



5.1 Credit, investment, and expenditure

	Private investment		Foreign direct investment				Credit to private sector		Private non-guaranteed debt		Central government expenditure	
	% of gross domestic fixed investment		% of gross domestic investment		% of GDP		% of GDP		% of external debt		% of GDP	
	1980	1996	1980	1996	1980	1996	1980	1996	1980	1996	1980	1995
Albania	..	..	..	16.3	..	3.4	..	3.9	..	0.0	..	31.0
Algeria	67.4	74.8	2.1	0.0	0.8	0.0	42.2	5.5	0.0	0.0	..	..
Angola	..	68.9	..	39.7	..	4.5	..	..	..	0.0	..	..
Argentina	..	85.8	3.5	7.9	0.9	1.5	25.4	18.6	24.3	13.8	18.2	14.5
Armenia	..	33.6	..	9.4	..	1.0	..	7.3	..	0.0	..	..
Australia	..	..	4.6	18.9	1.2	1.6	51.9	77.4	..	..	22.7	27.4
Austria	..	..	1.1	1.1	0.3	1.7	74.2	99.3	..	..	36.6	42.2
Azerbaijan	..	..	..	67.3	..	16.5	..	1.0	..	0.0	..	..
Bangladesh	58.9	62.5	0.0	0.3	0.0	0.0	8.1	20.6	0.0	0.0	10.0	..
Belarus	..	..	..	0.4	..	0.1	..	6.9	..	2.8	..	..
Belgium	..	..	..	..	..	..	29.1	67.5	..	..	50.6	49.4
Benin	..	61.7	2.0	0.5	0.3	0.1	28.6	9.1	0.0	0.0	..	..
Bolivia	51.3	41.9	10.3	17.9	1.5	6.4	15.5	52.8	3.4	5.5	..	23.1
Bosnia and Herzegovina	..	..	..	..	..	..	..	..	..	..	..	..
Botswana	62.1	..	30.5	6.3	10.8	1.5	11.3	11.1	0.0	0.0	31.8	38.0
Brazil	89.7	86.2	3.5	6.8	0.8	1.3	42.5	30.7	23.2	27.3	20.2	37.4
Bulgaria	85.9	85.0	0.0	8.6	0.0	1.2	..	36.9	..	2.0	..	41.6
Burkina Faso	..	57.9	0.0	0.0	0.0	0.0	16.7	7.0	0.0	0.0	12.2	..
Burundi	8.1	15.7	0.0	1.0	0.0	0.1	9.8	15.8	0.0	0.0	21.5	24.9
Cambodia	..	68.6	..	45.4	..	9.4	..	5.3	0.0	0.0	..	..
Cameroon	77.8	95.5	9.2	2.4	1.9	0.4	29.5	8.3	6.9	1.9	15.7	12.7
Canada	..	..	9.4	10.5	2.2	1.1	68.7	88.8	..	..	21.3	24.6
Central African Republic	46.5	41.8	9.5	8.4	0.7	0.5	13.9	4.3	0.0	0.0	22.0	..
Chad	4.8	35.8	0.0	8.0	0.0	1.5	24.4	5.0	0.0	0.0	..	..
Chile	72.2	80.0	3.7	19.9	0.8	5.5	46.8	55.2	38.8	56.7	28.0	19.2
China	43.4	47.0	0.0	11.6	0.0	4.9	53.4	94.7	0.0	0.9	..	8.3
Hong Kong, China	85.1	86.8	..	..	..	..	..	161.7	..	..	..	..
Colombia	58.3	47.8	2.5	18.7	0.5	3.9	30.5	41.4	7.4	28.3	13.4	14.4
Congo, Dem. Rep.	42.4	..	0.0	0.5	0.0	0.0	2.8	1.0	0.0	0.0	12.4	7.6
Congo, Rep.	..	91.4	6.6	0.6	2.3	0.3	15.5	8.0	0.0	0.0	49.4	..
Costa Rica	61.3	75.1	4.1	19.7	1.1	4.5	27.9	17.6	15.0	5.6	25.0	29.1
Côte d'Ivoire	53.2	69.1	3.5	1.4	0.9	0.2	40.8	19.7	27.0	17.0	31.7	..
Croatia	..	59.6	..	12.4	..	1.8	..	30.1	..	18.5	..	46.5
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	..	..	0.0	7.6	0.0	2.6	..	59.0	0.0	10.6	..	39.9
Denmark	..	..	1.1	14.1	0.2	0.4	42.1	33.4	..	..	39.4	43.4
Dominican Republic	68.4	66.5	5.6	12.3	1.4	3.0	30.8	26.6	12.7	0.1	16.9	15.6
Ecuador	59.7	78.3	2.3	13.4	0.6	2.3	22.8	33.5	18.7	2.2	14.2	15.7
Egypt, Arab Rep.	30.1	59.1	8.7	5.7	2.4	0.9	15.2	41.5	1.4	0.4	45.6	37.4
El Salvador	44.8	78.0	1.2	1.5	0.2	0.2	33.6	36.6	17.6	0.1	17.1	13.7
Eritrea	..	52.7	..	..	..	..	..	..	..	0.0	..	..
Estonia	..	80.2	..	12.9	..	3.5	..	18.1	..	0.9	..	35.2
Ethiopia	..	63.9	0.0	0.4	0.0	0.1	20.1	21.7	0.0	0.0	19.5	18.1
Finland	..	..	0.2	5.1	0.1	0.9	48.5	61.5	..	..	28.1	42.7
France	..	..	2.0	8.5	0.5	1.4	104.8	81.7	..	..	39.5	46.4
Gabon	80.1	72.0	2.7	-5.7	0.7	-1.1	15.8	6.6	0.0	0.0	36.5	..
Gambia, The	35.4	63.1	0.0	10.2	0.0	2.2	24.2	10.6	0.0	0.0	32.1	21.5
Georgia	..	73.7	..	4.6	..	0.2	..	..	..	0.0	..	..
Germany	..	..	..	2.2	..	-0.1	..	104.9	..	..	..	33.9
Ghana	..	26.3	6.2	10.1	0.4	1.9	2.2	6.6	0.7	4.4	10.9	22.1
Greece	..	..	5.9	7.0	1.4	0.7	43.9	35.7	..	..	29.3	33.6
Guatemala	63.8	81.3	8.9	3.8	1.4	0.5	16.2	18.9	24.2	3.2	12.1	8.9
Guinea	..	57.7	..	4.7	..	0.6	..	4.8	0.0	0.0	..	..
Guinea-Bissau	..	32.5	0.0	1.7	0.0	0.4	..	0.1	0.0	0.0	..	..
Haiti	..	27.6	5.3	0.0	0.9	0.2	15.7	14.3	0.0	0.0	17.4	..
Honduras	62.1	62.7	0.9	5.8	0.2	1.9	28.8	26.7	13.0	2.8	..	..



	Private investment		Foreign direct investment				Credit to private sector		Private non-guaranteed debt		Central government expenditure	
	% of gross domestic fixed investment		% of gross domestic investment		% of GDP		% of GDP		% of external debt		% of GDP	
	1980	1996	1980	1996	1980	1996	1980	1996	1980	1996	1980	1995
Hungary	..	..	0.0	16.5	0.0	4.4	48.3	22.3	0.0	18.6	56.2	..
India	55.5	66.1	0.2	2.7	0.0	0.7	25.4	23.7	1.6	8.2	13.3	16.4
Indonesia	..	60.5	1.0	11.1	0.2	3.5	8.8	55.8	15.0	28.4	22.1	14.7
Iran, Islamic Rep.	..	..	0.0	..	0.0	..	43.8	23.2	..	1.1	35.7	23.2
Iraq	..	..	..	..	0.0	..	..	..	0.0	0.0	..	..
Ireland	..	..	..	23.6	1.7	3.5	44.0	78.3	..	..	45.1	40.3
Israel	..	..	1.0	7.3	0.2	1.7	68.3	66.8	..	..	70.2	44.7
Italy	..	..	0.5	2.5	0.1	0.3	55.9	52.1	..	..	41.3	48.6
Jamaica	..	..	6.5	14.9	1.0	4.0	21.9	31.1	3.9	3.0	41.5	..
Japan	..	..	0.1	0.0	0.0	0.0	132.7	207.1	..	..	18.4	23.7
Jordan	51.4	77.1	2.3	0.6	0.9	0.2	51.0	71.5	0.0	0.5	41.3	31.6
Kazakhstan	..	98.8	..	6.4	..	1.5	..	7.1	..	7.4	..	..
Kenya	54.7	44.5	3.7	0.7	1.1	0.1	29.5	34.6	12.9	5.4	25.3	29.8
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	76.2	76.0	0.0	1.3	0.0	0.5	50.9	74.8	..	..	17.0	17.7
Kuwait	..	..	0.0	..	0.0	..	33.1	38.6	..	..	27.7	51.4
Kyrgyz Republic	..	87.5	..	13.8	..	2.6	..	..	..	0.0	..	..
Lao PDR	..	..	..	18.4	..	5.6	..	9.1	0.0	0.0	..	..
Latvia	..	89.3	..	34.9	..	6.5	..	7.3	..	0.0	..	32.2
Lebanon	..	71.8	..	2.0	..	0.6	116.4	63.8	0.0	10.3	..	32.5
Lesotho	..	36.8	2.9	3.0	1.2	3.2	9.8	17.5	0.0	0.0	..	50.7
Libya	8.3	..	-13.9	..	-3.1	..	11.2	..	..	..	..	..
Lithuania	..	86.3	..	9.3	..	2.0	..	11.9	..	5.0	..	25.5
Macedonia, FYR	..	..	..	4.6	..	0.7	..	..	..	31.6	..	..
Madagascar	..	42.5	-0.2	2.4	0.0	0.2	19.2	9.4	0.0	0.0	..	17.2
Malawi	21.4	84.3	3.1	0.3	0.8	0.0	20.7	4.2	0.0	0.0	34.6	..
Malaysia	62.6	69.8	12.5	11.0	3.8	4.5	49.9	129.5	18.9	32.7	28.5	22.9
Mali	..	54.4	0.9	3.3	0.1	0.9	23.0	13.0	0.0	0.0	20.6	..
Mauritania	..	68.3	10.6	2.1	3.8	0.5	31.0	23.6	0.0	0.0	..	..
Mauritius	64.0	64.8	0.5	3.3	0.1	0.9	21.6	44.7	5.1	13.5	27.2	22.6
Mexico	57.0	79.1	4.1	10.9	1.1	2.3	19.7	21.6	12.7	12.9	15.7	15.9
Moldova	..	78.5	..	8.0	..	2.2	..	7.3	..	0.0	..	..
Mongolia	..	..	..	2.3	..	0.5	..	12.3	..	0.0	..	21.5
Morocco	44.0	57.8	2.0	4.1	0.5	0.8	27.0	45.8	1.6	1.8	33.1	..
Mozambique	27.0	65.3	0.0	3.5	0.0	1.7	..	17.8	..	0.7	..	..
Myanmar	20.6	60.6	..	..	..	..	5.5	..	..	..	15.8	10.6
Namibia	42.0	62.2	0.0	21.4	0.0	4.2	..	50.5	0.0	0.0	..	38.5
Nepal	60.2	67.8	0.0	1.9	0.0	0.4	8.6	24.6	0.0	0.0	14.3	17.5
Netherlands	..	..	6.0	18.7	1.3	2.0	93.6	105.7	..	..	52.9	50.8
New Zealand	..	..	3.7	31.5	0.8	0.4	18.4	93.3	..	..	38.3	32.9
Nicaragua	..	38.6	0.0	8.2	0.0	2.3	48.3	28.6	0.0	0.0	30.4	33.2
Niger	..	50.6	5.3	0.0	1.9	0.0	16.9	3.1	35.3	7.0	18.4	..
Nigeria	..	62.5	-5.4	23.2	-1.2	4.3	12.2	10.6	12.3	1.0	..	..
Norway	..	..	0.4	..	0.1	2.5	51.4	72.3	..	..	34.4	39.0
Oman	34.1	..	7.4	4.0	1.6	0.4	13.7	29.2	0.0	0.1	38.5	42.4
Pakistan	36.1	52.5	1.4	5.7	0.3	1.1	24.0	26.7	0.2	6.7	17.5	23.2
Panama	..	83.8	-4.4	9.9	-1.2	2.9	58.1	80.6	0.0	1.1	30.5	24.7
Papua New Guinea	58.6	85.8	11.8	16.2	3.0	4.4	17.6	18.2	19.3	31.9	34.4	29.4
Paraguay	..	..	..	10.1	0.7	1.3	13.1	29.3	15.9	1.0	9.9	13.0
Peru	75.6	82.9	0.4	25.0	0.1	5.9	12.9	19.6	6.5	4.7	19.5	17.2
Philippines	69.0	81.1	-1.1	6.9	-0.3	1.7	42.2	54.2	14.1	11.9	13.4	17.9
Poland	..	81.9	0.1	16.4	0.0	3.3	6.4	15.5	..	3.9	..	43.0
Portugal	..	..	..	8.3	0.5	0.6	54.0	64.3	..	..	33.1	44.1
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..
Romania	..	73.8	..	2.9	..	0.7	..	..	0.0	4.5	44.8	32.0
Russian Federation	..	91.1	..	2.5	..	0.6	..	7.4	..	0.0	..	24.0



5.1

	Private investment		Foreign direct investment				Credit to private sector		Private non-guaranteed debt		Central government expenditure	
	% of gross domestic fixed investment		% of gross domestic investment		% of GDP		% of GDP		% of external debt		% of GDP	
	1980	1996	1980	1996	1980	1996	1980	1996	1980	1996	1980	1995
Rwanda	..	70.0	8.7	0.6	1.4	0.1	5.7	7.1	0.0	0.0	14.3	25.8
Saudi Arabia	..	..	-9.4	-7.7	-2.0	-1.5	22.8	63.8	..	..	..	..
Senegal	62.1	70.3	3.1	5.3	0.5	0.9	42.3	15.8	0.6	1.1	23.1	..
Sierra Leone	..	64.4	-9.0	5.7	-1.6	0.5	7.2	2.5	0.0	0.0	26.5	16.4
Singapore	75.6	..	22.8	28.6	10.5	10.0	81.0	108.8	..	..	20.0	15.9
Slovak Republic	..	..	..	3.9	..	1.5	..	31.7	0.0	7.1	..	..
Slovenia	..	26.7	..	4.3	..	1.0	..	28.5	..	48.0	..	..
South Africa	50.8	..	-0.1	0.6	0.0	0.1	60.3	137.1	..	15.1	22.1	33.7
Spain	..	..	3.0	5.2	0.7	1.1	78.2	74.9	..	..	26.7	38.2
Sri Lanka	77.4	..	3.2	3.4	1.1	0.9	17.2	25.2	0.2	1.0	41.4	29.3
Sudan	38.9	..	0.0	..	0.0	..	14.9	5.3	6.3	2.9	19.6	..
Sweden	..	..	0.9	41.2	0.2	2.2	78.0	37.1	..	..	39.3	49.5
Switzerland	..	..	..	..	..	1.2	113.7	167.7	..	..	20.1	26.6
Syrian Arab Republic	36.1	..	0.0	..	0.0	0.6	5.7	10.9	0.0	0.0	48.2	24.5
Tajikistan	..	..	..	4.7	..	0.8	..	..	..	0.0	..	..
Tanzania	..	..	..	14.2	..	2.6	..	3.4	3.4	0.6	..	..
Thailand	68.1	77.6	2.0	3.1	0.6	1.3	41.7	100.0	20.5	39.8	18.8	15.8
Togo	28.3	78.2	13.1	0.0	3.7	0.0	27.5	19.2	0.0	0.0	30.8	..
Trinidad and Tobago	..	88.0	9.7	38.1	3.0	5.9	28.7	46.3	0.0	3.5	30.9	29.2
Tunisia	46.9	51.0	9.1	6.8	2.7	1.6	46.4	63.5	5.1	1.9	31.6	32.8
Turkey	..	81.4	0.1	1.7	0.0	0.4	13.6	22.8	2.8	13.1	21.3	22.2
Turkmenistan	..	..	..	..	..	2.5	..	17.5	..	0.0	..	..
Uganda	..	63.9	0.0	12.1	0.0	2.0	3.9	4.7	0.0	0.0	6.2	..
Ukraine	..	..	..	3.5	..	0.8	..	1.4	..	1.9	..	..
United Arab Emirates	..	..	..	..	..	..	22.9	50.0	..	..	12.1	11.8
United Kingdom	..	..	11.2	..	1.9	2.8	27.6	124.1	..	..	38.3	42.0
United States	..	..	3.1	5.4	0.6	1.0	80.3	115.4	..	..	22.0	22.7
Uruguay	67.9	71.1	16.5	7.7	2.9	0.9	37.2	30.3	12.7	2.3	21.8	31.5
Uzbekistan	..	..	..	1.4	..	0.2	..	..	..	0.0	..	..
Venezuela	51.5	31.5	0.3	16.3	0.1	2.7	48.2	9.6	10.8	5.1	18.7	18.8
Vietnam	..	76.3	..	23.0	..	6.4	..	8.2	0.0	0.0	..	..
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	..	67.6	..	6.6	..	1.7	..	3.4	..	0.0	..	24.7
Yugoslavia, FR (Serb./Mont.)	..	..	0.0	..	0.0	..	..	..	59.5	20.5	..	..
Zambia	..	48.7	6.8	11.4	1.6	1.7	19.9	9.3	2.7	0.2	37.1	25.0
Zimbabwe	77.1	90.4	0.1	4.7	0.0	0.8	33.2	35.4	0.0	8.6	34.8	34.1
World	.. w	68.1 w	2.3 w	8.1 w	0.6 w	1.1 w	69.8 w	107.7 w	.. w	.. w	25.7 w	29.1 w
Low income	48.5	53.2	0.0	9.8	0.0	3.3	32.3	62.3	4.8	3.1	..	12.9
Excl. China & India	..	63.2	-0.1	10.6	0.0	2.1	17.4	17.7	..	..	..	..
Middle income	..	79.1	1.1	7.8	0.3	1.8	30.4	35.0	12.7	15.2	..	..
Lower middle income	..	75.0	1.5	6.5	0.4	1.6	29.9	34.8	..	..	..	22.6
Upper middle income	66.8	81.3	0.8	9.2	0.2	2.0	30.7	35.1	..	..	20.3	29.0
Low & middle income	59.8	66.6	0.8	8.5	0.2	2.2	16.7	18.7	..	..	..	21.9
East Asia & Pacific	50.5	56.9	1.1	10.4	0.4	4.0	41.5	85.4	13.5	19.4	..	11.5
Europe & Central Asia	..	84.5	0.1	5.7	0.0	1.3	17.0	15.7	15.3	7.3	..	30.9
Latin America & Carib.	70.6	80.2	3.4	10.4	0.8	2.1	32.5	27.5	16.5	16.9	18.8	24.5
Middle East & N. Africa	..	..	3.1	3.3	0.7	0.7	28.6	37.5	0.7	1.8	..	..
South Asia	54.4	64.4	0.4	2.9	0.1	0.7	23.6	23.9	0.9	6.2	14.2	17.6
Sub-Saharan Africa	..	64.8	0.0	6.0	0.0	1.1	31.3	68.1	5.4	4.2	22.2	..
High income	..	..	2.9	5.4	0.7	0.9	82.7	82.9	..	..	26.3	31.3



About the data

The indicators in the table measure the relative size of states and markets in national economies. There is no ideal size for states, and size alone does not capture their full effect on markets. Large states may support prosperous and effective markets; small states may be predatory toward markets. The resources of a large state may be used to correct genuine market failures—or merely to subsidize state enterprises making goods or providing services that the private sector might have produced more efficiently. A large share of private domestic investment in total investment may reflect a highly competitive and efficient private sector—or one that is subsidized and protected. Thus, like other indicators in this book, the indicators here provide an important but incomplete picture of what they measure—in this case the roles of states and markets.

Because data on subnational units of government—state, provincial, and municipal—are not readily available, the size of the public sector is measured here by the size of the central government. While the central government is usually the largest economic agent in a country and typically accounts for most public sector revenues, expenditures, and deficits, in some countries—especially large ones—state, provincial, and local governments are important participants in the economy. In addition, “central government” activities can vary depending on the accounting practice followed. In most countries central government finance data are consolidated into one overall account, but in others only budgetary central government accounts are available, which often omit the operations of state-owned enterprises (see *Primary data documentation*).

When direct estimates of private gross domestic fixed investment are not available, such investment is estimated as the difference between total gross domestic investment and consolidated public investment. Total investment may be estimated directly from surveys of enterprises and administrative records or indirectly using the commodity flow method. Consolidated measures of public investment may omit important subnational units of government. In addition, public investment data may include financial as well as physical capital investment. As the difference between two estimated quantities, private investment may be undervalued or overvalued and subject to large errors over time. (See the notes to table 4.9 for further discussion on measuring domestic investment.)

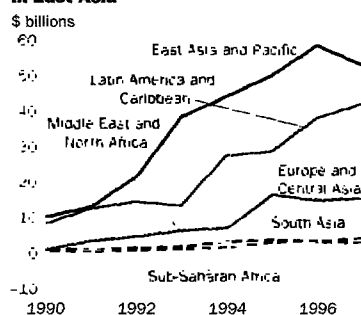
Statistics on foreign direct investment are based on balance of payments data reported by the International

Monetary Fund (IMF), supplemented by data on net foreign direct investment reported by the Organisation for Economic Co-operation and Development and official national sources. The data suffer from deficiencies relating to definitions, coverage, and cross-country comparability. (See the notes to table 6.8 for a detailed discussion of data on foreign direct investment.)

Data on domestic credit to the private sector are taken from the banking survey of the IMF's *International Financial Statistics* or, when the broader aggregate is not available, from its monetary survey. The monetary survey includes monetary authorities (the central bank) and deposit money banks. In addition to these, the banking survey includes other banking institutions such as savings and loan institutions, finance companies, and development banks. In some cases credit to the private sector may include credit to state-owned or partially state-owned enterprises.

Figure 5.1a

Foreign direct investment has retreated in East Asia



Source: World Bank 1998.

The surge in net foreign direct investment (FDI) flows during the 1990s has been spurred by three main factors: increasing liberalization of developing economies, strong growth in GDP and trade of the main developing economy recipients of FDI, and falling costs and improving quality of communication and transportation services.

FDI leveled off in 1997 to \$120 billion after several years of rapid growth. The ratio of FDI to GDP in developing economies quadrupled from 0.6 percent in 1990 to 2.5 percent in 1997, while nominal levels quintupled.

The deceleration in 1997 reflected a reversal in East Asia and the Pacific, where flows fell 9 percent, to \$53 billion. In contrast, flows to Latin America and the Caribbean increased 10 percent, to \$42 billion.

Definitions

• **Private investment** covers gross outlays by the private sector (including private nonprofit agencies) on additions to its fixed domestic assets. Gross domestic fixed investment includes similar outlays by the public sector. No allowance is made for the depreciation of assets. • **Foreign direct investment** is net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. Gross domestic investment (used in the denominator) is gross domestic fixed investment plus net changes in stocks inventories. • **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. • **Private nonguaranteed debt** consists of external obligations of private debtors that are not guaranteed for repayment by a public entity. Total external debt is the sum of public and publicly guaranteed long-term debt, private nonguaranteed long-term debt, IMF credit, and short-term debt. • **Central government expenditure** comprises the expenditures of all government offices, departments, establishments, and other bodies that are agencies or instruments of the central authority of a country. It includes both current and capital (development) expenditures.

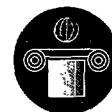
Data sources

Private investment data are from the International Finance Corporation's *Trends in Private Investment in Developing Countries 1997* and World Bank estimates. Data on foreign direct investment are based on estimates compiled by the IMF in the *Balance of Payments Statistics Yearbook*, supplemented by World Bank staff estimates. Data on domestic credit are from the IMF's *International Financial Statistics*, and data on government expenditure are from the IMF's *Government Finance Statistics Yearbook*. External debt figures are from the World Bank's Debtor Reporting System as reported in *Global Development Finance 1998*.



5.2 Stock markets

	Market capitalization				Value traded		Turnover ratio		Listed domestic companies		IFC Investable index	
	\$ millions		% of GDP		% of GDP		value of shares traded as % of capitalization		1990	1996	% change in price index	
	1990	1997	1990	1996	1990	1996	1990	1997			1996	1997
Albania												
Algeria												
Angola												
Argentina	3,268	59,252	2.3	15.2	0.6	1.5	33.6	49.5	179	147	18.7	17.4
Armenia		7		0.2		0.1		0.8		10		
Australia	107,611	311,988	36.4	79.5	13.3	37.1	31.6	52.2	1,089	1,135		
Austria	11,476	33,953	7.2	15.0	11.7	9.1	110.3	61.8	97	106		
Azerbaijan												
Bangladesh	321	4,551	1.4	14.3	0.0	2.3	1.5	24.2	134	186		
Belarus												
Belgium	65,449	119,831	33.8	45.3	3.3	9.9			182	139		
Benin												
Bolivia		114		1.6		0.0		0.6		10		
Bosnia and Herzegovina												
Botswana	261	326	6.6	6.6	0.2	0.6	6.1	9.0	9	12		
Brazil	16,354	255,478	3.4	29.0	1.2	15.0	23.6	85.8	581	551	29.8	21.8
Bulgaria		7		0.1		0.0		0.1		15		
Burkina Faso												
Burundi												
Cambodia												
Cameroon												
Canada	241,920	486,268	42.6	83.9	12.5	45.8	26.7	62.2	1,144	1,265		
Central African Republic												
Chad												
Chile	13,645	72,046	44.9	88.8	2.6	11.4	6.3	10.5	215	291	-17.1	3.6
China	2,028	206,366	0.5	14.0	0.2	31.4	158.9	231.0	14	540	36.3	-25.0
Hong Kong, China	83,397	449,381	111.5	216.6	46.3	76.2	43.1	44.2	284	561		
Colombia	1,416	19,530	3.5	20.1	0.2	1.6	5.6	10.2	80	189	5.9	30.4
Congo, Dem. Rep.												
Congo, Rep.												
Costa Rica	311	782	5.5	8.7	0.1	0.2	5.8	3.5	82	114		
Côte d'Ivoire	549	914	5.1	8.6	0.2	0.2	3.4	2.2	23	31		
Croatia		581		3.2		0.3		0.0		61		
Cuba												
Czech Republic		12,786		32.9		15.4		47.9		1,588	16.9	-22.0
Denmark	39,063	71,688	30.3	41.1	8.6	19.9	28.0	54.2	258	237		
Dominican Republic												
Ecuador	69	1,946	0.5	10.2		0.6	0.0	5.2	65	42		
Egypt, Arab Rep.	1,765	20,830	4.1	20.9	0.3	3.6		33.5	573	646		
El Salvador		450		4.3		0.1				49		
Eritrea												
Estonia												
Ethiopia												
Finland	22,721	63,078	16.9	50.9	2.9	18.1			73	71		
France	314,384	591,123	26.3	38.4	9.8	18.0			578	686		
Gabon												
Gambia, The												
Georgia												
Germany	355,073	670,997	22.9	28.5	22.1	32.7	139.3	123.2	413	681		
Ghana	76	1,492	1.2	23.5	0.0	0.3	0.0	1.1	13	21		
Greece	15,228	34,164	18.4	19.7	4.7	6.7	36.3	73.8	145	224	0.3	33.7
Guatemala		168		1.1		0.0		2.5		9		
Guinea												
Guinea-Bissau												
Haiti												
Honduras	40	338	1.3	8.5		0.0	0.0	0.0	26	111		



	Market capitalization				Value traded		Turnover ratio		Listed domestic companies		IFC Investable index	
	\$ millions		% of GDP		% of GDP		value of shares traded as % of capitalization		1990	1996	% change in price index	
	1990	1997	1990	1996	1990	1996	1990	1997	1990	1996	1996	1997
Hungary	505	14,975	1.5	11.8	0.4	3.7	6.4	73.4	21	45	99.9	60.0
India	38,567	128,466	12.9	34.4	7.3	30.7	65.9	41.6	6,200	8,800	-2.0	5.8
Indonesia	8,081	29,105	7.1	40.3	3.5	14.2	75.8	64.2	125	253	16.4	-73.6
Iran, Islamic Rep.	34,282	17,008	28.0	..	4.3	..	30.4	22.2	97	220	..	..
Iraq	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	..	12,243	..	17.6	..	6.7	..	24.5	..	76	..	..
Israel	3,324	45,268	6.0	39.6	10.1	10.0	95.8	26.7	216	655	..	21.7
Italy	148,766	258,160	13.6	21.4	3.9	8.5	26.8	43.8	220	244	..	..
Jamaica	911	1,887	21.4	42.6	0.8	0.9	3.4	2.5	44	46	..	..
Japan	2,917,679	3,088,850	98.4	67.2	54.0	27.2	43.8	37.1	..	53	13.4 ^a	..
Jordan	2,001	5,446	49.8	62.7	10.1	4.1	20.0	9.7	105	98	1.1	12.6
Kazakhstan	..	..	..	..	..	..	..	..	..	..	..	..
Kenya	453	1,846	5.3	20.0	0.1	0.7	2.2	3.7	54	56	..	..
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	110,594	41,881	43.6	28.6	29.9	36.6	61.3	172.3	669	760	-38.7	-68.9
Kuwait	..	18,817	..	51.1	..	24.0	..	..	2,071	2,334	..	..
Kyrgyz Republic	..	5	..	0.3	..	0.0	..	3.7	..	27	..	..
Lao PDR	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	..	148	..	2.9	..	0.3	..	14.6	..	34	..	..
Lebanon	..	..	..	..	..	..	..	..	..	..	..	..
Lesotho	..	..	..	..	..	..	..	..	..	..	..	..
Libya	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	..	900	..	11.6	..	0.6	..	8.9	..	460	..	..
Macedonia, FYR	..	..	..	..	..	..	..	..	..	..	..	..
Madagascar	..	..	..	..	..	..	..	..	..	..	..	..
Malawi	..	..	..	..	..	..	..	..	..	..	..	..
Malaysia	48,611	93,608	113.6	309.6	25.4	174.9	24.6	72.6	282	621	24.1	-72.9
Mali	..	..	..	..	..	..	..	..	..	..	..	..
Mauritania	..	..	..	..	..	..	..	..	..	..	..	..
Mauritius	268	1,676	10.1	39.0	0.2	1.8	1.9	5.4	13	40	..	..
Mexico	32,725	156,595	12.5	31.8	4.6	12.9	44.1	39.7	199	193	16.9	48.8
Moldova	..	..	..	..	..	..	..	..	..	..	..	..
Mongolia	..	..	..	..	..	..	..	..	..	..	..	..
Morocco	966	12,177	3.7	23.6	0.2	1.2	..	10.2	71	47	..	..
Mozambique	..	..	..	..	..	..	..	..	..	..	..	..
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..
Namibia	21	473	0.7	14.6	0.0	1.2	0.0	12.1	3	12	..	..
Nepal	..	208	..	4.7	..	0.1	..	2.3	..	90	..	..
Netherlands	119,825	378,721	46.4	96.5	15.6	86.5	29.0	92.4	260	217	..	..
New Zealand	8,835	38,288	24.5	58.8	5.4	15.2	17.3	28.1	171	158	..	..
Nicaragua	..	..	..	..	..	..	..	..	..	..	..	..
Niger	..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	1,372	3,646	4.8	11.1	0.0	0.2	0.9	3.9	131	183	..	..
Norway	26,130	57,423	21.7	36.4	11.6	22.7	54.4	70.3	112	158	..	..
Oman	945	2,673	9.0	16.4	1.1	1.8	12.3	21.3	55	143	..	..
Pakistan	2,850	10,966	7.1	16.4	0.6	9.3	8.7	103.7	487	782	-19.3	26.9
Panama	226	831	3.4	10.5	0.0	0.1	0.9	1.1	13	16	..	..
Papua New Guinea	..	..	..	..	..	..	..	..	..	..	..	..
Paraguay	..	383	..	4.0	..	0.3	..	11.3	..	60	..	..
Peru	812	17,586	2.5	20.2	0.3	6.2	19.3	25.6	294	231	-0.2	12.5
Philippines	5,927	31,361	13.4	96.2	2.7	30.4	13.6	34.8	153	216	13.1	-61.6
Poland	144	12,135	0.2	6.2	0.0	4.1	89.7	78.4	9	83	71.8	-18.5
Portugal	9,201	38,954	13.7	23.7	2.5	6.9	16.9	66.8	181	158	26.2	44.4
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..
Romania	..	61	..	0.2	..	0.0	..	7.2	..	17	..	..
Russian Federation	244	128,207	0.0	8.5	..	0.7	..	19.4	13	73	..	..



5.2

	Market capitalization				Value traded		Turnover ratio		Listed domestic companies		IFC Investable index	
	\$ millions		% of GDP		% of GDP		value of shares traded as % of capitalization		1990	1996	% change in price index	
	1990	1997	1990	1996	1990	1996	1990	1997			1996	1997
Rwanda	..	..	..	..	..	..	..	..	..	..	..	..
Saudi Arabia	..	40,961	..	32.7	..	5.0	..	15.6	..	69	..	..
Senegal	..	..	..	..	..	..	..	..	..	..	..	..
Sierra Leone	..	..	..	..	..	..	..	..	..	..	..	..
Singapore	34,308	150,215	91.6	159.7	54.2	45.4	..	28.7	150	223	..	..
Slovak Republic	..	1,826	..	11.5	..	12.2	..	109.4	..	816	..	..
Slovenia	..	663	..	3.6	..	2.2	..	68.8	24	21	..	..
South Africa	137,540	232,069	128.9	191.3	7.6	21.5	..	18.3	732	626	-19.2	-13.8
Spain	111,404	242,779	22.6	41.7	8.3	42.8	..	..	427	357	..	..
Sri Lanka	917	2,096	11.4	13.3	0.5	1.0	5.8	15.6	175	235	-8.6	22.3
Sudan	..	..	..	..	..	..	..	..	..	..	..	..
Sweden	97,929	247,217	43.2	98.8	7.8	54.7	14.9	64.4	258	229	..	..
Switzerland	160,044	402,104	70.1	137.0	29.6	133.9	0.0	94.0	182	213	..	..
Syrian Arab Republic	..	..	..	..	..	..	..	..	..	..	..	..
Tajikistan	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	..	..	..	..	..	..	..	..	..	..	..	..
Thailand	23,896	23,538	27.9	53.9	26.7	24.0	92.6	39.2	214	454	-41.1	-78.8
Togo	..	..	..	..	..	..	..	..	..	..	..	..
Trinidad and Tobago	696	1,405	13.7	25.7	1.1	2.0	10.0	8.3	30	23	..	..
Tunisia	533	4,263	4.3	21.8	0.2	1.4	3.3	6.8	13	30	..	..
Turkey	19,065	61,090	12.7	16.5	3.9	20.3	42.5	113.5	110	229	42.3	109.9
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	..	..	..	..	..	..	..	..	..	..	..	..
Ukraine	..	..	..	..	..	..	..	..	..	..	..	..
United Arab Emirates	..	..	..	..	..	..	..	..	..	..	..	..
United Kingdom	848,866	1,740,246	87.0	151.9	28.6	50.5	33.3	36.8	1,701	2,433	23.0 ^b	..
United States	3,059,434	8,484,433	55.1	115.6	31.5	97.0	53.4	92.8	6,599	8,479	20.3 ^c	..
Uruguay	38	266	0.5	1.5	0.0	0.0	0.0	1.7	36	18	..	..
Uzbekistan	..	128	..	0.5	..	0.3	..	..	..	4	..	..
Venezuela	8,361	14,581	17.2	14.9	4.6	1.9	43.0	31.0	76	88	117.7	25.7
Vietnam	..	..	..	..	..	..	..	..	..	..	..	..
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Yugoslavia, FR (Serb./Mont.)	434	..	..	..	..	..	..	..	24	25	..	..
Zambia	..	229	..	6.8	..	0.1	..	1.0	..	5	..	..
Zimbabwe	2,395	1,969	35.2	48.1	0.7	3.4	2.9	17.1	57	64	72.4	-46.8
World	9,399,355 s	20,177,662 s	51.7 w	70.6 w	29.0 w	48.2 w	47.6 w	77.1 w	29,189 s	42,404 s	..	..
Low income	47,424	265,322	8.3	19.5	3.4	27.4	100.9	205.2	7,261	11,150	..	..
Excl. China & India	8,857	28,962	..	..	..	..	..	..	1,061	1,810	..	..
Middle income	328,104	1,461,083	21.6	40.0	10.1	15.0	..	39.5	4,195	8,895	..	..
Lower middle income	73,734	436,341	9.8	25.8	..	9.4	..	34.5	1,859	3,664	..	..
Upper middle income	254,370	1,024,742	23.3	51.6	3.5	19.6	29.6	43.5	2,336	5,231	..	..
Low & middle income	375,528	1,726,405	18.5	34.4	5.5	18.4	..	85.1	11,456	20,045	..	..
East Asia & Pacific	86,515	692,427	16.3	49.1	6.6	37.7	118.3	208.5	774	2,084	..	..
Europe & Central Asia	19,065	103,563	2.1	10.5	..	6.0	..	45.5	110	3,428	..	..
Latin America & Carib.	78,506	481,799	7.4	27.4	2.1	9.9	29.5	39.0	1,748	2,191	..	..
Middle East & N. Africa	6,210	51,373	..	24.2	..	2.6	..	14.4	817	1,184	..	..
South Asia	42,655	139,879	11.6	29.7	6.0	24.7	54.5	23.1	6,996	10,102	..	..
Sub-Saharan Africa	142,577	257,364	56.3	123.1	4.1	13.3	..	8.1	1,011	1,056	..	..
High income	9,023,827	18,451,257	56.4	78.5	32.5	54.6	48.8	75.1	17,733	22,359	..	..

a.Data refer to the Nikkei index. b.Data refer to the FT 100 index. c.Data refer to the S&P 500 index.



About the data

Financial market development is closely related to an economy's overall development. At low levels of development, commercial banks tend to dominate the financial system. As economies grow, specialized financial intermediaries and equity markets develop.

A variety of measures are needed to gauge a country's level of stock market development. Single measures suffer from conceptual and statistical weaknesses such as inaccurate reporting and different accounting standards. The stock market indicators presented in the table include measures of size (market capitalization and number of listed domestic companies) and liquidity (value traded as a percentage of GDP and turnover ratio). The percentage change in stock market prices in U.S. dollars comes from the International Finance Corporation's Investable (IFCI) index, an important measure of performance. Regulatory and institutional factors that can boost investor confidence, such as the existence of a securities and exchange commission and the quality of investor protection laws, influence the functioning of stock markets but are not included in this table.

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

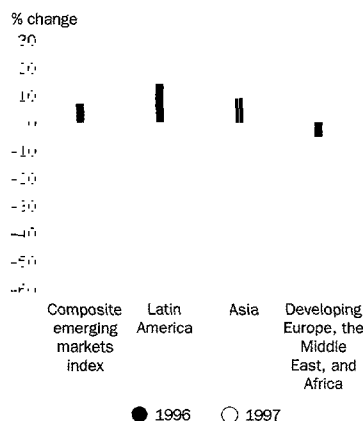
Market liquidity, the ability to easily buy and sell securities, is measured by dividing the total value traded by GDP. This indicator complements the market capitalization ratio by showing whether market size is matched by trading. The turnover ratio—shares traded as a percentage of market capitalization—is also a measure of liquidity as well as of transactions costs. (High turnover indicates low transactions costs.) The turnover ratio also complements the ratio of value traded to GDP, because turnover 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 small value traded ratio. Liquidity is an important attribute of stock market development 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.

The IFC has developed a series of indexes for investors interested in investing in stock markets in

developing countries. The IFC Investable (IFCI) index series includes country indexes (shown in table 5.2), regional indexes, and the Composite index. The IFCI Composite index tracks 1,426 stocks with a market value of more than \$769 billion in 31 emerging markets. The IFCI Composite index is the broadest index available, designed to measure returns on emerging market stocks that are legally and practically open to foreign portfolio investment. It is a widely used benchmark for international portfolio management purposes. See IFC's *The IFC Indexes: Methodology, Definitions, and Practices* booklet for further information on the IFCI indexes.

Figure 5.2a

Emerging stock markets have been volatile



Source: IFC Emerging Markets Database.

The International Finance Corporation's Investable (IFCI) index covers 31 emerging markets. The figure shows the percentage change (in U.S. dollar terms) in emerging market stock prices for the composite index, Latin America, Asia, and developing Europe, the Middle East, and Africa

It was a rollercoaster year for emerging markets in 1997. A stock market boom in Latin America and Eastern Europe was accompanied by substantial portfolio equity flows, but the onset of the East Asian financial crisis in July 1997—and its effects on other regions later in the year—led to a general retreat from new investments in emerging markets.

Definitions

• **Market capitalization** (also known as market value) is the share price times the number of shares outstanding. • **Value traded** refers to the total value of shares traded during the period. • **Turnover ratio** is the total value of shares traded during the period divided by the average market capitalization for the period. Average market capitalization is calculated as the average of the end-of-period values for the current period and the previous period. **Listed domestic companies** is the number of 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. • **IFCI investable index price change** is the U.S. dollar price change in the stock markets covered by the IFCI index.

Data sources

Data are from the IFC's *Emerging Stock Markets Factbook 1997*, with supplemental data from IFC. IFC collects data through an annual survey of the world's stock exchanges, supplemented by information provided by Reuters and IFC's network of correspondents. GDP data are from the World Bank's national accounts data files. *About the data* is based on Demirgüç-Kunt and Levine (1996b).



5.3 Portfolio investment regulation and risk

	Entry and exit regulations			Composite ICRG risk rating	Institutional Investor credit rating ^a	Euromoney country credit-worthiness rating	Moody's sovereign long-term debt rating		Standard & Poor's sovereign long-term debt rating	
	Entry 1996	Repatriation of income 1996	Repatriation of capital 1996				December 1997	September 1997	September 1997	Foreign currency	Domestic currency	Foreign currency	Domestic currency
				January 1998	January 1998	January 1998				January 1998
Albania	..	..	..	52.8	11.6	21.7	..	..	..	..
Algeria	..	..	..	59.0	24.5	37.2	..	..	..	..
Angola	..	..	..	44.8	13.6	22.7	..	..	..	..
Argentina	Free	Free	Free	75.5	41.3	63.2	Ba3	Ba3	BB	BBB-
Armenia	..	..	..	..	..	25.6	..	..	..	..
Australia	..	..	..	83.5	73.3	91.5	Aa2	Aaa	AA	AAA
Austria	..	..	..	82.5	86.5	94.4	Aaa	Aaa	AAA	AAA
Azerbaijan	..	..	..	..	..	25.1	..	..	..	..
Bangladesh	Free	Free	Free	66.0	28.5	44.6	..	..	..	..
Belarus	..	..	..	..	14.2	29.1	..	..	..	..
Belgium	..	..	..	78.5	81.3	92.2	Aa1	Aa1	AA+	AAA
Benin	..	..	..	..	17.4	25.0	..	..	..	..
Bolivia	..	..	..	68.5	26.2	44.1	..	..	..	..
Bosnia and Herzegovina	..	..	..	..	..	..	..	..	..	..
Botswana	Free	Free	Free	81.0	51.2	53.4	..	..	..	..
Brazil	Free	Free	Free	71.3	39.5	56.7	B1	..	BB-	BB+
Bulgaria	Free	Free	Free	56.5	22.2	37.8	B3	..	..	..
Burkina Faso	..	..	..	60.3	19.7	33.8	..	..	..	..
Burundi	..	..	..	..	..	..	..	..	..	..
Cambodia	..	..	..	..	..	20.3	..	..	..	..
Cameroon	..	..	..	58.8	18.8	32.5	..	..	..	..
Canada	..	..	..	84.8	82.1	95.4	Aa2	Aa1	AA+	AAA
Central African Republic	..	..	..	..	..	13.7	..	..	..	..
Chad	..	..	..	..	..	23.1	..	..	..	..
Chile	Rel. free	Free	Delayed ^b	80.3	63.5	78.2	..	..	A-	AA
China	Special	Free	Free	75.0	57.8	71.3	A3	..	BBB+	..
Hong Kong, China	..	..	..	82.5	63.9	85.5	..	..	A+	AA-
Colombia	Auth. only	Free	Free	58.8	47.2	60.3	Baa3	..	BBB-	A+
Congo, Dem. Rep.	..	..	..	35.3	..	..	..	..	..	..
Congo, Rep.	..	..	..	52.0	7.0	27.7	..	..	..	..
Costa Rica	Free	Free	Free	74.3	36.0	50.3	Ba1	..	BB	BB+
Côte d'Ivoire	Rel. free	Free	Free	63.8	20.1	37.0	..	..	..	..
Croatia	Free	Free	Free	..	33.6	52.7	Baa3	..	BBB-	A-
Cuba	..	..	..	59.3	11.3	9.5	..	..	..	..
Czech Republic	Free	Free	Free	76.5	..	71.7	Baa1	..	A	..
Denmark	..	..	..	85.3	82.6	95.1	Aa1	Aaa	AA+	AAA
Dominican Republic	..	..	..	74.3	24.8	42.8	..	..	B+	BB
Ecuador	Free	Free	Free	62.0	26.3	37.1	B1	..	..	..
Egypt, Arab Rep.	Free	Free	Free	71.3	39.7	55.4	..	..	BBB-	A-
El Salvador	..	..	..	73.5	27.5	54.2	..	..	BB	BBB+
Eritrea	..	..	..	..	..	..	..	..	..	..
Estonia	..	..	..	..	36.9	56.5	..	..	BBB+	A-
Ethiopia	..	..	..	66.3	17.1	25.2	..	..	..	..
Finland	..	..	..	86.0	76.6	92.8	Aa1	Aaa	AA	AAA
France	..	..	..	81.3	88.4	93.0	Aaa	Aaa	AAA	AAA
Gabon	..	..	..	68.3	24.5	36.4	..	..	..	..
Gambia, The	..	..	..	71.5	..	24.7	..	..	..	..
Georgia	..	..	..	..	9.5	17.0	..	..	..	..
Germany	..	..	..	80.5	91.3	95.4	..	Aaa	AAA	AAA
Ghana	Free	Free	Free	63.5	31.5	45.6	..	..	..	..
Greece	Free	Free	Free	76.3	53.0	77.8	Baa1	A2	..	..
Guatemala	..	..	..	73.5	26.8	51.0	..	..	..	..
Guinea-Bissau	..	..	..	43.8	..	15.4	..	..	..	..
Guinea	..	..	..	55.5	14.9	28.7	..	..	..	..
Haiti	..	..	..	54.0	14.0	23.6	..	..	..	..
Honduras	..	..	..	59.5	18.9	41.2	..	..	..	..



	Entry and exit regulations			Composite ICRG risk rating	Institutional Investor credit rating ^a	Euromoney country credit-worthiness rating	Moody's sovereign long-term debt rating		Standard & Poor's sovereign long-term debt rating	
	Entry 1996	Repatriation of income 1996	Repatriation of capital 1996	December 1997	September 1997	September 1997	Foreign currency January 1998	Domestic currency January 1998	Foreign currency January 1998	Domestic currency January 1998
Hungary	Free	Free	Free	75.8	49.7	70.0	Baa3	..	BBB-	A-
India	Auth. only	Free	Free	68.8	46.9	61.4	..	..	BB+	BBB+
Indonesia	Rel. free	Restricted	Restricted	66.3	51.8	68.9	Baa3	..	BBB-	A-
Iran, Islamic Rep.	..	..	..	70.8	27.5	33.1	..	..	..	..
Iraq	..	..	..	32.3	7.9	3.6	..	..	..	..
Ireland	..	..	..	88.0	76.7	93.8	Aa1	Aaa	AA	AAA
Israel	..	..	..	67.5	52.9	76.6	A3	..	A-	AA-
Italy	..	..	..	81.3	75.4	86.9	Aa3	Aa3	AA	AAA
Jamaica	Rel. free	Free	Free	73.5	29.7	39.3	..	..	..	..
Japan	..	..	..	87.3	91.5	93.0	..	Aaa	AAA	AAA
Jordan	Free	Free	Free	74.8	34.9	53.4	Ba3	..	BB-	BBB-
Kazakhstan	..	..	..	..	24.0	45.9	Ba3	..	BB-	BB+
Kenya	Rel. free	Free	Free	62.3	28.6	40.5	..	..	..	..
Korea, Dem. Rep.	..	..	..	38.3	4.7	5.8	..	..	..	..
Korea, Rep.	Rel. free	Free	Free	79.3	69.7	80.3	..	..	B+	BBB-
Kuwait	..	..	..	76.5	55.0	76.2	..	..	A	A+
Kyrgyz Republic	..	..	..	..	..	20.7	..	..	..	..
Lao PDR	..	..	..	..	..	24.8	..	..	..	..
Latvia	Free	Free	Free	..	32.6	57.7	..	..	BBB	A-
Lebanon	..	..	..	61.3	32.4	50.8	B1	..	BB-	BB
Lesotho	..	..	..	..	..	32.1	..	..	..	..
Libya	..	..	..	63.0	27.8	16.5	..	..	..	..
Lithuania	Rel. free	Free	Free	..	31.1	56.7	Ba2	..	BBB-	BBB+
Macedonia, FYR	..	..	..	..	..	23.3	..	..	..	..
Madagascar	..	..	..	61.8	..	28.4	..	..	..	..
Malawi	..	..	..	66.5	21.0	30.5	..	..	..	..
Malaysia	Free	Free	Free	76.3	66.7	79.4	A1	..	A	AA
Mali	..	..	..	61.5	17.4	34.2	..	..	..	..
Mauritania	..	..	..	..	..	19.7	..	..	..	..
Mauritius	Free	Free	Free	..	51.9	71.3	Baa2	..	..	..
Mexico	Free	Free	Free	70.8	43.5	63.5	Ba2	Baa3	BB	BBB+
Moldova	..	..	..	..	..	36.3	Ba2	..	..	..
Mongolia	..	..	..	65.8	..	38.4	..	..	..	..
Morocco	..	..	..	67.5	40.9	53.8	..	..	..	..
Mozambique	..	..	..	48.5	14.6	24.1	..	..	..	..
Myanmar	..	..	..	61.0	21.0	32.2	..	..	..	..
Namibia	Free	Free	Free	81.0	..	33.0	..	..	..	..
Nepal	..	..	..	..	25.9	36.6	..	..	..	..
Netherlands	..	..	..	86.5	90.6	98.0	..	..	AAA	AAA
New Zealand	..	..	..	81.8	73.1	92.2	Aa1	Aaa	AA+	AAA
Nicaragua	..	..	..	52.8	13.5	25.1	..	..	..	..
Niger	..	..	..	..	..	30.6	..	..	..	..
Nigeria	Free	Free	Free	57.0	15.3	30.6	..	..	..	..
Norway	..	..	..	91.0	85.8	96.6	Aaa	Aaa	AAA	AAA
Oman	Rel. free	Free	Free	74.5	53.0	66.7	..	..	BBB-	..
Pakistan	Free	Free	Free	60.5	27.2	44.5	B2	..	B+	..
Panama	Free	Free	Free	72.8	33.6	57.2	Ba1	..	BB+	BB+
Papua New Guinea	..	..	..	68.5	32.3	47.0	..	..	..	..
Paraguay	..	..	..	72.8	33.5	48.8	..	..	BB-	BBB-
Peru	Free	Free	Free	64.8	33.7	50.1	..	..	BB	BBB-
Philippines	Special	Free	Free	72.3	44.3	64.6	Ba1	..	BB+	A-
Poland	Free	Free	Free	78.3	50.2	66.7	Baa3	..	BBB-	A-
Portugal	Free	Free	Free	82.3	71.2	91.1	Aa3	Aa2	AA-	AAA
Puerto Rico	..	..	..	..	..	..	..	..	..	..
Romania	..	..	..	60.3	34.1	50.5	Ba3	..	BB-	BBB-
Russian Federation	Free	Free	Free	66.0	27.5	49.7	Ba2	..	BB-	..



5.3

	Entry and exit regulations			Composite ICRG risk rating	Institutional Investor credit rating ^a	Euromoney country credit-worthiness rating	Moody's sovereign long-term debt rating		Standard & Poor's sovereign long-term debt rating	
	Entry 1996	Repatriation of income 1996	Repatriation of capital 1996	December 1997	September 1997	September 1997	Foreign currency January 1998	Domestic currency January 1998	Foreign currency January 1998	Domestic currency January 1998
Rwanda	20.5	..	..	..	..
Saudi Arabia	76.8	54.8	74.3	..	..	..	..
Senegal	64.0	21.2	34.5	..	..	..	..
Sierra Leone	46.8	6.5	19.1	..	..	..	..
Singapore	92.5	84.2	93.7	..	..	AAA	AAA
Slovak Republic	Free	Free	Free	75.5	44.8	60.4	Baa3	..	BBB-	A
Slovenia	Closed	Restricted	Restricted	..	36.9	73.0	A3	..	A	AA
South Africa	Free	Free	Free	73.8	46.4	67.8	Baa3	Baa1	BB+	BBB+
Spain	79.5	75.5	91.3	Aa2	Aa2	AA	AAA
Sri Lanka	Rel. free	Restricted	Restricted	64.3	32.1	46.3	..	..	..	..
Sudan	37.5	9.1	13.7	..	..	..	..
Sweden	81.3	76.2	90.7	Aa3	Aa1	AA+	AAA
Switzerland	86.3	92.2	93.7	..	..	AAA	AAA
Syrian Arab Republic	67.5	24.3	36.8	..	..	..	..
Tajikistan	25.6	..	..	..	..
Tanzania	63.3	18.7	32.6	..	..	..	..
Thailand	Rel. free	Free	Free	71.3	59.9	66.8	Baa3	..	BBB	A
Togo	58.3	16.9	30.7	..	..	..	..
Trinidad and Tobago	Rel. free	Free	Free	77.5	42.9	51.0	Ba1	..	BB+	BBB+
Tunisia	70.5	47.9	59.9	Baa3	..	BBB-	A
Turkey	Free	Free	Free	52.3	38.6	52.8	B1	..	B	..
Turkmenistan	24.6	..	..	..	..
Uganda	63.5	20.1	36.9	..	..	..	..
Ukraine	19.8	29.7	..	..	..	..
United Arab Emirates	77.8	60.1	77.3	..	..	..	..
United Kingdom	83.3	88.4	97.6	Aaa	Aaa	AAA	AAA
United States	80.8	92.1	100.0	..	Aaa	AAA	AAA
Uruguay	68.3	43.4	58.5	Baa3	..	BBB-	BBB+
Uzbekistan	19.5	39.4	..	..	..	..
Venezuela	Rel. free	Free	Free	70.8	35.4	52.2	Ba2	..	B+	..
Vietnam	66.8	32.5	50.3	..	..	..	..
West Bank and Gaza
Yemen, Rep.
Yugoslavia, FR (Serb./Mont.)	54.8	..	17.5	..	..	..	..
Zambia	Free	Free	Free	64.3	16.0	24.0	..	..	..	..
Zimbabwe	Free	Free	Free	63.3	33.8	40.9	..	..	..	..
World	70.8 m	38.6 m	53.8 m	..	..	..	..
Low income	61.5	18.8	32.3	..	..	..	..
Excl. China & India	61.3	18.7	32.2	..	..	..	..
Middle income	70.8	35.4	53.4	..	..	..	..
Lower middle income	68.0	32.4	50.3	..	..	..	..
Upper middle income	75.5	48.1	66.7	..	..	..	..
Low & middle income	66.0	28.6	45.6	..	..	..	..
East Asia & Pacific	66.6	32.5	50.3	..	..	..	..
Europe & Central Asia	66.0	38.6	52.8	..	..	..	..
Latin America & Carib.	70.8	33.6	50.6	..	..	..	..
Middle East & N. Africa	70.5	34.9	53.4	..	..	..	..
South Asia	65.2	30.3	45.5	..	..	..	..
Sub-Saharan Africa	62.3	18.1	31.6	..	..	..	..
High income	82.4	76.7	92.2	..	..	..	..

Note: For explanations of the terms used to describe entry and exit regulations see *Definitions*.

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About the data

As investment portfolios become increasingly global, investors and governments seeking to attract foreign investment must have a good understanding of country risk. Risk, by its nature, is perceived differently by different groups. This table presents information on country risk and creditworthiness from several major international rating services.

The information on the regulation of entry to and exit from stock markets is reported by the International Finance Corporation (IFC) for emerging markets only. In many economies certain industries are considered strategic and are not open to foreign or nonresident investors. Or foreign investment in a company or in certain classes of stocks may be limited by national law or corporate policy. The regulations summarized in the table refer to "new money" investment by foreign institutions; other regulations may apply to capital invested through debt conversion schemes or to capital from other sources. The regulations shown here are formal ones. But even formal regulations may have very different effects in different countries because of the prevailing bureaucratic culture, the speed with which applications are processed, and the extent of red tape. The effect of entry and exit regulations may also be influenced by graft and corruption, which are impossible to quantify.

Most risk ratings are numerical or alphabetical. For numerical ratings, a higher number means lower risk. For alphabetical ratings, a letter closer to the beginning of the alphabet means lower risk. Readers should refer to the data sources for more details on the rating processes of the rating agencies. Risk ratings may be highly subjective, reflecting external perceptions that do not always capture the actual situation in a country. But these subjective perceptions are the reality that policymakers face in the climate they create for foreign private inflows. Countries that are not rated by credit risk rating agencies typically do not attract registered flows of private capital. Note that the risk ratings presented here are not endorsed by the World Bank but are included for their analytic usefulness.

Political Risk Services' *International Country Risk Guide* (ICRG) collects information on 22 components of risk, groups it into three major categories (political, financial, and economic), and converts it into a single numerical risk assessment ranging from 0 to 100. Ratings below 50 are considered very high risk, and those above 80 very low risk. Ratings are updated every month.

Institutional Investor country credit ratings are based on information provided by leading international

banks. Responses are weighted using a formula that gives more importance to responses from banks with greater worldwide exposure and more sophisticated country analysis systems. Countries are rated on a scale of 0 to 100, and ratings are updated every six months.

Euromoney country creditworthiness ratings are based on analytical, credit, and market indicators. The ratings, also on a scale of 0 to 100, are based on polls of economists and political analysts supplemented by quantitative data such as debt ratios and access to capital markets.

Ratings of sovereign foreign and domestic currency debt by Moody's Investors Service are presented for obligations that extend longer than one year. These long-term ratings measure total expected credit loss over the life of the security; they are not intended to measure other risks in fixed income investment, such as market risk.

Standard & Poor's ratings of sovereign long-term foreign and domestic currency debt are based on current information furnished by the issuer or obtained by Standard & Poor's from other sources it considers reliable. The ratings reflect several risk factors, such as the likelihood of default and the capacity and willingness of the debtor to make timely payments of interest and repayments of principal in accordance with the terms of the obligation. The ratings measure the creditworthiness of the debtor and do not take into account exchange-related uncertainties for foreign currency debt.

Definitions

• **Regulations on entry into emerging stock markets** are evaluated using the following terms: *free* (no significant restrictions), *relatively free* (some registration procedures required to ensure repatriation rights), *special classes* (foreigners restricted to certain classes of stocks designated for foreign investors), *authorized investors only* (only approved foreign investors may buy stocks), and *closed* (closed or access severely restricted, as for nonresident nationals only). • **Regulations on repatriation of income** (dividends, interest, and realized capital gains) and **repatriation of capital** from emerging markets are evaluated as *free* (repatriation done routinely) or *restricted* (repatriation requires registration with or permission of a government agency that may restrict the timing of exchange release). • **Composite International Country Risk Guide (ICRG) risk rating** is an overall index, ranging from 0 to 100, based on 22 components of risk. • **Institutional Investor credit rating** ranks, from 0 to 100, the chances of a country's default. • **Euromoney country creditworthiness rating** ranks, from 0 to 100, the riskiness of investing in an economy. • **Moody's sovereign foreign and domestic currency long-term debt rating** assesses the risk of lending to governments. Aaa bonds are judged to be of the best quality and C bonds of the lowest quality. Numerical modifiers 1–3 are applied to classifications from Aa to B, with 1 indicating that the obligation ranks at the high end of its rating category. • **Standard & Poor's sovereign foreign and domestic currency long-term debt ratings** are categorized as investment grade (AAA through BBB) and speculative grade (BB through C). Ratings from AA to CCC may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the rating category.

Data sources

Emerging Stock Markets Factbook 1997

Data on emerging stock markets' entry and exit regulations are from the IFC's *Emerging Stock Markets Factbook 1997*. Information on country risk and creditworthiness are from several sources: Political Risk Services' monthly *International Country Risk Guide*; the monthly *Institutional Investor*; the monthly *Euromoney*; Moody's Investors Service's *Sovereign, Subnational and Sovereign-Guaranteed Issuers*; and Standard & Poor's *Sovereign List in Credit Week*.



5.4 Financial depth and efficiency

	Domestic credit provided by banking sector		Liquid liabilities		Quasi-liquid liabilities		Interest rate spread		Spread over LIBOR	
	% of GDP		% of GDP		% of GDP		Lending minus deposit rate percentage points		Lending rate minus LIBOR percentage points	
	1990	1996	1990	1996	1990	1996	1990	1996	1990	1996
Albania		44.9		52.5		23.6	2.1	7.2	16.7	18.4
Algeria	74.7	42.4	73.6	12.9	24.9	12.9				
Angola										
Argentina	32.4	26.0	11.5	20.8	7.1	14.4		3.2		5.0
Armenia	62.3	9.1	83.5	7.9	42.9	1.9		34.2		60.8
Australia	104.4	88.7	63.4	63.7	51.1	45.9	6.8		12.2	
Austria	123.0	130.9	89.4	91.7	75.7	75.2				
Azerbaijan	57.2	11.3	33.5	9.8	11.6	2.7				156.5
Bangladesh	32.5	30.7	31.8	37.5	22.8	26.6	3.9	6.7	7.7	8.5
Belarus		16.1		15.2		6.5		31.9		58.8
Belgium	77.2	154.1	48.6	82.2	29.6	62.2	6.9	4.4	4.7	1.7
Benin	22.4	10.8	26.7	24.8	5.9	8.0	9.0		7.7	
Bolivia	33.3	57.5	26.5	46.5	19.5	33.2	18.0	36.8	33.5	50.5
Bosnia and Herzegovina										
Botswana	-49.7	-37.7	23.6	28.4	14.7	21.9	1.8	4.1	-0.4	9.0
Brazil	87.2	36.8	25.6	28.0	17.9	22.7				
Bulgaria	126.8	150.6	73.4	73.8	53.6	59.7	9.9	48.8	43.4	118.0
Burkina Faso	13.7	6.7	21.3	23.1	7.5	5.4	9.0		7.7	
Burundi	24.5	21.1	18.2	17.8	6.5	5.1			4.0	9.2
Cambodia		6.9		11.1		7.1		10.0		13.3
Cameroon	31.2	16.4	22.6	12.6	10.1	5.8	11.0	10.5	10.2	10.0
Canada	86.6	102.1	74.9	78.7	60.3	61.1	1.3	1.7	5.7	0.5
Central African Republic	13.1	11.2	15.6	23.2	1.9	1.7	11.0	10.5	10.2	10.0
Chad	14.4	15.3	20.7	19.9	0.8	0.9	11.0	10.5	10.2	10.0
Chile	72.9	59.6	40.6	40.8	32.7	32.1	8.6	3.9	40.5	11.9
China	90.0	98.0	79.2	112.2	41.4	67.0	0.7	2.6	1.0	4.6
Hong Kong, China	132.1	156.7	181.7	175.3	166.8	160.7	3.3	3.9	1.7	3.0
Colombia	36.2	45.5	29.8	38.6	19.3	27.3	8.8	10.8	36.9	36.5
Congo, Dem. Rep.	25.3	1.6	12.9	2.2	2.1	2.2				
Congo, Rep.	29.1	16.2	22.0	15.1	6.1	2.5	11.0	10.5	10.2	10.0
Costa Rica	29.9	33.1	42.7	32.9	30.0	23.8	11.4	9.0	24.2	20.8
Côte d'Ivoire	44.5	29.1	28.8	27.2	10.9	9.5	9.0		7.7	
Croatia		46.4		35.2		24.2	499.3	16.9	1,153.9	17.0
Cuba										
Czech Republic		78.6		91.4		55.1		5.8		7.0
Denmark	65.1	58.7	60.9	59.6	30.3	29.3	6.2	5.9	5.8	3.2
Dominican Republic	31.3	29.5	25.7	27.0	13.1	16.9				
Ecuador	17.2	31.7	23.3	33.3	12.9	24.3	-6.0	13.0	29.2	49.0
Egypt, Arab Rep.	106.8	82.8	87.9	81.7	60.7	62.3	7.0	5.0	10.7	10.1
El Salvador	32.0	41.4	30.6	44.2	19.6	33.4	3.2	4.6	12.9	13.1
Eritrea										
Estonia	65.0	20.1	136.2	27.0	93.5	6.4		7.6	26.6	8.2
Ethiopia	67.5	45.1	42.2	42.1	12.6	17.7	3.6	4.5	-2.3	8.4
Finland	84.3	63.8	55.2	58.6	46.6	26.5	4.1	3.8	3.3	0.6
France	106.3	102.1	64.6	67.7	38.7	44.0	6.0	3.1	2.2	1.3
Gabon	20.0	15.0	17.8	14.4	6.6	5.0	11.0	10.5	10.2	10.0
Gambia, The	3.6	8.2	21.8	26.6	9.3	12.9	15.2	13.0	18.2	20.0
Georgia										
Germany	110.0	136.7	64.4	68.1	44.2	45.4	4.5	7.2	3.3	4.5
Ghana	13.2	21.4	14.1	17.3	3.4	5.6				
Greece	103.8	84.2	90.1	82.5	72.5	64.2	8.1	7.5	19.3	15.4
Guatemala	17.4	19.4	21.2	24.7	11.8	15.7	5.1	15.1	15.0	17.2
Guinea	5.5	8.2	9.3	8.9	1.2	2.0	0.2	4.0	12.9	15.5
Guinea-Bissau	0.7	0.1	0.3	0.2	0.1	0.1	13.1	4.5	37.4	46.2
Haiti	32.9	27.4	31.4	48.0	15.9	26.2				
Honduras	40.9	26.0	33.6	34.0	18.8	21.1	8.3	13.0	8.7	24.2



	Domestic credit provided by banking sector		Liquid liabilities		Quasi-liquid liabilities		Interest rate spread		Spread over LIBOR	
	% of GDP		% of GDP		% of GDP		Lending minus deposit rate percentage points		Lending rate minus LIBOR percentage points	
	1990	1996	1990	1996	1990	1996	1990	1996	1990	1996
Hungary	82.6	49.1	43.8	42.9	19.0	24.1	4.1	6.5	20.5	26.6
India	54.7	49.8	45.8	49.4	29.9	32.3	..	..	8.2	10.4
Indonesia	45.5	54.6	40.4	52.5	29.1	42.7	3.3	2.0	12.5	13.7
Iran, Islamic Rep.	70.8	45.7	57.6	40.8	31.1	22.2	..	..	..	..
Iraq	..	..	..	..	..	..	..	..	..	..
Ireland	58.0	84.5	45.1	75.6	32.8	61.5	5.0	5.6	3.0	0.3
Israel	101.3	79.4	67.0	73.9	60.6	67.8	12.0	6.2	18.1	15.2
Italy	90.6	95.0	71.0	62.0	35.7	29.4	7.3	5.6	5.8	6.5
Jamaica	34.8	33.5	51.0	53.4	37.8	36.4	6.6	18.8	22.2	38.5
Japan	266.8	295.1	187.5	203.3	159.6	167.6	3.4	2.4	-1.4	-2.9
Jordan	117.9	86.1	131.2	91.6	77.8	61.9	3.3	3.5	1.7	4.0
Kazakhstan	..	9.5	..	..	..	..	..	..	..	..
Kenya	52.9	52.8	43.3	50.6	29.3	35.6	5.1	16.2	10.4	28.3
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	65.3	74.5	54.3	84.0	45.5	73.8	0.0	1.3	1.7	3.3
Kuwait	243.0	103.2	196.8	92.7	158.4	77.8	0.4	2.7	4.1	3.3
Kyrgyz Republic	..	..	..	..	..	..	..	27.9	..	53.1
Lao PDR	5.1	8.7	7.2	14.3	3.1	9.9	2.5	11.0	20.0	21.5
Latvia	..	13.0	..	23.5	..	8.3	..	14.1	..	20.3
Lebanon	132.6	104.2	193.7	141.6	170.9	133.0	23.1	9.7	31.6	19.7
Lesotho	30.1	-15.2	38.8	34.7	22.4	18.1	7.4	5.0	12.1	12.2
Libya	..	..	..	..	..	..	1.5	..	-1.3	..
Lithuania	..	11.5	..	17.4	..	5.8	..	18.7	..	16.1
Macedonia, FYR	..	..	..	..	..	..	..	..	..	..
Madagascar	26.8	14.6	18.2	21.4	5.4	8.5	5.3	13.8	17.5	27.2
Malawi	19.9	9.1	21.3	17.2	11.8	9.0	8.9	19.0	12.7	39.8
Malaysia	77.9	131.9	66.3	121.5	44.3	91.8	1.3	1.9	-1.1	3.5
Mali	13.4	10.1	20.0	23.3	5.4	5.6	9.0	..	7.7	..
Mauritania	54.7	14.0	28.5	16.5	7.0	5.6	5.0	..	1.7	..
Mauritius	45.1	63.9	63.3	76.2	49.1	63.4	5.4	10.0	9.7	15.3
Mexico	42.5	40.6	24.9	37.7	18.1	28.3	..	..	..	..
Moldova	62.8	22.0	70.3	16.3	35.4	4.7	..	11.2	..	31.2
Mongolia	68.5	17.5	52.4	22.4	13.8	11.0	..	55.5	..	86.4
Morocco	60.1	74.8	61.0	72.1	18.4	27.3	0.5	..	0.7	5.3
Mozambique	29.5	2.8	46.1	34.6	9.1	5.2	..	..	..	..
Myanmar	32.7	..	27.9	..	7.8	..	2.1	4.0	-0.3	11.0
Namibia	19.2	60.1	23.1	48.6	13.5	28.4	10.6	6.6	17.4	13.6
Nepal	28.9	36.0	32.2	38.3	18.5	23.9	..	..	6.1	7.4
Netherlands	107.5	124.6	84.1	84.3	60.1	57.1	8.4	2.4	3.4	0.4
New Zealand	74.4	89.7	65.4	79.5	32.2	41.3	4.4	3.8	7.7	6.8
Nicaragua	206.6	144.8	5.7	40.6	2.3	31.2	12.5	8.4	13.7	15.2
Niger	16.2	8.8	19.8	12.3	8.3	3.4	9.0	..	7.7	..
Nigeria	23.7	16.3	23.6	18.6	10.3	6.7	5.5	6.7	17.0	14.2
Norway	89.5	74.6	59.9	56.6	27.0	17.8	4.6	2.9	5.9	1.6
Oman	16.6	29.2	28.9	32.5	19.3	22.4	1.4	2.4	1.4	3.7
Pakistan	50.9	52.5	39.8	45.6	10.0	21.3	..	..	..	..
Panama	52.7	74.4	43.6	70.5	35.0	59.5	3.6	3.4	3.7	5.1
Papua New Guinea	35.8	28.0	35.2	36.4	24.0	20.7	6.9	1.1	7.2	7.8
Paraguay	14.9	28.2	21.4	31.2	12.8	22.6	8.1	11.7	22.7	23.4
Peru	16.2	12.1	19.9	18.8	9.5	13.2	2,335.0	11.2	4,766.2	20.6
Philippines	26.9	72.2	36.8	58.7	28.2	48.1	4.6	5.2	15.8	9.3
Poland	19.5	35.4	34.0	37.2	17.2	23.6	462.5	6.1	495.9	20.6
Portugal	73.6	99.7	65.1	81.7	39.7	53.4	7.8	5.4	13.5	6.2
Puerto Rico	..	..	..	..	..	..	..	..	..	..
Romania	79.7	4.2	60.4	27.1	32.7	17.3	..	..	..	..
Russian Federation	..	24.8	..	16.3	..	7.5	..	91.8	..	141.3



5.4

	Domestic credit provided by banking sector		Liquid liabilities		Quasi-liquid liabilities		Interest rate spread		Spread over LIBOR	
	% of GDP		% of GDP		% of GDP		Lending minus deposit rate percentage points		Lending rate minus LIBOR percentage points	
	1990	1996	1990	1996	1990	1996	1990	1996	1990	1996
Rwanda	17.0	10.6	14.8	17.5	7.0	6.3	6.3	..	4.9	..
Saudi Arabia	58.7	38.0	47.9	51.2	21.9	24.6	..	..	..	..
Senegal	33.7	21.8	22.9	21.2	9.7	8.2	9.0	..	7.7	..
Sierra Leone	26.3	52.3	14.5	9.9	4.0	3.8	12.0	18.2	44.2	26.6
Singapore	74.1	78.0	120.9	112.5	98.4	92.1	2.7	2.9	-1.0	0.7
Slovak Republic	..	60.1	..	70.6	..	40.7	..	4.6	..	8.4
Slovenia	36.8	36.0	34.2	36.7	25.8	28.6	179.9	8.7	847.5	18.2
South Africa	102.7	160.2	47.1	47.2	28.9	20.0	2.1	4.6	12.7	14.0
Spain	109.0	105.9	76.6	80.5	45.3	53.0	5.4	2.4	7.7	3.0
Sri Lanka	43.0	35.0	35.2	41.3	22.9	31.2	-6.4	0.2	4.7	10.8
Sudan	29.9	18.9	29.4	24.0	4.2	9.4	..	..	..	..
Sweden	145.5	68.2	46.6	45.5	..	..	6.8	4.9	8.4	1.9
Switzerland	179.0	183.4	146.7	147.3	119.9	119.0	-0.9	3.6	-0.9	-0.5
Syrian Arab Republic	56.6	45.7	54.7	53.4	10.5	13.9	..	..	..	..
Tajikistan	..	..	..	..	..	..	..	..	..	..
Tanzania	39.2	17.4	22.6	24.3	7.2	11.0	..	23.6	..	31.7
Thailand	90.7	98.8	74.7	79.5	65.8	70.4	4.3	5.9	8.2	9.6
Togo	21.3	25.8	36.1	25.8	19.1	9.1	9.0	..	7.7	..
Trinidad and Tobago	58.5	54.2	54.6	49.7	42.7	37.2	6.9	9.1	4.6	10.3
Tunisia	62.5	65.4	51.5	48.4	26.7	27.1	..	..	..	..
Turkey	25.9	34.4	24.1	32.3	16.4	27.2	..	..	..	..
Turkmenistan	..	1.7	..	9.7	..	0.8	..	..	..	..
Uganda	17.7	4.6	7.6	10.7	1.4	3.3	7.4	9.7	30.4	14.8
Ukraine	83.2	15.0	0.0	0.0	0.0	0.0	..	46.3	..	74.4
United Arab Emirates	35.2	48.6	47.0	56.7	38.2	42.2	..	..	..	..
United Kingdom	123.0	131.0	..	..	..	..	2.2	2.9	6.4	0.4
United States	114.4	137.5	68.6	61.1	51.8	43.5	..	..	1.7	2.8
Uruguay	60.7	39.8	61.2	38.2	53.3	32.1	76.6	63.4	166.1	86.0
Uzbekistan	..	..	..	..	..	..	..	..	..	..
Venezuela	37.4	19.9	41.1	22.3	29.4	10.4	0.5	4.1	19.9	26.2
Vietnam	15.9	20.8	22.7	20.3	9.3	8.3	..	10.4	..	22.3
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	62.0	29.0	56.3	40.5	10.7	16.6	..	..	..	..
Yugoslavia, FR (Serb./Mont.)	..	..	..	..	..	..	..	..	..	..
Zambia	64.5	56.2	23.8	17.9	12.6	11.2	9.5	11.7	26.8	48.3
Zimbabwe	53.8	55.3	54.0	50.7	39.2	32.3	2.9	12.7	3.4	28.7
World	126.0 w	139.1 w	71.1 w	72.4 w	64.6 w	66.9 w	..	..	..	..
Low income	64.6	73.6	54.4	80.8	30.0	48.6	..	..	..	..
Excl. China & India	37.9	32.6	28.3	30.0	12.6	16.3	..	..	..	..
Middle income	60.6	46.0	36.6	35.4	24.0	26.3	..	..	..	..
Lower middle income	52.0	45.3	44.4	38.9	30.1	30.0	..	..	..	..
Upper middle income	65.8	46.7	30.6	32.0	19.6	22.8	..	..	..	..
Low & middle income	61.7	53.9	41.7	48.4	25.7	32.7	..	..	..	..
East Asia & Pacific	76.5	88.2	66.7	92.9	41.6	61.6	..	..	..	..
Europe & Central Asia	..	31.9	..	28.9	..	18.0	..	..	..	..
Latin America & Carib.	59.7	35.7	23.5	26.9	17.6	21.7	..	..	..	..
Middle East & N. Africa	69.4	70.0	58.6	60.5	30.4	44.0	..	..	..	..
South Asia	52.4	48.3	43.4	47.3	27.0	30.3	..	..	..	..
Sub-Saharan Africa	59.6	84.5	37.0	38.5	18.5	15.8	..	..	..	..
High income	138.9	157.9	77.5	78.1	73.2	74.9	..	..	..	..



About the data

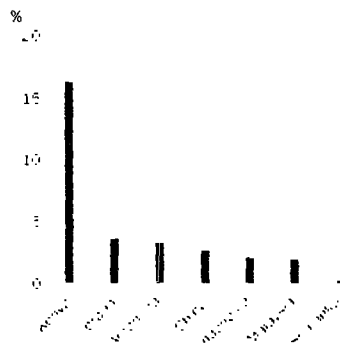
Households and institutions save and invest independently. The financial system's role is to inter-mediate between them and cycle funds. Savers accumulate claims on financial institutions, which pass these funds to their final users. As an economy develops, this indirect lending by savers to investors becomes more efficient and gradually increases financial assets relative to GDP. This wealth allows increased saving and investment, facilitating and enhancing economic growth. As more specialized savings and financial institutions emerge, more financing instruments become available, reducing risks and costs to liability holders. As securities markets mature, savers can invest their resources directly in financial assets issued by firms.

The ratio of domestic credit provided by the banking sector to GDP is used to measure the growth of the banking system because it reflects the extent to which savings are financial. Liquid liabilities include bank deposits of generally less than one year plus currency. Their ratio to GDP indicates the ease with which their owners can use them to buy goods and services without incurring any cost. Quasi-liquid liabilities are long-term deposits and assets—such as certificates of deposit, commercial paper, and bonds—that can be converted into currency or demand deposits, but at a cost.

No less important than the size and structure of the financial sector is its efficiency, as indicated by

Figure 5.4a

Interest rate spreads vary dramatically



Source: Table 5.4

The spread between banks' deposit and lending rates provides information about the efficiency of the financial sector, competition between institutions, the adequacy of margins for prudential purposes, the costs of reserve requirements and other banking regulations, and the effectiveness of monetary policy.

the margin between the cost of mobilizing liabilities and the earnings on assets. Small margins are crucial for economic growth because they lower interest rates and thus the overall cost of investment. Interest rates reflect the responsiveness of financial institutions to competition and price incentives. The interest rate spread, also known as the intermediation margin, is a summary measure of a banking system's efficiency. It may not be a reliable measure of efficiency to the extent that information about interest rates is inaccurate, banks do not monitor all bank managers, or the government sets deposit and lending rates. The spread over LIBOR reflects the interest rate differential between a country's lending rate and the London interbank offered rate (ignoring expected changes in the exchange rate). Interest rates are expressed as annual averages.

In some countries financial markets are distorted by restrictions on foreign investment, selective credit controls, and controls on deposit and lending rates. Interest rates may reflect the diversion of resources to finance the public sector deficit through statutory reserve requirements and direct borrowing from the banking system. And where state-owned banks dominate the financial sector, noncommercial considerations may unduly influence credit allocation.

The indicators in the table provide quantitative assessments of each country's financial sector, but qualitative assessments of policies, laws, and regulations are needed to analyze overall financial conditions. In addition, the accuracy of financial data depends on the quality of accounting systems, which are weak in some developing economies. Some of these indicators are highly correlated, particularly the ratios of domestic credit, liquid liabilities, and quasi-liquid liabilities to GDP, because changes in liquid and quasi-liquid liabilities flow directly from changes in domestic credit. Moreover, the precise definition of the financial aggregates presented varies by country. Data on domestic credit and liquid and quasi-liquid liabilities are cited on an end-of-year basis.

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

Definitions

- **Domestic credit provided by banking sector** includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. The banking sector includes monetary authorities, deposit money banks, and other banking institutions for which data are available (including institutions that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other banking institutions include savings and mortgage loan institutions and building and loan associations.
- **Liquid liabilities** are also known as broad money, or M3. They are the sum of currency and deposits in the central bank (M0), plus transferable deposits and electronic currency (M1), plus time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase agreements (M2), plus travelers checks, foreign currency time deposits, commercial paper, and shares of mutual funds or market funds held by residents.
- **Quasi-liquid liabilities** are the M3 money supply less M1.
- **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.
- **Spread over LIBOR** (London interbank offered rate) is the interest rate charged by banks on loans to prime customers minus LIBOR. LIBOR is the most commonly recognized international interest rate and is quoted in several currencies. The average three-month LIBOR on U.S. dollar deposits is used here.

Data sources

Data on credit, liabilities, and interest rates are collected from central banks and finance ministries and are reported in the print and electronic versions of the International Monetary Fund's *International Financial Statistics*.



5.5 Tax policies

	Tax revenue	Taxes on income, profits, and capital gains		Domestic taxes on goods and services		Export duties		Import duties		Highest marginal tax rate		
	% of GDP	% of total taxes		% of value added of industry and services		% of exports		% of imports		Individual rate %	or income exceeding \$	Corporate rate %
	1996	1980	1996	1980	1996	1980	1996	1980	1996	1997	1997	1997
Albania	16.6	..	10.7	..	19.0	..	..	..	10.0	..	..	..
Algeria	..	..	..	..	..	..	..	..	..	..	..	..
Angola	..	..	..	..	..	..	..	..	..	..	..	..
Argentina	11.9	0.0	11.2	2.8	5.0	0.0	0.2	0.0	8.5	33	120,000	33
Armenia	..	..	..	..	..	..	..	..	..	..	..	..
Australia	23.0	67.6	71.5	5.4	5.4	0.5	0.0	8.5	4.5	47	39,582	36
Austria	33.1	22.8	22.7	9.1	8.6	0.2	0.0	1.6	0.4	50	63,903	34
Azerbaijan	..	..	..	..	..	..	..	..	..	40	1,757	32
Bangladesh	..	14.8	..	5.7	..	3.9	..	16.4	..	..	..	..
Belarus	..	..	..	..	..	..	..	..	..	..	..	..
Belgium	43.3	40.2	35.9	..	..	..	..	..	..	55	75,507	39
Benin	..	..	..	..	..	1.6	..	..	..	..	..	..
Bolivia	11.8	..	7.6	..	..	..	0.0	..	5.1	13	..	25
Bosnia and Herzegovina	..	..	..	..	..	..	..	..	..	..	..	..
Botswana	17.5	45.5	51.3	0.3	2.0	0.1	0.0	21.8	17.1	30	16,680	15
Brazil	..	13.6	..	9.0	..	0.0	..	16.5	..	25	20,789	15
Bulgaria	25.2	..	25.4	..	9.6	..	..	..	5.5	40	2,630	36
Burkina Faso	..	20.1	..	2.9	..	3.6	..	20.7	..	..	..	..
Burundi	11.2	20.4	25.1	10.1	12.0	24.4	7.1	21.5	13.4	..	..	..
Cambodia	..	..	..	..	..	..	..	..	..	..	..	..
Cameroon	9.4	23.7	23.4	4.1	5.4	7.5	5.1	21.3	19.7	60	14,313	39
Canada	18.5	60.8	54.7	..	..	1.1	0.0	4.6	1.7	29	43,178	38
Central African Republic	..	17.7	..	6.0	..	9.2	..	23.9	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..
Chile	18.3	22.0	21.9	12.4	..	..	..	..	..	45	6,588	15
China	5.2	..	12.0	..	5.1	..	..	..	3.2	45	12,051	30
Hong Kong, China	..	..	..	..	..	..	..	..	..	..	..	17
Colombia	13.6	28.9	40.8	3.4	7.6	6.7	0.0	12.3	8.7	35	49,934	35
Congo, Dem. Rep.	4.5	34.5	35.8	1.6	2.6	10.7	0.4	18.3	9.6	..	..	..
Congo, Rep.	..	63.8	..	3.1	..	0.1	..	14.0	..	..	..	45
Costa Rica	22.5	14.6	12.9	6.6	10.1	6.7	2.5	6.8	9.2	25	24,559	30
Côte d'Ivoire	..	14.0	..	7.9	..	8.0	..	28.9	..	10	4,489	35
Croatia	42.8	..	12.4	..	27.1	..	..	..	10.0	35	4,675	..
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	34.1	..	15.2	..	13.9	..	..	..	4.0	40	27,660	39
Denmark	35.3	40.6	45.4	..	..	..	..	0.1	0.1	60	..	34
Dominican Republic	14.7	24.8	17.2	3.8	6.3	6.2	0.0	15.0	27.1	..	..	..
Ecuador	13.9	46.6	56.5	2.5	4.6	3.0	0.0	16.3	8.3	25	61,861	20
Egypt, Arab Rep.	22.6	29.6	30.3	5.2	6.1	5.3	0.0	25.9	20.3	32	14,749	40
El Salvador	11.6	23.8	28.8	5.5	7.6	10.3	0.0	4.1	6.5	30	22,857	25
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..
Estonia	31.0	..	17.5	..	17.7	..	..	..	0.2	26	..	26
Ethiopia	..	25.4	..	9.2	..	31.3	..	16.4	..	..	..	..
Finland	27.8	30.9	32.5	..	..	..	..	1.9	0.2	38	65,352	28
France	38.8	19.1	19.5	12.8	11.7	..	..	0.1	0.0	..	..	33
Gabon	..	60.2	..	1.8	..	1.4	..	31.7	..	55	..	40
Gambia, The	..	18.1	..	1.2	..	0.5	..	18.5	..	..	..	..
Georgia	..	..	..	..	..	..	..	..	..	..	..	..
Germany	29.3	19.4	17.1	..	..	..	..	0.0	0.0	53	77,406	30
Ghana	..	22.0	..	4.6	..	30.5	..	14.5	..	35	9,173	35
Greece	19.7	19.5	36.8	..	..	..	..	..	..	45	68,820	40
Guatemala	7.7	14.4	20.7	..	5.2	9.8	0.0	7.6	9.2	30	30,002	30
Guinea	..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..
Haiti	..	15.9	..	..	..	..	..	..	..	..	..	..
Honduras	..	32.9	..	5.1	..	7.5	..	7.8	..	40	196,382	15



	Tax revenue	Taxes on income, profits, and capital gains		Domestic taxes on goods and services		Export duties		Import duties		Highest marginal tax rate		
	% of GDP	% of total taxes		% of value added of industry and services		% of exports		% of imports		Individual rate %	on income exceeding \$	Corporate rate %
	1996	1980	1996	1980	1996	1980	1996	1980	1996	1997	1997	1997
Hungary	..	22.1	..	..	..	0.1	..	6.6	..	42	6,614	18
India	10.5	21.9	29.3	8.9	6.0	1.8	0.1	26.4	27.8	40	3,359	40
Indonesia	14.8	82.0	58.0	2.4	6.0	2.2	0.1	5.7	2.6	30	20,982	30
Iran, Islamic Rep.	6.7	12.2	29.0	1.0	1.7	..	..	20.9	5.4	54	172,063	10
Iraq	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	34.7	38.6	42.1	..	..	..	..	6.2	3.9	48	15,732	36
Israel	33.4	47.3	42.7	17.4	..	..	..	4.6	..	50	57,730	36
Italy	40.7	32.1	34.8	..	..	..	..	0.1	0.0	51	196,005	37
Jamaica	..	35.1	..	15.6	..	..	..	2.1	..	25	1,449	33
Japan	..	74.7	..	2.5	..	..	..	2.3	..	50	258,398	38
Jordan	21.0	17.0	15.6	1.6	9.6	..	..	21.2	13.8	..	..	..
Kazakhstan	..	..	..	..	..	..	..	..	..	40	..	30
Kenya	21.3	33.3	30.7	14.8	18.7	1.4	0.0	10.7	14.2	35	374	35
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	18.6	25.5	33.3	9.4	7.5	..	..	7.7	4.7	40	94,764	28
Kuwait	1.2	63.6	15.4	0.2	0.0	..	..	3.0	3.4	0	..	55
Kyrgyz Republic	..	..	..	..	..	..	..	..	..	..	..	..
Lao PDR	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	25.5	..	8.1	..	16.3	..	..	..	1.8	25	..	25
Lebanon	11.6	..	9.1	..	1.1	..	..	..	11.2	..	..	..
Lesotho	..	15.6	..	5.4	..	3.5	..	15.8	..	..	..	..
Libya	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	22.0	..	13.8	..	14.2	..	0.0	..	1.8	33	..	29
Macedonia, FYR	..	..	..	..	..	..	..	..	..	..	..	..
Madagascar	8.2	17.1	18.8	8.4	3.3	3.0	0.9	17.6	28.6	..	..	..
Malawi	..	38.9	..	11.7	..	0.0	..	16.8	..	38	2,763	38
Malaysia	20.1	41.9	45.3	5.7	7.3	9.1	0.6	9.1	3.1	30	58,893	30
Mali	..	20.5	..	7.9	..	3.0	..	8.0	..	..	..	..
Mauritania	..	..	..	..	..	..	..	..	..	..	..	..
Mauritius	16.3	17.3	15.7	4.8	6.1	8.6	0.0	16.2	14.1	30	2,764	35
Mexico	12.8	36.9	32.4	8.3	8.7	0.6	0.0	10.1	3.7	35	21,173	34
Moldova	..	..	..	..	..	..	..	..	..	..	..	..
Mongolia	18.7	..	29.2	..	7.3	..	..	..	5.0	..	..	..
Morocco	..	22.0	..	9.9	..	2.3	..	22.3	..	44	6,814	35
Mozambique	..	..	..	..	..	..	..	..	..	..	..	..
Myanmar	3.7	4.9	34.4	12.7	4.2	..	..	19.3	45.7	..	..	..
Namibia	..	..	..	..	..	..	..	..	..	35	17,152	35
Nepal	10.4	6.6	15.3	8.0	9.0	5.4	1.2	16.0	10.4	..	..	..
Netherlands	42.6	33.1	27.7	10.6	10.8	..	..	..	..	60	55,730	36
New Zealand	32.8	75.0	67.7	6.9	..	0.1	0.0	4.4	4.0	33	21,848	33
Nicaragua	23.9	8.9	11.8	11.3	16.4	3.9	0.0	8.0	11.7	30	20,202	30
Niger	..	28.1	..	4.5	..	2.6	..	17.0	..	..	..	..
Nigeria	..	..	..	..	..	..	..	..	..	25	754	30
Norway	32.5	30.3	22.3	15.2	15.9	0.1	0.0	0.8	1.0	..	..	28
Oman	8.5	92.4	77.4	0.2	..	..	..	1.4	..	0	..	50
Pakistan	15.3	16.8	20.3	8.6	10.8	1.9	0.0	25.2	28.4	35	7,485	46
Panama	17.2	29.0	29.7	5.2	5.2	..	1.4	..	8.7	30	200,000	30
Papua New Guinea	18.9	67.5	58.3	4.2	3.2	1.4	2.7	8.0	16.0	35	14,900	25
Paraguay	..	16.6	..	2.7	..	0.5	..	8.4	..	0	..	30
Peru	14.0	28.1	23.9	7.1	8.1	10.9	0.0	17.1	13.0	30	49,923	30
Philippines	16.7	23.6	37.1	7.8	6.4	1.0	0.0	13.4	12.2	35	19,016	35
Poland	36.0	..	28.3	..	12.3	..	0.0	..	10.7	44	14,542	40
Portugal	32.1	20.9	27.3	..	..	0.0	0.0	4.4	0.0	40	39,247	40
Puerto Rico	..	..	..	..	..	..	..	..	..	33	50,000	20
Romania	26.4	0.0	34.0	..	9.0	..	..	0.0	6.0	60	3,600	38
Russian Federation	17.4	..	15.8	..	7.8	..	4.3	..	3.1	35	8,587	35



5.5

	Tax revenue	Taxes on income, profits, and capital gains		Domestic taxes on goods and services		Export duties		Import duties		Highest marginal tax rate		
	% of GDP	% of total taxes		% of value added of industry and services		% of exports		% of imports		Individual rate %	on income exceeding \$	Corporate rate %
	1996	1980	1996	1980	1996	1980	1996	1980	1996	1997	1997	1997
Rwanda	..	20.7	..	5.3	..	..	..	..	..	..	..	..
Saudi Arabia	..	..	..	..	..	..	..	..	..	0	..	45
Senegal	..	21.4	..	7.5	..	3.1	..	26.9	..	50	24,141	..
Sierra Leone	7.7	25.0	16.3	4.1	4.7	10.8	0.0	19.8	17.8	..	..	..
Singapore	16.2	47.0	41.5	4.1	5.3	..	..	0.9	..	28	285,836	26
Slovak Republic	..	..	..	..	..	..	..	..	..	42	33,861	..
Slovenia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	25.9	64.0	54.3	6.4	11.8	0.1	0.0	3.0	2.5	45	21,440	35
Spain	28.9	25.2	31.9	..	..	..	..	6.0	0.0	56	79,896	35
Sri Lanka	16.9	16.4	15.9	8.0	14.6	22.0	0.0	9.6	9.2	35	5,293	35
Sudan	..	17.2	..	6.0	..	3.3	..	33.5	..	..	..	..
Sweden	37.2	21.1	12.7	..	..	..	..	1.5	1.0	30	30,326	28
Switzerland	21.5	15.1	12.7	..	..	..	..	4.0	4.9	13	460,382	46
Syrian Arab Republic	18.4	24.7	28.9	1.8	..	1.7	..	11.6	..	..	..	..
Tajikistan	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	..	35.2	..	..	..	11.2	..	9.2	..	35	14,075	35
Thailand	16.9	19.3	35.0	8.6	8.5	4.4	0.1	11.1	6.6	37	158,479	30
Togo	..	38.6	..	6.4	..	3.3	..	15.2	..	..	..	..
Trinidad and Tobago	24.2	85.7	58.7	1.6	7.9	..	..	9.8	5.3	35	8,103	35
Tunisia	24.9	19.2	18.8	8.7	7.2	1.0	0.2	18.8	19.6	..	..	..
Turkey	15.2	61.8	38.6	5.1	11.4	..	..	8.9	3.2	55	14,877	25
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	..	11.8	..	4.6	..	55.8	..	15.8	..	30	4,800	30
Ukraine	..	..	..	..	..	..	..	..	..	..	..	..
United Arab Emirates	0.6	..	0.0	0.0	..	..	..	..	..	..	..	..
United Kingdom	33.6	43.4	38.9	..	..	0.0	0.0	0.1	0.1	40	44,692	33
United States	19.4	61.6	58.2	0.9	..	..	..	3.0	2.6	40	271,050	35
Uruguay	29.2	11.5	14.2	11.2	11.3	0.0	0.1	19.2	6.1	0	..	30
Uzbekistan	..	..	..	..	..	..	..	..	..	..	..	..
Venezuela	14.5	79.4	54.1	1.0	5.9	..	..	9.6	10.2	34	..	34
Vietnam	..	..	..	..	..	..	..	..	..	50	6,278	25
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	9.9	..	35.2	..	2.9	..	..	..	20.3	..	..	..
Yugoslavia, FR (Serb./Mont.)	..	..	..	..	..	..	..	..	..	..	..	..
Zambia	16.7	41.1	39.6	12.5	9.6	0.0	0.0	7.2	6.0	30	1,376	35
Zimbabwe	..	57.9	..	8.4	..	..	..	18.4	..	40	5,597	38



About the data

Taxes are compulsory, unrequited payments made to governments by individuals, businesses, or institutions. They are considered unrequited because governments provide nothing specifically in return for them, although they typically are used to provide goods or services to individuals or communities. The sources of the revenue received by governments and the relative contributions of these sources are determined by 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 hence the behavior of economic actors and country competitiveness.

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

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

As countries develop, they typically expand their capacity to tax residents directly, and indirect taxes become less important as a source of revenue. Thus the share of taxes on income, profits, and capital gains is one measure of a tax system's level of development. In the early stages of development governments tend to rely on indirect taxes because the administrative costs of collecting them are relatively low. The two main indirect taxes are international trade taxes (including customs revenues) and domestic taxes on goods and services. The table shows these domestic taxes as a percentage of value added in industry and services. Agriculture and mining are excluded from the denominator because indirect taxation of these sectors is usually negligible. What is

missing here is a measure of the uniformity of these taxes across industries and along the value added chain of production. Without such data no clear inferences can be drawn about how neutral a tax system is between subsectors. "Surplus" revenues raised by some governments by charging higher prices for goods produced under monopoly by state-owned enterprises are not counted as tax revenues.

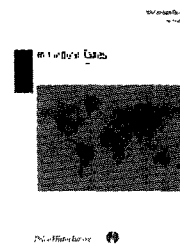
Export and import duties are shown separately because their burdens on the economy (and hence growth) are likely to be high. Export duties, typically levied on primary (particularly agricultural) products, often take the place of direct taxes on income and profits, but they reduce the incentive to export and encourage a shift to other products. High import duties penalize consumers, create protective barriers—which promote higher-priced output and inefficient production—and implicitly tax exports. By contrast, lower trade taxes enhance openness—to foreign competition, knowledge, technologies, and resources—energizing development in many ways. The economies growing fastest over the past 15 years have not relied on tax revenues from imports. Seeing this pattern, many developing countries have lowered tariffs over the past decade and, given the successful completion of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), this trend is expected to continue. In some countries, such as members of the European Union, most customs duties are collected by a supranational authority; these revenues are not reported in the individual countries' accounts.

The tax revenues collected by governments are the outcomes of systems that are often complex, containing many exceptions, exemptions, penalties, and other inducements that affect tax incidence and thus influence the decisions of workers, managers, and entrepreneurs. A potentially important influence on both domestic and international investors is a tax system's progressivity, as reflected in the highest marginal tax rate on individual and corporate income. Figures for individual marginal tax rates generally refer to employment income. For some countries, the highest marginal tax rate is also the basic or flat rate, and other surtaxes, deductions, and the like may apply.

Definitions

- **Tax revenue** comprises compulsory, unrequited, non-repayable receipts collected by central governments for public purposes. It includes interest collected on tax arrears and penalties collected on nonpayment or late payment of taxes and is shown net of refunds and other corrective transactions.
- **Taxes on income, profits, and capital gains** include taxes levied by central governments on the actual or presumptive net income of individuals and profits of enterprises. Also included are taxes on capital gains, whether realized or not, on the sale of land, securities, and other assets. Social security contributions based on gross pay, payroll, or number of employees are not included, but social security contributions based on personal income after deductions and personal exemptions are included.
- **Domestic taxes on goods and services** include all taxes and duties levied by central governments on the production, extraction, sale, transfer, leasing, or delivery of goods and rendering of services, or on the use of goods or permission to use goods or perform activities. These include general sales taxes, turnover or value added taxes, excise taxes, and motor vehicle taxes.
- **Export duties** include all levies collected on goods at the point of export. Rebates on exported goods—that is, repayments of previously paid general consumption taxes, excise taxes, or import duties—should be deducted from the gross receipts of the appropriate taxes, not from export duty receipts.
- **Import duties** comprise all levies collected on goods at the point of entry into the country. They include levies for revenue purposes or import protection, whether on a specific or ad valorem basis, as long as they are restricted to imported products.
- **Highest marginal tax rate** is the highest rate shown on the schedule of tax rates applied to the taxable income of individuals and corporations. Also presented are the income levels above which the highest marginal tax rates apply for individuals.

Data sources



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The definitions used here are from the International Monetary Fund (IMF) *Manual on Government Finance Statistics*. Data on tax revenues are from print and electronic editions of the IMF's *Government Finance Statistics Yearbook*. Data on individual and corporate tax rates are from Price Waterhouse's *Individual Taxes: A Worldwide Summary (1997)* and *Corporate Taxes: A Worldwide Summary (1997)*.



5.6 Relative prices and exchange rates

	Exchange rate arrangements		Official exchange rate	Ratio of official to parallel exchange rate	Real effective exchange rate	Purchasing power parity conversion factor		Interest rate			Key agricultural producer prices	
	Classification 1996	Structure 1996	local currency units to \$	1996	1990 = 100 1996	local currency units to international \$		Deposit % 1996	Lending % 1996	Real % 1996	Wheat \$ per metric ton	Maize \$ per metric ton
			1996			1990	1996				1995	1995
Albania	IF	U	104.5	1.0	..	..	..	16.8	24.0	8.2	347	178
Algeria	MF	U	54.7	0.4	..	4.9	17.9	..	..	..	399	336
Angola	P	U	59,515.0	..	..	22.3	38,483,348.5	..	..	..	..	..
Argentina	P	U	1.0	1.0	..	0.3	0.9	7.4	10.5	10.0	93	66
Armenia	IF	U	414.0	..	..	0.0	82.4	32.2	66.4	-18.9	..	..
Australia	IF	U	1.3	1.0	93.4	1.4	1.3	..	..	..	158	176
Austria	FL	U	10.6	1.0	86.2	13.4	13.7	1.7	..	..	270	159
Azerbaijan	IF	U	4,301.3	..	..	0.1	1,367.0	..	162.5	-63.0	..	..
Bangladesh	P	U	41.8	0.8	..	9.0	10.6	7.3	14.0	8.0	186	..
Belarus	MF	U	..	..	..	0.1	3,974.9	32.3	64.3	12.3	..	..
Belgium	FL	U	31.0	1.0	108.0	36.2	36.3	4.0	7.2	5.3	..	..
Benin	P	U	511.6	..	..	109.3	160.1	..	..	..	..	187
Bolivia	IF	U	5.1	1.0	95.4	0.9	1.5	19.2	56.0	35.4	187	137
Bosnia and Herzegovina	P	U	..	..	..	..	..	..	..	..	..	..
Botswana	P	D	3.3	1.0	..	0.8	1.3	10.4	14.5	4.2	..	151
Brazil	MF	D	1.0	1.0	..	0.0	0.7	26.4	..	..	155	122
Bulgaria	IF	U	177.9	0.8	..	1.1	45.3	74.7	123.5	4.7	55	61
Burkina Faso	P	U	511.6	..	..	106.8	127.6	..	..	..	..	..
Burundi	P	U	302.7	0.8	100.5	47.8	89.7	..	15.3	-5.9	..	..
Cambodia	MF	D	2,624.1	1.0	..	..	..	8.8	18.8	11.0	..	..
Cameroon	P	U	511.6	..	67.3	146.5	175.9	5.5	16.0	-0.9	..	..
Canada	IF	U	1.4	1.0	82.7	1.3	1.2	4.3	6.1	4.8	94	85
Central African Republic	P	U	511.6	1.0	64.5	96.2	111.0	5.5	16.0	4.2	..	543
Chad	P	U	511.6	..	..	74.1	99.7	5.5	16.0	5.4	318	127
Chile	MF	D	412.3	0.9	123.8	97.5	176.8	13.5	17.4	9.7	215	168
China	MF	U	8.3	1.0	..	1.1	1.7	7.5	10.1	3.8	126	98
Hong Kong, China	MF	U	7.7	1.0	..	6.1	7.8	4.6	8.5	3.0	..	..
Colombia	MF	U	1,036.7	0.9	143.9	115.0	336.9	31.2	42.0	20.7	218	185
Congo, Dem. Rep.	IF	U	7,024.4	..	82.6	0.0	7,299.4	..	..	..	..	..
Congo, Rep.	P	U	511.6	..	..	194.4	251.9	5.5	16.0	11.2	..	200
Costa Rica	MF	U	207.7	1.0	102.2	34.1	84.0	17.3	26.3	8.6	..	176
Côte d'Ivoire	P	U	511.6	..	70.4	158.7	221.0	..	..	..	..	..
Croatia	MF	U	5.4	0.6	..	..	5.1	5.6	22.5	16.6	..	..
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	P	U	27.1	1.0	..	5.8	13.1	6.8	12.5	-1.5	104	118
Denmark	FL	U	5.8	1.0	105.6	8.8	8.5	2.8	8.7	6.7	182	..
Dominican Republic	MF	D	13.8	1.0	117.7	2.6	5.0	..	..	..	..	311
Ecuador	MF	D	3,189.5	1.0	128.8	195.2	1,018.1	41.5	54.5	19.4	186	182
Egypt, Arab Rep.	MF	M	3.4	1.0	..	0.8	1.4	10.5	15.6	6.0	157	142
El Salvador	MF	U	8.8	0.9	..	3.6	5.6	14.0	18.6	10.3	..	164
Eritrea	MF	D	..	..	..	..	..	..	..	..	..	..
Estonia	P	U	12.0	0.8	..	0.1	7.7	6.1	13.7	-6.8	..	..
Ethiopia	IF	U	6.4	0.6	..	0.9	1.3	9.4	13.9	12.5	..	..
Finland	FL	U	4.6	1.0	68.3	6.2	5.9	2.4	6.2	5.1	199	..
France	FL	U	5.1	1.0	95.7	6.5	6.3	3.7	6.8	5.4	170	165
Gabon	P	U	511.6	..	63.9	265.5	348.1	5.5	16.0	9.7	..	..
Gambia, The	IF	U	9.8	0.9	94.0	2.1	2.4	12.5	25.5	18.1	..	..
Georgia	MF	U	..	..	..	0.0	576.6	..	..	..	..	..
Germany	FL	U	1.5	1.0	122.2	..	2.0	2.8	10.0	8.9	167	168
Ghana	IF	U	1,637.2	1.0	..	91.2	323.7	34.5	..	..	..	144
Greece	MF	U	240.7	1.0	105.4	130.4	226.4	13.5	21.0	11.1	273	213
Guatemala	IF	U	6.0	1.0	..	1.2	2.3	7.7	22.7	12.3	203	176
Guinea	IF	U	1,004.0	1.0	..	226.5	326.9	17.5	21.5	15.5	..	..
Guinea-Bissau	P	D	511.6	..	..	654.9	6,233.1	47.3	51.8	2.3	..	..
Haiti	IF	U	15.7	0.7	..	1.6	5.0	..	..	..	..	328
Honduras	MF	D	11.7	1.0	..	1.3	3.6	16.7	29.7	7.0	..	211



	Exchange rate arrangement		Official exchange rate	Ratio of official to parallel exchange rate	Real effective exchange rate	Purchasing power parity conversion factor		Interest rate			Key agricultural producer prices	
	Classification	Structure	local currency units to \$	1996	1990 = 100	local currency units to international \$		Deposit %	Lending %	Real %	Wheat \$ per metric ton	Maize \$ per metric ton
			1996			1990	1996				1995	1995
Hungary	MF	U	152.6	1.0	128.0	31.1	96.6	26.1	32.6	4.6	89	95
India	IF	U	35.4	0.9	..	5.7	8.3	..	16.0	8.4	134	104
Indonesia	MF	U	2,342.3	1.0	..	564.6	776.7	17.3	19.2	9.7	..	168
Iran, Islamic Rep.	MF	D	1,750.8	0.3	..	161.3	745.0	..	..	..	153	138
Iraq	P	D	0.3	0.0	..	..	..	..	..	..	..	..
Ireland	FL	U	0.6	1.0	72.1	0.7	0.6	0.3	5.8	4.8	141	..
Israel	MF	U	3.2	1.0	..	1.8	2.8	14.5	20.7	9.7	..	..
Italy	FL	U	1,543.0	1.0	79.0	1,412.1	1,612.6	6.5	12.1	7.3	196	189
Jamaica	IF	U	37.1	0.9	..	4.0	22.3	25.2	44.0	15.8	..	383
Japan	IF	U	108.8	1.0	124.4	191.5	171.8	0.3	2.7	2.7	..	..
Jordan	P	U	0.7	1.0	..	0.3	0.3	6.0	9.5	4.2	212	137
Kazakhstan	IF	U	67.3	..	..	0.0	26.5	..	..	..	..	..
Kenya	IF	U	57.1	1.0	..	8.1	16.6	17.6	33.8	22.0	97	140
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	MF	U	804.5	1.0	..	534.5	649.0	7.5	8.8	5.2	..	569
Kuwait	P	U	0.3	..	..	0.2	0.2	6.0	8.8	3.1	..	..
Kyrgyz Republic	MF	U	12.8	..	..	0.0	2.4	30.7	58.6	20.3	..	..
Lao PDR	MF	U	921.1	1.0	..	176.7	289.5	16.0	27.0	12.5	..	..
Latvia	MF	U	0.6	..	..	0.0	0.3	11.7	25.8	9.7	73	..
Lebanon	IF	U	1,571.4	1.0	..	..	844.5	15.5	25.2	15.0	..	..
Lesotho	P	U	4.3	1.0	99.6	0.8	1.1	12.7	17.7	5.2	..	177
Libya	P	U	0.4	0.2	..	..	..	..	..	..	..	..
Lithuania	P	U	4.0	..	..	0.0	1.9	8.4	21.6	-3.6	..	..
Macedonia, FYR	MF	U	40.0	..	..	..	..	..	..	..	..	..
Madagascar	IF	U	4,061.3	0.9	..	417.2	1,312.6	19.0	32.8	9.6	..	..
Malawi	IF	U	15.3	0.5	82.3	1.1	4.8	26.3	45.3	1.3	85	47
Malaysia	MF	U	2.5	1.0	107.0	1.0	1.1	7.1	9.0	0.8	..	..
Mali	MF	U	511.6	..	..	128.5	187.2	..	..	..	..	..
Mauritania	IF	U	137.2	..	..	27.2	33.7	..	..	..	..	..
Mauritius	MF	U	17.9	0.9	..	6.0	7.5	10.8	20.8	14.0	..	283
Mexico	IF	U	7.6	1.0	..	1.3	3.4	25.1	..	..	181	194
Moldova	IF	U	4.6	..	..	0.0	1.3	25.4	36.7	13.1	..	..
Mongolia	IF	U	548.4	1.0	..	2.3	114.2	36.4	91.9	58.5	..	..
Morocco	P	U	8.7	1.0	113.2	3.2	3.5	..	10.0	9.6	274	246
Mozambique	IF	U	11,293.7	0.9	..	230.2	1,933.1	..	..	..	..	..
Myanmar	P	D	5.9	0.0	..	..	..	12.5	16.5	16.5	..	..
Namibia	P	U	4.3	..	..	1.2	1.7	12.6	19.2	8.4	199	197
Nepal	P	U	56.7	0.8	..	6.8	10.4	..	12.9	5.9	..	..
Netherlands	FL	U	1.7	0.9	97.2	2.2	2.1	3.5	5.9	4.4	..	..
New Zealand	IF	U	1.5	1.0	107.2	1.5	1.5	8.5	12.3	10.2	..	..
Nicaragua	MF	U	8.4	1.0	80.6	0.0	1.8	12.3	20.7	8.1	..	216
Niger	P	U	511.6	..	..	96.7	116.7	..	..	..	..	..
Nigeria	P	D	21.9	0.3	149.2	3.6	19.7	13.5	20.2	-23.6	580	254
Norway	MF	U	6.4	1.0	106.1	10.3	9.9	4.2	7.1	2.4	394	..
Oman	P	U	0.4	1.0	..	0.3	0.2	6.9	9.2	5.5	..	..
Pakistan	MF	U	36.1	0.9	..	6.2	10.1	..	..	..	126	..
Panama	P	U	1.0	..	..	0.4	0.4	7.2	10.6	8.8	..	257
Papua New Guinea	IF	U	1.3	1.0	93.0	0.4	0.5	12.2	13.3	9.8	..	..
Paraguay	IF	U	2,062.8	0.9	118.8	462.7	1,144.1	17.2	28.9	15.8	119	145
Peru	IF	U	2.5	1.0	..	0.1	1.4	14.9	26.1	15.2	280	204
Philippines	IF	U	26.2	0.9	129.9	6.0	8.9	9.7	14.8	5.3	..	194
Poland	MF	U	2.7	1.0	211.0	0.3	1.6	20.0	26.1	6.5	153	..
Portugal	FL	U	154.2	1.0	115.4	92.4	119.4	6.3	11.7	8.1	187	179
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..
Romania	IF	U	3,084.2	0.8	..	9.1	1,045.7	..	..	..	127	86
Russian Federation	MF	U	5,120.8	1.0	..	0.7	3,577.0	55.1	146.8	69.6	..	..



5.6

	Exchange rate arrangement		Official exchange rate	Ratio of official to parallel exchange rate	Real effective exchange rate	Purchasing power parity conversion factor		Interest rate			Key agricultural producer prices	
	Classification	Structure	local currency units to \$	1996	1990 = 100	local currency units to international \$		Deposit %	Lending %	Real %	Wheat \$ per metric ton	Maize \$ per metric ton
			1996			1990	1996						1996	1995	1995
Rwanda	IF	U	306.8	0.9	..	39.8	95.3	10.9	..	..	267	172
Saudi Arabia	FL	U	3.7	1.0	93.1	2.6	2.5	..	..	..	..	..
Senegal	P	U	511.6	..	..	142.5	182.6	..	..	..	..	140
Sierra Leone	IF	U	920.7	1.0	106.3	54.1	359.5	14.0	32.1	4.8	..	..
Singapore	MF	U	1.4	1.0	..	1.6	1.6	3.4	6.3	3.7	..	..
Slovak Republic	P	U	30.7	0.9	..	7.4	14.5	9.3	13.9	8.0	109	125
Slovenia	MF	U	135.4	0.9	..	..	105.1	15.0	23.7	12.8	194	144
South Africa	IF	U	4.3	1.0	90.3	1.2	1.9	14.9	19.5	10.3	217	164
Spain	FL	U	126.7	1.0	91.5	105.1	121.1	6.1	8.5	5.0	227	222
Sri Lanka	MF	U	55.3	1.0	..	11.5	18.1	16.0	16.3	4.8	..	180
Sudan	MF	U	1,250.8	..	..	..	..	..	..	..	209	..
Sweden	IF	U	6.7	1.0	79.1	9.5	9.7	2.5	7.4	6.4	142	..
Switzerland	IF	U	1.2	1.0	111.7	2.1	2.1	1.3	5.0	4.8	880	520
Syrian Arab Republic	P	M	11.2	0.2	..	10.4	14.0	..	..	..	..	..
Tajikistan	IF	U	2,204.3	..	..	0.0	57.7	..	..	..	..	..
Tanzania	IF	U	580.0	1.0	..	..	..	13.6	37.2	11.9	..	..
Thailand	P	U	25.3	1.0	..	9.9	11.4	10.3	14.4	9.4	..	142
Togo	P	U	511.6	..	73.6	72.6	101.8	..	..	..	..	112
Trinidad and Tobago	IF	U	6.0	1.0	85.2	3.2	3.8	6.9	15.8	11.2	..	371
Tunisia	MF	U	1.0	1.0	..	0.4	0.4	..	..	..	291	..
Turkey	MF	U	81,404.9	1.0	..	1,525.1	39,421.8	80.7	..	..	169	196
Turkmenistan	MF	D	404.4	..	..	0.0	907.1	..	..	..	..	..
Uganda	IF	U	1,046.1	0.9	87.7	118.2	302.3	10.6	20.3	14.0	..	..
Ukraine	MF	U	1.8	1.0	..	0.0	0.7	33.6	79.9	9.6	..	..
United Arab Emirates	FL	U	3.7	1.0	..	3.6	3.7	..	..	..	..	..
United Kingdom	IF	U	0.6	1.0	91.5	0.6	0.6	3.0	6.0	2.8	186	..
United States	IF	U	1.0	..	96.6	1.0	1.0	..	8.3	6.2	127	89
Uruguay	MF	U	8.0	1.0	160.4	0.6	5.8	28.1	91.5	55.7	153	154
Uzbekistan	MF	M	..	..	..	0.0	9.3	..	..	..	..	..
Venezuela	MF	U	417.3	0.9	117.9	16.5	151.3	27.6	31.7	-37.7	..	222
Vietnam	MF	U	10,962.1	..	..	479.4	2,185.9	17.9	28.3	7.4	..	..
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	IF	U	94.2	..	..	..	46.1	..	..	..	367	416
Yugoslavia, FR (Serb./Mont.)	..	..	..	..	..	..	..	..	..	..	..	..
Zambia	IF	U	1,203.7	0.9	97.7	15.6	500.3	42.1	53.8	13.5	..	..
Zimbabwe	IF	U	10.0	0.9	..	0.8	2.9	21.6	34.2	9.9	224	139

Note: Exchange rate arrangements are given for the end of the year in 1996. Exchange rate classifications: FL = flexibility limited, IF = independent floating, MF = managed floating, P = pegged. Exchange rate structures: D = dual exchange rates, M = multiple exchange rates, U = unitary rate.



About the data

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

The exchange rate is the price of one currency in terms of another. Official exchange rates and exchange rate arrangements are established by governments. Parallel, or “black market,” exchange rates reflect unofficial rates negotiated by traders and are by their nature difficult to measure. Parallel exchange rate markets often account for only a small share of transactions and so may be both thin and volatile. But in countries with weak policies and financial systems, they often represent the “going” rate. The parallel rates reported here are collected by Currency Data & Intelligence, Inc., from a variety of sources, some within the country and some outside but doing business with entities based in the country.

Real effective exchange rates are derived by deflating a trade-weighted average of the nominal exchange rates that apply between trading partners. For most industrial countries the weights are based on trade in manufactured goods with other industrial countries during 1989–91, and an index of relative, normalized unit labor costs is used as the deflator. (Normalization smooths a time series by removing short-term fluctuations while retaining changes of a large amplitude over the longer economic cycle.) For other countries, prior to 1990, the weights take into account trade in manufactured and primary products during 1980–82; from January 1990 onward weights are based on trade in manufactured and primary products during 1988–90, and an index of relative changes in consumer prices is used as the deflator. An increase in the real effective exchange rate represents an appreciation of the local currency. Because of conceptual and data limitations, changes in real effective exchange rates should be interpreted with caution.

The exchange rate is often used as a basis for converting prices in different currencies because it is observable in the market and available universally. But because market imperfections are extensive and exchange rates reflect at most the relative prices of tradables, the volume of goods and services that a U.S. dollar buys in the United States may not correspond to what a U.S. dollar converted to another country's currency at

the official exchange rate would buy in that country. The alternative approach is to convert national currency estimates of GNP to a common currency by using conversion factors that reflect equivalent purchasing power. Purchasing power parity (PPP) conversion factors are based on price and expenditure surveys conducted by the International Comparison Programme (ICP) and represent the conversion factors applied to equalize price levels across countries. See the notes to tables 4.10 and 4.11 for further discussion of the PPP conversion factor.

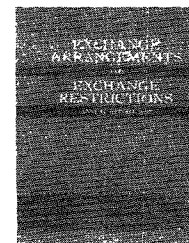
Many interest rates coexist in an economy, reflecting competitive conditions, the terms governing loans and deposits, and differences in the position and status of creditors and debtors. In some economies interest rates are set by regulation or administrative fiat. In economies with imperfect markets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

The table also shows prices for two key agricultural commodities, wheat and maize. Prices received by farmers, as used here, are important determinants of the type and volume of agricultural production. In theory these prices should refer to national average farmgate, or first-point-of-sale, transactions. But depending on the country's institutional arrangements—that is, whether it relies on market wholesale prices, government-fixed prices, or support prices—the data might not always refer to the same selling points. These data come from the Food and Agriculture Organization (FAO), and most originated from official country publications or from FAO questionnaires. As the data show, prices received by farmers often are not equalized across international markets (even after adjusting for freight, transport, and insurance costs and differences in quality). Market imperfections such as taxes, subsidies, and trade barriers drive a wedge between domestic and international prices.

Definitions

• **Exchange rate arrangement** describes the arrangement that an IMF member country has furnished to the IMF under Article IV, Section 2(a). *Exchange rate classification* indicates how the exchange rate is determined in the main market when there is more than one market: pegged (to a single currency or composite of currencies), flexibility limited, or floating (managed or independent). *Exchange rate structure* shows whether countries have unitary, dual, or multiple exchange rates. • **Official exchange rate** refers to the actual, principal exchange rate and is an annual average based on monthly averages (local currency units relative to U.S. dollars) determined by country authorities or on rates determined largely by market forces in the legally sanctioned exchange market. • **Ratio of official to parallel exchange rate** measures the premium people must pay, relative to the official exchange rate, to exchange the domestic currency for dollars in the black market. • **Real effective exchange rate** is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs. • **Purchasing power parity conversion factor** is the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as \$1 would buy in the United States. • **Deposit interest rate** is the rate paid by commercial or similar banks for demand, time, or savings deposits. • **Lending interest rate** is the rate charged by banks on loans to prime customers. • **Real interest rate** is the lending interest rate adjusted for inflation as measured by the GDP deflator. • **Key agricultural producer prices** are the domestic producer prices per metric ton for wheat and maize converted to U.S. dollars using the official exchange rate.

Data sources



Information on exchange rate arrangements is drawn from the IMF's *Exchange Arrangements and Exchange Restrictions Annual Report 1997*. Official and real effective exchange rates and deposit and lending interest rates are from the IMF's *International Financial Statistics*. Estimates of parallel market exchange rates are from Currency Data & Intelligence, Inc.'s *Global Currency Report*. PPP conversion factors are from the ICP and World Bank staff estimates. Real interest rates are calculated using World Bank data on the GDP deflator. Agricultural price data are from the FAO's *Production Yearbook*.



5.7 Defense expenditures and trade in arms

	Military expenditures				Armed forces personnel				Arms trade			
	% of GNP		% of central government expenditure		Total thousands		% of labor force		Exports % of total exports		Imports % of total imports	
	1985	1995	1985	1995	1985	1995	1985	1995	1985	1995	1985	1995
Albania	5.3	1.1	10.9	3.2	..	52	..	3.2	0.0	0.0	0.0	0.0
Algeria	2.5	3.2	6.3	6.9	170	120	2.9	1.4	0.0	0.0	5.1	2.2
Angola	19.9	3.0	..	..	66	82	1.7	1.7	0.0	0.0	118.0	13.7
Argentina	3.8	1.7	12.4	27.0	129	65	1.1	0.5	1.0	0.3	5.5	0.2
Armenia	..	0.9	..	..	..	60	..	3.3	..	0.0	..	4.5
Australia	2.7	2.5	9.4	8.8	70	58	0.9	0.6	0.6	0.1	3.6	1.5
Austria	1.3	0.9	3.3	2.2	40	45	1.1	1.2	0.9	0.1	0.1	0.1
Azerbaijan	..	2.8	..	..	..	87	..	2.7	..	0.0	..	0.0
Bangladesh	1.7	1.7	13.0	9.9	91	115	0.2	0.2	0.0	0.0	2.2	0.9
Belarus	..	0.8	..	..	..	115	..	2.1	..	4.0	..	0.0
Belgium	3.1	1.7	5.3	3.5	107	47	2.7	1.1	0.7	0.1	0.7	0.2
Benin	2.2	1.2	..	8.6	6	6	0.3	0.2	0.0	0.0	3.0	0.0
Bolivia	3.3	2.3	22.6	9.5	28	28	1.2	0.9	0.0	0.0	0.7	0.7
Bosnia and Herzegovina	..	..	..	..	..	50	..	2.4	..	0.0	..	20.0
Botswana	2.5	5.3	5.8	12.7	3	8	0.6	1.3	0.0	0.0	1.7	0.0
Brazil	0.8	1.7	2.1	3.9	496	285	0.9	0.4	1.3	0.0	0.4	0.3
Bulgaria	14.1	2.8	32.5	6.3	189	86	4.2	2.0	4.7	2.8	7.3	0.0
Burkina Faso	1.9	2.9	18.7	12.0	9	9	0.2	0.2	0.0	0.0	6.0	0.0
Burundi	3.0	4.4	20.8	24.8	9	22	0.3	0.7	0.0	0.0	2.6	0.0
Cambodia	..	3.1	..	..	35	90	0.9	1.8	0.0	0.0	..	3.2
Cameroon	1.9	1.9	8.3	10.2	15	22	0.4	0.4	0.0	0.0	1.7	0.8
Canada	2.2	1.7	8.6	7.1	83	70	0.6	0.5	0.6	0.1	0.1	0.1
Central African Republic	1.8	2.5	6.4	..	5	5	0.4	0.3	0.0	0.0	0.0	0.0
Chad	2.0	3.1	6.1	..	16	30	0.6	1.0	0.0	0.0	12.0	4.5
Chile	4.0	3.8	11.4	17.5	124	102	2.8	1.8	2.1	0.0	0.7	2.4
China	4.9	2.3	23.8	18.5	4,100	2,930	0.7	0.4	..	..	..	..
Hong Kong, China	..	..	..	..	..	..	..	..	..	..	..	..
Colombia	1.6	2.6	10.3	16.2	66	146	0.6	0.9	0.0	0.0	0.5	0.4
Congo, Dem. Rep.	1.2	0.3	9.8	3.7	62	49	0.4	0.3	0.0	0.0	5.0	0.0
Congo, Rep.	4.0	2.9	9.2	..	15	10	1.8	0.9	0.0	0.0	6.7	1.5
Costa Rica	0.7	0.6	2.8	2.7	8	8	0.8	0.6	0.0	0.0	1.8	0.0
Côte d'Ivoire	1.2	1.1	..	4.2	8	15	0.2	0.3	0.0	0.0	1.1	0.0
Croatia	..	10.5	..	32.0	..	60	..	2.7	..	0.0	..	1.5
Cuba	4.5	1.6	..	..	297	70	7.0	1.4	0.1	0.0	27.4	0.0
Czech Republic	..	2.3	..	6.6	..	68	..	1.2	..	0.6	..	0.0
Denmark	2.3	1.8	5.2	4.1	29	27	1.0	0.9	0.1	0.0	0.6	0.2
Dominican Republic	1.2	1.4	8.0	9.1	22	22	0.9	0.7	0.0	0.0	0.7	0.3
Ecuador	2.8	3.7	16.9	18.3	43	58	1.4	1.4	0.0	0.0	4.0	6.2
Egypt, Arab Rep.	12.8	5.7	22.1	13.7	466	430	2.9	2.1	4.9	0.0	30.9	16.2
El Salvador	5.7	1.1	29.1	7.4	48	22	2.9	1.0	0.0	0.0	12.5	0.7
Eritrea	..	..	..	..	..	..	..	..	..	0.0	..	0.0
Estonia	..	1.1	..	2.9	..	6	..	0.7	..	0.0	..	0.2
Ethiopia	6.7	2.2	28.9	9.2	240	120	1.2	0.5	0.0	0.0	80.6	0.0
Finland	1.7	2.0	5.4	5.1	40	32	1.6	1.2	0.0	0.0	0.8	0.1
France	4.0	3.1	8.8	6.6	563	504	2.3	2.0	7.0	0.8	0.1	0.1
Gabon	2.8	2.6	6.6	9.6	7	10	1.7	2.0	0.0	0.0	11.7	0.0
Gambia, The	..	4.6	..	16.2	1	1	0.3	0.2	0.0	0.0	10.8	0.0
Georgia	..	2.4	..	..	..	5	..	0.2	..	0.0	..	4.0
Germany*	3.2	1.9	10.3	5.0	495	352	1.3	0.9	..	0.2	..	0.1
Ghana	1.0	1.4	7.2	5.8	15	7	0.3	0.1	0.0	0.0	0.0	0.0
Greece	7.0	5.5	13.8	10.8	201	213	5.0	4.8	0.7	0.1	2.9	2.2
Guatemala	1.6	1.3	17.0	14.2	43	36	1.6	1.0	0.0	0.0	2.6	0.2
Guinea	..	1.5	..	..	28	12	1.1	0.4	0.0	0.0	20.8	0.0
Guinea-Bissau	2.9	2.8	4.7	..	11	7	2.5	1.4	0.0	0.0	41.0	0.0
Haiti	1.5	2.9	7.5	21.6	6	0	0.2	0.0	0.0	0.0	2.3	0.0
Honduras	3.5	1.4	14.0	8.7	21	18	1.4	0.8	0.0	0.0	3.4	0.8



	Military expenditures				Armed forces personnel				Arms trade			
	% of GNP		% of central government expenditure		Total thousands		% of labor force		Exports % of total exports		Imports % of total imports	
	1985	1995	1985	1995	1985	1995	1985	1995	1985	1995	1985	1995
Hungary	7.2	1.5	15.3	4.6	117	71	1.8	1.1	2.6	0.2	1.0	0.2
India	3.5	2.4	15.7	12.7	1,260	1,265	0.4	0.3	0.1	0.0	16.3	1.2
Indonesia	2.4	1.8	10.3	8.9	278	280	0.4	0.3	0.0	0.0	1.6	0.4
Iran, Islamic Rep.	7.7	2.6	34.1	13.6	345	440	2.5	2.3	0.0	1.6	17.2	2.2
Iraq	41.2	..	..	..	788	390	19.5	7.2	0.2	0.0	46.4	0.0
Ireland	1.7	1.3	2.9	3.4	14	13	1.1	0.9	0.0	0.0	0.1	0.0
Israel	20.3	9.6	27.2	21.1	195	185	11.9	8.5	10.8	4.1	10.9	1.1
Italy	2.2	1.8	4.6	3.9	504	435	2.1	1.7	1.7	0.1	0.3	0.1
Jamaica	0.9	0.8	1.8	1.4	2	3	0.2	0.2	0.0	0.0	0.9	0.0
Japan	1.0	1.0	5.6	4.2	241	240	0.4	0.4	0.1	0.0	0.8	0.2
Jordan	15.5	7.7	39.7	21.7	81	112	12.3	10.2	0.0	0.0	22.9	1.9
Kazakhstan	..	0.9	..	..	..	28	..	0.3	..	0.4	..	7.2
Kenya	2.3	2.3	8.4	6.2	19	22	0.2	0.2	0.0	0.0	0.7	0.3
Korea, Dem. Rep.	20.0	28.6	..	..	784	1,040	8.5	8.8	25.4	3.6	22.1	5.8
Korea, Rep.	5.0	3.4	26.6	13.6	600	655	3.4	3.0	0.6	0.0	1.5	0.8
Kuwait	5.7	11.6	13.6	25.5	16	20	2.4	2.4	0.0	0.0	6.2	11.6
Kyrgyz Republic	..	0.7	..	..	..	13	..	0.7	..	2.5	..	0.0
Lao PDR	7.4	4.2	..	22.3	54	50	2.9	2.1	0.0	0.0	48.8	0.0
Latvia	..	0.9	..	..	..	7	..	0.5	..	0.0	..	0.3
Lebanon	..	3.7	..	9.7	21	55	2.2	4.2	0.0	0.0	2.3	0.5
Lesotho	5.3	1.9	..	2.5	2	2	0.3	0.2	0.0	0.0	0.0	0.0
Libya	12.0	6.0	..	..	91	76	8.2	4.9	0.8	0.0	39.0	0.0
Lithuania	..	0.5	..	2.1	..	12	..	0.6	..	0.0	..	0.2
Macedonia, FYR	..	3.3	..	..	..	16	..	1.6	..	0.0	..	0.0
Madagascar	1.9	0.9	8.0	5.0	27	21	0.6	0.3	0.0	0.0	7.5	1.0
Malawi	2.0	1.6	5.8	3.5	6	10	0.2	0.2	0.0	0.0	1.8	0.0
Malaysia	3.8	3.0	10.7	12.4	110	122	1.8	1.5	0.0	0.1	3.8	1.0
Mali	2.9	1.8	8.1	..	8	8	0.2	0.2	0.0	0.0	3.3	0.0
Mauritania	6.9	3.2	25.0	9.3	16	10	1.9	1.0	0.0	0.0	0.0	0.0
Mauritius	0.2	0.4	0.8	1.6	1	1	0.3	0.2	0.0	0.0	0.0	0.0
Mexico	0.7	1.0	2.6	5.1	140	175	0.5	0.5	0.0	0.0	0.2	0.0
Moldova	..	2.1	..	..	..	12	..	0.6	..	5.6	..	0.0
Mongolia	8.3	2.4	13.1	7.0	38	21	4.2	1.7	0.0	0.0	0.5	0.0
Morocco	6.0	4.3	20.0	13.8	165	195	2.1	1.9	0.0	0.0	3.1	0.6
Mozambique	9.9	5.4	38.0	..	35	12	0.5	0.1	0.0	0.0	63.7	0.0
Myanmar	1.9	2.9	18.7	12.0	9	9	0.0	0.0	0.0	0.0	17.7	10.5
Namibia	..	2.1	..	5.5	..	8	..	1.2	..	0.0	..	0.8
Nepal	1.1	0.9	6.2	5.8	25	40	0.3	0.4	0.0	0.0	1.1	0.0
Netherlands	3.0	2.1	5.4	4.4	103	67	1.7	0.9	0.2	0.1	0.8	0.1
New Zealand	2.0	1.3	4.5	3.3	13	10	0.9	0.6	0.0	0.0	1.3	0.3
Nicaragua	17.4	2.2	26.2	5.3	74	14	6.7	0.9	0.0	7.7	29.0	0.0
Niger	0.8	1.2	5.0	7.9	5	9	0.2	0.2	0.0	0.0	0.0	0.0
Nigeria	1.5	0.8	9.4	3.5	134	89	0.4	0.2	0.0	0.0	3.8	0.0
Norway	3.1	2.7	7.5	6.5	36	38	1.8	1.7	0.2	0.0	1.2	0.4
Oman	24.4	16.7	42.3	33.9	25	36	6.9	6.5	0.0	..	4.4	10.8
Pakistan	6.2	6.1	28.1	25.3	483	587	1.4	1.3	1.5	0.3	8.0	4.2
Panama	2.0	1.4	6.4	5.3	12	12	1.5	1.1	0.0	0.0	0.7	0.0
Papua New Guinea	1.5	1.4	4.5	5.6	3	5	0.2	0.2	0.0	0.0	1.0	0.0
Paraguay	1.1	1.4	11.9	7.3	14	12	1.0	0.7	0.0	0.0	4.0	0.0
Peru	6.7	1.7	36.3	9.3	128	115	2.0	1.3	0.0	0.0	3.8	3.0
Philippines	1.4	1.5	9.5	8.5	115	110	0.5	0.4	0.2	0.0	0.7	0.3
Poland	10.2	2.3	40.7	5.4	439	278	..	2.0	11.3	0.2	4.2	0.3
Portugal	2.9	2.6	6.5	5.9	102	78	2.2	1.6	3.7	0.0	3.1	0.3
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..
Romania	6.9	2.5	20.0	11.2	237	209	2.2	2.0	3.6	0.3	0.4	0.0
Russian Federation	..	11.4	..	38.1	..	1,400	..	1.8	..	4.3	..	0.0



	Military expenditures				Armed forces personnel				Arms trade			
	% of GNP		% of central government expenditure		Total thousands		% of labor force		Exports % of total exports		Imports % of total imports	
	1985	1995	1985	1995	1985	1995	1985	1995	1985	1995	1985	1995
Rwanda	1.7	5.2	9.4	23.3	5	33	0.2	0.8	0.0	0.0	0.0	0.0
Saudi Arabia	22.7	13.5	27.0	41.0	80	175	2.1	2.8	0.0	0.0	30.1	31.3
Senegal	2.8	1.6	8.8	..	18	14	0.6	0.4	0.0	0.0	0.6	0.4
Sierra Leone	0.8	6.1	5.0	28.9	4	14	0.3	0.8	0.0	0.0	0.0	0.0
Singapore	5.9	4.7	17.0	24.0	56	60	4.7	4.1	0.2	0.0	0.5	0.2
Slovak Republic	..	3.0	..	6.8	..	52	..	1.9	..	0.8	..	3.1
Slovenia	..	1.5	..	3.5	..	10	..	1.0	..	0.1	..	0.3
South Africa	3.8	2.2	11.6	6.7	95	100	0.8	0.6	0.5	0.4	0.2	0.8
Spain	2.4	1.6	6.9	5.6	314	210	2.1	1.3	2.4	0.1	0.6	0.6
Sri Lanka	2.9	4.6	8.4	15.7	22	110	0.4	1.5	0.0	0.0	1.6	3.1
Sudan	3.2	6.6	..	37.6	65	89	0.8	0.9	0.0	0.0	7.8	8.4
Sweden	3.0	2.8	6.1	5.8	69	51	1.6	1.1	0.6	0.4	0.3	0.0
Switzerland	2.4	1.6	..	6.0	23	29	0.7	0.8	1.2	0.1	2.4	0.0
Syrian Arab Republic	21.8	7.2	42.0	..	402	320	13.9	8.0	0.0	0.0	37.8	1.5
Tajikistan	..	3.7	..	..	..	8	..	0.4	..	1.4	..	0.0
Tanzania	3.8	1.8	12.8	8.4	43	35	0.4	0.2	0.0	0.0	3.8	0.0
Thailand	4.2	2.5	19.7	15.2	235	288	0.8	0.9	0.0	0.0	2.1	1.6
Togo	2.6	2.3	6.9	10.2	7	12	0.5	0.7	0.0	0.0	0.0	0.0
Trinidad and Tobago	..	1.7	..	4.0	2	3	0.4	0.6	0.0	0.0	0.0	0.0
Tunisia	3.6	2.0	8.8	6.3	38	35	1.5	1.0	0.0	0.0	11.2	0.5
Turkey	4.6	4.0	17.9	17.6	814	805	3.8	2.9	1.5	0.3	4.4	2.0
Turkmenistan	..	1.7	..	..	..	21	..	1.1	..	0.0	..	4.2
Uganda	2.0	2.3	15.6	13.3	15	52	0.2	0.5	0.0	0.0	3.1	0.0
Ukraine	..	2.9	..	7.8	..	476	..	1.8	..	1.4	..	0.0
United Arab Emirates	6.7	4.8	43.5	38.4	44	60	6.1	5.3	0.0	0.0	3.4	1.8
United Kingdom	5.1	3.0	12.6	7.2	334	233	1.2	0.8	1.6	2.1	0.7	0.1
United States	6.1	3.8	25.7	17.4	2,244	1,620	1.9	1.2	6.3	2.7	0.5	0.1
Uruguay	2.9	2.4	10.6	7.3	30	25	2.4	1.7	0.0	0.0	0.0	0.2
Uzbekistan	..	3.8	..	..	..	21	..	0.2	..	0.3	..	0.0
Venezuela	2.1	1.1	9.2	6.3	71	75	1.2	0.9	0.0	0.0	6.5	0.8
Vietnam	19.4	2.6	..	10.9	1,027	550	3.5	1.5	2.7	0.0	94.3	2.7
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	..	15.7	..	29.4	..	68	..	1.5	..	0.0	..	13.9
Yugoslavia, FR (Serb./Mont.)	3.7	..	54.8	..	258	..	5.7	..	4.2	..	0.2	..
Zambia	..	2.8	..	12.6	16	22	0.6	0.6	0.0	0.0	4.6	0.6
Zimbabwe	5.7	4.0	14.4	10.5	46	40	1.2	0.8	0.0	0.0	0.0	0.0
World^b	5.2 w	2.8 w	18.1 w	9.9 w	28,070 t	22,790 t	..	..	2.7 w	0.7 w	2.7 w	0.7 w

Note: Data for some countries are based on partial or uncertain data or rough estimates; see ACDA 1997.

a. Data prior to 1990 refer to the Federal Republic of Germany before unification. b. U.S. Arms Control and Disarmament Agency aggregate measures.



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 place a burden on the economy and may impede growth. Determining the appropriate level of defense spending is not easy, but concerns about perceived vulnerability and risk play an important role. Comparisons between countries should take into account the many factors that influence such perceptions 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.

Although the traditional secrecy shrouding data on defense spending and trade in arms is gradually lifting, data from governments are often incomplete and unreliable. Even in countries where parliaments vigilantly review government budgets and spending, defense spending and trade in arms often do not receive close scrutiny. Finance ministries also may not exercise due oversight, particularly in countries where the armed forces have a strong political voice. For a detailed critique of the quality of such data, see Ball (1984) and Happe and Wakeman-Linn (1994).

The International Monetary Fund's (IMF) *Government Finance Statistics* is the primary source for data on defense spending. It uses a consistent definition of defense spending based on the United Nations' classification of the functions of government and the North Atlantic Treaty Organization (NATO) definition. The IMF checks data on defense spending for broad consistency with other macroeconomic data reported to it but is not always able to verify the accuracy and completeness of such data. Moreover, country coverage is affected by delays or failure to report data. Thus most researchers supplement the IMF's data with independent assessments of military outlays by organizations such as the U.S. Arms Control and Disarmament Agency (ACDA), the Stockholm International Peace Research Institute (SIPRI), and the International Institute for Strategic Studies (IISS). However, these agencies rely heavily on reporting by governments, on confidential intelligence estimates of varying quality, on sources that they do not or cannot reveal, and on one another's publications. Data presented in this table are from the ACDA.

Definitions of military spending differ depending on whether they include 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. Official government data may omit parts of military spending, disguise financing through extrabudgetary accounts or unrecorded use of foreign exchange receipts, or fail to include military assistance or secret military equipment imports. Current spending is more likely to be reported than capital spending. In some cases a more accurate estimate of military spending can be obtained by adding the value of estimated arms imports and nominal military expenditures. This method may understate or overstate spending in a particular year, however, because payments for arms may not coincide with deliveries.

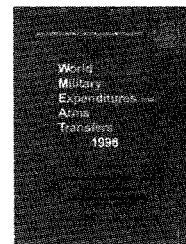
Data on armed forces refer to active-duty military personnel, including paramilitary forces. These data exclude payments to civilians from the defense budget and so are not consistent with the data on military spending. Moreover, since they exclude payments to personnel not on active duty, they underestimate the share of the labor force that works for the defense establishment. Because governments rarely report the size of their armed forces, such data typically come from intelligence sources. The ACDA attributes its data to unspecified U.S. government sources.

The Standard International Trade Classification (SITC) does not clearly distinguish trade in military goods. For this and other reasons, customs-based data on trade in arms are of little use, so most compilers rely on trade publications, confidential government information on third-country trade, and other sources. The construction of defense production facilities and licensing fees paid for the production of arms are included in trade data when they are specified in military transfer agreements. Grants in kind are usually included as well. Definitional issues include treatment of dual-use equipment such as aircraft, use of military establishments like hospitals and schools by civilians, and purchases by non-government buyers. ACDA data do not include arms supplied to subnational groups. Valuation problems arise when data are reported in volume terms and the purchase price must be estimated. Differences between sources may reflect reporting lags or differences in the period covered. Most compilers revise their time series data regularly, so estimates for the same year may not be consistent between publication dates.

Definitions

- **Military expenditures** for NATO countries are based on the NATO definition, which covers military-related expenditures of the defense ministry (including recruiting, training, construction, and the purchase of military supplies and equipment) and other ministries. Civilian-type expenditures of the defense ministry are excluded. Military assistance is included in the expenditures of the donor country, and purchases of military equipment on credit are included at the time the debt is incurred, not at the time of payment. Data for other countries generally cover expenditures of the ministry of defense (excluded are expenditures on public order and safety, which are classified separately).
- **Armed forces personnel** refers to active-duty military personnel, including paramilitary forces if those forces resemble regular units in their organization, equipment, training, or mission.
- **Arms trade** is exports and imports of military equipment usually referred to as "conventional," including weapons of war, parts thereof, ammunition, support equipment, and other commodities designed for military use. See *About the data* for more details.

Data sources



Data on military expenditures, armed forces, and arms trade are from the ACDA's *World Military Expenditures and Arms Transfers 1996* (1997).



5.8 State-owned enterprises

	Economic activity		Investment		Credit		Net financial flows from government		Overall balance before transfers		Employment		Proceeds from privatization
	% of GDP		% of gross domestic investment		% of gross domestic credit		% of GDP		% of GDP		% of total		\$ millions
	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1990-96
Albania	..	..	..	..	..	..	..	..	..	..	..	..	..
Algeria	..	..	..	..	..	38.5	..	..	..	..	7.2 ^a	..	18.5
Angola	..	..	..	..	..	..	..	..	..	..	..	..	7.6
Argentina	2.7	1.3	9.4	3.0	..	..	..	..	-0.6	-0.1	2.6	..	16,323.7
Armenia	..	..	..	..	..	..	..	..	..	..	..	..	79.2
Australia	..	..	15.0 ^b	..	..	..	..	..	..	..	..	..	..
Austria	..	..	..	..	..	..	..	..	..	..	..	..	..
Azerbaijan	..	..	..	..	..	65.4	..	..	..	..	..	..	..
Bangladesh ^c	3.1	3.4	33.5	23.5	17.4	12.0	..	-0.7	-3.9	-3.6	..	..	66.1
Belarus	..	..	..	..	..	..	..	..	..	..	..	..	..
Belgium	2.8	..	7.8	..	..	0.5	..	..	..	..	..	..	..
Benin	..	..	21.8	..	..	..	..	..	..	..	..	..	31.6
Bolivia	13.9	13.8	25.9	26.0	12.3	6.1	-7.6 ^a	-8.2	7.9 ^a	7.2	2.3 ^a	..	89.7
Bosnia and Herzegovina	..	..	..	..	..	..	..	..	..	..	..	..	..
Botswana	5.6 ^a	5.6 ^a	16.5 ^a	23.2 ^a	9.4	6.0	-0.3 ^a	-0.3 ^a	-2.6 ^a	-6.2 ^a	6.3 ^a	5.8 ^e	..
Brazil	7.6	8.0	13.0	8.6	14.0	4.2	-0.6 ^b	-2.2	0.9 ^b	3.3	..	..	22,402.1
Bulgaria	..	..	..	..	..	38.9	..	..	..	..	..	..	434.3
Burkina Faso	..	..	..	..	..	..	..	..	..	..	..	..	12.0
Burundi	7.3	..	41.1	..	19.3	12.0	2.7	..	..	..	32.1 ^{b,d}	..	4.2
Cambodia	..	..	..	..	..	1.2	..	..	..	..	..	..	..
Cameroon	18.0	..	..	..	13.0	7.5	1.3	..	..	..	..	..	82.1
Canada	..	..	..	..	..	..	..	..	..	..	..	..	..
Central African Republic	4.1	..	..	..	12.5	11.1	..	..	-3.1	..	..	..	..
Chad	..	..	..	..	32.5	15.9	..	..	..	..	..	..	..
Chile	14.4	8.1	15.3	6.1	2.0	1.7	-8.6 ^e	-4.8 ^e	8.7 ^e	4.8 ^e	..	..	1,107.3
China ^f	..	..	29.2	24.9	..	..	..	..	..	..	7.7	7.4	10,411.4
Hong Kong, China	..	..	..	..	..	..	..	..	..	..	..	..	..
Colombia	7.0	..	13.5	..	5.2	1.5	-0.6	..	0.8	..	..	..	4,606.3
Congo, Dem. Rep.	..	..	18.8	..	1.0	5.0	..	..	..	..	..	..	..
Congo, Rep.	15.1 ^a	..	..	..	12.8	8.1	..	..	..	..	..	..	..
Costa Rica	8.1	..	8.5	11.0	..	..	-1.9	..	1.9	..	..	..	77.7
Côte d'Ivoire	..	..	21.4 ^b	..	..	..	..	..	..	..	..	..	261.1
Croatia	..	..	..	..	..	4.2	..	..	..	..	..	..	417.6
Cuba	..	..	..	..	..	..	..	..	..	..	..	..	1,412.0
Czech Republic	..	..	..	..	..	22.4	..	..	..	..	..	..	659.1
Denmark	..	..	..	..	..	..	..	..	..	..	..	..	..
Dominican Republic	..	..	11.6 ^b	..	15.0	11.1	..	..	..	..	..	..	..
Ecuador	10.2	..	12.7	..	0.3	0.5	0.3	..	-1.2	..	..	..	191.9
Egypt, Arab Rep.	..	..	65.5	..	21.5	18.5	-0.7	..	-2.6	..	13.8	..	..
El Salvador	1.8 ^a	..	7.1	..	3.2	0.0	0.1 ^a	..	-0.3 ^a	..	..	..	..
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..	..
Estonia	..	..	..	..	..	23.5	..	..	..	..	..	..	359.5
Ethiopia	..	..	..	..	..	..	..	..	..	..	..	..	..
Finland	..	..	..	..	..	..	..	..	..	..	..	..	..
France	11.2	..	..	..	..	..	..	..	..	..	..	..	..
Gabon	..	..	..	..	5.2	3.3	..	..	..	..	25.1	..	..
Gambia, The	3.8	..	..	..	..	..	2.9 ^a	..	..	..	..	..	..
Georgia	..	..	..	..	..	..	..	..	..	..	..	..	..
Germany	..	..	..	..	..	..	..	..	..	..	..	..	..
Ghana	8.5	..	18.5	..	12.4	10.0	0.4 ^a	..	0.1	..	34.3 ^d	..	1,368.9
Greece	11.5	..	20.2	..	..	..	..	..	..	..	..	..	..
Guatemala	1.9	..	8.0	..	..	..	0.2 ^a	..	0.0	..	..	..	..
Guinea	..	..	..	..	..	0.8	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	13.2	8.9	..	..	..	..	..	..	0.7
Haiti	..	..	11.3	..	7.7	3.9	..	..	..	..	..	..	..
Honduras	5.5	..	15.1	..	..	..	0.0	..	-0.9	..	..	..	79.4



	Economic activity		Investment		Credit		Net financial flows from government		Overall balance before transfers		Employment		Proceeds from privatization
	% of GDP		% of gross domestic investment		% of gross domestic credit		% of GDP		% of GDP		% of total		\$ millions
	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1990-96
Hungary													8,135.4
India	13.4	13.4	35.4	32.4			-0.3 ^g	-0.9	-2.5 ^g	-1.2 ^g	8.5 ^g	8.1 ^g	6,890.0
Indonesia	14.5		8.9	15.7		3.4	1.3		-0.5	-2.6	0.9	1.1	5,745.7
Iran, Islamic Rep.													
Iraq													
Ireland													
Israel													
Italy			12.9										
Jamaica			23.6		3.3	1.8			-1.4				478.7
Japan			5.8		2.8	2.0							
Jordan					9.5	7.7							22.6
Kazakhstan													1,659.1
Kenya	11.6		20.4		5.2	3.2	0.2				7.9	7.8	334.1
Korea, Dem. Rep.													
Korea, Rep.	10.3		14.3				-0.2		0.7		1.9		
Kuwait													
Kyrgyz Republic													279.0
Lao PDR						29.8							
Latvia						5.3							392.0
Lebanon													
Lesotho													
Libya													
Lithuania						9.9							1,672.1
Macedonia, FYR													
Madagascar													
Malawi	4.3 ^a		9.2		12.8	10.2	0.8 ^a		-1.2 ^a				17.9
Malaysia ^h				25.9						-1.9			7,443.8
Mali													43.7
Mauritania			19.3			0.1							
Mauritius	1.9						-0.3						
Mexico ⁱ	6.7	4.9	14.6	10.5	6.5	0.9	-2.4	-3.1	2.4	3.0	3.5	2.1	24,929.3
Moldova						38.9							3.1
Mongolia						32.8							
Morocco	16.8		19.3				0.0 ^a						1,507.8
Mozambique					8.9	5.9							98.5
Myanmar			37.1 ^a										
Namibia			11.9			1.3	2.5 ^a		-1.0				
Nepal			50.0		7.4	3.0							13.9
Netherlands													
New Zealand													
Nicaragua					43.2	13.1							141.5
Niger	5.1								-0.1				
Nigeria						0.5							738.2
Norway			25.8 ^b		2.0	1.2							
Oman					1.3	0.7							86.5
Pakistan			28.8	25.9									3,268.1
Panama	8.2		10.2				-0.8		1.6				302.9
Papua New Guinea			7.8										447.2
Paraguay	4.8	4.5	11.2	5.1	16.6	7.9	0.2	-0.4	-2.0	1.2			44.0
Peru	6.4	5.7	9.7	4.4			-3.1	-3.1	1.5	3.0	2.5		9,524.6
Philippines	2.3	2.2	8.4	9.9	8.5	3.9			-2.2	-3.7	0.8		3,666.9
Poland					76.0	29.6							3,803.8
Portugal	15.1		16.6		12.2	6.4							
Puerto Rico													
Romania						75.2							410.6
Russian Federation						20.3							



	Economic activity		Investment		Credit		Net financial flows from government		Overall balance before transfers		Employment		Proceeds from privatization
	% of GDP		% of gross domestic investment		% of gross domestic credit		% of GDP		% of GDP		% of total		\$ millions
	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1985-90	1990-95	1990-96
Rwanda							0.4		1.0				
Saudi Arabia								12.9					
Senegal	6.9		28.2				4.5		-1.0		20.4 ^d		
Sierra Leone					0.4	0.1	0.1 ^b						
Singapore													
Slovak Republic								27.9					1,865.0
Slovenia													377.2
South Africa	14.9		16.5										1,317.3
Spain					0.1								
Sri Lanka			26.8				2.8	1.4			12.4		398.2
Sudan					16.5	5.0							
Sweden			10.3										
Switzerland													
Syrian Arab Republic													
Tajikistan													
Tanzania	12.9		30.0						-7.4		21.4		66.1
Thailand			11.5	10.4	1.5	2.3	-0.3	-0.4	-0.3	-0.8	1.0 ^e		1,773.7
Togo			10.7				1.6						24.7
Trinidad and Tobago	9.1 ^a		16.4		10.8	6.5	0.0		0.7 ^a				
Tunisia			31.0				7.6						149.0
Turkey	6.5	5.1	27.1	15.1	6.0	4.7	1.6	1.0	-3.2	-6.6	3.7	2.9	2,777.4
Turkmenistan													
Uganda													138.7
Ukraine						49.2							31.5
United Arab Emirates													
United Kingdom	3.4		6.5 ^p										
United States	1.1		3.6										
Uruguay	5.0		14.2		11.1	11.1	-3.2		3.3				4.0
Uzbekistan													424.0
Venezuela	22.3		50.9		1.1	4.2	-11.1		9.3				6,503.1
Vietnam						44.0							2.6
West Bank and Gaza													
Yemen, Rep.						3.0							
Yugoslavia, FR (Serb./Mont.)													
Zambia	32.2												89.7
Zimbabwe	10.8	11.3			29.7	7.5							25.0

Note: Averages for a period have been calculated only when three or more years' data are available. Figures in italics refer to an average for the period 1990-96
a. Selected major state-owned enterprises only. b. Includes financial state-owned enterprises. c. Data for 1985-90 refer to the 10 largest state-owned enterprises. For 1990-95, data refer to 210 enterprises. d. As a percentage of formal sector employment. e. Nonoperating revenue before 1989 is split between current transfers and grants. Since 1989, all nonoperating revenue is classified as current transfers. f. Data refer to industrial state-owned enterprises. g. Data refer to central public enterprises only. h. Data prior to 1991 have not been shown due to lack of consistency. i. Data for economic activity and employment refer to nonfinancial enterprises in both the controlled and the noncontrolled sectors. Data on investment up to 1986 refer to nonfinancial enterprises in both the controlled and the noncontrolled sectors. Since 1987 financial enterprises in the noncontrolled sector are included. Data on overall balances before transfers and net financial flows from government refer only to nonfinancial enterprises in the controlled sector.



About the data

State-owned enterprises are government-owned or -controlled economic entities that generate most of their revenue by selling goods and services. This definition encompasses commercial enterprises directly operated by a government department and those in which the government holds a majority of shares directly or indirectly through other state enterprises. It also includes enterprises in which the state holds a minority of shares, if the distribution of the remaining shares leaves the government with effective control. It excludes public sector activity—such as education, health services, and road construction and maintenance—that is financed in other ways, usually from the government's general revenue. Because financial enterprises are of a different nature, they have generally been excluded from the data.

The definition of a state enterprise varies among countries and within countries over time. In exceptional cases governments include noncommercial activities, such as agricultural research institutes, in their data on state enterprises. But more often they omit activities that clearly are state enterprises. The most common omissions occur when governments use a narrow definition of state enterprises—for example, by excluding those with a particular legal form (such as departmental enterprises), those owned by local governments (typically utilities), or those considered unimportant in terms of size or need for fiscal resources. Accordingly, data on state enterprises tend to underestimate their relative importance in the economy.

Although attempts have been made to correct for differences in definitions and coverage across countries, inconsistencies remain. These cases are detailed in the country notes in *Bureaucrats in Business* (World Bank 1995b). The state enterprises covered in the table are limited to central or federal government enterprises because data on local government-owned enterprises are extremely limited. Another weakness in the data is that many state enterprises do not follow generally accepted accounting principals, so accounting rules can vary by country and enterprise. In many cases small state enterprises are not audited by internationally accredited accounting firms, so there may be no independent check on their record keeping and reporting.

To assess the importance of government ownership, the table includes three measures of the economic size of state enterprises: share in economic activity, investment, and employment. Indicators that measure the performance of state enterprises and their effect on the macroeconomy and growth include credit, net financial flows from government, and overall balance before transfers. These indicators do not, however, allow for analysis

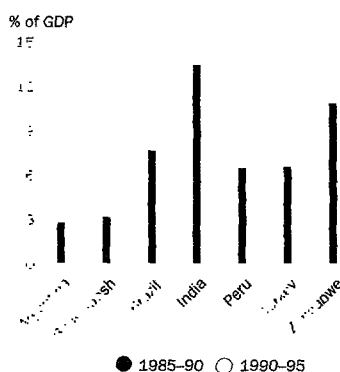
of the relative efficiency of state enterprises and private firms because not enough data are available on ownership by economic sector. Data in the table are period averages for 1985–90 and 1990–95. The updating of data has necessitated revisions to earlier years in order to ensure consistency over the time series.

Data on proceeds from privatization are included in the table because privatization—that is, the transfer of productive assets from the public to the private sector—has been one of the defining economic changes of the 1980s and 1990s. Direct sales are the most common privatization method, accounting for 60 percent of privatization transactions in 1996. Direct sales enable governments to attract strategic investors who can transfer capital, technology, and managerial know-how to newly privatized enterprises. Share issues in domestic and international capital markets are the second most common method, accounting for about 33 percent of privatization transactions in 1996.

Large sales proceeds do not necessarily imply major changes in the control or stock of state-owned enterprises, however. For example, selling equity may not change effective control. It may only generate revenue, with no gains in efficiency. A preliminary analysis suggests that the increase in proceeds is due to a larger number of countries privatizing a few firms rather than to a radical restructuring of ownership in many countries (Haggarty and Shirley 1997).

Figure 5.8a

State enterprises still play a sizable role in many developing economies



Source: Table 5.8.

Despite more than a decade of divestitures and the growing consensus that the private sector should play a larger role, the share of state-owned enterprises in GDP continues to rise in some countries.

Definitions

• **Economic activity** is the value added of state enterprises, estimated as their sales revenue minus the cost of their intermediate inputs, or as the sum of their operating surplus (balance) and wage payments. • **Investment** refers to fixed capital formation by state enterprises. • **Credit** is credit extended to state enterprises by domestic financial institutions. • **Net financial flows from government** is the difference between total financial flows from the government to state enterprises (including government loans, equity, and subsidies) and total flows from state enterprises to the government (including dividends and taxes). Taxes paid by state enterprises are treated as a transfer of financial resources to the government. • **Overall balance before transfers** is the sum of net operating and net nonoperating revenues minus net capital expenditure. Net operating revenues (or operating surplus or balance) refer to gross operating profits, or operating revenues, minus the costs of intermediate inputs, wages, factor rentals, and depreciation. • **Employment** for many countries refers to the share of full-time state enterprise employees in total employment, but for some it refers to employment only in selected state enterprises, including financial ones, and for others it refers to employment as a share of total formal sector employment. Thus the data on state enterprise employment are not directly comparable. • **Proceeds from privatization** include all sales of public assets to private entities through public offers, direct sales, management and employee buyouts, concessions or licensing agreements, and joint ventures.

Data sources

Data on state enterprises were collected from World Bank member country central banks, finance ministries, enterprises, and World Bank and International Monetary Fund reports. These data were then collated into a database for the World Bank Policy Research Report *Bureaucrats in Business: The Economics and Politics of Government Ownership* (1995b). Updates to this database have been made for several economies. Data on privatization are from the World Bank's *Global Development Finance 1998*. Data on credit are from the International Monetary Fund's *International Financial Statistics*.



5.9 Transport infrastructure

	Roads			Railways		Air		
	Paved roads	Normalized	Goods	Passenger-	Goods	Aircraft	Passengers	Air freight
	%	road index	million	km per	transported	departures	carried	millions
	1996	1996	ton-km	PPP	ton-km per PPP	thousands	thousands	ton-km
			1996	\$ million	\$ million	1996	1996	1996
				of GDP	of GDP			
				1996	1996			1996
Albania	30.0	110	3	..	..	1	29	0
Algeria	68.9	165	20,000	12,987	17,681	45	3,494	16
Angola	25.0	..	2,187	..	..	8	207	62
Argentina	29.1	115	..	..	..	132	7,779	177
Armenia	100.0	100	18	..	..	2	358	12
Australia	38.7	128	128,000	..	..	371	30,075	1,834
Austria	100.0	136	64,400	51,084	79,531	118	4,719	192
Azerbaijan	..	..	11,459	..	..	19	1,233	28
Bangladesh	7.2	64	..	..	..	13	1,252	136
Belarus	70.1	85	350	262,101	619,342	26	596	2
Belgium	..	..	428	30,112	32,214	165	5,174	591
Benin	20.0	52	..	..	..	1	75	16
Bolivia	5.5	59	..	..	..	32	1,783	47
Bosnia and Herzegovina	52.3	..	..	..	..	..	..	..
Botswana	23.5	314	..	..	..	4	104	0
Brazil	9.3	145	384,000	1,265	50,730	483	22,004	1,645
Bulgaria	91.9	99	39	136,587	202,772	14	718	24
Burkina Faso	16.0	96	..	..	..	3	138	16
Burundi	7.1	108	..	..	..	1	9	0
Cambodia	7.5	..	..	..	..	..	..	..
Cameroon	12.5	59	..	13,165	33,723	4	362	42
Canada	..	..	182,000	2,076	266,190	306	22,856	1,781
Central African Republic	..	..	..	..	..	1	75	16
Chad	0.8	15	..	..	..	2	93	16
Chile	13.8	56	..	4,344	6,096	94	3,622	806
China	..	..	463,000	88,980	360,383	493	51,770	1,689
Hong Kong, China	100.0	..	14	..	..	..	..	..
Colombia	11.9	41	..	..	..	195	8,342	311
Congo, Dem. Rep.	..	..	..	705	4,387	..	..	..
Congo, Rep.	9.7	62	..	69,853	54,139	5	253	17
Costa Rica	17.0	211	..	..	..	21	918	45
Côte d'Ivoire	9.7	86	..	7,822	13,484	5	179	16
Croatia	81.5	..	4	49,544	103,711	15	727	2
Cuba	55.9	..	..	..	..	14	929	44
Czech Republic	100.0	..	686	71,434	196,511	27	1,394	22
Denmark	100.0	103	..	39,515	14,713	108	5,892	172
Dominican Republic	49.4	136	..	..	..	1	30	0
Ecuador	13.3	76	54,300	..	..	22	1,873	24
Egypt, Arab Rep.	78.1	149	..	327,998	27,908	41	4,282	198
El Salvador	19.9	80	4,273	..	..	21	1,800	16
Eritrea	21.8	..	..	..	..	..	..	..
Estonia	53.2	65	11	45,250	540,949	5	149	1
Ethiopia	15.0	55	..	..	..	25	743	118
Finland	64.0	79	374	33,706	70,489	103	5,597	237
France	100.0	143	1,275	47,243	39,290	542	40,300	4,811
Gabon	8.2	38	..	9,441	61,672	7	431	35
Gambia, The	35.4	251	..	..	..	..	..	..
Georgia	93.5	..	7	..	..	2	205	2
Germany	99.1	..	294,160	..	39,068	567	40,118	6,036
Ghana	24.1	106	..	..	..	3	197	30
Greece	91.8	155	201	13,406	1,913	92	6,396	119
Guatemala	27.6	62	..	..	..	5	300	26
Guinea	16.5	146	..	..	..	1	36	1
Guinea-Bissau	10.3	..	..	..	..	1	21	0
Haiti	24.3	..	..	..	..	..	..	..
Honduras	20.3	135	..	..	..	13	498	2



	Roads			Railways		Air		
	Paved roads %	Normalized road index	Goods transported million ton-km	Passenger- km per PPP \$ million of GDP	Goods transported ton-km per PPP \$ million of GDP	Aircraft departures thousands	Passengers carried thousands	Air freight millions ton-km
	1996	1996	1996	1996	1996	1996	1996	1996
Hungary	43.1	147	39	88,789	103,268	25	1,563	29
India	50.2	566	..	231,700	177,267	151	13,255	565
Indonesia	45.5	211	..	23,842	6,843	311	16,173	749
Iran, Islamic Rep.	50.0	..	..	22,281	34,136	63	7,610	110
Iraq	86.0	..	..	..	..	..	..	..
Ireland	94.1	276	..	19,499	9,314	95	7,677	102
Israel	100.0	100	..	2,685	11,827	50	3,695	1,113
Italy	100.0	60	..	43,529	18,432	307	25,838	1,459
Jamaica	70.7	797	..	..	..	18	1,388	25
Japan	74.1	77	..	89,507	8,896	564	95,914	6,801
Jordan	100.0	98	..	..	47,815	17	1,299	297
Kazakhstan	80.5	171	803	..	..	10	568	17
Kenya	13.9	115	..	13,587	46,448	14	779	48
Korea, Dem. Rep.	6.4	..	..	..	..	6	254	3
Korea, Rep.	76.1	151	410	52,691	24,665	207	33,003	6,551
Kuwait	80.6	..	..	..	..	19	2,133	334
Kyrgyz Republic	91.1	..	110	..	..	13	488	2
Lao PDR	13.8	273	..	..	..	4	125	1
Latvia	38.3	161	30	157,014	1,115,793	17	407	2
Lebanon	95.0	..	..	..	..	10	775	80
Lesotho	17.9	137	..	..	..	1	17	0
Libya	57.2	..	..	..	..	6	639	0
Lithuania	87.6	436	89	53,960	491,829	7	214	2
Macedonia, FYR	63.8	79	3	..	..	5	287	1
Madagascar	11.6	158	..	..	..	17	542	25
Malawi	18.5	327	..	10,172	10,172	4	153	3
Malaysia	75.1	..	..	6,159	6,867	188	15,118	1,415
Mali	12.1	90	..	..	..	1	75	16
Mauritania	11.3	54	..	..	..	5	235	17
Mauritius	93.1	110	..	..	..	9	718	137
Mexico	37.4	106	..	2,674	52,983	223	14,678	169
Moldova	87.3	91	41	..	..	4	190	1
Mongolia	7.8	..	2	..	..	10	662	3
Morocco	50.4	144	54,671	18,995	55,334	32	2,301	57
Mozambique	18.7	141	230	..	..	4	163	5
Myanmar	12.2	..	..	..	..	15	334	1
Namibia	12.1	362	..	4,234	131,387	7	237	29
Nepal	41.5	76	..	..	..	28	755	18
Netherlands	90.1	73	..	44,295	9,816	..	..	..
New Zealand	58.1	100	..	..	..	187	9,597	745
Nicaragua	10.1	65	..	..	..	1	51	9
Niger	7.9	27	..	..	..	1	75	16
Nigeria	18.8	106	..	580	1	6	221	5
Norway	72.0	106	244	..	..	279	12,727	177
Oman	30.0	212	..	..	..	18	1,620	106
Pakistan	57.0	283	..	93,400	25,084	70	5,375	427
Panama	33.6	128	..	..	..	17	689	9
Papua New Guinea	3.5	27	..	..	..	27	970	18
Paraguay	9.5	..	..	..	..	4	213	0
Peru	10.1	39	..	2,007	5,176	35	2,328	14
Philippines	..	..	..	..	..	65	7,263	384
Poland	65.4	156	1,640	85,254	290,148	36	1,806	70
Portugal	86.0	94	369	33,497	13,832	80	4,806	211
Puerto Rico	100.0	..	..	..	..	..	..	..
Romania	51.0	108	616,044	175,264	230,933	17	913	15
Russian Federation	78.8	..	18,000	340,048	1,790,023	465	22,117	854



	Roads			Railways		Air		
	Paved roads	Normalized	Goods	Passenger-	Goods	Aircraft	Passengers	Air freight
	%	road index	transported	km per	transported	departures	carried	millions
	1996	1996	million	PPP	ton-km per PPP	thousands	thousands	ton-km
			ton-km	\$ million	\$ million			
			1996	of GDP	of GDP	1996	1996	1996
Rwanda	9.1	119						
Saudi Arabia	42.7	142		875	4,384	101	11,706	863
Senegal	29.3	106		14,302	30,617	5	155	16
Sierra Leone	11.0	100				0	15	0
Singapore	97.4					57	11,841	4,115
Slovak Republic	98.5		34,745	93,911	298,678	3	63	0
Slovenia	82.0	100	5	27,278	115,975	8	393	23
South Africa	41.5	300		34,034	336,265	90	7,183	335
Spain	99.0	104	589	25,645	15,998	333	27,759	740
Sri Lanka	40.0	469	3,020	83,699	4,027	9	1,171	159
Sudan	36.3					11	491	46
Sweden	76.1	85		35,735	103,765	183	9,879	250
Switzerland			410,000			218	10,468	1,511
Syrian Arab Republic	23.0			11,108	29,013	9	599	16
Tajikistan	82.7					3	594	3
Tanzania	4.2	69				6	224	3
Thailand	97.5	173				92	14,078	1,348
Togo	31.6	180				1	75	16
Trinidad and Tobago	51.1	217				14	897	22
Tunisia	78.9	172		23,325	53,910	14	1,371	18
Turkey	25.0	53	135,781	13,978	17,619	85	8,464	207
Turkmenistan	81.2					9	523	2
Uganda				2,168	12,829	1	100	1
Ukraine	95.0	96	1,254,540	329,444	910,955	28	1,151	17
United Arab Emirates	100.0	32				38	4,063	651
United Kingdom	100.0	64	1,689	26,728	11,465			
United States	60.8	112		1,387	365,655	8,032	571,072	21,676
Uruguay	90.0	167		22,273	18,789	7	504	4
Uzbekistan	87.3					12	1,566	8
Venezuela	39.4	108				83	4,487	117
Vietnam	25.1			24,649	20,223	29	2,505	2
West Bank and Gaza								
Yemen, Rep.	8.1							
Yugoslavia, FR (Serb./Mont.)	58.3		100					
Zambia	18.3	189		34,856	60,312			
Zimbabwe	47.4	144		22,994	200,217	10	654	153
World	47.4 m	.. m				18,746 s	1,388,670 s	
Low income	19	106.0				1,040	87,460	
Excl. China & India	18	105.8				396	22,435	
Middle income	55					3,604	222,117	
Lower middle income	53	109.1				1,995	125,563	
Upper middle income	57					1,609	96,554	
Low & middle income	32	110.1				4,644	309,577	
East Asia & Pacific						1,305	110,432	
Europe & Central Asia	82	99.8				869	47,754	
Latin America & Carib.	26	107.9				1,519	76,532	
Middle East & N. Africa	54					371	36,896	
South Asia	42	282.8				284	22,305	
Sub-Saharan Africa	17	107.1				296	15,658	
High income						14,102	1,079,094	



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 by measurement focus (whether on 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 and extent of roads, railways, and air transport systems and the volume of freight and passengers carried.

Data for most transport sectors are not internationally comparable. Unlike demographic statistics, national income accounts, and international trade data, the collection of infrastructure data has not been "internationalized." Data on roads are collected by the International Road Federation (IRF) and data on air transport are collected by the International Civil Aviation Organization (ICAO). National road associations are the primary source of IRF data; in countries where such an association is absent 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 the compiled data are of uneven quality.

Even when data are available, they are often of limited value because of incompatible definitions, inappropriate geographical units of observation, or lack of timeliness. Data on passengers carried, for example, may be distorted because of "ticketless" travel or breaks in journeys; in such cases the statistics may report the number of passenger-kilometers for two passengers instead of one. Measurement problems are compounded because over time the mix of transported commodities changes, and in some cases shorter-haul traffic has been excluded from intercity traffic. Finally, the quality of transport service (reliability, transit time, and condition of goods delivered) is rarely measured but may be as important as quantity in assessing an economy's transport system. Serious efforts are needed to create internationally databases whose comparability and accuracy can be gradually improved.

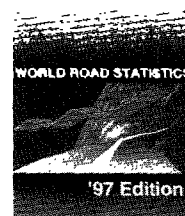
Some form of normalization is required to measure the relative size of an indicator over time or across countries. The table presents normalized indicators for railway passenger-kilometers per million dollars of GDP measured in purchasing power parity (PPP) terms, goods transported by railway ton-kilo-

meters per million dollars of GDP PPP (see tables 4.10 and 4.11 for a discussion of PPP) and the normalized road index. While the rail traffic indicators are normalized by a single indicator—the size of the economy—the normalized road index uses a multi-dimensional regression function to estimate a country's "normal," or expected, stock of roads (Armington and Dikhanov 1996). Normalizing variables include population, population density, per capita income, urbanization, and regional differences. The value of the normalized road index shows whether a country's stock of roads exceeds or falls short of the average for countries with similar characteristics.

Definitions

- **Paved roads** are roads that have been sealed with asphalt or similar road-building materials.
- **Normalized road index** is the total length of roads in a country compared with the expected length of roads, where the expectation is conditioned on population, population density, per capita income, urbanization, and region-specific dummy variables. A value of 100 is "normal." If the index is more than 100, the country's stock of roads exceeds the average.
- **Goods transported by road** are the volume of goods transported by road vehicles, measured in millions of metric tons times kilometers traveled.
- **Railway passengers** measures the total passenger-kilometers per million dollars of GDP measured in PPP terms (see tables 4.10 and 4.11 for a discussion of PPP).
- **Goods transported by rail** measures the tonnage of goods transported times kilometers traveled per million dollars of GDP measured in PPP terms.
- **Aircraft departures** are the number of domestic and international takeoffs of aircraft.
- **Passengers carried** include both domestic and international aircraft passengers.
- **Air freight** is the sum of the tons of freight, express, and diplomatic bags carried on each flight stage (the operation of an aircraft from takeoff to its next landing) multiplied by the stage distance.

Data sources



Data on roads are from the International Road Federation's *World Road Statistics*. The normalized road index is based on World Bank staff estimates. Railway data are from a database maintained by the World Bank's Transportation, Water, and Urban Development Department, Transport Division. Air transport data are from the International Civil Aviation Organization's *Civil Aviation Statistics of the World*.



5.10 Power and communications

	Electric power			Telephone mainlines						International telecommunications		
	Consumption per capita kwh	Production average annual % growth	Transmission and distribution losses % of output	In largest city		Waiting list thousands	Waiting time years	per employee	Revenue per line \$	Cost of local call \$ per 3 minutes	Outgoing traffic minutes per subscriber	Cost of call to U.S. \$ per 3 minutes
				per 1,000 people	per 1,000 people							
				1996	1996							
1995	1980-95	1995	1996	1996	1996	1996	1996	1996	1996	1996		
Albania	623	-2.3	51	19	51	21.3	3.1	14	571	0.04	323	9.51
Algeria	513	7.3	17	44	64	702.2	>10	58	162	0.02	73	5.04
Angola	60	2.1	28	5	23	..	..	26	3,698	..	302	..
Argentina	1,519	2.3	18	174	224	110.6	0.2	186	982	0.10	30	7.37
Armenia	811	-6.0	39	154	212	54.7	..	63	50	..	90	..
Australia	8,033	4.5	7	519	485	..	0.0	118	1,411	0.19	101	3.00
Austria	5,800	2.7	6	466	632	3.7	0.1	219	709	0.20	251	3.77
Azerbaijan	1,806	-1.5	23	85	170	178.7	5.7	44	68	0.19	42	3.85
Bangladesh	57	10.4	32	3	25	155.2	6.6	15	634	0.04	81	..
Belarus	2,451	1.6	15	208	302	573.1	5.5	86	106	0.01	62	6.00
Belgium	6,752	3.4	5	465	635	1.7	0.0	180	948	0.20	248	3.05
Benin	43	2.2	50	6	33	5.2	1.3	25	1,107	0.13	212	8.26
Bolivia	356	4.0	12	47	67	50.1	1.0	199	307	..	65	..
Bosnia and Herzegovina	..	..	23	90	429	70.0	..	80	2	..	19	..
Botswana	..	..	..	48	180	9.3	1.0	43	972	0.03	427	6.06
Brazil	1,610	5.5	17	96	273	..	..	169	821	0.04	24	4.68
Bulgaria	3,415	-1.5	13	313	374	480.0	7.7	100	30	0.01	32	..
Burkina Faso	..	..	..	3	29	..	..	28	1,229	0.12	200	..
Burundi	..	..	..	2	45	0.0	..	26	1,079	0.04	169	13.67
Cambodia	..	..	..	1	5	13.4	>10	12	25,550	..	857	..
Cameroon	196	3.1	4	5	30	42.0	9.4	36	1,088	0.08	352	12.02
Canada	15,147	2.8	5	602	..	..	0.0	245	731	..	168	1.16
Central African Republic	..	..	..	3	12	1.1	1.5	23	1,933	0.20	389	24.04
Chad	..	..	..	1	6	1.4	3.0	16	1,264	0.20	314	14.07
Chile	1,698	6.1	10	156	192	72.5	0.3	184	743	0.09	72	2.79
China	637	8.2	7	45	140	812.0	0.1	114	318	..	26	..
Hong Kong, China	4,850	7.6	15	547	537	..	0.0	91	1,866	..	504	2.64
Colombia	948	5.4	21	118	227	728.0	1.5	228	439	0.01	31	4.12
Congo, Dem. Rep.	132	3.4	3	1	6	6.0	..	19	..	..	36	..
Congo, Rep.	207	9.4	0	8	..	0.8	0.6	23	2,182	0.13	190	..
Costa Rica	1,348	5.5	8	155	..	77.9	0.8	106	441	0.04	113	..
Côte d'Ivoire	159	2.7	4	9	36	74.2	5.6	38	1,393	0.20	285	..
Croatia	2,074	8.5	19	309	405	71.7	0.6	146	426	0.02	175	5.66
Cuba	818	0.7	13	32	74	..	..	25	1,217	..	35	..
Czech Republic	4,654	1.3	8	273	525	577.0	2.0	104	412	0.07	103	4.64
Denmark	5,975	2.9	6	618	..	..	0.0	199	1,236	0.17	175	3.35
Dominican Republic	588	4.5	25	83	132	..	..	158	..	1.52	124	..
Ecuador	600	5.4	21	73	189	60.2	0.7	160	296	0.01	56	8.21
Egypt, Arab Rep.	896	8.6	..	50	95	1,310.2	5.0	58	256	0.01	37	6.19
El Salvador	507	5.4	13	56	144	200.0	4.0	60	617	0.02	187	..
Eritrea	..	..	..	5	32	40.0	>10	35	922	0.03	92	8.25
Estonia	3,022	-0.9	20	299	245	96.1	3.2	116	337	0.04	133	4.99
Ethiopia	22	4.6	3	3	45	195.5	>10	27	526	0.03	70	..
Finland	12,785	4.2	2	549	1,349	0.0	0.0	178	956	0.14	118	3.22
France	5,892	3.9	6	564	..	..	0.0	198	830	0.15	90	3.03
Gabon	737	3.1	10	32	90	3.5	2.0	44	1,971	0.18	508	..
Gambia, The	..	..	..	19	37	19.2	>10	28	781	0.09	274	..
Georgia	1,057	-3.8	25	105	183	230.0	..	72	13	..	0	..
Germany	5,527	1.2	5	538	558	..	..	205	1,011	0.16	118	2.87
Ghana	318	4.6	4	4	17	28.3	2.9	38	1,283	0.08	267	..
Greece	3,259	3.8	7	509	620	78.6	0.4	224	587	..	97	3.05
Guatemala	264	5.5	13	31	117	100.0	2.7	56	615	0.03	101	..
Guinea	..	..	..	2	5	1.6	1.0	19	1,555	0.12	152	8.76
Guinea-Bissau	..	..	..	7	..	0.7	1.8	32	1,447	0.09	311	..
Haiti	32	-1.6	53	8	23	40.0	8.0	23	1,301	..	..	7.07
Honduras	333	6.5	28	31	102	268.9	>10	42	887	0.06	219	7.11



	Electric power			Telephone mainlines						International telecommunications		
	Consumption per capita kwh 1995	Production average annual % growth 1980-95	Transmission and distribution losses % of output 1995	per 1,000 people 1996	In largest city per 1,000 people 1996	Waiting list thousands 1996	Waiting time years 1996	per employee 1996	Revenue per line \$ 1996	Cost of local call \$ per 3 minutes 1996	Outgoing traffic minutes per subscriber 1996	Cost of call to U.S. \$ per 3 minutes 1996
Hungary	2,682	0.7	14	261	386	250.9	0.6	164	485	0.15	100	4.77
India	339	9.2	18	15	80	2,277.0	1.0	28	238	0.02	29	6.35
Indonesia	263	15.0	12	21	77	117.5	0.2	105	643	0.05	63	6.07
Iran, Islamic Rep.	1,059	8.7	20	95	222	1,379.0	1.9	121	148	0.01	29	6.02
Iraq	1,396	6.5	..	33	..	..	..	..	..	..	..	..
Ireland	4,139	4.0	9	395	..	..	..	120	1,273	0.16	311	3.32
Israel	4,836	5.9	4	446	414	12.0	0.1	287	843	0.08	108	3.43
Italy	4,163	3.1	7	440	529	32.0	0.1	253	911	0.20	84	3.36
Jamaica	2,049	8.4	11	142	168	183.1	3.5	88	995	0.06	183	..
Japan	6,937	4.0	4	489	..	..	0.0	276	1,532	0.09	28	5.10
Jordan	1,139	10.9	8	60	160	129.0	9.9	81	702	0.03	226	..
Kazakhstan	3,106	-2.8	15	118	275	668.4	4.2	39	126	0.00	8	..
Kenya	123	5.5	16	8	77	70.6	4.5	22	1,139	0.06	80	11.17
Korea, Dem. Rep.	261	-10.2	84	49	85	16.4	0.2	..	..	..	3	..
Korea, Rep.	3,606	11.7	5	430	466	..	0.0	294	469	0.04	35	4.88
Kuwait	13,185	5.5	..	232	..	2.6	0.2	52	572	..	364	5.51
Kyrgyz Republic	1,666	2.8	28	75	230	67.4	..	51	63	..	79	11.82
Lao PDR	..	..	..	6	13	2.6	0.4	29	709	..	240	..
Latvia	1,789	-1.6	32	298	371	102.2	6.8	116	191	0.08	59	6.43
Lebanon	1,224	1.4	13	149	..	..	..	115	580	0.04	85	7.14
Lesotho	..	..	..	9	64	5.4	2.5	22	742	0.04	..	..
Libya	3,569	10.2	..	59	36	..	..	..	..	0.03	147	..
Lithuania	1,711	-2.7	15	268	362	141.6	3.2	100	134	0.02	54	7.88
Macedonia, FYR	2,443	..	12	170	235	21.0	1.5	108	219	0.01	139	..
Madagascar	..	..	..	3	5	10.0	6.5	12	1,012	0.06	148	..
Malawi	..	..	..	4	13	29.9	>10	8	900	0.04	214	12.45
Malaysia	1,953	10.1	10	183	143	160.0	0.4	137	679	0.04	66	5.99
Mali	..	..	..	2	16	..	..	16	2,646	0.17	429	17.59
Mauritania	..	..	..	4	13	1.2	1.6	23	2,689	0.13	479	..
Mauritius	..	..	..	162	206	35.9	1.4	106	622	0.06	118	5.85
Mexico	1,305	4.9	14	95	..	196.9	0.5	180	786	0.08	107	3.01
Moldova	1,517	1.3	18	140	269	201.7	8.7	78	64	0.10	105	6.39
Mongolia	..	..	..	39	80	40.0	4.6	18	206	0.02	26	14.77
Morocco	407	6.5	4	45	121	48.0	0.3	85	556	0.09	104	6.88
Mozambique	67	-5.8	5	3	24	22.7	>10	25	948	0.04	217	..
Myanmar	52	5.3	34	4	24	55.0	2.7	25	1,792	0.17	82	26.86
Namibia	..	..	..	54	253	4.5	0.7	51	899	..	596	..
Nepal	39	10.9	26	5	69	136.2	>10	30	337	0.02	184	..
Netherlands	5,374	2.9	4	543	..	20.0	0.1	284	1,005	0.19	181	2.69
New Zealand	8,504	3.0	9	499	..	..	0.0	189	1,201	..	179	4.78
Nicaragua	272	1.7	28	26	55	..	..	30	473	0.04	304	..
Niger	..	..	..	2	16	1.4	0.9	13	1,138	0.15	273	..
Nigeria	85	4.6	32	4	16	98.1	3.5	28	1,904	0.26	233	..
Norway	23,892	2.2	7	555	732	6.0	0.0	132	1,471	0.11	189	2.36
Oman	2,891	15.7	..	86	150	3.3	0.2	92	1,260	0.07	317	..
Pakistan	304	10.1	23	18	61	209.5	0.7	44	442	0.05	32	..
Panama	1,089	2.9	19	122	214	28.8	1.4	90	764	..	127	5.20
Papua New Guinea	..	..	..	11	200	0.3	0.1	23	2,418	0.13	572	..
Paraguay	683	10.4	1	36	125	..	..	25	1,034	0.06	123	..
Peru	525	2.4	21	60	119	44.8	0.2	228	920	0.10	49	5.76
Philippines	337	2.8	16	25	96	900.2	2.9	98	610	..	108	6.22
Poland	2,324	0.2	13	169	..	2,327.4	3.3	89	389	0.06	67	4.12
Portugal	2,857	5.1	11	375	645	7.6	0.0	171	1,198	0.08	91	3.74
Puerto Rico	..	..	..	336	437	57.0	1.1	157	917	0.13	723	..
Romania	1,603	-3.5	11	140	..	1,299.0	7.0	59	177	0.01	29	11.57
Russian Federation	4,172	0.0	10	175	467	8,796.8	>10	58	203	0.27	9	8.61



5.10

	Electric power				Telephone mainlines					International telecommunications		
	Consumption per capita kwh	Production average annual % growth	Transmission and distribution losses % of output	In largest city per 1,000 people	Waiting list thousands	Waiting time years	per employee	Revenue per line \$	Cost of local call \$ per 3 minutes	Outgoing traffic minutes per subscriber	Cost of call to U.S. \$ per 3 minutes	
												1995
Rwanda	..	..	..	3	..	..	20	1.016	..	89	..	
Saudi Arabia	3,906	11.5	9	106	189	1,262.5	9.7	104	1.053	0.02	292	6.41
Senegal	91	3.1	13	11	29	17.8	1.7	65	1.275	0.10	260	9.36
Sierra Leone	..	..	..	4	20	14.0	>10	18	896	0.07	190	..
Singapore	6,018	8.6	4	513	513	0.2	0.0	224	1,785	0.03	541	4.02
Slovak Republic	4,075	0.8	8	232	515	144.9	1.2	79	382	0.06	109	5.45
Slovenia	4,710	1.2	5	333	610	48.7	1.1	215	492	0.02	160	5.56
South Africa	3,874	3.3	6	100	495	126.8	0.6	74	892	0.09	83	..
Spain	3,594	3.4	10	392	440	1.5	0.0	229	753	0.10	77	3.49
Sri Lanka	208	6.2	18	14	219	237.8	7.4	25	1,410	0.05	122	3.25
Sudan	37	0.8	19	4	3	75.0	6.4	38	221	0.03	130	10.55
Sweden	14,096	2.8	6	682	778	..	0.0	304	852	0.11	156	2.65
Switzerland	6,916	2.5	6	640	956	0.3	0.0	221	1,863	0.24	416	2.43
Syrian Arab Republic	698	7.2	..	82	176	2,945.4	>10	68	1,001	0.05	66	33.41
Tajikistan	2,367	2.6	12	42	222	72.0	..	50	41	..	1	26.87
Tanzania	52	5.5	13	3	21	107.9	>10	19	775	0.08	63	..
Thailand	1,199	12.4	8	70	339	821.6	1.2	120	545	0.12	61	7.39
Togo	..	..	..	6	22	7.6	3.4	28	1,618	0.12	359	13.20
Trinidad and Tobago	2,817	4.0	10	168	137	6.4	1.1	80	825	0.04	277	3.48
Tunisia	661	6.6	10	64	73	81.8	1.5	98	505	0.07	146	6.47
Turkey	1,057	8.6	16	224	438	752.7	0.7	194	180	0.06	33	4.37
Turkmenistan	1,109	0.5	10	74	198	79.6	3.3	41	..	..	17	..
Uganda	..	..	..	2	34	6.3	0.7	36	905	0.19	113	9.29
Ukraine	2,785	-1.1	10	181	395	3,103.2	7.2	71	119	..	9	..
United Arab Emirates	7,752	8.0	..	302	425	1.0	0.0	128	1,396	..	798	3.78
United Kingdom	5,081	2.0	7	528	..	..	0.0	218	932	0.19	148	1.86
United States	11,571	3.0	7	640	..	..	0.0	190	1,073	0.09	113	..
Uruguay	1,574	3.8	19	209	309	48.0	1.0	117	938	0.19	82	5.90
Uzbekistan	1,731	0.8	10	76	234	329.4	3.3	68	68,478	..	..	..
Venezuela	2,518	4.3	21	117	285	476.3	2.4	161	622	0.06	53	5.25
Vietnam	146	9.2	22	16	70	..	..	16	530	0.11	44	..
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	99	9.2	26	13	71	75.3	5.2	57	732	0.02	117	13.44
Yugoslavia, FR (Serb./Mont.)	2,921	-2.5	9	197	424	212.8	4.0	178	199	0.01	109	7.04
Zambia	574	-2.2	11	9	22	24.7	..	24	1,393	0.25	162	4.40
Zimbabwe	738	1.8	7	15	60	113.2	7.2	30	789	0.03	279	..
World	1,978 w	4.5 w	8 w	133 w	271 w	28,093.8 s	1.5 m	179 w	791 w	0.07 m	161 m	5.81 m
Low income	414	8.4	15	26	56	2,383.2	4.9	104	333	0.10	195	10.86
Excl. China & India	187	8.3	22	11	56	1,571.2	5.4	40	592	0.10	200	11.17
Middle income	1,619	7.8	14	105	305	25,612.6	1.5	116	462	0.06	121	5.99
Lower middle income	1,429	11.2	15	94	312	21,735.4	2.9	110	293	0.04	108	6.22
Upper middle income	2,072	4.2	13	130	283	3,877.1	1.0	131	738	0.06	175	5.45
Low & middle income	836	7.9	15	52	225	27,995.8	2.7	113	420	0.06	142	6.45
East Asia & Pacific	575	7.7	13	41	52	1,899.7	0.4	113	391	0.11	162	..
Europe & Central Asia	2,798	11.4	12	185	397	19,569.9	3.3	102	218	0.04	73	6.00
Latin America & Carib.	1,298	4.7	17	102	196	1,658.1	1.1	155	780	0.06	124	5.25
Middle East & N. Africa	1,122	8.8	15	64	121	3,780.7	5.1	93	427	0.05	104	6.47
South Asia	300	9.2	19	14	69	155.5	6.6	30	291	0.05	99	..
Sub-Saharan Africa	437	3.1	13	15	30	931.9	2.9	63	935	0.09	253	10.55
High income	7,755	3.2	6	540	569	98.0	0.0	210	1,002	0.16	199	3.27



About the data

A country's production of electricity is a basic indicator of its size and level of development. Although a few countries export electrical 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. Adjustments are made, for example, to account for self-production by establishments that, in addition to their main activities, generate electricity wholly or partly for their own use. In some countries self-production by households and small entrepreneurs is substantial because of remoteness or unreliable public power sources, and in these cases may not be adequately reflected in these adjustments. Electricity consumption is equivalent to production less power plants' own use and transmission, distribution, and transformation losses. It includes consumption by auxiliary stations, losses in transformers that are considered integral parts of those stations, and electricity produced by pumping installations. It covers electricity generated by primary sources of energy—coal, oil, gas, nuclear, hydro, geothermal, wind, tide and wave, and combustible renewables—where data are available. Neither production nor consumption data capture the reliability of supplies, including frequency of outages, breakdowns, and load factors.

Over the past decade privatization and deregulation have spurred dramatic growth in telecommunications in many countries. The table presents some common performance indicators for telecommunications, including measures of supply and demand, service quality, productivity, economic and financial performance, capital investment, and tariffs.

Demand for telecommunications is often measured by the sum of telephone mainlines and the number of registered applicants for new connections. (A mainline is normally identified by a unique number that is the one billed). In some countries the list of registered applicants does not reflect real current pending demand, which is often hidden or suppressed, reflecting an extremely short supply that has discouraged potential applicants from applying for telephone service. And in some cases waiting lists may overstate demand because applicants have placed their names on the list several times to improve their chances.

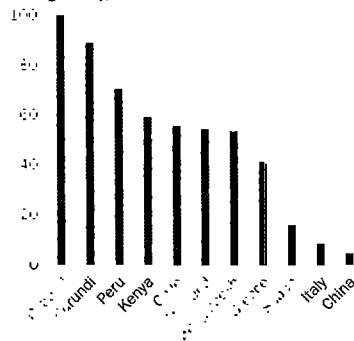
Waiting time is calculated by dividing the number of applicants on the waiting list by the average number of mainlines added each year over the past three years. The number of mainlines no longer reflects a telephone system's full capacity because mobile telephones provide an alternative point of access. (See table 5.11 for data on mobile phones.)

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

Figure 5.10a

Where are the telephones?

% of country's total telephone mainlines in largest city, 1995



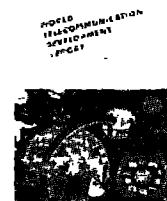
Source: International Telecommunication Union.

In some countries a single large city may dominate the economic and social life of the country, and access to telecommunications services is high. In other countries with widely dispersed populations and policies aimed at wider diffusion of telecommunications, the share of telephone mainlines in the largest city may be well under 5 percent of the country's total mainlines.

Definitions

- **Electricity consumption** measures the production of power plants and combined heat and power plants less distribution losses and own use by heat and power plants.
- **Electric power production** refers to gross production in kilowatt-hours by private companies, cooperative organizations, local and regional authorities, government organizations, and self-producers. Electric power production growth is average annual growth in power production.
- **Electric power transmission and distribution losses** are losses in transmission between sources of supply and points of distribution and in distribution to consumers, including pilferage.
- **Telephone mainlines** are telephone lines connecting a customer's equipment to the public switched telephone network. Data are presented for the entire country and the largest city.
- **Waiting list** shows the number of applications for a connection to a mainline that have been held up by a lack of technical capacity.
- **Waiting time** is the approximate number of years applicants must wait for a telephone line.
- **Mainlines per employee** is calculated by dividing the number of mainlines by the number of telecommunications staff (with part-time staff converted to full-time equivalents) employed by telecommunications enterprises providing public telecommunications services.
- **Revenue per line** is the revenues received by firms for providing telecommunication services.
- **Cost of local call** is the cost of a three-minute call within the same exchange area using the subscriber's equipment (that is, not from a public phone).
- **Outgoing traffic** is the telephone traffic, measured in minutes per subscriber, that originated in the country that has a destination outside the country.
- **Cost of international call to U.S.** is the cost of a three-minute peak rate call from the country to the United States.

Data sources



Data on electricity consumption, power growth, and losses are from the IEA's *Energy Statistics and Balances of Non-OECD Countries 1994-95*, the IEA's *Energy Statistics of OECD Countries 1994-95*, and the United Nations' *Energy Statistics Yearbook*. Telecommunications data are from the International Telecommunication Union's (ITU) *World Telecommunication Development Report* except for data on telephone traffic data, which are from *Direction of Traffic*, published by the ITU and TeleGeography, Inc.



5.11 The information age

	Daily newspapers	Radios	Television		Mobile phones	Fax machines	Personal computers	Internet hosts
	per 1,000 people	per 1,000 people	Sets per 1,000 people	Cable subscribers per 1,000 people	per 1,000 people	per 1,000 people	per 1,000 people	per 10,000 people
	1994	1995	1996	1996	1996	1995	1996	July 1997
Albania	54	..	173	..	1	..	..	0.32
Algeria	46	..	68	..	0	0.2	3.4	0.01
Angola	11	58	51	..	0	..	..	0.02
Argentina	138	..	347	116.4	16	1.4	24.6	5.32
Armenia	23	..	216	..	0	0.1	..	0.88
Australia	258	..	666	..	208	26.3	311.3	382.44
Austria	472	348	493	110.7	74	35.4	148.0	108.25
Azerbaijan	28	..	212	0.1	2	0.3	..	0.11
Bangladesh	6	48	7	..	0	0.0	..	0.00
Belarus	187	322	292	..	1	0.9	..	0.44
Belgium	321	..	464	360.0	47	17.8	167.3	84.64
Benin	2	1,461	73	..	0	0.1	..	0.02
Bolivia	69	..	202	3.4	4	..	..	0.69
Bosnia and Herzegovina	131	..	55	..	0	..	..	0.13
Botswana	24	816	27	..	..	2.2	6.7	1.58
Brazil	45	222	289	11.8	16	1.7	18.4	4.20
Bulgaria	..	354	361	..	3	1.8	295.2	6.65
Burkina Faso	0	31	6	..	0	..	..	0.04
Burundi	3	71	2	..	0	0.5	..	0.01
Cambodia	..	121	9	..	2	0.1	..	0.01
Cameroon	4	326	75	..	0	..	..	0.05
Canada	189	..	709	262.5	114	23.6	192.5	228.05
Central African Republic	1	93	5	..	0	0.0	..	0.02
Chad	0	620	2	..	..	0.0	..	0.00
Chile	100	..	280	39.9	23	1.8	45.1	13.12
China	23	161	252	28.9	6	0.2	3.0	0.21
Hong Kong, China	719	..	388	50.2	216	46.3	150.5	74.84
Colombia	64	..	188	3.1	13	2.6	23.3	1.81
Congo, Dem. Rep.	3	102	41	..	0	0.1	..	0.00
Congo, Rep.	8	318	8	..	..	..	..	0.02
Costa Rica	99	..	220	16.2	14	0.7	..	12.14
Côte d'Ivoire	7	..	60	..	1	..	1.4	0.17
Croatia	575	..	251	10.5	14	8.2	20.9	14.08
Cuba	120	241	200	0.0	0	..	..	0.06
Czech Republic	219	..	406	45.9	19	7.1	53.2	47.66
Denmark	365	..	533	263.4	250	47.6	304.1	259.73
Dominican Republic	34	..	84	15.5	8	0.3	..	0.03
Ecuador	72	..	148	3.9	5	2.7	3.9	0.90
Egypt, Arab Rep.	64	..	126	..	0	0.4	5.8	0.31
El Salvador	50	..	250	4.6	3	..	..	0.34
Eritrea	..	372	7	..	..	0.2	..	0.00
Estonia	242	..	449	12.9	47	8.8	6.7	45.35
Ethiopia	2	206	4	..	..	0.0	..	0.00
Finland	473	1,331	605	164.4	292	31.5	182.1	653.61
France	237	..	598	31.6	42	32.7	150.7	49.86
Gabon	16	..	76	..	6	0.3	6.3	0.00
Gambia, The	2	157	..	..	3	0.9	..	0.00
Georgia	..	62	474	2.4	0	0.1	..	0.55
Germany	317	..	493	203.9	71	19.5	233.2	106.68
Ghana	18	..	41	..	1	0.3	1.2	0.15
Greece	156	..	442	..	53	2.9	33.4	18.76
Guatemala	23	..	122	16.9	4	1.0	2.8	0.79
Guinea	..	76	8	..	0	..	0.3	0.00
Guinea-Bissau	6	40	..	..	..	0.5	..	0.09
Haiti	6	60	5	..	..	..	..	0.00
Honduras	44	108	80	8.0	0	..	..	0.94



	Daily newspapers	Radios	Television		Mobile phones	Fax machines	Personal computers	Internet hosts
	per 1,000 people 1994	per 1,000 people 1995	Sets per 1,000 people 1996	Cable subscribers per 1,000 people 1996	per 1,000 people 1996	per 1,000 people 1995	per 1,000 people 1996	per 10,000 people July 1997
Hungary	228	..	444	135.2	46	4.4	44.1	33.29
India	..	119	64	17.2	0	0.1	1.5	0.05
Indonesia	20	..	232	..	3	0.4	4.8	0.54
Iran, Islamic Rep.	17	238	164	..	1	0.5	32.7	0.00
Iraq	27	..	78	..	..	..	..	0.00
Ireland	170	..	469	151.9	82	22.4	145.0	90.89
Israel	281	..	303	160.5	184	25.0	117.6	104.79
Italy	105	102	436	..	112	31.4	92.3	36.91
Jamaica	66	764	326	73.9	22	..	4.6	1.36
Japan	576	..	700	87.9	214	102.2	128.0	75.80
Jordan	48	325	175	..	3	7.3	7.2	0.38
Kazakhstan	..	..	275	..	0	0.2	..	0.70
Korea, Rep.	213	163	115	..	..	0.1	..	0.00
Korea, Dem. Rep.	404	..	326	84.8	70	8.9	131.7	28.77
Kuwait	401	..	373	..	89	20.7	74.1	21.72
Kyrgyz Republic	11	..	238	..	..	..	..	0.23
Lao PDR	3	134	10	..	1	0.1	1.1	0.00
Latvia	228	..	598	147.1	11	0.3	7.9	21.03
Lebanon	172	..	355	0.4	65	..	24.3	2.72
Lesotho	7	77	13	..	1	0.3	..	0.08
Libya	13	..	143	..	..	..	..	0.01
Lithuania	136	485	376	80.9	14	1.0	6.5	7.46
Macedonia, FYR	21	..	170	..	0	0.8	..	2.15
Madagascar	4	214	24	..	0	..	..	0.03
Malawi	2	902	..	..	0	0.1	..	0.00
Malaysia	124	473	228	..	74	5.0	42.8	19.30
Mali	4	168	11	..	0	..	..	0.03
Mauritania	0	188	82	..	..	0.1	5.3	0.00
Mauritius	68	..	219	..	18	17.7	31.9	1.84
Mexico	113	..	193	13.3	11	2.4	29.0	3.72
Moldova	24	209	307	8.4	0	0.1	2.6	0.39
Mongolia	88	79	63	8.8	0	0.9	..	0.07
Morocco	13	..	145	..	2	0.3	1.7	0.32
Mozambique	5	46	3	..	..	0.4	0.8	0.02
Myanmar	23	71	7	..	0	0.0	..	0.00
Namibia	102	..	29	..	4	..	12.7	2.16
Nepal	8	57	4	0.2	..	0.0	..	0.07
Netherlands	334	..	495	377.9	52	32.3	232.0	219.01
New Zealand	297	..	517	0.3	138	18.1	266.1	424.34
Nicaragua	30	..	170	4.9	1	..	..	1.60
Niger	1	61	23	..	..	0.0	..	0.04
Nigeria	18	..	55	..	0	..	4.1	0.00
Norway	607	..	569	151.4	287	30.1	273.0	474.63
Oman	30	370	591	..	6	1.3	10.9	0.00
Pakistan	21	..	24	..	0	1.2	1.2	0.07
Panama	62	..	229	11.3	..	..	..	1.44
Papua New Guinea	15	..	4	..	1	0.2	..	0.18
Paraguay	42	..	144	7.1	7	..	..	0.47
Peru	86	..	142	6.3	8	0.6	5.9	2.63
Philippines	65	168	125	5.9	13	0.7	9.3	0.59
Poland	141	535	418	70.4	6	1.4	36.2	11.22
Portugal	41	..	367	17.3	67	5.0	60.5	18.26
Puerto Rico	184	796	322	69.1	45	150.2	..	0.30
Romania	297	..	226	110.6	1	0.9	5.3	2.66
Russian Federation	267	341	386	69.4	2	0.2	23.7	5.51



	Daily newspapers	Radios	Television		Mobile phones	Fax machines	Personal computers	Internet hosts
	per 1,000 people	per 1,000 people	Sets per 1,000 people	Cable subscribers per 1,000 people	per 1,000 people	per 1,000 people	per 1,000 people	per 10,000 people
	1994	1995	1996	1996	1996	1995	1996	July 1997
Rwanda	0	76	..	..	..	..	..	0.01
Saudi Arabia	54	..	263	..	10	8.4	37.2	0.15
Senegal	6	..	38	..	0	..	7.2	0.31
Sierra Leone	2	67	17	..	..	0.2	..	0.00
Singapore	364	..	361	13.2	141	25.1	216.8	196.30
Slovak Republic	256	917	384	83.7	5	8.3	186.1	20.47
Slovenia	185	..	375	130.8	20	7.8	47.8	85.66
South Africa	33	182	123	..	22	2.4	37.7	30.67
Spain	104	1,020	509	10.8	33	16.6	94.2	31.00
Sri Lanka	25	193	82	..	4	0.6	3.3	0.33
Sudan	23	311	80	..	0	0.2	0.7	0.00
Sweden	483	..	476	212.4	282	45.3	214.9	321.48
Switzerland	409	..	493	345.1	93	27.8	408.5	207.98
Syrian Arab Republic	18	..	91	..	..	0.3	1.4	0.00
Tajikistan	13	172	279	..	0	0.2	..	0.00
Tanzania	8	398	16	0.0	0	..	..	0.02
Thailand	48	204	167	3.5	28	1.7	16.7	2.11
Togo	2	362	14	..	..	2.4	..	0.01
Trinidad and Tobago	135	..	318	..	11	1.6	19.2	3.24
Tunisia	46	176	156	..	1	2.8	6.7	0.02
Turkey	44	126	309	7.6	13	1.6	13.8	3.60
Turkmenistan	..	..	163	..	..	..	..	0.00
Uganda	2	126	26	..	0	0.1	0.5	0.01
Ukraine	118	..	341	..	1	0.0	5.6	2.09
United Arab Emirates	161	..	276	..	79	16.8	65.5	7.66
United Kingdom	351	..	612	35.6	122	30.8	192.6	149.06
United States	228	..	806	239.5	165	64.6	362.4	442.11
Uruguay	237	..	305	22.0	25	3.5	22.0	3.18
Uzbekistan	7	..	190	..	0	0.1	..	0.06
Venezuela	215	..	180	10.1	35	1.1	21.1	2.06
Vietnam	8	..	180	..	1	0.2	3.3	0.00
West Bank and Gaza	..	..	..	..	..	..	..	..
Yemen, Rep.	17	45	278	..	1	0.2	..	0.00
Yugoslavia, FR (Serb./Mont.)	90	..	185	..	..	1.4	..	2.72
Zambia	8	112	80	..	0	0.1	..	0.27
Zimbabwe	18	..	29	..	..	0.4	6.7	0.24
World	99 w	.. w	211 w	52.9 w	28 w	8.9 w	49.9 w	35.18 w
Low income	19	143	147	23.7	3	0.2	2.3	0.12
Excl. China & India	13	..	47	..	0	..	..	0.07
Middle income	94	..	224	..	10	1.5	21.6	4.21
Lower middle income	92	..	246	..	7	0.8	17.1	1.85
Upper middle income	97	..	259	33.7	18	2.7	30.5	9.73
Low & middle income	50	163	177	..	5	0.6	8.7	1.53
East Asia & Pacific	29	160	228	26.6	7	0.4	4.5	0.57
Europe & Central Asia	171	..	350	..	6	1.2	17.4	6.53
Latin America & Carib.	83	..	216	18.4	14	1.9	23.2	3.48
Middle East & N. Africa	37	..	144	..	3	1.0	17.1	0.20
Sub-Saharan Africa	11	..	43	..	..	..	..	2.03
High income	303	..	611	160.1	131	47.5	224.2	203.46



About the data

The table includes indicators that measure the penetration of the information economy—newspapers, radios, television sets, mobile phones, fax machines, personal computers, and Internet hosts. Other important indicators of information and communications technology—such as the use of teleconferencing or the use of the Internet in organizing and mobilizing conferences, distance education, and commercial transactions—are not collected systematically and so are not reported here.

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

Data presented for other electronic communications and information technology are from the International Telecommunication Union (ITU) and Network Wizards. Data on television sets and cable television subscribers are supplied to the ITU through annual questionnaires sent to national broadcasting authorities and industry associations. Some countries require that television sets

be registered. To the extent that households do not register their televisions or do not register all of their televisions, the number of licensed sets may understate the true number.

Because of different regulatory requirements for the provision of data, complete measurement of the telecommunications sector is not possible. Telecommunications data are compiled through annual questionnaires sent to telecommunications authorities and operating companies. The data are supplemented by annual reports and statistical yearbooks of telecommunications ministries, regulators, operators, and industry associations. In some cases estimates are derived from ITU documents or other references.

Data on fax machines exclude fax modems attached to computers. Some operators report only the equipment they sell, lease, or register, so the actual number is almost certainly much higher.

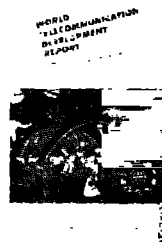
Estimates of the number of personal computers (PCs) are derived from an annual questionnaire, supplemented by other sources. In many countries mainframe computers are used extensively, and thousands of users can be connected to a single mainframe computer; thus the number of PCs understates the total use of computers.

Internet hosts are assigned to countries based on the host's country code, though this does not necessarily indicate that the host is physically located in the country. In addition, all hosts lacking a country code identification are assigned to the United States. Thus the number of Internet hosts shown for each country should be considered an approximation.

Definitions

- **Daily newspapers** are the number of newspapers published at least four times a week, per 1,000 people.
- **Radios** are the estimated number of radio receivers in use for broadcasts to the general public, per 1,000 people.
- **Television sets** are the estimated number of television sets in use, per 1,000 people.
- **Mobile phones** refer to users of portable telephones subscribing to an automatic public mobile telephone service using cellular technology that provides access to the public switched telephone network, per 1,000 people.
- **Fax machines** are the estimated number of facsimile machines connected to the public switched telephone network, per 1,000 people.
- **Personal computers** are the estimated number of self-contained computers designed to be used by a single individual, per 1,000 people.
- **Internet hosts** are the number of computers directly connected to the worldwide network of interconnected computer systems, per 10,000 people. All hosts without a country code identification are assumed to be located in the United States.

Data sources



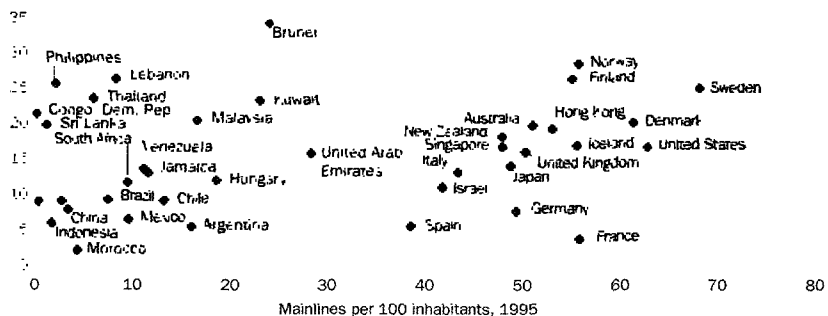
Data on newspapers and radios are from UNESCO, which compiles data mainly from official replies by member states to UNESCO questionnaires and special surveys, but also from official reports and publications, supplemented by information from national and international sources.

Data on television sets, mobile phones, fax machines, and personal computers are from the annual questionnaire sent to member countries by the ITU. These data are reported in the ITU's *World Telecommunication Development Report* or the Telecommunications Indicators database. The text also draws on ITU sources. Data on Internet hosts are from Network Wizards (<http://www.nw.com>).

Figure 5.11a

Mobile telephones play a big role in countries with limited traditional telephone services

Cellular subscribers as % of all telephone subscribers, 1995



Source: International Telecommunication Union.

In some developing countries—mostly in Southeast Asia and South Asia—with low fixed-line penetration, cellular mobile services are developing as substitutes to traditional fixed-line services. Growth in cellular mobile services is reinforced by strong demand (as expressed, for example, through long waiting lists and times for fixed-line service) and competitive service provision. In industrial countries cellular mobile services mainly complement fixed-line services.



5.12 Science and technology

	Scientists and engineers in R&D	Technicians in R&D	Expenditures for R&D	High-technology exports		Royalty and license fees				Patent applications filed ^a	
	per million people 1981-95 ^b	per million people 1981-95 ^b	% of GNP 1981-95 ^b	\$ millions 1996	% of manufactured exports 1996	Receipts \$ millions		Payments \$ millions		Residents 1995	Non-residents 1995
						1990	1996	1990	1996		
Albania	..	..	..	..	..	0	0	0	0	..	1,564
Algeria	..	..	..	46	15	0	..	1	..	28	114
Angola	..	..	..	..	..	0	18	0	0	..	..
Argentina	..	..	0.3	1,195	17	4	6	409	221	..	..
Armenia	..	..	..	..	..	..	..	..	..	..	15,570
Australia	2,477	943	1.4	6,226	39	162	251	827	1,089	9,325	28,156
Austria	1,604	801	1.5	11,975	24	91	181	287	691	2,419	63,707
Azerbaijan	..	..	..	..	..	..	..	..	..	221	31
Bangladesh	..	..	..	..	..	0	0	0	5	70	156
Belarus	3,300	515	0.9	..	..	..	..	..	..	626	16,625
Belgium	1,814	2,200	1.7	..	..	682	683	1,328	1,197	1,464	52,187
Benin	..	..	..	..	..	0	0	0	0	..	..
Bolivia	250	154	1.7	71	41	0	0	3	5	17	106
Bosnia and Herzegovina	..	..	..	..	..	..	..	..	..	..	..
Botswana	..	..	..	..	..	0	0	8	6	1	50
Brazil	165	58	0.4	4,448	18	12	32	54	529	2,757	23,040
Bulgaria	4,240	1,205	1.7	..	..	0	..	0	..	370	16,953
Burkina Faso	..	..	..	..	..	0	0	0	0	..	..
Burundi	..	..	..	..	..	0	0	0	0	..	1
Cambodia	..	..	..	..	..	..	..	..	..	..	..
Cameroon	..	..	..	4	3	1	0	0	1	..	..
Canada	2,322	978	1.6	30,715	24	..	..	..	..	3,039	40,565
Central African Republic	55	31	..	0	0	0	..	0	..	..	..
Chad	..	..	..	..	..	0	0	0	0	..	..
Chile	..	..	0.8	388	18	1	63	37	51	181	1,535
China	537	187	0.6	26,938	21	0	..	0	..	10,066	31,707
Hong Kong, China	..	..	..	7,032	27	..	..	..	..	23	1,938
Colombia	..	..	..	815	21	21	59	13	49	141	1,093
Congo, Dem. Rep.	..	..	..	..	..	..	..	..	..	3	15
Congo, Rep.	..	..	..	2	12	0	..	0	..	..	..
Costa Rica	539	..	..	95	14	1	3	9	12	..	..
Côte d'Ivoire	..	..	..	..	..	0	0	0	0	..	..
Croatia	1,977	845	..	561	17	..	..	..	..	265	335
Cuba	1,369	878	0.9	..	..	..	..	..	..	104	33
Czech Republic	1,285	949	1.3	2,485	14	..	43	..	98	628	19,382
Denmark	2,647	2,656	1.9	7,386	25	0	..	0	..	2,257	59,810
Dominican Republic	..	..	..	295	19	0	0	0	11	..	..
Ecuador	169	215	0.1	45	11	0	0	37	68	8	270
Egypt, Arab Rep.	458	340	1.0	101	9	0	55	0	40	..	..
El Salvador	19	299	0.0	73	17	0	0	1	3	3	64
Eritrea	..	..	..	..	..	..	..	..	..	..	..
Estonia	3,296	550	0.6	272	19	0	1	0	3	16	14,751
Ethiopia	..	..	..	..	..	0	0	0	0	..	..
Finland	3,675	2,360	2.3	7,663	23	50	66	317	465	2,533	20,192
France	2,537	2,926	2.5	68,655	31	1,295	1,860	1,629	2,627	16,140	73,626
Gabon	..	..	..	20	32	0	0	0	0	..	..
Gambia, The	..	..	..	..	..	0	0	0	0	..	..
Georgia	..	..	..	..	..	..	..	..	..	288	15,660
Germany	3,016	1,607	2.6	110,000	25	1,987	3,320	3,797	5,866	51,948	84,667
Ghana	..	..	..	..	..	..	..	0	1	..	42
Greece	774	314	0.5	728	13	0	0	15	57	452	44,697
Guatemala	..	..	..	95	15	0	..	0	..	5	57
Guinea	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	0	..	0	..	..	..
Haiti	..	..	..	..	..	0	0	0	0	..	..
Honduras	..	..	..	8	3	0	0	3	9	7	40



	Scientists and engineers in R&D	Technicians in R&D	Expenditures for R&D	High-technology exports		Royalty and license fees				Patent applications filed ^a	
	per million people	per million people	% of GNP	\$ millions	% of manufactured exports	Receipts \$ millions		Payments \$ millions		Residents	Non-residents
	1981-95 ^b	1981-95 ^b	1981-95 ^b	1996	1996	1990	1996	1990	1996	1995	1995
Hungary	1,157	588	1.0	1,690	19	49	45	36	132	1,117	19,770
India	151	114	0.8	2,350	10	1	1	72	90	1,545	5,021
Indonesia	..	..	..	4,676	18	0	0	0	0	..	..
Iran, Islamic Rep.	..	..	..	..	..	0	0	0	0	278	129
Iraq	..	..	..	..	..	..	..	..	..	76	24
Ireland	1,871	510	1.4	23,192	62	38	94	591	3,434	927	44,660
Israel	..	..	2.2	5,654	30	63	142	73	172	1,266	3,159
Italy	1,303	796	1.3	34,442	15	1,040	381	1,959	1,027	1,625	63,330
Jamaica	..	..	..	619	67	3	4	7	19	7	54
Japan	5,677	869	3.0	151,000	39	2,866	6,683	6,051	9,834	335,061	53,896
Jordan	..	..	..	183	26	0	0	0	0	..	..
Kazakhstan	..	..	..	..	..	..	..	..	..	1,031	16,368
Kenya	..	..	..	..	..	9	5	6	0	..	28,728
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	15,693
Korea, Rep.	2,636	317	2.8	44,433	39	37	185	136	2,431	59,249	37,308
Kuwait	..	..	..	77	13	..	..	..	..	..	..
Kyrgyz Republic	..	..	..	47	24	..	..	..	..	119	15,599
Lao PDR	..	..	..	..	..	0	0	0	0	..	..
Latvia	1,165	3	..	143	16	0	0	0	1	210	16,140
Lebanon	67	2	..	..	..	..	..	..	..	..	..
Lesotho	..	..	..	..	..	0	0	1	0	8	2,608
Libya	361	493	0.2	..	..	0	..	0	..	6	37
Lithuania	1,278	..	..	365	23	..	0	..	4	106	15,882
Macedonia, FYR	1,258	334	..	..	..	..	..	..	..	100	3,084
Madagascar	..	..	..	2	3	0	1	0	3	21	15,802
Malawi	..	..	..	1	3	0	0	0	0	5	28,868
Malaysia	87	88	0.4	39,448	67	0	0	0	0	141	3,911
Mali	..	..	..	..	..	0	0	0	0	..	..
Mauritania	..	..	..	..	..	0	0	0	0	..	..
Mauritius	361	158	0.4	14	1	0	0	0	0	3	4
Mexico	95	27	0.3	24,179	32	73	122	380	360	436	23,233
Moldova	..	..	..	15	9	..	..	..	..	271	15,606
Mongolia	..	..	..	1	2	0	..	0	..	130	15,847
Morocco	..	..	..	568	24	4	5	60	133	89	292
Mozambique	..	..	..	1	5	0	..	0	..	..	..
Myanmar	..	..	..	..	..	0	..	0	..	..	..
Namibia	..	..	..	..	..	1	0	3	3	..	..
Nepal	22	5	..	0	0	0	0	0	0	3	5
Netherlands	2,656	1,774	1.9	46,651	42	1,086	2,361	1,751	2,852	4,460	59,279
New Zealand	1,778	822	1.1	428	11	0	0	0	0	1,418	19,230
Nicaragua	..	..	..	88	40	0	0	0	0	..	35
Niger	..	..	..	..	..	..	..	0	1	..	..
Nigeria	..	..	..	..	..	0	0	0	0	..	..
Norway	3,434	1,705	1.9	2,703	24	133	729	148	942	1,278	20,398
Oman	..	..	..	65	8	0	..	0	..	..	..
Pakistan	54	76	..	269	3	0	6	0	21	21	678
Panama	..	..	..	14	..	..	..	9	11	16	62
Papua New Guinea	..	..	..	..	..	0	0	0	0	..	..
Paraguay	..	..	..	8	4	0	..	0	..	..	..
Peru	..	..	..	94	11	..	2	5	63	..	..
Philippines	..	..	..	10,561	62	1	2	38	99	..	..
Poland	1,083	1,380	0.9	1,926	11	0	24	0	144	2,598	19,491
Portugal	599	381	0.6	2,295	12	14	26	117	262	96	58,605
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..
Romania	1,382	613	0.7	442	7	0	101	0	12	1,811	16,856
Russian Federation	4,358	905	0.8	..	..	..	..	..	..	17,611	23,746



5.12

	Scientists and engineers in R&D	Technicians in R&D	Expenditures for R&D	High-technology exports		Royalty and license fees				Patent applications filed ^a	
	per million people 1981-95 ^b	per million people 1981-95 ^b	% of GNP 1981-95 ^b	\$ millions 1996	% of manufactured exports 1996	Receipts \$ millions		Payments \$ millions		Residents 1995	Non-residents 1995
						1990	1996	1990	1996		
Rwanda	..	..	..	..	..	0	0	0	1	..	..
Saudi Arabia	..	..	..	..	..	0	0	0	0	28	718
Senegal	..	..	..	145	55	1	1	0	0	..	..
Sierra Leone	..	..	..	..	..	0	..	0	..	..	5
Singapore	2,512	1,524	1.1	73,701	71	..	..	..	..	10	11,871
Slovak Republic	1,922	796	1.1	982	16	..	18	..	83	273	17,659
Slovenia	2,998	2,390	1.5	1,180	16	4	6	5	27	318	16,267
South Africa	..	..	..	..	..	54	67	130	250	5,549	5,501
Spain	1,098	342	0.9	13,179	17	90	238	1,022	1,424	2,329	68,922
Sri Lanka	..	..	..	65	3	0	0	0	0	76	15,944
Sudan	..	..	..	..	..	0	..	0	..	..	28,951
Sweden	3,714	3,173	3.5	20,905	31	563	997	743	1,006	6,396	64,165
Switzerland	..	..	2.6	..	..	..	..	..	..	5,116	64,626
Syrian Arab Republic	..	..	..	..	..	0	..	0	..	43	12
Tajikistan	..	..	..	..	..	..	..	..	..	33	15,598
Tanzania	..	..	..	..	..	..	0	..	0	..	..
Thailand	173	51	0.2	14,746	36	0	25	170	717	..	..
Togo	..	..	..	..	..	0	0	0	0	..	..
Trinidad and Tobago	..	..	..	312	33	0	0	7	0	24	15,515
Tunisia	388	71	0.3	450	10	1	1	1	2	31	115
Turkey	209	23	0.8	1,326	8	..	..	..	..	206	1,506
Turkmenistan	..	..	..	..	..	..	..	..	..	..	8,420
Uganda	..	..	..	..	..	0	0	0	0	..	20,840
Ukraine	..	..	..	..	..	..	..	..	..	4,806	17,548
United Arab Emirates	..	..	..	..	..	..	..	..	..	..	..
United Kingdom	2,417	1,019	2.2	85,035	40	2,540	4,725	2,992	3,625	25,355	90,399
United States	3,732	..	..	198,000	44	16,635	29,973	3,138	7,322	127,476	107,964
Uruguay	..	..	..	91	10	0	0	0	8	..	..
Uzbekistan	1,760	313	..	..	..	..	..	..	..	1,039	15,873
Venezuela	208	32	0.5	377	14	..	..	..	2	..	..
Vietnam	..	..	..	..	..	..	..	..	..	23	16,959
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	..	..	..	0	0	..	..	..	..	..	..
Yugoslavia, FR (Serb./Mont.)	1,476	400	..	141	16	..	..	..	..	592	230
Zambia	..	..	..	..	..	0	..	0	..	4	90
Zimbabwe	..	..	..	33	5	1	1	8	6	56	177

a. Other patent applications filed in 1995 include those filed under the auspices of the African Intellectual Property Organization (27 by residents, 15,819 by nonresidents), African Regional Industrial Property Organization (4 by residents, 15,032 by nonresidents), and European Patent Office (35,390 by residents, 42,869 by nonresidents). Information was originally provided by the WIPO. The International Bureau of WIPO assumes no liability or responsibility with regard to the transformation of this data. b. See *Primary data documentation* for survey year.



About the data

Rapid progress in science and technology is changing the global economy and increasing the importance of knowledge as a factor of production. It is also driving rapid shifts in comparative advantage between countries. The table shows several key indicators that provide a partial picture of the "technological base": the availability of skilled human resources (scientists, engineers, and technicians employed in research and development), the competitive edge countries enjoy in high-technology exports, sales and purchases of technology through royalties and licenses, and the number of patent applications filed.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) collects data on scientific and technical workers and research and development expenditures from member states, mainly from official replies to UNESCO questionnaires and special surveys, as well as from official reports and publications, supplemented by information from other national and international sources. UNESCO reports either the stock of scientists, engineers, and technicians (all qualified persons in those fields on a given reference date) or the number of economically active persons qualified to be scientists, engineers, or technicians (people engaged in or actively seeking work in any branch of the economy on a given date). Stock data generally come from censuses and are less timely than measures of the economically active population. UNESCO supplements these data with estimates of the number of qualified scientists and engineers by counting the number of people who have completed education at ISCED (International Standard Classification of Education) levels 6 and 7; qualified technicians are estimated using the number of people who have completed education at ISCED level 5. The data on scientists, engineers, and technicians, normally calculated in terms of full-time equivalent staff, cannot take into account the considerable variations in quality of training and education.

Data on R&D expenditures may reflect the different tax treatment of such expenditures. In some countries they may also reflect large and possibly unproductive outlays by governments or state-owned research establishments.

High-technology exports are those produced by a country's 10 most R&D-intensive industries. Industry rankings are based on a methodology developed by Davis (1982). Using input-output techniques, Davis estimated the technology intensity for U.S. industries in terms of the R&D expenditures required to produce a certain manufactured good. This methodology takes into account direct R&D expenditures made by final producers as well as indirect R&D expenditures made by suppliers of intermediate

goods used in producing the final good. Industries classified on the basis of the U.S. Standard Industrial Classification (SIC) were ranked according to their R&D intensity, and the top 10 SIC groups (three-digit classification) were designated as high-technology industries. The industry ranked tenth had an R&D intensity index 30 percent greater than the industry ranked eleventh and was more than 100 percent greater than the average for manufacturing.

To translate Davis's industry classification into a definition of high-technology trade, Braga and Yeats (1992) used the concordance between the SIC grouping and the Standard International Trade Classification (SITC) revision 1 classification proposed by Hatter (1985). Given the imperfect match between SIC and SITC codes, Hatter estimated high-technology weights (the share of U.S. high-technology imports and exports in each SITC group, based on 1975-77 U.S. trade data) to highlight the relative importance of high-technology products in SITC groups. In preparing the data on high-technology trade, Braga and Yeats considered only SITC groups (at a four-digit level) that had a high-technology weight above 50 percent. Examples of high-technology exports include aircraft, office machinery, pharmaceuticals, and scientific instruments. It is worth noting that this methodology rests on the somewhat unrealistic assumption that using U.S. input-output relations and trade patterns for high-technology production does not introduce a bias in the classification.

Most countries have adopted systems that protect patentable inventions. Under most legislation concerning inventions, to be protected by law ("patentable"), an idea must be new in the sense that it has not already been published or publicly used; it must be nonobvious ("involve an inventive step") in the sense that it would not have occurred to any specialist in the particular industrial field, had such a specialist been asked to find a solution to the particular problem; and it must be capable of industrial application in the sense that it can be industrially manufactured or used. Data on patent applications filed by residents and nonresidents are shown in the table. The World Intellectual Property Organization (WIPO) estimates that at the end of 1995 about 3.7 million patents were in force in the world.

Definitions

- **Scientists and engineers in R&D** are people trained to work in any field of science who are engaged in professional R&D activity (including administrators). Most such jobs require completion of tertiary education.
- **Technicians in R&D** are people engaged in professional R&D activity who have received vocational or technical training in any branch of knowledge or technology of a specified standard. Most of these jobs require three years beyond the first stage of secondary education.
- **Expenditures for R&D** are current and capital expenditures (including overhead) on creative, systematic activity intended to increase the stock of knowledge and on the use of this knowledge to devise new applications. This includes fundamental and applied research and experimental development work leading to new devices, products, or processes.
- **High-technology exports** are goods produced by industries (based on U.S. industry classifications) that rank among a country's top 10 in terms of R&D expenditures. Manufactured exports are commodities in the SITC, revision 1, sections 5-9 (chemicals and related products, basic manufactures, manufactured articles, machinery and transport equipment, and other manufactured articles and goods not elsewhere classified), excluding division 68 (nonferrous metals).
- **Royalty and license fees** are payments and receipts between residents and nonresidents for the authorized use of intangible, nonproduced, nonfinancial assets and proprietary rights (such as patents, copyrights, trademarks, industrial processes, and franchises) and for the use, through licensing agreements, of produced originals of prototypes (such as manuscripts and films).
- **Patents** are documents, issued by a government office, that describe the invention and create a legal situation in which the patented invention can normally only be exploited (made, used, sold, imported) by, or with the authorization of, the patentee. The protection of inventions is limited in time (generally 20 years from the filing date of the application for the grant of a patent). Information on patent applications filed is shown separately for residents and nonresidents of the country.

Data sources

Data on technical personnel and R&D expenditures are collected by UNESCO and published in its *Statistical Yearbook*. Information on high-technology exports are from the United Nations COMTRADE database. Data on royalty and license fees are from the IMF's *Balance of Payments Statistics Yearbook*. Data on patents are from WIPO's *Industrial Property Statistics*.