

STATES AND MARKETS

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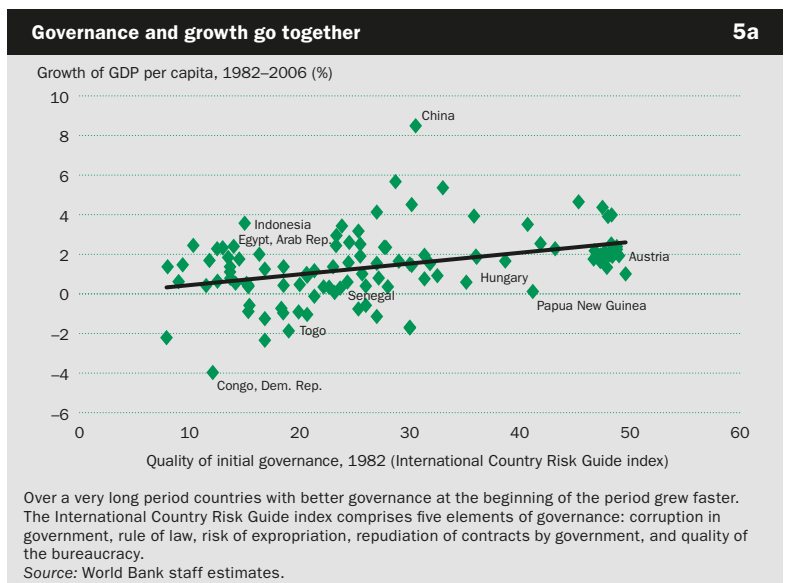
Measuring governance

The breakup of the Soviet Union and the emergence of democracies in many developing countries have increased interest in governance. Good governance, strong institutions, and control of corruption are important for development success. Failures of the state can negate development gains, particularly in low-income economies, many of them fragile states.

Improvements in data and econometric techniques have permitted large cross-country studies on the impact of governance and institutions on investment and growth. This research has produced strong evidence that the quality of governance has a big impact on economic growth, a relationship that is robust over time and across countries (figure 5a). It shows that corruption discourages private investment and distorts resource allocation in ways that hurt the poor. Research also finds that public spending to expand primary education and reduce child and infant mortality produces more benefits in countries with less corruption. And it finds that good governance in a country increases the likelihood of development projects succeeding.

The World Bank defines *governance* as the way public officials and institutions acquire and exercise authority to provide public goods and services, including education, health care, infrastructure, and a sound investment climate. Bad governance is often equated with corruption. But the concepts, while related, are different. Corruption, the abuse of public office for private gain, is an outcome of poor governance, reflecting the breakdown of accountability. Fighting corruption requires addressing underlying failures of governance.

As citizens, investors, policymakers, and donors become more aware of the importance of good governance to development, they increasingly demand information that better tracks progress and increases the transparency of public sector management and anticorruption programs (box 5b). The growing interest in the quality of governance has driven what a recent Organisation for Economic Co-operation and Development publication describes as “explosive growth in the use of quantitative indicators in developing countries” (OECD 2006, p. 13). At least 140 sets of governance indicators, with thousands of individual indicators, are now publicly available. Some look at rules, some at how the rules are implemented, some at outcomes, and some are aggregate measures, summarizing more specific indicators.



Types of governance indicators

Rules indicators attempt to establish the presence or absence of rules and processes. Do countries have laws guaranteeing the right to information? Do they have independent anticorruption commissions? Are budget documents published?

Such indicators are used to measure specific institutional reforms. They require narrow and explicit definitions of what is being measured. Typically, these indicators are prepared by country experts and validated by outside experts.

Interpreting these indicators is not easy. There may be clarity about the existence of a specific rule, law, or legal body, but this does not make the resulting indicators more objective than perception-based indicators. Those who frame the questions have a concept of a “good system” and may impose their own prejudices and values. Nor do formal rules necessarily lead to desired outcomes. An anticorruption commission, for example, may not guarantee less corruption (figure 5c). And while the rules may have normative values of their own—access to budget documents, for instance, is desirable in itself—it is not clear how they influence governance outcomes or reforms. Most important, assessments of complicated rules are subject to errors of fact and judgment, particularly when the analyst has to determine the net effect of many conflicting rules and regulations.

The *Doing Business* indicators in table 5.3 are based on information collected by local experts. The methodology uses factual information about laws and regulations to assess the business climate of a country. The results at the two extremes are far from surprising. New Zealand, Singapore, and the United States are the easiest countries to do business in, while the fragile states of Democratic Republic of Congo, Central African Republic, and Guinea-Bissau are the most difficult. However, China and India, two of the fastest growing economies in the world, rank 83rd and 120th, suggesting either that their rules are not a serious impediment to growth or that the business environment is not as unfavorable as these rankings imply.

Part of the explanation may lie in what the data represent. For comparability, the data refer to businesses in each country’s most populous city, which may not be representative. The reports cover only domestically owned, limited liability companies and a limited set of transactions. Indicators of the time it takes to start a business involve judgment by local experts. Businesses may get things done faster, if they deploy “speed money,” or slower, if they are poorly informed about policies and procedures. For the serious analyst the indicators are only a starting point. Understanding what the data say opens doors to better understanding governance.

Who uses governance indicators?

Box 5b

- *Citizens* are more conscious of the need to hold their governments accountable, and governance indicators increase awareness of the quality of governance. The indicators can provide citizens with information to monitor service delivery and measure how their government—local, provincial, or national—is performing. Citizens can compare indicators with those of similar countries.
- *Investors, lenders, and businesses*, both domestic and foreign, know that the quality of governance influences the investment climate and the return on investments. They want to be better informed about the governance and corruption risks that they are likely to face. Many of the earliest efforts to provide governance indicators came from credit and investment risk evaluation agencies in response to these commercial needs.
- *Governments*, following the maxim that “what you cannot measure you cannot manage,” need to monitor their own

performance to improve the effectiveness of their policies and institutions and to better understand how outcomes can be improved. Governance indicators can provide benchmarks against which governments can measure their progress.

- *Donors* are accountable to their citizens for the development assistance they provide. They are thus anxious to know that the resources that they provide will be used for the intended purposes and to compare performance across countries. In preparing their development assistance strategies, they rely on governance assessments that use a wide range of governance indicators. These governance assessments are used to inform country programming and assistance priorities, allocate aid money using transparent and consistent criteria, provide a basis for a dialogue with partner governments, and assess political and fiduciary risks, among other purposes.

Outcome indicators—some highly specific, others more general—attempt to measure the consequences of governance. Typically, they are perceptions-based indicators that capture the views of relevant stakeholders or interested observers, including experts, officials, researchers, decisionmakers, opinion makers, businesses, and citizens. The indicators provide information on how the rules operate in practice (figure 5d). But they have some problems. It is difficult to identify a connection between particular rules and particular outcomes. And outcome indicators are often measured on a cardinal scale—say, from 1 to 5 or 10. Unless the criteria for assigning specific scores are clear and independently verified, there is a risk of arbitrary scoring and confusion about the relative importance of scores.

Four frequently used sets of outcome indicators—covering civil and political rights, political risk, corruption, and overall governance (table 5e)—rely on expert assessments or a combination of expert assessments and surveys of firms, households, and opinion makers. Expert assessments are cheaper and with careful benchmarking may be used for cross-country comparisons. But experts often disagree, so it is best not to rely on any one set of experts.

Surveys of firms and households may be better grounded in country realities. The views of respondents matter,

because they are able to act on their beliefs. If they believe the courts are highly corrupt, they will avoid seeking legal recourse through the courts and instead choose arbitration or informal means of settling disputes. While governments may discount outsiders' views, citizens and firms' views matter.

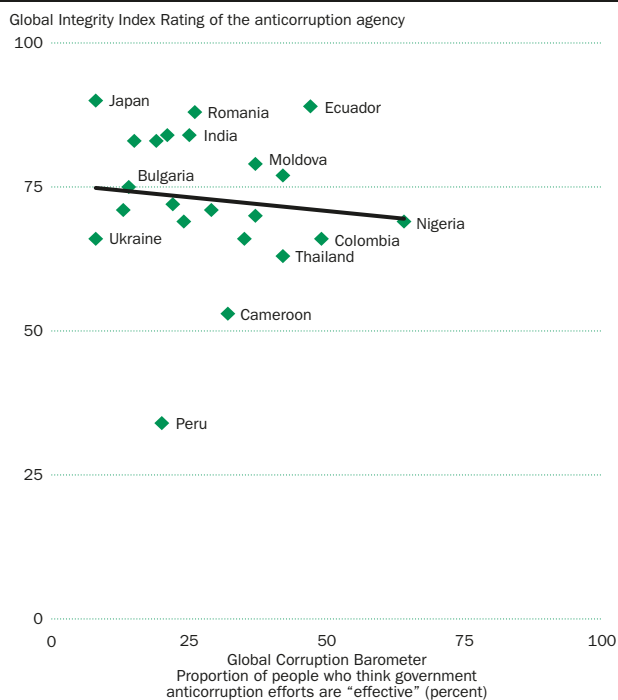
There are few household surveys on governance, but many firm-level surveys. The World Bank's Enterprise Surveys provide an overview of the international investment climate, reporting on some governance outcomes, such as unofficial payments as a share of firms' sales, the time required to resolve disputes in court, the cost of providing security against crime, and the efficiency and client orientation of the tax system.

The distinction between rules and outcome indicators is not absolute. Some rules indicators also implicitly measure outcomes. As noted, the time required to register a business is the outcome of applicable regulations and not a measure of the time it actually takes.

Actionable indicators or second-generation indicators stem from the desire to identify specific policies, procedures, and institutional arrangements that contribute to the overall quality of governance. Actionable indicators have received greater attention as part of the World Bank's Governance and

Not producing the desired results

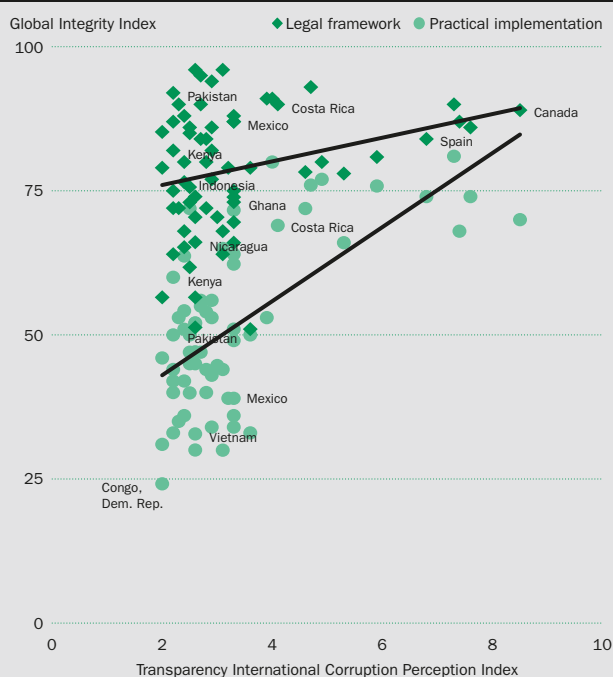
5c



Anticorruption agencies should help reduce corruption, but even when agency rules and implementation are rated highly by experts, citizens are not convinced that their governments' efforts are effective. This appears to confirm other research findings that cast doubt on the effectiveness of such agencies. Citizens may also be using their survey responses to send a message to their governments about the need to do more. Source: World Bank staff estimates.

Governance in theory and in practice

5d



Rules indicators and outcome indicators produce different assessments. Global Integrity produces summary indexes of countries' legal frameworks and practical implementation of controls on corruption. Scores on the practical implementation measure generally lie below the legal framework measure. And the practical measure is more strongly correlated with Transparency International's broad-based Corruption Perception Index, suggesting that the Transparency International sources put more weight on outcomes than on rules. Source: World Bank staff estimates.

Anticorruption Strategy. These indicators look beyond the rules to how they are actually implemented (table 5f). Some examples of these indicators follow:

- The Public Expenditure and Financial Accountability program aims to provide governments and donors a shared pool of information on public financial management performance and a common platform for policy dialogue.
- The Global Integrity Index is based on six key aspects of global integrity: civil society; public information and media; elections; government accountability, administration, and civil service; oversight and regulation; and anticorruption and rule of law. These six aspects cover 23 subcategories and 290 indicators, all narrowly and explicitly defined.

Such indicators are called “actionable” for four reasons:

- They provide more clarity about the steps governments can take to improve their ratings.
- They shed light on the efficacy of certain public sector reforms in improving governance.
- They are replicable—that is, independent observers can arrive at roughly the same scores when the questions are explicit and precise.
- They allow meaningful discussion between the raters and those being rated and thus stimulate policy dialogue on these issues.

Efforts like those described in table 5f are planned or under way in other areas, including public accountability, human resources management, and provincial and local governance.

Despite these efforts, major gaps remain in topical coverage (such as legal and judicial reforms), country coverage, periodicity, and methods. Actionable indicators are subject to many of the same measurement errors as other governance indicators. Experts may disagree even over narrowly defined assessments. The coverage of countries and years, while expanding, is still limited. The Global Integrity Index provides two observations for only 25 countries and three observations for only 8. Much work remains to be done in understanding which of the profusion of “actionable” indicators are also “action worthy,” in the sense of leading to desired governance and development outcomes. Progress is bound to be gradual, a long-term undertaking needing the support of key development institutions.

Aggregate indicators are composite measures combining the scores on many separate indicators. Among the most widely used and cited governance indicators are the World Bank’s Worldwide Governance Indicators, which draw on 33 sources to produce indicators on six dimensions of governance for 212 countries and territories, and Transparency International’s Corruption Perceptions Index, which draws on 12 sources and covers 180 countries.

Examples of governance outcome indicators

5e

Indicator or objective	Nature and number of indicators	Country coverage
Since 1972 <i>Freedom House</i> has produced <i>Freedom in the World</i> , an annual survey that provides an “evaluation of the state of global freedom as experienced by individuals.” http://www.freedomhouse.org	Countries are scored on political rights and civil liberties outcomes on a 1–7 scale and then rated not free, partly free, or free. The ratings are based on a checklist of 10 political rights and 15 civil liberties.	193 countries and 15 related and disputed territories.
Since 1980 <i>Political Risk Services Group</i> has produced <i>International Country Risk Guide</i> (ICRG) to meet the needs of clients for an in-depth analysis of potential risks to international business. http://www.prsgroup.com	The political risk guide assigns points to 12 risk components relevant to governance.	140 countries monthly and 21 annually.
Since 1995 <i>Transparency International</i> has ranked countries by the degree to which corruption is perceived to exist among public officials and politicians. The Corruption Perceptions Index (CPI) defines corruption as “the abuse of public office for private gain,” encompassing both administrative and political corruption. http://www.transparency.org	The CPI is a composite, a poll of polls, that draws on corruption-related data from expert and business surveys by a variety of independent institutions. The CPI reflects views from around the world, including in-country experts. The 2007 CPI draws on 14 polls and surveys from 12 independent institutions.	180 countries.
Since 1999 <i>Worldwide Governance Indicators</i> have provided aggregate governance outcomes from 1996 onward. http://www.govindicators.org	Governance is measured along six dimensions: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption.	212 countries.

Aggregation is not unique to governance indicators. Weighted averages or more complex statistical methods are used to produce broad indicators of social conditions. The United Nations Development Programme's Human Development Index is an example. Aggregation is also necessary to summarize the results of large sets of "actionable indicators." For example, the World Bank uses the aggregate Country Policy and Institutional Assessment (CPIA) rating, an average of 16 more detailed components, to allocate concessional lending across countries. Properly designed, aggregation can provide estimates of the variance of the underlying indicators. But it also loses some of the detail, reducing its usefulness as a policy tool. It is important, therefore, to provide access to the underlying indicators, as the Worldwide Governance Indicators now do in most cases (figure 5g).

Aggregate indicators, despite their limitations, have opened doors to much research and analysis on governance and corruption. They provide a starting point for drilling down deeper into country governance systems. And the increasing variety and richness of disaggregated indicators—covering more topics in more depth for more countries over longer periods, using a variety of methods—enables drilling down even further and increasing understanding of the factors driving aggregate success or failure.

Drilling down: the Worldwide Governance Indicators

5g

Worldwide Governance Indicators Indonesia 2006	Sources	Year	Governance score	Standard error
Voice and accountability	14	2006	-0.25	0.14
Political stability	10	2006	-1.17	0.22
Government effectiveness	14	2006	-0.38	0.15
Regulatory quality	12	2006	-0.26	0.17
Rule of law	19	2006	-0.82	0.13
Control of corruption	17	2006	-0.77	0.13

WGI sources (partial list)	Type	Values
Bertelsmann Transformation Index	Experts	0.61
Institute for Management and Development World Competitiveness Yearbook	Survey	0.38
International Budget Project Open Budget Index	Experts	0.41
Political Risk Services International Country Risk Guide	Experts	0.41

Open Budget Index 2006 (partial list)	
Executive's budget proposal	Questions 1–55, 67, 68, 69
Citizens budget	Question 61
Pre-budget statement	Questions 72, 73, 74
Auditors report	Questions 112–114, 116, 120–122

61. Does the executive publish a "citizens budget" or some nontechnical presentation intended for a wide audience that describes the budget and its proposals?

Starting from the Worldwide Governance Indicator of Voice and accountability, it is possible to drill down to the underlying indicators on which it is based. And for some it is possible to go farther, to the scoring of individual questions. Good documentation and access to the original data make aggregate indicators more useful.

Selected actionable governance indicators

5f

Indicator or objective	Nature and number of indicators	Country coverage
<i>Public Expenditure and Financial Accountability Assessment</i> , initiated in 2001, measures critical dimensions of open and orderly public financial management systems. www.pefa.org .	28 high-level indicators that capture six dimensions of public financial management.	67 completed, of which 26 are publicly available.
<i>OECD Assessment Methodology for Public Procurement Systems</i> , developed over 2003–04 through an Organisation for Economic Co-operation and Development Development Assistance Committee– and World Bank–led roundtable and now being piloted, measures compliance, performance, and transparency and integrity of public procurement systems. www.oecd.org/dac .	12 indicators with 54 subindicators in four broad areas: legislative and regulatory framework, institutional framework and management capacity, procurement operations and market practice, and integrity and transparency.	22 countries participating in pilot program; reports available online for 9.
<i>Open Budget Index</i> , launched in October 2006 by civil society organizations in 59 countries, provides comprehensive practical information to gauge a government's commitment to budget transparency and accountability. www.openbudgetindex.org	122 items that assess public availability of key budget documents, quality of information, and timeliness of dissemination.	59 in 2006; 88 targeted and 80 expected for 2008
<i>Global Integrity Index</i> , launched in 2002 by the Washington, D.C.,–based Center for Public Integrity and a new independent nonprofit called Global Integrity formally started in 2005, assesses the existence and effectiveness of anticorruption mechanisms that promote public integrity. The index evaluates the existence of laws, regulations, and institutions; their implementation; and the access average citizens have to those mechanisms. www.globalintegrity.org	More than 290 discrete integrity indicators generate the index, which is organized into six broad categories.	25 countries in 2004, 41 in 2006, 48 in 2007, 33 assessed at least twice.

Why governance is difficult to measure

Measuring governance is not easy. A broad concept, governance embraces many institutions and the formal and informal rules that guide their operation. Governance also involves a range of players—citizens, their elected leaders, public officials, and those delivering services—who respond to the incentives created by these rules. Formal rules are more readily observed. Informal rules, less easily measured, may have a greater influence on the quality of governance and require a much deeper understanding of the workings of society. That is why many governance measures rely on the views of experts or the managers of firms—because they understand the principles of governance or have practical experience of the formal and informal rules of the game (figure 5h). Demand for such measures comes from a variety of stakeholders (see box 5b).

Measuring governance can involve assessing how public institutions work as a whole or in their many parts, such as the effectiveness of the judiciary or the bureaucracy or the process for setting and monitoring the budget. Because the concepts are so broad, the same terms may be applied in many different ways. Thus, the *rule of law* may be interpreted narrowly—to mean whether the country's laws are clear and well understood, whether property rights and contracts are effectively enforced. Or they may be interpreted more broadly—to mean

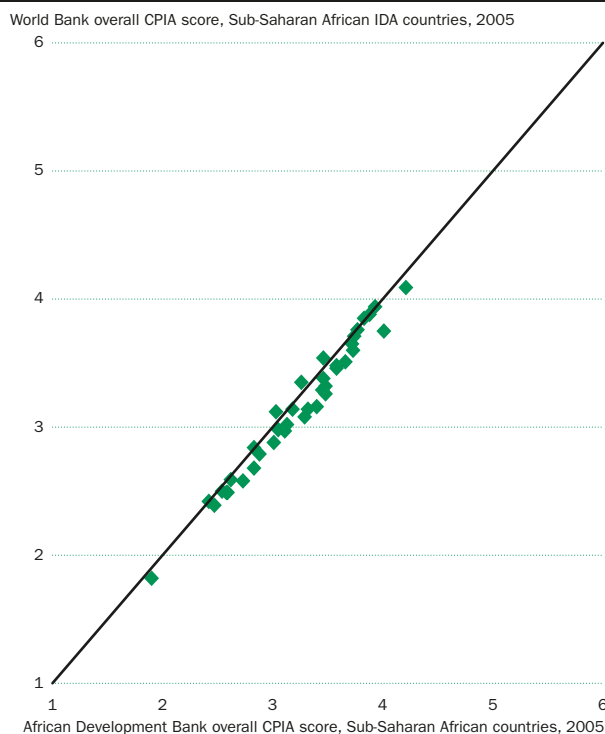
the equality of all citizens in the eyes of the law so that no individual, however powerful, stands above the law. Reaching a consensus on such concepts is not easy (figure 5i). Because most definitions tend to be broad, the boundaries between different indicators risk being blurred.

That governance is difficult to measure does not imply that governance is not measurable. Nor should demonstrable errors of measurement deter the effort. All indicators are subject to error. The national accounts reported in *World Development Indicators* are estimated and later subject to revision, at times very large. Because it is difficult and costly to obtain reliable data through surveys and official records, maternal mortality is often estimated from models. Poverty estimates depend on surveys of household consumption patterns and the judgment of experts about an appropriate poverty line.

Still, measuring corruption is particularly problematic. Those with direct knowledge of corruption are likely to want to keep it secret. In some cases administrative corruption can be gauged through surveys of citizens and business or the judgments of informed experts. But often the state's capture by special interests is difficult to assess because that lies outside the direct experience of citizens and small businesses.

Experts generally agree on governance assessments at the aggregate level . . .

5h



The World Bank and African Development Bank rate countries independently using similar Country Performance and Institutional Assessments (CPIA), an aggregation of 16 specific scores. Overall scores are normalized to a scale of 1 to 6. Source: World Bank staff estimates.

. . . but experts can still disagree, even using a very specific assessment protocol

5i



On CPIA item 13, which assesses the quality of budgetary and financial management, differences between the scores assigned by the World Bank and African Development Bank for an individual component differ by as much as 1.5 points on a scale of 1 to 6. Source: World Bank staff estimates.

Measurement errors

All governance indicators are subject to significant measurement errors, but these errors are rarely reported. Measures based on sample surveys are subject to sampling error, and those based on expert assessments to informant error. Because any indicator is an imperfect measure of the broader concepts it pertains to, a third source of error might be called proxy error. High levels of overall corruption in the customs service, even if accurately measured, might not reflect corruption in the country. To increase the reliability of governance measures, measurement errors should be quantified and reported where possible.

In combining information from different sources, aggregate indicators can smooth the idiosyncrasies of their underlying components. The Worldwide Governance Indicators, for instance, draw on indicators from 33 sources to produce six aggregate indicators. The statistical model for combining the indicators assumes that the observed empirical indicators of governance provide noisy or imperfect signals of the fundamentally unobservable concept of governance. The model estimates the variance of the aggregate estimate for each country, conditional on the observed data, and provides estimates of the variance of the underlying indicators as well (Kaufmann and Kraay forthcoming). The more the individual indicators agree, the smaller is the measured error of the aggregate.

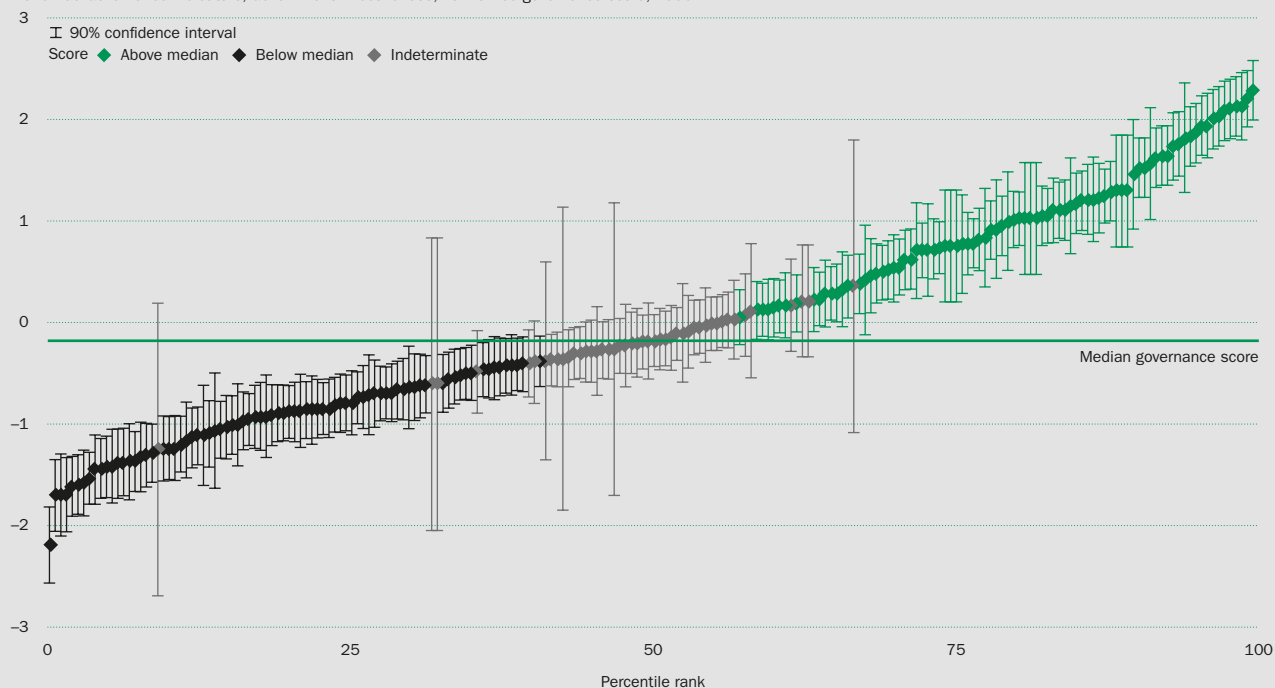
In explicitly measuring margins of error, the Worldwide Governance Indicators inform users of the uncertainty surrounding the estimates. For some countries with similar scores, overlapping confidence intervals make comparisons of differences meaningless. But statistically reliable statements can be made in many cases when scores differ by larger amounts. Figure 5j shows the World Governance Indicators government effectiveness scores and margins of error for 212 countries. The 81 countries at the lower end of the distribution of governance have scores that are almost certainly below the median, and the 85 countries at the upper end of the distribution are almost certainly above the median (with a probability of 90 percent or higher). But for the 46 countries in the middle of the distribution there is at least a 10 percent chance that a score below the median could be above it, or vice versa.

Recognition of measurement errors should discourage naïve ranking of countries on governance performance. Transparency International, which uses country rankings as a way of shaming countries into fighting corruption, nevertheless cautions users against comparing countries with close scores. Its country rankings also cannot be compared from year to year as country coverage keeps changing and expanding.

Comparing governance scores in the light of uncertainty

5j

Worldwide Governance Indicators, Government Effectiveness, normalized governance score, 2006



Countries' scores on the Worldwide Governance Indicators aggregate indicator of government effectiveness are shown in rank order. The error bars show a 90 percent confidence interval around each score. Because of measurement error, differences in scores cannot be determined with certainty. In this example the scores of the 46 countries in the middle of the distribution cannot be determined to be significantly above or below the median value. Source: World Bank staff estimates.

Looking ahead

The proliferation of governance indicators has led to several recent efforts to take stock of where this work stands and what the next areas of emphasis should be (see UNDP 2007a; Knack, Kugler, and Manning 2003; Arndt and Oman 2006; World Bank 2006g; Kaufmann and Kraay forthcoming; Levy 2007; Thomas 2006).

Four priorities stand out.

First, it is important to evaluate all governance indicators, exposing them to peer review and strengthening them to increase public confidence in their use. The methods and underlying assumptions used to produce them should be carefully reviewed. The quality of the underlying data should be evaluated, including the role of experts and surveys. And methods of better estimating the uncertainties associated with all measures of governance should be studied so that users of data are aware of the uncertainties they are dealing with.

Second, given the strong interest from policymakers in indicators of remediable policy or institutional failures, progress on action-worthy indicators is a high priority. To build on the promise of the initial round of Public Expenditure and Financial Accountability (PEFA) Assessments, formally launched two years ago, it will be important to extend them to more countries, to conduct regular periodic assessments, and to ensure that results are disseminated. The example of PEFA generating information on the quality of public financial systems also opens the door to similar approaches in other areas. The World Bank has already identified some key areas for undertaking similar assessments, including decentralization, public accountability, and human resources management.

Decentralization is particularly promising, because it enables central governments to monitor the performance of provincial and local governments, improving information on governance in the country as a whole.

Third, one difficulty with the proliferation of disaggregated, specific indicators is that they do not provide guidance to users on which of the many subindicators are most critical to particular governance outcomes. Research on this is a high priority, to identify a core set of the most important indicators that influence governance outcomes, allowing governments and donors to focus their reforms on those critical areas.

Fourth, given the growing recognition of how understanding a country's political economy can produce better development outcomes, the quality of current efforts to measure political trends and outcomes should be reviewed for their capacity to shed light on development prospects and outcomes.

These and other issues could be part of a program of work led by the World Bank, as a major user and producer of governance indicators (box 5k).

This section of *World Development Indicators* includes a broad range of indicators that shed light on the effectiveness and accountability of governments and their interaction with the private sector. Tables 5.2–5.6 provide an overview of the climate for investment and doing business and of the tax and regulatory roles of the state. Table 5.8 provides the World Bank's Country Policy and Institutional Assessment data for 77 International Development Association–eligible countries. Other tables show data on financial markets, public and private provision of infrastructure, and defense, all of which depend on effective government spending and oversight.

Governance indicators are now routinely collected and used by the World Bank for a number of purposes.

Resource allocation. The Bank's Country Policy and Institutional Assessment Indicators (CPIA) enter into the International Development Association (IDA) country performance rating (CPR) with an effective weight of 67 percent. The CPR is used as part of the IDA performance assessment, which is used to allocate IDA resources among eligible countries.

Global monitoring. The 2006 *Global Monitoring Report* included 13 governance indicators in its statistical appendix (see table).

Governance indicators from *Global Monitoring Report*

Category	Indicator
Overall governance performance	1. Control of corruption (Worldwide Governance Indicators)
	2. Corruption perceptions index (Transparency International)
	3. Unofficial payments (Enterprise Surveys)
	4. Policy outcome (CPIA cluster a–c average)
	5. Aggregate public institutions (CPIA cluster d)
	6. Licensing time (Doing Business)
	7. Time spent on regulations (Enterprise Surveys)
Bureaucratic capability	8. Budget/financial management (CPIA 13)
	9. Public administration (CPIA 15)
Checks and balances institutions	10. Voice and accountability (Worldwide Governance Indicators)
	11. Rule of law (Worldwide Governance Indicators)
	12. Property rights and rule-based governance (CPIA 12)
	13. Executive constraints (Polity IV)

Country governance monitoring. Diagnosing governance obstacles at the country level and designing and monitoring reforms, now a requirement under the World Bank's new Governance and Anticorruption Strategy, employ a range of aggregate and actionable indicators including the Worldwide Governance Indicators, the Transparency International indicator, Public Expenditure and Financial Accountability indicators, the Doing Business indicators, the investment climate assessments, public financial management studies, the World Bank Institute Governance and Anticorruption diagnostic surveys, and quantitative service delivery surveys and report cards. These feature in the Bank's analytical and advisory assistance, project documents, and country assistance strategies.

Actionable indicators. The Bank's new Governance and Anticorruption Strategy calls for the development and promotion of actionable indicators, including decentralization, public accountability, human resources management, and the Public Expenditure and Financial Accountability (PEFA). This work includes extending the coverage of PEFA and the Global Integrity Index to more countries and encouraging countries to permit the publication of PEFA data.

Research. In studies on governance outcomes World Bank research increasingly uses large cross-country governance databases including Polity IV, the database of political institutions; the Worldwide Governance Indicators; and Transparency International's Corruption Perceptions Index.

Data. Bank staff manage, produce, and analyze several databases on governance: the Investment Climate Assessments, the Doing Business database, the Database of Political Institutions, and the annual *Governance Matters* report (Kaufmann, Kraay, and Mastruzzi 2007, *Governance Matters VI*), which since 2003 has generated annual aggregate indicators on worldwide governance based on external data sources.



	Investment commitments in infrastructure projects with private participation ^a								Domestic credit to private sector % of GDP 2006	Businesses registered		Micro, small, and medium-size enterprises	
	\$ millions									New 2005	Total 2005	Total 2000-05 ^b	per 1,000 people 2000-05 ^b
	Telecommunications		Energy		Transport		Water and sanitation						
1995-99	2000-06	1995-99	2000-06	1995-99	2000-06	1995-99	2000-06						
Afghanistan	..	747.5	..	1.6	..	..	..	..	..	..	..	..	..
Albania	..	569.2	0.0	789.0	..	308.0	..	8.0	21.8	2,388	16,423	38,331	12.2
Algeria	..	4,124.5	..	2,720.0	..	120.9	..	510.0	12.5	12,164	103,482	580,000	18.7
Angola	..	528.7	..	54.4	..	55.0	..	..	7.5	..	..	..	..
Argentina	10,498.6	6,859.8	12,992.6	5,642.1	6,996.5	522.2	3,307.1	791.6	13.0	53,000	450,535	..	..
Armenia	112.5	317.1	0.0	67.0	..	63.0	..	0.0	8.8	9,667	123,951	99,805	33.1
Australia	..	..	..	..	..	..	..	..	109.6	81,079	935,047	1,269,000	63.0
Austria	..	..	..	..	..	..	..	..	114.9	14,669	172,602	252,399	30.9
Azerbaijan	122.0	769.2	..	375.2	..	..	..	0.0	12.2	..	..	49,527	6.0
Bangladesh	438.1	2,187.3	554.9	501.5	0.0	0.0	..	..	36.2	5,328	67,459	177,000	1.2
Belarus	20.0	955.8	500.0	..	..	..	..	..	20.2	..	..	25,108	2.5
Belgium	..	..	..	..	..	..	..	..	83.3	25,492	343,761	686,533	66.2
Benin	..	133.9	..	590.0	..	..	..	..	16.7	..	..	..	..
Bolivia	528.0	594.3	2,777.3	934.3	168.7	16.6	682.0	..	36.1	1,625	24,649	..	..
Bosnia and Herzegovina	0.0	860.5	..	277.9	..	..	..	..	48.4	1,409	34,035	14,986	3.8
Botswana	97.0	122.0	..	..	..	..	..	..	19.6	7,301	79,543	13,137	7.2
Brazil	45,135.2	46,959.3	33,042.3	29,351.3	16,960.8	4,060.7	1,850.0	1,215.3	36.5	..	..	4,903,268	27.4
Bulgaria	202.5	2,641.1	..	3,566.1	..	533.7	..	152.0	47.4	..	..	216,489	27.7
Burkina Faso	..	331.9	5.6	..	63.3	..	..	..	16.7	..	..	..	..
Burundi	..	53.6	..	..	..	..	..	..	21.0	..	..	..	..
Cambodia	102.4	198.1	143.0	88.1	120.0	325.3	..	..	9.1	1,551	10,349	..	..
Cameroon	12.7	457.4	..	531.8	90.0	0.0	..	..	9.0	..	..	..	..
Canada	..	..	..	..	..	..	..	..	195.3	85,083	1,357,881	2,245,245	69.5
Central African Republic	1.1	0.0	..	..	..	..	..	..	6.6	..	..	..	..
Chad	2.0	37.4	..	0.0	..	..	..	..	2.5	..	..	..	..
Chile	673.5	1,485.6	6,594.1	1,525.1	3,104.1	4,936.2	4,190.3	1,495.2	82.4	31,088	170,636	700,000	43.4
China	5,970.0	8,548.0	17,166.6	10,847.0	10,852.5	20,347.4	985.9	4,300.4	113.6	..	..	8,000,000	6.3
Hong Kong, China	..	..	..	..	..	..	..	..	139.5	74,122	557,002	263,959	38.9
Colombia	1,384.3	3,012.0	6,985.4	695.0	995.5	1,919.8	321.0	619.3	35.7	987	20,026	664,000	15.2
Congo, Dem. Rep.	48.0	547.4	..	..	0.0	..	..	..	2.9	..	..	..	..
Congo, Rep.	54.7	71.8	325.0	..	..	..	..	0.0	2.2	2,160	34,514	..	..
Costa Rica	..	..	301.2	160.0	..	508.2	..	..	39.1	44,301	392,726	40,921	9.6
Côte d'Ivoire	752.3	147.9	260.6	0.0	241.3	140.0	..	..	14.1	..	..	..	..
Croatia	978.0	1,602.1	368.5	7.1	672.2	451.0	..	298.7	68.7	8,733	113,708	94,088	21.2
Cuba	..	60.0	165.0	..	..	0.0	..	600.0	..	..	..	..	..
Czech Republic	6,178.5	8,996.0	944.1	3,865.3	283.7	106.7	135.5	263.7	40.9	30,945	273,688	..	..
Denmark	..	..	..	..	..	..	..	..	185.1	33,047	234,432	257,950	47.8
Dominican Republic	163.0	424.0	979.0	1,306.6	..	1,148.9	..	..	25.8	..	..	..	..
Ecuador	696.4	588.6	30.0	431.0	686.8	1,651.0	..	500.0	24.0	..	..	1,043,440	83.7
Egypt, Arab Rep.	1,914.5	7,222.9	634.0	678.0	123.9	821.5	..	..	55.3	9,595	367,559	..	..
El Salvador	720.2	1,282.1	900.2	85.0	..	..	..	..	42.9	2,617	40,739	461,642	73.3
Eritrea	..	40.0	..	..	..	..	..	..	29.0	..	..	..	..
Estonia	628.2	467.1	26.5	..	1.0	298.4	..	115.0	78.4	9,945	73,999	65,194	48.4
Ethiopia	..	..	..	..	..	..	..	..	27.2	..	..	..	..
Finland	..	..	..	..	..	..	..	..	77.8	7,710	114,061	221,000	42.4
France	..	..	..	..	..	..	..	..	98.7	144,521	1,225,291	2,612,960	43.2
Gabon	8.4	26.6	294.0	0.0	46.7	177.4	..	..	9.3	..	..	..	..
Gambia, The	..	6.6	..	0.0	..	..	..	..	15.6	..	..	..	..
Georgia	61.0	493.8	159.0	134.5	..	168.5	..	..	19.5	5,035	56,840	33,860	7.6
Germany	..	..	..	..	..	..	..	..	109.8	66,747	465,615	3,162,111	38.3
Ghana	491.1	371.5	110.0	590.0	..	10.0	..	0.0	18.0	6,189	100,272	25,679	1.2
Greece	..	..	..	..	..	..	..	..	72.3	2,381	33,839	771,000	69.9
Guatemala	1,366.3	836.1	1,223.2	110.0	33.8	..	..	..	26.8	4,251	68,451	..	..
Guinea	120.3	98.6	36.4	..	..	..	..	..	5.0	..	..	..	..
Guinea-Bissau	..	6.9	..	..	..	..	..	..	4.0	..	..	..	..
Haiti	102.5	148.0	4.7	5.5	..	..	..	..	13.3	9	300	..	..

Private sector in the economy

5.1

	Investment commitments in infrastructure projects with private participation ^a								Domestic credit to private sector % of GDP 2006	Businesses registered		Micro, small, and medium-size enterprises	
	\$ millions									New 2005	Total 2005	Total 2000-05 ^b	per 1,000 people 2000-05 ^b
	Telecommunications		Energy		Transport		Water and sanitation						
	1995-99	2000-06	1995-99	2000-06	1995-99	2000-06	1995-99	2000-06					
Honduras	51.3	224.2	112.1	358.8	10.5	120.0	..	207.9	49.0	..	..	257,953	41.6
Hungary	6,430.2	5,798.1	3,812.1	2,090.6	135.0	3,297.5	205.8	0.0	55.4	22,251	240,556	..	..
India	7,456.8	27,912.6	7,096.7	11,572.2	1,349.1	11,365.7	..	2.1	45.0	38,129	712,800	..	..
Indonesia	8,847.5	8,108.1	9,942.1	2,485.7	1,530.8	2,400.7	955.2	36.7	24.6	19,851	259,799	41,362,315	195.3
Iran, Islamic Rep.	28.0	695.0	..	650.0	..	..	..	..	47.3	..	..	..	..
Iraq	..	1,074.0	..	..	..	..	..	..	..	..	..	..	..
Ireland	..	..	..	..	..	..	..	..	183.4	17,234	160,707	97,000	24.3
Israel	..	..	..	..	..	..	..	..	89.6	14,687	379,503	468,338	67.6
Italy	..	..	..	..	..	..	..	..	95.6	104,364	1,688,198	4,486,000	77.9
Jamaica	..	701.0	43.0	279.0	0.0	565.0	..	..	27.9	..	..	..	..
Japan	..	..	..	..	..	..	..	..	182.0	114,013	2,572,088	5,712,191	44.7
Jordan	39.9	1,952.6	..	..	182.0	0.0	0.0	169.0	98.0	7,706	102,716	141,327	26.7
Kazakhstan	1,633.5	1,788.9	1,825.0	300.0	..	..	..	100.0	47.8	3,302	32,150	..	..
Kenya	193.0	2,053.0	238.0	116.7	53.4	404.0	0.0	..	27.7	7,371	125,102	2,800,000	85.1
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	..	..	..	..	..	..	..	..	102.0	..	..	2,998,223	62.4
Kuwait	..	..	..	..	..	..	..	..	63.1	..	..	..	..
Kyrgyz Republic	100.8	47.4	..	..	..	..	..	..	10.5	..	..	142,475	28.3
Lao PDR	100.1	97.7	535.5	2,050.0	0.0	0.0	..	..	6.0	..	..	..	..
Latvia	600.9	817.4	106.0	71.1	75.0	135.0	..	..	86.8	10,856	193,893	32,571	13.8
Lebanon	485.7	138.1	..	..	..	153.0	..	0.0	77.9	3,127	63,423	..	..
Lesotho	15.7	93.9	..	0.0	..	..	..	..	8.9	..	..	..	..
Liberia	..	80.8	..	..	..	..	..	..	8.4	..	..	..	..
Libya	..	..	..	..	..	..	..	..	15.5	..	..	..	..
Lithuania	832.7	1,112.0	10.0	399.3	..	..	..	..	50.6	4,507	71,085	56,428	16.5
Macedonia, FYR	..	808.6	..	391.0	..	..	..	..	30.2	10,814	157,973	55,742	27.5
Madagascar	30.0	12.6	..	0.0	..	48.5	..	..	10.2	1,234	19,305	..	..
Malawi	23.1	66.8	..	0.0	6.0	..	..	..	8.7	420	5,595	747,396	64.3
Malaysia	3,188.6	3,770.8	1,610.2	6,840.6	8,135.6	4,992.4	10.0	6,502.2	108.1	..	..	518,996	20.2
Mali	..	82.6	..	365.9	..	55.4	..	..	17.2	..	..	..	..
Mauritania	..	92.1	..	..	..	..	..	..	..	..	..	..	..
Mauritius	..	393.0	109.3	0.0	42.6	..	..	..	78.0	..	..	75,267	62.2
Mexico	10,757.5	20,763.4	2,120.8	6,795.3	4,706.1	5,388.4	305.0	548.7	22.1	306,400	4,290,000	2,891,300	28.3
Moldova	84.6	80.1	60.0	25.3	38.0	0.0	..	..	27.9	5,033	61,333	25,667	6.5
Mongolia	21.9	22.1	..	..	..	..	..	..	32.8	..	..	..	..
Morocco	1,240.0	6,715.1	5,978.0	1,049.0	..	340.0	..	..	58.1	13,407	155,947	450,000	15.4
Mozambique	29.0	138.6	..	1,205.8	441.0	334.6	25.5	..	13.8	..	..	..	..
Myanmar	..	..	719.0	..	50.0	..	..	..	5.6	..	..	..	..
Namibia	55.0	35.0	4.0	1.0	..	..	..	0.0	61.7	..	..	..	..
Nepal	..	97.3	98.2	39.0	..	..	..	..	37.7	..	..	3,040	0.1
Netherlands	..	..	..	..	..	..	..	..	176.2	116,000	1,030,000	735,160	45.0
New Zealand	..	..	..	..	..	..	..	..	144.2	62,695	388,846	334,031	81.7
Nicaragua	24.5	294.3	232.4	126.3	..	104.0	..	..	33.8	..	..	..	..
Niger	..	85.5	..	..	..	..	..	3.4	8.3	..	..	..	..
Nigeria	69.0	9,485.8	..	1,920.0	..	2,617.6	..	..	15.0	..	..	..	..
Norway	..	..	..	..	..	..	..	..	..	47,436	298,360	316,243	68.4
Oman	..	1,047.0	183.0	1,364.3	77.5	473.8	..	0.0	34.9	..	..	7,373	3.0
Pakistan	75.5	9,068.0	4,298.3	800.7	421.3	322.0	..	..	29.0	4,227	44,897	2,956,704	19.0
Panama	1,429.2	307.9	669.2	455.5	994.6	51.4	25.0	..	88.6	..	..	..	..
Papua New Guinea	..	..	65.0	..	..	..	71.0	..	17.1	..	..	..	..
Paraguay	259.3	365.5	..	..	58.0	..	..	..	16.9	..	..	548,000	98.4
Peru	4,774.5	2,643.2	3,004.9	2,511.2	86.3	1,537.5	..	152.0	17.8	33,349	554,135	658,837	24.4
Philippines	5,358.3	5,235.3	6,998.0	4,275.2	1,364.0	1,260.5	7,567.2	503.9	30.0	13,328	..	808,634	10.0
Poland	4,913.2	18,179.1	628.1	2,352.7	169.4	1,672.0	6.1	64.3	33.6	23,864	509,894	1,654,822	43.3
Portugal	..	..	..	..	..	..	..	..	157.4	16,770	262,686	693,000	66.4
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	2,069	0.5



5.1

Private sector in the economy

	Investment commitments in infrastructure projects with private participation ^a								Domestic credit to private sector % of GDP 2006	Businesses registered		Micro, small, and medium-size enterprises	
	\$ millions									New 2005	Total 2005	Total 2000-05 ^b	per 1,000 people 2000-05 ^b
	Telecommunications		Energy		Transport		Water and sanitation						
1995-99	2000-06	1995-99	2000-06	1995-99	2000-06	1995-99	2000-06						
Romania	2,072.8	4,179.9	100.0	2,065.6	23.4	..	..	1,116.0	26.3	91,386	851,562	392,544	18.1
Russian Federation	5,639.1	27,700.4	2,281.3	1,726.0	406.0	253.4	108.0	938.5	30.8	446,605	4,767,300	6,891,300	48.1
Rwanda	8.0	82.3	..	1.6	..	..	..	..	13.5	..	..	..	..
Saudi Arabia	..	..	..	..	..	..	..	..	50.7	..	..	..	..
Senegal	273.9	805.1	124.0	93.3	..	55.4	20.0	0.0	23.1	23	1,000	..	..
Serbia	1,590.0	3,197.0	..	..	..	..	..	0.0	26.8	14,608	270,872	68,220	9.1
Sierra Leone	7.0	88.8	..	..	..	..	..	..	4.4	..	..	..	..
Singapore	..	..	..	..	..	..	..	..	98.6	19,501	102,662	136,363	32.2
Slovak Republic	488.5	2,993.9	..	4,459.6	..	42.0	0.0	13.6	39.2	7,507	81,775	70,553	13.1
Slovenia	..	..	..	..	..	..	..	..	68.8	3,237	40,560	91,066	45.6
Somalia	0.0	13.4	..	..	..	..	..	..	..	..	..	..	..
South Africa	2,975.3	6,856.5	3.0	1,261.2	1,386.4	3,987.7	56.9	31.3	160.8	41,356	553,425	..	..
Spain	..	..	..	..	..	..	..	..	167.4	139,119	2,193,691	3,168,735	73.0
Sri Lanka	559.9	938.2	192.3	270.8	240.0	..	..	..	32.8	4,754	58,518	121,426	6.3
Sudan	18.3	1,454.0	..	..	..	30.0	..	..	0.1	..	..	22,460	0.7
Swaziland	21.2	27.7	..	..	..	..	..	..	23.7	..	..	..	..
Sweden	..	..	..	..	..	..	..	..	117.3	21,695	301,814	898,454	99.6
Switzerland	..	..	..	..	..	..	..	..	174.3	8,998	140,580	344,000	46.9
Syrian Arab Republic	..	628.0	..	..	..	37.0	..	..	14.9	216	2,268	..	..
Tajikistan	1.2	8.5	..	16.0	..	..	..	..	16.0	..	..	92,964	14.7
Tanzania	100.2	585.3	127.0	376.4	16.5	27.7	..	8.5	12.2	3,933	59,163	2,700,000	75.8
Thailand	2,735.2	6,732.7	6,875.4	4,693.3	1,941.1	939.0	289.0	306.5	88.0	..	..	842,360	13.7
Timor-Leste	..	0.0	..	..	..	..	..	..	..	..	..	4,138	4.5
Togo	5.0	0.0	0.0	657.7	0.0	..	..	..	16.9	..	..	..	..
Trinidad and Tobago	0.0	190.0	207.0	39.0	..	..	0.0	120.0	34.3	..	..	19,150	14.5
Tunisia	..	3,094.0	291.0	30.0	..	..	..	..	65.0	6,353	62,563	..	..
Turkey	3,269.7	14,780.3	2,992.2	6,084.5	610.0	4,160.6	942.0	..	34.1	86,900	593,166	210,134	3.1
Turkmenistan	..	36.3	..	..	..	..	..	..	..	..	..	..	..
Uganda	119.3	387.6	..	125.7	..	404.0	0.0	0.0	7.9	8,096	89,503	160,453	6.1
Ukraine	1,094.6	4,028.1	..	160.0	..	..	..	..	44.9	28,716	471,839	343,786	7.3
United Arab Emirates	..	..	..	..	..	..	..	..	60.9	..	..	..	..
United Kingdom	..	..	..	..	..	..	..	..	175.8	333,700	2,160,000	4,415,260	73.8
United States	..	..	..	..	..	..	..	..	201.1	676,830	5,156,000	5,868,737	20.0
Uruguay	63.7	144.2	86.0	330.0	20.0	251.1	..	368.0	26.2	..	..	125,000	37.9
Uzbekistan	513.8	385.6	..	..	..	..	..	0.0	..	..	..	212,424	8.3
Venezuela, RB	4,877.9	4,428.0	103.0	39.5	268.0	34.0	25.0	15.0	17.1	..	..	11,314	0.5
Vietnam	256.0	690.0	435.5	2,279.0	85.0	20.0	38.8	174.0	71.3	..	..	90,935	1.1
West Bank and Gaza	265.0	279.8	..	150.0	..	..	0.0	..	8.0	..	..	97,194	27.7
Yemen, Rep.	..	647.6	..	15.8	190.0	..	..	..	6.9	1,800	21,332	310,000	16.1
Zambia	64.2	446.3	274.0	3.0	..	15.6	..	0.0	9.7	3,389	65,155	..	..
Zimbabwe	46.0	92.0	600.0	..	85.0	..	..	..	26.6	..	..	..	..
World	.. s	.. s	.. s	.. s	.. s	.. s	.. s	.. s	136.7 w	3,658,665 s	38,885,427 s		
Low income	11,569.9	60,085.8	15,726.4	23,465.5	3,121.9	16,176.2	155.3	188.0	38.3	75,510	1,221,960		
Middle income	147,572.8	255,063.3	136,018.9	114,473.2	63,231.9	70,618.4	21,831.5	21,613.6	60.1	1,389,189	16,463,270		
Lower middle income	38,688.6	76,783.1	65,675.8	37,500.4	18,401.9	34,404.2	10,800.3	7,913.7	81.3	182,097	2,737,021		
Upper middle income	108,884.2	178,280.2	70,343.1	76,972.8	44,829.9	36,214.2	11,031.2	13,699.9	41.4	1,207,092	13,726,249		
Low & middle income	159,142.7	315,149.1	151,745.3	137,938.7	66,353.8	86,794.6	21,986.8	21,801.6	57.3	1,464,699	17,685,230		
East Asia & Pacific	26,616.5	33,533.1	44,490.3	33,565.9	24,079.0	30,285.2	9,917.1	11,823.7	98.7	21,402	270,148		
Europe & Central Asia	30,761.6	94,150.4	12,842.2	25,358.4	2,129.0	11,084.7	1,261.9	2,691.1	35.1	783,581	8,648,355		
Latin America & Carib.	83,557.9	92,346.7	72,527.6	51,226.9	35,089.7	22,852.5	10,705.4	6,562.5	30.9	477,627	5,971,458		
Middle East & N. Africa	3,973.1	27,618.6	7,086.0	6,657.1	573.4	2,426.2	0.0	679.0	41.3	54,368	879,290		
South Asia	8,530.3	41,008.4	12,240.4	13,185.8	2,010.4	11,687.7	..	2.1	42.6	52,438	883,674		
Sub-Saharan Africa	5,703.3	26,491.9	2,558.8	7,944.5	2,472.2	8,458.3	102.4	43.2	78.4	75,283	1,032,305		
High income	..	..	..	..	..	..	..	..	161.7	2,193,966	21,200,197		
Euro area	..	..	..	..	..	..	..	..	115.7	658,331	7,178,119		

a. Data refer to total for the period shown. Includes projects that became privatized during financial closure years 1990-2006. b. Data are for the most recent year available.

Private sector in the economy

About the data

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

Investment in infrastructure projects with private participation has made important contributions to easing fiscal constraints, improving the efficiency of infrastructure services, and extending delivery to poor people. Developing countries have been in the forefront, pioneering better approaches to infrastructure services and reaping the benefits of greater competition and customer focus. Between 1990 and 2006 more than 3,800 projects in more than 139 developing countries introduced private participation in at least one infrastructure sector.

The data on investment in infrastructure projects with private participation refer to all investment (public and private) in projects in which a private company assumes operating risk during the operating period or development and operating risk during the contract period. Investment refers to commitments not disbursements. Foreign state-owned companies are considered private entities for the purposes of this measure. The data are from the World Bank's Private Participation in Infrastructure (PPI) Project Database, which tracks more than 3,800 projects, newly owned or managed by private companies, that reached financial closure in developing economies in 1990–2006. Geographic and income aggregates are calculated by the World Bank's Development Data Group. For more information, see <http://ppi.worldbank.org/>.

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

include credit to state-owned or partially state-owned enterprises.

Entrepreneurship is essential to the dynamism of the modern market economy, and a greater entry rate of new businesses can foster competition and economic growth. The table includes data on business registrations from the 2007 World Bank Group Entrepreneurship Survey, which includes entrepreneurial activity in 84 countries for 2003–05. Survey data are used to analyze firm creation, its relationship to economic growth and poverty reduction, and the impact of regulatory and institutional reforms. The 2007 survey improves on the 2006 survey's methodology and country coverage for better cross-country comparability. Data on total and newly registered businesses were collected directly from national registrars of companies. For cross-country comparability, only limited liability corporations that operate in the formal sector are included. For additional information on sources, methodology, calculation of entrepreneurship rates, and data limitations see www.ifc.org/ifcext/sme.nsf/Content/Entrepreneurship+Database.

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

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

Definitions

• **Investment commitments in infrastructure projects with private participation** refers to infrastructure projects in telecommunications, energy (electricity and natural gas transmission and distribution), transport, and water and sanitation that have reached financial closure and directly or indirectly serve the public. Incinerators, movable assets, standalone solid waste projects, and small projects such as windmills are excluded. Included are operation and management contracts, operation and management contracts with major capital expenditure, greenfield projects (new facilities built and operated by a private entity or a public-private joint venture), and divestitures. Investment commitments are the sum of investments in facilities and investments in government assets. Investments in facilities are resources the project company commits to invest during the contract period in new facilities or in expansion and modernization of existing facilities. Investments in government assets are the resources the project company spends on acquiring government assets such as state-owned enterprises, rights to provide services in a specific area, or use of specific radio spectrums. • **Domestic credit to private sector** is financial resources provided to the private sector—such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable—that establish a claim for repayment. For some countries these claims include credit to public enterprises. • **New businesses registered** are the number of limited liability firms registered in the calendar year. • **Total businesses registered** are the year-end stock of total registered limited liability firms. • **Micro, small, and medium-size enterprises** are business that may be defined by the number of employees. There is no international standard definition of firm size; however, many institutions that collect information use the following size categories: micro enterprises, 0–9 employees; small enterprises, 10–49 employees; and medium-size enterprises, 50–249 employees.

Data sources

Data on investment commitments in infrastructure projects with private participation are from the World Bank's PPI Project database (<http://ppi.worldbank.org>). Data on domestic credit are from the IMF's *International Financial Statistics*. Data on business registration and micro, small, and medium-size enterprises are from the IFC's Micro, Small, and Medium Enterprises database (www.ifc.org/ifcext/sme.nsf/Content/Resources).



5.2

Business environment: enterprise surveys

Survey year	Regulations and tax		Permits and licenses	Corruption	Crime	Informality	Gender	Finance	Infrastructure	Innovation	Trade	Workforce	
	Time dealing with officials % of management time	Average number of times management met with tax officials											Time required to obtain operating license days	Unofficial payments to public officials % of firms	Losses due to theft, robbery, vandalism, and arson % of sales	Firms that do not report all sales for tax purposes % of firms	Firms with female participation in ownership % of firms	Firms using banks to finance investment % of firms	Value lost due to electrical outages % of sales	ISO certification ownership % of firms	Average time to clear exports through customs days	Firms offering formal training % of firms
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..
Albania ^a	2005	10.4	6.6	..	64.3	0.0	66.2	14.1	27.9	10.9	16.7	1.4	47.5
Algeria	2002	..	..	..	75.2	0.5	70.4	..	16.9	4.3	..	8.6	31.8
Angola ^a	2006	7.1	5.2	24.1	46.3	2.4	67.8	23.4	2.1	3.7	5.1	16.5	19.4
Argentina ^a	2006	14.1	4.6	175.8	18.7	3.7	49.1	30.3	6.9	1.4	26.9	5.5	52.2
Armenia ^a	2005	3.0	2.9	..	24.6	0.0	26.2	12.5	35.0	2.5	5.7	5.0	35.9
Australia	..	..	..	..	..	..	..	..	..	..	..	..	..
Austria	..	..	..	..	..	..	..	..	..	..	..	..	..
Azerbaijan ^a	2005	5.2	1.3	..	37.8	0.2	38.7	14.4	0.6	5.9	10.3	1.6	16.3
Bangladesh ^a	2007	3.2	1.4	6.1	82.2	1.2	..	16.1	11.6	10.6	7.8	8.4	16.2
Belarus ^a	2005	3.6	3.1	..	26.2	0.2	20.0	23.8	10.5	3.8	8.9	3.0	49.7
Belgium	..	..	..	..	..	..	..	..	..	..	..	..	..
Benin	2004	6.5	6.3	39.9	57.7	0.3	39.6	..	20.8	6.5	2.7	6.3	35.3
Bolivia ^a	2006	13.5	3.5	30.0	32.0	3.3	51.4	41.1	21.1	4.4	13.8	15.3	53.9
Bosnia and Herzegovina ^a	2005	4.3	1.9	..	24.1	0.4	29.2	25.2	17.5	2.4	14.5	2.0	47.2
Botswana ^a	2006	5.0	2.4	13.7	27.6	3.2	65.3	40.9	11.3	1.4	12.7	1.4	37.7
Brazil	2003	7.2	..	..	..	0.4	82.8	..	22.9	1.6	19.1	8.2	67.1
Bulgaria ^a	2005	2.8	4.7	..	36.1	0.3	39.7	36.5	24.7	1.3	11.0	2.0	32.3
Burkina Faso ^a	2006	9.5	2.5	..	87.0	1.8	58.8	23.3	22.3	3.9	7.4	2.8	43.1
Burundi ^a	2006	5.7	2.1	27.3	56.5	4.9	42.7	34.8	12.3	10.7	7.1	..	22.1
Cambodia	2003	8.6	7.2	..	82.4	1.6	91.0	..	6.8	2.2	2.8	..	22.5
Cameroon ^a	2006	12.8	6.4	15.6	77.4	3.8	38.7	35.3	18.0	3.9	16.4	4.3	42.4
Canada	..	..	..	..	..	..	..	..	..	..	..	..	..
Central African Republic	..	..	..	..	..	..	..	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..	..
Chile ^a	2006	9.0	5.4	67.7	8.2	1.3	27.9	27.8	29.0	1.8	22.0	5.8	46.9
China	2003	18.3	14.4	11.8	72.6	0.1	49.5	..	9.8	1.3	35.9	6.7	84.8
Hong Kong, China	..	..	..	..	..	..	..	..	..	..	..	..	..
Colombia ^a	2006	14.3	2.5	28.2	8.2	2.9	38.7	43.0	30.5	2.3	5.9	7.1	39.5
Congo, Dem. Rep. ^a	2006	6.3	10.0	17.8	83.8	6.5	65.4	21.2	3.3	5.6	4.3	3.6	11.4
Congo, Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..
Costa Rica	2005	9.6	0.7	..	33.8	0.4	68.3	34.7	9.3	1.9	10.5	3.5	46.4
Côte d'Ivoire	..	..	..	..	..	..	..	..	..	..	..	..	..
Croatia ^a	2005	2.7	2.3	..	20.8	0.2	33.3	20.0	29.7	2.4	16.1	2.0	59.9
Cuba	..	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic ^a	2005	2.1	1.7	..	25.5	0.4	51.1	21.8	11.4	1.6	12.5	3.6	60.3
Denmark	..	..	..	..	..	..	..	..	..	..	..	..	..
Dominican Republic	2005	8.8	2.7	..	26.3	0.7	73.6	..	3.6	15.2	9.6	11.4	53.3
Ecuador ^a	2006	17.3	2.6	19.9	20.7	3.0	37.6	32.7	23.8	2.7	18.2	7.0	61.6
Egypt, Arab Rep.	2004	..	7.2	112.8	21.2	..	33.0	..	7.9	4.5	12.0	4.8	13.4
El Salvador ^a	2006	9.2	4.1	35.4	27.3	5.6	42.3	39.6	17.3	2.9	11.0	2.6	49.6
Eritrea	2002	3.8	..	..	6.8	..	84.2	5.3	30.5	..	6.6	..	20.3
Estonia ^a	2005	2.3	2.2	..	16.2	0.4	24.7	34.1	17.8	1.1	13.2	1.8	64.9
Ethiopia ^a	2006	3.8	1.8	11.4	12.4	1.4	51.6	30.9	11.0	0.9	4.2	4.3	38.2
Finland	..	..	..	..	..	..	..	..	..	..	..	..	..
France	..	..	..	..	..	..	..	..	..	..	..	..	..
Gabon	..	..	..	..	..	..	..	..	..	..	..	..	..
Gambia, The ^a	2006	7.3	3.2	9.1	52.1	8.7	88.1	21.3	7.6	11.8	22.2	5.0	25.6
Georgia ^a	2005	3.1	7.9	..	11.1	0.3	36.0	36.9	12.5	9.2	13.0	3.4	24.0
Germany	..	..	..	..	..	..	..	..	..	..	..	..	..
Ghana ^a	2007	4.0	4.6	6.4	38.8	3.7	59.2	44.0	16.0	6.0	6.8	7.8	33.0
Greece	..	..	..	..	..	..	..	..	..	..	..	..	..
Guatemala ^a	2006	9.2	3.9	75.4	13.0	5.2	44.2	28.4	12.8	4.5	8.0	4.5	28.1
Guinea ^a	2006	2.7	3.6	13.0	84.8	8.3	95.4	25.4	0.9	14.0	5.2	4.3	21.1
Guinea-Bissau ^a	2006	2.9	4.4	30.4	62.2	3.3	68.2	19.9	0.7	5.3	8.4	5.6	12.4
Haiti	..	..	..	..	..	..	..	..	..	..	..	..	..

Business environment: enterprise surveys

5.2

Survey year	Regulations and tax		Permits and licenses	Corruption	Crime	Informality	Gender	Finance	Infrastructure	Innovation	Trade	Workforce	
	Time dealing with officials % of management time	Average number of times management met with tax officials	Time required to obtain operating license days	Unofficial payments to public officials % of firms	Losses due to theft, robbery, vandalism, and arson % of sales	Firms that do not report all sales for tax purposes % of firms	Firms with female participation in ownership % of firms	Firms using banks to finance investment % of firms	Value lost due to electrical outages % of sales	ISO certification ownership % of firms	Average time to clear exports through customs days	Firms offering formal training % of firms	
Honduras ^a	2006	4.6	2.4	31.6	12.7	6.1	36.0	39.9	8.5	3.8	16.5	6.0	33.3
Hungary ^a	2005	4.0	2.5	..	32.1	0.1	40.0	40.1	22.3	1.4	23.1	4.5	39.9
India	2006	6.7	3.1	..	47.5	0.1	59.2	9.1	19.4	6.6	22.5	15.6	15.9
Indonesia	2003	4.0	2.0	18.6	44.2	0.2	44.0	..	13.9	3.3	22.1	4.1	23.8
Iran, Islamic Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..
Iraq	..	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	..	..	..	..	..	..	..	..	..	..	..	..	..
Israel	..	..	..	..	..	..	..	..	..	..	..	..	..
Italy	..	..	..	..	..	..	..	..	..	..	..	..	..
Jamaica	2005	6.3	2.2	..	17.7	1.1	28.8	32.2	10.6	11.8	16.4	4.3	53.5
Japan	..	..	..	..	..	..	..	..	..	..	..	..	..
Jordan	2006	6.7	2.2	6.4	4.1	1.3	13.0	13.1	8.6	1.7	15.5	3.8	23.9
Kazakhstan ^a	2005	3.1	4.0	..	45.1	0.3	23.2	36.1	15.4	2.2	9.9	6.8	30.7
Kenya	2003	11.7	5.5	11.6	63.0	0.8	45.9	..	25.7	8.1	..	4.7	48.5
Korea, Dem. Rep.	2005	3.2	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	2005	3.2	2.4	..	14.1	0.0	43.7	19.1	11.5	..	17.6	7.2	39.5
Kuwait	..	..	..	..	..	..	..	..	..	..	..	..	..
Kyrgyz Republic ^a	2005	6.1	3.5	43.9	66.3	0.7	43.2	27.3	7.9	4.1	11.9	4.1	47.0
Lao PDR	2005	4.5	3.8	..	31.2	1.5	14.9	..	13.8	4.3	3.3	2.0	28.2
Latvia ^a	2005	2.9	2.2	..	31.3	0.5	26.3	42.3	15.1	1.4	9.3	2.0	51.7
Lebanon	2006	12.0	4.7	..	51.2	0.5	67.5	27.9	26.8	6.0	20.9	7.4	67.8
Lesotho	2003	19.8	14.3	..	33.3	0.1	35.4	..	6.7	8.5	8.6	2.3	24.6
Liberia	..	..	..	..	..	..	..	..	..	..	..	..	..
Libya	..	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania ^a	2005	5.1	4.2	55.5	44.6	0.4	39.0	25.5	15.6	1.2	15.1	1.8	52.6
Macedonia, FYR ^a	2005	8.2	2.7	..	26.0	0.3	52.2	17.5	9.0	1.8	11.0	2.4	37.4
Madagascar	2005	20.8	2.7	..	24.5	1.9	21.0	..	13.0	6.6	6.6	3.5	48.5
Malawi ^a	2006	5.8	8.9	17.4	35.7	2.3	55.3	15.8	20.6	22.6	17.2	3.5	51.6
Malaysia	2002	7.3	5.2	..	..	0.3	..	..	23.8	1.8	31.4	2.5	42.0
Mali	2003	7.5	6.9	8.1	59.6	0.5	55.1	..	16.8	1.7	6.5	8.1	25.5
Mauritania ^a	2006	5.8	1.9	10.7	82.1	5.6	82.5	17.3	3.2	1.6	5.9	3.9	25.5
Mauritius	2005	9.6	2.1	..	17.5	0.1	26.3	..	36.3	2.9	28.4	4.4	62.1
Mexico ^a	2006	20.5	2.3	11.9	20.0	3.4	57.7	24.8	2.6	2.4	20.3	5.4	24.6
Moldova ^a	2005	3.6	2.7	44.7	36.0	0.1	40.2	27.5	17.7	2.7	6.9	2.6	32.5
Mongolia	2004	6.0	7.3	..	..	0.6	80.4	..	32.8	1.5	20.5	3.5	46.2
Morocco	2004	9.2	0.8	4.9	..	0.0	10.7	..	24.7	0.7	22.3	2.2	33.5
Mozambique	..	..	..	..	..	..	..	..	..	..	..	..	..
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..	..
Namibia ^a	2006	2.9	1.6	9.6	11.4	3.0	45.5	33.4	8.1	0.7	17.6	1.5	44.5
Nepal	..	..	..	..	..	..	..	..	..	..	..	..	..
Netherlands	..	..	..	..	..	..	..	..	..	..	..	..	..
New Zealand	..	..	..	..	..	..	..	..	..	..	..	..	..
Nicaragua ^a	2006	9.3	2.5	19.7	16.8	3.8	60.4	41.4	13.0	8.7	18.7	5.0	28.9
Niger ^a	2006	11.5	4.3	10.9	69.7	6.1	29.7	10.0	14.4	2.5	4.8	7.4	34.4
Nigeria	..	..	..	..	..	..	..	..	..	..	..	..	..
Norway	..	..	..	..	..	..	..	..	..	..	..	..	..
Oman	..	..	5.2	11.8	33.2	..	42.5	..	6.5	4.2	10.8	4.2	20.9
Pakistan	2002	8.7	4.2	35.2	57.0	0.1	..	..	3.6	4.9	17.0	9.7	11.1
Panama ^a	2006	10.3	2.7	41.2	24.2	2.7	54.2	37.1	19.2	2.4	14.7	5.7	43.9
Papua New Guinea	..	..	..	..	..	..	..	..	..	..	..	..	..
Paraguay ^a	2006	7.9	2.2	37.8	68.0	3.1	42.8	44.8	8.0	2.5	7.1	5.5	46.9
Peru ^a	2006	13.5	2.5	81.1	9.2	2.4	27.2	32.8	30.8	3.2	14.6	5.6	57.7
Philippines	2003	6.9	3.9	25.0	44.7	0.9	57.9	..	5.5	5.9	15.8	6.6	21.7
Poland ^a	2005	3.0	2.7	16.5	23.7	0.4	43.9	33.6	20.7	1.6	13.9	3.3	48.4
Portugal	..	..	..	..	..	..	..	..	..	..	..	..	..
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..	..



5.2

Business environment: enterprise surveys

Survey year	Regulations and tax		Permits and licenses	Corruption	Crime	Informality	Gender	Finance	Infrastructure	Innovation	Trade	Workforce	
	Time dealing with officials % of management time	Average number of times management met with tax officials	Time required to obtain operating license days	Unofficial payments to public officials % of firms	Losses due to theft, robbery, vandalism, and arson % of sales	Firms that do not report all sales for tax purposes % of firms	Firms with female participation in ownership % of firms	Firms using banks to finance investment % of firms	Value lost due to electrical outages % of sales	ISO certification ownership % of firms	Average time to clear exports through customs days	Firms offering formal training % of firms	
Romania ^a	2005	1.1	1.8	..	33.1	0.2	26.9	27.7	23.2	2.1	16.8	2.4	32.7
Russian Federation ^a	2005	6.3	2.5	..	59.9	0.5	40.3	28.6	10.2	2.0	9.3	8.2	37.3
Rwanda ^a	2006	5.9	4.0	6.5	20.0	7.1	28.9	41.0	15.9	8.7	10.8	6.7	27.6
Saudi Arabia	..	..	..	..	..	..	..	..	..	..	..	..	..
Senegal	2003	..	6.7	30.5	25.3	0.6	..	..	26.3	4.3	6.1	6.6	32.7
Serbia ^a	2005	8.1	4.1	..	31.8	0.6	33.3	25.0	16.7	2.4	11.7	3.2	47.5
Sierra Leone	..	..	..	..	..	..	..	..	..	..	..	..	..
Singapore	..	..	..	..	..	..	..	..	..	..	..	..	..
Slovak Republic ^a	2005	3.0	1.8	..	34.3	0.4	22.0	18.2	13.2	1.2	10.0	5.8	79.4
Slovenia	2005	3.7	1.4	..	11.2	0.2	35.6	34.5	29.6	1.1	20.2	2.9	69.9
Somalia	..	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	2003	9.2	3.3	6.4	2.1	0.5	15.9	..	24.2	0.4	42.4	4.5	64.0
Spain	..	..	..	..	..	..	..	..	..	..	..	..	..
Sri Lanka	2004	3.5	5.1	49.5	16.3	0.5	42.0	..	16.2	..	..	7.6	32.6
Sudan	..	..	..	..	..	..	..	..	..	..	..	..	..
Swaziland	2006	4.4	1.9	24.0	40.6	3.4	74.6	28.6	7.7	2.5	22.1	4.0	51.0
Sweden	..	..	..	..	..	..	..	..	..	..	..	..	..
Switzerland	..	..	..	..	..	..	..	..	..	..	..	..	..
Syrian Arab Republic	2003	10.3	6.0	..	..	..	79.9	..	2.9	8.6	7.4	6.3	21.0
Tajikistan	2005	3.3	3.0	15.3	45.7	0.3	34.5	21.8	1.0	7.3	6.5	5.4	30.9
Tanzania	2006	4.0	3.3	15.9	49.1	3.9	71.0	30.9	6.8	9.6	14.7	5.7	36.5
Thailand	2004	1.3	1.7	37.1	..	0.1	..	..	74.7	1.4	44.6	1.4	76.3
Timor-Leste	..	..	..	..	..	..	..	..	..	..	..	..	..
Togo	..	..	..	..	..	..	..	..	..	..	..	..	..
Trinidad and Tobago	..	..	..	..	..	..	..	..	..	..	..	..	..
Tunisia	..	..	..	..	..	..	..	..	..	..	..	..	..
Turkey	2005	10.8	2.2	..	45.7	0.2	63.1	8.9	7.5	2.2	12.6	4.5	25.5
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	2006	5.2	2.9	9.3	50.6	4.1	74.5	34.7	7.7	10.2	15.5	4.7	35.0
Ukraine	2005	8.1	4.7	..	48.0	0.4	24.4	34.9	14.7	2.7	10.8	4.7	44.0
United Arab Emirates	..	..	..	..	..	..	..	..	..	..	..	..	..
United Kingdom	..	..	..	..	..	..	..	..	..	..	..	..	..
United States	..	..	..	..	..	..	..	..	..	..	..	..	..
Uruguay	2006	7.0	2.2	133.8	7.1	2.1	45.5	41.6	6.8	0.9	6.8	2.8	24.6
Uzbekistan	2005	2.5	3.5	..	36.8	0.1	14.6	17.2	3.3	2.7	8.7	5.1	16.2
Venezuela, RB	2006	33.6	3.4	41.6	..	6.8	..	..	35.7	4.4	12.5	14.1	42.3
Vietnam	2005	3.1	2.2	..	67.2	0.1	70.3	27.4	29.2	..	11.4	4.9	44.0
West Bank and Gaza	2006	5.7	5.2	21.3	5.2	7.5	25.7	18.0	4.2	4.6	18.2	6.0	26.5
Yemen, Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..
Zambia	2002	13.0	2.9	..	44.4	2.8	53.5	..	17.4	3.8	5.8	2.3	34.2
Zimbabwe	..	..	..	..	..	..	..	..	..	..	..	..	..

a. Representative sample of the nonagricultural economy, excluding financial and public services.

About the data

The World Bank Group's Enterprise Surveys collect firm-level data on the business environment to analyze how it changes and affects firm performance and growth. Enterprise Surveys cover 11 dimensions of the business environment and are available for more than 70,000 firms in 104 countries.

Firms evaluating alternative investment options, governments interested in improving business conditions, and economists seeking to explain economic performance have all grappled with defining and measuring the business environment. The firm-level data from Enterprise Surveys provide a useful tool for benchmarking performance and monitoring progress.

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

In some countries doing business requires unofficial payments or gifts to "get things done" in customs, taxes, licenses, regulations, services, and the like. Corruption such as this harms the business environment by distorting policymaking, undermining government credibility, and diverting public resources. Crime, theft, and disorder may also impose costs on businesses and society.

In many developing countries informal businesses operate without licenses, which constrains private sector growth because these firms have less access to financial and public services and can engage in fewer types of contracts and investments.

Equal opportunities for men and women contribute to development. The table shows female participation in firm ownership as a measure of women's integration as decisionmakers in business.

When financial markets work well, they connect firms to lenders and investors, allowing firms to seize opportunities and grow their businesses: creditworthy firms can obtain credit from financial intermediaries at competitive prices. But too often market imperfections and government-induced distortions limit a firm's access to credit and thus restrain private sector development and economic growth.

The reliability and availability of infrastructure benefit households and are crucial for development. Firms with access to modern and efficient infrastructure—telecommunications, reliable

electricity, and transport—can be more productive. Firm-level innovation and use of modern technology may improve enterprises' ability to compete in the business environment.

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

The table presents data for 27 countries in Europe and Central Asia and 2 comparator countries in Asia (Republic of Korea and Vietnam) that are based on the joint European Bank for Reconstruction and Development (EBRD)—World Bank Business Environment and Enterprise Performance Surveys (BEEPS). All other data are from the World Bank Financial and Private Sector Development Group's Enterprise Surveys. All BEEPS economies project plus the Latin American and Caribbean and Sub-Saharan African countries for 2006 (except Burkina Faso, Cameroon, and Cape Verde), Jordan, and the 2007 surveys for Bangladesh and Ghana draw a sample from the universe of registered nonagricultural businesses, excluding the financial and public sectors. Economies in the table with samples that are representative of the economy are footnoted. Samples for most of the remaining economies were drawn from the manufacturing sector.

Samples are selected by simple random sampling or stratified random sampling. Typical sample sizes range from 100 to 1,800, depending on the size of the economy. BEEPS use a simple random sample method based on GDP contributions, and therefore samples are self-weighted. Latin American and Caribbean and Sub-Saharan African countries (except Burkina Faso, Cameroon, and Cape Verde), Bangladesh, and Jordan use stratified random sampling, with three levels of stratification: sector, firm size, and geographic region. At the sector level the strata were defined by a few selected manufacturing industries, the retail industry (to represent the services sector), and a residual stratum for the rest of the economy. Firm size is stratified into small, medium, and large. Geographic stratification is defined by country. Stratified random sampling allows indicators to be computed by sector, size, and geographic region. Economywide indicators can also be computed with more precision than under simple random sampling when individual observations are properly weighted.

Definitions

- **Survey year** is the year in which the underlying data were collected.
- **Time dealing with officials** is the time senior management spends dealing with the requirements of government regulation.
- **Average number of times management met with tax officials** is the average number of visits or required meetings with tax officials.
- **Time required to obtain operating license** is the average wait to obtain an operating license from the day the establishment applied for it to the day it was granted.
- **Unofficial payments to public officials** are the percentage of firms expected to make informal payments to public officials to "get things done" with regard to customs, taxes, licenses, regulations, services, and the like.
- **Losses due to theft, robbery, vandalism, and arson** are the estimated losses from those causes that occurred on establishments' premises as a percentage of annual sales.
- **Firms that do not report all sales for tax purposes** are the percentage of firms that expressed that a typical firm reports less than 100 percent of sales for tax purposes; such firms are termed "informal firms."
- **Firms with female participation in ownership** are the percentage of firms with a woman among the principal owners.
- **Firms using banks to finance investment** are the percentage of firms using banks to finance investments.
- **Value lost due to electrical outages** is the percentage of sales lost due to power outages.
- **ISO certification ownership** is the percentage of firms that have earned a quality certification recognized by the International Organization for Standardization (ISO).
- **Average time to clear exports through customs** is the average number of days to clear direct exports through customs.
- **Firms offering formal training** are the percentage of firms offering formal training programs for their permanent, full-time employees.

Data sources

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



5.3

Business environment: Doing Business indicators

	Starting a business			Registering property		Dealing with licenses		Employing workers	Enforcing contracts		Protecting investors	Closing a business
	Number of procedures June 2007	Time required days June 2007	Cost % of per capita income June 2007	Number of procedures June 2007	Time required days June 2007	Number of procedures to build a warehouse June 2007	Time required to build a warehouse days June 2007	Rigidity of employment index 0–100 (least to most rigid) June 2007	Number of procedures June 2007	Time required days June 2007	Disclosure index 0–10 (least to most disclosure) June 2007	Time to resolve insolvency years June 2007
Afghanistan	4	9	84.6	9	250	13	340	23	47	1,642	0	..
Albania	10	36	20.9	7	47	24	331	35	39	390	0	..
Algeria	14	24	13.2	14	51	22	240	48	47	630	6	2.5
Angola	12	119	343.7	7	334	14	337	69	46	1,011	5	6.2
Argentina	14	31	9.7	5	65	28	338	41	36	590	6	2.8
Armenia	9	18	4.8	3	4	19	116	31	50	285	5	1.9
Australia	2	2	0.8	5	5	16	221	3	28	262	8	1.0
Austria	8	28	5.4	3	32	13	194	37	26	397	3	1.1
Azerbaijan	13	30	6.9	7	61	31	207	38	39	267	4	2.7
Bangladesh	8	74	46.2	8	425	14	252	35	41	1,442	6	4.0
Belarus	10	48	8.8	7	231	17	350	27	28	225	5	5.8
Belgium	3	4	5.3	7	132	14	169	20	27	505	8	0.9
Benin	7	31	195.0	3	118	15	332	40	42	720	6	4.0
Bolivia	15	50	134.1	7	92	17	249	79	37	591	1	1.8
Bosnia and Herzegovina	12	54	30.1	7	331	16	467	46	38	595	3	3.3
Botswana	11	108	9.9	4	30	24	167	20	29	987	8	1.7
Brazil	18	152	10.4	14	45	18	411	46	45	616	6	4.0
Bulgaria	9	32	8.4	9	19	22	131	29	40	564	10	3.3
Burkina Faso	6	18	82.1	8	182	32	226	61	37	446	6	4.0
Burundi	11	43	251.0	5	94	20	384	41	44	558	4	..
Cambodia	10	86	190.3	7	56	23	709	45	44	401	5	..
Cameroon	13	37	129.2	5	93	15	426	46	43	800	6	3.2
Canada	2	3	0.9	6	17	14	75	4	36	570	8	0.8
Central African Republic	10	14	205.4	3	69	21	239	61	43	660	6	4.8
Chad	19	75	188.8	6	44	9	181	46	41	743	6	..
Chile	9	27	8.6	6	31	18	155	24	36	480	7	4.5
China	13	35	8.4	4	29	37	336	24	35	406	10	1.7
Hong Kong, China	5	11	3.1	5	54	23	155	0	24	211	10	1.1
Colombia	11	42	19.3	9	23	14	146	27	34	1,346	8	3.0
Congo, Dem. Rep.	13	155	487.2	8	57	14	322	74	43	685	3	5.2
Congo, Rep.	10	37	150.1	7	137	14	169	69	44	560	6	3.0
Costa Rica	12	77	21.3	6	21	23	178	32	40	877	2	3.5
Côte d'Ivoire	10	40	135.8	7	62	21	628	38	33	770	6	2.2
Croatia	8	40	11.7	5	174	22	255	50	38	561	1	3.1
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	10	17	10.6	4	123	36	180	31	27	820	2	6.5
Denmark	4	6	0.0	6	42	6	69	10	34	380	7	1.1
Dominican Republic	9	22	31.1	7	60	17	214	32	34	460	5	3.5
Ecuador	14	65	29.2	10	17	19	148	51	39	498	1	5.3
Egypt, Arab Rep.	7	9	28.6	7	193	28	249	27	42	1,010	7	4.2
El Salvador	9	26	73.1	5	31	34	155	24	30	786	5	4.0
Eritrea	13	84	125.8	12	101	..	..	20	39	405	4	..
Estonia	5	7	2.0	3	51	13	117	58	36	425	8	3.0
Ethiopia	7	16	41.3	13	43	12	128	34	39	690	4	3.0
Finland	3	14	1.0	3	14	18	38	48	33	235	6	0.9
France	5	7	1.1	9	123	13	137	56	30	331	10	1.9
Gabon	9	58	164.0	8	60	14	210	59	38	1,070	6	5.0
Gambia, The	9	32	279.0	5	371	17	146	23	32	434	2	3.0
Georgia	5	11	9.5	5	5	12	113	7	36	285	8	3.3
Germany	9	18	5.7	4	40	12	100	44	33	394	5	1.2
Ghana	11	42	41.4	5	34	18	220	37	36	487	7	1.9
Greece	15	38	23.3	12	23	15	169	55	39	819	1	2.0
Guatemala	11	26	47.3	5	30	22	235	28	28	1,459	3	3.0
Guinea	13	41	138.3	6	104	32	255	41	50	276	6	3.8
Guinea-Bissau	17	233	255.5	9	211	15	167	66	41	1,140	6	..
Haiti	12	202	133.9	5	405	11	1,179	21	35	508	2	5.7

Business environment: Doing Business indicators

5.3

	Starting a business			Registering property		Dealing with licenses		Employing workers	Enforcing contracts		Protecting investors	Closing a business
	Number of procedures June 2007	Time required days June 2007	Cost % of per capita income June 2007	Number of procedures June 2007	Time required days June 2007	Number of procedures to build a warehouse June 2007	Time required to build a warehouse days June 2007	Rigidity of employment index 0–100 (least to most rigid) June 2007	Number of procedures June 2007	Time required days June 2007	Disclosure index 0–10 (least to most disclosure) June 2007	Time to resolve insolvency years June 2007
Honduras	13	21	59.9	7	24	17	125	43	45	480	1	3.8
Hungary	6	16	17.7	4	63	31	211	30	33	335	2	2.0
India	13	33	74.6	6	62	20	224	30	46	1,420	7	10.0
Indonesia	12	105	80.0	7	42	19	196	44	39	570	9	5.5
Iran, Islamic Rep.	8	47	5.3	9	36	19	670	40	39	520	5	4.5
Iraq	11	77	93.5	5	8	14	215	38	51	520	4	..
Ireland	4	13	0.3	5	38	11	185	17	20	515	10	0.4
Israel	5	34	4.4	7	144	20	235	24	35	890	7	4.0
Italy	9	13	18.7	8	27	14	257	38	41	1,210	7	1.8
Jamaica	6	8	8.7	5	54	10	236	4	34	565	4	1.1
Japan	8	23	7.5	6	14	15	177	17	30	316	7	0.6
Jordan	10	14	66.2	8	22	18	122	30	39	689	5	4.3
Kazakhstan	8	21	7.6	8	52	38	231	20	38	230	7	3.3
Kenya	12	44	46.1	8	64	10	100	21	44	465	3	4.5
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	10	17	16.9	7	11	13	34	37	35	230	7	1.5
Kuwait	13	35	1.6	8	55	25	104	13	50	566	7	4.2
Kyrgyz Republic	8	21	8.8	4	4	20	291	38	39	177	8	4.0
Lao PDR	8	103	16.5	9	135	24	172	37	42	443	0	..
Latvia	5	16	3.0	8	54	26	188	43	27	279	5	3.0
Lebanon	6	46	94.1	8	25	20	211	25	37	721	9	4.0
Lesotho	8	73	37.4	6	101	15	601	24	41	695	2	2.6
Liberia	12	99	493.3	13	50	25	398	31	41	1,280	4	3.0
Libya	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	7	26	3.0	3	3	17	156	48	30	210	5	1.7
Macedonia, FYR	9	15	6.6	6	98	19	192	50	39	385	5	3.7
Madagascar	5	7	22.7	8	134	16	268	63	38	871	5	..
Malawi	10	37	188.7	6	88	21	213	25	42	432	4	2.6
Malaysia	9	24	18.1	5	144	25	285	10	30	600	10	2.3
Mali	11	26	132.1	5	29	14	208	38	39	860	6	3.6
Mauritania	11	65	56.2	4	49	25	201	45	46	400	5	8.0
Mauritius	6	7	5.3	6	210	18	107	23	37	750	6	1.7
Mexico	8	27	13.3	5	74	11	131	48	38	415	8	1.8
Moldova	9	23	11.5	6	48	30	292	38	31	365	7	2.8
Mongolia	8	20	4.3	5	11	21	126	34	32	314	5	4.0
Morocco	6	12	11.5	8	47	19	163	63	40	615	6	1.8
Mozambique	10	29	21.6	8	42	17	361	54	31	1,010	5	5.0
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..
Namibia	10	99	22.3	9	23	12	139	20	33	270	5	1.5
Nepal	7	31	73.9	3	5	15	424	52	39	735	6	5.0
Netherlands	6	10	6.0	2	5	18	230	42	25	514	4	1.1
New Zealand	2	12	0.1	2	2	7	65	7	30	216	10	1.3
Nicaragua	6	39	119.1	8	124	17	219	27	35	540	4	2.2
Niger	11	23	174.8	5	32	16	293	70	39	545	6	5.0
Nigeria	9	34	56.6	14	82	18	350	7	39	457	5	2.0
Norway	6	10	2.3	1	3	14	252	47	33	310	7	0.9
Oman	9	34	4.3	2	16	16	242	24	51	598	8	4.0
Pakistan	11	24	14.0	6	50	12	223	43	47	880	6	2.8
Panama	7	19	22.0	7	44	25	149	69	31	686	1	2.5
Papua New Guinea	8	56	26.4	4	72	24	217	10	43	591	5	3.0
Paraguay	7	35	77.6	6	46	13	291	59	38	591	6	3.9
Peru	10	72	29.9	5	33	21	210	55	41	468	8	3.1
Philippines	15	58	26.8	8	33	21	177	35	37	842	1	5.7
Poland	10	31	21.2	6	197	30	308	37	38	830	7	3.0
Portugal	7	7	3.4	5	42	20	327	48	35	577	6	2.0
Puerto Rico	7	7	0.8	8	194	22	209	21	41	620	7	3.8



5.3

Business environment: Doing Business indicators

	Starting a business			Registering property		Dealing with licenses		Employing workers	Enforcing contracts		Protecting investors	Closing a business
	Number of procedures June 2007	Time required days June 2007	Cost % of per capita income June 2007	Number of procedures June 2007	Time required days June 2007	Number of procedures to build a warehouse June 2007	Time required to build a warehouse days June 2007	Rigidity of employment index 0–100 (least to most rigid) June 2007	Number of procedures June 2007	Time required days June 2007	Disclosure index 0–10 (least to most disclosure) June 2007	Time to resolve insolvency years June 2007
Romania	6	14	4.7	8	150	17	243	66	32	537	9	3.3
Russian Federation	8	29	3.7	6	52	54	704	44	37	281	6	3.8
Rwanda	9	16	171.5	5	371	16	227	42	24	310	2	..
Saudi Arabia	7	15	32.3	4	4	18	125	13	44	635	7	2.8
Senegal	10	58	107.0	6	114	14	217	61	44	780	6	3.0
Serbia	11	23	8.9	6	111	20	204	46	36	635	7	2.7
Sierra Leone	9	26	1,075.2	8	235	47	235	51	40	515	3	2.6
Singapore	5	5	0.8	3	9	11	102	0	22	120	10	0.8
Slovak Republic	9	25	4.2	3	17	13	287	36	30	565	3	4.0
Slovenia	9	60	8.5	6	391	15	208	63	32	1,350	3	2.0
Somalia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	8	31	7.1	6	24	17	174	42	30	600	8	2.0
Spain	10	47	15.1	4	18	11	233	56	39	515	5	1.0
Sri Lanka	5	39	8.5	8	83	22	214	27	40	1,318	4	1.7
Sudan	10	39	57.9	6	9	19	271	36	53	810	0	..
Swaziland	13	61	38.7	11	46	13	93	17	40	972	0	2.0
Sweden	3	15	0.6	1	2	8	116	39	30	508	6	2.0
Switzerland	6	20	2.1	4	16	14	154	17	32	417	0	3.0
Syrian Arab Republic	13	43	55.7	4	34	21	128	37	55	872	6	4.1
Tajikistan	13	49	39.6	6	37	32	191	51	34	295	0	3.0
Tanzania	12	29	47.1	10	119	21	308	63	38	462	3	3.0
Thailand	8	33	5.6	2	2	11	156	18	35	479	10	2.7
Timor-Leste	9	82	11.9	..	..	22	208	34	51	1,800	3	..
Togo	13	53	245.7	5	295	15	277	54	41	588	6	3.0
Trinidad and Tobago	9	43	0.9	8	162	20	261	7	42	1,340	4	..
Tunisia	10	11	8.3	5	49	20	93	49	39	565	0	1.3
Turkey	6	6	20.7	6	6	25	188	42	36	420	8	3.3
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	18	28	92.0	13	227	16	143	3	38	535	2	2.2
Ukraine	10	27	7.8	10	93	29	429	45	30	354	1	2.9
United Arab Emirates	11	62	36.9	3	6	21	125	20	50	607	4	5.1
United Kingdom	6	13	0.8	2	21	19	144	7	30	404	10	1.0
United States	6	6	0.7	4	12	19	40	0	32	300	7	1.5
Uruguay	11	44	46.0	8	66	30	234	31	40	720	3	2.1
Uzbekistan	7	15	14.2	12	78	26	260	34	42	195	4	4.0
Venezuela, RB	16	141	28.2	8	47	11	395	79	29	510	3	4.0
Vietnam	11	50	20.0	4	67	13	194	27	34	295	6	5.0
West Bank and Gaza	12	92	280.4	10	72	21	199	31	44	700	6	..
Yemen, Rep.	12	63	178.8	6	21	13	107	33	37	520	6	3.0
Zambia	6	33	30.5	6	70	17	254	34	35	471	3	2.7
Zimbabwe	10	96	21.3	4	30	19	952	33	38	410	8	3.3
World	9 u	44 u	61.1 u	6 u	81 u	18 u	223 u	34 u	38 u	605 u	5 u	3.0 u
Low income	10	54	134.9	7	114	19	288	40	40	645	5	3.8
Middle income	9	48	43.1	6	76	19	216	34	38	621	5	3.1
Lower middle income	10	53	56.5	6	86	18	218	33	39	635	4	3.3
Upper middle income	9	41	24.0	6	61	21	212	35	38	602	5	2.9
Low & middle income	10	50	75.9	7	89	19	241	36	39	630	5	3.3
East Asia & Pacific	9	47	40.8	5	112	19	179	21	37	591	5	3.1
Europe & Central Asia	9	26	11.6	6	81	24	261	39	36	392	5	3.2
Latin America & Carib.	10	73	47.8	7	67	17	242	34	39	692	4	3.2
Middle East & N. Africa	10	39	80.5	7	47	19	218	38	43	707	6	3.5
South Asia	8	33	40.7	6	134	16	247	27	44	1,047	4	5.0
Sub-Saharan Africa	11	56	148.1	7	105	18	262	43	39	643	5	3.4
High income	7	22	6.6	5	51	17	158	28	34	516	6	2.0
Euro area	7	22	7.4	6	70	14	190	45	31	591	6	1.4

About the data

These indicators on the environment for doing business identify regulations that enhance or constrain business investment, productivity, and growth. The data are from the World Bank's Doing Business database, which includes data on 178 economies. The indicators in the table point to the administrative and regulatory reforms and institutions needed to create a favorable environment for doing business.

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

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

Construction is a large sector in most economies, and the table includes data on the number of procedures and time required for a business in the construction industry to complete the legal procedures to build a standardized warehouse. These include obtaining all necessary licenses and permits, completing all required notifications and inspections, and submitting the relevant documents to the authorities.

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

Contract enforcement is critical to enable businesses to engage with new borrowers or customers. The institution that enforces contracts between debtors and creditors, and suppliers and customers, is the court. The efficiency of contract enforcement

is reflected in two indicators: the number of judicial procedures to resolve a commercial dispute and the time to enforce a commercial contract.

What companies disclose to the public has a large impact on investor protection. Both investors and entrepreneurs benefit greatly from such legal protection. The disclosure index is based on several measures that cover disclosure of ownership and interests in related party transactions to reduce expropriation of minority investors.

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

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

For more information on the methodology, see www.doingbusiness.org/.

Definitions

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

Data sources

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



5.4

Stock markets

	Market capitalization				Market liquidity		Turnover ratio		Listed domestic companies		S&P/EMDB indexes	
	\$ millions		% of GDP		Value of shares traded % of GDP		Value of shares traded % of market capitalization		number		% change	
	2000	2007	2000	2006	2000	2006	2000	2007	2000	2007	2006	2007
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..
Albania	..	..	..	..	..	..	..	..	..	..	..	..
Algeria	..	..	..	..	..	..	..	..	..	..	..	..
Angola	..	..	..	..	..	..	..	..	..	..	..	..
Argentina	166,068	86,684	58.4	37.2	2.1	2.1	4.8	9.8	127	107	57.6	0.7 ^a
Armenia	2	60	0.1	0.9	0.0	0.1	4.6	9.4	105	35	..	..
Australia	372,794	1,095,858	93.3	140.4	56.6	105.9	56.5	87.0	1,330	1,751	..	..
Austria	29,935	191,300	15.4	59.4	4.8	24.7	29.8	50.4	97	96	..	..
Azerbaijan	4	..	0.1	..	..	..	..	..	2	..	..	..
Bangladesh	1,186	6,793	2.5	5.8	1.6	1.5	74.4	95.5	221	278	12.9	126.4 ^b
Belarus	..	..	..	..	..	..	..	..	..	..	..	..
Belgium	182,481	396,220	78.7	100.6	16.4	42.1	20.7	48.5	174	153	..	..
Benin	..	..	..	..	..	..	..	..	..	..	..	..
Bolivia	1,742	2,223	20.7	19.9	0.8	0.0	0.1	0.0	26	35	..	..
Bosnia and Herzegovina	..	..	..	..	..	..	..	..	..	..	..	..
Botswana	978	5,887	15.8	37.2	0.8	0.7	4.8	2.1	16	18	53.0	37.2 ^b
Brazil	226,152	1,370,377	35.1	66.6	15.7	23.8	43.5	56.2	459	442	43.1	74.7 ^a
Bulgaria	617	21,793	4.9	32.8	0.5	4.8	9.2	34.1	503	369	31.4	39.0 ^b
Burkina Faso	..	..	..	..	..	..	..	..	..	..	..	..
Burundi	..	..	..	..	..	..	..	..	..	..	..	..
Cambodia	..	..	..	..	..	..	..	..	..	..	..	..
Cameroon	..	..	..	..	..	..	..	..	..	..	..	..
Canada	841,385	1,700,708	116.1	133.7	87.6	101.5	77.3	81.1	1,418	3,790	..	..
Central African Republic	..	..	..	..	..	..	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..
Chile	60,401	212,910	79.7	119.7	8.0	19.7	9.4	21.8	258	238	28.6	22.6 ^a
China	580,991	6,226,305	48.5	91.7	60.2	61.8	158.3	197.5	1,086	1,530	80.7	66.6 ^a
Hong Kong, China	623,398	1,714,953	368.6	903.6	223.4	437.7	61.3	60.0	779	1,165	..	..
Colombia	9,560	101,956	11.4	36.6	0.5	7.4	3.8	15.4	126	96	12.7	12.7 ^b
Congo, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Congo, Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Costa Rica	2,924	1,944	18.3	8.7	0.7	0.2	12.0	3.1	21	16	..	..
Côte d'Ivoire	1,185	8,353	11.4	23.7	0.3	0.6	2.6	2.3	41	38	35.6	115.6 ^b
Croatia	2,742	65,977	14.9	67.6	1.0	4.2	7.4	7.2	64	353	85.2	68.1 ^b
Cuba	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	11,002	73,420	19.4	34.0	11.6	23.0	60.3	73.4	131	32	30.9	49.7 ^a
Denmark	107,666	231,015	67.3	83.9	57.2	64.2	86.0	86.4	225	201	..	..
Dominican Republic	141	..	0.8	..	..	..	..	..	6	..	..	..
Ecuador	704	4,266	4.4	9.8	0.1	0.7	5.5	7.0	30	35	32.0	3.8 ^b
Egypt, Arab Rep.	28,741	139,289	28.8	87.0	11.1	44.2	34.7	48.3	1,076	435	10.2	52.2 ^a
El Salvador	2,041	5,465	15.5	29.3	0.2	0.9	1.3	3.7	40	48	..	..
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..
Estonia	1,846	6,037	32.8	36.3	5.8	5.9	18.9	31.6	23	18	30.3	-15.5 ^b
Ethiopia	..	..	..	..	..	..	..	..	..	..	..	..
Finland	293,635	265,477	241.0	126.0	169.6	169.4	64.3	150.2	154	134	..	..
France	1,446,634	2,428,572	108.9	108.0	81.6	111.4	74.1	119.6	808	717	..	..
Gabon	..	..	..	..	..	..	..	..	..	..	..	..
Gambia, The	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	24	668	0.8	8.6	0.1	1.2	..	18.6	269	231	..	..
Germany	1,270,243	1,637,826	66.8	56.5	56.3	85.8	79.1	173.9	1,022	656	..	..
Ghana	502	2,380	10.1	25.0	0.2	0.4	1.5	5.1	22	32	9.7	21.6 ^b
Greece	110,839	208,284	76.9	67.5	66.0	34.8	63.7	60.8	329	318	..	..
Guatemala	240	..	1.2	..	0.0	..	0.0	..	44	..	..	..
Guinea	..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..
Haiti	..	..	..	..	..	..	..	..	..	..	..	..

	Market capitalization				Market liquidity		Turnover ratio		Listed domestic companies		S&P/EMDB indexes	
	\$ millions		% of GDP		Value of shares traded % of GDP		Value of shares traded % of market capitalization		number		% change	
	2000	2007	2000	2006	2000	2006	2000	2007	2000	2007	2006	2007
Honduras	458	..	8.8	..	..	..	..	..	46	..	..	..
Hungary	12,021	47,651	25.1	37.1	25.3	27.6	90.7	102.6	60	41	31.4	13.1 ^a
India	148,064	1,819,101	32.2	89.8	110.8	70.0	133.6	95.9	5,937	4,887	46.7	78.6 ^a
Indonesia	26,834	211,693	16.3	38.1	8.7	13.4	32.9	66.7	290	383	67.9	49.3 ^a
Iran, Islamic Rep.	7,350	37,943	7.3	17.4	1.1	2.2	12.7	12.7	304	332	..	..
Iraq	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	81,882	163,358	85.0	74.2	15.0	36.3	19.2	57.6	76	57	..	..
Israel	64,081	236,361	53.0	123.4	19.3	63.2	36.3	54.8	654	654	-6.3	34.3 ^a
Italy	768,364	1,026,640	70.0	55.5	70.9	73.8	104.0	149.7	291	284	..	..
Jamaica	3,582	12,335	44.6	122.5	0.9	3.0	2.5	3.1	46	41	-1.5	0.3 ^b
Japan	3,157,222	4,726,269	67.6	108.2	57.7	143.1	69.9	132.1	2,561	3,362	5.9	-5.2 ^b
Jordan	4,943	41,216	58.4	210.8	4.9	142.2	7.7	52.2	163	245	-36.0	32.6 ^b
Kazakhstan	1,342	43,688	7.3	53.9	0.5	4.9	25.1	14.7	23	67	..	..^c
Kenya	1,283	13,387	10.1	49.9	0.4	5.7	3.6	11.6	57	51	60.3	11.8 ^b
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	171,587	1,123,633	33.5	94.1	208.7	150.9	233.2	191.6	1,308	1,767	13.3	27.7 ^a
Kuwait	20,772	188,046	55.1	161.0	11.2	116.4	21.3	74.0	77	181	-4.6	39.9 ^b
Kyrgyz Republic	4	93	0.3	3.3	1.7	3.5	..	148.2	80	8	..	..
Lao PDR	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	563	3,111	7.2	13.4	2.9	0.6	48.6	4.7	64	41	1.5	1.9 ^b
Lebanon	1,583	10,858	9.4	36.4	0.7	9.0	6.7	10.9	12	11	-9.2	40.5 ^b
Lesotho	..	..	..	..	..	..	..	..	..	..	..	..
Liberia	..	..	..	..	..	..	..	..	..	..	..	..
Libya	..	..	..	..	..	..	..	..	..	..	..	..
Lithuania	1,588	10,134	13.9	34.2	1.8	7.0	14.8	9.2	54	40	9.7	14.3 ^b
Macedonia, FYR	7	1,098	0.2	17.7	3.3	3.1	6.6	22.4	1	43	..	..
Madagascar	..	..	..	..	..	..	..	..	..	..	..	..
Malawi	..	587	..	18.6	..	0.5	13.8	3.5	..	10	..	..
Malaysia	116,935	325,663	129.5	156.2	64.8	44.4	44.6	51.6	795	1,036	34.6	44.6 ^a
Mali	..	..	..	..	..	..	..	..	..	..	..	..
Mauritania	1,090	..	97.2	..	..	..	..	..	40	..	..	..
Mauritius	1,331	5,666	29.8	56.7	1.7	2.2	5.0	8.7	40	41	44.3	94.0 ^b
Mexico	125,204	397,725	21.5	41.5	7.8	9.5	32.3	29.5	179	125	41.1	12.8 ^a
Moldova	392	..	30.4	22.1	1.9	0.8	5.8	5.9	36	..	..	..
Mongolia	37	113	3.4	3.6	0.7	0.3	7.3	13.5	410	386	..	..
Morocco	10,899	75,495	29.4	75.5	3.0	20.6	9.2	39.6	53	74	78.5	45.3 ^a
Mozambique	..	..	..	..	..	..	..	..	..	..	..	..
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..
Namibia	311	702	9.1	8.3	0.6	0.3	4.5	3.5	13	9	12.8	39.4 ^b
Nepal	790	1,805	14.4	20.2	0.6	0.8	6.9	4.4	110	135	..	..
Netherlands	640,456	779,645	166.3	117.7	175.9	165.5	101.4	159.7	234	226	..	..
New Zealand	18,866	44,940	35.8	43.0	20.5	18.9	45.9	44.7	142	154	..	..
Nicaragua	..	..	..	..	..	..	..	..	..	..	..	..
Niger	..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	4,237	86,347	9.2	28.5	0.6	3.1	7.3	28.7	195	212	34.0	108.3 ^b
Norway	65,034	281,081	38.6	83.9	35.7	104.8	93.4	148.7	191	195	..	..
Oman	3,463	23,060	17.4	49.5	2.8	10.4	14.2	30.9	131	125	7.9	67.0 ^b
Pakistan	6,581	70,262	8.9	35.9	44.6	99.8	475.5	167.3	762	654	1.3	41.7 ^b
Panama	2,794	5,716	24.0	33.4	1.3	0.8	1.7	2.7	29	22	..	..
Papua New Guinea	1,520	6,632	49.6	117.3	0.0	0.4	..	0.5	7	9	..	..
Paraguay	224	409	3.5	4.4	0.1	0.0	3.5	0.5	56	55	..	..
Peru	10,562	105,960	19.8	64.6	2.9	4.6	12.6	7.8	230	190	82.5	66.4 ^a
Philippines	25,957	103,224	34.2	58.2	10.8	9.6	15.8	33.1	228	242	50.3	36.0 ^a
Poland	31,279	207,322	18.3	44.0	8.5	16.2	49.9	44.1	225	328	38.1	23.2 ^a
Portugal	60,681	104,201	53.9	53.5	48.3	36.1	85.5	82.1	109	47	..	..
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..



5.4

Stock markets

	Market capitalization				Market liquidity		Turnover ratio		Listed domestic companies		S&P/EMDB indexes	
	\$ millions		% of GDP		Value of shares traded % of GDP		Value of shares traded % of market capitalization		number		% change	
	2000	2007	2000	2006	2000	2006	2000	2007	2000	2007	2006	2007
Romania	1,069	44,925	2.9	27.0	0.6	3.5	23.1	19.2	5,555	2,096	54.2	32.8 ^b
Russian Federation	38,922	1,503,011	15.0	107.1	7.8	52.1	36.9	63.9	249	328	62.0	21.9 ^a
Rwanda	..	..	..	..	..	..	..	..	..	..	..	..
Saudi Arabia	67,171	515,111	35.6	93.6	9.2	401.9	27.1	199.2	75	111	-48.9	35.6 ^b
Senegal	..	..	..	..	..	..	..	..	..	..	..	..
Serbia	734	10,985	4.6	34.3	0.1	4.2	0.0	16.3	6	1,111	..	..
Sierra Leone	..	..	..	..	..	..	..	..	..	..	..	..
Singapore	152,827	276,329	164.8	209.1	98.7	139.5	52.1	62.2	418	461	..	..
Slovak Republic	1,217	6,971	6.0	10.1	4.4	0.2	129.8	0.5	493	153	24.0	57.4 ^b
Slovenia	2,547	28,963	13.2	40.7	2.4	2.7	20.7	10.7	38	87	74.3	95.0 ^b
Somalia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	204,952	833,548	154.2	280.2	58.3	122.5	33.9	52.5	616	422	17.2	15.5 ^a
Spain	504,219	1,323,090	86.8	108.0	169.8	157.6	210.7	169.1	1,019	3,339	..	..
Sri Lanka	1,074	7,553	6.6	28.8	0.9	3.7	11.0	12.3	239	235	45.3	-10.6 ^b
Sudan	..	..	..	..	..	..	..	..	..	..	..	..
Swaziland	73	200	5.3	7.5	0.0	0.0	9.8	0.0	6	6	..	..
Sweden	328,339	573,250	135.7	149.4	161.2	176.4	111.2	138.6	292	321	..	..
Switzerland	792,316	1,212,508	322.0	318.7	247.6	338.3	82.0	119.6	252	256	..	..
Syrian Arab Republic	..	..	..	..	..	..	..	..	..	..	..	..
Tajikistan	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	233	541	2.6	4.2	0.4	0.1	2.4	2.1	4	6	..	..
Thailand	29,489	196,046	24.0	68.4	19.0	48.9	53.2	62.0	381	475	6.2	39.4 ^a
Timor-Leste	..	..	..	..	..	..	..	..	..	..	..	..
Togo	..	..	..	..	..	..	..	..	..	..	..	..
Trinidad and Tobago	4,330	15,605	53.1	85.9	1.7	2.3	3.1	2.4	27	37	-6.5	-2.8 ^b
Tunisia	2,828	5,355	14.5	14.7	3.2	1.7	23.3	13.0	44	50	47.9	15.6 ^b
Turkey	69,659	286,572	34.9	40.3	89.7	56.5	206.2	134.2	315	319	-4.0	74.8 ^a
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	35	116	0.6	1.2	0.0	0.1	..	5.2	2	5	..	..
Ukraine	1,881	111,757	6.0	40.3	0.9	1.1	19.6	2.7	139	276	48.6	112.2 ^b
United Arab Emirates	5,727	224,675	8.1	173.9	0.2	110.4	3.9	85.0	54	90	-44.6	52.1 ^b
United Kingdom	2,576,992	3,794,310	178.7	159.6	127.2	178.5	66.6	123.8	1,904	2,913	26.2	5.6 ^d
United States	15,104,037	19,425,855	154.7	147.6	326.3	252.7	200.8	182.8	7,524	5,133	13.6	3.5 ^e
Uruguay	161	125	0.8	0.6	0.0	0.0	0.5	1.6	16	10	..	..
Uzbekistan	32	715	0.2	4.2	0.1	0.1	..	5.9	5	114	..	..
Venezuela, RB	8,128	8,251	6.9	4.5	0.6	0.4	8.9	1.3	85	53	79.0	..
Vietnam	..	19,542	..	14.9	..	1.8	..	85.6	..	121	..	10.7 ^b
West Bank and Gaza	765	2,729	18.6	67.2	4.6	26.3	10.0	29.7	24	33	..	..
Yemen, Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Zambia	236	1,186	7.3	11.0	0.2	0.2	20.8	2.1	9	14	..	..
Zimbabwe	2,432	5,333	32.9	70.3	3.8	9.7	10.8	11.0	69	82	912.3	-83.8 ^b
World	32,187,756 s	54,194,991 s	102.7 w	113.9 w	152.8 w	143.4 w	122.1 w	94.3 w	47,877 s	50,212 s		
Low income	166,802	967,029	23.9	67.0	78.1	55.0	151.9	93.3	7,922	6,911		
Middle income	1,833,330	7,056,701	37.2	74.2	26.8	36.8	71.5	94.5	15,335	13,195		
Lower middle income	751,235	3,186,679	35.8	74.5	37.5	44.5	107.8	146.4	4,940	5,205		
Upper middle income	1,082,095	3,870,022	38.3	74.0	18.7	30.6	46.0	50.8	10,395	7,990		
Low & middle income	2,000,132	8,023,730	35.6	73.3	33.2	39.2	81.4	94.3	23,257	20,106		
East Asia & Pacific	780,487	3,026,517	47.2	85.1	49.9	52.4	125.2	163.5	3,190	4,080		
Europe & Central Asia	163,360	1,603,092	19.0	66.7	26.3	35.1	83.9	64.1	8,141	6,070		
Latin America & Carib.	620,263	1,470,534	31.8	51.7	8.4	13.5	27.4	34.8	1,762	1,509		
Middle East & N. Africa	60,573	242,122	19.7	48.9	5.0	19.4	12.6	28.3	1,807	1,443		
South Asia	157,695	877,581	26.1	77.2	90.2	67.5	167.9	101.3	7,269	6,089		
Sub-Saharan Africa	217,754	803,885	89.9	159.9	32.3	65.4	22.2	30.1	1,088	915		
High income	30,187,624	46,171,261	117.3	126.1	178.8	174.6	130.7	150.2	24,620	30,106		
Euro area	5,432,330	8,639,721	87.0	81.2	80.4	96.4	90.4	139.0	4,535	6,318		

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

About the data

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

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

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

Stock market size can be measured in various ways, and each may produce a different ranking of countries. Market capitalization shows the overall size of the stock market in U.S. dollars and as a percentage of GDP. The number of listed domestic

companies is another measure of market size. Market size is positively correlated with the ability to mobilize capital and diversify risk.

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

The S&P/EMDB, the source for all the data in the table, provides regular updates on 58 emerging stock markets encompassing more than 3,800 stocks. Standard & Poor's maintains a series of indexes for investors interested in investing in stock markets in developing countries. At the core of the S&P/EMDB indexes, the Global (S&P/IFCG) index is intended to represent the most active stocks in the markets it covers and to be the broadest possible indicator of market movements. The Investable (S&P/IFCI) index, which applies the same calculation methodology as the S&P/IFCG index, is designed to measure the returns that foreign portfolio investors might receive from investing in emerging market stocks that are legally and practically open to foreign portfolio investment. These indexes are widely used benchmarks for international portfolio management. See Standard & Poor's (2000) for further information on the indexes.

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

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

Definitions

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

Data sources

Data on stock markets are from Standard & Poor's *Global Stock Markets Factbook 2007*, which draws on the Emerging Markets Data Base, supplemented by other data from Standard & Poor's. The firm collects data through an annual survey of the world's stock exchanges, supplemented by information provided by its network of correspondents and by Reuters. Data on GDP are from the World Bank's national accounts data files.



	Getting credit				Bank capital to asset ratio	Ratio of bank nonperforming loans to total gross loans	Domestic credit provided by banking sector	Interest rate spread	Risk premium on lending		
	Legal rights index	Credit information index	% of adult population							Lending rate minus deposit rate percentage	Prime lending rate minus treasury bill rate percentage
	0–10 (weak to strong)	0–6 (low to high)	Public credit registry coverage	Private credit bureau coverage							
June 2007	June 2007	June 2007	June 2007	% 2006	% 2006	% of GDP 2006	points 2006	points 2006			
Afghanistan	0	0	0.0	0.0	..	..	..	..	..
Albania	9	0	0.0	0.0	6.2	3.1	54.5	7.7	7.5		
Algeria	3	2	0.2	0.0	..	..	4.0	6.3	5.9
Angola	3	4	2.3	0.0	11.3	13.3	-3.6	15.0	..		
Argentina	3	6	25.5	100.0	13.6	3.4	30.8	2.2	..		
Armenia	5	5	2.8	13.5	22.9	2.5	8.1	10.7	11.7		
Australia	9	5	0.0	100.0	4.9	0.2	115.0	5.5	..		
Austria	5	6	1.3	40.6	5.2	2.6	128.4	..	..
Azerbaijan	7	4	1.4	0.0	14.2	7.2	13.6	7.3	7.8		
Bangladesh	7	2	0.7	0.0	4.0	13.2	58.1	6.2	..		
Belarus	2	3	0.0	0.0	17.8	1.2	27.2	1.2	..		
Belgium	5	4	57.2	0.0	3.7	1.8	110.2	..	4.8		
Benin	4	1	7.8	0.0	..	..	10.2	..	..
Bolivia	1	5	12.1	22.6	10.0	8.7	39.4	7.9	7.3		
Bosnia and Herzegovina	7	5	0.0	63.7	13.8	4.0	47.8	4.3	..		
Botswana	7	4	0.0	58.3	9.7	2.8	-14.3	7.6	..		
Brazil	2	5	17.1	46.4	9.9	4.1	81.7	36.9	36.4		
Bulgaria	6	6	25.4	3.0	10.4	2.2	43.0	5.7	6.3		
Burkina Faso	4	1	2.1	0.0	..	..	14.4	..	..
Burundi	1	1	0.2	0.0	..	..	42.1	..	..
Cambodia	0	0	0.0	0.0	..	..	6.0	14.6	..
Cameroon	3	2	1.0	0.0	..	..	8.2	11.0	..
Canada	7	6	0.0	100.0	5.7	0.4	220.8	4.0	1.8		
Central African Republic	3	2	1.4	0.0	..	..	17.5	11.0	..
Chad	3	1	0.2	0.0	..	..	4.7	11.0	..
Chile	4	5	26.2	33.5	6.8	0.8	83.5	2.9	..		
China	3	4	49.2	0.0	6.1	7.5	136.9	3.6	..		
Hong Kong, China	1	5	0.0	64.7	11.8	1.1	134.6	5.1	4.5		
Colombia	2	5	0.0	39.9	10.8	2.6	48.0	6.6	..		
Congo, Dem. Rep.	3	0	0.0	0.0	..	..	4.6	..	..
Congo, Rep.	3	2	2.4	0.0	..	..	-9.3	11.0	..
Costa Rica	4	5	6.1	52.7	10.2	1.5	44.7	12.4	..		
Côte d'Ivoire	3	1	2.8	0.0	..	..	17.8	..	..
Croatia	6	3	0.0	72.4	10.3	5.2	80.6	8.2	..		
Cuba	..	..	..	..	..	..	..	..	..
Czech Republic	6	5	4.2	53.0	6.2	4.1	48.4	4.4	3.1		
Denmark	8	4	0.0	11.5	6.2	0.4	189.3	..	..
Dominican Republic	4	6	13.3	35.4	10.0	4.5	47.1	9.6	..		
Ecuador	1	5	37.9	44.1	13.7	3.3	17.5	5.4	..		
Egypt, Arab Rep.	1	4	1.6	0.0	5.5	24.7	99.3	6.6	3.1		
El Salvador	3	6	17.2	74.6	11.8	1.9	45.7	..	..
Eritrea	3	0	0.0	0.0	..	..	139.0	..	..
Estonia	4	5	0.0	19.7	8.4	0.2	81.6	2.2	..		
Ethiopia	4	2	0.1	0.0	..	..	53.7	3.4	6.9
Finland	6	5	0.0	14.9	9.2	0.3	81.3	2.7	..		
France	6	4	24.8	0.0	5.8	3.2	115.5	4.3	..		
Gabon	3	2	2.4	0.0	..	11.1	8.3	11.0	..		
Gambia, The	4	0	0.0	0.0	..	..	27.0	17.1	..
Georgia	5	4	0.0	0.2	18.8	2.5	23.9	7.3	12.1		
Germany	8	6	0.7	98.1	4.7	4.0	132.0	..	..
Ghana	5	0	0.0	0.0	12.4	7.9	32.4	..	..
Greece	3	4	0.0	38.7	5.2	5.5	90.5	..	..
Guatemala	3	5	20.7	13.1	8.2	4.6	32.8	8.3	..		
Guinea	4	0	0.0	0.0	..	..	15.7	..	..
Guinea-Bissau	3	1	0.9	0.0	..	..	10.5	..	..
Haiti	3	2	0.7	0.0	..	..	27.8	37.1	32.7

Financial access, stability, and efficiency

5.5

	Getting credit				Bank capital to asset ratio	Ratio of bank nonperforming loans to total gross loans	Domestic credit provided by banking sector	Interest rate spread	Risk premium on lending		
	Legal rights index	Credit information index	% of adult population							Lending rate minus deposit rate percentage	Prime lending rate minus treasury bill rate percentage
	0–10 (weak to strong)	0–6 (low to high)	Public credit registry coverage	Private credit bureau coverage							
June 2007	June 2007	June 2007	June 2007	% 2006	% 2006	% of GDP 2006	2006	2006			
Honduras	6	6	12.7	58.0	8.4	6.6	40.6	8.1	..		
Hungary	6	5	0.0	6.9	8.7	2.5	68.1	0.6	1.2		
India	6	4	0.0	10.8	6.6	3.5	63.4	..	..
Indonesia	5	3	20.5	0.2	10.7	13.1	41.7	4.6	..		
Iran, Islamic Rep.	5	3	22.2	0.0	..	..	49.2	4.2	..
Iraq	4	0	0.0	0.0	..	..	..	..	..
Ireland	8	5	0.0	100.0	4.3	0.7	182.0	2.6	..		
Israel	8	5	0.0	91.6	5.9	1.9	76.6	3.2	2.1		
Italy	3	5	11.0	71.5	7.1	5.3	112.9	..	2.4		
Jamaica	5	0	0.0	0.0	8.7	2.6	63.9	10.6	4.9		
Japan	6	6	0.0	68.3	5.3	2.5	307.7	1.0	1.2		
Jordan	5	2	0.8	0.0	10.7	4.3	116.5	3.6	..		
Kazakhstan	5	4	0.0	13.7	8.9	4.8	32.5	..	..
Kenya	8	4	0.0	1.5	..	5.2	40.3	8.5	6.9		
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..
Korea, Rep.	5	5	0.0	74.2	9.2	0.8	107.1	1.5	..		
Kuwait	4	4	0.0	14.5	12.0	3.9	71.7	3.7	..		
Kyrgyz Republic	5	3	0.0	1.6	..	..	11.7	17.6	18.4
Lao PDR	2	0	0.0	0.0	..	..	7.3	25.0	11.7
Latvia	8	4	2.6	0.0	7.6	0.4	89.0	3.8	3.2		
Lebanon	4	5	4.7	0.0	8.4	13.5	196.2	2.3	5.0		
Lesotho	5	0	0.0	0.0	..	1.0	-5.7	7.6	5.3		
Liberia	4	0	0.0	0.0	..	..	177.8	13.6	..
Libya	..	..	..	..	..	..	-53.8	3.8	0.6
Lithuania	4	6	6.6	7.3	7.1	1.0	49.5	4.5	2.2		
Macedonia, FYR	6	3	4.0	0.0	..	11.2	23.7	5.5	..		
Madagascar	1	0	0.1	0.0	6.2	10.1	9.7	7.2	8.3		
Malawi	7	0	0.0	0.0	..	..	13.9	21.3	13.0
Malaysia	8	6	44.5	..	7.6	8.5	119.4	3.3	3.3		
Mali	3	1	2.5	0.0	..	..	13.6	..	..
Mauritania	4	1	0.2	0.0	..	..	..	15.1	11.2
Mauritius	5	1	38.6	0.0	..	..	111.1	11.5	..
Mexico	3	6	0.0	61.2	13.2	2.1	39.3	4.2	0.3		
Moldova	6	0	0.0	0.0	17.0	4.3	35.0	6.2	10.8		
Mongolia	5	3	9.5	0.0	..	..	20.9	8.4	..
Morocco	3	1	2.3	0.0	7.4	10.9	78.5	7.9	..		
Mozambique	3	3	0.9	0.0	6.4	3.7	10.0	8.2	3.5		
Myanmar	..	..	..	..	..	..	28.1	5.5	..
Namibia	5	5	0.0	59.9	8.3	2.9	63.9	4.9	3.9		
Nepal	4	2	0.0	0.2	..	..	50.4	5.9	6.0
Netherlands	7	5	0.0	78.1	4.0	1.0	186.7	0.6	..		
New Zealand	9	5	0.0	100.0	..	..	142.3	5.3	5.2
Nicaragua	3	5	14.8	100.0	8.8	8.0	74.4	6.7	..		
Niger	3	1	1.0	0.0	..	..	7.9	..	..
Nigeria	7	0	0.0	0.0	14.7	21.9	..	7.2	6.9		
Norway	6	4	0.0	100.0	5.0	0.6	..	2.2	..		
Oman	4	2	12.4	0.0	13.2	7.8	34.9	3.4	..		
Pakistan	4	4	4.6	1.4	8.8	7.7	43.0	6.8	2.4		
Panama	6	6	0.0	41.6	11.3	1.5	90.8	4.6	..		
Papua New Guinea	5	0	0.0	0.0	..	..	23.2	9.6	6.6
Paraguay	3	6	11.0	48.7	12.5	3.3	18.0	23.4	..		
Peru	4	6	20.7	33.0	9.5	1.6	15.0	20.7	..		
Philippines	3	3	0.0	5.5	11.7	18.6	48.6	4.5	4.5		
Poland	4	4	0.0	51.5	7.9	9.4	42.4	4.0	1.3		
Portugal	4	4	67.1	11.3	6.4	1.3	160.9	..	..
Puerto Rico	6	5	0.0	62.0	..	..	..	..	..



5.5

Financial access, stability, and efficiency

	Getting credit				Bank capital to asset ratio	Ratio of bank nonperforming loans to total gross loans	Domestic credit provided by banking sector	Interest rate spread	Risk premium on lending		
	Legal rights index	Credit information index	% of adult population							Lending rate minus deposit rate percentage points	Prime lending rate minus treasury bill rate percentage points
	0–10 (weak to strong)	0–6 (low to high)	Public credit registry coverage	Private credit bureau coverage							
June 2007	June 2007	June 2007	June 2007	% 2006	% 2006	% of GDP 2006	2006	2006			
Romania	7	5	4.1	10.9	8.9	8.4	26.8	..	..
Russian Federation	3	4	0.0	4.4	12.5	2.6	21.4	6.4	..		
Rwanda	1	2	0.2	0.0	9.2	27.2	9.7	8.1	6.2		
Saudi Arabia	3	6	0.0	23.5	9.3	2.0	37.3	..	..
Senegal	3	1	4.0	0.0	8.1	16.0	23.3	..	..
Serbia	7	5	0.1	51.3	15.6	21.4	23.6	11.5	6.3		
Sierra Leone	5	0	0.0	0.0	19.0	20.9	10.6	13.6	6.3		
Singapore	9	4	0.0	42.7	9.6	2.8	72.6	4.7	2.4		
Slovak Republic	9	4	1.2	56.0	8.0	3.7	50.4	4.1	..		
Slovenia	6	2	2.5	0.0	7.4	4.9	76.3	4.6	4.1		
Somalia	..	..	..	..	..	..	..	..	..
South Africa	5	6	0.0	52.1	7.8	1.2	197.4	4.0	3.8		
Spain	6	6	44.9	8.3	7.2	0.6	177.7	..	..
Sri Lanka	3	3	0.0	2.9	6.7	9.6	44.1	-3.2	-2.0		
Sudan	4	0	0.0	0.0	..	..	0.2	..	..
Swaziland	5	5	0.0	37.6	..	2.0	15.7	6.2	3.6		
Sweden	6	4	0.0	100.0	4.9	0.5	125.8	2.5	1.6		
Switzerland	6	5	0.0	24.0	4.9	0.3	187.4	1.6	1.7		
Syrian Arab Republic	3	0	0.0	0.0	..	..	33.5	7.0	..
Tajikistan	4	0	0.0	0.0	..	..	15.4	15.3	..
Tanzania	5	0	0.0	0.0	..	..	11.2	8.8	3.8
Thailand	5	5	0.0	27.9	9.2	7.5	101.3	2.9	..		
Timor-Leste	2	0	0.0	0.0	..	..	..	..	..
Togo	3	1	2.7	0.0	..	..	17.4	..	..
Trinidad and Tobago	5	4	0.0	34.4	..	..	21.0	6.1	4.8
Tunisia	2	4	13.7	0.0	7.7	19.2	72.4	..	..
Turkey	3	5	10.3	2.7	11.3	3.2	60.2	..	..
Turkmenistan	..	..	..	..	..	..	..	..	..
Uganda	3	0	0.0	0.0	9.7	2.8	9.4	9.6	10.6		
Ukraine	8	0	0.0	0.0	12.1	17.8	46.2	7.6	..		
United Arab Emirates	3	2	1.4	0.0	12.6	6.3	59.5	..	..
United Kingdom	10	6	0.0	84.6	8.9	0.9	176.9	..	0.0		
United States	7	6	0.0	100.0	10.5	0.8	230.8	..	3.2		
Uruguay	5	6	14.1	93.8	9.8	1.9	32.2	7.4	4.7		
Uzbekistan	2	0	0.0	0.0	..	..	..	..	..
Venezuela, RB	4	0	0.0	0.0	9.8	1.1	18.8	5.2	..		
Vietnam	6	3	9.2	0.0	..	..	75.0	3.5	6.4
West Bank and Gaza	5	3	1.8	0.0	..	..	9.2	4.8	..
Yemen, Rep.	3	0	0.1	0.0	..	..	4.8	5.0	2.4
Zambia	6	0	0.0	0.0	..	10.8	16.6	12.8	12.8		
Zimbabwe	6	0	0.0	0.0	12.1	23.2	93.1	293.1	174.1		
World	4.6 u	2.7 u	4.6 u	19.6 u	8.9 m	3.0 m	187.9 w	6.6 m			
Low income	3.8	0.9	1.0	0.3	..	..	53.2	11.3	
Middle income	4.4	2.9	6.2	17.5	10.0	3.4	76.7	6.6			
Lower middle income	4.0	2.7	5.9	13.9	10.7	4.0	99.1	7.2			
Upper middle income	5.0	3.3	6.6	22.8	9.8	3.2	63.4	5.9			
Low & middle income	4.2	2.2	4.3	11.3	9.4	5.3	76.7	7.3			
East Asia & Pacific	3.9	1.6	6.6	3.9	..	..	119.6	6.5	
Europe & Central Asia	5.6	3.3	2.4	14.4	10.3	3.2	37.6	6.8			
Latin America & Carib.	4.0	3.4	8.9	32.1	10.1	2.6	54.9	7.4			
Middle East & N. Africa	3.5	2.1	4.6	0.0	..	..	49.8	4.3	
South Asia	3.9	1.9	0.7	1.9	6.6	7.7	60.6	6.7			
Sub-Saharan Africa	4.0	1.3	2.1	4.6	..	..	94.4	9.6	
High income	5.8	4.4	5.7	49.9	6.2	1.1	194.3	4.4			
Euro area	5.6	4.3	16.1	35.5	5.2	1.6	132.2	..			

About the data

Financial sector development has positive impacts on economic growth and poverty. The size of the sector determines the amount of resources mobilized for investment. Access to finance can expand opportunities for all—not just the rich and well connected—with higher levels of access and use of banking services associated with lower financing obstacles for people and businesses. A stable financial system that promotes efficient savings and investment is also crucial for a thriving democracy and market economy. The banking system is the largest sector in the financial system in most countries, so most indicators in the table cover the banking system.

There are several aspects of access to financial services: availability, cost, and quality of services. The development and growth of credit markets depend on access to timely, reliable, and accurate data on borrowers' credit experiences. For secured transactions, such as mortgages or vehicle loans, having rapid access to information in property registries is also vital, and for small business loans corporate registry data are needed. An effective way to improve access to credit is to increase information about potential borrowers' creditworthiness and make it easy to create and enforce collateral agreements. Lenders look at a borrower's credit history and collateral when extending loans. Where credit registries and effective collateral laws are absent—as in many developing countries—banks make fewer loans. Indicators that cover financial access, or getting credit, include the legal rights index (ranges from 0, weaker, to 10, stronger), credit information index (ranges from 0, less, to 6, more), public registry coverage, and private bureau coverage. The legal rights index is based on seven aspects related to legal rights in collateral law and three aspects in bankruptcy law. The depth of credit information index assesses six features of the public registry or the private credit bureau. For more information on these indexes, see www.doingbusiness.org/MethodologySurveys/.

The size and mobility of international capital flows have made it increasingly important to monitor the strength of financial systems. Robust financial systems can increase economic activity and welfare, but instability in the financial system can disrupt financial activity and impose huge and widespread costs on the economy. The ratio of bank capital to assets, a measure of bank solvency and resiliency, provides a measure of the extent to which banks can deal with unexpected losses. Capital includes tier 1 capital (paid-up shares and common stock), which is a common feature in all countries' banking systems,

and total regulatory capital, which includes several specified types of subordinated debt instruments that need not be repaid if the funds are required to maintain minimum capital levels (these comprise tier 2 and tier 3 capital). Total assets include all nonfinancial and financial assets. Data are from internally consistent financial statements, to enhance the quality and analytical usefulness of the indicator.

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

Domestic credit provided by the banking sector as a share of GDP is a measure of banking sector depth and financial sector development in terms of size. In a few countries governments may hold international reserves as deposits in the banking system rather than in the central bank. Since the claims on the central government are a net item (claims on the central government minus central government deposits), this net figure may be negative, resulting in a negative figure of domestic credit provided by the banking sector.

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

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

Definitions

- **Legal rights index** measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. Higher values indicate that the laws are better designed to expand access to credit.
- **Credit information index** measures rules affecting the scope, accessibility, and quality of information available through public or private credit registries. Higher values indicate the availability of more credit information.
- **Public credit registry coverage** is the number of individuals and firms listed in a public credit registry with current information on repayment history, unpaid debts, or credit outstanding as a percentage of the adult population.
- **Private credit bureau coverage** is the number of individuals or firms listed by a private credit bureau with current information on repayment history, unpaid debts, or credit outstanding as a percentage of the adult population.
- **Bank capital to asset ratio** is the ratio of bank capital and reserves to total assets. Capital and reserves include funds contributed by owners, retained earnings, general and special reserves, provisions, and valuation adjustments.
- **Ratio of bank nonperforming loans to total gross loans** is the value of nonperforming loans divided by the total value of the loan portfolio (including nonperforming loans before the deduction of loan loss provisions). The amount recorded as nonperforming should be the gross value of the loan as recorded on the balance sheet, not just the amount overdue.
- **Domestic credit provided by banking sector** is all credit to various sectors on a gross basis, except to the central government, which is net. The banking sector includes monetary authorities, deposit money banks, and other banking institutions for which data are available.
- **Interest rate spread** is the interest rate charged by banks on loans to prime customers minus the interest rate paid by commercial or similar banks for demand, time, or savings deposits.
- **Risk premium on lending** is the interest rate charged by banks on loans to prime private sector customers minus the “risk-free” treasury bill interest rate at which short-term government securities are issued or traded in the market.

Data sources

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



5.6

Tax policies

	Tax revenue collected by central government		Taxes payable by businesses			Highest marginal tax rate ^a		
	% of GDP		Number of payments June 2007	Time to prepare, file, and pay taxes hours June 2007	Total tax rate % of profit June 2007	Individual		Corporate % 2006
	2000	2006				% 2006	On income over \$ 2006	
Afghanistan ^b	..	5.8	6	275	35.5	..	..	..
Albania ^b	16.1	17.3	44	240	46.8	20	2,003	20
Algeria ^b	36.9	32.1	33	451	72.6	..	..	..
Angola	..	..	31	272	53.2	..	..	..
Argentina	9.8	14.2	19	615	112.9	35	41,379	35
Armenia ^b	..	14.4	50	1,120	36.6	..	..	..
Australia	22.1	23.7	12	107	50.6	47	72,519	30
Austria	19.6	20.0	22	170	54.6	50	63,750	25
Azerbaijan ^b	12.7	..	38	952	40.9	35	12,632	22
Bangladesh ^b	7.6	8.1	17	400	39.5	..	..	..
Belarus ^b	16.6	22.2	124	1,188	144.4	..	..	..
Belgium	27.4	26.1	11	156	64.3	50	39,625	34
Benin ^b	15.5	15.8	55	270	73.3	35	..	38
Bolivia	13.2	17.3	41	1,080	78.1	..	..	25
Bosnia and Herzegovina	..	22.4	51	368	44.1	15	..	30
Botswana ^b	..	..	19	140	17.2	25	19,569	15
Brazil ^b	11.3	..	11	2,600	69.2	28	11,486	15
Bulgaria ^b	18.3	23.7	17	616	36.7	24	4,586	15
Burkina Faso ^b	..	11.2	45	270	48.9	..	..	..
Burundi ^b	13.6	..	32	140	278.7	..	..	..
Cambodia	8.2	8.2	27	137	22.6	20	36,652	20
Cameroon ^b	11.2	..	41	1,400	51.9	..	..	..
Canada ^b	15.0	14.1	9	119	45.9	29	97,756	22
Central African Republic ^b	..	6.0	54	504	203.8	..	..	..
Chad	..	..	54	122	63.7	..	..	..
Chile	16.7	20.7	10	316	25.9	40	6,127	17
China ^b	6.8	8.7	35	872	73.9	45	8,637	..
Hong Kong, China	..	..	4	80	24.4	20	11,568	18
Colombia	13.3	14.1	69	268	82.4	22	43,154	39
Congo, Dem. Rep. ^b	3.5	..	32	308	229.8	50	4,920	40
Congo, Rep.	9.2	..	89	606	65.4	..	..	..
Costa Rica ^b	..	14.1	43	402	55.7	25	19,414	30
Côte d'Ivoire ^b	14.6	14.9	66	270	45.4	10	4,550	35
Croatia ^b	26.2	23.3	28	196	32.5	45	3,765	20
Cuba	..	..	..	..	..	..	..	..
Czech Republic ^b	15.4	14.6	12	930	48.6	32	13,823	24
Denmark	31.0	31.2	9	135	33.3	59	53,117	28
Dominican Republic ^b	..	16.8	74	286	40.2	30	29,596	30
Ecuador ^b	..	..	8	600	35.3	25	61,440	25
Egypt, Arab Rep. ^b	14.6	15.8	36	711	47.9	20	6,920	..
El Salvador	10.7	13.4	66	224	33.8	..	..	..
Eritrea	..	..	18	216	84.5	..	..	..
Estonia	15.9	16.6	10	81	49.2	23	1,908	23
Ethiopia ^b	10.7	..	20	198	31.1	35 ^c	..	30 ^c
Finland	24.6	21.9	20	269	47.8	28	72,750	26
France	23.2	22.7	23	132	66.3	48	60,673	33
Gabon	..	..	28	272	44.2	..	..	..
Gambia, The ^b	..	..	50	376	286.7	..	..	..
Georgia ^b	7.7	15.5	29	387	38.6	12	..	20
Germany	11.9	11.4	16	196	50.8	42	65,190	25
Ghana ^b	17.2	22.4	32	304	32.9	25	10,581	25
Greece	20.2	17.2	21	264	48.6	40	28,750	29
Guatemala ^b	10.1	10.2	39	344	37.5	31	38,663	31
Guinea ^b	11.1	..	56	416	49.9	..	..	..
Guinea-Bissau	..	..	46	208	45.9	..	..	..
Haiti	..	..	53	160	40.0	..	..	..

	Tax revenue collected by central government		Taxes payable by businesses			Highest marginal tax rate ^a		
	% of GDP		Number of payments June 2007	Time to prepare, file, and pay taxes hours June 2007	Total tax rate % of profit June 2007	Individual		Corporate % 2006
	2000	2006				% 2006	On income over \$ 2006	
Honduras	..	17.9	47	424	51.4	25	26,553	25
Hungary ^b	21.9	20.1	24	340	55.1	36	7,766	16
India ^b	9.0	10.7	60	271	70.6	30	5,669	34
Indonesia ^b	11.6	12.3	51	266	37.3	35	20,608	30
Iran, Islamic Rep. ^b	6.3	7.6	22	292	47.4	35	114,101	25
Iraq	..	..	13	312	24.7	..	..	..
Ireland	26.1	26.7	9	76	28.9	42	40,000	13
Israel	29.6	28.6	33	230	36.0	49	94,530	31
Italy	23.2	22.9	15	360	76.2	43	125,000	33
Jamaica ^b	24.7	29.2	72	414	51.3	25	1,993	33
Japan ^b	..	..	13	350	52.0	37	163,310	30
Jordan ^b	19.0	26.2	26	101	31.1	..	..	..
Kazakhstan ^b	10.2	16.3	9	271	36.7	20	55,810	30
Kenya ^b	16.8	18.3	41	432	50.9	30	5,841	30
Korea, Dem. Rep. ^b	..	..	..	..	..	..	..	..
Korea, Rep. ^b	16.1	15.7	48	290	34.9	35	78,116	25
Kuwait	1.3	1.0	14	118	14.4	0	..	0
Kyrgyz Republic ^b	..	14.3	75	202	61.4	..	..	..
Lao PDR	..	..	34	672	35.5	..	..	..
Latvia	14.2	15.7	7	219	32.6	25	..	15
Lebanon	12.2	16.3	19	180	35.4	..	..	..
Lesotho	32.7	44.3	22	342	20.8	..	..	..
Liberia	..	..	37	158	81.6	..	..	..
Libya	..	..	..	..	..	..	..	..
Lithuania	14.6	18.1	24	166	48.3	33	..	15
Macedonia, FYR ^b	..	..	52	96	49.8	24	14,610	15
Madagascar	11.3	10.7	26	238	46.5	..	..	..
Malawi	..	..	30	370	32.2	..	..	..
Malaysia ^b	14.3	..	35	166	36.0	28	65,963	28
Mali	13.2	15.7	58	270	51.4	..	..	..
Mauritania	..	..	38	696	107.5	..	..	..
Mauritius ^b	18.2	18.2	7	161	21.7	30	16,949	25
Mexico ^b	11.7	..	27	552	51.2	29	9,470	29
Moldova ^b	14.7	19.9	49	218	44.0	20	1,667	15
Mongolia	..	..	42	204	38.4	..	..	..
Morocco	19.9	22.5	28	358	53.1	..	..	..
Mozambique	..	..	37	230	34.3	32	43,710	32
Myanmar ^b	3.0	4.7	..	..	..	..	..	..
Namibia ^b	30.0	..	37	..	26.5	35	31,447	35
Nepal ^b	8.7	8.9	33	408	32.5	..	..	..
Netherlands	22.3	23.7	9	180	43.4	52	65,285	30
New Zealand	29.5	34.2	8	70	35.1	39	42,254	33
Nicaragua ^b	13.8	17.5	64	240	63.2	30	29,886	30
Niger	..	..	42	270	42.4	..	..	..
Nigeria	..	..	35	1,120	29.9	..	..	..
Norway	27.4	29.2	4	87	42.0	..	..	28
Oman ^b	7.2	..	14	62	21.6	0	..	12
Pakistan ^b	10.1	9.5	47	560	40.7	35	11,763	37
Panama ^b	10.2	..	59	482	50.8	30	200,000	30
Papua New Guinea ^b	19.4	..	33	206	41.7	..	..	..
Paraguay ^b	..	12.1	35	328	35.3	10	..	0
Peru ^b	12.2	13.5	9	424	41.5	30	49,899	30
Philippines ^b	13.7	14.3	47	195	52.8	32	9,076	35
Poland	16.0	17.5	41	418	38.4	40	22,854	19
Portugal	21.5	22.0	8	328	44.8	42	75,000	25
Puerto Rico	..	..	16	140	44.3	33	50,000	20



5.6 Tax policies

	Tax revenue collected by central government		Taxes payable by businesses			Highest marginal tax rate ^a		
	% of GDP		Number of payments June 2007	Time to prepare, file, and pay taxes hours June 2007	Total tax rate % of profit June 2007	Individual		Corporate % 2006
	2000	2006				% 2006	On income over \$ 2006	
Romania	11.7	12.2	96	202	46.9	16	4,617	16
Russian Federation	13.7	16.7	22	448	51.4	13	..	24
Rwanda	..	..	34	168	33.8	..	..	..
Saudi Arabia	..	..	14	79	14.5	0	..	0
Senegal ^b	16.1	..	59	696	46.0	0	..	..
Serbia ^b	..	..	66	279	35.8	..	..	..
Sierra Leone ^b	10.2	11.0	22	399	233.5	..	..	..
Singapore ^b	15.4	12.7	5	49	23.2	21	192,771	20
Slovak Republic	..	14.0	31	344	50.5	19	14,087	19
Slovenia ^b	21.2	21.9	22	260	39.2	50	..	25
Somalia	..	..	..	..	..	..	..	..
South Africa	24.0	29.0	11	350	37.1	40	47,170	29
Spain	16.2	12.9	8	298	62.0	29	58,524	35
Sri Lanka ^b	14.5	15.3	62	256	63.7	35	4,975	35
Sudan ^b	6.4	..	42	180	31.6	..	..	..
Swaziland ^b	..	..	33	104	36.6	33	11,792	30
Sweden	19.7	21.3	2	122	54.5	25	61,673	28
Switzerland ^b	11.3	10.5	24	63	29.1	..	..	9
Syrian Arab Republic ^b	17.4	..	21	336	46.7	..	..	..
Tajikistan	7.7	9.8	54	224	82.2	..	..	..
Tanzania	..	..	48	172	44.3	30	5,740	30
Thailand	..	16.9	35	264	37.7	37	99,453	30
Timor-Leste	..	..	15	640	28.3	..	..	..
Togo ^b	..	13.9	53	270	48.2	..	..	..
Trinidad and Tobago ^b	22.1	27.9	40	114	33.1	25	7,937	25
Tunisia ^b	21.3	21.0	46	268	61.0	..	..	..
Turkey ^b	..	25.9	15	223	45.1	35	100,298	30
Turkmenistan	..	..	..	..	..	..	..	..
Uganda ^b	10.9	13.0	33	237	32.3	30	2,763	30
Ukraine ^b	14.1	18.0	99	2,085	57.3	13	..	25
United Arab Emirates ^b	1.7	..	14	12	14.4	0	..	..
United Kingdom	29.0	28.8	8	105	35.7	40	60,545	30
United States	12.7	11.9	10	325	46.2	35	326,450	35
Uruguay ^b	16.7	19.3	53	304	40.7	0	..	30
Uzbekistan	..	..	118	196	96.3	29	960	12
Venezuela, RB ^b	13.3	15.6	70	864	53.3	34	93,767	34
Vietnam ^b	..	..	32	1,050	41.1	40	5,044	28
West Bank and Gaza	..	..	27	154	17.1	..	..	..
Yemen, Rep. ^b	9.4	..	32	248	41.4	..	..	..
Zambia ^b	18.6	17.2	37	132	16.1	30	368	35
Zimbabwe ^b	..	..	52	256	53.0	45	26,249	30
World	15.7 w	16.8 w	34 u	323 u	50.7 u			
Low income	9.5	10.7	41	327	67.4			
Middle income	..	..	37	377	45.3			
Lower middle income	9.4	11.4	40	401	45.8			
Upper middle income	..	..	32	344	44.5			
Low & middle income	..	..	38	359	53.2			
East Asia & Pacific	7.7	9.5	31	295	39.9			
Europe & Central Asia	16.1	18.9	50	455	51.4			
Latin America & Carib.	11.4	..	40	435	48.7			
Middle East & N. Africa	15.7	17.3	27	276	41.4			
South Asia	9.3	10.6	31	306	41.4			
Sub-Saharan Africa	..	..	39	321	68.0			
High income	16.5	16.7	17	188	41.5			
Euro area	19.1	18.5	16	211	50.9			

a. Data are from PriceWaterhouseCoopers's *World Wide Tax Summaries Online*. b. Data on central government taxes were reported on a cash basis and have been adjusted to the accrual framework of the International Monetary Fund's *Government Finance Statistics Manual 2001*.

About the data

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

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

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

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

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

they have certain levels of start-up capital, employees, and turnover. For details about the assumptions, see *Doing Business 2008*.

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

Definitions

- **Tax revenue collected by central government** refers to compulsory transfers to the central government for public purposes. Certain compulsory transfers such as fines, penalties, and most social security contributions are excluded. Refunds and corrections of erroneously collected tax revenue are treated as negative revenue. The analytic framework of the International Monetary Fund's (IMF) *Government Finance Statistics Manual 2001* (GFSM 2001) is based on accrual accounting and balance sheets. For countries still reporting government finance data on a cash basis, the IMF adjusts reported data to the GFSM 2001 accrual framework. These countries are footnoted in the table.
- **Number of tax payments by businesses** is the total number of taxes paid by businesses during one year. When electronic filing is available, the tax is counted as paid once a year even if payments are more frequent.
- **Time to prepare, file, and pay taxes** is the time, in hours per year, it takes to prepare, file, and pay (or withhold) three major types of taxes: the corporate income tax, the value-added or sales tax, and labor taxes, including payroll taxes and social security contributions.
- **Total tax rate** is the total amount of taxes payable by businesses (except for consumption taxes) after accounting for deductions and exemptions as a percentage of profit. For further details on the method used for assessing the total tax payable, see *Doing Business 2008*.
- **Highest marginal tax rate** is the highest rate shown on the national schedule of tax rates applied to the annual taxable income of individuals and corporations. Also presented are the income levels for individuals above which the highest marginal tax rates levied at the national level apply.

Data sources

Data on central government tax revenue are from print and electronic editions of the IMF's *Government Finance Statistics Yearbook*. Data on taxes payable by businesses are from *Doing Business 2008* (www.doingbusiness.org). Data on individual and corporate tax rates are from PricewaterhouseCoopers's *Worldwide Tax Summaries Online* (www.pwc.com).



	Military expenditures				Armed forces personnel				Arms transfers			
	% of GDP		% of central government expenditure		thousands		% of labor force		\$ millions 1990 prices			
	1995	2006	1995	2006	1995	2006	1995	2006	Exports		Imports	
	1995	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995	2006
Afghanistan	..	9.9	..	..	383	51	6.2	0.6	0	..	..	28
Albania	2.1	1.6	8.2	6.3	87	12	6.0	0.8	..	..	24	42
Algeria	3.0	2.7	12.2	15.3	163	334	1.8	2.4	..	..	365	173
Angola	8.1	5.4	..	..	122	110	2.3	1.5	..	..	1	22
Argentina	1.6	0.9	..	5.9	99	107	0.7	0.6	3	..	75	53
Armenia	4.1	2.8	..	17.3	61	47	4.2	3.7	..	..	49	151
Australia	1.9	1.8	..	7.5	57	51	0.6	0.5	28	4	149	777
Austria	1.1	0.8	2.4	2.0	56	40	1.4	1.0	11	61	24	21
Azerbaijan	2.7	3.3	13.8	..	127	82	3.8	1.9	..	..	25	45
Bangladesh	1.4	1.1	..	13.6	171	214	0.3	0.3	..	..	121	208
Belarus	1.6	1.7	5.7	5.5	106	183	2.1	3.8	8	24	..	254
Belgium	1.6	1.1	3.4	2.7	47	40	1.1	0.9	299	50	16	4
Benin	..	..	..	..	7	8	0.3	0.2	..	..	..	..
Bolivia	1.8	1.5	..	5.9	64	83	2.2	1.9	..	..	1	25
Bosnia and Herzegovina	..	1.6	..	4.8	92	9	5.3	0.4	..	..	52	..
Botswana	3.5	3.0	11.5	..	9	11	1.5	1.6	..	..	7	9
Brazil	1.9	1.5	4.8	..	681	754	0.9	0.8	28	1	259	323
Bulgaria	2.6	2.3	6.6	7.1	136	75	3.5	2.5	2	..	1	20
Burkina Faso	1.5	1.4	..	11.5	10	11	0.2	0.2	..	..	..	19
Burundi	4.2	5.5	17.8	..	15	82	0.5	2.1	..	..	..	..
Cambodia	5.4	1.7	..	19.4	309	191	6.2	2.8	0	..	33	..
Cameroon	1.3	1.4	11.8	..	24	23	0.4	0.3	..	..	4	5
Canada	1.6	1.2	6.4	6.5	76	64	0.5	0.4	326	227	356	109
Central African Republic	1.2	1.1	..	12.3	5	3	0.3	0.2	..	..	..	9
Chad	1.7	0.9	..	..	35	35	1.2	0.9	..	..	1	2
Chile	3.1	3.6	..	21.2	130	103	2.3	1.6	30	..	459	1,125
China	1.7 ^a	1.9 ^a	.. ^a	18.2 ^a	4,130	3,605	0.6	0.5	1,017	564	641	3,261
Hong Kong, China	..	..	..	..	..	..	..	..	..	..	..	..
Colombia	2.6	3.5	..	12.1	233	398	1.4	1.7	..	..	37	33
Congo, Dem. Rep.	1.5	0.0	13.5	..	65	65	0.4	0.3	..	..	0	13
Congo, Rep.	..	1.1	..	..	17	12	1.4	0.8	..	..	27	4
Costa Rica	..	..	..	..	16	10	1.2	0.5	..	..	3	..
Côte d'Ivoire	0.8	..	..	..	15	19	0.3	0.3	..	..	2	14
Croatia	9.4	1.6	22.2	4.1	150	21	7.2	1.1	..	..	22	8
Cuba	..	..	..	..	124	76	2.5	1.4	..	..	..	..
Czech Republic	1.9	1.7	5.9	4.9	92	26	1.8	0.5	122	56	0	65
Denmark	1.7	1.4	..	4.4	33	30	1.2	1.1	8	3	130	133
Dominican Republic	0.6	0.5	..	3.1	40	65	1.3	1.6	..	..	4	27
Ecuador	2.4	2.3	6.0	..	57	57	1.3	0.9	..	..	11	33
Egypt, Arab Rep.	3.9	2.7	16.3	9.9	610	866	3.5	3.7	7	..	1,698	538
El Salvador	1.0	0.6	..	3.0	39	28	1.8	1.0	0	..	3	..
Eritrea	20.8	..	..	..	55	202	4.4	10.6	..	..	3	70
Estonia	1.0	1.4	..	5.4	6	7	0.8	1.1	8	..	17	8
Ethiopia	1.6	2.6	..	..	120	183	0.5	0.5	..	..	70	162
Finland	1.5	1.4	..	3.8	35	32	1.4	1.2	20	31	159	84
France	3.0	2.4	6.2	5.3	502	354	2.0	1.3	795	1,557	43	121
Gabon	..	1.2	..	..	10	7	2.1	1.2	..	..	..	63
Gambia, The	0.8	0.5	..	..	1	1	0.2	0.1	..	..	..	7
Georgia	2.2	3.1	8.2	15.2	14	33	0.5	1.5	..	7	8	70
Germany	1.6	1.3	4.2	4.3	365	246	0.9	0.6	1,430	1,855	252	216
Ghana	0.8	0.7	..	3.8	13	7	0.2	0.1	..	..	7	27
Greece	3.3	3.2	9.0	9.1	202	161	4.5	3.1	18	23	870	1,452
Guatemala	1.0	0.4	13.1	3.6	57	35	1.8	0.8	..	..	3	..
Guinea	1.4	2.0	..	..	19	13	0.6	0.3	..	..	..	..
Guinea-Bissau	0.9	4.0	..	..	9	9	1.9	1.4	..	..	4	..
Haiti	..	..	..	..	7	5	0.2	0.1	..	..	..	..

Military expenditures and arms transfers

5.7

	Military expenditures				Armed forces personnel				Arms transfers			
	% of GDP		% of central government expenditure		thousands		% of labor force		\$ millions 1990 prices			
	1995	2006	1995	2006	1995	2006	1995	2006	Exports	2006	1995	2006
Honduras	..	0.6	..	2.8	24	20	1.3	0.7	..	..	..	..
Hungary	1.6	1.2	3.0	2.7	73	44	1.7	1.0	6	68	24	337
India	2.7	2.7	18.4	17.7	2,150	2,589	0.6	0.6	2	11	968	1,710
Indonesia	1.6	1.2	16.2	8.3	461	582	0.5	0.5	25	8	319	54
Iran, Islamic Rep.	2.4	4.8	15.2	19.4	763	585	4.4	2.0	1	9	355	891
Iraq	..	..	..	..	407	495	7.0	6.0	..	..	..	195
Ireland	1.0	0.5	2.7	1.7	13	10	0.9	0.5	..	..	43	11
Israel	8.6	8.4	..	19.0	178	185	8.5	6.7	113	287	308	994
Italy	1.7	1.7	3.6	4.1	585	440	2.6	1.8	365	878	332	697
Jamaica	0.6	0.6	1.7	1.4	4	3	0.3	0.3	..	..	..	25
Japan	1.0	0.9	..	..	252	252	0.4	0.4	158	..	1,254	392
Jordan	5.8	4.9	22.3	14.1	129	111	10.3	5.9	77	13	19	117
Kazakhstan	1.1	0.9	5.7	6.2	75	81	1.0	1.0	25	5	99	53
Kenya	1.6	1.6	6.4	9.3	29	29	0.2	0.2	..	..	12	25
Korea, Dem. Rep.	..	..	..	..	1,243	1,295	12.0	11.4	52	13	82	5
Korea, Rep.	2.8	2.7	19.4	12.1	641	692	3.0	2.8	21	89	1,788	1,292
Kuwait	13.6	4.8	29.3	17.1	22	23	2.5	1.6	..	..	608	107
Kyrgyz Republic	3.5	3.1	..	17.5	7	21	0.4	0.9	61	..	..	1
Lao PDR	2.9	..	..	..	137	129	7.9	5.5	..	..	14	4
Latvia	0.9	1.6	3.1	5.7	11	17	0.9	1.5	8	..	16	4
Lebanon	6.4	4.1	..	16.8	63	76	5.0	4.7	..	..	34	1
Lesotho	3.7	2.4	10.7	5.9	2	2	0.3	0.3	..	..	..	1
Liberia	31.2	..	..	..	21	2	2.6	0.2	..	..	..	..
Libya	4.1	1.5	..	..	81	76	5.1	3.0	8	24	..	5
Lithuania	0.4	1.2	..	4.2	9	24	0.5	1.5	..	..	4	33
Macedonia, FYR	3.0	2.0	..	..	18	19	2.2	2.2	0	29	0	..
Madagascar	0.9	1.0	..	8.5	29	22	0.5	0.3	..	..	19	..
Malawi	0.8	..	..	..	10	7	0.2	0.1	..	..	2	..
Malaysia	2.8	2.0	16.0	..	140	134	1.7	1.2	0	..	876	654
Mali	2.2	2.2	..	14.3	15	12	0.4	0.2	..	..	7	13
Mauritania	2.0	2.5	..	..	21	21	2.4	1.7	..	..	2	..
Mauritius	0.4	0.2	1.8	0.9	2	2	0.4	0.4	..	..	30	..
Mexico	0.6	0.4	3.8	..	189	280	0.5	0.6	..	..	42	68
Moldova	0.9	0.3	2.4	0.9	15	8	0.8	0.4	36	4	6	..
Mongolia	1.7	1.3	..	..	31	16	3.3	1.3	..	..	..	..
Morocco	5.9	3.7	..	14.2	238	246	2.7	2.2	..	..	30	49
Mozambique	1.5	0.9	..	..	12	11	0.2	0.1	..	..	..	..
Myanmar	3.7	..	..	..	371	513	1.7	1.9	..	..	245	7
Namibia	2.0	2.9	..	..	8	15	1.5	2.2	..	..	4	13
Nepal	0.9	1.9	..	12.8	63	131	0.8	1.2	..	..	1	4
Netherlands	1.9	1.5	3.8	3.6	78	46	1.0	0.5	421	1,481	47	171
New Zealand	1.4	1.0	..	3.0	10	9	0.6	0.4	3	1	7	8
Nicaragua	1.1	0.7	7.8	3.4	12	14	0.8	0.7	5	..	..	..
Niger	1.0	1.1	..	..	11	10	0.3	0.2	..	..	3	..
Nigeria	0.7	0.7	..	..	89	162	0.2	0.3	..	..	2	72
Norway	2.4	1.5	..	4.7	31	16	1.4	0.6	22	2	84	509
Oman	14.6	11.8	45.2	..	48	47	6.2	4.9	1	1	182	406
Pakistan	6.0	3.8	31.4	24.9	846	923	2.2	1.5	1	17	..	..
Panama	1.2	..	5.6	..	12	12	1.1	0.8	..	..	0	..
Papua New Guinea	1.0	0.5	3.9	..	4	3	0.2	0.1	..	..	0	..
Paraguay	1.4	0.8	..	4.9	28	26	1.4	0.9	..	..	2	1
Peru	1.9	1.2	10.7	7.9	178	198	1.8	1.5	..	5	32	365
Philippines	1.4	0.9	8.5	5.0	149	147	0.5	0.4	..	..	30	43
Poland	2.0	2.0	..	5.4	302	148	1.7	0.9	176	169	195	224
Portugal	2.4	2.1	5.7	5.0	104	91	2.1	1.6	1	..	24	431
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..



5.7

Military expenditures and arms transfers

	Military expenditures				Armed forces personnel				Arms transfers			
	% of GDP		% of central government expenditure		thousands		% of labor force		\$ millions 1990 prices			
	1995	2006	1995	2006	1995	2006	1995	2006	Exports	2006	1995	2006
Romania	2.8	1.9	..	8.2	297	154	2.4	1.5	6	..	3	131
Russian Federation	4.4	4.0	38.3	20.5	1,800	1,446	2.5	2.0	3,363	6,623	40	4
Rwanda	4.4	2.7	..	..	47	53	1.9	1.2	..	..	1	..
Saudi Arabia	9.3	8.5	..	..	178	240	3.0	2.8	2	36	987	148
Senegal	1.7	1.6	..	..	17	19	0.5	0.4	..	..	2	..
Serbia	4.3	2.1	..	..	165	24	..	..	2	5	20	..
Sierra Leone	2.9	1.0	..	5.1	7	11	0.4	0.4	..	..	15	..
Singapore	4.4	4.7	35.1	34.0	66	167	3.7	7.3	0	3	269	54
Slovak Republic	3.2	1.7	..	5.1	51	17	2.1	0.6	91	79	218	4
Slovenia	1.6	1.7	4.7	4.2	13	11	1.3	1.1	..	..	19	2
Somalia	..	..	..	..	225	0	8.4	0.0	..	..	..	..
South Africa	2.2	1.4	..	4.5	277	103	1.7	0.5	15	115	38	862
Spain	1.4	1.0	3.9	4.2	282	222	1.7	1.1	82	803	363	378
Sri Lanka	5.3	2.4	20.3	11.0	236	213	3.3	2.5	..	..	49	20
Sudan	2.7	..	..	..	134	123	1.6	1.2	..	..	3	48
Swaziland	2.4	1.9	..	..	3	..	1.1	..	..	..	..	..
Sweden	2.3	1.4	..	4.0	100	25	2.2	0.5	222	472	96	122
Switzerland	1.3	0.9	5.2	4.9	31	23	0.8	0.5	36	144	93	72
Syrian Arab Republic	6.2	3.8	..	..	531	401	11.4	5.1	0	3	43	9
Tajikistan	1.0	2.2	..	15.8	18	17	0.9	0.8	..	..	27	13
Tanzania	1.6	1.1	..	..	36	28	0.2	0.1	..	..	3	..
Thailand	2.3	1.1	..	6.8	421	420	1.3	1.2	..	5	520	47
Timor-Leste	..	..	..	..	..	1	..	0.3	..	..	..	..
Togo	2.4	1.6	..	..	8	10	0.4	0.4	..	..	3	..
Trinidad and Tobago	..	..	..	..	7	3	1.3	0.5	..	..	..	..
Tunisia	1.9	1.4	6.7	4.8	59	48	2.1	1.2	..	..	46	16
Turkey	3.9	2.9	..	9.8	690	612	3.0	2.2	0	45	1,580	486
Turkmenistan	2.3	..	..	..	11	22	0.7	1.0	..	..	..	10
Uganda	2.2	2.1	..	12.0	52	47	0.6	0.4	..	..	32	15
Ukraine	2.8	2.1	..	5.7	519	215	2.0	1.0	215	133	0	29
United Arab Emirates	5.2	2.0	49.2	..	71	51	5.5	1.9	27	7	427	2,439
United Kingdom	3.0	2.6	..	6.3	233	181	0.8	0.6	1,402	1,063	659	463
United States	3.8	4.1	..	19.5	1,636	1,498	1.2	1.0	11,288	7,938	767	443
Uruguay	2.1	1.2	7.9	4.3	27	25	1.8	1.5	..	..	8	7
Uzbekistan	1.1	..	..	..	42	87	0.5	0.7	..	4	..	..
Venezuela, RB	1.6	1.1	8.7	4.4	80	82	0.9	0.6	..	5	5	388
Vietnam	2.6	..	..	..	622	495	1.8	1.1	..	..	269	179
West Bank and Gaza	..	..	..	..	..	56	..	7.0	..	..	1	0
Yemen, Rep.	6.4	6.0	33.4	..	70	138	1.7	2.2	..	..	175	308
Zambia	1.6	2.3	..	11.3	23	16	0.6	0.3	..	..	5	15
Zimbabwe	19.1	2.3	0.1	..	68	51	1.4	0.9	..	..	1	20
World	2.5 w	2.5 w	.. w	11.2 w	30,182 s	27,030 s	1.2 w	0.9 w	21,064 s	22,904 s	22,357 s	26,241 s
Low income	2.7	2.4	19.4	18.3	7,694	7,160	1.0	0.9	115	11	2,250	2,681
Middle income	2.3	2.0	..	..	16,027	14,271	1.2	0.9	4,996	7,717	8,509	11,361
Lower middle income	2.1	2.0	..	15.7	10,405	9,878	1.0	0.8	1,304	730	4,302	6,115
Upper middle income	2.5	2.0	..	..	5,622	4,393	1.7	1.2	3,692	6,987	4,207	5,246
Low & middle income	2.4	2.1	..	..	23,721	21,431	1.1	0.9	5,111	7,728	10,759	14,042
East Asia & Pacific	1.8	1.8	..	17.2	8,021	7,535	0.9	0.7	1,039	572	2,994	4,250
Europe & Central Asia	3.5	2.9	..	13.0	4,874	3,434	2.3	1.6	4,011	6,975	2,301	1,560
Latin America & Carib.	1.7	1.3	5.1	..	2,105	2,281	1.0	0.9	36	6	935	2,412
Middle East & N. Africa	4.2	3.5	17.6	16.2	3,172	3,479	4.2	3.1	8	49	2,951	2,399
South Asia	3.0	2.7	20.4	18.4	3,852	4,121	0.8	0.7	2	11	1,463	2,247
Sub-Saharan Africa	2.0	1.3	..	..	1,698	582	0.7	0.5	15	115	115	1,174
High income	2.5	2.6	..	10.6	6,461	5,599	1.4	1.1	15,953	15,176	11,598	12,199
Euro area	2.0	1.6	4.0	4.3	2,298	1,707	1.7	1.1	3,235	4,884	2,149	3,351

Note: For some countries data are partial or uncertain or based on rough estimates; see SIPRI (2007).

a. Estimates differ from official statistics of the government of China, which has published the following estimates: military expenditure as 1.0 percent of GDP in 1995 and 1.4 percent in 2005 and 9.3 percent of central government expenditure in 1995 and 7.3 percent in 2005 (see National Bureau of Statistics of China, www.stats.gov.cn).

About the data

Although national defense is an important function of government and security from external threats that contributes to economic development, high levels of military expenditures for defense or civil conflicts burden the economy and may impede growth. Data on military expenditures as a share of gross domestic product (GDP) are a rough indicator of the portion of national resources used for military activities and of the burden on the national economy. As an “input” measure military expenditures are not directly related to the “output” of military activities, capabilities, or security. Comparisons of military spending between countries should take into account the many factors that influence perceptions of vulnerability and risk, including historical and cultural traditions, the length of borders that need defending, the quality of relations with neighbors, and the role of the armed forces in the body politic.

Data on military spending reported by governments are not compiled using standard definitions. They are often incomplete and unreliable. Even in countries where the parliament vigilantly reviews budgets and spending, military expenditures and arms transfers rarely receive close scrutiny or full, public disclosure (see Ball 1984 and Happe and Wakeman-Linn 1994). Therefore, SIPRI has adopted a definition of military expenditure derived from the North Atlantic Treaty Organization (NATO) definition (see *Definitions*). The data on military expenditures as a share of GDP and as a share of central government expenditure are estimated by the Stockholm International Peace Research Institute (SIPRI). Central government expenditures are from the International Monetary Fund (IMF). Therefore the data in the table may differ from comparable data published by national governments.

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

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

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

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

SIPRI's Arms Transfers Project collects data on arms transfers from open sources. Since publicly available information is inadequate for tracking all weapons and other military equipment, SIPRI covers only what it terms *major conventional weapons*. Data cover the supply of weapons through sales, aid, gifts, and manufacturing licenses; therefore the term *arms transfers* rather than *arms trade* is used. SIPRI data also cover weapons supplied to or from rebel forces in an armed conflict as well as arms deliveries for which neither the supplier nor the recipient can be identified with acceptable certainty; these data are available in SIPRI's database.

SIPRI's estimates of arms transfers are designed as a trend-measuring device in which similar weapons have similar values, reflecting both the value and quality of weapons transferred. SIPRI cautions that the estimated values do not reflect financial value (payments for weapons transferred) because reliable data on the value of the transfer are not available, and even when values are known, the transfer usually includes more than the actual conventional weapons, such as spares, support systems, and training, and details of the financial arrangements (such as credit and loan conditions and discounts) are usually not known.

Given these measurement issues, SIPRI's method of estimating the transfer of military resources includes an evaluation of the technical parameters of the weapons. Weapons for which a price is not known are compared with the same weapons for which actual acquisition prices are available (core weapons) or for the closest match. These weapons are assigned a value in an index that reflects their military resource value in relation to the core weapons. These matches are based on such characteristics as size, performance, and type of electronics, and adjustments are made for secondhand weapons. More information on SIPRI's Arms Transfers Project is available at www.sipri.org/contents/armstrad/.

Definitions

- **Military expenditures** are SIPRI data derived from the NATO definition, which includes all current and capital expenditures on the armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces, if judged to be trained and equipped for military operations; and military space activities. Such expenditures include military and civil personnel, including retirement pensions and social services for military personnel; operation and maintenance; procurement; military research and development; and military aid (in the military expenditures of the donor country). Excluded are civil defense and current expenditures for previous military activities, such as for veterans benefits, demobilization, and weapons conversion and destruction. This definition cannot be applied for all countries, however, since that would require more detailed information than is available about military budgets and off-budget military expenditures (for example, whether military budgets cover civil defense, reserves and auxiliary forces, police and paramilitary forces, and military pensions).

- **Armed forces personnel** are active duty military personnel, including paramilitary forces if the training, organization, equipment, and control suggest they may be used to support or replace regular military forces. Reserve forces, which are not fully staffed or operational in peace time, are not included. The data also exclude civilians in the defense establishment and so are not consistent with the data on military expenditures on personnel.
- **Arms transfers** cover the supply of military weapons through sales, aid, gifts, and manufacturing licenses. Weapons must be transferred voluntarily by the supplier, have a military purpose, and be destined for the armed forces, paramilitary forces, or intelligence agencies of another country. The trends shown in the table are based on actual deliveries only. Data cover major conventional weapons such as aircraft, armored vehicles, artillery, radar systems, missiles, and ships designed for military use. Excluded are transfers of other military equipment such as small arms and light weapons, trucks, small artillery, ammunition, support equipment, technology transfers, and other services.

Data sources

Data on military expenditures are from SIPRI's *Yearbook 2007: Armaments, Disarmament, and International Security*. Data on armed forces personnel are from the International Institute for Strategic Studies' *The Military Balance 2008*. Data on arms transfers are from SIPRI's Arms Transfer Project (www.sipri.org/contents/armstrad/).



	IDA Resource Allocation Index 1-6 (low to high)	Economic management 1-6 (low to high)				Structural policies 1-6 (low to high)			
		Macroeconomic management	Fiscal policy	Debt policy	Average	Trade	Financial sector	Business regulatory environment	Average
		2006	2006	2006	2006	2006	2006	2006	2006
Afghanistan	2.6	4.0	3.0	3.0	3.3	3.0	2.0	2.5	2.5
Albania	3.7	4.5	3.5	4.0	4.0	5.0	4.0	3.5	4.2
Angola	2.7	3.0	3.0	2.0	2.7	4.0	2.5	2.0	2.8
Armenia	4.3	5.5	5.0	5.5	5.3	4.5	3.5	4.0	4.5
Azerbaijan	3.7	4.5	4.5	4.5	4.5	4.0	3.0	3.5	3.5
Bangladesh	3.4	4.0	3.5	4.5	4.0	3.5	3.0	3.5	3.3
Benin	3.6	4.5	4.0	3.5	4.0	4.5	3.5	3.5	3.8
Bhutan	3.8	4.5	4.0	4.0	4.2	3.0	3.0	3.5	3.2
Bolivia	3.7	4.0	4.0	4.5	4.2	5.0	3.5	2.5	3.7
Bosnia and Herzegovina	3.7	4.5	3.5	4.0	4.0	3.5	4.0	3.5	3.7
Burkina Faso	3.7	4.5	4.5	4.0	4.3	4.0	3.0	3.0	3.3
Burundi	3.0	3.5	3.5	2.5	3.2	3.5	3.0	2.5	3.0
Cambodia	3.2	4.0	3.0	3.5	3.5	3.5	2.5	3.5	3.2
Cameroon	3.2	4.0	4.0	2.5	3.5	3.5	3.0	3.0	3.2
Cape Verde	4.1	4.5	4.5	4.0	4.3	4.0	4.0	3.5	3.8
Central African Republic	2.4	3.0	3.0	1.5	2.5	3.5	2.5	2.0	2.7
Chad	2.8	3.5	3.0	2.5	3.0	3.0	3.0	3.0	3.0
Comoros	2.4	2.5	2.0	1.5	2.0	2.5	2.5	2.5	2.5
Congo, Dem. Rep.	2.8	3.5	3.5	2.5	3.2	4.0	2.0	3.0	3.0
Congo, Rep.	2.8	3.5	2.5	2.5	2.8	3.5	2.5	2.5	2.8
Côte d'Ivoire	2.5	2.5	2.0	1.0	1.8	3.5	3.0	3.0	3.2
Djibouti	3.1	3.5	2.5	2.5	2.8	4.0	3.5	3.0	3.5
Dominica	3.8	4.0	4.5	3.0	3.8	4.0	4.0	4.5	4.2
Eritrea	2.5	2.0	2.0	2.5	2.2	1.5	2.0	2.0	1.8
Ethiopia	3.4	3.0	4.0	3.5	3.5	3.0	3.0	3.5	3.2
Gambia, The	3.1	3.5	3.0	2.5	3.0	4.0	3.0	3.0	3.3
Georgia	4.1	4.5	4.5	4.5	4.5	4.5	3.5	4.5	4.2
Ghana	3.9	4.0	4.5	4.0	4.2	4.0	3.5	4.0	3.8
Grenada	3.8	4.0	3.0	3.0	3.3	4.0	3.5	4.5	4.0
Guinea	2.9	2.5	3.0	2.5	2.7	4.5	3.0	3.0	3.5
Guinea-Bissau	2.6	2.0	2.5	1.5	2.0	4.0	3.0	2.5	3.2
Guyana	3.4	3.5	3.5	4.0	3.7	4.0	3.5	3.0	3.5
Haiti	2.9	3.5	3.5	2.5	3.2	4.0	3.0	2.5	3.2
Honduras	3.9	4.5	4.0	4.0	4.2	5.0	3.5	4.0	4.2
India	3.8	4.5	3.5	4.5	4.2	3.5	4.0	3.5	3.7
Indonesia	3.7	4.5	4.0	4.5	4.3	4.5	3.5	3.0	3.7
Kenya	3.7	4.5	4.0	4.0	4.2	4.0	3.5	4.0	3.8
Kiribati	3.1	2.5	2.0	5.0	3.2	3.0	3.0	3.0	3.0

About the data

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

The World Bank's IDA Resource Allocation Index (IRAI), which is presented in the table, is based on the results of the annual Country Policy and Institutional Assessment (CPIA) exercise, which covers the IDA-eligible countries. The table does not include Liberia, Myanmar, and Somalia because they were not rated in the 2006 exercise even though they are

IDA eligible. Serbia and Montenegro as a unified country was IDA eligible in 2005, rated in that year's exercise, and included in last year's table, but neither Serbia nor Montenegro is IDA eligible as an independent country and thus neither is rated in the 2006 exercise nor included in this year's table. Afghanistan and Timor-Leste are included in this year's table. Country assessments have been carried out annually by World Bank staff since the mid-1970s. Over time the criteria have been revised from a largely macroeconomic focus to include governance aspects and a broader coverage of social and structural dimensions. Country performance is assessed against a set of 16 criteria grouped into four clusters: economic management, structural policies, policies for social

inclusion and equity, and public sector management and institutions. IDA resources are allocated to a country on per capita terms based on its IDA country performance rating and, to a limited extent, based on its per capita gross national income. This ensures that good performers receive a higher IDA allocation in per capita terms. The IRAI is a key element in the country performance rating.

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

Public policies and institutions

5.8

IDA Resource Allocation Index 1-6 (low to high)	Economic management 1-6 (low to high)				Structural policies 1-6 (low to high)				
	Macroeconomic management	Fiscal policy	Debt policy	Average	Trade	Financial sector	Business regulatory environment	Average	
	2006	2006	2006	2006	2006	2006	2006	2006	
Kyrgyz Republic	3.6	4.5	3.5	4.0	4.0	5.0	3.5	3.5	4.0
Lao PDR	3.1	4.0	3.5	3.5	3.7	3.5	2.0	3.0	2.8
Lesotho	3.5	4.0	4.0	4.0	4.0	3.5	3.5	3.0	3.3
Madagascar	3.6	4.0	3.0	3.5	3.5	4.0	3.5	4.0	3.8
Malawi	3.4	3.5	3.0	3.0	3.2	4.0	3.0	3.5	3.5
Maldives	3.6	3.0	2.5	3.5	3.0	4.0	4.0	4.0	4.0
Mali	3.7	4.5	4.0	4.5	4.3	4.0	3.0	3.5	3.5
Mauritania	3.3	3.0	3.0	4.0	3.3	4.5	2.5	3.5	3.5
Moldova	3.7	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5
Mongolia	3.4	4.0	3.0	3.0	3.3	4.5	3.0	3.5	3.7
Mozambique	3.5	4.0	4.0	4.5	4.2	4.5	3.0	3.0	3.5
Nepal	3.4	4.5	3.5	3.5	3.8	4.0	3.0	3.0	3.3
Nicaragua	3.8	4.0	4.0	4.5	4.2	4.5	3.5	3.5	3.8
Niger	3.3	4.0	3.5	3.5	3.7	4.0	3.0	3.0	3.3
Nigeria	3.2	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
Pakistan	3.6	4.0	3.5	4.5	4.0	4.0	4.5	4.0	4.2
Papua New Guinea	3.1	4.0	3.5	4.0	3.8	4.0	3.0	3.0	3.3
Rwanda	3.6	4.0	4.0	3.5	3.8	3.5	3.5	3.5	3.5
Samoa	3.9	4.0	3.5	4.0	3.8	4.5	4.0	3.5	4.0
São Tomé and Príncipe	3.0	3.0	3.0	2.5	2.8	4.0	2.5	3.0	3.2
Senegal	3.7	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.7
Sierra Leone	3.1	4.0	3.5	3.5	3.7	3.0	3.0	2.5	3.0
Solomon Islands	2.8	3.5	3.5	2.5	3.2	3.5	3.0	2.5	2.8
Sri Lanka	3.6	3.0	3.0	3.5	3.2	4.0	4.0	4.0	3.8
St. Lucia	3.9	4.5	3.5	4.0	4.0	4.0	4.0	4.5	4.2
St. Vincent & Grenadines	3.8	4.0	3.5	3.5	3.7	2.5	4.0	4.5	4.2
Sudan	2.5	3.5	3.0	1.5	2.7	4.0	3.0	3.0	2.8
Tajikistan	3.3	4.5	4.0	4.0	4.2	4.0	3.0	3.5	3.5
Tanzania	3.9	5.0	4.5	4.0	4.5	3.5	3.5	3.5	3.7
Timor-Leste	2.7	2.5	3.0	3.5	3.0	3.5	2.5	1.5	2.5
Togo	2.5	2.5	2.0	1.5	2.0	4.0	2.5	3.0	3.2
Tonga	2.9	3.0	2.0	3.0	2.7	3.0	3.0	3.0	3.0
Uganda	3.9	4.5	4.5	4.5	4.5	4.0	3.5	4.0	3.8
Uzbekistan	3.0	3.0	3.5	4.0	3.5	2.5	2.5	2.5	2.5
Vanuatu	3.1	3.5	3.0	4.0	3.5	3.5	3.0	3.0	3.2
Vietnam	3.9	5.5	4.5	4.0	4.7	3.5	3.0	3.5	3.3
Yemen, Rep.	3.3	3.5	3.0	4.5	3.7	4.5	2.5	3.0	3.3
Zambia	3.4	4.0	3.5	3.5	3.7	4.0	3.0	3.0	3.3
Zimbabwe	1.8	1.0	1.0	1.0	1.0	2.0	2.5	2.0	2.2

and institutional framework supports sustainable growth and poverty reduction and, consequently, the effective use of development assistance.

All criteria within each cluster receive equal weight, and each cluster has a 25 percent weight in the overall score, which is obtained by averaging the average scores of the four clusters. For each of the 16 criteria countries are rated on a scale of 1 (low) to 6 (high). The scores depend on the level of performance in a given year assessed against the criteria, rather than on changes in performance compared with the previous year. All 16 CPIA criteria contain a detailed description of each rating level. In assessing country performance, World Bank staff evaluate the country's actual performance on each of the criteria and assign

a rating. The ratings reflect a variety of indicators, observations, and judgments based on country knowledge and on relevant publicly available indicators. In interpreting the assessment scores, it should be noted that the criteria are designed in a developmentally neutral manner. Accordingly, higher scores can be attained by a country that, given its stage of development, has a policy and institutional framework that more strongly fosters growth and poverty reduction.

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

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

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

5.8 | Public policies and institutions

	Policies for social inclusion and equity 1–6 (low to high)					Public sector management and institutions 1–6 (low to high)						
	Gender equality 2006	Equity of public resource use 2006	Building human resources 2006	Social protection and labor 2006	Policies and institutions for environmental sustainability 2006	Average 2006	Property rights and rule-based governance 2006	Quality of budgetary and financial management 2006	Efficiency of revenue mobilization 2006	Quality of public administration 2006	Transparency, accountability, and corruption in the public sector 2006	Average 2006
Afghanistan	2.0	2.5	3.0	2.0	2.0	2.3	1.5	3.0	2.5	2.0	2.5	2.3
Albania	4.0	3.5	3.5	3.5	3.0	3.5	3.0	4.0	4.0	3.0	2.5	3.3
Angola	3.0	2.5	2.5	2.5	3.0	2.7	2.0	2.5	2.5	2.5	2.5	2.4
Armenia	4.5	4.5	4.0	4.5	3.5	4.2	3.5	4.0	3.5	4.0	3.5	3.5
Azerbaijan	4.0	4.0	3.0	4.0	3.0	3.6	3.0	4.0	3.5	3.0	2.5	3.2
Bangladesh	4.0	3.5	4.0	3.5	3.0	3.6	2.5	3.0	3.0	3.0	2.5	2.8
Benin	3.0	3.0	3.5	3.0	3.5	3.2	3.0	3.5	3.5	3.0	3.5	3.3
Bhutan	4.0	4.0	4.5	3.5	4.5	4.1	3.5	3.5	4.0	4.0	4.0	3.8
Bolivia	4.0	4.0	4.5	3.0	3.5	3.8	2.5	3.5	4.0	3.0	3.5	3.3
Bosnia and Herzegovina	4.5	3.0	3.5	3.5	3.5	3.6	3.0	3.5	4.5	3.0	3.0	3.4
Burkina Faso	3.5	4.0	3.5	3.5	3.5	3.6	3.5	4.0	3.5	3.5	3.0	3.5
Burundi	3.5	3.0	3.0	3.0	3.0	3.1	2.5	3.0	3.0	2.5	2.5	2.7
Cambodia	4.0	3.0	3.5	3.0	3.0	3.3	2.5	3.0	3.0	2.5	2.5	2.7
Cameroon	3.5	3.0	3.5	3.0	3.0	3.2	2.5	3.5	3.5	3.0	2.5	3.0
Cape Verde	4.5	4.5	4.5	4.5	3.5	4.3	4.0	3.5	3.5	4.0	4.5	3.9
Central African Republic	2.5	2.0	2.0	2.0	2.5	2.2	2.0	2.0	2.5	2.0	2.5	2.2
Chad	2.5	3.0	2.5	2.5	2.5	2.6	2.0	2.5	2.5	3.0	2.0	2.4
Comoros	3.0	3.0	3.0	2.5	2.0	2.7	2.5	1.5	2.5	2.0	2.5	2.2
Congo, Dem. Rep.	3.0	3.0	3.0	3.0	2.5	2.9	2.0	2.5	2.5	2.5	2.0	2.3
Congo, Rep.	3.0	2.5	3.0	2.5	2.5	2.7	2.5	3.0	3.0	2.5	2.5	2.7
Côte d'Ivoire	2.5	1.5	2.0	2.5	3.0	2.3	2.0	2.5	4.0	2.0	2.0	2.5
Djibouti	3.0	3.0	3.5	3.0	3.0	3.1	2.5	3.0	3.5	2.5	2.5	2.8
Dominica	4.0	3.5	4.0	3.5	3.5	3.7	4.0	3.0	3.5	3.5	4.0	3.6
Eritrea	3.5	3.0	3.5	3.0	2.0	3.0	2.5	2.5	3.5	3.0	2.5	2.8
Ethiopia	3.0	4.5	3.5	3.5	3.5	3.6	3.0	4.0	4.0	3.0	2.5	3.3
Gambia, The	3.5	3.0	3.5	2.5	3.0	3.1	3.5	2.5	3.5	3.0	2.0	2.9
Georgia	4.5	4.5	4.0	4.0	3.5	4.1	3.5	4.0	4.0	3.5	3.5	3.7
Ghana	4.0	4.0	4.0	3.5	3.5	3.8	3.5	4.0	4.5	3.5	4.0	3.9
Grenada	5.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	3.5	4.0	3.7
Guinea	3.5	3.0	3.0	3.0	2.5	3.0	2.0	2.5	3.0	3.0	2.5	2.6
Guinea-Bissau	2.5	3.0	2.5	2.5	2.5	2.6	2.5	2.5	3.0	2.5	2.5	2.6
Guyana	4.0	3.5	3.5	3.0	3.0	3.4	3.0	3.5	3.5	2.5	3.0	3.1
Haiti	3.0	3.0	2.5	2.5	2.5	2.7	2.0	3.0	2.5	2.5	2.0	2.4
Honduras	4.0	4.0	4.0	3.5	3.0	3.7	3.5	4.0	4.0	3.0	3.0	3.5
India	3.5	4.0	4.0	3.5	3.5	3.7	3.5	4.0	4.0	3.5	3.5	3.7
Indonesia	3.5	4.0	3.5	3.5	3.0	3.5	2.5	3.5	3.5	3.5	3.0	3.2
Kenya	3.0	3.5	3.5	3.0	3.0	3.2	3.0	3.5	4.0	3.5	3.0	3.4
Kiribati	3.0	3.0	2.5	3.0	3.0	2.9	3.5	3.0	3.0	3.0	3.5	3.2

Definitions

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

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

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

	Policies for social inclusion and equity 1–6 (low to high)						Public sector management and institutions 1–6 (low to high)					
	Gender equality	Equity of public resource use	Building human resources	Social protection and labor	Policies and institutions for environmental sustainability	Average	Property rights and rule-based governance	Quality of budgetary and financial manage- ment	Efficiency of revenue mobilization	Quality of public administration	Transparency, accountability, and corruption in the public sector	Average
	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006
Kyrgyz Republic	4.5	3.5	3.5	3.5	3.0	3.6	2.5	3.0	3.5	2.5	2.5	2.8
Lao PDR	3.5	3.5	3.0	2.0	3.5	3.1	3.0	3.0	2.5	3.0	2.0	2.7
Lesotho	4.0	3.0	3.5	3.0	3.5	3.4	3.5	3.0	4.0	3.0	3.5	3.4
Madagascar	3.5	3.5	3.5	3.5	4.0	3.6	3.5	3.0	3.5	3.5	3.5	3.4
Malawi	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	4.0	3.5	3.0	3.4
Maldives	4.0	4.0	4.0	3.5	4.0	3.9	4.0	3.0	4.0	4.0	2.5	3.5
Mali	3.5	3.5	3.5	3.5	3.0	3.4	3.5	3.5	4.0	3.0	3.5	3.5
Mauritania	3.5	3.5	3.5	3.0	3.5	3.4	3.0	2.5	3.5	3.0	2.5	2.9
Moldova	5.0	3.5	4.0	3.5	3.5	3.9	3.5	3.5	3.0	3.0	3.0	3.2
Mongolia	3.5	3.0	3.5	3.5	2.5	3.2	3.0	4.0	3.5	3.5	2.5	3.3
Mozambique	3.5	3.5	3.5	3.0	3.0	3.3	3.0	3.5	3.5	2.5	3.0	3.1
Nepal	3.5	3.5	3.5	3.0	3.0	3.3	3.0	3.5	3.5	3.0	3.0	3.2
Nicaragua	3.5	4.0	3.5	3.5	3.5	3.6	3.0	4.0	4.0	3.0	3.0	3.4
Niger	2.5	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.0	3.2
Nigeria	3.0	3.5	3.0	3.0	3.0	3.1	2.5	3.0	3.0	2.5	3.0	2.8
Pakistan	2.0	3.5	3.5	3.0	3.5	3.1	3.0	3.5	3.5	3.5	2.5	3.2
Papua New Guinea	2.5	3.0	2.5	3.0	1.5	2.5	2.0	3.5	3.5	2.5	3.0	2.9
Rwanda	3.5	4.5	4.5	3.5	3.0	3.8	3.0	4.0	3.5	3.5	3.0	3.4
Samoa	4.0	4.0	4.0	3.5	4.0	3.9	4.0	3.5	4.0	4.0	4.0	3.9
São Tomé and Príncipe	3.0	3.5	2.5	2.5	2.5	2.8	2.5	2.5	3.5	3.0	3.5	3.0
Senegal	3.5	3.5	3.5	3.0	3.5	3.4	3.5	3.5	4.5	3.5	3.0	3.6
Sierra Leone	3.0	3.0	3.0	2.5	2.0	2.8	2.5	3.5	2.5	3.0	2.5	2.9
Solomon Islands	3.0	2.5	3.0	3.5	2.0	2.6	2.5	2.5	3.5	2.0	3.0	2.5
Sri Lanka	4.0	3.5	4.0	4.0	3.5	3.7	3.5	4.0	3.5	3.0	3.5	3.5
St. Lucia	4.0	3.5	4.0	3.5	3.5	3.8	4.0	3.5	3.5	3.5	4.5	3.8
St. Vincent & Grenadines	4.5	3.5	4.0	2.0	3.5	3.8	4.0	3.5	3.0	3.5	4.0	3.7
Sudan	2.0	2.5	2.5	3.5	2.5	2.3	2.0	2.0	3.0	2.5	2.0	2.3
Tajikistan	3.5	3.0	3.0	3.5	2.5	3.1	2.5	3.0	4.0	2.5	2.0	2.6
Tanzania	4.0	4.0	4.0	2.5	3.5	3.8	3.5	4.5	3.0	3.5	3.5	3.8
Timor-Leste	3.0	3.0	2.5	2.5	2.0	2.6	1.5	3.0	3.0	2.5	3.0	2.6
Togo	3.0	2.0	3.0	2.5	2.5	2.6	2.5	2.0	2.5	2.0	2.0	2.2
Tonga	2.5	3.5	4.0	3.0	3.0	3.2	3.5	2.5	3.0	2.5	2.0	2.7
Uganda	3.5	4.5	4.0	3.5	4.0	3.9	3.5	4.0	3.0	3.0	3.0	3.3
Uzbekistan	3.5	3.5	4.0	3.5	3.5	3.6	2.0	3.0	3.0	2.5	1.5	2.4
Vanuatu	3.0	3.5	2.5	2.0	3.0	2.8	3.0	3.5	3.5	2.5	3.0	3.1
Vietnam	4.5	4.5	4.0	3.0	3.5	3.9	3.5	4.0	3.5	3.5	3.0	3.5
Yemen, Rep.	2.5	3.5	3.0	3.5	3.0	3.1	2.5	3.0	3.0	3.0	3.0	2.9
Zambia	3.5	3.5	3.5	3.0	3.5	3.4	3.0	3.5	3.5	3.0	3.0	3.2
Zimbabwe	2.5	1.5	2.0	1.5	2.5	2.0	1.0	2.0	3.5	2.0	1.0	1.9

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

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

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

Data sources

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



	Roads				Railways			Ports	Air		
	Total road network km	Paved roads %	Passengers carried million passenger-km	Goods hauled million ton-km	Rail lines total route-km	Passengers carried million passenger-km	Goods hauled million ton-km	Port container traffic thousand TEU	Registered carrier departures worldwide thousands	Passengers carried thousands	Air freight million ton-km
	2000-05 ^a	2000-05 ^a	2000-05 ^a	2000-05 ^a	2000-06 ^a	2000-06 ^a	2000-06 ^a	2006	2006	2006	2006
Afghanistan	34,782	23.7	..	..	..	..	..	..	..	..	..
Albania	18,000	39.0	197	2,200	447	73	26	..	4	213	0
Algeria	108,302	70.2	..	..	3,572	929	1,471	..	45	2,900	24
Angola	51,429	10.4	166,045	4,709	2,761	..	..	..	5	263	81
Argentina	231,374	30.0	..	..	..	..	..	1,758	74	6,612	125
Armenia	7,515	90.0	2,131	231	711	27	654	..	6	606	7
Australia	812,972	..	290,280	168,630	9,528	1,290	46,164	5,689	353	46,952	2,570
Austria	133,928	100.0	69,000	26,411	5,690	8,470	17,036	..	150	8,785	572
Azerbaijan	59,141	49.4	10,892	7,536	2,122	878	10,067	..	13	1,253	16
Bangladesh	239,226	9.5	..	..	2,855	4,164	817	904	8	1,729	191
Belarus	94,797	88.6	9,231	15,055	5,498	13,568	43,559	..	6	307	1
Belgium	150,567	78.0	126,680	54,856	3,542	9,150	8,130	8,672	158	3,641	740
Benin	19,000	9.5	..	..	578	66	86	..	..	..	..
Bolivia	62,479	7.0	..	..	..	..	..	..	22	1,443	11
Bosnia and Herzegovina	21,846	52.3	..	300	1,000	53	1,173	..	..	..	..
Botswana	24,455	33.2	..	..	888	171	842	..	7	214	0
Brazil	1,751,868	5.5	..	..	..	..	..	6,305	561	40,945	1,412
Bulgaria	44,033	99.0	14,401	6,840	4,154	2,389	5,164	..	12	808	3
Burkina Faso	92,495	4.2	..	..	622	..	..	..	2	73	0
Burundi	12,322	10.4	..	..	..	..	..	..	..	..	..
Cambodia	38,257	6.3	201	3	650	45	92	..	4	256	1
Cameroon	50,000	10.0	..	..	1,016	357	1,076	..	11	425	29
Canada	1,408,900	39.9	493,814	184,774	67,346	1,430	445,689	4,309	1,042	46,727	1,503
Central African Republic	24,307	..	..	..	..	..	..	..	..	..	..
Chad	33,400	0.8	..	..	..	..	..	..	..	..	..
Chile	79,604	20.2	..	..	2,035	737	1,241	2,127	95	6,017	1,028
China	1,930,544	81.6	929,210	869,320	62,200	666,200	2,170,700	84,686	1,543	158,013	7,692
Hong Kong, China	1,955	100.0	..	..	..	..	..	23,539	130	21,796	8,326
Colombia	164,257	..	157	38,199	2,137	..	7,751	1,511	175	10,616	1,051
Congo, Dem. Rep.	153,497	1.8	..	..	3,641	140	444	..	..	..	..
Congo, Rep.	17,289	5.0	..	..	795	135	231	..	..	..	..
Costa Rica	35,330	24.4	..	..	..	..	..	834	36	943	10
Côte d'Ivoire	80,000	8.1	..	..	639	10	129	710	..	..	..
Croatia	28,472	84.4	3,403	9,328	2,726	1,266	2,835	..	22	1,389	2
Cuba	60,856	49.0	..	..	..	..	..	..	12	812	30
Czech Republic	127,781	100.0	90,055	46,600	9,513	6,631	14,385	..	75	4,922	39
Denmark	72,257	100.0	70,635	11,058	2,212	5,459	2,030	669	14	582	1
Dominican Republic	12,600	49.4	..	..	1,743	..	..	537	..	..	..
Ecuador	43,197	15.0	10,641	5,453	966	..	..	671	31	2,110	6
Egypt, Arab Rep.	92,370	81.0	..	..	5,150	40,837	3,917	4,916	47	4,988	309
El Salvador	10,029	19.8	..	..	283	..	..	..	25	2,579	20
Eritrea	4,010	21.8	..	..	306	..	..	..	..	..	..
Estonia	57,016	22.7	3,190	7,641	959	248	10,311	..	8	598	1
Ethiopia	37,018	13.4	219,113	2,456	..	..	..	..	34	1,720	157
Finland	78,821	65.0	70,300	27,800	5,732	3,478	9,706	1,401	115	7,597	409
France	950,985	100.0	771,000	193,000	29,286	76,159	41,898	4,005	806	59,538	6,135
Gabon	9,170	10.2	..	..	810	95	2,219	..	9	508	78
Gambia, The	3,742	19.3	16	..	..	..	..	..	..	..	..
Georgia	20,247	39.4	5,200	570	1,515	720	6,127	..	5	272	3
Germany	..	100.0	1,062,700	237,609	34,218	72,554	88,022	15,053	1,085	99,647	8,134
Ghana	57,613	17.9	..	..	977	85	242	..	1	96	7
Greece	117,533	91.8	..	18,360	2,576	1,854	613	1,769	133	9,481	71
Guatemala	14,095	34.5	..	..	886	..	..	800	..	..	..
Guinea	44,348	9.8	..	..	1,115	..	..	..	..	..	..
Guinea-Bissau	3,455	27.9	..	..	..	..	..	..	..	..	..
Haiti	4,160	24.3	..	..	..	..	..	..	..	..	..

Transport services

5.9

	Roads				Railways			Ports	Air		
	Total road network km	Paved roads %	Passengers carried million passenger-km	Goods hauled million ton-km	Rail lines total route-km	Passengers carried million passenger-km	Goods hauled million ton-km	Port container traffic thousand TEU	Registered carrier departures worldwide thousands	Passengers carried thousands	Air freight million ton-km
	2000-05 ^a	2000-05 ^a	2000-05 ^a	2000-05 ^a	2000-06 ^a	2000-06 ^a	2000-06 ^a	2006	2006	2006	2006
Honduras	13,600	20.4	..	..	699	..	..	553	..	..	..
Hungary	159,568	43.9	13,300	12,505	7,730	6,953	8,537	..	46	2,592	20
India	3,383,344	47.4	..	..	63,465	575,702	407,398	6,190	454	40,289	843
Indonesia	372,929	55.3	..	..	..	14,345	4,430	3,740	357	29,867	469
Iran, Islamic Rep.	179,388	67.4	..	..	7,131	11,149	19,127	1,529	136	13,623	92
Iraq	45,550	84.3	..	..	1,963	570	1,682	..	..	..	..
Ireland	96,602	100.0	..	15,900	1,919	1,781	303	1,065	350	50,738	131
Israel	17,589	100.0	..	..	899	1,618	1,149	1,774	36	4,357	1,124
Italy	484,688	100.0	97,560	192,700	16,225	46,144	20,131	9,963	448	36,709	1,377
Jamaica	21,532	73.9	..	..	272	..	..	2,150	21	1,527	15
Japan	1,177,278	77.7	947,562	327,632	20,052	245,957	22,632	18,274	670	102,845	8,480
Jordan	7,601	100.0	..	..	293	..	1,024	..	27	2,046	259
Kazakhstan	90,800	83.0	91,651	47,100	14,205	12,129	191,200	..	19	1,283	16
Kenya	63,265	14.1	..	22	1,917	226	1,399	..	29	2,685	301
Korea, Dem. Rep.	31,200	6.4	..	..	5,214	..	..	..	2	105	2
Korea, Rep.	102,293	76.8	91,665	12,545	3,392	31,004	10,108	15,711	224	34,843	7,752
Kuwait	5,749	85.0	..	..	..	..	..	750	21	2,628	239
Kyrgyz Republic	18,500	91.1	5,874	1,336	424	50	561	..	5	219	1
Lao PDR	31,210	14.4	..	..	..	..	..	..	10	327	3
Latvia	69,829	100.0	2,869	2,767	2,375	894	17,921	..	29	1,410	13
Lebanon	6,970	..	..	..	401	..	..	..	11	969	74
Lesotho	5,940	18.3	..	..	..	..	..	..	..	..	..
Liberia	10,600	6.2	..	..	490	..	..	..	..	..	..
Libya	83,200	57.2	..	..	2,757	..	..	..	13	1,152	0
Lithuania	79,497	78.2	38,484	15,908	1,772	428	12,457	..	11	430	1
Macedonia, FYR	13,182	..	842	4,100	699	94	441	..	2	209	0
Madagascar	49,827	11.6	..	..	732	10	12	..	14	573	19
Malawi	15,451	45.0	..	..	710	26	38	..	6	146	2
Malaysia	98,721	81.3	..	..	1,667	1,181	1,178	13,419	164	17,833	2,597
Mali	18,709	18.0	..	..	733	196	189	..	..	..	..
Mauritania	7,660	11.3	..	..	717	..	..	..	2	149	0
Mauritius	2,015	100.0	..	..	..	..	..	..	14	1,056	195
Mexico	355,796	37.0	422,915	204,217	..	..	..	2,680	318	21,243	457
Moldova	12,737	86.3	1,640	1,577	1,075	355	2,980	..	4	274	1
Mongolia	49,250	3.5	557	242	1,810	1,228	8,857	..	6	348	6
Morocco	57,626	61.9	..	1,256	1,907	2,987	5,919	561	55	4,109	51
Mozambique	30,400	18.7	..	..	3,070	172	768	..	10	350	5
Myanmar	27,966	11.4	..	..	..	..	..	..	29	1,621	3
Namibia	42,237	12.8	47	591	..	..	..	..	7	401	0
Nepal	17,280	56.9	..	..	59	..	..	..	7	510	7
Netherlands	126,100	90.0	..	77,100	2,813	14,730	4,331	10,044	251	27,454	4,959
New Zealand	93,460	64.9	..	..	..	..	4,078	1,718	221	12,382	819
Nicaragua	18,669	11.4	..	..	6	..	..	..	..	..	..
Niger	18,423	20.6	..	..	..	..	..	..	..	..	..
Nigeria	193,200	15.0	..	..	3,528	174	77	513	16	1,308	11
Norway	92,864	77.5	58,247	14,966	4,087	2,440	9,568	..	254	12,277	177
Oman	34,965	27.7	..	..	..	..	..	2,620	32	3,267	235
Pakistan	258,340	64.7	209,959	..	7,791	24,237	5,013	1,699	51	5,715	427
Panama	11,643	34.6	..	..	355	..	..	3,383	33	2,029	36
Papua New Guinea	19,600	3.5	..	..	..	..	..	..	22	919	22
Paraguay	29,500	50.8	..	..	441	..	..	..	10	433	0
Peru	78,829	14.4	..	..	..	..	..	1,085	56	4,218	112
Philippines	200,037	9.9	..	..	491	144	1	3,596	62	8,305	319
Poland	423,997	69.7	29,314	119,740	19,507	16,742	45,438	428	83	3,626	80
Portugal	78,470	86.0	..	23,187	2,839	3,412	2,422	1,012	120	9,441	294
Puerto Rico	25,645	95.0	..	10	96	..	..	1,729	..	..	..



5.9

Transport services

	Roads				Railways			Ports	Air		
	Total road network km	Paved roads %	Passengers carried million passenger-km	Goods hauled million ton-km	Rail lines total route-km	Passengers carried million passenger-km	Goods hauled million ton-km	Port container traffic thousand TEU	Registered carrier departures worldwide thousands	Passengers carried thousands	Air freight million ton-km
	2000-05 ^a	2000-05 ^a	2000-05 ^a	2000-05 ^a	2000-06 ^a	2000-06 ^a	2000-06 ^a	2006	2006	2006	2006
Romania	198,817	30.2	9,438	37,220	10,844	7,960	16,032	1,018	43	2,047	5
Russian Federation	537,289	..	..	25,200	85,245	177,639	1,950,900	2,326	421	28,837	1,926
Rwanda	14,008	19.0	..	..	..	..	..	..	..	..	..
Saudi Arabia	152,044	29.9	..	..	1,020	393	1,192	3,919	132	16,831	1,066
Senegal	13,576	29.3	..	..	906	88	265	..	0	501	0
Serbia	45,290	62.4	3,865	3,100	3,809	852	3,482	..	20	1,042	4
Sierra Leone	11,300	8.0	..	..	..	..	..	..	0	19	10
Singapore	3,234	100.0	..	..	..	..	..	24,792	85	19,566	7,981
Slovak Republic	43,000	87.3	32,214	18,517	3,659	2,166	9,326	..	15	780	0
Slovenia	38,485	100.0	848	11,033	1,228	777	3,245	..	20	861	2
Somalia	22,100	11.8	..	..	..	..	..	..	..	..	..
South Africa	364,131	17.3	..	434	20,247	991	109,721	3,552	147	12,933	1,233
Spain	666,292	99.0	397,117	132,868	14,484	21,047	11,586	10,033	603	53,122	1,100
Sri Lanka	97,286	81.0	21,067	..	1,200	4,358	135	3,079	21	3,101	325
Sudan	11,900	36.3	..	..	5,478	40	766	..	9	563	51
Swaziland	3,594	30.0	..	..	301	..	11,394	..	..	..	..
Sweden	425,383	31.5	112,010	39,373	9,867	5,673	13,120	1,281	190	11,624	257
Switzerland	71,296	100.0	97,996	15,753	3,011	13,830	8,571	..	125	10,647	1,039
Syrian Arab Republic	94,890	20.1	589	..	1,888	607	2,256	..	17	1,252	16
Tajikistan	27,767	..	..	..	616	50	1,117	..	3	394	13
Tanzania	78,891	8.6	..	..	4,582 ^b	946 ^b	1,990 ^b	..	5	190	2
Thailand	57,403	98.5	..	..	4,044	9,195	4,037	5,574	127	20,102	2,107
Timor-Leste	..	..	..	..	..	..	..	..	..	..	..
Togo	7,520	31.6	..	..	568	..	..	..	..	..	..
Trinidad and Tobago	8,320	51.1	..	..	..	..	..	..	14	1,024	46
Tunisia	19,232	65.8	..	16,611	1,909	1,319	2,067	..	22	2,055	19
Turkey	426,914	..	182,152	166,831	8,697	6,183	9,078	3,648	177	19,361	464
Turkmenistan	24,000	81.2	..	..	2,529	1,286	8,670	..	16	1,843	10
Uganda	70,746	23.0	..	..	259	..	218	..	0	55	34
Ukraine	169,323	97.4	51,820	23,895	22,001	52,655	223,980	730	49	2,802	44
United Arab Emirates	4,030	100.0	..	..	..	..	..	10,967	87	14,314	3,734
United Kingdom	388,008	100.0	736,000	163,000	15,810	43,200	22,110	8,226	1,037	97,545	6,215
United States	6,544,257	65.3	7,814,575	2,116,532	153,787	47,717	2,589,349 ^c	40,875	9,739 ^d	725,531 ^d	39,882 ^d
Uruguay	77,732	10.0	..	..	3,003	12	331	..	9	569	4
Uzbekistan	81,600	87.3	..	1,200	4,014	2,012	18,007	..	22	1,665	68
Venezuela, RB	96,155	33.6	..	..	336	..	54	1,218	140	5,226	2
Vietnam	222,179	..	..	..	2,671	4,558	2,928	3,000	51	5,284	216
West Bank and Gaza	4,996	100.0	..	..	..	..	..	..	..	..	..
Yemen, Rep.	71,300	8.7	..	..	..	..	..	..	19	1,162	66
Zambia	91,440	22.0	..	..	1,273	183	..	..	6	59	0
Zimbabwe	97,267	19.0	..	..	..	..	..	..	7	239	9
World	35.9 m	35.9 m	.. m	.. m	.. s	2,278 m	7,751 m	414,087 s	24,843 s	2,072,237 s	143,212 s
Low income	12.1	..	..	..	..	..	..	9,772	846	69,322	2,469
Middle income	44.0	..	..	..	..	1,286	5,542	158,956	5,580	467,938	23,065
Lower middle income	65.8	..	..	..	..	1,286	3,449	114,068	3,034	285,540	13,248
Upper middle income	34.1	..	..	..	..	1,716	9,202	44,888	2,546	182,398	9,817
Low & middle income	26.8	..	..	..	..	..	..	170,749	6,426	537,260	25,535
East Asia & Pacific	11.4	..	..	..	..	4,558	1,902	114,016	2,454	244,449	13,538
Europe & Central Asia	..	9,859	13,124	196,529	1,286	8,874	5,530	1,032	73,664	2,700	
Latin America & Carib.	24.3	..	..	..	..	..	..	24,523	1,621	107,627	4,346
Middle East & N. Africa	70.2	..	..	..	..	..	2,256	..	392	34,257	909
South Asia	56.9	..	..	..	..	14,297	2,915	11,872	549	51,488	1,793
Sub-Saharan Africa	11.9	..	..	..	..	..	..	..	378	25,776	2,249
High income	90.9	..	51,147	..	..	6,152	10,311	243,338	18,417	1,534,977	117,678
Euro area	100.0	126,680	51,147	120,827	8,810	9,706	64,550	4,314	371,383	29,254	

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

About the data

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

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

National road associations are the primary source of IRF data. In countries where a national road association is lacking or does not respond, other agencies are contacted, such as road directorates, ministries of transport or public works, or central statistical offices. As a result, definitions and data collection methods and quality differ, and the compiled data are of uneven quality. Moreover, the quality of transport service (reliability, transit time, and condition of goods delivered) is rarely measured, though it may be as important as quantity in assessing an economy’s transport system. Several new initiatives are under way to improve data availability and consistency. The IRF is collaborating with national and international development agencies to improve the quality and coverage of road statistics. To improve measures of progress and performance, the World Bank is also working on better measures of access, affordability, efficiency, quality, and fiscal and institutional aspects of infrastructure.

Unlike the road sector, where numerous qualified motor vehicle operators can operate anywhere on the road network, railways are a restricted transport system with vehicles confined to a fixed guideway. Considering the cost and service characteristics, railways generally are best suited to carry—and can effectively compete for—bulk commodities and containerized freight for distances of 500–5,000 kilometers, and passengers for distances of 50–1,000 kilometers. Below these limits road transport tends to be more competitive, while above these limits

air transport for passengers and freight and sea transport for freight tend to be more competitive. The railways indicators in the table focus on scale and output measures: total route-kilometers, passenger-kilometers, and goods (freight) hauled in ton-kilometers.

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

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

The data cover the air traffic carried on scheduled services, but changes in air transport regulations in Europe have made it more difficult to classify traffic as scheduled or nonscheduled. Thus recent increases shown for some European countries may be due to changes in the classification of air traffic rather than actual growth. For countries with few air carriers or only one, the addition or discontinuation of a home-based air carrier may cause significant changes in air traffic.

Definitions

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

Data sources

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



	Electric power		Telephones										
	Consumption per capita kWh	Transmission and distribution losses % of output	Access				Quality	Affordability and efficiency					Subscribers per employee ^a
			per 100 people		Population covered by mobile telephony ^a %	International voice traffic ^a minutes per person		Faults per 100 mainlines ^a	\$ per month		Telecommunications revenue ^a % of GDP		
			Fixed mainlines ^a	Mobile subscribers ^a					Price basket for residential fixed line ^b	Price basket for mobile ^a		Cost of call to U.S. ^a \$ per 3 minutes	
2005	2005	2006	2006	2006	2006	2006	2006	2006	2005	2006	2006		
Afghanistan	..	..	1	10	..	1	25.0	0.1	10.8	0.39	5.1	60
Albania	1,167	39	11	49	97	160	..	5.1	22.1	1.34	..	623	
Algeria	899	13	9	63	75	17	0.8	6.3	7.5	2.08	4.7	302	
Angola	141	14	1	14	..	..	..	..	12.2	3.23	2.0	586
Argentina	2,418	15	24	81	..	33	..	6.8	7.8	..	3.4	972	
Armenia	1,503	16	20	11	88	128	64.4	2.4	8.7	2.42	3.0	173	
Australia	11,481	7	48	95	98	..	12.0	30.5	18.2	..	3.6	317	
Austria	7,889	5	43	112	99	..	5.7	29.0	23.2	0.71	2.3	642	
Azerbaijan	2,407	10	14	39	99	33	48.1	5.3	15.1	4.18	1.3	229	
Bangladesh	136	8	1	12	90	6	..	4.0	2.6	2.02	1.5	..	
Belarus	3,209	12	35	61	93	64	23.1	1.6	11.8	1.90	2.1	280	
Belgium	8,510	5	45	92	99	..	6.3	33.1	18.5	0.75	3.2	634	
Benin	69	..	1	12	..	6	7.5	16.1	13.0	4.80	1.6	621	
Bolivia	479	16	7	29	..	49	..	8.5	5.6	..	5.7	810	
Bosnia and Herzegovina	2,316	18	25	48	97	208	..	6.3	6.6	3.62	5.5	366	
Botswana	1,406	15	7	53	99	74	..	10.2	8.7	2.88	2.6	1,101	
Brazil	2,008	17	20	53	88	..	1.6	15.6	26.2	0.71	3.4	1,545	
Bulgaria	4,121	11	31	107	100	72	2.8	10.0	16.2	0.57	6.2	347	
Burkina Faso	..	..	1	7	26	11	18.4	16.9	12.8	1.14	3.7	440
Burundi	..	..	0	2	..	..	..	2.6	12.2	2.45	..	234
Cambodia	..	..	0	8	..	10	..	..	5.1	2.94	..	..
Cameroon	196	16	1	13	73	9	..	9.3	16.3	..	3.1	730	
Canada	17,285	7	64	53	97	..	..	..	6.9	..	2.5	425
Central African Republic	..	..	0	2	..	..	..	..	12.4	1.99	1.1	..
Chad	..	..	0	4	..	..	..	16.9	13.2	..	..	..
Chile	3,074	4	20	76	100	48	..	9.7	11.8	..	..	..
China	1,781	7	28	35	..	7	..	..	2.9	2.90	3.1	1,043
Hong Kong, China	5,878	13	56	136	100	1,179	1.3	12.6	2.2	0.77	3.7	657	
Colombia	890	19	17	65	80	68	27.9	8.0	10.4	..	5.3	..	
Congo, Dem. Rep.	91	4	0	7	50	5	..	..	11.0	..	6.4	1,428
Congo, Rep.	160	56	0	14	80	..	..	..	11.0	5.39	2.9	..
Costa Rica	1,719	10	31	33	86	127	3.8	6.0	1.9	..	2.4	459	
Côte d'Ivoire	170	18	1	21	55	17	..	22.5	21.8	2.25	5.4	1,442	
Croatia	3,475	17	41	101	100	231	12.0	13.1	14.5	..	5.5	540	
Cuba	1,152	15	9	1	71	31	9.2	13.1	22.6	7.49	2.6	58	
Czech Republic	6,343	6	31	118	100	95	6.1	24.1	17.2	1.06	3.9	768	
Denmark	6,663	4	57	107	..	318	..	30.7	6.0	0.89	2.6	474	
Dominican Republic	1,000	27	9	48	90	..	..	18.2	8.6	0.22	0.5	..
Ecuador	714	43	13	64	67	216	3.8	7.9	18.9	..	3.8	660	
Egypt, Arab Rep.	1,245	16	15	24	98	30	0.1	4.0	5.8	1.45	3.8	443	
El Salvador	666	13	15	57	95	410	1.7	2.0	8.5	2.40	4.6	1,182	
Eritrea	..	..	1	1	..	9	73.7	6.2	..	3.59	2.4	80
Estonia	5,567	11	40	124	99	109	..	15.6	8.6	0.90	5.4	641	
Ethiopia	34	10	1	1	..	3	..	2.2	3.1	4.01	2.4	142	
Finland	16,120	4	36	108	99	..	..	28.7	6.7	1.80	2.7	451
France	7,938	6	55	84	99	183	..	29.0	29.4	0.84	2.3	582	
Gabon	999	18	3	58	78	74	13.4	32.4	14.9	2.77	1.5	244	
Gambia, The	..	..	3	24	..	..	..	..	..	1.81	..	..
Georgia	1,672	16	12	38	96	..	..	9.7	44.1	..	7.3	197
Germany	7,111	5	66	102	99	..	..	26.5	17.0	0.43	2.9	559
Ghana	266	14	2	23	69	20	5.6	9.8	7.0	0.39	..	563	
Greece	5,242	9	55	100	100	182	12.8	21.1	23.1	1.09	3.4	632	
Guatemala	522	8	10	55	..	195	..	9.8	6.1	1.21	..	..
Guinea	..	..	0	2	..	..	..	..	7.7	..	..	..
Guinea-Bissau	..	..	1	6	..	..	..	..	21.9	..	..	..
Haiti	37	38	2	5	..	..	..	..	4.5	2.15	..	..

	Electric power		Telephones										
	Consumption per capita kWh	Transmission and distribution losses % of output	Access				Inter-national voice traffic ^a minutes per person	Quality	Affordability and efficiency				
			per 100 people		Population covered by mobile telephony ^a %	Faults per 100 mainlines ^a			Price basket for residential fixed line ^b	Price basket for mobile ^a	Cost of call to U.S. ^a \$ per 3 minutes	Telecom-munications revenue ^a % of GDP	Subscribers per employee ^a
			Fixed mainlines ^a	Mobile subscribers ^a									
2005	2005	2006	2006	2006	2006		2006	2006					
Honduras	626	24	10	32	..	96	..	5.9	10.8	2.52	7.1	187	
Hungary	3,771	11	33	99	99	105	8.2	23.6	12.1	1.01	4.4	780	
India	480	25	4	15	61	..	..	3.3	2.5	1.19	2.0	..
Indonesia	509	12	7	29	90	5	..	5.8	4.3	2.79	2.2	1,084	
Iran, Islamic Rep.	2,117	19	31	19	90	9	..	2.1	2.7	0.55	1.4	856	
Iraq	1,188	6	4	2	72	..	..	..	2.6	..	..	..
Ireland	6,234	8	49	110	99	..	3.2	39.5	19.3	0.71	2.4	406	
Israel	6,759	3	43	119	100	364	..	10.5	9.3	0.59	4.2	692	
Italy	5,669	7	43	122	100	..	..	24.9	14.1	0.79	3.0	1,116
Jamaica	2,474	12	12	106	95	..	..	9.1	7.5	0.87	4.9	..
Japan	8,233	5	43	80	99	43	0.0	26.1	20.4	1.63	3.7	1,722	
Jordan	1,676	14	11	78	99	139	7.9	10.0	6.9	1.44	7.8	707	
Kazakhstan	3,206	10	19	51	..	..	..	..	11.4	..	2.6	98
Kenya	138	18	1	18	..	6	145.4	13.9	16.6	3.00	4.6	220	
Korea, Dem. Rep.	817	16	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	7,779	4	55	83	99	92	..	8.3	14.2	0.76	4.9	..	
Kuwait	15,345	11	20	94	100	..	4.0	10.5	75.0	1.51	3.4	387	
Kyrgyz Republic	1,842	26	9	11	90	30	..	4.7	6.4	5.40	4.5	134	
Lao PDR	..	..	1	11	55	7	..	..	3.8	1.11	1.7	496
Latvia	2,702	17	29	95	98	67	1.1	13.3	9.3	1.63	3.9	731	
Lebanon	2,242	16	17	27	100	279	..	15.0	20.1	2.19	5.0	..	
Lesotho	..	..	2	13	29	18	60.0	18.4	14.8	3.28	..	1,111
Liberia	..	..	..	5	..	..	..	..	..	..	..	..
Libya	3,299	13	8	65	71	66	..	1.9	6.1	..	..	1,566
Lithuania	3,104	8	23	139	100	49	9.3	17.7	8.9	1.55	3.3	..	
Macedonia, FYR	3,417	23	24	70	99	63	9.0	10.5	14.8	..	7.1	..	
Madagascar	..	..	1	5	..	1	..	10.5	8.1	0.59	2.6	..
Malawi	..	..	1	3	..	..	..	5.8	10.2	..	3.3	..
Malaysia	3,262	4	17	75	..	..	22.5	8.7	5.0	0.71	4.6	770
Mali	..	..	1	13	..	..	..	16.1	13.5	..	5.2	..
Mauritania	..	..	1	35	..	..	5.5	11.6	..	..	5.9	1,003
Mauritius	..	..	29	62	100	150	23.0	7.9	4.2	1.59	3.7	492
Mexico	1,899	16	19	55	100	174	1.4	16.1	13.9	0.83	3.0	691	
Moldova	1,428	38	27	35	97	110	5.1	5.3	17.1	1.46	10.2	250	
Mongolia	..	..	6	22	..	5	18.5	1.6	5.4	..	3.6	147
Morocco	644	18	4	52	98	65	25.0	23.0	15.9	1.69	4.5	821	
Mozambique	450	12	0	11	..	13	46.0	13.1	10.0	1.17	1.5	980	
Myanmar	82	35	1	0	..	3	125.0	1.3	..	0.17	0.6	81	
Namibia	1,428	18	7	25	88	..	35.0	9.1	14.2	..	4.8	470	
Nepal	70	20	2	4	1	6	68.0	3.1	2.1	2.04	0.9	145	
Netherlands	6,988	4	47	97	100	..	..	..	22.9	0.32	..	..
New Zealand	9,656	7	42	85	98	361	..	28.6	19.4	1.30	..	962	
Nicaragua	414	22	4	33	60	62	4.8	9.2	15.1	3.15	..	..
Niger	..	..	0	2	15	..	..	9.5	16.5	..	2.2	..
Nigeria	127	24	1	22	58	..	..	..	10.7	1.49	3.5	..
Norway	25,137	7	44	108	..	193	..	37.9	19.8	..	1.4	445	
Oman	3,757	26	11	71	92	189	89.7	12.1	5.5	1.87	2.4	583	
Pakistan	456	24	3	22	36	10	..	4.1	2.4	1.03	2.5	433	
Panama	1,500	16	13	52	89	..	12.2	10.3	16.7	..	3.9	330	
Papua New Guinea	..	..	1	1	..	..	..	..	14.6	..	..	..
Paraguay	849	5	6	54	..	31	8.2	6.4	3.4	0.90	4.4	..	
Peru	848	9	8	31	..	99	..	18.8	23.0	1.80	2.7	670	
Philippines	588	12	4	50	99	28	4.5	11.6	5.3	1.20	4.4	1,555	
Poland	3,437	9	30	96	99	5.0	..	7.6	1.35	3.8	..
Portugal	4,663	9	40	115	99	178	10.4	31.8	23.1	1.04	4.9	1,126	
Puerto Rico	..	..	27	86	100	..	..	33.5	..	..	..	..



	Electric power			Telephones								
	Consumption per capita kWh	Transmission and distribution losses % of output	Access			International voice traffic ^a minutes per person	Quality	Affordability and efficiency				
			per 100 people		Population covered by mobile telephony ^a %			Faults per 100 mainlines ^a	\$ per month		Telecommunications revenue ^a % of GDP	Subscribers per employee ^a
			Fixed mainlines ^a	Mobile subscribers ^a					Price basket for residential fixed line ^b	Price basket for mobile ^a			Cost of call to U.S.^{a} $ per 3 minutes
2005	2005	2006	2006	2006	2006	2006	2006	2006	2005	2006	2006	
Romania	2,342	10	19	81	98	..	10.4	7.2	10.5	0.82	5.0	..
Russian Federation	5,785	12	28	84	..	..	7.1	..	5.9	2.03	2.9	439
Rwanda	..	..	0	3	75	..	..	6.6	12.3	2.43	3.3	..
Saudi Arabia	6,813	11	17	83	96	216	..	11.7	9.7	..	3.1	927
Senegal	151	30	2	25	85	39	2.0	15.4	9.4	1.02	9.1	1,100
Serbia	..	..	36	70	99	..	..	..	5.8	..	0.0	605
Sierra Leone	..	..	..	..	..	..	..	..	70.9	..	..	..
Singapore	8,358	5	41	107	100	1,045	0.3	6.3	6.1	0.69	3.1	..
Slovak Republic	4,920	5	22	91	100	90	7.9	19.8	12.2	1.06	3.6	559
Slovenia	6,918	6	42	91	99	..	13.4	17.6	10.1	0.65	3.5	1,225
Somalia	..	..	1	6	..	..	..	..	5.1	..	..	..
South Africa	4,847	6	10	72	96	..	..	22.7	13.8	0.79	6.4	1,145
Spain	6,147	9	42	105	99	173	..	25.8	21.7	0.60	4.3	656
Sri Lanka	378	15	9	27	85	28	8.6	8.2	1.2	2.11	2.6	619
Sudan	94	16	2	12	..	12	95.5	6.3	4.0	..	7.6	624
Swaziland	..	..	4	22	..	..	90.0	8.3	13.5	2.97	12.3	..
Sweden	15,440	7	59	106	99	..	..	26.7	6.0	0.41	2.8	764
Switzerland	8,305	7	67	99	100	..	..	29.5	28.0	0.32	3.3	537
Syrian Arab Republic	1,411	24	17	24	99	44	50.0	2.7	10.0	..	3.0	221
Tajikistan	2,267	15	4	4	4	..	..	..	23.3	7.84	2.9	114
Tanzania	61	27	0	15	..	..	26.0	14.0	10.0	3.17	..	..
Thailand	1,988	8	11	64	31	14	2.7	8.3	4.3	0.67	3.2	1,850
Timor-Leste	..	..	..	..	..	..	..	..	..	..	..	..
Togo	94	46	1	11	85	21	..	15.4	12.1	3.98	6.3	432
Trinidad and Tobago	5,038	6	25	125	..	376	..	7.0	6.7	2.19	2.4	..
Tunisia	1,194	12	13	72	100	73	20.0	2.9	5.3	..	4.4	915
Turkey	1,898	15	26	72	96	27	5.6	14.7	12.7	2.40	2.9	1,032
Turkmenistan	1,731	12	8	2	14	..	..	..	17.2	..	0.7	72
Uganda	..	..	0	7	80	..	..	13.8	9.4	3.21	3.4	255
Ukraine	3,246	13	26	105	96	57	41.3	..	9.4	1.65	5.8	210
United Arab Emirates	13,708	7	31	130	100	..	0.3	17.4	4.1	1.73	2.7	587
United Kingdom	6,253	8	55	115	99	..	..	28.2	13.7	0.77	3.7	..
United States	13,648	6	57	78	99	279	13.8	25.0	5.2	..	3.0	389
Uruguay	2,007	23	30	70	100	121	..	10.7	16.1	0.52	..	..
Uzbekistan	1,659	9	7	3	..	12	92.2	0.9	1.8	..	2.5	117
Venezuela, RB	2,848	25	16	70	..	..	..	..	1.2	0.84	3.6	677
Vietnam	573	11	19	18	..	..	..	2.7	6.3	1.95	4.7	..
West Bank and Gaza	..	..	9	22	95	66	23.0	1.0	9.6	1.17	0.8	903
Yemen, Rep.	174	23	5	9	68	..	..	2.8	4.2	2.39	1.2	..
Zambia	721	5	1	14	65	..	108.0	7.7	14.2	1.41	2.5	175
Zimbabwe	953	7	3	6	..	25	57.0	4.3	3.4	..	4.3	375
World	2,678 w	9 w	20 w	40 w	.. w	.. w	.. m	10.0 m	10.4 m	1.42 m	2.9 w	572 m
Low income	391	22	3	14	40	..	..	6.1	10.0	1.99	4.0	..
Middle income	1,928	11	22	44	..	31	8.2	9.2	10.2	1.65	2.1	586
Lower middle income	1,502	9	22	38	..	21	22.0	8.2	9.8	2.08	2.1	599
Upper middle income	3,131	13	22	66	95	..	7.5	11.4	10.9	1.06	3.6	594
Low & middle income	1,290	12	13	31	..	..	..	8.7	10.0	1.81	2.5	492
East Asia & Pacific	1,492	7	23	35	..	8	..	5.8	5.0	1.16	2.7	849
Europe & Central Asia	3,633	12	25	63	..	..	9.5	7.2	11.8	1.55	1.7	314
Latin America & Carib.	1,715	16	18	55	90	..	..	9.5	10.4	1.21	4.3	642
Middle East & N. Africa	1,358	17	17	36	84	36	23.5	5.2	6.5	1.66	1.5	466
South Asia	432	24	3	15	60	..	..	4.0	2.4	2.02	2.1	433
Sub-Saharan Africa	542	9	1	14	..	..	..	11.6	12.3	2.43	3.2	586
High income	9,760	6	53	90	99	204	..	26.6	17.0	0.77	4.4	641
Euro area	6,926	6	54	99	99	..	8.3	28.8	20.5	0.73	3.3	638

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

About the data

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

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

Data on electric power production and consumption are collected from national energy agencies by the International Energy Agency (IEA) and adjusted by the IEA to meet international definitions (for data on electricity production, see table 3.10). Electricity consumption is equivalent to production less power plants' own use and transmission, distribution, and transformation losses less exports plus imports. It includes consumption by auxiliary stations, losses in transformers that are considered integral parts of those stations, and electricity produced by pumping installations. Where data are available, it covers electricity generated by primary sources of energy—coal, oil, gas, nuclear, hydro, geothermal, wind, tide and wave, and combustible renewables. Neither production nor consumption data capture the reliability of supplies, including breakdowns, load factors, and frequency of outages.

Over the past decade new financing and technology, along with privatization and liberalization, have spurred dramatic growth in telecommunications in many countries. With the rapid development of mobile telephony and the global expansion of the Internet, information and communication technologies are increasingly recognized as essential tools of development, contributing to global integration and enhancing public sector effectiveness, efficiency, and transparency. The table presents telecommunications indicators covering access, quality, and affordability and efficiency.

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

Globally, there have been huge improvements in access to telecommunications, driven mainly by mobile telephony. By 2002 access to mobiles outpaced access to fixed-line telephones in developing countries, and rural areas are catching up with urban areas (although gaps are still large). By 2004 approximately 98 percent of the population in high-income countries and about 64 percent of the population in developing countries were covered by mobile telephony (within range of a mobile cellular signal). Indeed, in many developing countries, especially in Sub-Saharan Africa, the number of mobile phones has overtaken the number of fixed-line phones.

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

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

Definitions

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

Data sources

Data on electricity consumption and losses are from the IEA's *Energy Statistics and Balances of Non-OECD Countries 2004–2005*, the IEA's *Energy Statistics of OECD Countries 2004–2005*, and the United Nations Statistics Division's *Energy Statistics Yearbook*. Data on telecommunications are from the International Telecommunication Union's World Telecommunication Development Report database and World Bank estimates.



5.11

The information age

	Daily newspapers per 1,000 people 2000-06 ^a	Households with television ^b %	Personal computers and the Internet						Information and communications technology expenditures	
			Access		Quality		Application	Affordability	% of GDP 2006	Per capita \$ 2006
			per 100 people Personal computers ^b 2006	Internet users ^b 2006	Broadband subscribers ^b per 100 people 2006	International Internet bandwidth ^b bits per capita 2006	Secure Internet servers per million people December 2007	Price basket for Internet ^b \$ per month 2006		
Afghanistan	..	6	0.4	2.1	0.00	0	0	..	..	..
Albania	25	90	1.7	14.9	0.01	4	2	16.3	..	..
Algeria	..	90	1.1	7.4	0.59	5	0	9.3	2.4	84
Angola	2	9	0.7	0.5	0.00	12	0	0.2	..	..
Argentina	36	97	9.0	20.9	4.01	690	12	5.4	6.9	379
Armenia	8	91	9.8	5.7	0.07	22	3	56.6	..	..
Australia	156	99	75.7	73.9	18.84	11,593	579	22.5	6.4	2,413
Austria	315	98	60.7	50.7	17.24	6,634	284	15.7	5.5	2,137
Azerbaijan	16	99	2.3	9.8	0.03	36	0	10.0	..	..
Bangladesh	..	23	2.2	0.3	0.00	8	0	24.0	2.7	11
Belarus	82	97	0.8	56.3	0.12	192	1	10.5	..	..
Belgium	164	98	37.7	45.8	19.19	11,279	146	37.6	5.9	2,203
Benin	0	20	0.4	8.0	0.00	5	0	11.4	..	..
Bolivia	..	50	2.4	6.2	0.12	43	3	12.1	4.9	58
Bosnia and Herzegovina	..	87	5.4	24.2	1.02	40	4	7.6	..	..
Botswana	43	10	4.7	3.3	0.09	16	1	18.2	..	..
Brazil	36	91	16.1	22.5	3.13	150	16	10.1	6.4	363
Bulgaria	79	97	6.3	24.3	5.00	1,756	11	7.4	3.4	141
Burkina Faso	..	8	0.2	0.6	0.01	15	0	33.9	..	..
Burundi	..	14	0.7	0.7	0.00	1	0	40.0	..	..
Cambodia	..	43	0.3	0.3	0.01	1	0	9.9	..	..
Cameroon	..	26	1.1	2.0	0.00	9	0	17.6	5.1	52
Canada	175	99	87.6	68.1	23.51	6,732	644	9.5	5.7	2,201
Central African Republic	..	5	0.3	0.3	0.00	0	0	100.1	..	..
Chad	..	4	0.2	0.6	0.00	1	..	86.3	..	..
Chile	51	90	14.1	25.3	5.95	780	22	26.7	5.2	465
China	74	89	4.3	10.4	3.88	196	0	10.0	5.4	108
Hong Kong, China	223	99	61.2	55.0	26.20	13,439	194	3.9	8.8	2,428
Colombia	22	90	4.2	14.7	1.38	560	6	7.5	7.1	239
Congo, Dem. Rep.	..	4	0.0	0.3	0.00	0	0	14.0	..	..
Congo, Rep.	..	7	0.5	1.9	0.00	0	0	64.9	..	..
Costa Rica	65	89	23.1	27.6	1.34	176	67	18.3	7.3	368
Côte d'Ivoire	..	35	1.7	1.6	0.01	3	0	67.7	..	..
Croatia	..	98	19.9	35.5	5.67	1,074	48	16.5	0.0	0
Cuba	65	70	3.3	2.1	0.00	14	0	30.0	..	..
Czech Republic	182	..	27.4	34.5	10.58	2,170	64	19.9	7.3	1,020
Denmark	352	97	69.6	58.3	31.79	34,796	614	23.4	6.0	3,036
Dominican Republic	42	76	2.2	20.8	0.69	6	6	12.3	..	..
Ecuador	99	80	6.6	11.7	0.21	227	5	20.2	3.0	93
Egypt, Arab Rep.	..	88	3.7	8.1	0.28	126	1	5.0	1.4	20
El Salvador	37	83	5.2	9.6	0.63	23	6	22.6	..	..
Eritrea	..	16	0.6	2.1	0.00	2	..	13.0	..	..
Estonia	192	..	48.3	56.6	17.00	11,175	163	10.9	..	..
Ethiopia	5	4	0.4	0.2	0.00	0	0	6.7	..	..
Finland	431	94	50.0	55.5	27.12	4,311	380	22.5	6.7	2,689
France	165	97	57.5	49.1	20.73	3,286	96	12.6	6.3	2,324
Gabon	..	56	3.5	6.2	0.09	153	5	39.2	..	..
Gambia, The	..	12	1.5	3.6	0.00	6	1	6.8	..	..
Georgia	4	89	4.7	7.5	0.61	7	5	9.9	..	..
Germany	267	98	60.6	46.9	17.10	6,864	349	7.5	6.2	2,174
Ghana	..	26	0.6	2.7	0.06	9	0	11.9	..	..
Greece	..	100	9.2	18.4	4.38	587	40	10.2	3.2	875
Guatemala	..	50	2.1	10.1	0.21	56	6	54.3	..	..
Guinea	..	11	0.5	0.5	0.00	0	..	5.9	..	..
Guinea-Bissau	..	31	0.2	2.2	0.00	1	..	15.0	..	..
Haiti	..	27	0.2	6.9	0.00	17	1	12.0	..	..

	Daily newspapers per 1,000 people 2000–06 ^a	Households with television ^b % 2006	Personal computers and the Internet						Information and communications technology expenditures	
			Access		Broadband subscribers ^b per 100 people 2006	Quality International Internet bandwidth ^b bits per capita 2006	Application Secure Internet servers per million people December 2007	Affordability Price basket for Internet ^b \$ per month 2006	% of GDP 2006	Per capita \$ 2006
			per 100 people Personal computers ^b 2006	Internet users ^b 2006						
			2006	2006	2006	2006	2006	2006	2006	2006
Honduras	..	58	1.8	4.8	0.00	6	5	12.0	4.6	60
Hungary	217	96	14.9	34.8	9.70	993	36	10.5	6.0	669
India	73	32	1.6	5.5	0.21	24	1	6.6	6.1	50
Indonesia	..	65	1.5	7.3	0.05	7	1	6.6	3.1	51
Iran, Islamic Rep.	..	..	10.6	25.7	0.66	53	0	2.3	2.4	76
Iraq	..	..	..	0.1	0.00	..	0	..	..	..
Ireland	182	98	52.8	33.7	12.12	5,912	415	31.4	4.3	2,207
Israel	..	92	122.1	26.9	20.16	2,455	182	22.2	7.9	1,570
Italy	138	96	36.7	49.0	14.68	2,044	53	25.0	4.3	1,363
Jamaica	..	70	6.7	46.4	1.70	15,822	18	26.5	10.2	383
Japan	551	99	67.6	68.5	20.16	1,038	331	13.1	7.9	2,688
Jordan	..	96	6.6	14.4	0.88	57	4	10.9	8.0	204
Kazakhstan	..	..	..	8.1	0.20	63	1	15.8	..	..
Kenya	..	18	1.4	7.6	0.00	21	0	15.8	2.4	15
Korea, Dem. Rep.	..	..	..	..	0.00	..	..	..	..	..
Korea, Rep.	..	..	53.2	70.5	29.00	1,028	60	34.6	6.6	1,214
Kuwait	..	95	23.7	31.4	0.99	348	35	13.7	1.4	466
Kyrgyz Republic	1	..	1.9	5.7	0.05	39	1	12.0	..	..
Lao PDR	3	30	1.8	0.4	0.00	4	0	25.0	..	..
Latvia	154	98	24.6	46.8	4.79	3,230	46	12.6	..	..
Lebanon	61	96	10.2	23.4	4.19	111	10	10.0	..	..
Lesotho	..	2	0.1	2.6	0.00	2	0	38.6	..	..
Liberia	..	..	..	..	0.00	..	..	..	..	..
Libya	..	50	2.2	3.9	0.00	21	0	22.1	..	..
Lithuania	108	98	18.0	31.9	10.86	2,714	26	7.3	..	..
Macedonia, FYR	89	98	22.2	13.2	1.79	17	2	25.3	..	..
Madagascar	..	10	0.5	0.6	0.00	2	0	2.8	..	..
Malawi	..	3	0.2	0.4	0.00	1	0	22.5	..	..
Malaysia	111	95	21.8	43.2	3.44	124	17	2.7	6.7	388
Mali	..	17	0.4	0.6	0.02	26	0	28.7	..	..
Mauritania	..	25	2.6	3.3	0.02	30	1	16.0	..	..
Mauritius	77	93	16.9	14.5	1.75	153	18	16.2	..	..
Mexico	92	93	13.6	17.5	3.58	109	10	17.3	3.3	266
Moldova	..	82	9.0	19.0	0.57	147	4	13.3	..	..
Mongolia	19	63	13.3	10.5	0.07	13	4	10.7	..	..
Morocco	11	78	2.5	20.0	1.28	377	1	26.8	5.6	119
Mozambique	3	6	1.4	0.9	0.00	1	0	32.9	..	..
Myanmar	..	3	0.8	0.2	0.00	2	0	1.5	..	..
Namibia	28	39	12.3	4.0	0.00	18	8	48.7	..	..
Nepal	..	13	0.5	0.9	0.00	5	1	8.0	..	..
Netherlands	308	99	85.4	89.0	31.78	20,501	413	8.8	6.2	2,531
New Zealand	185	98	50.2	76.5	13.77	1,107	588	11.0	10.6	2,635
Nicaragua	..	60	4.0	2.8	0.34	1	3	10.0	..	..
Niger	0	7	0.1	0.3	0.00	2	0	101.8	..	..
Nigeria	..	32	0.8	5.5	0.00	1	0	11.3	3.4	27
Norway	517	100	59.4	87.4	27.43	9,305	389	29.8	4.9	3,556
Oman	..	79	5.2	12.5	0.60	174	4	5.2	..	..
Pakistan	51	46	0.5	7.5	0.04	5	0	9.5	6.9	55
Panama	65	79	4.6	6.7	0.54	287	57	38.5	8.2	425
Papua New Guinea	9	10	6.4	1.8	0.00	1	1	12.9	..	..
Paraguay	..	82	7.8	4.3	0.27	83	1	0.2	..	..
Peru	..	71	10.3	22.1	1.76	367	6	11.5	5.9	199
Philippines	80	63	5.3	5.5	0.15	38	3	2.0	6.7	91
Poland	113	91	24.2	28.8	6.92	560	38	11.7	4.2	369
Portugal	..	99	13.3	30.3	13.79	829	65	28.7	4.3	797
Puerto Rico	..	97	0.8	23.4	3.02	511	33	..	..	..



	Daily newspapers per 1,000 people 2000-06 ^a	Households with television ^b %	Personal computers and the Internet						Information and communications technology expenditures	
			Access		Broadband subscribers ^b per 100 people 2006	Quality International Internet bandwidth ^b bits per capita 2006	Application Secure Internet servers per million people December 2007	Affordability Price basket for Internet ^b \$ per month 2006	% of GDP 2006	Per capita \$ 2006
			per 100 people Personal computers ^b 2006	per 100 people Internet users ^b 2006						
Romania	70	94	12.9	32.4	8.19	1,503	7	6.0	3.2	180
Russian Federation	92	98	12.2	18.0	2.04	100	3	12.7	3.2	222
Rwanda	..	2	0.2	0.7	0.02	7	..	30.1	..	..
Saudi Arabia	..	99	13.6	19.8	0.92	126	5	5.3	2.1	308
Senegal	9	31	2.1	5.4	0.24	103	0	25.8	8.5	64
Serbia	..	..	5.2	20.3	..	95	3	6.9	..	..
Sierra Leone	..	..	..	0.2	0.00	..	0	10.6	..	..
Singapore	361	98	68.2	38.3	17.76	7,052	291	13.2	9.3	2,743
Slovak Republic	125	98	35.8	41.8	5.88	2,913	28	19.8	5.5	557
Slovenia	175	96	40.4	62.3	13.14	1,255	95	18.8	3.1	575
Somalia	..	8	0.9	1.1	0.00	0	0	..	..	..
South Africa	30	59	8.5	10.9	0.35	19	23	11.6	10.0	537
Spain	145	99	27.7	42.1	15.08	2,776	100	32.0	3.6	1,004
Sri Lanka	24	32	3.7	2.2	0.15	25	2	4.4	5.4	73
Sudan	..	16	11.2	9.3	0.01	5	0	52.5	..	..
Swaziland	26	18	3.7	3.7	0.00	1	4	15.1	..	..
Sweden	480	94	83.6	76.9	25.83	17,468	405	19.2	7.2	3,052
Switzerland	429	99	86.5	58.2	28.57	9,609	576	7.9	7.7	3,914
Syrian Arab Republic	..	95	4.2	7.7	0.03	8	0	9.2	..	..
Tajikistan	..	79	1.3	0.3	0.00	0	..	12.3	..	..
Tanzania	2	14	0.9	1.0	0.00	0	0	36.0	..	..
Thailand	..	92	7.0	13.3	0.17	156	6	5.8	4.0	129
Timor-Leste	..	..	..	..	0.00	..	1	5.0	..	..
Togo	2	16	3.0	5.0	0.00	16	0	10.7	..	..
Trinidad and Tobago	151	88	9.7	12.3	1.55	370	27	12.6	..	..
Tunisia	23	92	6.3	12.8	0.18	126	2	3.1	6.0	180
Turkey	..	92	5.7	16.8	3.80	631	25	6.7	8.2	452
Turkmenistan	9	..	7.2	1.3	0.00	16	..	23.1	..	..
Uganda	..	10	1.7	2.5	0.00	4	0	99.6	..	..
Ukraine	132	97	4.5	11.9	0.00	17	2	2.1	7.8	177
United Arab Emirates	..	86	25.6	40.2	5.66	2,371	59	5.4	3.6	1,201
United Kingdom	292	98	75.8	55.4	21.46	13,062	560	27.6	6.9	2,721
United States	194	99	76.2	69.5	19.42	3,307	868	15.0	8.7	3,846
Uruguay	..	92	13.6	22.8	3.23	484	30	23.9	7.8	454
Uzbekistan	..	..	3.1	6.4	0.03	9	0	5.7	..	..
Venezuela, RB	93	90	9.3	15.3	1.99	50	5	12.5	3.7	248
Vietnam	..	83	1.4	17.5	0.61	84	0	1.8	15.1	110
West Bank and Gaza	10	93	5.4	7.0	0.68	199	1	15.6	..	..
Yemen, Rep.	4	43	1.9	1.2	0.00	0	0	6.0	..	..
Zambia	5	..	1.1	4.3	0.02	11	0	33.3	..	..
Zimbabwe	..	34	6.5	9.2	0.08	4	0	1.3	12.7	17
World	105 w	83 m	10.6 w	21.4 w	5.46 w	529 w	74 w	12.1 m	6.7 w	564 w
Low income	..	16	1.4	4.2	0.18	22	0	12.0	6.1	47
Middle income	71	89	6.6	14.1	3.33	144	5	11.2	5.1	166
Lower middle income	73	80	4.3	11.4	3.23	189	1	10.0	5.0	103
Upper middle income	68	93	13.3	22.2	3.57	242	15	11.7	5.2	339
Low & middle income	67	60	4.3	8.0	2.04	143	3	11.7	5.2	121
East Asia & Pacific	74	63	4.1	11.1	3.56	182	1	5.8	5.3	105
Europe & Central Asia	99	97	10.2	19.2	3.64	268	11	11.1	4.6	291
Latin America & Carib.	64	79	11.3	18.4	2.95	269	12	12.2	5.3	304
Middle East & N. Africa	..	90	5.6	13.8	0.63	126	1	9.2	2.9	72
South Asia	70	32	1.4	4.9	0.18	22	1	6.6	6.0	47
Sub-Saharan Africa	..	14	1.8	3.8	0.03	5	2	15.9	..	..
High income	263	98	56.7	59.3	19.20	4,346	441	13.7	7.2	2,555
Euro area	203	98	47.6	47.9	17.33	4,830	185	20.7	5.4	1,813

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

About the data

The digital and information revolution has changed the way the world learns, communicates, does business, and treats illnesses. New information and communications technologies offer vast opportunities for progress in all walks of life in all countries—opportunities for economic growth, improved health, better service delivery, learning through distance education, and social and cultural advances.

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

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

Data on the number of daily newspapers in circulation are from surveys by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics that cover such areas as newspaper circulation, online newspaper titles, journalists, community newspapers, and news agencies.

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

Estimates of personal computers are from an annual International Telecommunication Union (ITU) questionnaire sent to member states, supplemented by other sources. Many governments lack the capacity to survey all places where personal computers are used—homes, schools, businesses, government offices, libraries, Internet cafes, and the like—so most estimates are derived from the number of

personal computers sold each year in a country. Annual shipment data can also be multiplied by an estimated average useful lifespan before replacement to approximate the number of personal computers. There is no precise method for determining replacement rates, but in general personal computers are replaced every three to five years.

Data on Internet users and related Internet indicators are based on nationally reported data. Some countries derive these data from surveys, but since survey questions and definitions differ, the estimates may not be strictly comparable. For example, questions on the age of Internet users and frequency of use vary by country. Countries without surveys generally derive their estimates by multiplying subscriber counts reported by Internet service providers by a multiplier. This method may undercount the actual number of people using the Internet, particularly in developing countries, where many commercial subscribers rent out computers connected to the Internet or prepaid cards are used to access the Internet.

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

The number of secure Internet servers, from the Netcraft Secure Server Survey, gives an indication of how many companies are conducting encrypted transactions over the Internet. The Netcraft survey examines the use of encrypted transactions on the Internet through extensive automated exploration, tallying the number of Web sites using a secure socket layer (SSL). Some countries, such as the Republic of Korea, establish the encryption channel by using application layers, which are SSL equivalent.

According to the World Information Technology and Services Alliance's (WITSA) *Digital Planet 2006*, the global marketplace for information and communications technologies was expected to top \$3 trillion in 2006 and to rise to almost \$4 trillion by 2009. The data on information and communications technology expenditures cover the world's 75 largest buyers among countries and regions.

Definitions

- **Daily newspapers** are newspapers that report mainly on events occurring in the 24-hour period before going to press and that are issued at least four times a week. The indicator is average circulation (or copies printed) per 1,000 people.
- **Households with television** are the percentage of households with a television set.
- **Personal computers** are self-contained computers designed for use by a single individual, including laptops and notebooks and excluding terminals connected to mainframe and minicomputers intended primarily for shared use and devices such as smart phones and personal digital assistants.
- **Internet users** are people with access to the worldwide network.
- **Broadband subscribers** are the number of broadband subscribers with a digital subscriber line, cable modem, or other high-speed technologies.
- **International Internet bandwidth** is the contracted capacity of international connections between countries for transmitting Internet traffic.
- **Secure Internet servers** are servers using encryption technology in Internet transactions.
- **Price basket for Internet** is based on the cheapest available tariff for accessing the Internet 20 hours a month (10 hours peak and 10 hours off-peak). The basket does not include telephone line rental but does include any telephone usage charges.
- **Information and communications technology expenditures** include computer hardware (computers, storage devices, printers, and other peripherals); computer software (operating systems, programming tools, utilities, applications, and internal software development); computer services (information technology consulting, computer and network systems integration, Web hosting, data processing services, and other services); and communications services (voice and data communications services) and wired and wireless communications equipment.

Data sources

Data on newspapers are compiled by the UNESCO Institute for Statistics. Data on televisions, personal computers, Internet users, broadband subscribers, international Internet bandwidth, and price basket for Internet are from the ITU's World Telecommunication Development Report database. Data on secure Internet servers are from Netcraft (www.netcraft.com/) and official government sources. Data on information and communications technology expenditures are from WITSA's *Digital Planet 2006: The Global Information Economy* and from Global Insight, Inc.



	Researchers in R&D	Technicians in R&D	Scientific and technical journal articles	Expenditures for R&D	High-technology exports		Royalty and license fees		Patent applications filed ^{a,b}		Trademark applications filed ^{a,c}	
	per million people 2000-05 ^d	per million people 2000-05 ^d	2005	% of GDP 2000-05 ^d	\$ millions 2006	% of manu- factured exports 2006	Receipts \$ millions 2006	Payments \$ millions 2006	Residents 2005	Non- residents 2005	Residents 2005	Non- residents 2005
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..
Albania	..	..	..	..	8	13	1	7	..	..	..	..
Algeria	170	35	350	0.16	11	2	..	..	58	455	1,488	3,369
Angola	..	..	..	..	..	..	1,340	1	..	..	..	..
Argentina	768	338	3,058	0.44	994	7	71	807	..	..	61,953	19,139
Armenia	..	..	180	0.21	5	1	..	..	206	2	1,088	364
Australia	4,099	..	15,957	1.77	3,371	12	621	2,221	8,630	22,562	38,728	17,053
Austria	3,444	1,477	4,566	2.35	14,037	13	177	1,334	1,904	601	7,565	1,018
Azerbaijan	..	..	116	0.23	8	2	0	1	281	6	774	823
Bangladesh	..	..	193	..	21	0	0	5	..	..	..	..
Belarus	..	..	490	0.69	268	3	6	50	1,065	382	2,410	3,556
Belgium	3,067	1,473	6,841	1.82	22,644	8	1,544	1,075	533	175	20,831 ^e	30,665 ^e
Benin	..	..	..	..	0	0	..	2	..	..	..	..
Bolivia	120	6	..	0.28	13	4	2	14	..	..	..	..
Bosnia and Herzegovina	..	..	..	..	62	3	..	..	66	306	295	902
Botswana	..	..	..	0.39	..	..	0	7	..	..	..	..
Brazil	462	395	9,889	0.91	8,426	12	150	1,664	3,821	2,560	83,117	15,981
Bulgaria	1,301	478	764	0.50	486	6	11	69	261	52	6,731	1,252
Burkina Faso	19	17	..	0.18	3	10	..	..	..	..	..	..
Burundi	..	..	..	..	0	4	0	..	..	..	..	..
Cambodia	17	13	..	0.05	4	0	0	7	..	..	409	1,638
Cameroon	28	..	131	..	3	3	0	2	..	..	..	..
Canada	3,922	1,467	25,836	2.01	32,740	15	3,245	7,320	3,942	35,946	17,719	22,169
Central African Republic	..	..	..	..	0	0	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..
Chile	833	302	1,559	0.68	401	7	55	381	361	2,646	..	..
China	708	..	41,596	1.34	271,170	30	205	6,634	93,172	80,155	593,382	63,902
Hong Kong, China	2,096	417	..	0.74	1,788	11	245	1,289	156	11,607	8,173	20,877
Colombia	125	95	400	0.17	349	4	11	127	..	..	..	..
Congo, Dem. Rep.	..	..	..	0.48	..	..	..	..	..	..	..	..
Congo, Rep.	30	32	..	..	..	..	..	..	..	..	..	..
Costa Rica	..	..	105	0.37	2,088	45	0	87	..	..	..	..
Côte d'Ivoire	..	..	..	..	521	42	0	10	..	..	..	..
Croatia	1,573	567	953	1.22	691	10	47	175	355	657	1,180	831
Cuba	..	..	261	0.56	59	12	..	..	94	191	301	482
Czech Republic	2,365	1,348	3,169	1.42	11,897	14	31	526	586	244	9,279	973
Denmark	5,190	..	5,040	2.45	11,455	20	..	..	1,655	168	4,585	1,289
Dominican Republic	..	..	..	..	..	..	0	32	..	..	..	..
Ecuador	50	..	..	0.06	96	8	0	44	11	580	5,907	2,148
Egypt, Arab Rep.	..	..	1,658	0.19	15	1	138	159	428	1,008	..	..
El Salvador	47	..	..	..	22	3	1	27	..	..	..	..
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..
Estonia	2,505	490	439	0.99	771	13	6	29	23	15	1,241	1,737
Ethiopia	21	10	88	0.20	..	..	0	1	..	..	..	..
Finland	7,541	..	4,811	3.52	13,990	22	1,494	1,901	1,827	232	2,820	661
France	3,320	..	30,309	2.13	80,525	21	6,230	3,298	14,230	3,060	62,330	3,224
Gabon	..	..	..	..	71	32	..	..	..	..	..	..
Gambia, The	30	18	..	..	0	1	..	..	..	..	..	..
Georgia	..	..	145	0.18	74	16	13	5	225	22	507	518
Germany	3,242	1,056	44,145	2.51	154,757	17	5,888	7,843	47,537	12,685	67,208	3,718
Ghana	..	..	81	..	1	0	0	..	..	..	..	..
Greece	1,531	831	4,291	0.61	1,139	11	67	406	487	50	5,872	893
Guatemala	35	3	0	0	10	267
Guinea	0
Guinea-Bissau	0
Haiti	4	1

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	Researchers in R&D	Technicians in R&D	Scientific and technical journal articles	Expenditures for R&D	High-technology exports		Royalty and license fees		Patent applications filed ^{a,b}		Trademark applications filed ^{a,c}	
	per million people	per million people		% of GDP	\$ millions	% of manufactured exports	Receipts \$ millions	Payments \$ millions	Residents	Non-residents	Residents	Non-residents
	2000-05 ^d	2000-05 ^d	2005	2000-05 ^d	2006	2006	2006	2006	2005	2005	2005	2005
Honduras	..	..	..	0.05	3	1	0	25	..	..	1,149	3,388
Hungary	1,572	466	2,614	0.95	14,915	24	627	1,056	697	505	3,515	659
India	..	..	14,608	0.61	3,511	5	112	949	6,795	10,671	..	..
Indonesia	202	..	205	0.05	5,900	13	14	870	234	4,069	..	..
Iran, Islamic Rep.	..	..	2,635	0.59	375	6	..	..	..	..	17,607	1,356
Iraq	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	2,688	654	2,120	1.24	31,840	34	1,028	20,815	789	75	1,285	2,677
Israel	..	..	6,309	4.95	5,565	14	596	679	1,329	5,124	2,816	6,159
Italy	1,241	..	24,645	1.10	25,046	7	1,116	1,840	..	..	..	..
Jamaica	..	..	..	0.07	1	0	12	11	10	59	..	..
Japan	5,294	528	55,471	3.18	126,618	22	20,096	15,500	359,382	67,696	114,015	11,792
Jordan	..	..	275	0.34	35	1	..	..	..	..	..	..
Kazakhstan	803	86	96	0.28	987	21	0	48	1,696	102	2,908	1,070
Kenya	..	..	226	..	17	3	10	50	..	..	..	..
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Rep.	3,760	567	16,396	2.99	92,945	32	2,011	4,487	121,942	38,979	99,435	16,454
Kuwait	74	95	233	0.18	..	..	0	0	..	..	..	..
Kyrgyz Republic	..	..	..	0.20	6	3	2	19	179	1	133	345
Lao PDR	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	1,423	460	134	0.57	242	7	11	20	112	57	1,367	487
Lebanon	..	..	234	..	26	2	0	0	..	..	..	..
Lesotho	..	..	..	0.06	..	..	18	..	..	..	..	..
Liberia	..	..	..	..	..	..	..	..	..	..	..	..
Libya	361	493	..	..	..	..	..	0	..	..	..	..
Lithuania	2,226	419	406	0.76	653	8	1	24	68	47	1,839	411
Macedonia, FYR	547	83	..	0.25	18	1	3	9	37	415	619	437
Madagascar	43	6	..	0.16	4	1	2	9	16	22	439	419
Malawi	..	..	..	..	9	11	..	..	..	..	..	..
Malaysia	509	64	615	0.63	63,411	54	26	1,052	..	..	10,479	11,668
Mali	..	..	..	..	2	4	0	1	..	..	..	..
Mauritania	..	..	..	..	..	..	..	..	..	..	..	..
Mauritius	..	..	..	0.38	360	24	0	4	..	..	..	..
Mexico	321	147	3,902	0.41	35,732	19	171	503	549	13,887	45,736	22,962
Moldova	..	..	89	..	10	5	2	4	377	11	1,941	474
Mongolia	..	..	..	0.32	3	2	..	..	100	87	369	1,854
Morocco	..	..	443	0.75	830	10	5	48	139	521	..	..
Mozambique	..	..	..	0.52	3	2	1	2	..	..	..	..
Myanmar	17	133	..	0.16	..	..	..	..	..	..	..	..
Namibia	..	..	..	..	102	7	..	3	..	..	..	..
Nepal	59	137	..	..	..	..	..	..	..	..	..	..
Netherlands	2,309	1,765	13,885	1.79	69,210	28	4,126	3,865	2,217	633	..	..
New Zealand	3,945	833	2,983	1.14	587	11	123	487	1,856	5,149	8,269	8,564
Nicaragua	..	..	..	0.05	5	7	0	..	..	..	..	..
Niger	7	10	..	..	5	11	0	1	..	..	..	..
Nigeria	..	..	362	..	..	..	..	45	..	..	..	..
Norway	4,729	..	3,644	1.51	3,577	19	760	553	1,143	4,843	..	5,996
Oman	..	..	111	..	4	1	..	..	..	..	..	..
Pakistan	80	41	492	0.43	197	1	53	106	..	1,081	8,319	5,117
Panama	97	387	..	0.24	0	0	0	50	..	..	..	..
Papua New Guinea	..	..	..	..	..	..	..	..	..	..	..	..
Paraguay	82	118	..	0.08	25	8	236	2	..	..	..	..
Peru	..	..	133	0.15	57	2	3	86	27	993	10,468	8,353
Philippines	..	..	178	0.14	27,626	68	6	349	157	1,731	7,031	5,526
Poland	1,613	232	6,844	0.57	3,284	4	38	1,313	2,028	4,555	13,828	984
Portugal	2,001	307	2,910	0.81	2,971	9	82	349	158	47	8,589	1,134
Puerto Rico



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	Researchers in R&D	Technicians in R&D	Scientific and technical journal articles	Expenditures for R&D	High-technology exports		Royalty and license fees		Patent applications filed ^{a,b}		Trademark applications filed ^{a,c}	
	per million people 2000-05 ^d	per million people 2000-05 ^d	2005	% of GDP 2000-05 ^d	\$ millions 2006	% of manu- factured exports 2006	Receipts \$ millions 2006	Payments \$ millions 2006	Residents 2005	Non- residents 2005	Residents 2005	Non- residents 2005
Romania	976	254	887	0.39	1,129	4	35	236	916	68	11,121	2,090
Russian Federation	3,244	553	14,412	1.07	4,755	9	299	2,002	23,588	8,665	26,460	7,926
Rwanda	..	..	..	..	..	..	0	1	..	..	..	..
Saudi Arabia	..	..	575	..	148	1	0	0	..	..	..	..
Senegal	..	..	83	0.09	17	6	..	7	..	..	..	..
Serbia	..	..	849	1.41	176	4	..	..	381	658	1,089	736
Sierra Leone	..	..	..	..	..	..	1	1	..	..	..	..
Singapore	5,500	381	3,609	2.36	124,133	58	730	10,470	435	8,170	4,839	26,986
Slovak Republic	2,022	416	919	0.52	2,196	6	..	..	154	96	2,740	1,146
Slovenia	1,949	1,264	1,035	1.22	941	5	17	154	323	27	1,399	417
Somalia	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	379	110	2,392	0.87	1,799	6	46	1,282	..	5,554	..	28,331
Spain	2,549	888	18,336	1.12	10,037	6	922	2,504	3,027	326	54,268	2,541
Sri Lanka	130	72	136	0.19	99	2	..	..	95	189	3,989	1,773
Sudan	..	..	..	0.30	0	1	..	..	..	..	..	..
Swaziland	..	..	..	..	2	0	0	106	..	..	..	..
Sweden	5,977	..	10,012	3.86	18,078	16	3,964	1,618	2,512	448	..	9,864
Switzerland	3,508	2,366	8,749	2.94	29,261	22	..	..	1,643	455	9,393	4,479
Syrian Arab Republic	..	..	77	..	29	1	..	20	..	..	..	..
Tajikistan	..	..	..	0.10	..	..	1	0	32	2	63	277
Tanzania	..	..	107	..	1	0	0	1	..	..	..	..
Thailand	287	208	1,249	0.25	26,953	27	46	2,046	891	5,449	22,612	9,241
Timor-Leste	..	..	..	..	..	..	..	..	..	..	..	..
Togo	..	..	..	..	0	0	0	3	..	..	..	..
Trinidad and Tobago	..	..	..	0.12	30	1	..	..	..	205	..	..
Tunisia	1,450	41	571	1.03	344	4	14	11	56	282	..	..
Turkey	469	37	7,815	0.67	258	..	0	531	465	383	48,981	3,096
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	..	..	93	1.25	60	34	2	11	..	..	..	..
Ukraine	..	..	2,105	1.07	926	3	32	428	3,535	2,057	13,184	3,182
United Arab Emirates	..	..	229	..	10	..	..	..	..	..	..	..
United Kingdom	..	..	45,572	1.75	115,464	34	13,588	9,962	17,488	10,500	24,163	4,529
United States	4,605	..	205,320	2.68	219,179	30	62,378	26,433	202,776	187,957	224,269	28,359
Uruguay	366	50	204	0.26	36	3	0	7	37	514	5,626	8,189
Uzbekistan	..	..	157	..	..	..	..	..	264	180	349	611
Venezuela, RB	..	..	534	0.25	80	2	0	257	..	..	..	..
Vietnam	115	..	221	0.19	869	5	..	..	..	..	..	..
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	..	..	..	..	3	5	149	9	..	..	..	..
Zambia	..	..	..	0.03	4	2	..	0	..	..	..	..
Zimbabwe	..	..	..	..	8	2	..	..	..	..	..	..
World	.. w	.. w	708,086 s	2.10 w	1,418,509 s	21 w	135,278 s	148,518 s	915,598 s	553,167 s	1,584,746 s	420,729 s
Low income	..	..	16,711	0.57	..	6	334	1,163	364	267	1,157	2,884
Middle income	803	..	112,719	0.85	478,215	20	3,743	22,719	132,662	137,246	898,687	200,348
Lower middle income	500	..	53,423	1.03	272,746	24	2,154	11,140	99,752	97,897	634,878	93,599
Upper middle income	1,285	372	59,296	0.72	143,179	16	1,589	11,579	32,910	39,349	263,809	106,749
Low & middle income	..	..	129,430	0.83	..	20	4,077	23,882	133,026	137,513	899,844	203,232
East Asia & Pacific	704	..	44,064	1.34	..	33	297	10,959	94,397	91,491	611,261	82,950
Europe & Central Asia	2,019	371	39,975	0.87	31,160	9	1,129	5,998	33,133	17,286	136,989	30,048
Latin America & Carib.	392	256	20,045	0.59	48,368	12	753	4,146	4,873	20,916	151,155	58,115
Middle East & N. Africa	..	..	6,354	..	1,263	5	306	247	623	2,266	17,607	3,369
South Asia	..	..	15,429	0.59	..	4	175	1,060	6,795	11,752	8,319	5,117
Sub-Saharan Africa	..	..	3,563	..	..	..	1,417	1,471	16	5,554	439	28,750
High income	3,731	..	578,656	2.38	1,322,714	21	131,201	124,636	782,572	415,654	684,902	217,497
Euro area	2,734	..	158,066	2.02	428,463	16	23,049	44,309	58,359	14,865	148,179	43,724

a. Original information was provided by the World Intellectual Property Organization (WIPO). The International Bureau of WIPO assumes no responsibility with respect to the transformation of these data. b. Excludes applications filed under the auspices of the European Patent Office (33,410 by residents, 95,303 by nonresidents) and the Eurasian Patent Organization (1,940 by nonresidents). c. Excludes applications filed under the auspices of the EU Office for Harmonization in the Internal Market (64,798 by nonresidents). d. Data are for the most recent year available. e. Includes Luxembourg and the Netherlands.

About the data

Technological innovation, often fueled by government-led research and development (R&D), has been the driving force for industrial growth. The best opportunities to improve living standards, including new ways of reducing poverty, will come from science and technology. Science is playing a growing economic role: countries able to access, generate, and apply scientific knowledge will have a competitive edge. And there is greater appreciation of the need for high-quality scientific input into public policy issues such as regional and global environmental concerns.

Science and technology cover a range of issues too broad and complex to be quantified by a single set of indicators, but those in the table shed light on countries' technology base.

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

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

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

The method used for determining a country's high-technology exports was developed by the Organisation for Economic Co-operation and Development in collaboration with Eurostat. Termed the "product approach" to distinguish it from a "sectoral approach," the method is based on R&D intensity (R&D expenditure divided by total sales) for groups of products from six countries (Germany, Italy, Japan, the Netherlands, Sweden, and the United States). Because industrial sectors specializing in a few high-technology products may also produce many low-technology products, the product approach is

more appropriate than the sectoral approach for analyzing international trade. This method takes only R&D intensity into account, but other characteristics of high technology are also important, such as know-how, scientific and technical personnel, and technology embodied in patents. Considering these characteristics would yield a different list. (See Hatzichronoglou 1997 for further details.) Moreover, the R&D for high-technology exports may not have occurred in the reporting country.

A patent is an exclusive right granted for an invention (a product or process that provides a new way of doing something or a new technical solution to a problem). It must be of practical use and display a characteristic unknown in the body of existing knowledge in its technical field. A patent grants protection for the invention to the owner of the patent for a specified period, generally 20 years.

Most countries have systems to protect patentable inventions. The Patent Cooperation Treaty provides a system for filing patent applications. It consists of an international phase followed by a national or regional phase. An applicant files an international application and designates the countries in which patent protection is sought (since 2004 all eligible countries are automatically designated in every application under the treaty). The application is searched, published, and, optionally, an international preliminary examination is conducted. In the national (or regional) phase the applicant requests national processing of the application, pays additional fees, and initiates the national search and granting procedure. International applications under the treaty provide for a national patent grant only—there is no international patent. The national phase filing represents the applicant's seeking of patent protection for a given territory, whereas international filings, while they represent a legal right, do not accurately reflect where patent protection is eventually sought. Resident filings are those from residents of the country or region concerned. Nonresident filings are from applicants outside the country or region. For regional offices such as the European Patent Office, applications from residents of any member state of the regional patent convention are considered a resident filing. Some offices (notably the U.S. Patent and Trademark Office) use the residence of the inventor rather than the applicant to classify resident and nonresident filings. A trademark protects its owner by ensuring exclusive right to use it to identify goods or services or to authorize another to use it in return for payment. The period of protection varies, but a trademark can be renewed indefinitely for a fee. Trademarks help consumers identify a product or service whose nature and quality, indicated by its unique trademark, meet their needs.

Definitions

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

Data sources

Data on R&D are provided by the UNESCO Institute for Statistics. Data on scientific and technical journal articles are from the U.S. National Science Foundation's *Science and Engineering Indicators 2008*. Data on high-technology exports are from the United Nations Statistics Division's Commodity Trade (Comtrade) database. Data on royalty and license fees are from the International Monetary Fund's *Balance of Payments Statistics Yearbook*. Data on patents and trademarks are from the World Intellectual Property Organization's *WIPO Patent Report: Statistics on Worldwide Patent Activity* (2007 edition) and www.wipo.int.