



Chapter 10

What Should Governments Do?

THE OVERVIEW PROPOSED THAT WE LOOK at development in a new way: that we look at the knowledge gaps between and within countries and at the information problems that undermine markets and hinder government action. These gaps and these failures are especially severe in poorer countries and work especially to the detriment of the poor. Subsequent chapters examined these problems in detail and considered some of the many ways in which countries around the world are addressing them. The knowledge perspective has reinforced some well-known lessons, such as the crucial importance of universal education, and focused fresh attention on other needs, such as tertiary education. It has also cast into sharp relief the need to recognize and compensate for information problems and the resulting market failures.

The general principle that institutions should act on their comparative strengths suggests that governments should focus on those responsibilities that the private sector is unlikely to shoulder, or to shoulder well. That is, governments should concentrate on activities whose spillover effects (externalities) are especially important, that have clear public good characteristics, or that address distributional concerns. As we have seen throughout the Report, public action is important in narrowing knowledge gaps and addressing information problems. This final chapter sketches a strategy for public action based on the Report's three main conclusions.

First, narrowing the gaps in know-how that separate poor countries from rich—and poor people from non-poor—can increase economic growth in developing countries, raise incomes, reduce environmental degradation, and generally improve the quality of life, especially for the

poor. The first section of this chapter suggests how governments can address these issues.

Second, even if we could magically close all knowledge gaps, developing countries would still be disadvantaged by information failures. Therefore, addressing information problems—such as a banker's lack of knowledge about a poor borrower's creditworthiness, or a consumer's lack of knowledge about the quality of goods in the marketplace—can improve the functioning of market and nonmarket institutions, making it easier for people to partake in the economy and improve their lives. The second section of this chapter summarizes how governments can address these information problems.

Third, no matter what governments do to narrow knowledge gaps and improve information flows, these problems can never be eliminated. Policies work best when they are based on the recognition that knowledge is not freely available to all, and that many markets for the things that matter most to our well-being are far from perfect. The Report therefore concludes with a discussion of policymaking amid persistent knowledge gaps and information failures.

Formulate a national strategy to narrow knowledge gaps

The opportunities for countries and companies to move to better practice—for narrowing the knowledge gaps within and between countries—are nothing short of stupendous, and they apply not just to industry but across the entire economy. Grasping those opportunities requires openness to outside ideas. It also requires the right incentives and institutions. And it requires strong local efforts to acquire,

adapt, and use knowledge effectively. Strategies to close knowledge gaps should focus on three issues:

- What policies foster the acquisition of knowledge?
- What policies enhance a country's learning capacities?
- What policies improve the effectiveness of communications and reduce the costs?

As countries search for the answers, competing priorities will vie for attention and resources, often posing explicit dilemmas and tradeoffs: Should countries acquire knowledge abroad or create it at home? Should education systems extend basic literacy at the expense of investment in tertiary education? Often the issue is balance, and the balance shifts with a country's stage of development and its circumstances.

Tap global knowledge and create local knowledge

Acquiring knowledge involves a combination of tapping knowledge from abroad and creating knowledge at home. Because no country can create all the knowledge it needs, learning from others is a critical component of a successful strategy for all countries, even the more technologically advanced. Even low-income economies must build the capacity to adapt imported knowledge and to create knowledge that cannot be obtained internationally. The precise approach will vary according to a country's situation. Some newly industrializing economies in Asia have stepped up their investment in original research and development, even as they continue to learn from abroad. Some low-income economies find that they learn most effectively from the middle-income economies. And some economies in transition from central planning, given their already high educational attainment, continue to pursue advanced basic research, even as they catch up on manufacturing techniques.

To build their knowledge base, developing countries should explore all the means available of acquiring knowledge from abroad and creating it locally. They should:

- Find new and better ways of producing goods and services through trade—ever more important as the structure of trade shifts from commodities and simple manufactured goods to increasingly knowledge-intensive products
- Work with foreign direct investors that are leaders in innovation, spurring domestic producers to try to match best practice and to tap potential knowledge spillovers
- Get access to new proprietary technical knowledge through technology licensing
- Stimulate domestic innovation and get access to global knowledge through establishing laws and institutions for the protection of intellectual property rights

- Attract back home talented people who have studied or worked abroad, and
- Promote domestic R&D to make it more responsive to the market.

Trade. Openness to trade is essential. One of the main reasons the East Asian economies were able to grow so fast for so long was their ability to build strong links with world markets and to draw upon the technology flowing through those markets. They did this with policies ranging from trade liberalization to export promotion, some of which offset protectionist biases favoring domestic industries. Export promotion and diversification are also valuable, since domestic producers, to be competitive internationally, must meet international standards and adopt up-to-date technology. Exporters also receive much technical information from buyers and suppliers, and importers get access to knowledge embodied in new goods and services. But for trade to expand, countries also need good standards, measurement, testing, and quality control systems, so that domestic products and services can compete in the global market. These standards need not be set by government, as we saw with the ISO 9000 certification standards described in Chapter 2.

Foreign direct investment. Countries with more open trade regimes are likely to attract competitive, outward-oriented foreign investment, which brings efficient technology and management into the economy. Hong Kong (China), Indonesia, Malaysia, Singapore, Taiwan (China), and Thailand have been particularly welcoming, and their growth spurts were closely linked to surges in foreign direct investment. In contrast, Sub-Saharan Africa has been less open to foreign trade and investment. Partly as a result, the region has attracted only about 1 percent of worldwide foreign direct investment to developing countries, and it has lagged behind other regions in acquiring knowledge and in economic growth. To attract foreign investment, developing countries also need appropriate infrastructure—both “hard” infrastructure, such as transport and communications, and “soft,” institutional infrastructure, such as effective legal, financial, and educational systems.

Technology licensing. Technology licensing has become increasingly important, since new knowledge is expanding rapidly. Governments can facilitate the inflow of such knowledge by not restricting access to technology licensing or restricting the terms of such contracts. Instead, by encouraging the creation of domestic information centers, where local firms can obtain information on foreign technology, countries can reduce their firms' disadvantages in licensing negotiations.

Intellectual property rights. As the world moves toward a knowledge-based economy, producers of knowledge are seeking stronger enforcement of intellectual property

rights—and that has mixed effects on the production of new knowledge and the closing of knowledge gaps. Well-designed intellectual property rights regimes try to balance the private incentives for the creation of knowledge against the social benefits from its dissemination. This balance is difficult to achieve because most of the producers of knowledge reside in industrial countries. But as Chapter 2 showed, adequate intellectual property rights are necessary if countries are to get access to foreign technology through foreign direct investment and technology transfers. They are also important in stimulating the domestic creation of knowledge, which in many developing countries will grow as they strengthen their human and technological capabilities.

How should developing countries respond to the trend toward strengthened intellectual property rights? The answer is twofold. First, they should negotiate internationally for intellectual property rights regimes that give adequate consideration to their urgent need to narrow the knowledge gap—while maintaining incentives for knowledge producers everywhere to continue their creative activity. Furthermore, as new technological developments bring in new issues for negotiation—biotechnology and information technologies, for example—developing countries will need to keep up with these trends and represent their own interests. Second, developing countries should establish and enforce intellectual property rights standards that comply with international practice, because adhering to those standards is necessary to get access to foreign technology through foreign direct investment and technology transfer—and to get access to foreign markets through trade.

Developing-country governments can also continue efforts to negotiate for definitions of intellectual property rights that recognize the value of indigenous knowledge and reward those who create and preserve it. For example, in 1990 world sales of modern medicines derived from plants discovered by indigenous peoples were estimated at \$43 billion. Yet only a tiny fraction of this went to the people and groups who had preserved the traditional knowledge of these medicinal plants or to the countries where the plants were found. Developing countries thus need to increase their capability to negotiate better terms with foreign firms who would profit from this knowledge. To do so, they must participate actively in evolving international agreements on intellectual property rights and biodiversity.

People. A final important channel for the acquisition of knowledge from abroad is expatriate nationals. Today more than a million students from developing countries are enrolled in higher education programs abroad, and many will stay where they have studied. Many of the best-trained at home, finding few opportunities to use their new knowledge in their own countries, will also end up emigrating.

This continuing brain drain has led some developing economies to establish programs to encourage expatriates to return. Korea and Taiwan, China, offered well-trained expatriates good job opportunities and strong financial and tax incentives to return home to teach or work. China, India, and Taiwan, China, have tapped the expertise of their overseas nationals without bringing them back, by offering special opportunities for trade and investment.

Are all modes of knowledge transfer equally conducive to domestic learning? Probably not. The most appropriate form of know-how is that which matches the sophistication of the technology with domestic capabilities. Licensing coupled with a strong domestic technological effort may be appropriate for firms in a newly industrializing economy, whereas foreign direct investment may be a more suitable approach for a lower-income economy. The East Asian economies drew on the full range of possibilities, the precise mix differing with the base of capabilities and the technological vision of government. Their experience shows that there is more than one solution, and that the most effective strategies make the most of all available channels for tapping global knowledge as well as creating it locally.

Creating knowledge at home. Developing countries, in addition to taking advantage of the large global stock of knowledge, should develop the capability to create knowledge at home. We saw in the Overview how agricultural knowledge had to be adapted to local conditions for the green revolution to take hold. Even in manufacturing, knowledge from other countries must often be adapted to differences in climate, consumer tastes, and availability of complementary inputs. And some types of knowledge must be built from the ground up. Examples include knowledge of the local environment and social customs, often vital for effective policy. For these and other reasons, a balanced strategy for narrowing knowledge gaps must include the capacity to create locally the knowledge that cannot be obtained from abroad.

Governments can encourage research either directly through public R&D or indirectly through incentives for private R&D. Direct government R&D includes that financed at universities, government research institutes, science parks, and research-oriented graduate schools. Indirect support for R&D includes preferential finance, tax concessions, matching grants, and the promotion of national R&D projects. For most developing countries, however, local research should focus on essential needs. And maintaining core strengths in basic science and technology may be necessary not only to maintain access to the global pool of knowledge but also to adapt that knowledge to local uses.

Many public research institutions lack either information on the needs of the productive sector or incentives to

respond to those needs. That is why Brazil, China, India, Korea, and Mexico have launched vast programs to reform their public R&D laboratories and focus them on the needs of the productive sector, as Chapter 2 discussed. The measures include restructuring the labs so they behave like corporations, capping the government contribution to their budgets to provide incentives for researchers to seek corporate sponsorship, improving the pay and recognition of researchers, and giving firms direct incentives to place research contracts with them.

Only a few developing economies—Korea, Singapore, and Taiwan, China, among them—have provided the right incentives for significant private R&D, and allowed their publicly funded R&D institutes to focus on more basic precommercial research. But continuing strong government support is essential in some other crucial areas, such as research to adapt international advances in agriculture and health to a country's circumstances.

Increase people's capabilities to absorb knowledge

An effective strategy to narrow knowledge gaps must include measures to increase people's capacity to use knowledge. Ensuring universal access to basic education is the crucial first step, but it is not enough. Countries must also ensure that they have enough highly trained personnel, including engineers and scientists. This requires strong secondary schools and universities, especially for engineering and science. And it means providing opportunities for lifelong learning after students complete their formal education. To meet these needs with a limited budget, all countries, especially the poorest, must obtain the best possible return for their educational dollar.

To address these problems, governments should consider the following possibilities:

- Decentralize education to give more power to those with the most information about educational needs and how to meet them: students, parents, teachers, and local school administrators
- Focus public resources on those who need them most, for example by targeting subsidies to the poor and to girls
- Provide support for higher education, especially in the sciences and engineering, while ensuring access for the poor, and
- Use new learning technologies to improve the quality of education and to broaden access.

Decentralize to give power to those with the most information. Achieving educational goals often does not mean spending more, but rather improving the quality and delivery of education. Although increasing spending to reduce class size, for example, would almost surely improve educational quality, equivalent improvements are often possible

even within existing budgets, by increasing efficiency and reforming the way education is provided.

Education systems confront complex information problems, and addressing these problems can help improve educational quality. One way to do this is to move from a top-down to a more client-driven approach, placing power in the hands of those closest to the education process and thus with the most information. As Chapter 3 showed, the many experiments under way throughout the developing world offer a great opportunity to learn what works and what does not. For example, in El Salvador, teacher absenteeism has declined in community-managed schools, even in the poorest communities, because parents closely monitor teacher performance.

Focus public resources on those who need them most. Despite the high private returns to education, many people cannot take advantage of educational opportunities because they cannot pay the cost. Education requires considerable private resources, even for education that is "free" in the sense that no fees are charged. Time spent in school is time not spent on other tasks: working for a wage or in a family enterprise, or caring for younger siblings, a task that often falls to girls. For the poor, these opportunity costs may make education unaffordable, especially when access to credit is lacking. Governments can alleviate these problems through a variety of mechanisms: higher subsidies to schools in poorer areas, direct stipends for disadvantaged students (like those recently provided to girls in Bangladesh), and student loans for higher education.

Support tertiary education, especially in engineering and the sciences. Many low-income economies have programs of tertiary education that prepare workers for scarce civil service positions but do not improve technical skills. Often it is more effective to focus public resources on the preparation of engineers and scientists capable of absorbing and adapting advanced technology. Korea achieved universal primary enrollment before its economic takeoff, and it moved quickly to expand tertiary education and train its own scientists and engineers. Today its enrollment shares in mathematics, computer science, and engineering are similar to those in many OECD countries. Strengthening tertiary education need not require more government spending, especially in the long run. Because advanced training confers significant benefits on those who receive it, governments can often increase tuition charges while still ensuring access for low-income students, for example through expanded student loan programs.

The transition economies face special problems. They need to improve the content, delivery, and funding of education to respond to market demands and tight budgets, especially in science and engineering. Some of the transition economies had first-rate scientific and engineering establishments, now threatened by underfunding and a brain

drain. Maintaining quality and redirecting research and teaching to reflect the new reality will prove a challenge.

Use new learning technologies to improve quality and broaden access. New technology for teacher training and distance education has greatly increased the opportunities and reduced the cost of adult learning outside traditional campus settings. In China half the 92,000 students who graduate with degrees in engineering and technology each year are taught through distance learning provided by traditional universities. The African Virtual University is trying to increase university enrollments and improve the quality and relevance of instruction in business, science, and engineering throughout the Sub-Saharan region. So far it has installed 27 satellite receiver terminals, and to compensate for the dearth of scientific journals in African universities it has developed a digital library.

In sum, an effective education system is crucial to increasing people's capacity to absorb knowledge. Reforming education systems to achieve this goal involves more than simply spending more from the public purse. Governments must apply their resources to the array of institutions and activities associated with lifelong learning: preschool programs, basic formal schooling, higher formal schooling, formal training programs, on-the-job learning, information dissemination programs, and informal education. The most effective public actions will be those that focus directly on the information problems that underlie market failures—or that address distributional concerns.

Build the capacity for people to communicate

The new information and communications technologies let people share knowledge today at an ever more affordable cost. The potential is thus great for developing countries to take advantage of the new technologies to upgrade education systems, improve policy formation and execution, and widen the range of new opportunities for businesses. To realize this potential, countries need to make the effective use of information technologies a key thrust of their national development strategies, as Malaysia has done. Countries should:

- Ensure competition and appropriate regulation, to unleash private initiative to provide communications infrastructure and services and expand the use of new technologies, and
- Ensure that services are extended to remote areas and the poor, by moving away from traditional cross-subsidy schemes, and working instead in partnership with the private sector or end-users to determine the required government support.

Ensure competition, private provision, and regulation. Chile, Ghana, the Philippines, and dozens of other devel-

oping countries are privatizing their telecommunications industries. Their experience shows that access to services expands much faster in privatized markets where competition prevails. Governments should speed their efforts to privatize and, more important, to introduce competition along with privatization to avoid private monopolies replacing public ones. For example, competition among international suppliers of telecommunications services can ensure that a large part of the gains from technological progress in the communications industry accrues to the countries hosting those international suppliers. But all too often, developing countries rely on one international supplier.

Access also expands rapidly when government encourages the emergence of new private providers, particularly in value-added services and cellular phones. Sri Lanka licensed four private cellular companies and has seen access explode. Malaysia and the Philippines have about one cellular phone for every two traditional wire-based lines, which is five times the ratio for France or Belgium. Cellular phones are proliferating in many other developing countries as consumers see them as a good substitute for hard-to-get or poorly working traditional telephone service.

Although competition is increasing in telecommunications, it is still far from perfect. Even the United States, with one of the most competitive telecommunications industries in the world, does not yet have enough competition to put regulation aside. Developing countries need strong regulatory authorities, not to choke competition but to enhance it. In Poland, poor regulation so thwarted the benefits of liberalization that of the 200 or so new telecommunications licenses awarded since 1990, only 12 were in use in 1996. The reasons included unfavorable terms for revenue sharing between new licensees and the dominant state operator, limited access to the state operator's network, slow negotiation of agreements for interconnection with that network, and prohibitions against new licensees setting up their own transmission facilities. An important new role for regulation is to ensure that a dominant operator—be it public or private—does not engage in anticompetitive practices, for example by withholding essential technical and commercial information needed to price interconnections.

Regulation will take different forms in countries at different stages of development and with different needs, but there is much to learn from Chile, Ghana, Poland, and the United States. One task of the regulatory authority is to help competing operators reach a reasonable agreement when they cannot do so themselves. For instance, Guatemala requires the regulator to choose among the parties' final offers for connectivity charges. If one party stubbornly maintains an unreasonable position, the regulator is likely to choose the other's price. (If a country's regulatory skills are scarce, this task can be outsourced.) State-

owned operators must also be deprived of the sovereign immunity that protects them from legal action.

Monopoly power is a concern not only in telephone service but in the mass media as well. Some countries are troubled about concentration of ownership of television stations, or of print and broadcast media more broadly. Another worry is that privatizing state-controlled media may curtail cultural diversity. Providers who compete for a mass market tend to offer similar products, leaving those with more specialized interests lacking adequate service. (This is one of the reasons behind public radio and television.) Fortunately the new information and communications technologies can enhance diversity: cable and satellite television can deliver far more stations at low cost than conventional broadcasting ever could. One private company, for example, is about to launch three satellites, one each to cover Africa, Latin America, and Asia, to beam a variety of world-class programs to low-income consumers.

Provide access to rural areas and the poor. In many developing countries entrepreneurs have brought telephone access even to the poorest. Senegal in 1995 had more than 2,000 privately owned “telecenters,” each with a pay phone and a fax machine; this was four times the number just two years before. In many instances, however, providing access to the rural poor requires government support. South Africa’s multipurpose community information centers suggest a model. Its Universal Service Agency, established in 1996, provides each center with two years’ worth of startup costs, plus field workers to offer technical support. A 1997 survey of these centers found that 67 percent had a telephone, 31 percent a computer, and 8 percent Internet access.

As Chile’s auctions of telephone subsidies show, market-like mechanisms can determine the extent of required government support and help allocate public funding. In 1994 the government established a special fund to award subsidies competitively to projects providing telephone service to small towns and remote areas. The fund is achieving its objectives in a cost-effective way because many private providers have requested less subsidy than assumed—and in many cases no subsidy at all. If the fund’s performance is maintained, 97 percent of Chileans will have access to basic telecommunications services by the end of 1998.

Address information problems to foster markets

A sound national knowledge strategy requires that governments seek ways to improve information flows that make a market economy function better. But governments, like every actor in every economy, are themselves subject to information failure. So policymakers must consider the strengths and limits of government capabilities relative to

those of the market. This echoes one of the key findings of *World Development Report 1997: The State in a Changing World*, namely, that when deciding the scope and nature of public action, policymakers must balance the market failure they seek to address against the government’s capacity to address it.

Part Two of this Report spelled out the need to address information problems in finance, the environment, and assistance to the poor—three areas of special relevance to developing countries. Here we consider three types of action that cut across these and all other parts of the economy, and the role of government in each:

- Provide and elicit information to verify quality
- Monitor and enforce performance to support market transactions, and
- Ensure two-way information flows between citizens (especially the poor) and government.

Advanced economies tend to have much better developed mechanisms for each of these actions than do developing ones. As economies grow more complex, requiring sophisticated transactions over long distances, traditional information mechanisms such as local reputation to establish quality or reliability become inadequate. The lack of alternative institutions can lead to serious inefficiencies and even to the breakdown of markets. Governments thus have to ensure that information crucial to markets but otherwise unavailable is collected and shared. They must decide case by case whether to address these problems directly—for example, by inspecting products and certifying quality—or to create mechanisms for other players, such as firms, voluntary associations, and citizen groups, to address them.

Provide and elicit information

For some products and services, markets alone are sufficient. A person can easily decide whether a haircut is worth the price, and the economic loss from a bad haircut is small, temporary, and mostly confined to the customer. Sometimes, however, buyers cannot readily determine quality, and the damage from a wrong purchase may be lasting or widespread. That is true, for example, when buyers cannot determine the wholesomeness of food, the soundness of banks, or the profitability of a company offering shares on the stock market. In such cases governments can greatly improve market outcomes by providing and eliciting information that would not otherwise be available. They can:

- Establish product standards to ensure, for example, the quality of food and promote exports
- Make information available and set standards for services such as education
- Set standards for accounting

- Establish disclosure requirements for banks and firms
- Create self-revelation mechanisms—systems of incentives that lead firms and individuals to reveal information they would otherwise keep hidden, and
- Ensure the transparency of public institutions.

There are compelling reasons for governments to be active in these areas. Often the information in question is a public good or has important spillover effects, so that the private sector by itself will not invest enough in collecting and disseminating the information. As in other situations, governments should focus their limited resources in areas where the market is least likely to provide adequate solutions, and where government action has the greatest potential to improve outcomes.

Establish standards for product quality. In most countries with weak institutions and poorly developed markets, only the government has the authority and the credibility to define and enforce standards, so that quality can be recognized and rewarded in the market. This Report has presented many examples of such direct government action. In India the National Dairy Development Board defined and monitored standards in the milk market, to the benefit of both consumers and producers (Chapter 5). Government action can also ensure the quality of a wide range of exports, enhancing the ability of firms to compete in the global marketplace, as Malaysia has done with its promotion of international quality standards.

In other cases government can encourage private quality standards instead of trying to develop and impose its own. An example is the ISO 9000 standards of product quality, developed and publicized by the private sector. These standards provide buyers with important information about the quality controls in place during production. Adherence to such standards is particularly important for developing-country exporters seeking to establish a reputation for quality in competitive import markets. Because the private sector has already developed the standards, governments need only publicize them and encourage exporters to use them. Similarly, private credit rating agencies can complement government supervision. Drawing on publicly provided information, they perform an important service by processing it and disseminating their findings.

Make information about educational options more accessible. How do parents know the quality of instruction being offered by schools? Governments can help by requiring schools and training programs to disclose overall test scores and summaries of placement records of their students. They can also accredit schools directly, after inspecting and evaluating them, and they can release information about school performance. Sometimes governments can encourage private voluntary accreditation agencies to provide the information instead, as in the Philippines. Many countries rely on a combination, using

mandatory government accreditation for basic education and voluntary private accreditation for higher levels. In the United States, for example, university accreditation is handled almost entirely by private agencies.

Set standards for accounting. Accounting standards are crucial for investors to assess a firm's financial history and the breakdown of its financial assets and liabilities (the balance sheet), revenues and expenses (the income statement), and liquidity (the cash flow statement). If governments fail to establish standards or require disclosure of this information by listed firms, equity markets will remain weak, and firms must rely more heavily on loans and direct financing. This impedes the efficient allocation of capital and limits the possibilities for distributing risk. The result will be higher debt-equity ratios, making firms and countries highly vulnerable to external shocks.

Many low-income economies have weak accounting systems, often with few trained accountants and in some cases no uniform system of accounts. In such settings equity markets are apt to be nonexistent or very small, dominated by foreign players who have better access to information. As a result, and despite rapid growth in equity markets over the past decade, banks still account for the lion's share of the financial sector in most developing countries. Improvements in accounting standards are important for the efficiency of the financial system—and for growth. Studies show that countries with sound accounting systems—for example, with standards that produce comprehensive and comparable corporate financial statements—have more-developed financial intermediaries and faster growth. One study estimated that raising accounting standards in Argentina in the early 1990s to the average then prevailing in the OECD countries would have boosted the country's GDP growth rate by 0.6 percentage point a year.

Establish standards and disclosure requirements for banks and firms. Setting standards and disclosure requirements for banks and other financial institutions is especially important—and difficult. Because a bank's assets consist mainly of the promises of borrowers to repay loans, accurate and consistent information on the status of those loans is critical to assessing a bank's viability. Without this information, it can be difficult to gauge the health of the entire economy. For example, in Mexico before the 1994 crisis, banks reported overdue interest payments as nonperforming but continued to claim the loan itself as an asset, in contrast with the practice in the United States. When Mexican borrowers began to miss payments, the Mexican accounting system portrayed the situation as much better than U.S. rules would have revealed. The Mexican system, since reformed, is now more consistent with U.S. practice.

Banks play a key role in addressing the information problems involved in assessing the performance of firms,

through monitoring their bank accounts and from past dealings. But who watches the watchdogs? It falls to the government to determine on behalf of the public the quality of the banks themselves. To do this, governments must establish consistent and rigorous accounting standards that require banks to reveal their assets, liabilities, and loan-loss provisions. But disclosure is not enough—bank regulators need to enforce standards as well.

Establishing standards and disclosure requirements for firms requires fewer government resources than does direct government action to obtain and disseminate the same information. Disclosure thus can be required even when governments face tight budgetary situations. But to be effective, disclosure requirements have to be backed by effective legal enforcement. And if markets are to rely on the information provided—whether voluntary or mandatory—they must have confidence in its accuracy. This requires effective enforcement of strong laws against fraud.

Create self-revelation mechanisms. In most of the approaches just described, information is ferreted out by an entity one step removed from the source. This entity may be the government or a third party, such as a private accreditation agency for schools or a credit rating agency for firms. In recent years some governments have discovered a promising alternative: sometimes, by creating the right mechanisms and incentives, they can encourage firms and individuals to reveal information that they would otherwise have kept hidden. These are called *self-revelation mechanisms*.

One such self-revelation approach uses auctions to induce producers with complex cost structures to reveal their true costs. Producers sometimes exaggerate the costs of providing a service, whether telecommunications or pollution abatement. Governments could counter this by launching extensive investigations into company finances or production processes. A less intrusive, less costly, and more effective approach uses market mechanisms to encourage producers to reveal this information themselves. Examples include the auction of telecommunications subsidies in Chile (Chapter 4) and the system of tradable pollution permits in the United States (Chapter 7).

Self-revelation has also been used to ensure that social benefits go to those who need them most. In many developing countries, food subsidies go to consumers at all income levels, draining scarce government funds. In Tunisia, household consumption surveys were used to design and market subsidized foodstuffs that appealed to the poor but that wealthier households snubbed. Public works programs have used similar self-selection mechanisms. A recent World Bank-supported project in Argentina offered jobs on community projects at a low wage, so that only the neediest were likely to apply (Chapter 8).

Ensure the transparency of public institutions. Public institutions, including governments and multilateral insti-

tutions, have a special obligation to disclose information about their operations—that is, to be transparent. Not only can a lack of transparency lead to corruption, weakening the state; it can also be used to hide mistakes and incompetence, limiting the ability of citizens to monitor the government and to choose effective leaders. Lack of transparency can generate uncertainty about future government policies, and this uncertainty can hurt the business environment, especially the environment for investing. And lack of transparency contributes to a lack of trust in government and to a lack of participation and ownership, all recognized as vital to the success of development.

A variety of concrete policies can help foster transparency. Involving local communities in monitoring public services improves their provision and checks abuses of local power. Removing barriers to competition reduces opportunities for corruption, such as those that arise with complex cross-subsidy schemes and special privileges associated with monopolies. Given the value of transparency, many governments have imposed disclosure requirements on themselves; an example is the Freedom of Information Act in the United States. Perhaps the most important safeguards of transparency are a literate citizenry and vigilant media. These not only strengthen public administration, for example by improving environmental monitoring, but also ensure that government acts in a timely manner to avert grave threats, such as famine.

Monitor and enforce performance

Ensuring that firms, banks, and individuals live up to their promises is a problem in all societies but tends to be especially severe in the weak institutional environments that characterize many developing countries. Three imperatives for policy are to:

- Develop a strong legal and judicial system, but
- Create incentives to minimize recourse to it, and
- Explore innovative alternative approaches to enforcement.

Develop a strong legal and judicial system. Typically the problem is not the absence of laws but the lack of credible enforcement. Fixing slow and corrupt courts is thus critical for successful economic reform. But even when the judicial system works well, litigation is costly. Thus the most effective arrangements create incentives for good behavior, so that recourse to the courts underpins the system but is regarded as a last resort. Areas in which a sound legal code supports monitoring and enforcement, and where information disclosure can minimize the need to rely on the courts, include bankruptcy, contract enforcement, bank regulation, and antifraud measures.

Because each party to a contract lacks full information about the other's intent and ability to comply, the legal

framework must establish and enforce damages that may be collected for breach of contract. Here the balance is crucial. If damages are too difficult to collect, there will be too few incentives to fulfill contracts; if too easy, one party may falsely claim breach of contract in hopes of obtaining a windfall. The difference between the penalties under civil law and the harsher punishments of criminal law reflect this need for balance: persons proven guilty of deliberate fraud are punished more severely than those who proved unable to fulfill a contract despite a good-faith effort.

The interactions between sound laws, an effective judiciary, and self-enforcing arrangements are subtle and complex. For example, lack of information about a borrower's intention to repay can be overcome with collateral. But for collateral to be effective, property rights and land registration must be clearly established. Even where these exist, collateral will facilitate credit markets only if borrowers who default can be forced to relinquish collateral promptly. Similarly, firms are more likely to repay loans if a bankruptcy system gives creditors the means to seize the assets of a firm in default.

Create incentives to minimize recourse to the courts. As in quality verification, government and the private sector can act in complementary ways to improve monitoring and enforcement, if the government establishes the right incentives. For instance, insurance companies have a strong incentive to see that the firms they insure against fire do everything reasonably possible to prevent fires. So they typically enforce safety codes far more effectively than governments do. Governments can help by establishing liability laws so that real estate owners have incentives to acquire insurance in the first place. Governments must also take care that their actions do not undermine incentives for private sector enforcement. For instance, firms that provide earthquake insurance have an incentive to make sure that buildings they insure are built to specified standards. But if the government provides disaster-relief assistance to repair buildings every time an earthquake strikes, regardless of whether or not structures complied with the building code, that incentive will evaporate. In this case government has to keep from acting too much.

A similar relationship between government-set incentives and private action is apparent in bank regulation. The value of a bank as an ongoing concern (its franchise value) can prod bank owners to act prudently. At their best, these incentives do more to prevent overly risky lending than do capital adequacy standards. But sometimes, inadequate regulation combines with government policy in ways that erode franchise value unexpectedly. For example, in the United States in the 1970s and 1980s, savings and loan institutions recycled short-term deposits into large long-term loans. When interest rates rose in 1979,

depositors took their money elsewhere, leaving the savings and loans insolvent. As their franchise values declined, these institutions, encouraged by deregulation, engaged in riskier lending, which culminated in their widespread failure later in the 1980s. That is why financial liberalization, which gives banks greater freedom to take on risk, coupled with low franchise values is such a dangerous cocktail.

Explore innovative alternatives. Innovative measures to address information problems and thereby improve monitoring and enforcement have recently emerged in markets ranging from finance to consumer goods. Underlying each of the examples discussed here is the idea that institutional arrangements—often but not always initiated by the government—can make it easier for private or community groups to monitor and enforce performance.

Requiring firms to disclose how much pollution they create often induces them to pollute less. The pressure works through a variety of channels, as it does in Indonesia's PROPER program, which discloses firms' compliance with water pollution regulations (Chapter 7). Armed with easy-to-understand compliance ratings of neighboring factories, local communities can pressure those factories to cut pollution. Moreover, because environmental reputation influences a firm's sales and share price, the disclosure of a company's environmental record creates incentives for that company to clean up beyond what regulation alone requires. Regulators, meanwhile, can focus their limited resources on the worst offenders, including those who refuse to disclose accurate pollution data.

Ecolabeling is another promising approach to giving private players the power to monitor and enforce environmental performance. Consumers often prefer goods produced in an environmentally sound manner—be it dolphin-safe tuna, recycled paper, or lumber harvested on a sustainable basis—and will sometimes pay a premium for them. Ecolabeling provides a mechanism for consumers to reward and encourage practices of which they approve. Governments could promote ecolabeling directly by establishing standards and inspecting producers to ensure compliance. Often, however, it is simpler and more effective to merely provide the legal framework and copy-right protection that ensure accurate labeling and prevent the pirating of established labels.

Sometimes governments can actually create new interest groups to assist in monitoring and enforcement. One example is the requirement in some countries that banks issue long-term, uninsured, subordinated debt. Because the debt is uninsured, purchasers have a strong incentive to monitor the issuing banks. Even the price of the subordinated debt in secondary markets provides valuable information about the viability of banks. This "multiple eyes" approach also helps improve bank performance: because bank managers do not want the price of their sub-

ordinated debt to drop, they are inclined to manage the bank more prudently than otherwise.

Microfinance is another area in which creating new constituencies has improved monitoring and enforcement. To overcome a chronic lack of information about the ability of the poor to repay loans, microfinance programs lend through small groups of people who know each other well. Although the loans go to individuals, group members understand that if any member defaults, none will receive future loans. Borrowers thus have a strong incentive to monitor the use of funds by fellow group members and to use peer pressure to enforce repayment. By providing monitoring and enforcement where none existed before, these programs give participants access to credit at reasonable interest rates, often for the first time in their lives.

Ensure two-way information flows

The way governments convey information to citizens, especially the poor, is often critical. So are the ways they listen to citizens and what they learn from them. Examples throughout this Report show how governments can ensure a two-way exchange of information—from society to government and from government to society. The starting point in all this is listening to the poor. Countries should:

- Give the poor voice, especially through better educational opportunities and better access to telecommunications
- Learn about the poor from the poor
- Work through local channels and earn the trust of the poor, and
- Provide knowledge to the poor in a manner they can use.

Give the poor voice. With education comes a broader world view and the ability to articulate concerns and desires, to make suggestions, and to voice complaints. A girl who learns to read also learns to write—even if only to fill out a job application form—and that increases her ability to voice her own concerns. Access to telecommunications—especially telephones, e-mail, and the Internet—can also strengthen the voice of the poor, whether in marketing village handicrafts or in advocating policies that address their needs. A poor laborer with access to a telephone can interpret advice from a doctor or veterinarian—or complain to officials about the poor quality of public health services. Chapter 4 offered some striking examples: the use of e-mail by a small business loan program in Vietnam, the Panamanian women who posted pictures of their handicrafts on the World Wide Web, the subsistence farmers in the Philippines who became pineapple specialists thanks to telex and fax machines.

Giving the poor voice also means taking the time to listen and learn. Recall that the extension agents most ef-

fective at informing farmers about the green revolution's new techniques were those who listened and got a better understanding of farmers' needs and concerns. More recently, agricultural researchers in Colombia and Rwanda let women farmers select those bean varieties they felt would do best in their growing conditions. The women's selections outproduced the varieties selected by plant breeders at central research stations by 60 to 90 percent.

Results from efforts around the world suggest that giving voice to the public and listening to that voice can greatly improve government decisionmaking. A public budgeting initiative in Porto Alegre, Brazil, succeeded only because of the autonomy granted to the city and its urban planners, who enlisted the participation of beneficiaries in the design and implementation of projects. That enabled them to establish priorities and implement programs in accord with local needs. The initiative showed that sometimes the easiest way to learn what people want is simply to ask.

Enabling communities to monitor public actions and voice their preferences through a free and vigorous press can check the abuse of power and improve the quality of services. On behalf of the poor, India's vigorous media have provided early warnings of hunger and agitated for public action—action that is more likely to succeed in societies where information can flow freely and public desire for action can be expressed without fear of government retaliation.

Learn about the poor. Learning about the poor often involves systematic learning through household surveys and other instruments. A living standards survey of households in Jamaica revealed some surprising information about two programs designed to help the poor: subsidies for basic foodstuffs and food stamps for low-income households. Policymakers were especially worried that malnourished children were not being brought to the clinics that are the primary channel for identifying food stamp beneficiaries. But the survey found that food stamps targeted to low-income households were much more effective than general subsidies for basic foodstuffs in reaching the poor.

Many ways of listening to and learning from the poor are now taking hold. Perhaps the most important is involving poor people in the design and implementation of projects intended to benefit them. One set of numbers reveals the power of beneficiary participation, which at last the development community is recognizing as fundamental. Of 121 rural water supply projects in 49 countries, those that involved beneficiaries in project design achieved a success rate of 7 in 10, compared with only 1 in 10 for projects that did not involve them. The study also found that governments have a key role in fostering beneficiary participation.

Work through local channels—and earn trust. Studies show repeatedly that people are strongly influenced by

their peers, and that working through traditional channels of communication is especially important for transmitting new ideas. This is likely to be particularly true for the poor, given their high illiteracy rates and lack of resources to acquire knowledge through other means. Recent studies of the success of the new preventive health program in Ceará State, Brazil, show that people learn best from their peers. And a study covering 70 villages in the Matlab district of Bangladesh found that peer influence was the key determinant of whether people adopted new family planning techniques. In each instance, working closely with local communities made it possible to communicate valuable information to people who would otherwise have rejected or even feared it. Working through local groups has also been effective in Kenya, where farmers have organized themselves into cooperatives to market their crops, obtain credit, and improve their farming techniques. The national extension program works through these cooperatives and sometimes directly with individual farmers.

Earning the trust of the poor is thus the key to effective exchanges of knowledge, and involving local people is a powerful means of disseminating new knowledge, whether about new seeds, new contraceptive methods, or new curricula. Given the importance of trust, it is not surprising that the diffusion of knowledge appears to be faster in villages where the social network is more densely knit. To measure the density and importance of social connections in rural Tanzania, researchers asked households to list the groups they belonged to: churches, mosques, burial societies, credit associations, political organizations. Villages rich in social capital had higher incomes than those with little. They were also much more likely to use fertilizer, agrochemical inputs, and improved seeds.

Provide knowledge to the poor. The approach taken by the United Nations Children's Fund (UNICEF) in Nepal shows the advantage of providing knowledge the poor can use. The program there promoted homemade solutions rather than the commercial alternative, but the promotional material described the treatment in words that applied to both. Rather than depress sales of ready-made packets, the program added to their credibility and increased local demand for them. And with more knowledge of what is involved in the cure, local communities are better able to sustain their use of some form of oral rehydration. Having reached 96 percent of the population, the program helped more than halve the incidence of diarrhea-related child mortality.

The importance of providing knowledge that the poor can use, in a manner in which they can use it, can also be seen in AIDS prevention. Scientists know how the disease is spread and the precautions to be taken. But this information becomes useful to the poor only if those providing it understand local conditions and work with local leaders

to develop prevention programs suited to those conditions. This was done in Ethiopia and Namibia, where community street theaters have been more effective in preventing AIDS than have radio, television, or print materials.

Recognize the persistence of knowledge gaps and information problems

No matter what governments do, knowledge gaps and information failures will persist. Even countries that pursue an aggressive, knowledge-based development strategy will not be free of these problems. Policymakers have to live with imperfection:

- In many instances, policymakers have to make key decisions in the absence of full knowledge.
- In all instances, they must keep in mind that even policies unrelated to knowledge and information will play out in an economy subject to information failures—and thus to market failures.

Policymaking amid persistent knowledge gaps

Chapter 3 pointed to some of the positive spillovers from education: educated farmers show the way for uneducated ones, educated mothers have healthier children, and so on. In other instances, actions that benefit a firm or an individual have negative spillovers: water pollution from firms and air pollution from automobiles are prime examples. An important role of government is to maximize well-being by altering incentives to take these spillovers into account, for example by providing education stipends and taxing water pollution and gasoline consumption. But because spill-overs are difficult to measure, policymakers can seldom know their precise magnitude. This is not to say that governments should ignore them. The appropriate course is trial and error, using the tools at government's disposal to readjust incentives to achieve socially desirable outcomes.

The need for an effective policy response is greatest when action—or inaction—risks irreversible damage to human well-being. We do not know precisely the future impact of today's carbon emissions on global warming. But given the risks, it is prudent to err on the side of caution and to restrict emissions in the most cost-effective way possible. Similarly, we cannot know in advance which salamander or orchid contains a cure for cancer, or how diverse species support one another and maintain the entire web of life. So the prudent course is to preserve fragile and unique ecosystems, even when this means forgoing short-term economic gains from converting forests into pasture, or wetlands into ports. In other areas, such as health care, failure to act may have irreversible consequences. Although measures of the long-term effects of childhood malnutrition are less than perfect, we know these effects are likely

to be permanent, and that prudent governments should ensure that every child has enough to eat.

In these and other cases, policymakers are also hampered by lack of knowledge about the impact of specific policies. Indeed, most policies, even those that do not involve spillovers or irreversible consequences, must be decided in the midst of persistent knowledge gaps. In part, this dilemma stems from imperfect knowledge of human nature: people respond to policies in unpredictable ways. The problem is worse in developing countries, where the capacity to design and implement policies is less fully developed, and where the technology for recording and analyzing information about people's responses is often lacking.

There are many examples where the availability of information to the government is critical to the implementation of government programs. For example, unless government can effectively monitor sales, it cannot impose a sales tax. Traditionally, many developing countries have relied heavily on trade taxes as a source of revenue, not so much because they wanted to restrict trade, but because traded goods must pass through a few easily identifiable checkpoints, and can thus be monitored and taxed. Fortunately, more developing countries are taking advantage of the plummeting costs and increased ease of use of new technologies to expand the scope of taxes that can be effectively administered. In Central and South America, several countries have increased the quality and the quantity of information they gather about individual taxpayers. Nationwide taxpayer identification numbers and computerized files are used to monitor taxpayer characteristics, transactions reported by third parties, and collection and delinquency records.

Policymaking amid persistent information failures

Possibly the most difficult challenge in policy design is recognizing information failures and modifying policy accordingly. The difficulties that arise from failing to take persistent information failures into account can be seen in two very different regions: the transition economies of Central and Eastern Europe and the financially troubled economies of East Asia.

The transition economies show all too painfully the cost of not having institutions to address information problems. Once the inefficiencies of central planning were replaced with a market system of prices, profits, and private property, one might have expected output to soar. Instead, it plummeted—and has yet to recover nearly a decade after the transition began. Part of the explanation is that the pace, sequencing, and manner of the transition destroyed institutions for mediating information faster than new institutions for a market economy could be created.

After the Soviet Union broke up in 1991, Soviet productive capacity remained in place, and many of the myriad price and trade distortions under the old system were re-

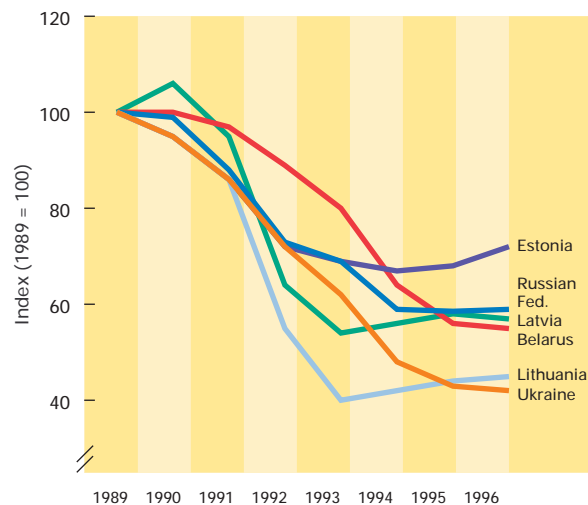
moved. Yet in 10 of the 15 countries of the former Soviet Union, GDP has shrunk by around half (Figure 10.1). What accounts for this collapse? Under central planning many firms relied on a single supplier for inputs. When markets were freed, new opportunities appeared for producers all along the chain of production. Bargaining relationships were altered, and often the outcome was a failure to reach a resolution. Yet information—and markets—were insufficient for firms to identify an alternative source of supply. Often bargaining broke down because of information problems, especially along production chains that linked many specialized producers. Not surprisingly, output fell most for goods with the most complex production processes.

In East Asia the problems have been very different. The economies there have been very successful in closing knowledge gaps: in acquiring, absorbing, and communicating knowledge. They have dealt less well with the information problems in their economies, and these explain in part their current difficulties. In the 1990s, several of the East Asian economies liberalized short-term capital flows before they had ensured that their financial institutions were on a sound footing. As a result, when capital flows reversed sharply in 1997, banks were too weak to withstand the strain. The liberalization of financial mar-

Figure 10.1

Trends in GDP in six former Soviet republics

Output has halved in parts of the former Soviet Union.



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kets preceded the establishment of adequate supervisory and regulatory capacity, so regulators either did not know how vulnerable the banks were or lacked the enforcement power to shore up the system. That shows that however desirable financial reforms may be, they need to take account of the consequences of information problems for the financial system and for the entire economy.

As East Asia's experience also shows, governments have an especially important role in regulating formal financial markets, because of their profound effect on the entire economy—and this regulation must take into account that information in the financial sector will always be imperfect. Appropriate regulation includes monitoring banks' risk management systems, their capital reserves, and their individual transactions. Standards for the adequacy of capital are important, because banks with enough capital have incentives to make only good loans. Banks whose capital has fallen to zero or worse have a tendency to gamble—they have nothing to lose, and a high payoff from the gamble may give them new life. Such gambling has contributed greatly to financial crises throughout the world. And because regulation and enforcement are sometimes inadequate, governments must provide backup systems, including deposit insurance (to discourage bank runs) and a central bank (to act as lender of last resort).

In the new global economy, monitoring and enforcement in the financial sector have become more important than ever. With money moving rapidly across borders, a financial crisis in one country can quickly spread to others. Volatile capital flows have deepened, and may have caused, financial crises and economic recessions in several countries. These outcomes mean that the risk borne by investors differs from the risk borne by society. And this provides the reason for government action—to find policies that discourage volatile short-term capital flows while maintaining the flows needed for trade and long-term investment, especially foreign direct investment. Countries have tried a variety of mechanisms to do this. Brazil has a tax on capital

inflows. Chile has a mandatory deposit scheme. Colombia has restrictions on bank exposure. And other mechanisms are under consideration, including proposals to restrict or eliminate corporate income tax deductions for interest payments on foreign-denominated, short-term debt. Will they work? Only time and nimble refinements will tell. The sole certainty in all this is the uncertainty.

Enlightening the way forward

Recent development thinking has been based on the assumption that markets work well enough to ensure development and alleviate poverty. Our growing understanding of information constraints suggests that markets alone are often inadequate; societies also require policies and institutions to facilitate the acquisition, adaptation, and dissemination of knowledge, and to mitigate information failures, especially as they affect the poor. This view implies an expanded mandate for public action. Yet governments, like markets, are hampered by information failures. In deciding which problems to address, policymakers balance the size of the information problem and the resulting market failure against the capacity of the government to improve the situation. The appropriate course of action will vary depending on the circumstances. In all countries, however, openness to learning, recognition that there is much we do not know, and a willingness to make mid-course adjustments will enhance the prospects of success.

We began by comparing knowledge to light. When we look back in 25 years on development's progress in the first quarter of the 21st century, which countries will stand out? It will surely be those that have mastered the acquisition of knowledge, increased the capacity to absorb it, and improved the means of communication for all their citizens. It will be those that have also found ways around information failures and improved the effectiveness of markets. It will thus be those that have extended the power and reach of knowledge to enlighten the lives of people everywhere.