682	10
Norway	91,916	77.5	56,573	13,614	4,077	2,477	2,668	..	260	13,230	177
Oman	32,800	30.0	..	..	..	..	..	2,515.5	32	3,267	235
Pakistan	254,410	60.0	209,959	..	7,791	23,911	5,004	1,101.5	50	5,097	402
Panama	11,643	34.6	..	..	355	..	..	2,428.8	27	1,501	34
Papua New Guinea	19,600	3.5	..	..	..	..	..	..	19	759	23
Paraguay	29,500	50.8	..	..	441	..	..	..	9	373	0
Peru	78,672	13.1	..	72	2,123	..	..	695.6	43	2,666	200
Philippines	200,037	9.9	..	..	..	..	..	3,673.3	57	7,406	301
Poland	423,997	69.7	29,996	85,989	19,576	18,626	47,847	428.4	78	3,493	77
Portugal	72,600	86.0	98,328	20,470	2,849	3,415	2,675	865.7	127	9,052	237
Puerto Rico	24,023	94.0	..	10	96	..	..	1,671.3	..	..	..

5.8 Transport services

	Roads				Railways			Ports	Air		
	Total road network km 1999–2003[a]	Paved roads % 1999–2003[a]	Passengers carried million passenger-km 1999–2003[a]	Goods hauled million ton-km 1999–2003[a]	Rail lines total route-km 2000–04[a]	Passengers carried million passenger-km 2000–04[a]	Goods hauled million ton-km 2000–04[a]	Port container traffic thousand TEU 2004	Registered carrier departures worldwide thousands 2004	Passengers carried thousands 2004	Air freight million ton-km 2004
Romania	198,817	50.4	5,283	25,350	10,844	8,633	14,262	..	30	1,338	5
Russian Federation	537,289	67.4	164	5,702	85,542	157,100	1,664,300	1,368.0	399	25,949	1,416
Rwanda	12,000	8.3	..	..	..	..	..	..	..	..	..
Saudi Arabia	152,044	29.9	..	..	1,390	364	1,173	3,185.7	113	14,943	957
Senegal	13,576	29.3	..	..	906	138	371	..	6	421	0
Serbia and Montenegro	45,290	62.0	..	..	3,809	..	..	..	25	1,414	6
Sierra Leone	11,300	8.0	..	..	..	..	..	..	0	16	8
Singapore	3,165	100.0	..	..	..	..	..	21,311.0	75	17,718	7,193
Slovak Republic	42,993	87.3	32,981	16,859	3,660	2,227	9,675	..	16	825	0
Slovenia	38,400	100.0	1,065	6,305	1,229	764	3,462	..	17	765	3
Somalia	22,100	11.8	..	..	..	..	..	..	..	..	..
South Africa	362,099	20.3	..	434	20,047	10,001	106,549	2,675.3	134	9,876	930
Spain	666,292	99.0	397,117	132,868	14,395	20,237	14,117	7,809.6	550	45,529	1,043
Sri Lanka	97,286	81.0	21,067	..	..	..	..	2,220.6	16	2,416	300
Sudan	11,900	36.3	..	..	5,478	32	889	..	8	476	41
Swaziland	3,594	..	..	..	301	..	..	..	*2*	*90*	*0*
Sweden	424,981	31.1	105,834	37,048	9,895	5,544	13,122	933.8	192	11,539	257
Switzerland	71,220	..	94,622	26,100	3,378	12,869	9,313	..	144	9,279	1,090
Syrian Arab Republic	91,795	20.1	589	..	2,798	635	1,924	..	16	1,141	20
Tajikistan	27,767	..	..	..	617	41	1,087	..	8	498	6
Tanzania	78,891	8.6	..	..	2,600[c]	471[c]	1,351[c]	..	6	248	2
Thailand	57,403	98.5	..	..	4,044	10,092	3,422	4,855.8	129	20,625	1,869
Togo	7,520	31.6	..	..	568	..	..	..	*1*	*46*	*7*
Trinidad and Tobago	8,320	51.1	..	..	..	..	..	*440.4*	17	1,132	42
Tunisia	18,997	65.4	..	16,611	1,909	1,242	2,173	..	21	1,940	20
Turkey	354,421	41.6	163,327	152,163	8,697	5,237	9,332	2,942.4	110	12,516	369
Turkmenistan	24,000	81.2	..	..	2,523	1,118	6,437	..	29	1,779	17
Uganda	70,746	23.0	..	..	259	..	218	..	0	46	27
Ukraine	169,739	97.0	40,131	24,387	22,011	51,726	233,961	..	34	1,924	23
United Arab Emirates	1,088	100.0	..	..	..	..	..	8,661.6	87	14,314	3,734
United Kingdom	619,398	100.0	666,000	159,000	16,514	42,626	20,700	7,480.9	970	86,055	5,698
United States	6,378,154	58.8	..	1,599,754	141,961	..	2,200,123[d]	35,612.7	9,566[e]	678,111[e]	37,450[e]
Uruguay	8,983	90.0	..	..	2,993	..	..	*301.6*	8	564	0
Uzbekistan	81,600	87.3	..	..	4,126	2,163	18,428	..	23	1,588	83
Venezuela, RB	96,155	33.6	..	..	433	..	32	920.9	129	4,592	2
Vietnam	215,628	..	18,116	4,772	2,600	4,376	2,682	2,138.8	51	5,050	217
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	67,000	11.5	..	..	..	..	..	*377.4*	16	995	60
Zambia	91,440	22.0	..	..	1,273[c]	186[c]	554[c]	..	5	49	0
Zimbabwe	97,267	19.0	..	..	..	..	..	..	4	238	17
World		**36.3 m**	**.. m**	**.. m**	**.. s**	**.. m**	**.. m**	**326,382.9 s**	**23,754 s**	**1,886,515 s**	**140,242 s**
Low income		13.3	..	..	..	..	..	8,435.5	696	49,908	2,157
Middle income		50.8	..	..	..	1,230	..	134,631.2	5,021	404,182	22,844
Lower middle income		50.1	..	..	..	..	..	104,722.1	3,087	272,310	15,055
Upper middle income		51.1	..	..	..	2,079	9,621	29,909.1	1,934	131,872	7,788
Low & middle income		29.5	..	..	..	..	..	143,321.1	5,718	454,090	25,001
East Asia & Pacific		32.3	1,659	..	..	..	2,662	102,039.0	2,079	203,261	13,730
Europe & Central Asia		74.0	9,603	11,400	216,994	2,227	9,675	..	985	65,135	2,139
Latin America & Carib.		26.8	..	..	..	..	..	19,377.2	1,561	98,165	4,629
Middle East & N. Africa		66.4	..	..	..	1,265	..	..	358	33,999	1,103
South Asia		53.9	..	..	..	..	..	7,589.0	389	33,527	1,579
Sub-Saharan Africa		12.5	..	..	..	..	..	..	347	20,003	1,821
High income		91.8	..	..	..	8,375	10,105	183,061.8	18,037	1,432,425	115,241
Europe EMU		99.5	108,334	26,460	120,432	8,676	10,105	44,966.0	3,783	309,557	27,487

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

Transport services 5.8

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 significantly by transport mode and focus (whether physical infrastructure or the services flowing from that infrastructure), highly specialized and carefully specified indicators are required. The table provides selected indicators of the size, extent, and productivity of roads, railways, and air transport systems and of the volume of traffic in these modes 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 such an 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, due to differing definitions and data collections methods and quality, 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. Several new initiatives are under way to improve data availability and consistency. The IRF is collaborating with national and international development agencies to improve the quality and coverage of road statistics. To improve measures of progress and performance, the World Bank is also working on better measures of access, affordability, efficiency, quality, and fiscal and institutional aspects of infrastructure.

Unlike the road sector, where 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 their cost and service characteristics, railways generally are best suited to carry—and can effectively compete for—bulk commodities and containerized freight for distances of 500–5,000 kilometers, and passengers for distances of 50–1,000 kilometers. Below these limits road transport tends to be more competitive, while above these limits either air transport for passengers and freight or sea transport for freight tend to be more competitive. The railways indicators in the table focus on scale and output measures: 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. • **Air passengers carried** include both domestic and international passengers of air carriers registered in the country. • **Air freight** is the volume of freight, express, and diplomatic bags carried 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. Data on port container traffic are from Containerisation International's *Containerisation International Yearbook.* And the data on air transport are from the ICAO's *Civil Aviation Statistics of the World* and ICAO staff estimates.

5.9 Power and communications

	Electric power		Telephones									
			Access				Quality	Affordability and efficiency				
	Consumption per capita kWh	Transmission and distribution losses % of output	per 1,000 people Fixed mainlines[a]	per 1,000 people Mobile subscribers[a]	Population covered by mobile telephony[a] %	International voice traffic minutes per person[a]	Faults per 100 mainlines[a]	$ per month Price basket for residential fixed line[a]	Price basket for mobile[b]	Cost of call to U.S. $ per 3 minutes[a]	Total tele-communications revenue[a] % of GDP	Total tele-phone sub-scribers per employee[a]
	2003	2003	2004	2004	2004	2004	2004	2004	2004	2004	2004	2004
Afghanistan	..	..	2	21	..	..	..	..	..	..	..	..
Albania	1,311	40	*82*	*356*	*90*	*442*	*57.2*	5.6	24.3	1.34	*5.6*	*319*
Algeria	796	14	71	145	84	..	*6.0*	*5.1*	10.2	2.08	*2.5*	..
Angola	113	14	*6*	61	..	*7*	..	*11.9*	11.2	3.23	*2.0*	*96*
Argentina	2,185	15	227	352	95	*40*	..	6.6	8.3	..	2.4	*625*
Armenia	1,312	23	192	67	81	*67*	*52.9*	*3.1*	12.2	2.42	3.2	146
Australia	10,713	7	541	818	97	*214*	*8.0*	29.4	17.8	*0.68*	3.5	*374*
Austria	8,104	5	460	978	98	*293*	*5.4*	30.6	26.4	0.71	2.5	..
Azerbaijan	2,355	16	118	215	*96*	*24*	*45.2*	*1.6*	10.5	4.18	*1.7*	*225*
Bangladesh	128	12	6	31	*50*	*5*	..	*7.2*	3.7	1.21	1.3	..
Belarus	3,039	13	*311*	113	87	*57*	*24.8*	*2.0*	7.5	*2.25*	*3.0*	*159*
Belgium	8,412	4	456	876	99	*316*	*5.6*	34.6	24.9	0.75	2.6	759
Benin	61	..	9	*30*	*23*	*8*	*6.2*	*12.2*	15.5	4.80	*2.6*	..
Bolivia	422	13	69	200	*60*	*24*	..	*7.9*	6.3	*1.89*	3.8	..
Bosnia and Herzegovina	2,096	17	*239*	*268*	*90*	*89*	..	*5.1*	9.1	3.62	*4.4*	*238*
Botswana	..	..	77	319	85	*62*	..	11.3	11.1	2.88	*3.0*	*341*
Brazil	1,883	17	230	357	*68*	*12*	1.6	*7.4*	18.9	*0.71*	*4.0*	..
Bulgaria	3,965	14	357	609	98	*36*	*2.6*	*8.5*	17.3	0.57	5.9	*199*
Burkina Faso	..	..	6	31	*60*	*6*	*51.8*	*11.9*	15.4	1.14	2.0	*138*
Burundi	..	..	*3*	*9*	82	*2*	..	*4.5*	11.6	2.45	*2.1*	*98*
Cambodia	..	..	*3*	37	*87*	*2*	..	*9.3*	4.0	*2.94*	*2.8*	..
Cameroon	178	24	*6*	96	70	..	..	*6.7*	16.6	..	3.3	..
Canada	17,290	6	*634*	469	*93*	*439*	..	16.1	6.7	..	*2.7*	*301*
Central African Republic	..	..	3	15	..	*2*	*56.0*	*32.8*	12.7	1.99	1.0	*54*
Chad	..	..	1	13	*8*	*2*	*60.8*	12.8	27.7	*9.11*	4.0	..
Chile	2,880	6	206	593	99	*57*	*25.0*	16.4	17.0	*2.18*	*3.8*	*567*
China	1,379	6	241	258	*73*	*6*	..	3.6	3.7	2.90	3.2	*656*
Hong Kong, China	5,653	13	549	1,184	100	*895*	*1.3*	15.1	3.4	*2.62*	*3.9*	*539*
Colombia	834	19	195	232	*74*	*44*	*33.0*	*5.8*	9.1	..	4.9	..
Congo, Dem. Rep.	87	3	0	18	*55*	..	..	..	10.4	..	4.6	..
Congo, Rep.	122	..	4	99	*65*	..	..	..	17.5	5.39	..	..
Costa Rica	1,666	7	316	217	..	82	4.0	*5.9*	4.2	*1.93*	2.5	*316*
Côte d'Ivoire	174	14	*14*	86	55	*15*	*81.0*	28.2	23.9	2.25	*3.7*	..
Croatia	3,156	20	425	575	98	*170*	*12.0*	*14.7*	14.4	..	*5.4*	*389*
Cuba	1,200	15	68	7	*50*	*28*	*9.5*	*12.4*	20.0	*7.35*	2.6	..
Czech Republic	6,070	6	338	1,054	99	*163*	*6.8*	*16.7*	15.1	1.06	3.7	*512*
Denmark	6,602	5	643	956	99	*244*	*9.0*	25.7	19.9	0.89	*2.6*	437
Dominican Republic	1,060	32	107	289	*88*	*232*	..	*16.9*	7.0	0.22	7.5	..
Ecuador	677	34	124	348	*88*	*51*	*35.3*	9.0	10.6	*1.75*	*2.1*	..
Egypt, Arab Rep.	1,127	12	130	105	91	23	0.1	3.8	4.1	1.45	3.4	*274*
El Salvador	584	13	131	271	86	*322*	*35.2*	12.9	13.5	2.40	36.0	..
Eritrea	..	..	9	5	*0*	*9*	*51.1*	*4.9*	..	*3.55*	2.8	*56*
Estonia	5,224	12	329	931	99	*128*	*16.3*	*14.2*	11.4	0.90	6.3	..
Ethiopia	28	10	*6*	2	..	*1*	*100.0*	*2.9*	3.4	*7.05*	*1.8*	*65*
Finland	16,427	4	453	954	99	*178*	..	*24.7*	13.6	1.80	3.1	*329*
France	..	6	561	738	99	*210*	..	25.7	29.7	0.84	2.2	..
Gabon	922	18	28	359	*24*	*54*	*50.2*	*27.8*	16.8	5.68	2.6	..
Gambia, The	..	..	*27*	118	60	..	..	*3.9*	..	1.81	*10.3*	*124*
Georgia	1,507	16	151	186	*79*	*57*	*17.2*	*4.6*	6.5	*0.68*	4.0	*191*
Germany	6,896	5	661	864	99	*191*	..	*17.5*	30.6	0.43	2.9	*526*
Ghana	248	12	14	78	*28*	*15*	*67.4*	*3.6*	11.1	0.39	*5.2*	*137*
Greece	5,041	9	466	999	99	*164*	*13.6*	*14.3*	19.3	1.09	4.0	..
Guatemala	396	21	92	258	*78*	*114*	..	*10.5*	4.3	*1.21*	*2.8*	..
Guinea	..	..	*3*	*12*	..	*7*	*1.6*	*9.4*	..	*4.61*	*1.1*	*150*
Guinea-Bissau	..	..	*7*	*1*	..	*9*	*70.5*	..	..	..	..	..
Haiti	31	52	17	48	..	..	..	..	..	..	..	..

5.9 Power and communications

	Electric power		Telephones									
			Access				Quality	Affordability and efficiency				
	Consumption per capita kWh	Transmission and distribution losses % of output	per 1,000 people Fixed mainlines[a]	per 1,000 people Mobile subscribers[a]	Population covered by mobile telephony[a] %	International voice traffic minutes per person[a]	Faults per 100 mainlines[a]	$ per month Price basket for residential fixed line[a]	Price basket for mobile[b]	Cost of call to U.S. $ per 3 minutes[a]	Total tele-communications revenue[a] % of GDP	Total tele-phone sub-scribers per employee[a]
	2003	2003	2004	2004	2004	2004	2004	2004	2004	2004	2004	2004
Honduras	556	23	53	100	*49*	82	*3.6*	5.9	6.9	2.52	5.8	183
Hungary	3,637	12	354	863	*99*	*49*	*8.7*	*20.3*	13.3	1.01	5.6	*508*
India	435	27	41	44	*41*	*3*	*126.0*	3.2	3.2	1.19	1.9	..
Indonesia	440	16	46	138	*85*	*5*	*20.0*	6.2	4.6	2.79	*2.3*	*665*
Iran, Islamic Rep.	1,916	17	*219*	64	..	*8*	..	*2.8*	2.9	0.55	*1.1*	*304*
Iraq	977	6	37	20	..	..	..	..	..	..	..	..
Ireland	6,098	8	496	929	99	*983*	*6.0*	39.7	19.1	0.71	2.7	401
Israel	6,599	3	441	1,057	*97*	*306*	..	14.9	9.3	0.59	4.5	*825*
Italy	5,620	7	451	1,090	*100*	*236*	..	*23.8*	14.0	0.79	2.6	..
Jamaica	2,481	9	189	832	*95*	*233*	*39.7*	*10.3*	8.1	0.87	*5.5*	*345*
Japan	7,818	5	460	716	99	*36*	..	26.0	29.1	1.66	*3.0*	..
Jordan	1,453	9	113	293	*99*	*104*	*12.6*	10.0	9.4	1.44	8.2	*303*
Kazakhstan	3,510	16	167	184	*94*	*26*	..	*3.8*	4.7	..	*3.0*	*108*
Kenya	125	19	9	76	..	*5*	*149.1*	*12.5*	14.0	3.00	4.8	*80*
Korea, Dem. Rep.	795	16	*44*	*0*	..	..	..	..	..	..	..	..
Korea, Rep.	7,018	3	542	761	99	*116*	*1.0*	7.3	2.1	0.76	4.2	..
Kuwait	14,808	11	202	813	99	..	*4.0*	*10.3*	7.4	*1.50*	*2.4*	*234*
Kyrgyz Republic	1,647	29	*79*	59	..	*14*	..	1.4	10.8	*8.92*	*3.8*	*71*
Lao PDR	..	..	13	35	*7*	*3*	..	*2.3*	2.2	1.11	*1.5*	*85*
Latvia	2,456	23	273	664	97	*66*	*20.3*	15.6	14.9	1.63	6.4	*415*
Lebanon	2,558	15	178	251	..	..	..	20.4	20.1	2.19	4.9	*304*
Lesotho	..	..	21	88	*80*	..	*75.0*	18.6	14.3	3.28	*2.5*	..
Liberia	..	..	*2*	*15*	*16*	..	..	..	..	..	3.5	..
Libya	2,415	28	*133*	*23*	..	..	..	..	..	..	..	..
Lithuania	3,055	7	239	996	*100*	*34*	*16.3*	*14.6*	6.9	*2.31*	3.5	..
Macedonia, FYR	..	..	*259*	383	99	*127*	..	*5.3*	..	..	6.7	..
Madagascar	..	..	*3*	18	*30*	*1*	*59.6*	*7.5*	4.0	0.59	*12.5*	*93*
Malawi	..	..	7	18	*70*	*5*	..	*4.5*	20.0	*3.56*	*2.0*	*49*
Malaysia	3,061	5	179	587	96	*85*	*40.0*	8.7	5.6	0.71	4.4	728
Mali	..	..	6	30	*15*	*6*	*177.6*	*8.5*	13.5	*12.28*	*3.0*	*71*
Mauritania	..	..	*13*	175	..	*20*	..	*12.3*	..	..	*7.5*	..
Mauritius	..	..	287	413	99	*92*	*41.5*	*7.4*	4.8	1.67	*3.8*	*373*
Mexico	1,801	15	174	370	86	*82*	*1.7*	15.5	11.4	*3.04*	2.7	*505*
Moldova	1,166	57	205	187	92	*61*	*5.2*	*1.8*	27.6	*2.21*	7.5	*169*
Mongolia	..	..	*53*	*124*	*64*	*4*	*20.6*	*2.5*	9.6	*4.92*	*3.5*	*82*
Morocco	577	16	44	313	95	55	25.0	18.4	16.0	1.41	4.9	..
Mozambique	339	10	*4*	36	..	*32*	66.0	16.5	10.9	1.17	2.8	*158*
Myanmar	101	20	8	2	..	*1*	*155.0*	*2.9*	..	*0.36*	0.2	*49*
Namibia	1,277	18	64	142	88	*57*	*40.4*	15.8	14.7	*4.28*	4.4	*181*
Nepal	68	19	15	7	..	*6*	*78.0*	3.1	2.8	2.04	*1.7*	*88*
Netherlands	6,748	4	483	910	100	*311*	..	31.7	24.5	0.32	*3.3*	*593*
New Zealand	8,896	13	443	745	97	*347*	*30.7*	*18.1*	19.8	1.30	*3.3*	..
Nicaragua	361	29	40	137	48	*44*	*4.6*	*14.3*	16.0	*3.20*	*2.5*	*196*
Niger	..	..	2	11	*13*	..	*104.6*	*9.1*	19.3	*8.77*	0.9	..
Nigeria	107	33	8	71	58	*2*	*20.6*	13.7	11.2	1.49	*4.4*	*192*
Norway	23,169	9	*487*	910	*99*	*236*	..	*29.9*	6.4	*0.31*	*1.8*	*412*
Oman	3,505	18	95	318	..	*108*	..	*12.9*	5.1	1.87	*2.6*	*319*
Pakistan	408	25	30	33	*45*	*11*	..	*6.1*	2.9	1.03	2.1	*97*
Panama	1,401	18	118	270	87	*55*	13.9	*10.9*	18.1	*3.64*	*4.7*	188
Papua New Guinea	..	..	*11*	3	..	*8*	..	*6.6*	8.4	*4.32*	*2.3*	..
Paraguay	801	4	*48*	294	60	*20*	*3.4*	*14.0*	7.3	0.90	4.0	..
Peru	759	10	74	148	*75*	*68*	..	19.4	21.9	1.80	*3.0*	..
Philippines	574	13	42	404	*80*	29	..	12.2	4.0	1.20	*3.7*	..
Poland	3,329	10	*322*	605	98	*61*	*17.2*	*17.3*	7.7	0.99	*3.5*	*603*
Portugal	4,383	8	404	981	99	*194*	*10.1*	25.8	31.7	1.04	*5.4*	*922*
Puerto Rico	..	..	285	689	..	..	..	..	..	..	*3.8*	..

5.9 Power and communications

	Electric power		Telephones									
			Access				Quality	Affordability and efficiency				
	Consumption per capita kWh	Transmission and distribution losses % of output	per 1,000 people Fixed mainlines[a]	Mobile subscribers[a]	Population covered by mobile telephony[a] %	International voice traffic minutes per person[a]	Faults per 100 mainlines[a]	$ per month Price basket for residential fixed line[a]	Price basket for mobile[b]	Cost of call to U.S. $ per 3 minutes[a]	Total tele-communications revenue[a] % of GDP	Total tele-phone sub-scribers per employee[a]
	2003	2003	2004	2004	2004	2004	2004	2004	2004	2004	2004	2004
Romania	2,221	9	202	471	97	*49*	*8.9*	*9.6*	8.8	0.82	*3.8*	*252*
Russian Federation	5,480	12	*256*	517	*78*	*15*	..	*7.8*	6.3	2.03	*3.2*	*193*
Rwanda	..	..	3	16	65	..	..	*7.9*	24.8	2.43	4.2	..
Saudi Arabia	6,259	5	154	383	*92*	*120*	*1.7*	*11.7*	9.6	*2.40*	3.2	..
Senegal	167	13	*21*	90	85	*21*	*17.3*	*14.5*	13.5	1.02	*7.1*	..
Serbia and Montenegro	3975	16	330	581	95	112	..	*2.3*	6.4	*2.08*	3.1	374
Sierra Leone	..	..	*5*	22	35	..	..	*3.0*	13.6	..	2.8	..
Singapore	7,977	6	440	910	100	*728*	*99.2*	6.7	5.7	0.69	*3.4*	403
Slovak Republic	5,010	6	232	794	99	*66*	*10.0*	*11.4*	10.3	1.06	4.0	508
Slovenia	6,817	4	*407*	871	99	..	*23.4*	*12.6*	11.7	0.65	*2.8*	*556*
Somalia	..	..	25	63	..	..	..	..	..	..	..	..
South Africa	4399	10	103	413	96	39	*48.2*	21.6	13.5	0.79	5.8	..
Spain	5,701	9	416	905	99	*117*	*14.2*	*20.3*	21.5	0.60	*4.4*	868
Sri Lanka	325	18	51	114	40	*20*	*6.8*	7.3	3.7	2.11	*2.2*	*166*
Sudan	81	16	29	30	*60*	11	..	*4.4*	3.2	*39.18*	2.4	*225*
Swaziland	..	..	*45*	109	90	*51*	*70.0*	8.3	16.6	2.97	*3.7*	*209*
Sweden	15,403	8	*767*	1,034	99	..	..	27.1	15.8	0.41	*1.9*	*780*
Switzerland	8,191	6	710	849	99	*665*	..	29.6	33.0	0.29	3.6	*516*
Syrian Arab Republic	1,243	24	143	126	99	*37*	*50.0*	*3.0*	48.2	*4.81*	*2.1*	..
Tajikistan	2,206	15	*39*	*7*	..	*10*	*144.0*	*1.0*	12.3	*6.96*	*2.1*	*57*
Tanzania	54	27	*4*	44	*25*	*1*	*24.0*	*11.6*	11.1	3.17	*2.4*	*262*
Thailand	1,752	7	107	430	*92*	12	2.5	8.3	6.8	0.67	*3.6*	..
Togo	94	30	*10*	*38*	80	*13*	*6.2*	*10.4*	13.4	3.98	*3.4*	*248*
Trinidad and Tobago	4,721	5	247	498	..	*334*	..	*7.0*	7.8	0.95	*3.7*	..
Tunisia	1,118	11	121	359	95	*61*	*30.0*	4.7	6.8	*2.28*	4.0	*224*
Turkey	1,656	17	267	484	*68*	*32*	*30.4*	*10.3*	6.4	*2.09*	*3.0*	*664*
Turkmenistan	1,750	14	*80*	*2*	..	*6*	*86.4*	*1.5*	..	..	*0.8*	*59*
Uganda	..	..	3	42	*70*	2	..	*16.6*	7.9	*3.51*	4.6	..
Ukraine	2,998	18	256	289	*75*	36	..	*2.5*	10.3	*1.65*	6.1	142
United Arab Emirates	10,992	10	275	853	99	..	*0.3*	5.0	3.5	1.73	*2.7*	500
United Kingdom	6,209	8	563	1,021	99	*262*	*11.0*	29.5	19.1	0.77	*3.9*	*358*
United States	13,078	7	606	617	95	201	*12.5*	25.0	10.8	..	2.5	344
Uruguay	1,781	21	291	174	99	60	..	9.0	7.4	0.52	2.9	..
Uzbekistan	1,741	9	*66*	21	*75*	6	*87.4*	*1.4*	4.6	*13.95*	2.1	87
Venezuela, RB	2,664	26	128	322	90	23	*2.0*	*16.2*	14.5	*0.84*	3.0	..
Vietnam	429	14	122	60	67	8	..	*4.3*	6.9	1.95	3.5	73
West Bank and Gaza	..	..	102	278	*95*	34	*94.0*	*9.4*	..	*1.03*	0.6	..
Yemen, Rep.	158	24	39	53	68	12	..	*3.0*	5.9	2.39	1.5	176
Zambia	576	3	*8*	26	*51*	7	*124.9*	*5.4*	13.1	*6.45*	1.9	..
Zimbabwe	819	16	25	31	..	19	*63.0*	*2.0*	17.8	*4.36*	1.6	138
World	**2,456 w**	**9 w**	**195 w**	**281 w**	**69 w**	**30 w**	**23.6 m**	**9.7 m**	**11.1 m**	**1.20 m**	**3.0 w**	**232 m**
Low income	358	24	34	42	43	5	..	6.6	11.6	5.58	3.4	*93*
Middle income	1,720	11	192	293	77	22	22.8	7.7	9.1	1.45	3.0	278
Lower middle income	1,329	10	189	249	76	16	25.0	5.5	8.9	1.62	2.4	191
Upper middle income	3,378	13	221	483	84	46	19.8	13.9	11.1	1.06	3.0	402
Low & middle income	1,159	13	125	187	64	12	35.3	7.3	10.5	1.65	3.0	166
East Asia & Pacific	1,184	7	191	244	73	8	..	4.5	5.1	1.20	2.6	..
Europe & Central Asia	3,531	13	242	463	82	35	*19.9*	3.5	10.3	1.61	3.0	150
Latin America & Carib.	1,615	16	180	318	76	44	4.7	9.0	9.1	1.96	3.9	..
Middle East & N. Africa	1,212	16	91	128	..	..	..	4.9	8.1	1.66	1.2	..
South Asia	394	26	35	41	43	4	*88.1*	3.2	3.2	1.21	1.9	*97*
Sub-Saharan Africa	513	12	16	78	..	8	61.6	8.5	13.5	2.43	3.6	*138*
High income	9,503	6	535	771	98	149	*7.0*	25.8	17.8	0.76	3.7	472
Europe EMU	6,506	6	525	904	99	199	*8.0*	31.2	24.5	0.75	3.0	487

a. Data are from the International Telecommunication Union's World Telecommunication Development Report database, and World Bank estimates. b. World Bank estimates.

Power and communications 5.9

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 and improving the quality of and access to services around the globe.

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

Data on electric power production and consumption are collected from national energy agencies by the International Energy Agency (IEA) and adjusted by the IEA to meet international definitions (for data on electricity production, see table 3.9). Electricity consumption is equivalent to production less power plants' own use and transmission, distribution, and transformation losses 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, geo-thermal, 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, quality, and affordability and efficiency.

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

Globally there have been huge improvements in access to telecommunications, driven mainly by mobile telephony. By 2002 access to mobiles outpaced access to fixed-line telephones in developing countries, and rural areas are catching up with urban areas (although gaps are still large). By 2002 there were over a billion mobile subscribers and an estimated 4.7 billion people, or about 77 percent of the world's population, were covered by a mobile cellular signal.

Telephone mainline faults are a measure of telecommunications quality. The definition varies among countries: some operators define faults as including malfunctioning customer equipment while others include only technical faults.

Although access is the key to delivering telecommunications services to people, if that service is not affordable to most people, then goals of universal usage will not be met. Three indicators of telecommunications affordability are presented in the table (price basket for fixed-line telephone service, price basket for mobile service, and the cost of a local call). Telecommunications efficiency is measured by total telecommunications revenue as percent of GDP and by total telephone subscribers per employee.

Definitions

• **Electric power consumption** measures the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants plus imports less exports. • **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 mainlines** are telephone lines connecting a subscriber to the telephone exchange equipment. • **Mobile telephone subscribers** are subscribers to a public mobile telephone service using cellular technology. • **Population covered by mobile telephony** is the percentage of people within range of a mobile cellular signal regardless of whether they are subscribers. • **International voice traffic** is the sum of international incoming and outgoing telephone traffic (in minutes) divided by total population. • **Telephone mainline faults** are the number of reported faults for the year divided by the number of telephone mainlines and multiplied by 100. • **Price basket for residential fixed line** is calculated as one-fifth of the installation charge, the monthly subscription charge, and the cost of local calls (15 peak and 15 off-peak calls of three minutes each). • **Price basket for mobile** is calculated as the pre-paid price for 25 calls per month spread over the same mobile network, other mobile networks, and mobile to fixed calls and during peak, off-peak, and weekend times. It also includes 30 text messages per month. • **Cost of call to U.S.** is the cost of a three-minute, peak rate, fixed-line call from the country to the United States. • **Total telecommunications revenue** is the revenue from the provision of telecommunications services such as fixed-line, mobile, and data divided by GDP. • **Total telephone subscribers per employee** are telephone subscribers (fixed-line plus mobile) divided by total telecommunications employees.

Data sources

Data on electricity consumption and losses are from the IEA's *Energy Statistics and Balances of Non-OECD Countries 2002–2003*, the IEA's *Energy Statistics of OECD Countries 2002–2003*, 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.

5.10 The information age

	Daily newspapers	Households with television[a]	Personal computers and the Internet							Information and communications technology expenditures	
			Access			Quality		Application	Affordability		
	per 1,000 people	%	per 1,000 people Personal computers[a]	Internet users[a]	Schools connected to the Internet %	Broadband subscribers per 1,000 people[a]	International Internet bandwidth bits per capita[a]	Secure Internet servers per million people November	Price basket for Internet $ per month[b]	% of GDP	Per capita $
	2000	2004	2004	2004	2004	2004	2004	2005	2003	2004	2004
Afghanistan	..	..	..	1	..	*0.0*	1	0	..	..	..
Albania	..	*90*	*12*	24	..	*0.0*	4	0	28.6	..	..
Algeria	*27*	98	9	26	53	1.1	*5*	0	17.8	..	..
Angola	*11*	*9*	*3*	11	..	*0.0*	*0*	0	78.8	..	..
Argentina	40	97	*96*	133	..	13.5	319	11	13.3	5.6	224
Armenia	..	*91*	66	50	..	*0.0*	12	1	44.8	..	..
Australia	161	96	682	646	*97*	77.0	1,097	500	18.1	5.4	1,714
Austria	309	97	418	477	*94*	101.3	6,682	232	32.9	5.1	1,816
Azerbaijan	*10*	*99*	18	49	..	*0.0*	*0*	0	108.3	..	..
Bangladesh	..	*29*	12	2	..	*0.0*	0	0	20.0	2.9	12
Belarus	..	91	..	163	..	*0.0*	36	1	12.8	..	..
Belgium	153	97	348	403	*93*	155.4	11,279	118	28.6	5.3	1,783
Benin	*5*	*20*	4	12	..	*0.0*	6	0	46.4	..	..
Bolivia	*99*	..	*36*	39	..	*0.0*	44	2	22.3	5.6	55
Bosnia and Herzegovina	..	*87*	45	58	..	*0.1*	77	3	7.3	..	..
Botswana	*25*	*15*	45	34	..	*0.0*	23	*1*	27.0	..	..
Brazil	46	*90*	105	120	*50*	12.4	149	14	28.0	6.3	208
Bulgaria	173	97	59	283	*60*	*5.6*	80	9	12.4	3.8	117
Burkina Faso	*1*	*7*	2	4	..	*0.0*	4	0	45.4	..	..
Burundi	*2*	*14*	5	3	..	*0.0*	*1*	0	80.9	..	..
Cambodia	..	..	3	3	..	*0.0*	*1*	0	57.4	..	..
Cameroon	*6*	*18*	10	10	..	0.0	3	0	51.7	5.1	45
Canada	168	*99*	700	626	*98*	164.3	6,803	570	12.7	5.4	1,641
Central African Republic	*2*	*2*	3	2	..	*0.0*	*0*	..	175.0	..	..
Chad	*0*	*2*	2	6	..	0.0	0	..	68.9	..	..
Chile	..	95	133	267	*62*	29.7	788	21	21.8	5.8	340
China	59	91	41	73	..	16.5	57	0	10.1	4.4	66
Hong Kong, China	218	99	608	506	100	215.7	4,793	159	3.8	8.7	2,065
Colombia	*26*	*92*	67	80	*50*	2.8	124	4	18.6	8.3	180
Congo, Dem. Rep.	*3*	*2*	..	*1*	..	0.0	*0*	0	74.0	..	..
Congo, Rep.	*6*	*6*	4	9	..	*0.0*	0	1	121.2	..	..
Costa Rica	70	91	238	235	*15*	*0.1*	..	62	25.8	7.8	337
Côte d'Ivoire	*16*	*35*	15	17	..	*0.0*	*2*	0	67.2	..	..
Croatia	134	*93*	190	293	..	5.0	317	40	17.1	..	..
Cuba	54	..	27	13	..	*0.0*	8	0	57.8	..	..
Czech Republic	..	..	240	470	*90*	16.5	*2,450*	42	20.8	6.0	632
Denmark	283	98	656	696	100	168.6	34,870	411	17.6	5.6	2,487
Dominican Republic	28	88	0	91	..	3.8	..	6	33.0	..	..
Ecuador	98	*89*	56	48	..	*0.0*	38	4	31.8	3.6	83
Egypt, Arab Rep.	*31*	*95*	32	54	*66*	0.4	19	1	5.5	1.4	15
El Salvador	*29*	..	44	87	..	*2.8*	62	5	48.1	..	..
Eritrea	..	*14*	4	12	..	0.0	2	..	26.8	..	..
Estonia	192	*93*	921	497	*75*	102.8	3,410	102	13.6	..	..
Ethiopia	*0*	*2*	3	2	*1*	*0.0*	0	*0*	27.4	..	..
Finland	445	*91*	481	629	*99*	149.2	4,326	308	22.5	6.6	2,344
France	142	*95*	487	414	*97*	108.1	3,312	79	14.1	5.6	1,899
Gabon	*29*	*54*	29	29	..	*0.0*	33	6	121.9	..	..
Gambia, The	*2*	*12*	16	33	..	*0.0*	*1*	..	27.1	..	..
Georgia	5	*76*	42	39	..	*0.3*	..	4	26.2	..	..
Germany	291	*94*	561	500	*99*	83.7	6,860	274	14.1	5.5	1,822
Ghana	*14*	*21*	5	17	1	*0.0*	*1*	0	43.8	..	..
Greece	..	98	89	177	*59*	4.7	589	31	37.6	4.2	774
Guatemala	..	..	19	61	..	*0.0*	57	6	31.2	..	..
Guinea	..	*9*	5	5	..	*0.0*	*0*	..	63.3	..	..
Guinea-Bissau	*5*	*26*	..	17	..	*0.0*	..	..	105.1	..	..
Haiti	..	*26*	..	59	..	*0.0*	..	1	130.0	..	..

The information age 5.10

	Daily newspapers	Households with television[a]	Personal computers and the Internet							Information and communications technology expenditures	
			Access			Quality		Application	Affordability		
	per 1,000 people	%	per 1,000 people Personal computers[a]	Internet users[a]	Schools connected to the Internet %	Broadband subscribers per 1,000 people[a]	International Internet bandwidth bits per capita[a]	Secure Internet servers per million people	Price basket for Internet $ per month[b]	% of GDP	Per capita $
	2000	2004	2004	2004	2004	2004	2004	November 2005	2003	2004	2004
Honduras	..	58	16	32	..	*0.0*	*3*	4	40.6	4.7	49
Hungary	162	92	146	267	*85*	36.2	989	30	10.2	5.9	588
India	*60*	37	12	32	..	0.6	11	1	8.7	3.8	24
Indonesia	*23*	66	14	67	..	0.3	10	0	22.3	3.1	37
Iran, Islamic Rep.	..	*77*	110	8	..	*0.2*	*15*	0	5.9	2.2	54
Iraq	..	..	*8*	1	..	*0.0*	..	..	..	..	..
Ireland	148	95	494	265	*99*	33.9	6,044	355	28.3	3.7	1,653
Israel	..	*93*	741	471	*95*	135.3	2,501	163	29.8	7.8	1,349
Italy	109	..	315	501	*88*	81.7	*2,078*	45	16.5	4.0	1,171
Jamaica	..	*70*	63	403	*10*	*9.6*	..	14	43.5	11.8	395
Japan	566	*99*	542	587	*99*	145.8	1,038	257	21.1	7.6	2,732
Jordan	*74*	*97*	55	110	*18*	*0.9*	57	4	26.3	8.4	178
Kazakhstan	..	95	..	27	..	*0.0*	*3*	1	34.5	..	..
Kenya	*8*	*19*	13	45	..	*0.0*	1	0	45.7	2.9	14
Korea, Dem. Rep.	..	..	..	..	..	*0.0*	..	..	..	..	..
Korea, Rep.	..	93	545	657	100	247.9	1,485	20	9.7	6.5	924
Kuwait	..	*95*	183	244	..	*5.4*	117	*21*	24.7	1.5	338
Kyrgyz Republic	..	..	17	52	..	*0.0*	*4*	1	15.0	..	..
Lao PDR	..	..	4	4	..	*0.0*	1	0	31.9	..	..
Latvia	138	*85*	217	350	*97*	16.9	972	38	58.1	..	..
Lebanon	63	*93*	113	169	*20*	*10.1*	56	10	36.9	..	..
Lesotho	*9*	*17*	..	24	..	*0.0*	*1*	..	43.4	..	..
Liberia	*14*	..	..	..	..	*0.0*	*0*	..	..	..	..
Libya	*14*	..	*24*	36	..	*0.0*	*1*	0	18.9	..	..
Lithuania	31	*97*	155	282	*56*	37.6	194	22	34.1	..	..
Macedonia, FYR	54	..	69	78	..	1.5	*25*	0	18.9	..	..
Madagascar	*5*	*8*	5	5	..	*0.0*	2	0	67.3	..	..
Malawi	*2*	*2*	2	4	*1*	*0.0*	0	0	62.0	..	..
Malaysia	95	98	197	397	..	10.1	128	15	8.4	6.7	316
Mali	*1*	*15*	3	4	..	*0.0*	1	0	58.0	..	..
Mauritania	..	*21*	14	5	..	*0.0*	*3*	0	38.6	..	..
Mauritius	116	94	279	146	*19*	2.0	146	18	15.0	..	..
Mexico	94	92	108	135	*60*	*3.1*	108	8	22.6	3.0	196
Moldova	*153*	*75*	27	96	*50*	0.7	43	4	19.0	..	..
Mongolia	18	*29*	124	80	*19*	*0.2*	*9*	3	17.8	..	..
Morocco	29	76	21	117	..	2.1	26	1	25.3	5.5	93
Mozambique	*3*	*6*	6	7	*0*	*0.0*	*1*	0	50.8	..	..
Myanmar	*9*	*3*	6	1	..	*0.0*	1	0	42.5	..	..
Namibia	*17*	*39*	109	37	*4*	0.0	4	7	33.4	..	..
Nepal	..	..	4	7	..	0.0	*1*	0	13.5	..	..
Netherlands	279	*99*	682	614	*92*	189.4	20,549	327	24.1	6.2	2,214
New Zealand	202	98	474	788	*99*	*18.0*	1,127	493	12.9	9.3	2,257
Nicaragua	..	..	37	23	..	*0.4*	186	2	51.0	..	..
Niger	*0*	*5*	1	2	..	*0.0*	0	0	96.8	..	..
Nigeria	*25*	*26*	7	14	..	*0.0*	*1*	0	85.5	..	..
Norway	569	*100*	573	390	*99*	*87.1*	9,370	309	26.3	5.0	2,716
Oman	..	*79*	47	97	..	*0.0*	*15*	4	23.6	..	..
Pakistan	39	*39*	5	13	..	0.0	5	0	15.6	7.1	45
Panama	..	*77*	41	94	..	5.8	292	56	36.0	9.3	400
Papua New Guinea	..	..	64	29	..	*0.0*	*1*	1	20.0	..	..
Paraguay	..	..	59	25	..	*0.1*	26	1	36.3	..	..
Peru	*23*	..	98	117	..	7.6	205	5	32.8	6.7	166
Philippines	..	*76*	45	54	..	*0.3*	39	3	17.0	6.4	67
Poland	102	*92*	193	236	*90*	32.7	560	22	15.7	4.3	270
Portugal	102	99	133	281	*92*	81.7	833	57	20.6	4.3	679
Puerto Rico	..	*97*	..	221	..	*5.9*	..	31	..	..	..

5.10 The information age

	Daily newspapers	Households with television[a]	Personal computers and the Internet							Information and communications technology expenditures	
			Access			Quality		Application	Affordability		
	per 1,000 people	%	per 1,000 people Personal computers[a]	Internet users[a]	Schools connected to the Internet %	Broadband subscribers per 1,000 people[a]	International Internet bandwidth bits per capita[a]	Secure Internet servers per million people November	Price basket for Internet $ per month[b]	% of GDP	Per capita $
	2000	2004	2004	2004	2004	2004	2004	2005	2003	2004	2004
Romania	..	..	113	208	*57*	*0.7*	186	5	26.4	2.6	88
Russian Federation	..	*98*	132	111	*65*	*0.9*	100	2	10.0	3.3	135
Rwanda	*0*	*2*	..	4	..	0.0	*1*	..	66.8	..	..
Saudi Arabia	..	*99*	354	66	..	*0.3*	31	3	34.7	2.2	235
Senegal	..	*29*	21	42	..	*0.2*	27	0	40.6	7.5	51
Serbia and Montenegro	..	*92*	48	147	*70*	*0.0*	87	2	13.2	..	..
Sierra Leone	..	*7*	..	2	..	0.0	*0*	..	12.0	..	..
Singapore	273	98	*763*	571	100	120.8	5,826	270	11.0	9.9	2,498
Slovak Republic	131	100	296	423	*65*	11.6	2,295	18	20.7	5.0	386
Slovenia	168	98	353	476	*99*	59.1	1,085	79	25.4	..	..
Somalia	..	*8*	6	25	..	*0.0*	*0*	..	..	..	..
South Africa	25	*54*	82	78	*27*	1.3	19	21	33.3	7.3	343
Spain	98	*99*	257	336	*94*	80.9	2,822	82	20.7	3.5	843
Sri Lanka	29	*32*	27	14	..	*0.1*	17	2	15.1	5.9	61
Sudan	..	*49*	17	32	..	0.1	6	..	160.6	..	..
Swaziland	..	*18*	32	32	..	0.0	*1*	2	20.6	..	..
Sweden	410	*94*	763	756	*99*	152.6	17,531	331	22.4	6.7	2,570
Switzerland	372	99	826	474	..	173.5	9,671	473	22.4	7.0	3,370
Syrian Arab Republic	..	*80*	32	43	..	*0.0*	*1*	..	55.2	..	..
Tajikistan	..	..	..	1	..	*0.0*	*0*	..	54.3	..	..
Tanzania	..	*14*	7	9	..	0.0	*0*	*0*	117.0	..	..
Thailand	*197*	92	58	109	*37*	*0.2*	47	5	7.0	3.6	91
Togo	2	*51*	29	37	..	0.0	*2*	0	30.4	..	..
Trinidad and Tobago	..	*88*	105	123	*15*	*0.1*	138	21	13.4	..	..
Tunisia	19	90	48	84	*25*	0.7	44	1	17.3	5.3	149
Turkey	..	..	52	142	*40*	*0.8*	124	17	19.8	6.9	293
Turkmenistan	7	94	..	8	..	0.0	0	..	20.2	..	..
Uganda	3	*6*	4	7	*1*	0.0	2	0	96.8	..	..
Ukraine	175	*97*	28	79	..	*0.0*	17	1	16.7	6.1	83
United Arab Emirates	..	*86*	*116*	321	..	13.0	351	49	13.1	..	..
United Kingdom	326	99	599	628	*99*	102.5	13,055	466	23.9	6.9	2,450
United States	196	97	749	630	*99*	129.0	3,305	783	14.9	9.0	3,595
Uruguay	..	..	125	198	*50*	*3.2*	291	26	26.5	6.7	259
Uzbekistan	..	..	..	34	..	*0.1*	*1*	0	20.2	..	..
Venezuela, RB	..	*90*	82	89	..	8.0	51	5	19.5	4.5	189
Vietnam	*6*	*83*	13	71	..	0.6	23	0	19.9	..	..
West Bank and Gaza	..	*94*	48	46	..	0.0	23	1	25.4	..	..
Yemen, Rep.	..	*43*	15	9	..	*0.0*	..	0	30.8	..	..
Zambia	22	*26*	10	20	..	*0.0*	*1*	0	32.6	..	..
Zimbabwe	..	*26*	77	63	..	*0.4*	151	0	23.3	16.0	58
World	**90 w**	**84 m**	**130 w**	**139 w**	**.. m**	**32.0 w**	**816 w**	**65 w**	**25.8 m**	**6.6 w**	**508 w**
Low income	*44*	*16*	11	24	..	*0.1*	10	0	45.5	4.2	..
Middle income	*55*	*89*	61	90	..	12.9	91	4	22.3	4.7	111
Lower middle income	61	*89*	46	74	..	12.5	60	2	25.4	4.7	79
Upper middle income	..	*92*	122	159	62	*3.7*	218	13	20.8	4.7	241
Low & middle income	*49*	*54*	41	62	..	7.7	59	3	27.4	4.6	82
East Asia & Pacific	60	*80*	38	74	..	13.4	48	1	19.9	4.4	67
Europe & Central Asia	..	*92*	110	138	..	*2.4*	210	9	19.8	4.7	202
Latin America & Carib.	61	*88*	92	115	..	*5.2*	159	11	31.5	5.1	200
Middle East & N. Africa	..	*88*	49	42	..	*0.2*	*9*	1	24.4	..	..
South Asia	*59*	*32*	12	26	..	0.6	10	1	15.1	4.2	26
Sub-Saharan Africa	*12*	*15*	15	19	..	*0.1*	*6*	2	51.2	..	..
High income	262	*98*	574	545	98	125.9	4,545	384	20.9	7.1	2,329
Europe EMU	188	*97*	421	443	*94*	93.7	5,788	149	22.5	5.0	1,530

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

The information age 5.10

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 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. The table presents indicators of the penetration of the information economy (newspapers, televisions, personal computers, and Internet use), quality (broadband subscribers, international Internet bandwidth, and secure Internet servers), and some of the economics of the information age (Internet access charges and spending on information and communications technology).

The data on the number of daily newspapers in circulation are from surveys by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics. In some countries definitions, classifications, and methods of enumeration do not entirely conform to UNESCO standards. For example, newspaper circulation data should refer to the number of copies distributed, but in some cases the figures reported are the number of copies printed.

The data for other electronic communications and information technology are from the International Telecommunication Union (ITU), the Internet Software Consortium, Netcraft, the World Information Technology and Services Alliance (WITSA), Global Insights, and World Bank staff estimates. Estimates of households with television are derived from household surveys; data presented in the table are from the ITU and World Bank staff estimates.

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

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

The number of secure Internet servers, from the Netcraft Secure Server Survey, gives an indication of how many companies are conducting encrypted transactions over the Internet.

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

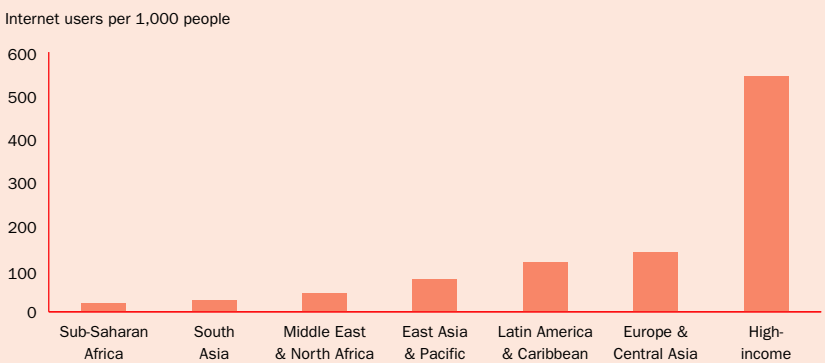
Ensuring universal access to information and communication technology is a goal of many countries, but not all countries regularly track accessibility. There is no common set of information and communications technology indicators and definitions, and data are often drawn from administrative records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

Definitions

• **Daily newspapers** refer to those published at least four times a week and calculated as average circulation (or copies printed) per 1,000 people. • **Households with television** are the share of households with a television set. Some countries report only the number of households with a color television set, and therefore the true number may be higher than reported. • **Personal computers** are self-contained computers designed for use by a single individual. • **Internet users** are people with access to the worldwide network. • **Schools connected to the Internet** are the share of primary and secondary schools in the country that have access to the Internet. • **Broadband subscribers** are the total number of broadband subscibers with a digital subscriber line, cable modem, or other high-speed technologies. Reporting countries may have different definitions of broadband, so data are not strictly comparable across countries. • **International Internet bandwidth** is the contracted capacity of international connections between countries for transmitting Internet traffic. • **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.

5.10a

Europe and Central Asia had the highest Internet use among developing country regions in 2004



Source: Table 5.10 based on International Telecommunication Union and World Bank data.

Data sources

Data on newspapers are compiled by the UNESCO Institute for Statistics. Data on televisions, personal computers, Internet users, price basket for Internet, broadband subscribers, and international Internet bandwidth are from the ITU and are reported in the ITU's World Telecommunication Development Report database and World Bank estimates. Data on schools connected to the Internet are World Bank staff estimates. Data on secure Internet servers are from Netcraft (www.netcraft.com/). Data on information and communications technology expenditures are from *Digital Planet 2004: The Global Information Economy* by WITSA, and Global Insight, Inc.

5.11 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]		Trademark applications filed[b]	
	per million people	per million people		% of GDP	$ millions	% of manufactured exports	Receipts $ millions	Payments $ millions	Residents	Non-residents	Residents	Non-residents
	1996–2004[c]	1996–2004[c]	2001	1996–2003[c]	2004	2004	2004	2004	2002	2002	2002	2002
Afghanistan	..	..	*0*	..	..	..	..	..	..	..	..	..
Albania	..	..	*17*	..	5	1	*5*	*8*	0	89,821	0	1,758
Algeria	..	..	225	..	7	1	..	..	42	88,839	1,313	3,088
Angola	..	..	*3*	..	..	..	227	2	..	..	..	..
Argentina	720	316	2,930	0.41	749	8	58	483	*0*	*6,634*	30,839	12,007
Armenia	1,537	103	152	0.25	4	1	..	..	204	89,361	388	2,084
Australia	3,670	..	14,788	1.63	3,128	14	472	1,437	10,823	96,434	26,831	17,113
Austria	2,968	1,254	4,526	2.22	10,597	12	170	1,241	3,313	250,719	7,272	9,996
Azerbaijan	1,236	195	68	0.30	8	2	..	*0*	0	89,337	144	2,051
Bangladesh	..	..	177	..	3	0	0	5	..	..	..	..
Belarus	1,871	207	528	0.62	215	3	2	10	908	89,686	1,730	4,548
Belgium	3,478	1,473	5,984	2.33	19,583	8	..	..	2,122	161,472	21,010[d]	10,695[d]
Benin	..	..	*20*	..	*1*	*2*	*0*	*2*	..	..	..	..
Bolivia	120	6	*33*	0.28	28	9	2	10	..	..	..	..
Bosnia and Herzegovina	..	..	*9*	..	..	..	..	..	0	89,872	0	3,283
Botswana	..	..	*41*	..	..	..	*3*	*12*	0	10	..	..
Brazil	344	332	7,205	0.98	5,929	12	114	1,197	6,521	95,225	81,036	13,218
Bulgaria	1,263	477	784	0.50	247	4	7	30	306	158,051	4,043	5,576
Burkina Faso	17	16	*23*	0.17	3	10	..	..	..	..	..	..
Burundi	..	..	*3*	..	0	6	*0*	*0*	..	..	20	132
Cambodia	..	..	*5*	..	4	0	..	6	..	..	333	1,305
Cameroon	..	..	75	..	2	1	..	..	..	..	..	..
Canada	3,597	..	22,626	1.94	25,625	14	3,019	5,528	5,934	102,418	17,068	19,664
Central African Republic	47	27	*4*	..	*0*	*0*	..	..	..	..	..	..
Chad	..	..	*2*	..	..	..	..	..	..	..	..	..
Chile	444	303	1,203	0.61	195	5	48	283	*241*	*2,879*	..	..
China	663	..	20,978	1.31	161,603	30	236	4,497	40,346	140,910	321,034	57,597
Hong Kong, China	1,564	225	*1,817*	0.60	80,109	32	*341*	*864*	112	9,018	5,903	14,543
Colombia	109	77	324	0.17	347	6	7	82	52	87,859	*7,265*	*7,096*
Congo, Dem. Rep.	..	..	*6*	..	..	..	..	..	..	..	..	..
Congo, Rep.	30	32	*13*	..	..	..	..	..	..	..	..	..
Costa Rica	368	..	92	0.39	1,374	37	1	51	0	89,225	..	..
Côte d'Ivoire	..	..	*40*	..	*93*	*8*	0	0	..	..	..	..
Croatia	1,296	455	710	1.14	759	13	41	146	444	89,877	843	5,600
Cuba	537	2,447	299	0.65	..	..	..	..	13	89,468	0	1,551
Czech Republic	1,594	879	2,622	1.27	7,662	13	57	172	608	158,592	8,114	9,756
Denmark	5,016	2,713	4,988	2.53	9,686	20	..	..	3,875	250,103	3,914	6,744
Dominican Republic	..	..	*6*	..	..	..	0	30	..	..	..	..
Ecuador	50	73	*20*	0.07	49	7	0	43	13	85,290	4,219	4,634
Egypt, Arab Rep.	..	..	1,548	0.19	15	1	100	108	627	798	0	2,496
El Salvador	47	..	*0*	0.08	37	4	0	18	..	..	..	..
Eritrea	..	..	*2*	..	..	..	..	..	..	..	..	..
Estonia	2,523	427	339	0.83	587	14	4	18	33	157,901	1,017	5,213
Ethiopia	..	..	93	..	*0*	*0*	0	0	*3*	*4*	..	..
Finland	7,992	3,472	5,098	3.49	10,625	21	850	805	2,941	248,668	2,830	6,095
France	3,213	..	31,317	2.19	64,871	19	5,070	3,142	21,959	160,056	58,035	12,774
Gabon	..	..	*20*	..	28	15	..	..	..	..	..	..
Gambia, The	..	..	*17*	..	*0*	*3*	..	..	0	177,146	..	..
Georgia	2,600	270	110	0.29	89	38	8	6	202	89,881	202	2,438
Germany	3,261	1,089	43,623	2.50	131,838	17	5,103	5,759	80,661	230,066	53,817	12,827
Ghana	..	..	90	..	*8*	*4*	0	0	0	177,371	..	..
Greece	1,413	895	3,329	0.65	1,031	11	32	466	614	162,387	5,290	6,075
Guatemala	..	..	*14*	..	88	7	0	0	*5*	0	*3,048*	*5,040*
Guinea	251	91	*2*	..	*0*	*0*	0	0	..	..	..	..
Guinea-Bissau	..	..	*6*	..	..	..	..	*0*	..	..	..	..
Haiti	..	..	*1*	..	..	..	*0*	*0*	..	..	..	..

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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]		Trademark applications filed[b]	
	per million people	per million people		% of GDP	$ millions	% of manufactured exports	Receipts $ millions	Payments $ millions	Residents	Non-residents	Residents	Non-residents
	1996–2004[c]	1996–2004[c]	2001	1996–2003[c]	2004	2004	2004	2004	2002	2002	2002	2002
Honduras	78	253	*11*	0.05	*6*	*2*	0	22	7	161	..	..
Hungary	1,472	457	2,479	0.95	14,158	29	551	949	962	91,497	4,316	9,546
India	119	102	11,076	0.85	2,840	5	*25*	*421*	220	91,704	..	..
Indonesia	..	..	207	..	5,809	16	221	990	0	90,922	..	..
Iran, Islamic Rep.	467	376	995	..	*51*	*2*	..	..	*691*	0	*9,858*	*1,224*
Iraq	..	..	*21*	..	..	..	..	..	..	..	..	..
Ireland	2,674	621	1,665	1.11	30,239	34	221	18,444	1,255	162,170	1,167	4,577
Israel	1,613	532	6,487	4.93	6,861	19	493	464	2,323	94,961	2,842	4,827
Italy	1,213	1,347	22,313	1.16	23,504	8	770	1,751	4,086	159,865	0	9,385
Jamaica	..	..	*44*	0.07	*3*	*0*	10	9	15	54	663	1,433
Japan	5,287	528	57,420	3.15	124,045	24	15,701	13,644	371,495	115,411	100,645	16,827
Jordan	1,927	709	240	..	147	5	..	..	..	..	..	..
Kazakhstan	629	92	116	0.22	72	2	0	26	2	89,421	1,809	2,902
Kenya	..	..	230	..	18	3	17	50	0	177,559	0	1,166
Korea, Dem. Rep.	..	..	*1*	..	..	..	..	..	0	88,052	0	1,913
Korea, Rep.	3,187	..	11,037	2.64	75,742	33	1,790	4,450	76,860	126,836	90,014	17,862
Kuwait	69	172	257	0.20	..	..	0	0	..	..	..	..
Kyrgyz Republic	406	51	*10*	0.20	*2*	*2*	5	4	123	89,357	67	1,850
Lao PDR	..	..	*2*	..	..	..	..	..	..	..	25	656
Latvia	1,434	318	157	0.38	130	5	8	14	8	140,637	1,262	5,699
Lebanon	..	..	202	..	*17*	*2*	..	..	*0*	*104*	..	..
Lesotho	42	26	*1*	0.01	..	..	17	*0*	0	177,309	0	774
Liberia	..	..	*1*	..	..	..	..	..	0	89,507	0	760
Libya	361	493	*19*	..	..	..	0	0	..	..	..	..
Lithuania	2,136	427	272	0.69	250	5	1	18	91	140,674	1,540	5,602
Macedonia, FYR	..	..	74	0.26	16	1	3	9	42	140,588	411	3,541
Madagascar	15	45	..	0.12	1	1	*1*	*13*	4	89,526	162	293
Malawi	..	..	*36*	..	2	2	*0*	*0*	0	177,315	138	440
Malaysia	299	58	494	0.69	52,868	55	*20*	*782*	..	..	..	..
Mali	..	..	*11*	..	..	..	*0*	*1*	..	..	..	..
Mauritania	..	..	*2*	..	..	..	..	..	..	..	..	..
Mauritius	201	126	*16*	0.35	61	4	0	4	..	..	..	..
Mexico	268	96	3,209	0.42	31,832	21	92	805	627	94,116	40,141	18,509
Moldova	172	201	77	0.81	13	4	2	3	240	89,396	1,391	2,690
Mongolia	681	69	*8*	0.28	*0*	*0*	..	..	121	89,864	255	3,260
Morocco	782	..	469	0.62	696	10	16	37	0	89,300	0	2,849
Mozambique	..	..	*14*	..	*2*	*9*	1	3	0	176,319	0	931
Myanmar	..	..	*10*	..	..	..	*0*	*0*	..	..	..	..
Namibia	..	..	*13*	..	*15*	*3*	*0*	3	..	..	..	..
Nepal	59	137	*39*	0.66	*1*	*0*	..	..	..	..	..	..
Netherlands	2,482	1,725	12,602	1.80	55,211	29	4,205	3,339	7,496	158,485	..	..
New Zealand	3,405	..	2,903	1.17	858	14	98	485	2,137	91,240	8,818	11,276
Nicaragua	44	39	*8*	0.05	5	6	0	0	..	..	..	..
Niger	..	..	*21*	..	*1*	*3*	..	*0*	..	..	..	..
Nigeria	..	..	332	..	*9*	*2*	..	64	..	..	..	..
Norway	4,587	1,754	3,252	1.75	2,759	18	242	485	504	90,712	0	6,981
Oman	..	..	96	..	22	1	..	..	0	75,825	..	..
Pakistan	86	13	282	0.22	150	1	10	95	*58*	0	5,342	1,560
Panama	97	387	*37*	0.34	2	2	0	49	*7*	*153*	..	..
Papua New Guinea	..	..	*36*	..	*47*	*39*	..	..	..	..	..	..
Paraguay	79	113	*4*	0.10	14	7	194	7	..	..	..	..
Peru	226	..	93	0.10	43	2	2	68	..	..	*6,940*	*6,983*
Philippines	..	..	158	..	13,913	64	12	270	0	81,697	..	..
Poland	1,581	282	5,686	0.56	1,932	3	27	880	2,324	92,176	12,355	11,607
Portugal	1,949	307	2,142	0.93	2,639	9	40	337	185	251,752	6,929	7,829
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..

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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]		Trademark applications filed[b]	
	per million people	per million people		% of GDP	$ millions	% of manufactured exports	Receipts $ millions	Payments $ millions	Residents	Non-residents	Residents	Non-residents
	1996–2002[c]	1996–2002[c]	2001	1996–2002[c]	2003	2003	2002	2002	2002	2002	2002	2002
Romania	976	249	997	0.40	653	3	8	108	1,486	141,294	6,026	6,485
Russian Federation	3,319	557	15,846	1.28	3,432	9	227	1,094	24,049	96,315	29,279	14,215
Rwanda	..	..	*4*	..	*1*	*25*	0	0	..	..	..	..
Saudi Arabia	..	..	580	..	*122*	*2*	0	0	61	552	..	..
Senegal	..	..	62	..	33	6	*0*	*1*	..	..	..	..
Serbia and Montenegro	1,031	440	547	..	..	..	..	..	507	90,893	0	4,758
Sierra Leone	..	..	*3*	..	*1*	*31*	1	0	0	177,366	0	787
Singapore	4,745	381	2,603	2.15	87,742	59	224	5,647	511	93,748	3,344	20,282
Slovak Republic	1,984	460	955	0.59	1,217	5	*50*	*91*	276	157,652	2,350	7,742
Slovenia	2,543	1,600	876	1.53	794	6	12	123	332	136,912	1,086	6,612
Somalia	..	..	*0*	..	..	..	..	..	..	..	..	..
South Africa	307	73	2,327	0.76	1,300	6	48	381	184	90,471	..	..
Spain	2,195	861	15,570	1.11	9,932	7	486	3,032	4,330	251,260	66,471	12,460
Sri Lanka	181	44	76	0.18	60	1	..	..	0	89,759	..	..
Sudan	263	131	*43*	0.34	*0*	*0*	..	..	2	177,336	0	795
Swaziland	..	..	*6*	..	*4*	*1*	0	96	0	88,379	0	828
Sweden	5,416	..	10,314	3.98	17,022	17	3,459	1,420	9,443	246,886	0	5,976
Switzerland	3,601	2,319	8,107	2.57	24,121	22	..	..	7,977	246,451	0	10,592
Syrian Arab Republic	29	24	*55*	..	6	1	..	10	0	30	*0*	*0*
Tajikistan	..	..	*20*	..	..	..	1	0	40	89,352	0	1,522
Tanzania	..	..	87	..	3	2	*0*	1	0	176,850	*0*	*16*
Thailand	286	115	727	0.24	*18,203*	*30*	14	1,584	*1,117*	*4,548*	..	..
Togo	..	..	*11*	..	0	0	*0*	*1*	..	..	..	..
Trinidad and Tobago	399	889	*37*	0.12	*22*	*1*	..	..	2	89,901	340	1,317
Tunisia	1,013	34	344	0.63	370	5	18	8	0	72,604	..	..
Turkey	341	37	4,098	0.66	1,064	2	0	362	550	250,492	28,209	7,611
Turkmenistan	..	..	*0*	..	..	..	..	..	0	89,333	0	1,648
Uganda	24	14	91	0.81	12	13	6	6	0	177,305	*0*	*14*
Ukraine	1,774	463	2,256	1.16	*572*	*5*	40	268	37	90,563	0	5,285
United Arab Emirates	..	..	159	..	..	..	..	..	0	89,666	..	..
United Kingdom	2,706	..	47,660	1.89	64,295	24	12,019	8,368	33,671	251,239	51,399	17,135
United States	4,484	..	200,870	2.60	216,016	32	52,643	23,901	198,339	183,398	181,693	30,944
Uruguay	366	50	155	0.26	22	2	0	10	*44*	*572*	5,863	9,514
Uzbekistan	..	..	204	..	..	..	..	..	717	89,902	756	2,166
Venezuela, RB	236	..	535	0.28	118	3	0	219	*56*	*2,292*	..	..
Vietnam	..	..	158	..	*594*	*6*	..	..	2	90,135	0	1,929
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	..	..	*10*	..	17	13	..	9	..	..	..	..
Zambia	51	16	*26*	0.01	1	1	..	..	0	157,720	0	554
Zimbabwe	..	..	113	..	5	1	..	..	0	177,483	*1*	*17*
World	**.. w**	**.. w**	**648,500 s**	**2.36 w**	***1,269,586 s***	**20 w**	**109,808 s**	**120,273 s**	**936,630 s**	**12,882,065 s**	**1,316,564 s**	**604,897 s**
Low income	..	..	13,147	0.73	..	*4*	59	248	1,469	3,003,874	8,489	26,165
Middle income	851	..	83,927	0.87	*266,410*	20	2,447	15,526	81,493	4,789,712	589,487	258,839
Lower middle income	609	..	39,520	1.02	..	23	1,282	9,566	51,330	2,439,396	423,019	134,156
Upper middle income	1,411	308	44,407	0.68	119,785	17	1,165	5,961	30,163	2,350,316	166,468	124,683
Low & middle income	..	..	97,074	0.85	*201,022*	18	2,506	15,774	82,962	7,793,586	597,976	285,004
East Asia & Pacific	663	..	22,722	1.31	..	34	484	7,347	40,469	581,580	321,648	66,765
Europe & Central Asia	1,907	379	39,077	0.98	32,514	9	992	4,118	34,159	3,071,921	106,252	137,176
Latin America & Carib.	..	..	16,045	0.57	40,852	13	563	3,425	7,255	1,166,254	163,101	62,928
Middle East & N. Africa	..	..	4,119	..	*1,152*	3	134	172	669	327,396	1,313	8,433
South Asia	119	102	11,611	0.75	..	4	17	100	220	181,463	5,342	2,242
Sub-Saharan Africa	..	..	3,500	..	..	*4*	317	612	190	2,464,972	320	7,460
High income	3,558	..	551,426	2.54	1,170,986	20	107,302	104,498	853,668	5,088,479	718,588	319,893
Europe EMU	2,607	1,230	148,169	2.20	361,128	16	17,110	38,459	129,155	2,448,271	222,821	92,713

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

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About the data

During the last century technological innovation in public health, nutrition, and agriculture has led to improvements in human welfare—child mortality rates have been reduced, and life expectancy has increased in all regions of the world. Knowledge is a key factor in economic development, and societies that are able to produce, select, adapt, and commercialize knowledge have better chances of achieving sustained growth and improved quality of life. Science, advancing rapidly in virtually all fields—particularly in biotechnology—is playing a growing economic role: countries able to access, generate, and apply scientific knowledge will have a competitive edge over those that cannot. And there is greater appreciation of the need for high-quality scientific input into public policy, such as regional and global environmental concerns.

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

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

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

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

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

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

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

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

Definitions

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

Data sources

Data on researchers, technicians, and expenditures in R&D are from the UNESCO Institute for Statistics. Data on journal articles are from the National Science Foundation's *Science and Engineering Indicators 2004*. 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 Industrial Property Statistics database.