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A WORLD BANK POLICY STUDY

Financing Health Services in Developing Countries

An Agenda for Reform

April, 1987



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*The World Bank
Washington, D.C., U.S.A.*

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Summary

Developing countries have achieved remarkable reductions in morbidity and mortality over the past thirty years. But continuing gains depend largely on the capacity of health systems to deliver basic types of services and information to households that are often dispersed and poor. At the same time, rising incomes, aging populations, and urbanization are increasing the demand for the conventional services of hospitals and physicians. These competing needs have put tremendous pressures on health systems at a time when public spending in general cannot easily be increased—indeed, in many countries it must be curtailed.

In most developing countries, public spending in all sectors grew rapidly in the 1960s and 1970s. But slow economic growth and record budget deficits in the 1980s have forced reductions in public spending; public spending on health has increased more slowly since 1980 and in some countries has declined on a per capita basis. A case certainly could be made for more public spending on health in developing countries. Public and private spending together in developing countries is on average less than 5 percent of that spent in developed countries; even if this money were spent as cost-effectively as possible, it would probably be insufficient to meet critical health needs. But in most countries the general budget stringency makes it difficult to argue for more public spending. For the

foreseeable future, government efforts to improve health are unlikely to rely on increases in public spending financed by debt or taxes, or on the reallocation of public expenditures from other sectors, even though such increases or reallocations would be economically as well as socially justified.

What can be done? An alternative approach to financing health care is proposed here. Even as governments continue to grapple with questions of the appropriate level of funding for health and the appropriate allocation of total government resources to health, this alternative approach deserves consideration. Indeed, it makes sense even in countries where the overall budget problem is not severe.

Simply stated, this approach would reduce government responsibility for paying for the kinds of health services that provide few benefits to society as a whole (as opposed to direct benefits to the users of the service). More government (or public) resources would then be available to pay for the services that provide many benefits to society as a whole. By relieving governments of the burden of spending public resources on health care for the rich, this approach would free resources so that more could be spent for the poor.¹

1. The categories of "rich" and "poor" need to be defined in each country and will depend on a country's income structure and social objectives.

Individuals are generally willing to pay for direct, largely curative care with obvious benefits to themselves and their families. Those who have sufficient income to do so should pay for these services. The financing and provision of these private types of health services (which benefit mainly the direct consumer) should be shifted to a combination of the nongovernment sector and a public sector reorganized to be financially more self-sufficient. Such a shift would increase the public resources available for the types of health services which are "public goods"; these include currently underfunded health programs such as immunizations, control of vector-borne diseases, sanitary waste disposal, health education, and in some circumstances prenatal and maternal care, including family planning (see box 1). The benefits of these largely preventive programs accrue to communities as a whole, not just to individuals and their families. They will not be paid for willingly by individuals and should be the responsibility of the government. But most curative care, whether provided by the government or nongovernment sec-

tor, should be paid for by those who receive the care. Shifting this responsibility would also increase the public resources available for government provision of basic curative and referral services to the poor, who currently have only limited access to services of this nature.

Health Sector Problems

The characteristics and performance of the health sector vary tremendously among developing countries. In most cases, however, the sector faces three main problems. It is argued here that each of these problems is due in part to the efforts of governments to cover the full costs of health care for everyone from general public revenues. The three problems are:

- *Allocation: Insufficient spending on cost-effective health activities.* Current government spending alone, even if it were better allocated, would not be sufficient to fully finance for everyone a

Box 1. Private and Public Benefits of Health Care

Goods and services provided by the health system can usefully be classified with respect to who receives the benefits of them. At one extreme are purely private goods, for which all benefits of use are captured by the person who consumes the health service, and at the other extreme are purely public goods, for which all benefits are equally received by all members of society. An aspirin taken for a headache is a good example of a purely private health good. Spraying to protect all residents from a vector-borne disease closely approximates a purely public health good. Many actual health services are of a mixed type; the consumer captures some purely private benefits, yet others also benefit from that person's consumption of the service. The person who is vaccinated receives a private benefit of protection, but others benefit as well because they are less likely to be exposed to the illness.

Consumers are almost always willing to pay directly for health services with largely private benefits. But they are generally reluctant to pay directly for programs and services which benefit society or communities as a whole. Consumers tend to wait and hope that others will provide the funds needed

for the adequate provision of the "public" type of service—the so-called free-rider problem. That is why in most societies the health services with largely public benefits are funded by general revenues rather than user charges. Only public involvement will provide sufficient public goods (and mixed goods with a significant public benefit).

Health services with mostly private benefits, for which there is therefore great willingness to pay, are often equated with curative care while those with mostly public benefits, for which there is little willingness to pay, are equated with preventive care. (For ease of exposition they are also discussed in these terms in this study.) But the correspondence is not exact. For some preventive care, such as monitoring the growth of infants, much of antenatal and perinatal care, and screening for hypertension, most benefits are captured by the recipients of the service and their families. Well-informed patients are likely to choose to pay for these services rather than forgo them. For some curative care, such as the treatment of the carrier of a contagious disease (tuberculosis is an example), there are public or social benefits to others as well as private benefits to the patient.

minimum package of cost-effective health activities, including both the truly "public" health programs noted above and basic curative care and referral services. Although nongovernment spending on health is substantial, not enough of it goes for basic cost-effective health services. As a result, the growth of important health activities is slowed despite the great needs of fast-growing populations and the apparent willingness of households to pay at least some of the costs of health care.

- *Internal inefficiency of public programs.* Nonsalary recurrent expenditures for drugs, fuel, and maintenance are chronically underfunded, a situation that often reduces dramatically the effectiveness of health staff. Many physicians cannot accommodate their patient loads, yet other trained staff are not productively employed. Lower-level facilities are underused while central outpatient clinics and hospitals are overcrowded. Logistical problems are pervasive in the distribution of services, equipment, and drugs. The quality of government health services is often poor; clients face unconcerned or harried personnel, shortages of drugs, and deteriorating buildings and equipment.
- *Inequity in the distribution of benefits from health services.* Investment in expensive modern technologies to serve the few continues to grow while simple low-cost interventions for the masses are underfunded. The better-off in most countries have better access both to nongovernment services, because they can afford them, and to government services, because they live in urban areas and know how to use the system. The rural poor benefit little from tax-funded subsidies to urban hospitals, yet often pay high prices for drugs and traditional care in the nongovernment sector.

Obviously these problems are not solely attributable to the approach governments have taken to financing health. Nor will a change in approach to financing health alone solve these problems. In the short run, for example, change in the way resources are mobilized will not by itself correct the gross misallocation of health resources between high-cost hospital-based care and low-cost basic

health services. Change in financing will not eliminate the need to improve management, administration, training, and supervision in the public delivery of health services. Similarly, in its work on health, the World Bank is concerned not only with financing but with a wide array of issues associated with the design of sustainable and effective health programs.² The concentration on financing in the present study by no means reflects a diminution of concern with the full range of issues. It does reflect the belief that the reform of financing deserves serious consideration as one part of an overall renewed effort to improve the health status of the populations in developing countries.

Four Policy Reforms

Four policies for health financing are proposed below. They constitute an agenda for reform that in virtually all countries ought to be carefully considered. The four policies are best thought of as a package; they are closely related and mutually reinforce each other. Most countries could benefit from adopting only some parts of the package, and some countries might wish to move more quickly on some parts than on others. But in the long run, because the policies are complementary, all four merit consideration.

- *Charge users of government health facilities.* Institute charges at government facilities, especially for drugs and curative care. This will increase the resources available to the government health sector, allow more spending on underfunded programs, encourage better quality and more efficiency, and increase access for the poor. Use differential fees to protect the poor. The poor should be the major beneficiaries of expanding resources for and improved efficiency in the government sector.

Some countries have had user fees for decades, and others, particularly in Africa, are now beginning to introduce them. But the more common approach to health care in developing countries has been to treat it as a right of the citizenry and to attempt to provide free services to everyone. This approach does not usually work. It prevents the

2. See World Bank, *Health, Sector Policy Paper* (Washington, D.C., 1980), which deals with the health sector as a whole.

government health system from collecting revenues that many patients are both able and willing to pay. Thus the entire cost of health care must be financed through frequently overburdened tax systems. It encourages clients to use high-cost hospital services when their needs could be addressed at lower levels of the system. It deprives health workers in government facilities of feedback on their success in satisfying consumers' needs. It makes it impossible to reduce subsidies to the rich by charging for certain services, or to improve subsidies to the poor by expanding other services.

In the short run—that is, as soon as administrative mechanisms can be put in place—countries should consider instituting modest charges, focusing initially on charges for drugs and other supplies and for private rooms in government hospitals. Where the current price is zero, even modest increases in charges could generate enough revenue to cover 15 to 20 percent of most countries' operating budgets for health care—enough to cover a substantial part of the costs of currently underfunded nonsalary inputs such as drugs, fuel, and building maintenance. By “modest increases” is meant amounts which would constitute, even for poor households, 1 percent or less of annual income, assuming two visits per person a year to a government health post for curative care.

In the longer run, user charges provide a way not only to raise revenue but also to improve the use of government resources. Curative services, most of which can be viewed as “private goods,” currently account for 70 to 85 percent of all health expenditures in developing countries and probably 60 percent or more of government expenditures on health. Over a period of years, and once mechanisms to protect the poor are in place (along with insurance systems to cover catastrophic costs for all households), consideration should be given to increasing charges for curative services to reflect the cost of providing them. This would free resources equivalent to perhaps 60 percent of current government expenditures on health for reallocation to basic preventive programs and first-level curative care for the poor. (At the same time, most preventive programs should remain free of charge and be financed directly by government.)

Capturing the benefits of a policy of user charges requires attention to three complementary steps by the government. First, user charges will not work unless services are accessible and of rea-

sonable quality; if they are not, the problem of underutilization discussed below will only be exacerbated. Second, user charges will not help improve the overall allocation of government health spending unless the freed revenues are actually funneled into currently underfunded health programs that provide public benefits and into increasing the number and quality of facilities to serve the poor. This redirection of freed resources requires a strong political commitment. Third, the poor who cannot afford new or higher charges must somehow be protected.

How can the poor be protected? Lower or even zero charges in clinics located in urban slums and in rural areas are a simple, practical step. Combined with higher charges for hospital care, they would not only protect the poor but also improve the targeting of existing government health spending. Another option is to issue vouchers to the poor, based on the certification of poor households by local community leaders (a practice that appears to work well in Ethiopia). Other options to protect the poor include allowing staff discretion in collecting charges (although this is difficult to do in the government sector) or, in middle-income countries, using means tests (which often already exist for other programs). In a well-functioning system of referral (in which patients enter the system at a low-cost lower-level facility and, only if they cannot be treated there, are referred to a higher-level facility), a schedule of low or even zero fees at the lower level and referrals at no additional cost also provide protection for the poor. The most appropriate option will depend on each country's situation; experimentation with different approaches is likely to be required.

- *Provide insurance or other risk coverage.* Encourage well-designed health insurance programs to help mobilize resources for the health sector while simultaneously protecting households from large financial losses. A modest level of cost recovery is possible without insurance. But in the long run, insurance is necessary to relieve the government budget of the high costs of expensive curative care; governments cannot raise government hospital charges close to costs until insurance is widely available.

Insurance programs cover only a small portion of low-income households in most developing countries, especially in Africa and South Asia.

Outside of China, where the majority of urban residents are insured, no more than 15 percent of the people in the low-income developing countries take part in any form of risk-coverage scheme (other than free health care provided by tax revenues). Most of these people are covered under government-sponsored social insurance plans in the middle-income countries of Latin America and Asia. Private insurance, prepaid plans, and employer-sponsored coverage are all still relatively rare.

A starting point for insurance in most low-income countries is to make coverage (whether provided by the government or the nongovernment sector) compulsory for employees in the formal sector. Then at least the relatively better-off will be paying the costs of their own care. A few low-income countries and most of the middle-income countries in Latin America and Asia have already taken this step, often through payroll taxes to fund social insurance that covers health.

Insurance programs in industrialized countries and in Latin America have undoubtedly contributed to rising health care costs. When schemes cover most or all costs, and patients and health providers perceive care as free, some unnecessary visits and unnecessary procedures are likely, and costs will escalate in the system as a whole. To avoid such escalation, compulsory insurance plans in low-income countries should avoid covering small, predictable costs (such as for low-cost curative care); they should cover only costs that might be termed catastrophic for an individual. (Where practicable, the definition of the catastrophic expenditure level can be related to household income.) In reimbursable systems costs will also be less likely to escalate if consumers pay an entrance fee (or a deductible) and make a co-payment for each illness, and if there is competition among insurance providers. Without effective competition, insurance providers will have little incentive to keep costs and premiums low, and higher costs will be passed through in the form of higher wage bills for employers who provide coverage and higher consumer prices.

Avoiding cost escalation in government-run insurance programs is especially critical to avoid a related problem: political pressure to subsidize the insurance system from general tax revenues. If this occurs, it makes the insurance program a benefit for the better-off, paid for in part by the poor.

- *Use nongovernment resources effectively.* Encourage the nongovernment sector (including nonprofit groups, private physicians, pharmacists, and other health practitioners) to provide health services for which consumers are willing to pay. This will allow the government to focus its resources on programs that benefit whole communities rather than particular individuals.

Government is an important provider of health services in developing countries, but by no means the only one. Religious missions and other nonprofit groups, independent physicians and pharmacists, and traditional healers and midwives are all active. Direct payments to these nongovernment providers account for up to half of all health spending in many countries. There is no "correct" size for this nongovernment sector; its role in relation to that of the government sector is bound to vary among countries. However, governments reduce their own options for expanding access to health care when they actively discourage nongovernment suppliers or fail to seek efficient ways to encourage them.

Community-run and privately managed cooperative health plans should be encouraged. Capitalizing such plans, providing temporary subsidies, and providing administrative support should be considered. Any prohibitions or restrictions on nongovernment providers should be reviewed. Unnecessary paper work and the regulations relating to nonprofit providers should be reduced. To provide better care for the poor, subsidies to make existing nongovernment facilities more affordable should be considered as a cost-effective alternative to direct provision of these services by the government.

Only the public sector can oversee and guide the activities of nongovernment providers of health services. In every country the government needs to take the lead in training health workers, testing them for competency, and licensing nongovernment facilities. Governments must play a central role in research and development. They must set standards and regulations to protect the populace from untrained or unethical practitioners, especially in countries where professional associations and standards of professional conduct are not yet well established. Governments need to develop the legal framework for prepaid health systems, and they must disseminate information about

pharmaceuticals and health insurance options to help consumers deal effectively with nongovernment providers.

In some countries, including much of Latin America and the middle-income countries of Asia, it may be possible for the nongovernment sector to provide most or even all curative care as long as risk-coverage plans and subsidies for the poor are implemented. In others, including those in Africa and the poorer countries of South Asia, where much of the population resides in rural areas and where basic curative and preventive services are closely and appropriately integrated, the government will need to continue to provide curative care in conjunction with its preventive care (for example, combining treatment of a sick child with immunization). Ideally, these services should complement existing nongovernment services, including those provided by traditional healers and religious missions. In all countries, in most areas of preventive care where social benefits are large, the role of government will remain predominant and indeed ought to expand.

- *Decentralize government health services.* Decentralize planning, budgeting, and purchasing for government health services, particularly the services offering private benefits for which users are charged. When setting national policies and programs, use market incentives where possible to better motivate staff and allocate resources. Allow revenues to be collected and retained as close as possible to the point of service delivery. This will improve both the collection of fees and the efficiency of the service.

The government will have a continuing role in providing health services in most nations. Efforts to increase efficiency in the provision of these services cannot be neglected. In countries where managerial resources are scarce, communication is difficult, transportation is slow, and many people are isolated, decentralization of the government service system should be considered as one possible way to improve efficiency.

Decentralization is appropriate primarily for services provided directly to people in dispersed facilities, where there are user charges for drugs and curative care. Decentralization is less likely to make sense for tax-supported public goods, such as immunizations and control of vector-borne diseases. These programs are more logically adminis-

tered centrally, although they can be, and sometimes are, contracted out to local governments. Decentralization gives local units greater responsibility for planning and budgeting, for collecting user charges, and for determining how collected funds and transfers from the central government will be spent. (It often also implies greater responsibility for personnel management and discipline.)

Decentralization of financial planning should include the general principle that revenues collected in the form of user charges should be retained as close as possible to the point at which they were collected. This improves incentives for collection, increases accountability of local staff, within limits ensures that the choice of expenditures (whether to fix the well or purchase drugs) reflects local needs, and fosters the development of managerial talent at the community level. The conventional public finance argument is that all public revenues should revert to the center for allocation where most needed. But this reasoning fails to take account of a critical factor: the system of collection itself affects the amount and use of revenues collected. In general, the higher the transactions and information costs of collecting fees and administering revenues—that is, the smaller the amounts collected and the more frequent the collection, as in the case of charging for drugs and simple curative care—the stronger are the arguments for placing control over revenues at the point of service delivery.

Decentralization and greater financial control by no means imply, however, the complete financial independence of each individual facility. Government facilities that provide integrated curative and preventive services in rural areas and to the urban poor will continue to require central support. In fact, in rural areas the appropriate unit for purposes of decentralized planning and budgeting is likely to be a regional or district office, not a small health post. Eventually government hospitals in urban areas could transfer some collected revenues to the center to supplement general revenues and help finance other government health programs.

Control of revenues at the point of service delivery also reinforces a more general principle: as fees collected in government facilities make largely curative services with private benefits financially self-sustaining, the freed government resources should be retained in the health sector (but not

necessarily at the individual facilities) until health programs with public benefits and care for the poor are adequately funded.

Decentralization of government health services will not be easy, and of the four policy recommendations it is probably the least tried. Where other parts of the government are highly centralized, there will be considerable obstacles to decentralization. But there will be considerable benefits as well since perhaps no other government service except agricultural extension is as highly dispersed. Where overall administrative systems are weak, the quality of staff in remote areas is poor, or positions are unfilled because of long-standing difficulties in attracting staff away from large cities, decentralization will have to be planned and introduced gradually. In some countries, where staff of regional agencies, local hospitals, and clinics have little experience in managing revenues and expenditures, training in such skills and a trial period to test these skills will need to precede decentralization.

The Policy Package and Health Sector Problems

Table 1 summarizes the potential effect of each of the four recommendations on the problems in the health sector. User charges for government-provided services can help solve all three problems. User charges increase resources for the system as a whole and allow government resources to shift to more cost-effective (generally preventive) programs. This shift alone will tend to benefit the currently underserved poor more than the rich, since the poor tend to suffer more from the kind

of health problems that can best be addressed by preventive programs. If revenues from user charges are channeled directly into underfunded nonsalary expenditures—that is, into drugs, fuel, and maintenance—the efficiency of the existing government services will increase. User charges can also play a direct role in making the health system more equitable: the rich, who benefit most from government-provided services, will now have to pay; the government resources thus freed can be redirected into programs and facilities targeted to the poor.

Risk-coverage programs can provide more revenue to the system as a whole and allow the diversion of freed government resources to cost-effective programs. By tapping the ability of the better-off to cover the major costs of their own care, risk-sharing schemes improve the overall equity of government health spending.

Using nongovernment resources effectively helps mobilize resources from families, communities, and voluntary groups and allows government resources to be redirected to programs that produce many benefits but for which individuals are reluctant to pay. The result of this redirection of funds is both more efficiency and greater equity.

Finally, decentralization can help mobilize more revenue. Consumers will be more willing to pay and providers more willing to collect charges because of the link between revenue collection and better services. Decentralization can also help improve the use of government resources, by making government-provided services more responsive to the needs of their clients.

The parts of this policy package rely on each other for their positive effects. Charging fees at government facilities will not be effective in raising

Table 1. Effects of Policy Reforms on Three Main Problems in the Health Sector

<i>Policy</i>	<i>Allocation</i>	<i>Internal inefficiency</i>	<i>Inequity</i>
Keep the present system	0	0	0
Institute user charges	+	+	+
<i>and</i> use freed government revenues to expand cost-effective services	+	0	+
<i>and</i> use new revenues to finance nonsalary costs	0	+	+
<i>and</i> use differential charges to protect the poor and reduce existing subsidies for the rich	0	0	+
Provide for risk coverage	+	0	+
Use nongovernment resources effectively	+	+	+
Decentralize government health services	+	+	+

Note: 0 indicates no effect; + indicates alleviation of the problem.

revenue unless competitive incentives in both the nongovernment sector and the decentralized government sector orient the system toward providing quality care at affordable prices. The tendency to allocate too much of the government health budget to high-cost hospital care, with negative effects on overall cost-effectiveness and on equity, will be difficult to change until charges come close to reflecting real costs. But charges at hospitals and other government facilities cannot be raised to reflect costs and recover larger amounts unless much of the population is insured. At the same time, insurance and other forms of risk coverage will collect little revenue and in all likelihood fail if free services remain available at government facilities. In the long run, the diversion of government resources to cost-effective basic services will be easier if an active nongovernment sector is providing the bulk of curative care. An active, high-quality nongovernment sector requires the availability of insurance.

Reforms in Financing

Implementation of these reforms will not by any means solve all the problems of the health sector. User charges in government facilities will not generate foreign exchange to pay for imported pharmaceuticals. Insurance programs will not by themselves raise the quality of government services. Decentralization will not eliminate the need for difficult decisions at the center regarding the geographical allocation of new investments and health personnel. A strong nongovernment sector may not adequately serve the poor in remote rural areas.

Reforming the finance policy will have little impact without a political commitment by the government to making the health sector more effective. As noted above, user charges (and other financing reforms) alone will not ensure that the government resources thus freed will be used wisely; decisions made largely in the political arena will determine whether the freed funds are used for the poor and for services with public benefits, rather than for building urban hospitals and buying expensive nonessential equipment. Political decisions will largely govern whether the freed revenues are used to improve the access to and the quality of services sufficiently to attract fee-paying

and insurance-buying customers. Only government action can bring necessary changes in management and training programs—for example, by instituting more appropriate training of doctors and placing greater emphasis on training paramedical personnel.

Without reforms in financing, however, the necessary revenues may not be available to carry out the political decisions for reallocation both within and outside the health sector. Although reforms will not automatically take care of political decisions, they will help make available the resources that make political decisions feasible.

Nor is the finance policy package itself a simple one to implement. In countries where administrative capability is weak, the introduction of new approaches will take time. Moreover, each of the four parts has potential drawbacks if implemented without due care. User charges could deter those who would benefit the most from seeking care. Risk-sharing schemes could raise costs and augment existing disparities. Deregulation of the nongovernment sector and administrative decentralization could increase geographical inequality and decrease the quality of services.

Avoiding the pitfalls requires that political and social boldness in innovating policies be complemented by systematic and sustained attention to monitoring programs. In each country, specific approaches to implementation need to be monitored as they are tried; flexibility in such areas as the size of user charges and the approach to decentralization needs to be maintained.

Need for Further Analysis

As the reforms in finance policy are tried, monitoring and operational research in each country should focus on the following kinds of questions:

1. How accessible are services now and how good are they? What are nongovernment expenditures on health care? How much do people now pay? How much can they afford? How would utilization of services be affected if prices were raised? Would demand fall for important health services? Would utilization by the poor decline?

2. What fees should be charged and how much revenue can be raised from them? What are collection costs likely to be? What is a reasonable schedule of charges at different levels of the system?

3. What health insurance programs now exist? Who is covered at what cost? Are there informal insurance systems within extended families?

4. How equitable is the existing health system? What groups now benefit from what services, at what cost to the government purse? What are practical means of identifying and protecting those unable to pay for health care?

5. How active is the nongovernment health sector? Is the for-profit sector competitive? Are there private physicians, pharmacists, and other trained health practitioners in rural areas? What income groups does the nongovernment sector serve? What are alternative means, and their relative costs, for improving information to consumers about the quality and prices of private health services? How can both public and private health providers be regulated and supervised so that their clients are protected from ill-advised and overpriced services?

6. How can the management of government health facilities be organized and overseen so that resources are used efficiently and workers perform well? What steps can be taken to ensure sustained political and popular support for the reform of health financing?

The Role of the World Bank

The World Bank began direct lending for health in 1980, and by 1983 it had become one of the largest funders of health programs in developing countries. Lending operations in more than thirty countries have focused on the development of basic health care programs, including expansion of primary health care, provision of drugs, and support for training and technical assistance. Lending operations have generally been preceded by systematic

studies of the health sector as a whole. These studies have enabled the Bank to carry on a policy dialogue regarding systemwide health issues with government officials.

In its sector work and lending in health, the Bank has been concerned not only with health financing, but also with a wide array of systemwide issues, including the appropriate allocation of investments in the sector given the criterion of cost-effectiveness, the design of sustainable health programs, and the need to improve management and training. Although this study concentrates on financing, this is no indication that concern with these other issues has in any way abated. But there is mounting concern in the Bank and in member countries about the resource problem in health, and a conviction that the Bank, itself a financial institution, can make a useful contribution to improving health in developing countries by encouraging innovative health financing policies.

The Bank is currently making renewed efforts to do so. A strengthened program of country sector work includes attention to the health financing issue. General reviews of overall government expenditures increasingly include special attention to the health sector. Innovative lending programs include assistance to countries in the development and implementation of new health financing approaches. Dialogue with other lending agencies is more active, and a program of research and operational evaluation on the effects of new approaches is planned.

The Bank consistently has advocated that overall economic policy be grounded in sound principles of finance and project selection; the agenda for the reform of health financing proposed here is consistent with and reinforces those principles in the health sector.

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The Health Sector and Its Problems

The main purpose of this study is to discuss new and generally underutilized approaches to financing health programs in developing countries—approaches that should help solve common problems in the health sector. In this chapter, after a brief introduction to the health status and the health sector in developing countries, three main problems are discussed. Four reforms of health financing that would help deal with these problems are described and evaluated in chapter 2. Chapter 3 discusses the operational research needed to design programs appropriate to specific nations and to evaluate the effects of the suggested reforms and looks at the World Bank's role in assisting countries with health finance policy.

Health and the Health Sector in Developing Countries

The extent of poor health in developing countries is enormous. Mortality is much higher than in developed countries, with low- and middle-income countries in 1983 experiencing average infant mortality rates about eight times higher, and female life expectancy about a third shorter, than in the industrialized nations. In pockets of Africa nearly a fifth of all births end in death before age one.

Morbidity is also high. The few available sample

surveys of morbidity demonstrate extraordinarily high levels of largely preventable sickness. A 1974 survey of two typical rural Punjab villages in Pakistan found 28 percent of the residents suffering from malaria and nearly 100 percent infested with various parasitic worms. Children under five averaged six bouts of diarrhea annually. A similar survey at the end of the dry season in fifteen rural Malian villages found malaria present in 50 percent of the people and an incidence of 30 percent each for goiter, schistosomiasis, salmonellosis, hookworm, and onchocerciasis.

The health sector in developing countries consists of a heterogeneous mixture of public, or government, activities and nongovernment activities, including services provided by both modern and traditional practitioners (box 4). The government component itself is diverse, providing a broad range of services through many different programs. Governments typically provide free or low-cost curative care directly through ministry of health institutions; they administer social security systems that provide free curative services to insureds through a second set of (often) government-owned facilities; they support mental hospitals, leprosaria, and hospitals for infectious diseases; and they finance control programs for vector-borne disease, water and sanitation projects, and other public health activities.

Box 2. Organization and Financing of the Health Sector in Zimbabwe

Reliable and complete information on health systems in developing countries is rare. Zimbabwe, a country with relatively good data, provides a typical example, although even for Zimbabwe assumptions must be made in order to complete the picture.

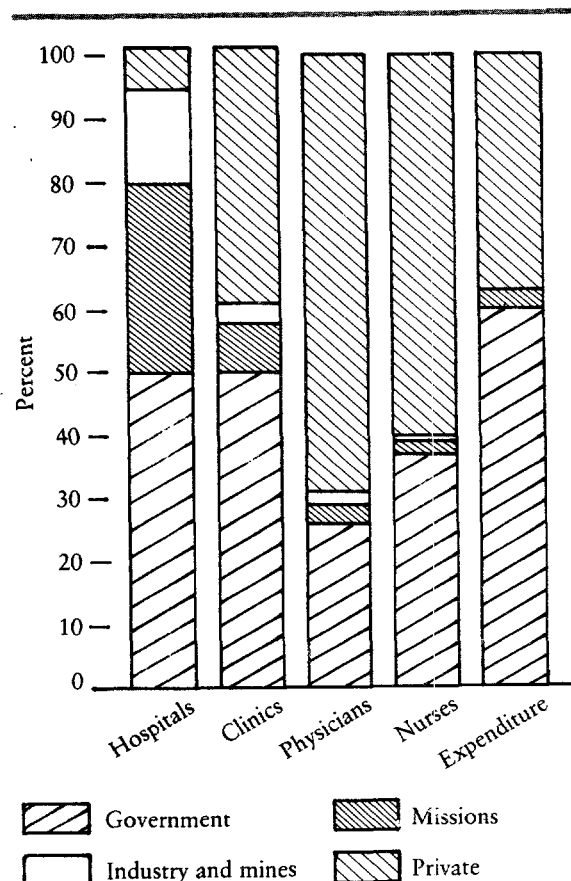
General information. Zimbabwe is classified by the World Bank as a lower-middle-income country. It occupies a position around the median of most development indicators. Female life expectancy is about 59 years, infant mortality is 77 deaths per thousand live births, and there are about 7,000 people per physician. It has a small population of about 8 million, with only 21 people per square kilometer, of whom about 30 percent live in cities.

Hospitals. The country has a public hospital-based health system run by the Ministry of Health and local governments, along with a rural mission system, which is also hospital-based, and a network of urban and rural health centers. Large industries and mines maintain hospitals and clinics for their own employees. The private modern sector, although large, accounts for only a tiny proportion of hospital facilities. In the figure the bar representing the total number of hospitals is divided into four sections to show the proportion of hospitals owned by the four components of the health system.

Clinics. For facilities other than hospitals, estimates are necessary. To determine the number of outpatient facilities, shown in the second bar, it is assumed that all hospitals provide outpatient services and that half the doctors classified as private offer clinic services. The number of clinics represented by these two groups is added to the known number of government clinics and estimates of mission facilities to get an approximate total. Even this conservative estimate of the size of the private sector accounts for about 40 percent of outpatient facilities. The private clinic sector is large relative to the private hospital sector because public hospitals allow privately attended patients.

Personnel. Zimbabwe requires annual registration of medical personnel. Apart from physicians and nurses employed by the government, missions, and industry, there is a large residual (in the third and fourth bars of the figure) labeled "private." (Some of the individuals may be retaining their licenses even though they are not practicing or are practicing in a different country.)

The Modern Health Sector in Zimbabwe, 1980-81



ing in a different country.) About 92 percent of government physicians and nurses work in hospitals; government clinics are almost completely staffed by paramedics. Zimbabwe has a registry of traditional healers that has so far tallied 11,000 traditional doctors. The total number of physicians, nurses, medical assistants, and health aides in the modern sector was just 11,159 in 1980.

Revenue. Although government and mission facilities charge user fees, people earning less than 150 Zimbabwe dollars (Z\$) a month are exempted. To offset the resulting loss of revenue in facilities not under the Ministry of Health, the ministry contributes about 76 percent of the cost of rural clinics (with local governments contributing the balance) and 85 percent of recurrent expenses in mission hospitals. In addition, part of the cost of medical-

(Box continues on following page.)

Box 2 (continued)

care in private industry is borne by the government through tax rebates. The Ministry of Health recovered about 4 percent of its total expenditure through user fees or insurance payments in 1980-81.

The private sector portion of each bar in the graph includes one known private expense, payments by insurance companies. The other components are estimates. Individuals are assumed to have paid fees directly to private physicians amounting to 10 percent of total insurance payments, to have purchased pharmaceuticals totaling 50 percent more than the Ministry of Health bought, and to have used the services of 20,000 traditional healers and midwives often enough for each to earn Z\$400 a year, the average per capita income for Zimbabwe. These conservative assumptions generate roughly a 60/40 split between government and nongovernment expenditures. Foreign aid accounted for less than 1 percent of the total, a low proportion for Africa.

Insurance. Private insurance is relatively well developed in Zimbabwe and, along with medical services run by mines and other industries, takes the place of the social insurance systems that are more common in Latin America and Asia. There are five voluntary insurance schemes covering about two-thirds of the resident Europeans but less than 1 percent of the Africans. One of these schemes is for public and parastatal workers. In these plans, half the cost of premiums is paid by workers and half by

employers, but both receive tax rebates for part of the payments.

The government further subsidizes private insurance by charging far less than actual costs for hospital stays. For example, about 7 percent of total insurance expenditures went to the top Ministry of Health hospital, where charges covered an average of only 28 percent of costs in 1979. Most insurance expenditures go to private sector facilities and providers, even though the public sector supplies most of the hospital services.

Public health and preventive care. In 1980-81 approximately 8 percent of the Ministry of Health budget was spent on preventive services.

Conclusion. Zimbabwe's system is typical of other developing countries. Public expenditures are largely urban. Ministry of Health expenditures are almost entirely for curative care, and the government heavily subsidizes medical care for citizens working in the modern wage sector of the economy. Available data have common shortcomings. There is little information on the private or traditional sectors, including who uses those services, how much users pay, and how much is spent for what drugs. For the public and private systems together, it is difficult to distinguish patterns of usage by different population groups. There is no information about how facilities are distributed throughout the country, how busy they are, or which income groups benefit from the public subsidies.

Use of the government service system varies enormously among and within countries, depending on its effectiveness and its competitive environment. In the Côte d'Ivoire the government system serves 90 percent of the outpatients; in the Philippines, which has a large modern private sector, the government system serves at least 25 percent of the outpatients. According to recent surveys, however, almost nowhere are government clinics and hospitals the only source of care. At a minimum, they compete with private physicians in urban areas and with traditional practitioners in rural areas; more often they compete with both. New government programs are thus often introduced into areas where people have well-established patterns of demand for medical service; there is rarely a com-

plete absence of services. For example, in the well-known study of Narangwal, India, in villages that were not receiving project health services, approximately a third of the sick children were found to use private or traditional care.¹ The rest stayed at home. In project villages, where free primary health services were aggressively delivered, the percentage of all sick children receiving any medical care increased, but a third of them still paid for private or traditional care.

1. Carl E. Taylor, R. S. S. Sarma, Robert Parker, and William E. Reinke, *Child and Maternal Health Services in India: The Narangwal Experiment*, vol. 2, *Integrated Family Planning and Health Care* (Baltimore, Md.: Johns Hopkins University Press, 1983).

The nongovernment sector is no less complex than the government sector. Modern private care is dominated by independent physicians. In Bangladesh, Côte d'Ivoire, Indonesia, Malaysia, Peru, and Thailand, surveys show that private physicians account for at least 25 percent of outpatient visits. In densely settled middle-income countries such as the Republic of Korea and the Philippines, as many as 40 percent of visits are to private physicians, even in rural areas. In many countries private physicians are joined by government physicians who maintain part-time private practices, by nurses, midwives, and paramedics who work privately, and by various nonprofit and voluntary organizations.

In Africa and parts of Latin America, modern nonpublic care is provided by religious missions and other nonprofit groups. Private employers also provide direct care, often for the sound business reason that it helps to maintain a stable work force. The Firestone company had by the late 1960s built up impressive health facilities for its workers and their families in Liberia, including two modern hospitals, a nursing school, and formal programs for training laboratory technicians and other skilled personnel. In 1966 the system had more than 500 employees, and more than 500,000 patient visits a year were being accommodated. Over 25 percent of total visits were by patients having no connection with the company. In many countries—for example, in francophone Africa—social legislation requires that large employers provide health services.

Also in the nongovernment sector are pharmacists and traditional healers and midwives. Private pharmacists, many of whom are primarily shopkeepers without formal training, are a source of informal advice and remedies. Traditional healers and midwives provide fee-for-service care in both urban and rural areas throughout the developing world, accounting for 10 to 50 percent of all medical visits in the countries surveyed. Even in areas where trained midwives are available and where women use modern prenatal care, traditional midwives may attend well over half of all births. World Fertility Survey data for Peru, a middle-income country, indicate that almost 60 percent of the children born in the late 1970s were delivered at home. In Mali and the Philippines, which are among the few countries for which extensive surveys of expenditures exist, traditional services

and purchases of drugs account for half to two-thirds of household health expenditures.

Use of more than one source of health care is not at all uncommon. Anthropologists have observed patients using free government care while simultaneously paying for traditional care, paying for ineffective traditional services or pharmaceuticals before finally ending up in a free government hospital bed, and paying private physicians to refer them to free government hospitals in the expectation of getting better care. Inattention to the traditional and modern private sectors when planning government services probably contributes to wasteful spending on duplicate care.

Although it is useful to emphasize features common to health systems in developing countries, it is important to point out that the countries are quite different in ways that affect the delivery, accessibility, and financing of health care. Terrain, income levels, income distribution, literacy, population density, capacity to educate health professionals, degree of urbanization, transportation and communication systems, proportion of wage earners in the population, and morbidity patterns vary tremendously. In general, certain obvious combinations of these characteristics—for example, low incomes, dispersed populations, and illiteracy—conspire to make financing and delivery of medical care far more difficult in some regions, including much of Africa. Even within Africa, however, there is great variation: some countries are characterized by relatively high and rising levels of urbanization, extremely small geographical areas, pockets of high incomes (especially in mining areas), and well-insured employees in certain industries.

Three Main Problems in the Health Sector

Problems in the health sector can be summarized under three headings: allocation—insufficient spending on cost-effective health programs; internal inefficiency—wasteful public programs of poor quality; and inequity—inequitable distribution of the benefits of health services. Piecemeal efforts to address these problems, such as foreign funding of high-priority programs or the addition of more supervisory staff to control quality, fail to address a fundamental cause—poor approaches to financing.

Allocation: Insufficient Spending on Cost-Effective Programs

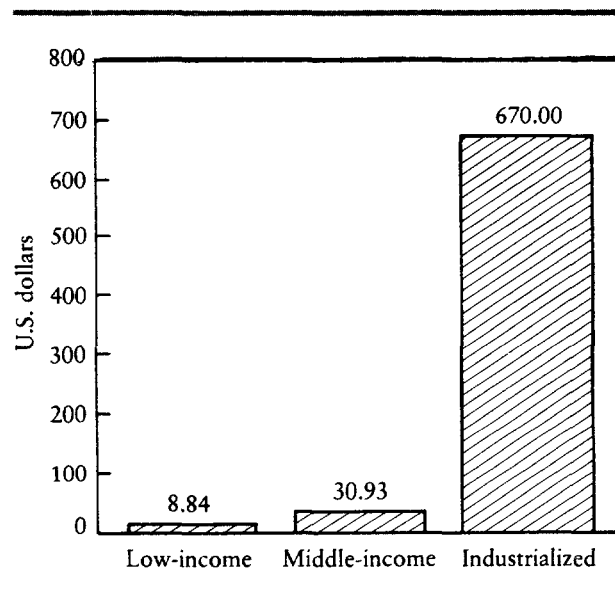
Most countries have embraced an explicit social goal—to bring basic health services to their entire population by the year 2000. But current public and private spending on basic health services in developing countries is insufficient to meet this goal. Although private spending is substantial, little of it goes for the low-cost services which are most cost-effective in improving health: basic health services, including immunizations, vector control, health education, simple curative care and referral, and effective drugs. Even if public resources were better allocated, current levels of spending would probably not be sufficient to finance these activities. As a result, basic health activities are unable to expand enough to meet the great needs of rapidly growing populations, even though households have shown they are willing to pay at least some of the costs of health care.

This section outlines the gap between actual and required spending on critical health programs in developing countries. The evidence of a gap is largely circumstantial. Systematic studies of the social returns to various types of spending do not exist for health services, as they do for education. There is therefore no simple way to quantify the gap between actual spending on health and potential spending that could yield a higher return.

ACTUAL SPENDING ON ALL HEALTH CARE. Public and private spending on health care in developing countries averages about \$9 per capita in low-income countries and \$31 in middle-income countries.² These figures are low compared with an average of \$670 in industrial countries (figure 1). Much of the difference simply reflects differences in overall per capita income; the proportion of total national income devoted to health ranges from 2 to 12 percent in almost all countries, developing and developed. Health spending is highly income elastic; as incomes rise absolute spending on health care rises at an even faster rate (table 2). As income levels rise in the poorer countries, the demand for public spending in the health sector is likely to rise more than proportionately, as it did historically in developed countries. Even in the United States, where more than half the health

2. Dollar amounts are in U.S. dollars unless otherwise specified.

Figure 1. Average Per Capita Health Expenditure, Selected Countries, 1981-82



Note: Expenditure includes public and private spending. The selected countries are:

Low-income: Burkina Faso, Burundi, Ethiopia, Mali, Niger, Pakistan, Rwanda, Senegal, Somalia, Sri Lanka, and Uganda.

Middle-income: Botswana, Colombia, Ecuador, Egypt, Greece, Indonesia, Jamaica, Jordan, Lesotho, Morocco, Peru, Philippines, Portugal, Swaziland, Thailand, Zambia, and Zimbabwe.

Industrialized: Australia, Austria, Belgium, Canada, Denmark, Federal Republic of Germany, Finland, France, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, and United Kingdom.

Sources: World Bank data for all developing countries but Egypt and Portugal; OECD (1985); and National Academy of Sciences (1979).

care is provided privately, expenditure by the public sector on health takes over 11 percent of the total government budget (appendix table A-3) and much private care is paid for by public Medicare and Medicaid funds. Public sector health expenditures per capita are larger in the United States than in most other developed countries (table 2). As development occurs all nations raise additional funds for health care with largely public benefits, and some, such as Sweden, publicly fund much care with private benefits.

Although governments are an important source of health spending in developing countries, they are by no means the dominant one. Direct private payments by individuals account for more than half of all health spending in developing countries, compared with less than one-quarter in developed countries. There are large differences among developing countries. Expenditures by individuals account for over 70 percent of total health expendi-

Table 2. Total and Public Expenditures on Health, Selected Countries
(current U.S. dollars)

Country ^a	Year	Total per capita	Public per capita	Total as percentage of GDP	Public as percentage of GDP
<i>Low-income</i>					
Ethiopia	1981	2.81	1.52	2.01	1.09
Uganda	1982	9.73	1.91	4.23	0.83
China	1981	8.39	5.70	2.80	1.90
Sri Lanka	1982	10.25	6.14	3.20	1.92
<i>Middle-income</i>					
Zambia	1981	32.24	16.30	5.37	2.72
Indonesia	1982	15.03	5.70	2.59	0.98
Egypt	1977	16.53	6.98	5.17	2.18
Peru	1981	62.12	32.71	5.31	2.80
<i>Industrialized</i>					
Italy	1982	444.42	375.84	6.50	5.49
Japan	1982	605.63	433.65	6.01	4.30
Sweden	1982	1,172.74	1,076.16	8.21	7.66
United States	1982	1,402.65	591.14	9.38	4.49

Note: Public is defined as the sum of all central government expenditures on health, health expenditures through the social security system, and foreign aid (excluding foreign aid to nongovernmental organizations). All data are based on estimates.

a. Countries in each category are listed in order of 1984 per capita income.

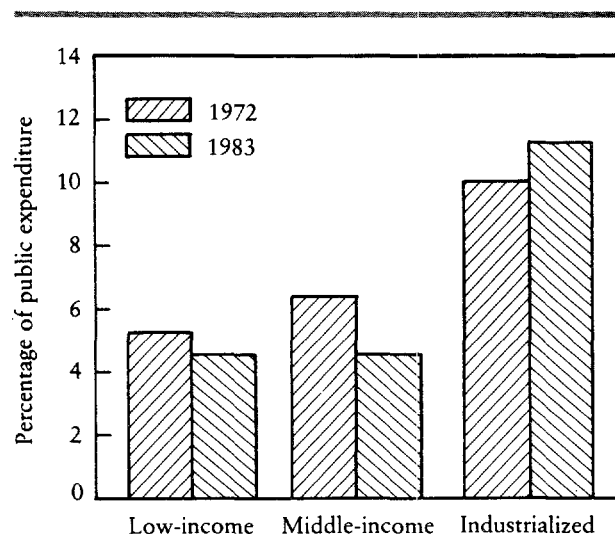
Sources: World Bank data for all developing countries but Egypt; OECD (1985); National Academy of Sciences (1979); World Bank (1983); and International Monetary Fund (1984).

tures in Bangladesh, Ghana, India, Korea, Pakistan, the Philippines, Syria, and Thailand and less than 30 percent in a number of poor African countries (table 3). Spending on nongovernment health care consists predominantly of fees-for-service and payments for drugs. In Indonesia at least 23 percent of all health spending in 1982-83 was for household purchases of medicines, and another 35 percent was for fees to modern and traditional private practitioners.

Between 1972 and 1982 the proportion of central government expenditures devoted to health declined for developing countries as a group, while it increased in developed countries (figure 2). For the poorest countries, the declining share of government expenditures going to health translated into real declines in public resources for health, and even larger declines in per capita spending, because of the rapid growth of population.

SOURCES OF FINANCE. Spending by ministries of health is supported almost exclusively by general tax revenues. Social security institutions, which are most prevalent in Latin America, are almost always financed by payroll and other earmarked taxes. Cost recovery in government facilities usually covers only a small fraction of expenses. Foreign assis-

Figure 2. Central Government Expenditure on Health as a Percentage of Total Public Expenditure, 1972-83



Source: World Bank (1986).

tance accounts for a relatively high proportion of capital costs in the poorest countries but is rarely available for operating expenses.

In the nongovernment sector, physicians, traditional healers, traditional midwives, and pharmacists are financed by fees or in-kind payments.

Table 3. Public and Nongovernment Health Expenditures, Selected Countries

(U.S. dollars per capita)

Country	Total	Public ^a	Nongovernment ^b	Nongovernment/Public
<i>Developing^c</i>				
Ethiopia, 1981	2.81	1.52	1.29	0.85
Mali, 1981	4.45	2.05	2.40	1.17
Burkina Faso, 1981	7.41	5.07	2.34	0.46
Niger, 1984	4.84	3.58	1.26	0.35
Burundi, 1982	4.23	3.52	0.71	0.20
Uganda, 1982	9.73	1.91	7.82	4.09
Somalia, 1982	9.10	4.48	4.62	1.03
Rwanda, 1982	7.07	5.18	1.89	0.37
China, 1981	8.39	5.70	2.68	0.47
Sri Lanka, 1982	10.25	6.14	4.11	0.67
Pakistan, 1982	11.18	3.23	7.95	2.46
Senegal, 1981	17.73	11.09	6.64	0.60
Zambia, 1981	32.24	16.30	15.94	0.98
Lesotho, 1980	8.99	7.94	1.05	0.13
Indonesia, 1982	15.03	5.70	9.33	1.64
Philippines, 1980	18.23	4.83	13.39	2.77
Morocco, 1982	23.53	10.60	12.93	1.22
Egypt, 1977	16.53	6.98	9.55	1.37
Zimbabwe, 1980	29.58	17.81	11.77	0.66
Swaziland, 1983	52.22	20.90	31.32	1.50
Thailand, 1979	19.56	5.86	13.70	2.34
Botswana, 1978	36.65	20.74	15.91	0.77
Peru, 1981	62.12	32.71	29.41	0.90
Ecuador, 1984	46.11	28.35	17.76	0.63
Jamaica, 1980	61.93	41.62	20.31	0.49
Colombia, 1978	69.60	46.42	23.18	0.50
Jordan, 1982	59.34	34.24	25.11	0.73
Portugal, 1982	134.86	95.88	38.98	0.41
Greece, 1982	173.16	146.19	26.97	0.18
<i>Industrialized^c</i>				
Spain, 1982	301.34	218.22	83.12	0.38
Ireland, 1982	449.58	421.01	28.57	0.07
Italy, 1982	444.42	375.84	68.58	0.18
New Zealand, 1982	421.51	373.66	47.85	0.13
United Kingdom, 1982	513.35	453.73	59.62	0.13
Belgium, 1982	531.14	490.09	41.05	0.08
Austria, 1982	641.85	404.76	237.09	0.59
Netherlands, 1982	842.75	671.12	171.63	0.26
France, 1982	935.00	664.34	270.65	0.41
Japan, 1982	605.63	433.65	171.98	0.40
Finland, 1982	695.71	554.37	141.34	0.25
Iceland, 1982	1,012.15	870.45	141.70	0.16
Germany, Fed. Rep. of, 1982	871.80	702.79	169.01	0.24
Denmark, 1982	748.75	646.80	101.95	0.16
Australia, 1982	843.33	555.22	288.12	0.52
Sweden, 1982	1,172.74	1,076.16	96.58	0.09
Canada, 1982	1,010.82	750.25	260.57	0.35
Norway, 1982	934.20	912.50	21.71	0.02
United States, 1982	1,402.65	591.14	811.51	1.37
Switzerland, 1982	945.50	618.46	327.05	0.53

Note: Because the sources use different definitions of public and nongovernmental, data for developing countries are not directly comparable across countries.

a. Public is defined as the sum of all central government expenditures on health, health expenditures through social security institutions, and foreign aid (excluding foreign aid earmarked for missions and nongovernmental organizations).

b. Nongovernment is defined as the sum of private expenditures on health care, expenditures by missions, and expenditures by Nongovernmental Organizations.

c. Countries in each category are listed in the order of 1984 per capita income.

Sources: World Bank data for all developing countries but Egypt and Portugal; OECD (1985); National Academy of Sciences (1979); World Bank (1983); and International Monetary Fund (1984).

Mission facilities are financed from three sources: user fees, generally high enough to permit substantial cost recovery; subsidies from affiliated churches; and in most African countries direct subsidies from the government. They also often benefit from the low salaries of religious personnel.

Third-party payment mechanisms are rare in developing countries outside of Latin America, so reimbursements from insurance programs (either government or private) account for only a small share of private sector revenue. However, prepaid health care programs organized by central governments, communities, or private companies are becoming increasingly common in nations such as Brazil, Jamaica, the Philippines, Thailand, and Uruguay.

REQUIRED SPENDING FOR CRITICAL PROGRAMS. Estimates of the cost of a package of basic health interventions—such as immunizations, prenatal care, and education about healthful personal habits—vary widely. Excluding water and sanitation, one detailed evaluation suggests annual costs on the order of \$10 per capita (see box 3). This is not large compared with total government and nongovernment spending on health of at least \$10 per capita in most countries. But most current spending, government and nongovernment, is for hospitals and other curative care and nonessential drugs; it does not address fundamental health problems. In most developing countries, health spending goes almost completely to curative services provided almost exclusively by hospitals. Estimates of the exact cost-effectiveness of alternative types of services are crude, but there is little doubt that costs per life saved are much higher in hospitals than in preventive services and community programs (see table 4).

Yet spending on curative hospital services, especially private spending, cannot easily be redirected. Nor should it all be redirected—at least some spending on hospitals is required because they are a necessary part of referral systems. In a sense hospitals serve the total population by being available to those who need (and can reach) them. And because hospitals treat the most difficult cases, costs per life saved (or episode of ill health ameliorated) will inevitably be higher there than elsewhere in the system.

The allocation problem in the health sector is thus rooted in a combination of limited overall

resources for health (limited in part by low per capita income) and the tendency in both the government and nongovernment sectors to allocate what resources there are to high-cost, relatively ineffective care.

Why has this mismatch between resources and problems occurred? In a centralized system, without any pricing mechanism to assist in resource allocation, investment over the long run can diverge considerably from needs. Even though hospitals have a valid and important role, it is likely that, if cost-effectiveness is used as a criterion, too many government resources are spent on them. Much more of the burden of this spending could be borne by the actual beneficiaries of the less essential care. In Niger about half the government health budget goes to hospital services in urban areas. Another 40 percent is spent on provincial facilities in the main towns, and just 10 percent is spent in rural areas where over 80 percent of the population lives. The 50 percent of the budget devoted to hospitals in 1984 benefited 350,000 hospital patients, while the other half of the budget provided services for more than 10 million clients.

In Swaziland the seven most common causes of hospitalization are gastrointestinal diseases, complications of pregnancy, respiratory illnesses, tuberculosis, malnutrition, measles, and skin diseases. If the public resources tied up in hospitals were redirected to lower levels of the health system, many of these could be treated earlier at a less severe stage or prevented altogether. Similarly, in Bangladesh specialized orthopedic, cardiovascular, and eye institutions as well as a planned cancer research center are publicly subsidized. Some specialization is hard to avoid. But in a country with a life expectancy of only fifty years, the chronic diseases those institutions are designed to treat will affect less than 1 percent of the population. At the same time, Bangladesh estimates that every year 325,000 active tuberculosis patients over the age of ten receive no treatment, at least 90,000 children under the age of five die of pneumonia, and 136,000 infants die of tetanus.

Another symptom of insufficient spending on cost-effective health activities is the difficulty of retaining trained personnel in critical public sector health programs. Low salaries and poor amenities in the public sector contribute to a loss of personnel, who seek jobs with the private sector and

Box 3. Primary Health Care: Resources and Costs

The World Health Organization's *Global Strategy for Health for All by the Year 2000*, published in 1981, estimates that the cost of achieving primary health care for all people in developing countries is approximately \$30 billion annually (or about \$10 per capita) for twenty years (1980–2000). The amount now being spent on health services by public and private sources combined in the same countries is about \$40 billion (\$13.3 per capita) annually. Given these needs and approximate overall spending, could primary health programs be financed simply by redirecting existing public, private, and foreign aid expenditures in developing countries away from hospital-based systems?

Some such redirection might be possible. But it alone will not solve the resource problem.

First, even if all hospitals were closed down and the money used for operating them were put into rural health services, the real inputs needed are simply not widely available. Manpower is an example. The developed countries have slightly more than nine times as many physicians per capita and about eighteen times as many nurses per capita as developing countries (World Bank 1986). The United States has 800 people per physician compared with

8,000 people per physician in the Philippines; even if allowance is made for some waste in the United States, a tenfold difference is dramatic.

Second, reallocating resources away from hospital care is not easy. It is physically impossible to turn a few large and costly hospitals into many small primary-level health care units or to turn a nation's highly trained doctors and nurses into less trained and less expensive primary health care workers. Since such facilities and personnel cannot be transformed, new primary-level health care facilities must be built and new lower-level personnel trained to carry out primary health care duties. Even if such facilities and personnel could be transformed, a system without any high-level personnel and facilities would not be desirable. Some high-level facilities and personnel are needed to handle the referrals from the rest of the system.

It is the financing of expensive hospital care that needs change, not the existence of the care as such. Governments must find ways to charge those who are able to pay for the benefits of publicly provided curative care, so that limited public funds can be freed for critical health programs with public benefits and for subsidizing care for the poor.

overseas, and make it difficult to staff publicly provided basic health services for the poor. India, which is widely regarded as having a surplus of physicians and is a major contributor to the international migration of physicians and nurses, had vacancy rates of 30 to 90 percent for professional health service positions in rural states during the early 1980s. An inventory of government rural health clinics in the Philippines in 1974 found a third to half of the openings for physicians and nurses unfilled. Because of the inability to raise salaries to a level competitive with other opportunities, public sector health systems in many countries have been forced to allow physicians to supplement their incomes through private practice, which often reduces their time spent in basic programs. Another response to the situation is to make temporary government service compulsory for recent medical and nursing school graduates.

Internal Inefficiency of Government Programs

In the government component of national health

systems, there is plentiful evidence that scarce resources are poorly used. Demand-side problems are created in part by low fees, which probably contribute to poor use of referral systems. Supply-side problems, including poor quality, are associated with highly centralized management.

DEMAND: INAPPROPRIATE USE OF SERVICES. One of the most obvious symptoms of inefficiency in health services is the widespread use of higher-level facilities by patients who could be well served at less sophisticated units. A typical pattern is for some facilities, usually central outpatient and inpatient facilities, to be crowded, with lengthy waiting times, while other facilities, usually lower-level ones, have few clients. In Colombia and Somalia hospitals at the highest level (tertiary care) in major cities had occupancy rates of over 80 percent in recent years, while local (secondary) hospitals had rates of 40 percent or less. In Rwanda the occupancy rate for beds in city hospitals averages about 70 percent but is 30 percent in rural health centers. A World Bank mission in Somalia observed a thirty-five-bed secondary hospital that had one

Table 4. Spending for and Cost of Various Health Services

<i>Services</i>	<i>Percentage of total expenditure on health^a</i>	<i>Approximate cost per additional life saved (U.S. dollars)</i>
<i>Direct services to patients</i>		
Curative	70-85	High (\$500-\$5,000)
Treatment and care of patients through health facilities and independent providers (including traditional practitioners)		
Retail sale of medicines		
Preventive	10-20	Medium (\$100-\$600)
Maternal and child health care (for example, immunization, growth monitoring, family planning, promotion of better breastfeeding and weaning practices)		
Adult care (for example, hypertension screening, pap smears)		
Community services	5-10	Low (less than \$250)
Vector control programs		
Educational and promotional programs on health and hygiene		
Monitoring of disease patterns		

a. Includes both nongovernment and public spending. Data on private spending are available for only a limited number of countries. Figures here assume 90 percent of private spending is for curative care and 10 percent is for preventive care.

Sources: For the percentage distribution of total expenditure on health, see de Ferranti (1985). They are rough estimates by the authors of the present study. The cost per additional life saved is based on selected studies. Cochrane and Zachariah (1983) show that the cost per additional life saved of hospitalization ranges between \$1,300 for hospital-based diarrhea treatment in Matlab, Bangladesh (1982), and \$2,820 for treatments in large hospitals in Morocco (1971). Creese (1986) estimates the cost of single antigen immunization programs at \$2-\$14; Barnum (1980), Barnum and others (1980), Barlow (1976), and Shepard (1982) estimate the cost of immunization programs per additional life saved at between \$24 and \$568, depending on the scope of the immunization program. Programs aimed at immunizing for only one or a few diseases had up to six times higher costs per additional life saved than total immunization programs. Walsh and Warren (1979), Faruqee and Johnson (1982), and Barnum and Yakey (1979) put the cost of primary health care interventions per additional life saved at between \$25 and \$508. Shepard and others (1986) estimate the average cost of diarrhea treatment at \$500 per additional life saved. Barlow and Grobar (1985) estimate the cost of a malaria control program at \$69.95 per additional life saved. Walsh and Warren (1979) estimate the cost of a malaria control program at \$892.20 per additional infant life saved; basing the cost on overall reductions in mortality would have reduced the cost per additional life saved. Cost per additional life saved for vector control programs is inversely related to the case fatality rate of the diseases and is therefore higher for diseases such as schistosomiasis, onchocerciasis, ascariasis, and ankylostomiasis. However, economic benefits in terms of improved productivity and reduced nutrition and health care needs are high.

patient and another thirty-two-bed hospital with no patients. In India health clinics that have eight to ten beds serve about 100,000 people. An evaluation of eight clinics in one district found only one of eighty beds being used.

Consumers crowd themselves into modern urban institutions for obvious reasons. Personnel have more training, equipment and laboratories are more complete, a wider array of diseases and emergencies can be handled, toilets and running water are available, and the institutions are located in cities where required drugs and related services can be purchased. Consumers have little pecuniary incentive not to use the high-level facilities when both high- and low-level facilities are either free or charge the same fee. The result: many services are delivered unnecessarily through costly facilities and personnel, and lower-level services that are known by professionals to be appropriate for some diseases are inadequately used by consumers. Crowded facilities are then expanded to accommodate large patient loads, and inefficient use is

reinforced. Inappropriate pricing policies result in inappropriate investment patterns, and the vicious circle builds on itself.

One reason Senegal's Sine Saloum Primary Health Care Program nearly collapsed in 1980 was exactly this type of pricing problem. Village health workers charged a flat fee for their services, but free treatment and drugs were also available at more distant government health posts. Village workers simply could not compete with free services from more highly trained nurses and nurses' aides. Moreover, they were slowly depleting their stocks of pharmaceuticals because the flat charge per visit did not cover replacement costs. The situation was corrected when the government instituted charges in the rest of the health system and drug charges in villages were revised to reflect costs.

DEMAND: RATIONING BY QUEUE. A study in Calabar, Nigeria, found the average visit to a government clinic to take one and a quarter hours, which

is not in itself exceptional, but waiting times were sometimes as long as eight hours. Data from facilities in Uganda showed that about half the patients were seen within two hours, but 10 percent waited more than five hours. Nearly a third of the patients in health centers, the highest-level facility in the sample, waited more than five hours. An anthropologist in Côte d'Ivoire observed patients in government clinics waiting hours to be seen for a few minutes of attention; the time was often wasted because supplies or personnel were not available. For the working poor—including mothers with heavy demands on their time for child care, other home activities, and agricultural work—the opportunity cost of waiting time can be high indeed.

The long lines at some government facilities can mean not only that clients' time is poorly used, but also that there is unintended and inefficient rationing of services. Perhaps those who can most afford to wait receive the care, rather than those who need it most—although the better-off can usually avoid the long lines for free services by going to the private sector or using bribes or connections to skip the queue. Long lines put pressure on providers to minimize the time spent with each patient, irrespective of the health problem. They are also likely to be an indication of hidden inefficiencies, including the loss of time by people reconnoitering clinics to see if they have a chance of being treated and the loss of care by needy people who cannot afford to wait.

SUPPLY: UNDERFUNDED RECURRENT COSTS. Pressure to expand the system combined with insufficient funds to do so leads to cutbacks on critical complementary inputs. When public budgets must be cut, it is easier, especially in the short run, to cut spending on fuel, drugs, and vehicle and building maintenance than on salaries. Because these inputs are usually a small portion of total costs (typically less than 20 percent), they must be cut drastically to reduce total spending significantly. The price of a small financial saving is a large drop in the effectiveness of workers.

In Zambia “free” government-provided health services were reportedly inoperative because fuel and drugs were unavailable; yet nongovernment services flourished. About a third of all rural clinics in the Philippines are located in dilapidated buildings. In Tanzania working vehicles and bicycles were available in only one-third of the rural

health clinics in 1978—and in less than one-fifth in 1984. Throughout much of Africa many health posts have deteriorating roofs, a nonworking water supply, and worn-out furniture and equipment. Drug shortages are common in public facilities, even when drugs are widely available in nearby nongovernment facilities.

Some apparent shortages stem from overly ambitious plans and the natural temptation to accept foreign funds for buildings, equipment, and service systems that cannot be maintained. Even the expected benefits of sensible investments are often not realized, however, because operating costs are not adequately financed.

SUPPLY: OVERCENTRALIZATION AND COSTS. Tax-supported health systems are highly centralized in their financing and usually highly centralized in their management as well. These centrally financed and managed systems tend to use resources inefficiently. A rural health demonstration project in Mali consumed 63 percent of its planned operating cost in supervising village health workers and carrying out other administrative requirements that replicated, at great expense, an existing decentralized private distribution system. Centrally managed and funded health systems are also susceptible to political disruptions. In Uganda the government health system was destroyed when political upheaval prevented the central authority from effectively managing or funding the system. Had there been no mission health system, health services would have disappeared for most Ugandans in the 1970s.

SUPPLY: LOGISTICAL PROBLEMS. Logistical problems in the supply of drugs, equipment, and fuel are the result not only of resource constraints but of highly centralized distribution systems. The distribution of publicly funded pharmaceuticals is an example. Countries typically have central warehouses through which all ministry of health pharmaceuticals flow. Brand name drugs are bought in small, expensive lots; drugs often spoil in storage; lax inventory control results in thefts; pharmaceuticals are allocated to facilities without regard to the demand for them; and there often are no formal procedures for reordering drugs. In Haiti an analysis of drug supplies found that the central warehouse flooded each fall during the rainy season, that there was no stock control or

reordering procedure, and drugs sent to local facilities bore only a chance relation to what was needed.

In a few countries inefficiencies in distribution show up in the form of high consumer prices. In Burkina Faso consumers pay 60 percent more than the retail price paid in France for similar pharmaceuticals. In Sierra Leone in 1983 average prices paid by the government's Central Medical Stores ranged up to 314 percent above average generic prices in the world market.

Similar problems arise in the distribution of fuel and in vehicle maintenance. In the Gambia some vehicles use half their biweekly fuel allotment to drive to a depot to collect the allotment. In Ethiopia half the 1,025 health service vehicles are inoperable at any one time. Over 40 percent of the vehicles dedicated to rural service are at least ten years old. Fuel is allocated by vehicle, not according to the area covered. In Zambia in 1982 only 26 percent of 550 vehicles were operative, and few of the working vehicles could be used because of a lack of fuel.

Primary health programs have taxed centralized distribution systems to the limit. A 1979 evaluation of community health workers in India found that 40 percent had never received their drug kits and 60 percent had not received their community health manuals. In Peru only 34 percent of village health promoters had received their medicine kits. Ministries of health have been unable to deliver support and supervision to dispersed health workers. In immunization programs, logistical problems have caused vaccines to spoil as a result of the failure to keep them refrigerated. In the late 1960s in Nigeria, measles cases were increasing among children with clear records of having been immunized. Tests of the measles vaccine found that only one of twenty samples was capable of immunizing a child. Similarly, Chile experienced a measles epidemic in the late 1970s despite widespread immunization. Sampling of the measles vaccine found 100 percent to be effective at the central stores, but only 76 percent at local clinics.

SUPPLY: POOR QUALITY IN THE PUBLIC SECTOR. Evidence of the poor quality of government services is anecdotal and difficult to quantify. But it is also impossible to ignore. In one African country group discussions were undertaken to examine reasons for the underutilization of public health

services. Seven different groups were interviewed: village women, village men, elementary school teachers, traditional healers, male civil servants, female civil servants, and nurses from the general hospital. Respondents complained of long waiting times in government facilities, shortages of drugs, the poor attitude and demeanor of nurses, and the hastiness of physicians. They viewed petty corruption as commonplace in government health services. For example, respondents said that personal connections were important in skipping registration lines; that drugs bought in the marketplace were frequently stamped as property of the government stores; and that the only way to obtain adequate care was to arrange for private care after hours.

A poor referral system, poorly trained health workers, and lack of supplies and drugs are other inadequacies. A 1984 survey in Tanzania showed that rural health clinic personnel referred only 3 percent of their patients to a higher level, when in fact they were not capable of treating 36 percent of their clients. The nonreferrals were given drugs that could not have helped them.

The skills of village health workers were evaluated in twenty-three states in India in 1979. They scored poorly in four areas: referrals, disease prevention, emergency care, and general curative services. Responses in these areas were on average correct less than 30 percent of the time. A 1982 study in one Indian state found that 80 percent of village health workers did not know how to mix oral rehydration solutions. In Peru village health workers in a 1984 review displayed "dismaying and alarming" ignorance of the symptoms of several important diseases.

Inequitable Distribution of Benefits

If public resources were unlimited, it might be possible for the government to provide free health services for all. But government resources are not unlimited. (And in any event, free services tend to lead to waste and high costs.) Given the resource constraints outlined above and the high fixed costs of certain kinds of health care, governments in developing countries can provide only a very low subsidy per person for health care. In most countries a low average subsidy leads inevitably to rationing—there is simply not enough for everyone. Providing free publicly funded curative services for

all translates into free and adequate services for some and inadequate services, or none, for others.

INEQUITABLE URBAN-RURAL DISTRIBUTION OF BENEFITS. In most developing countries 70 percent or more of government spending on health goes to urban hospital-based care (see box 4). Hospitals are inherently expensive. When their services are free, they create distinct subsidy patterns that are difficult to modify. In Tanzania, which has since 1972 pursued a policy of limiting hospital construction in order to focus resources on rural health services, the share of recurrent expenses going to hospitals fell from 82 percent in 1970–71

to a still substantial 60 percent in 1980–81. Hospitals consumed 34 percent of the capital budget for health in 1970–71, and the proportion remained roughly constant throughout the following decade despite almost a 1,000 percent expansion of the rural health clinic program.

Hospitals are located primarily in cities, since the market they serve has to be large enough to justify their high capital and recurrent costs. The result of this location pattern is not surprising. Even in well-functioning referral systems, in which many hospital patients come from rural areas, hospitals end up serving primarily urban residents. In developing countries 70 to 90 percent of hospital

Box 4. The Urban Orientation of Public Health Spending

Disparities in public spending between urban and rural areas are common. Per capita public expenditures on health care in urban areas are often more than three times as high as in rural areas. National health expenditure data are not usually sufficiently disaggregated to show intracountry differences. Data from China, Senegal, and Peru, however, do allow examination of spending patterns in those countries.

China. In China health subsidies have a pronounced urban orientation primarily because of state subsidies to urban beneficiaries of compulsory insurance schemes. Total expenditure per capita in 1981 was estimated at \$6 for rural areas and more than triple that amount, \$19, for urban areas. State subsidies to the health system averaged less than \$2 per capita in rural areas, but urban areas received almost ten times as much, \$15 per capita. Furthermore, private expenditures by rural residents were higher than by urban residents, about \$3 as opposed to \$2.

Since the collapse of the rural cooperative insurance system as a result of recent economic reforms in China, the great majority of rural people now have no insurance against the financial risks of ill health. These risks can be substantial in the Chinese health system, which is characterized by a high degree of cost recovery—hospitals typically recover about three-quarters of their operating costs through user fees and drug sales. Recent survey estimates indicate that the cost per hospital admission averages about \$75 for urban residents and \$36 for rural people. With rural incomes averaging as

little as \$85 a year per capita in some regions, these costs are virtually unaffordable for many rural people. By contrast, the majority of urban residents benefit from compulsory, state-subsidized health insurance—about 9 percent of the population are covered by the Government Insurance Scheme and another 57 percent by the Labor Insurance Scheme for state enterprise employees and their dependents. These plans provide free medical care (no deductibles or copayments) for their primary beneficiaries, and the Labor Insurance Scheme reimburses 50 percent of the costs for dependents.

Senegal. In smaller developing countries public investments and recurrent expenditures in the health sector tend to favor the national capital area. Inequality in the availability of health resources is compounded by the fact that referral systems rarely ensure equal access to health care by those living in rural areas. Of the ten national and regional hospitals in Senegal in 1981, three, including a university hospital center, served principally Dakar and the Cap Vert region. The Fleuve department in the north was served by three hospitals, while two other departments, Louga and Senegal Oriental, had no regional hospital at all. The ratio of population served per hospital bed ranged from 426:1 in Cap Vert to 7,254:1 in Casamance. Fifty percent of new investment funds are earmarked for the capital region.

The urban-rural distribution of supplies and personnel follows that of hospitals. Seventy percent of Senegal's physicians and pharmacists, 60 percent of its midwives, over 40 percent of its nurses, and

Box 4 (continued)

virtually all of its dentists are concentrated in the Dakar-Cap Vert region, where less than 30 percent of the population lives. In 1981 the Dakar-Cap Vert hospitals received 70 percent of the hospital drug budget, which is 50 percent of the national drug budget. Health centers, the secondary level of health care, received 32 percent of the national drug budget, which they are supposed to share with health posts at the primary level. In practice the latter receive little, and annual pharmaceutical supplies are usually exhausted at the health-post level within six months, so that local populations have to purchase their own drugs over the counter.

Overall, the Dakar-Cap Vert region received almost 60 percent of the national drug budget in 1979-80. The Fleuve department, with 10 percent of the population, received 13 percent of the drug budget. The six other departments, with 60 percent of the population, received less than 30 percent of the national drug budget.

The rural health system has been relatively neglected because of the diversion of resources to urban curative services. Of the thirty-six health centers in 1980, only twenty-four were considered operational. About half of Senegal's 492 health posts

are in poor operating condition. Many health centers are thirty to fifty years old and lack basic amenities such as water, latrines, and electricity.

Peru. National per capita public and private health expenditures in Peru amounted to about \$59 in 1980. Although 27 percent of the total population in 1981 lived in the metropolitan area of Lima, the percentage of total public spending that was spent there increased from 37 to 47 percent from 1970 to 1981. Per capita Ministry of Health expenditures in Lima were nearly twice that spent in the San Martin Amazonas department and over five times that spent in Cajamarca, the most rural department.

Of total public expenditures for health care in 1980 and 1981, 87 percent was spent on curative care. In the 1978-81 period an average of 11 percent of the Ministry of Health's budget was spent on capital expenditures, primarily for the construction of hospitals in cities. Two-thirds of all doctors live in Lima, which has only 29 percent of the country's population. In most rural areas there is only about one doctor per 10,000 or more inhabitants.

clients live within ten kilometers of the facility they use. As a consequence, in China, Colombia, Indonesia, and Malaysia the average health sector subsidy captured by urban households is up to five times larger than that captured by rural residents.

If hospital services are free, the use of fees or revolving drug funds to finance rural health workers will obviously exacerbate this imbalance. Self-financing rural health programs in Senegal and the Gambia were added on to existing free urban systems. As a result, rural residents pay for low-level care from a village health worker in addition to subsidizing free, more sophisticated urban facilities, which serve mainly urban dwellers.

INCOME INEQUALITIES. Because family incomes are significantly higher in cities, the urban bias of most health systems creates a distribution of facilities and personnel that favors the better-off. Demographics and disease patterns also play a role. Higher income groups tend to be older and to suffer from diseases or accidents requiring hospitalization, whereas the poorest households are

more often young families with children, for which many health problems can be handled without hospitalization.

The extent of income bias varies among countries. In Colombia and Malaysia health subsidies appear to be roughly proportional to incomes, with hospital subsidies favoring the rich and health center subsidies favoring the poor. In Indonesia, however, the poorest 40 percent capture only about 19 percent of the subsidies from public sector health centers and hospitals.

The pattern of public subsidies in Lesotho is similar to that of many other developing countries. In 1983-84, 84 percent of the budget of the Ministry of Health was absorbed by government-run hospitals and health centers concentrated in the towns and lowland areas where higher-income citizens live. In these government facilities fees are very low, covering less than 6 percent of the costs. The low-income population in the highlands is served by hospitals and clinics operated by mission agencies. Fees in these mission facilities cover 60 to 80 percent of the costs. Thus those who live in the

highlands, where incomes are low, pay a much higher proportion of the costs of their health care than those who live in the more prosperous lowlands and cities. Most of the government health subsidy is captured by the rich.³

These subsidy patterns often lead to the broad prescription that hospitals should be severely cut

3. When health services are provided through tax revenues, who pays the taxes is just as important as who receives the benefits. Tax burdens in developing countries are generally thought to be proportionately distributed at best—that is, people at all income levels pay the same percentage of their income in taxes, so that the poor pay as large a percentage as do the rich.

back or eliminated. However, a certain number of hospitals is an essential part of any health system, even one whose main emphasis is on primary health care. In a sense, they are a fixed cost of the health infrastructure. That fixed cost can consume a high proportion of health budgets even when hospitals are deemphasized, as in Tanzania. The real equity issue is how the needed hospitals are paid for. The problem is not only—or even primarily—that developing countries' health systems are hospital-based. It is that public spending for health is hospital-oriented and thus benefits the rich disproportionately.

2

Policy Reforms

Four policies to help address the problems of national health systems are discussed in this chapter. The policies share two characteristics: they shift some of the burden of financing health care from the public sector to the beneficiaries (households), and they shift some decisionmaking from central planning agencies to those in closer touch with local conditions and client needs. The policies are described in broad terms—their specific application will be different in different country situations. Because they are closely related and mutually reinforcing, the policies constitute a package. But a country may wish to adopt only some of them or to move more quickly in some areas than in others. In the long run, however, all four merit consideration.

The four policies are:

- Charging users of publicly provided health services, especially for the types of curative care that benefit solely individuals and their families
- Encouraging risk-coverage programs
- Strengthening nongovernment provision of health services for which households are willing to pay
- Decentralizing the public health system.

These policies alone will not rectify all health sector problems. They will not immediately help

countries rectify the big investment mistakes—investing too much in urban hospitals or in the wrong training facility. Nor are all aspects of these policies easy to implement: user charges must be designed to protect the poor; insurance programs are difficult to run in rural areas; decentralization of the health system may be resisted by other parts of government.

Policy changes of the types proposed are, however, already under way in many countries in at least partial response to the sector's problems. Many of the details of such policies must be designed specifically for each country, and their effects can be fully evaluated and specific designs altered only in accordance with the experience of each country. As argued below, any substantial improvement in the effectiveness and fairness of national health systems is difficult to envision without change in policies along the lines proposed.

Charging Users of Government Health Facilities

Government health facilities in developing countries tend to charge no fees or very low ones for services, drugs, and other supplies. An outpatient visit for an adult in Botswana, Burundi, Lesotho, Pakistan, the Philippines, or Rwanda costs less

than one-third of the average daily agricultural wage. In Indonesia the cost is about half the daily wage. In Burkina Faso, Malawi, Mali, and Zimbabwe the visit is free. How would increases in charges to users—even modest increases—help solve typical health sector problems?

First, higher charges at government health facilities would generate more revenue. In the long run, more revenue would allow currently underfunded but cost-effective basic health services to expand and thus help governments redress the allocation problem. In the short run, revenues from charges can be used to cover a substantial portion of the operating costs of current programs, especially programs of simple curative care. In Colombia and Indonesia fees cover more than 15 percent of the operating costs of the system as a whole. Health projects in India, Indonesia, Mexico, Sierra Leone, and Zaire cover 20 percent or more of recurrent costs with fees; a project in Cameroon covers 95 percent of its costs with fees. Mission facilities in Africa cover as much as 70 percent of their costs with fees. These examples suggest the likelihood that in many settings, even relatively poor ones, governments could recover 15 to 20 percent of operating costs. On the one hand, this is not much. On the other, it is a substantial part of nonsalary costs—which tend to be underfunded.

Second, higher charges could improve access of the poor to health services. It appears that free health care would make it easier for the poor to “afford” services. But appearances are deceptive. As discussed in chapter 1, because 60 to 80 percent of public funds are absorbed by urban, hospital-based care, it is often the middle class and the rich, not the poor, who benefit most from free services. Although the pattern of subsidizing urban hospital services may help the urban poor, it can leave the rural poor underserved. Even if the free services were available in every area, so that the rich and poor appeared to have equal access, this would not be the case. Because a consequence of greater wealth is a greater ability to afford the costs of travel and time to obtain care, the rich inevitably enjoy more of the subsidized free health care than do the poor. The imposition of fees makes it possible for governments to generate revenue to extend appropriate services to the underserved. The charging of appropriate fees to the rich also removes much of the unfair subsidy inherent in free care.

Third, even modest charges to users are likely to make delivery of government health services more efficient. Consumers will be more sensible in their demand for services. A system of fees to reflect the relative costs of the services will charge more for hospital than for clinic visits and will therefore encourage the proper use of referral systems. A small charge for a visit may help discourage patients from seeking the type of service they do not really need—say, hospital care by a doctor for a minor ailment that could be handled at a clinic by a paramedic or at home (although time and travel costs will probably do more than any small fee to discourage the frivolous use of services). Different charges for different types of service can also signal to consumers the importance of certain kinds of care; for example, the same health center could charge little or nothing for prenatal care and a higher fee for regular outpatient services. Fees also encourage efficiency on the supply side. Wasteful overprescription and multiple prescriptions are serious problems in developing countries. In public facilities health providers will be less inclined to overprescribe if they know patients must pay for drugs. Pilferage and spoilage of drugs and other supplies are also likely to decline if the providers of these goods charge for them and are accountable for the payments collected. Providers are likely to be more responsive to the concerns and needs of clients. The use of fees to fund some costs of health services will link revenue to performance and give staff an incentive to provide good care. If clients are not attracted to a facility, a problem will be obvious. In contrast, when few patients use free services or services are used only because they are free, there is no signal of a problem to higher management. But, when the institution of fees at public facilities in part of Nigeria led to a sudden drop in utilization, the authorities were able to recognize the serious problems in the quality of service.

Should All Services Have Fees High Enough to Cover Costs?

Full cost recovery is not appropriate for all health services. The textbook rule is that, given certain necessary conditions, the price charged for a good or service should equal the additional (or marginal) cost of providing it—that is, the cost of supplying the last unit. This pricing rule in most cases ensures

that prices will cover costs and that there will be an efficient allocation of resources throughout the economy. But the necessary conditions are not fulfilled for every kind of health service. Where they are not, exceptions to the price rule are appropriate. (In some cases it even makes sense to charge users nothing or to offer them incentives or subsidies for using the service.) What are the conditions, and when are exceptions justified?

EXTERNALITIES. When the benefits to society of an individual's use of a service exceed the benefits to the individual, individuals will not purchase enough of the service, from society's point of view, if they must pay the full cost. Immunization against contagious disease has such a positive externality. But most curative hospital care does not; all the benefits of a mended broken bone are captured by the patient.

INCOMPLETE INFORMATION. If people do not know enough about their own or their family's health needs or about what health care can do for them, they are likely to purchase more or less than they would if they had complete information. If mothers do not know that infants with diarrhea need liquids, they will not purchase oral rehydration solution. Prenatal health care, well-baby care, and family planning are other examples of services that have benefits which may not be fully known to all consumers.

A low or zero price is one way to encourage use of a new and valuable but not fully understood service. But four points must be made about this argument for low fees. First, the argument seldom justifies subsidies that are not fully complemented by education and information programs. Second, the argument may justify subsidies for a time, but not indefinitely. At some point, as consumers become aware of the private benefits of such services, they will be willing to pay an amount that permits full cost recovery. (Much that consumers will eventually learn relates to preventive care, which is relatively cheap to provide, however, and the costs of collecting small fees could even exceed the amounts collected.) Third, as with the externalities argument, the information argument does not justify subsidies for all types of health care. The problem of incomplete information applies much less to curative services because most people who are ill know they need health care.

Fourth, lack of information does not necessarily justify zero prices even for services about which consumers are uninformed. A modest charge that is lower than the marginal cost may in fact be a proper way to create incentives for efficient consumption and delivery of services. For example, charging for drugs may be the best way to make the distribution network responsive to consumer demands in rural areas, in terms of supplying both the quantity and type of medicine needed. A lack of information does not justify wholesale abandonment of marginal cost pricing policies. In fact, it suggests that information or health education programs should be subsidized, and perhaps accompanied by subsidized health services, as part of a marketing strategy.

THE FREE-RIDER PROBLEM. The benefits of certain health care services—such as disease control and monitoring programs—cannot be provided only to the individuals willing to pay and withheld from others in the same area. To kill flies, snails, and mosquitos which carry parasitic diseases or to monitor epidemics, entire regions must be blanketed. It is simply impractical to charge since no provider-client transaction takes place. For most clinic services, however, there is no free-rider problem.

FAILURE IN INSURANCE AND OTHER MARKETS. Without an insurance market individuals are unable to use some kinds of health services, even when they perceive the benefits of doing so and would be willing to pay the costs through insurance premiums. Formal risk-sharing schemes to cover curative health care are rare in rural areas of developing countries. In Africa and South Asia insurance is not common even in urban areas, except for employees of governments and large enterprises.

Lack of an insurance market does make it difficult to charge the full costs of expensive hospital care. But it does not rule out charging small amounts that at least deter frivolous use and raise some revenue.

THE EQUITY ARGUMENT AND MERIT GOODS. The exceptions discussed above all argue against full marginal cost pricing on the grounds that it would not lead to efficiency—to the best allocation of resources. There is a separate argument that it

would not lead to equity either. Some basic services, if priced at marginal cost, might not be purchased even by well-informed consumers if they do not have sufficient income. Governments may want to guarantee some minimal consumption of goods and services that meet basic needs (what economists refer to as merit goods), or they may redistribute income in a politically acceptable manner, by taxing the rich to provide basic services to the poor.

This equity consideration argues particularly for subsidies to services such as rural health posts that primarily serve the poor. In general, these have not absorbed large proportions of public health funds.

There are, in short, good reasons for charging less than full costs in the provision of public health. Three points, however, should be borne in mind:

- Because a low or zero price is justified for some health services, it is not justified for all.
- Even when some subsidy is justified, a large subsidy (large enough to keep the user price at zero) may not be.
- Even when some subsidy is justified for some period of time, it may not be justified indefinitely.

What System of Charges Is Practical?

Experience in a few countries provides a practical guide to determining which services should carry fees and to introducing fees in a sequence that is politically acceptable and administratively possible. Whatever system is selected, it should be flexible enough to allow increases and decreases in fees to adjust to changes in utilization patterns and the effects of inflation. Failure to raise fees with inflation has reduced revenues in many countries in the past decade.

The theory outlined above indicates that fees for curative care should be implemented first and be highest. Most curative care is for inpatients in hospitals and clinics, although some is for hospital outpatients. Except when the poor are exempt from payment for equity reasons, most outpatient and inpatient curative care in public facilities should be provided only for a fee. Such curative services often account for 60 percent of total public sector spending on health. Even if fees covered

only a portion—say, one-third—of the costs of such services, they could recover as much as one-fifth of the health system's total cost.

Until insurance is widely available, however, anything more than nominal daily charges for hospital and clinic stays may be impractical and unduly burden the unlucky sick. What kinds of fees are practical in the near future and already in use in some countries?

- *Hospital charges for private patients.* Publicly run hospitals are often accessible to private physicians and private patients. In Botswana, the Gambia, and Zimbabwe private patients are charged for private rooms; in Botswana the government is considering raising private fees above costs in order to subsidize public patients. In public hospitals in Indonesia fees collected from the more affluent who elect semiprivate care are used to subsidize general ward patients; the cross-subsidization is large enough to underwrite free accommodation for indigents. Private physicians can also be charged for their use of public hospital facilities, and patients using private physicians can be assigned, without choice, to a private ward and charged more than other patients.
- *Hospital charges payable directly by insurance providers for insured patients.* If participation in some sort of insurance scheme is compulsory for certain groups (such as employees in the civil service and formal sector) the full costs of those patients can be covered. To ease the administrative burden on hospitals, insurance providers could be billed full costs; they in turn could bill their clients any applicable deductible or copayment costs.
- *Drug charges.* Instituting charges for drugs should be high on the list of possible cost-recovery steps. There is already widespread acceptance of the idea of purchasing drugs; a private market exists in virtually every country, even those in which drugs are obtained free through the public health system. Where the procurement and distribution of drugs in the public sector is inefficient, the ability to charge for drugs provides a useful management incentive. In a revolving fund where charges are an important source of revenue to replenish drug supplies, accountability of managers and distributors can be built into the system and collection costs should be low (see box 5).

Box 5. Financing Village Health Workers and a Revolving Fund for Drugs in the Gambia

Many primary health care programs have successfully incorporated elements of self-finance, usually from community support and the sale of drugs. In the Gambia, village-level services are provided by a village health worker, who is trained to administer simple curative services and preventive care, and by a traditional birth attendant, who is trained in maternity care. Both workers are chosen by a village development committee. Following a short training period, they work in their villages under the supervision of a community health nurse who once a week visits the four or five villages for which he or she is responsible.

The village development committee pays the health workers a salary or the villagers may pay them in kind by contributing their labor in the health workers' fields. The birth attendant is compensated for services directly by the patients, as is

traditional. These payments constitute the community contribution to the health program.

Drugs are financed by a revolving fund. Initially a three-month supply of drugs is donated to the village by the central government. A small flat charge of 0.06 dalasis (less than 5 U.S. cents) per tablet or teaspoon is charged by the health worker. Revenues are turned over to the development council, which pays to replenish the stock of drugs. Orders for pharmaceuticals are written by the community nurse and picked up by the village health workers at the Ministry of Health's regional store. The central government subsidizes these purchases only to the extent of absorbing transport and handling costs to the regional store. Village pharmaceutical stocks and accounts are physically separated from the rest of the health system to help insulate village health workers from shortages.

- *Bypass fees.* In countries that have a referral system higher fees should be charged for simple types of care obtained from referral facilities. Under such a system, if a person bypasses a lower level of service where basic care is available and goes directly to a higher level he will have to pay more for that care. The higher fee reflects the higher cost of providing low-level services at high-level facilities and provides an incentive for patients to enter the referral system at the appropriate level. Eventually (as soon as practicable) higher-level facilities should cease to provide low-level services.
- *Modest inpatient charges.* There are many possibilities for instituting fees for inpatient care: a fixed fee at entrance, regardless of length of stay; a charge for linen, meals, and other replenishables, with the total cost to the patient rising with the length of stay; specific charges for identifiable goods, including drugs and laboratory services; and a comprehensive schedule of fees for different services. A simple structure with low administrative costs may yield higher net revenue than a complex schedule that is difficult to enforce.
- *Outpatient fees.* A few countries charge a fee for an initial visit. A small charge for a registration card or other record of visits (such as for prenatal

and pediatric care) could give patients more incentive to keep their card and bring it on all visits.

How High Should Charges Be?

For most types of curative service for which some charge is appropriate, the amount, or price, charged should generally equal the cost of providing that service. A typical fee schedule has lower charges at the primary level of service—say, at local dispensaries, where personnel and other costs are generally low—and successively higher fees at higher levels. (Such a schedule also allows for the use of bypass fees.) The true cost of many health services is difficult to calculate, however. For example, because most services are provided jointly with other services, the time devoted to a particular service by doctors, nurses, and other personnel is not usually clear.

For hospital, clinic, and other curative services, governments will usually want to implement a pricing scheme by starting with low fees that are clearly affordable to the bulk of the population—for example, fees could be set so as not to exceed 1 percent of income for most families for an average of two clinic visits per person a year. (Table 5 provides some actual examples.) When low fees

Table 5. Typical Charges at Public Health Facilities, Selected Countries

Country	Outpatient consulting	Drugs	Inpatient fees	Immunizations	Maternal and child health	Delivery
Botswana, 1983	\$0.45	Free			\$0.45	\$0.55
Burkina Faso, 1982	Free	Free	Minor	\$0.12 per registration		
Burundi, 1983	\$0.22	Free	\$2.20 per week		Free	
Cameroon, 1983	Free	Free	\$2.00 registration fee			
China, 1982	Registration fee	15-30 percent above wholesale	Charge for room, food, treatment	Service fee	Free	
Ecuador, 1985	Free	Charge	Free			
Ethiopia, 1984	\$0.25-0.50	Cost price of drugs	\$1.09-14.53			
Ghana, 1980	Charge		Charge			
Indonesia, 1983	\$0.36	Free	Charge for room and treatment			
Jamaica, 1985	\$0.90	\$0.90	\$5.60		Free	\$9.30
Lesotho, 1980	\$1.20	Free	\$0.60 per day and treatment			
Malawi, 1981	Free	Free	Free	Free	Free	\$1-3
Mali, 1982	Free	Free				
Morocco, 1985	Free	Free	Free	Free	Free	Free
Pakistan, 1982	Free (two provinces) \$0.08 (two provinces)		Charge (two provinces)			
Philippines, 1982	Free	Free	Charge			
Rwanda, 1977	Charge		Charge			
Togo, 1979			\$0.50-0.70 per day and treatment			\$1-2
Uganda, 1985	Free	Free	Free	Free	Free	Free
Zimbabwe, 1983	Free	Free	Free	Free		Free

Note: When drugs are included in the outpatient consultation fee, they are recorded as free. Although not noted, most countries have a special fee schedule for private inpatients who desire superior accommodations. All charges are in U.S. dollars of the year indicated (fiscal year for Pakistan).

Sources: Ainsworth (1983b), and World Bank data.

are already in place, a similar rule can govern increases in fees. Experience is then likely to indicate whether prices are too low or too high. They are probably too high if use drops by more than, say, 20 percent (and stays low for more than a few months) or certain groups cut back on their use. For such services as hospital surgery and intensive care, sudden fee increases to cover full costs would overburden many households. Only as opportunities to participate in insurance schemes expand should these fees be raised substantially. But extension of insurance to cover the bulk of the population will take time—in some cases, ten years or more.

When a direct comparison between public and nongovernment facilities is possible, a useful indi-

cator for setting fees is the fee charged for the same service at private facilities, including those run by missions. In most developing countries, private providers of health care charge higher (often much higher) fees than does the public sector. In Kenya the average charge for a day of inpatient care at six missionary hospitals is more than twice that at government hospitals. In Thailand the fee private practitioners charge for an outpatient consultation is typically 50 percent higher than at public clinics, and in the Philippines it can be twenty-eight times as high. In Peru the price of medicine at retailers is sometimes more than three times the official price at government facilities (but unofficial side payments are common in public sector dispensaries and medicines are often out of stock).

In parts of Java a visit to a traditional practitioner may cost a person ten times as much as a visit to a public clinic.

Can Most Households Afford Higher Charges?

Households spend 2 to 5 percent of their annual income on health care in many developing countries. Rural households often spend much more in years of poor health; surveys show drug purchases alone take up 5 percent of income in parts of rural Mali, and in Indonesia and Malawi fees of traditional practitioners may take up 10 percent of annual income. On the one hand, this is already a substantial amount, and additional fees and charges at public facilities might be difficult to bear. On the other hand, that level of spending indicates an ability and willingness to pay for traditional curative care and perhaps for some ineffective drugs; the public sector could tap this source to finance modern curative care and effective drugs and free public funds for preventive programs.

Most households could probably afford modest fees at public facilities. At a fee of 25 cents for an outpatient visit, for example, a four-person household with an income of only \$200 annually would spend just 1 percent of household income to reach the norm established by the World Health Organization of two visits per person per year. A household with only half as much income (\$100) would require 2 percent.¹ Charges to cover the cost of drugs in public facilities might actually *reduce* overall household spending on drugs: if the money collected were spent to make drugs more available in public facilities, clients would be spared the higher costs and sometimes wasteful overprescribing of private pharmacists. The availability of drugs in public facilities would provide effective competition for the private pharmacies and eventually drive down the high profits that are often

1. The question of affordability arises in many countries when user charges are simultaneously being introduced for other public services such as education, water supply, and irrigation. This is not an issue which can be treated adequately here. However, it should be noted that user charges for health would be small compared with new charges for water, electricity, or even education; and user charges at public facilities might not raise total household spending but would simply divert spending away from less effective traditional care and nontherapeutic drugs.

derived from their near monopoly over available drugs.

Existing private spending suggests that consumers would be *able* to pay for publicly provided health services. But would they be *willing* to pay, or would they simply stop using public services? The evidence from household surveys of health care utilization is clear on this point: fees themselves are not critical in determining utilization. Studies in Malaysia and the Philippines show that proximity and quality are more important than fees in individuals' decisions about whether to seek health care and what type to use. If public services are not very good or are too far away, even free services will not attract clients. In the Philippines the frequency of visits to private facilities and traditional practitioners was not affected by relative fees, despite the fact that the nongovernment clinics and hospitals had average charges twenty-eight times higher than those at government clinics and hospitals. Even demand for preventive care for mothers and infants was found to be not particularly sensitive to the amount of the fee.

Studies to date, however, have not examined in detail the differences between the nonpoor and the poor in their responses to prices. Even though there appears to be very little, if any, reduction in overall health care as a result of moderate price increases in many developing countries, it is plausible to assume that use by the very poor is reduced more than average. For that reason fee systems must be designed to protect the poor.

What about the Poor?

How can the poor be safeguarded from unaffordable costs?

Ironically, in some cases the poor may be better protected in the private sector. A sliding scale of fees, with a low charge or even none for the poor, is common on an informal basis at missions and at the village level, where any household's ability to pay is widely known. Traditional practitioners also charge different amounts depending on the patient's income. But in a formal public system a sliding scale would be costly to administer, and experience with this approach is lacking.

Employer and community insurance schemes, discussed below, can help, but the very poor are those least likely to be included in such schemes. Some form of differential pricing is thus necessary

in public systems so that disadvantaged groups, households, or individuals can be charged smaller fees.

One practical approach is to base fees on the user's place of residence. For instance, people in predominantly poor rural areas would pay little or nothing while those in urban districts would pay more. (Although some urban residents may travel to free rural health posts, travel and time costs and perceptions of better care in urban areas are likely to obviate this problem.) Combined with higher charges for hospital care, this approach would not only protect the poor, but would also improve the targeting of existing government health spending. Higher charges in urban areas may even be justified aside from concern for the poor—since urban services are usually better staffed and equipped.

Another option is to issue vouchers to the poor, based on certification of poor households by local community leaders, a practice that appears to work well in Ethiopia. The poor can also be protected by allowing staff discretion in collecting charges (although this is difficult in the government sector) or by using a means test, which often already exists for other programs in middle-income countries. A few countries, including Jamaica, Indonesia, and Thailand, are experimenting with more or less formal income tests that rely either on the patients' own word or on documentation from the patient's village headman or other community leader. In Thailand a means test establishes eligibility for free membership in a rural risk-sharing scheme that charges those who can afford to join (see box 7 below). Some of the previous suggestions—such as higher fees for private and semiprivate accommodation in public hospitals and free or low-cost care at higher-level facilities for patients referred from a lower level—also implicitly protect the poor.

Providing Insurance or Other Risk Coverage

If cost recovery measures are initially confined to small bypass and outpatient fees for regularly used services and to payments for frequently used pharmaceuticals (such as aspirin and chloroquine), the issue of insurance can safely be ignored. In the short run this may be a reasonable strategy, especially for low-income countries. But in the long run there will be problems:

- *Inequity.* Like an indirect tax, routine charges for basic services place a higher relative burden on the poor.
- *Low revenues.* The proportion of total costs that can be recovered is not likely to be high.
- *Inefficiency.* A structure consisting only of low fees does nothing to discourage excess demand for high-cost hospital care; some of the potential efficiency gains of fees are forfeited.

Fees that would cover the full costs of major hospital and other inpatient treatment do not present these problems. But inpatient care is expensive. Thus full-cost fees cannot be introduced until large parts of the population participate in some form of risk-sharing. Under health insurance the insurer reimburses the patients for their medical expenses; in prepayment systems, including health maintenance organizations (HMOs), all participants regularly pay a fixed amount and in turn receive full care.

The Situation Today

Such programs, however, currently cover only a small proportion of low-income households in most developing countries, and especially in Africa and South Asia. Outside of China, no more than 15 percent of the people in developing countries take part in any form of risk-coverage scheme. Adding China boosts the figure to between 15 and 25 percent because of China's large population and the fact that its urban risk-coverage programs cover the majority of urban residents and some in rural areas (although rural coverage has declined with the recent privatization of production). In a sense, of course, risk-coverage plans have existed ever since the extended family has existed; in many developing countries the family is still the most important mechanism for sharing risk.

Perhaps the most important form of health insurance is government-sponsored social insurance programs, most common in the middle-income countries of Latin America. In Brazil and Chile social insurance plans provide health coverage for more than 85 percent of the population. Government-sponsored social insurance is often compulsory for public employees. In India such a system serves about 5 percent of the total population and

covers its own costs. Thus at least part of the population pays directly for its health care. In Indonesia there is some evidence that the insured in a compulsory public employee insurance program provide a slight subsidy to the public health system.

Employer plans are a second form of coverage. They either provide care directly through employer-owned, on-site health facilities or rely on contracts with outside providers or health maintenance organizations. Indian employers that sponsor group policies can turn to the private market or, under certain conditions, join the public employees' government-run scheme. In Chile individuals or employers can form health insurance plans to which employees make payments that would otherwise go into the public insurance system. Agricultural estates, such as banana plantations in Honduras, rubber forests in Liberia and Zaire, and tea estates in India, typically offer direct care, maintaining their own medical staffs and health facilities in the rural locations where their employees live and work.

A third category of risk-sharing is prepayment plans: individuals form or join a group to which they make payments in return for the receipt of needed health care. Within this category fall personal prepayment plans, community-sponsored

plans (such as a village fund for purchasing medicines or a broader self-supporting network of local clinics), and programs sponsored by cooperatives such as a dairy farmers' association in India or a coffee growers' group in Colombia. Prepayment plans include health maintenance organizations and so-called preferred provider plans (box 6). But prepayment and community plans remain both few in number and small in scope—they probably reach less than half a percent of those not covered by social insurance or an employer plan.

Fourth, there is private insurance to cover fees. In countries where most health care is provided by the public sector at low or zero cost to users, the market for private insurance is limited to those who wish to use private practitioners. In Zimbabwe the majority of holders of private insurance are high-income Europeans; large tax rebates on their insurance premiums mean the public system is actually subsidizing them. In Jamaica private insurance has become increasingly popular for those who desire better service than the public sector provides, and in Brazil private insurance is increasingly available.

Many countries are already taking steps to extend risk coverage. Indonesia has plans to broaden the government program to cover all employees of private firms. In Thailand an innovative health

Box 6. Prepaid Health Care Organizations

There is a variety of ways to organize private groups for the provision of prepaid health care. In each of them all members pay a participation fee or prepayment. This spreads the risk of health care costs over the entire group. Some schemes also charge small additional fees for care (copayments) to discourage overuse, but the general pattern is that one payment entitles the participant to all health services and care needed over a given period. The premiums collected provide the funds for paying staff and buying all supplies and equipment.

The organizations have incentives to provide care in a cost-effective manner because adding services or providing more expensive care does not produce added revenues. There are also incentives to provide cost-effective preventive care to the participants so as to reduce illness and thus lower the costs of curative care. So long as participants have a

choice of providers, competition among providers prevents the poor quality of care, which would drive away clients.

Prepayment plans may hire their own staff to provide services or use private doctors who participate as "preferred providers." The so-called health maintenance organizations (HMOs) provide care directly with salaried employees in facilities owned by the HMOs. The preferred provider organizations (PPOs) provide care indirectly by allowing participants to choose among participating professionals. These professionals may be paid either a fee for service or a fixed amount per participant per year (capitation).

Community and cooperative prepayment programs are generally organized on the basis of either direct provision (HMO) or indirect provision (PPO).

card system is providing risk coverage for some rural people (box 7). In Latin America the percentage of the population covered by social insurance rose from 21 percent in 1960 to 40 percent in 1980. Risk-coverage programs that did not exist twenty-five years ago now serve millions in China, Egypt, and the Philippines. Most employer plans, other than those of the older agricultural estates, have either come into being or been rapidly enlarged in recent years, as have all but a handful of the community and cooperative schemes now operating.

But change is slow. In most countries governments that are introducing cost recovery in the health sector face the question of what to do to encourage or provide systems of risk sharing that will cover much larger proportions of the population than at present and will do so at a reasonable administrative cost.

How Can Governments Encourage Risk Sharing?

In any risk-sharing scheme, small amounts of revenue are collected from each participant (or from taxpayers) when the risk-sharing is accomplished through a national-service-type system so that the large cost of unexpected events can be shared. The only economic cost of a risk-coverage scheme is the administrative cost. For society at large, risk sharing makes sense under certain conditions: when the event insured against is largely unpredictable and its likelihood cannot be significantly reduced by the behavior of the individual; when the cost of the event's occurrence is large; and when there is a consensus that it is necessary to alleviate the harm caused. In health, such is the case. The probability of the need for medical care of the unpredictable and nonvoluntary type is generally low for any one person, but the cost to those stricken may be very large.

Thus there ought to be a viable market for health coverage. Why is such privately provided coverage so limited in developing countries? There are at least two reasons. First, as long as services in the government sector are free (or almost free), only those willing to pay extra to use private health care will be interested in risk coverage. Of course, if charges for government services are increased, this problem will disappear. Second, and more problematic in the long run, the administrative

costs of organizing risk-sharing programs, monitoring service, making payments, and so on may be very large in countries where communications are poor and literacy is low.

Under this second circumstance, what can governments do to encourage viable, low-cost risk sharing? Two approaches will help: making coverage compulsory and keeping it simple.

MAKING COVERAGE COMPULSORY. An effective approach is for governments to make health insurance compulsory, at least for employees in the formal salaried sector.² (As explained below, the government itself need not be the provider of insurance, although it may be.) Making coverage compulsory has several attractive features. First, the more participants there are, the more revenue is collected. A higher proportion of the costs of health services not covered by fees will be recovered via the insurance system. Second, a larger number of enrollees spreads risks more widely and makes the system more viable and more fair (see box 8). Other people need not be burdened with caring for those who, if given the choice, would not protect themselves against the risk of illness. Third, compulsory insurance creates a large market that will encourage private suppliers to enter and introduce a range of alternative risk-coverage plans to attract customers. Under such a system the government could collect compulsory premiums but allow consumers to subscribe to any one of a number of public or private risk-sharing systems. Fourth, but not least in importance, with compulsory coverage the problem of adverse selection—the tendency of the healthy to avoid joining or paying a premium—is effectively avoided. When adverse selection is operating, those who remain in the plans are usually the less wealthy, who also suffer more illness and who will face larger and larger premiums as the average health of the members declines. Some people would suggest, however, that since some health problems are due at least in part to smoking, drinking, lack of exercise, or poor dietary choices, the careful, diligent, and

2. Financing health insurance through a labor tax can introduce a distortion in the labor market. If the wage costs are passed on to consumers, this method of financing could be simply a new form of regressive sales tax. This is an important reason for keeping compulsory coverage simple and limited, as argued below.

Box 7. Rural Risk Coverage: Thailand's Health Card System

Risk coverage is difficult to provide in rural areas because poor communication, scattered population, and low money incomes restrict the market for private insurance and prepaid plans. Collecting premiums and making reimbursements are difficult whether the risk-sharing plan is privately or publicly run. Record-keeping for catastrophic coverage (the amount spent by an individual or household per illness or per time period) or for billing when deductibles or copayments are used is simply impractical in many rural facilities.

In 1983 the Ministry of Public Health in Thailand initiated a health card system in rural areas. Households are sold a card entitling the bearer to treatment for a specified number of times (usually eight) during the period of the card's validity. The cards are sold at a modest price so that most households can afford them. They entitle the purchaser not only to treatment of illness, but also to unlimited visits for preventive services such as maternal and child health care and immunizations. The system is set up so that cardholders must enter the health system at a health center or drug dispensary. Entry to a district or provincial hospital for higher-level care requires a referral from the lower-level

facility. With the referral slip a cardholder is entitled to prompt attention at the referral hospital via a "green channel" or "expressway," which reduces waiting time and thus increases the incentive to purchase a health card.

In principle the health cards should encourage the use of preventive health care (which is free to a cardholder), increase the use of local health centers (which had in the past often been bypassed), reduce waiting time and congestion for those referred to hospitals, raise capital to finance better and more health services, and allow households to protect themselves against catastrophic health costs.

An evaluative survey carried out several months after the program started found "uniform enthusiasm" for the system among cardholders. In the five villages covered by the system from 55 to 100 percent of the villagers purchased cards. The cards, which are priced at less than the average household health expenditure for mostly private care, have captured new revenues for the public sector. Although the program is still too new to be declared a success, there is room for optimism that card systems can help improve rural health care in Thailand and other developing countries.

strong-willed are paying for the health costs of the lazy, careless, and self-indulgent. In practical terms, perhaps little can be done about this unfairness, other than to make sure that the plan covers a group large and diverse enough to spread the risks related to poor habits and that deductibles and copayments reduce the attractiveness of the use of health care services.

KEEPING COVERAGE SIMPLE. Compulsory insurance plans (run or subsidized by the government) should, where politically possible, avoid covering small predictable costs, which tend to be covered, for example, under the social insurance schemes in Latin America. It makes little sense to collect from everyone the amount needed to pay for routine checkups and other predictably needed services and then to return the same amounts to each participant as the services are provided. If society considers checkups necessary but unlikely to be pur-

chased, or if it wishes to subsidize them for the poor, then it is reasonable to provide them at a low fee or even free of charge. But it is inefficient to collect from all members of the coverage plan to pay for such health care.

Only under prepayment plans does it make sense to cover low-cost services. In prepayment systems, health personnel have incentives to use supplies, equipment, and time wisely, and customers cannot successfully ask for more expensive services than are needed. At the same time, competition among plans gives providers an incentive to be sure participants receive adequate care.

Avoiding Cost Escalation

In some developed countries and in developing countries with large social insurance schemes, runaway costs in the health sector as a whole have become a problem. These are less the result of

Box 8. Social Security Financing of Health Care in Latin America

Social insurance has been used to finance health care in Latin America for more than sixty years. Sixteen Latin American countries have social insurance systems that provide health care to some portion of the population.

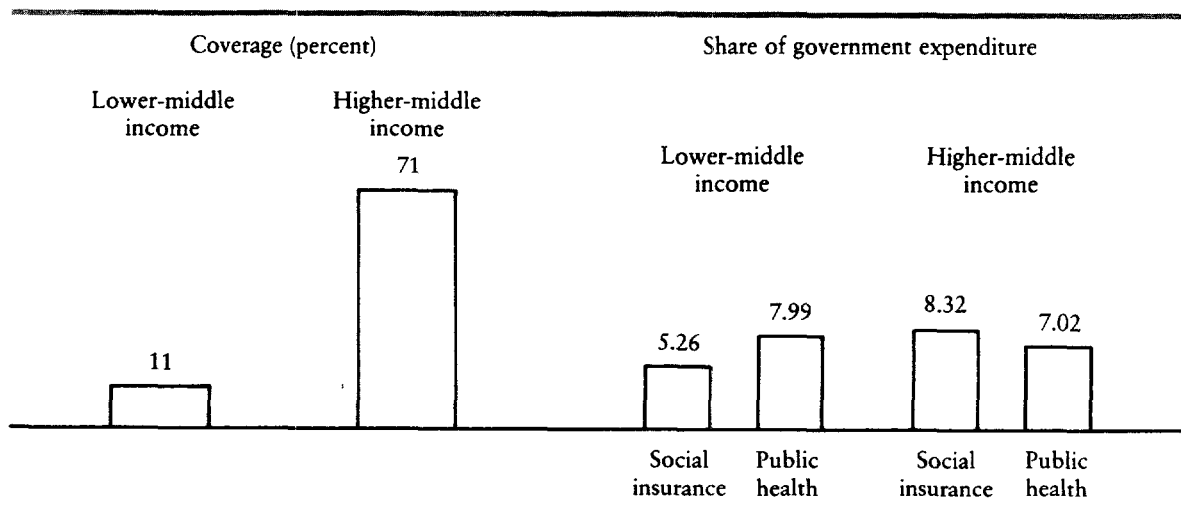
Social insurance systems are thought to contribute to the development of dual health systems—a ministry of health system for indigents and a social security system for comparatively wealthy workers in the modern sector. They are said to create an environment in which expensive, high-technology curative services are overemphasized to the neglect of less sophisticated types of care and preventive services. They are widely believed to contribute to the concentration of facilities and personnel in urban areas and to compete with public systems for scarce personnel and equipment.

The evidence on these points, however, is not clear-cut. The dual nature of health systems in Latin America is declining as social insurance coverage expands. Generally, social insurance covers only workers (and sometimes dependents) in the wage sector, a restriction which excludes the poorest occupational groups, such as farmers, agricultural workers, and domestic servants. As coun-

tries develop, however, and more workers are brought into the modern wage sector, more are covered, and as incomes rise countries can afford broader coverage. In fact, throughout Latin America, coverage has been increasing and is far more widespread in the higher-middle-income than lower-middle-income countries (see figure).

The Brazilian system has expanded rapidly since the 1960s, extending coverage from 23 percent of the economically active population in 1963 to over 85 percent by 1984. Coverage of rural areas and indigents has been paid for by federal subsidies, acreage taxes, taxes on agricultural sales, and taxes on rural employers. Any Brazilian needing emergency care will be treated in social security facilities. In Mexico the social security system covered about 35 percent of the population in 1978. Between 1978 and 1980 federal subsidies were used to build 2,100 rural health clinics that are run by the social security system. This program has brought about a third of rural residents into the social security system (although they have access only to these clinics, not to hospital care). Ecuador has extended medical care under social insurance to about 10 percent of rural residents.

Coverage and Share of Government Expenditure of Social Insurance Medical Plans, Latin America, 1977



Note: Percentages are averages, weighted by population, for the countries listed in the table. Lower-middle income refers to average per capita income of \$410–\$840 (range of the nine countries included). Higher-middle income refers to average per capita income of \$1120–\$2660 (range of the seven countries included).

Box 8 (continued)

In most social security systems benefits are relatively equitably distributed. Because workers usually pay a fixed percentage of wages to the system, contributions are proportional to wage income (at least within a certain range of earnings). Medical benefits are generally not closely related to income, so all members are eligible for the same health services despite their unequal contributions. In systems with broad coverage, this arrangement can create desirable redistributions of resources from the more affluent to the poor. In Brazil in 1981, for example, the social security system collected 42 percent of its revenues in the state of São Paulo (the richest state) but made only 24 percent of its health expenditures there.

Social security systems do spend a large amount per beneficiary on health care, probably more than do the corresponding public health systems, especially in the lower-middle-income countries. The social security systems of the seven higher-middle-income Latin American countries spent an average of \$44 per beneficiary in 1977, while the lower-middle-income countries spent an average of \$53 per capita.

But the systems are usually self-financing, funded primarily by payroll taxes. There were no state subsidies in Argentina, Bolivia, the Dominican Republic, or El Salvador in 1977. In Costa Rica and Panama state subsidies were less than 4 percent of revenues, in Uruguay 12 percent, and in Venezuela 15 percent. In Colombia the state subsidy is rather high—26 percent of total revenues, but this 26 percent includes the government's contribution for government employees. Thus the systems are fair in the sense that the benefits are paid for by those who receive them. The results can of course be judged

inequitable insofar as the poor receive little coverage.

The effect of social insurance on health care is undoubtedly to expand the hospital-based system. However, people who are covered by social security systems generally also have a better record of immunizations, attended deliveries, and prenatal care than do people covered only by publicly provided health systems.

Whether social insurance systems contribute to the centralization of health resources is equally questionable. Care has been extended to rural areas through social insurance in Brazil, Ecuador, and Mexico. Most hospital services paid for by social security in Brazil are provided under contract by the private sector. Public and philanthropic institutions provide services to social security beneficiaries who live long distances from social security facilities.

In summary, inequities created by social insurance systems in Latin America appear to be mainly a matter of incomplete coverage. Within a given fund (except in Chile) health care benefits are the same for rich or poor participants. Moreover, in these countries social insurance has proven its ability to generate revenue for health.

Several Latin American countries have had problems with overconsumption of health services (as have developed countries). As a result, there is wide experimentation with different health delivery systems, coverage plans, and prepayment and copayment policies. Brazil, for example, has introduced a diagnostically related group (DRG) system with reasonable success at cost containment. The need for reforms to reduce cost inflation should not, however, be allowed to overshadow the positive aspects of the systems.

Box Table 8. Overview of Medical Care under Social Insurance in Sixteen Latin American Countries, 1977

Country	Percentage of population covered	Per capita cost of medical care under social insurance (U.S. dollars)	Health care share of GDP		Health care share of total government expenditures	
			Social insurance	Public health	Social insurance	Public health
Higher-middle-income ^a						
Mexico	56	n.a.	n.a.	n.a.	n.a.	n.a.
Panama	47	74	3.1	4.3	10.3	14.5
Costa Rica	82	51	3.8	0.6	19.4	3.2
Brazil	83	23	1.4	0.7	7.4	8.1
Uruguay	50	14	0.5	0.9	2.2	2.0
Argentina	80	n.a.	n.a.	n.a.	n.a.	n.a.
Venezuela	30	59	0.7	2.2	2.3	7.3
Average	71	44.2			8.3	7.0

(Box continues on following page.)

Box Table 8 (continued)

Country	Percentage of population covered	Per capita cost of medical care under social insurance (U.S. dollars)	Health care share of GDP		Health care share of total government expenditures	
			Social insurance	Public health	Social insurance	Public health
<i>Lower-middle-income^b</i>						
Honduras	7	48	0.8	1.6	3.8	8.5
El Salvador	5	52	0.6	1.4	3.9	9.8
Bolivia	13	52	1.3	1.0	10.4	8.0
Colombia	10	49	0.9	0.8	8.0	8.6
Paraguay	13	n.a.	n.a.	n.a.	n.a.	n.a.
Ecuador	5	89	0.7	1.3	5.0	9.9
Guatemala	14	25	0.5	0.8	5.0	7.6
Dominican Republic	4	73	0.4	1.2	2.6	6.5
Peru	12	36	0.8	1.4	4.3	5.9
Average	11	53			5.3	8.0

n.a. Not available.

Note: Countries are listed in order of 1977 per capita income.

a. Higher-middle-income: \$1,120–\$2,660.

b. Lower-middle-income: \$410–\$840.

Source: Zschock (1986).

insurance as such than of poorly designed insurance. It is possible to design an insurance plan so that costs will not escalate in the long run.

DEDUCTIBLES AND COPAYMENTS. Services should not be seen by users and providers as free. If those covered by compulsory insurance receive services at no cost at all they will make too much use of costly services. In fee-for-service systems, a deductible (an amount users must pay before their insurance coverage begins) and a copayment (a percentage of total costs above the deductible paid by the user) help prevent overuse of scarce personnel, equipment, and supplies. Even small deductibles (such as 1 percent of yearly household income) and small copayments (10 percent or so of the cost of services received) can significantly reduce the unnecessary use of medical care by patients. In richer countries such as the United States, insurance firms have experienced such high costs with plans that do not have deductibles and copayments that they have almost ceased to offer such coverage. Copayments also give suppliers an incentive to avoid waste. Once patients begin to view services as something they must pay for, the incentives for suppliers to charge reasonable prices increase. (Why should a supplier husband resources if

whatever is used will be paid for without argument?) Accordingly, it generally makes sense even in prepaid plans to charge at least a small fee for each visit.

COMPETITION AMONG RISK-SHARING SCHEMES. Only effective competition will guarantee that administrative costs will be minimized and a variety of options offered. Whenever possible, governments should thus avoid crowding out private insurers. It may even be a good idea for governments to subsidize private insurers for a limited period, as in the Philippines. Governments can also set up a system to reinsure private insurers against large losses that occur before they have been in operation long enough to build up a reserve.

If a private market is unlikely to develop, governments should offer a range of options for coverage. Some customers will opt for small premiums with large copayments (that is, payment only for large medical expenses). By so doing they put themselves in a pool of customers who have incentives to keep expenditures (and therefore future premiums) low, while effectively protecting themselves against catastrophic costs. Others will find that HMO prepayment plans offer more for their money.

Protecting the Poor

What about the poor, who cannot afford even low premiums and cannot afford deductibles and copayments? The cost of premiums can be subsidized through vouchers to the poor, perhaps through a health card system. In fee-based systems, when catastrophic illness strikes and even small charges add up to a large financial burden, payments above a specified level can be forgiven. Deductibles and copayments can be reduced for the poor. The main practical problem with all these is identifying the poor—an administrative difficulty everywhere since means tests are difficult to apply.

Using Nongovernment Resources Effectively

In chapter 1 the widespread provision of health care in the nongovernment sector of health care in the developing world was documented. Religious missions and other nonprofit groups, independent physicians and pharmacists, and traditional healers and midwives are all active, and direct payments to these providers account for up to half of all health spending in many countries.

There is no “correct” size for this nongovernment sector in comparison with government services; the relative roles of the two sectors are bound to vary among countries. However, governments reduce their own options for expanding access to health when they actively discourage nongovernment suppliers or fail to seek efficient ways to encourage them. Even the Chinese health system relies heavily on private practitioners and private payments (see box 9). Expansion of nongovernment services, including private for-profit and nonprofit services, can reduce the administrative and fiscal burden on the government sector and broaden consumers’ options. For some types of health care, especially simple curative care, private providers may well be more efficient than the government and offer comparable or better services at lower unit cost.³ Competition from the nongovernment sector can also encourage government services to improve their efficiency.

The charging of fees and the encouragement of risk-coverage systems will in themselves provide incentives for the further development of nongovernment health care. When fees are instituted at public facilities, private providers are no

longer forced to compete with free services, and under risk-sharing plans that pay for treatment in the nongovernment sector (such as that introduced in Chile), private professionals and organizations can provide some of the services covered by government or private insurance.

The main issues for public policy are how to encourage the nongovernment sector and regulate the health market, especially the private for-profit sector. As discussed earlier, nongovernment provision is likely to make sense for most curative services, the full benefits of which accrue to the patient and for which users all over the world have demonstrated a willingness to pay. In a few countries, it may even be practical to make use of the nongovernment sector for preventive care of the type that benefits others than the recipient. The public health authorities might contract with private providers for certain public goods, such as vector control and immunizations. This use of the private sector (both nonprofit and for-profit) would require supervision and inspection by government authorities as well as public information campaigns to inform the people of the obligations and services of the private institutions.

Encouraging Nongovernment Health Care Services

The barriers that restrict community organizations and private groups from initiating, expanding, or improving health care services are varied and formidable. In Benin, Cameroon, Chad, and Togo care other than that of the state-administered health system is discouraged. In Malawi restrictions on private practice have led to the emigration of indigenous doctors. Private voluntary organizations (including churches) are often treated more as a nuisance than as a partner by government authorities. Approvals for expansion are delayed, access to government sources for purchasing

3. Hard evidence is not readily available, in part because it is difficult to establish comparability, taking quality into account. For example, a recent study comparing government and nongovernment hospitals in Chile concluded that the nongovernment hospitals were more efficient because fewer days per patient were spent in these hospitals. However, whether number of days spent in the hospital per patient is a satisfactory measure of efficiency is subject to debate.

Box 9. The Chinese System of Financing Health

The Chinese health system provides an important example of success in the effective delivery of low-cost services. Along with China's high level of literacy and food policies which help ensure adequate nutrition, China's health system has been important in raising life expectancy to almost seventy years, well above the average for countries of comparable income.

How is the Chinese health system financed? Consider how China has used each of the four approaches proposed in this paper.

User charges. The Chinese do charge users of public facilities. The central government pays 100 percent of the salaries of the health workers in state-owned hospitals and health centers and 60 percent of the salaries of workers in collectively owned health centers. The government also provides very small subsidies to village doctors working in some remote areas. User charges, however, cover all other costs. All drugs are sold at a 15 to 25 percent profit, and fees for services are set at a level to cover all nonsalary costs not covered by the drug revenues. Hospitals typically cover 75 percent of their operating costs through drug fees and user charges.

Risk coverage. The Chinese system provides health insurance for a significant part of the population. A state-sponsored compulsory Government Insurance Scheme covers about 20 million people, and a Labor Insurance Scheme covers another 120 mil-

lion state enterprise employees and their dependents. The two programs, introduced in 1952, cover approximately 14 percent of the population, mostly in urban areas. Most rural residents were covered by a rural cooperative insurance system until recent economic reforms led to its collapse. The great majority of rural people now have no insurance coverage, a situation causing large risk because of the high user charges.

Effective use of the private sector. "Barefoot doctors," now officially called rural or village doctors, are all effectively nongovernment, for-profit practitioners. They cover their own costs through charges to patients for curative services and through drug sales (at a markup of 15 percent for Western drugs and 25 percent for traditional drugs). They are typically well trained (one to three years) and well paid (above average incomes).

Decentralization. China has a long-standing policy that fees collected are used by the collecting facility as it sees fit. As would be the case elsewhere, decentralization may itself bring problems. For example, a recent decision to permit hospitals to distribute profits in the form of bonuses to employees may have contributed to an increase in drug sales (particularly to insured patients). If additional drugs were not actually needed, this would amount to supplier-induced demand.

medicines and supplies is denied, and long-range planning is limited. Nongovernment community groups—for instance, a village or neighborhood that wants to have its own health post—still get little assistance from higher-level public agencies in many countries during the difficult start-up phase. In some societies traditional practitioners—instead of being given the training and support that would enable them to collaborate better with the modern sector and promote primary health care—are dismissed as incompetent. Employees and volunteers of nonprofit and voluntary organizations are often treated in a similar fashion.

To encourage community-run and private sources of health services, the first step that many countries need to take is to reverse past tendencies

toward unnecessary restrictions, hostility, and neglect. Additional positive steps include:

- Helping community-based nongovernment schemes get started by increasing public funding for training and backup support, including technical supervision and assistance in procurement
- Providing technical and financial assistance to private voluntary organizations for training (especially in such areas as management) and the coordination of activities
- Making credit accessible (especially where credit markets are restricted) to communities and private ventures that want to expand or upgrade services and facilities

Box 10. Public-Private Cooperation

Cooperation between the public and nongovernment sectors in providing health care has sometimes been deliberately fostered by governments. It is particularly common in countries where nongovernment entities have historically provided an important share of health care services and where the government sector has been unable to expand rapidly enough to satisfy demand. This cooperation can take several different forms.

Subsidizing nongovernment organizations. In Rwanda, where missions provide 40 percent of the health care services, the government reimburses them for 86 percent of the salaries of Rwandese staff. These public subsidies account for 4 to 5 percent of recurrent public health spending.

In Zimbabwe the government provided missions with Z\$4.6 million (about US\$6.6 million) in 1980-81 to reimburse them for providing health care to indigents. This subsidy represented 4 percent of central government health care spending, but an estimated 85 percent of mission health service revenues. In addition, the government purchased Z\$0.9 million in services from hospitals owned by industrial or mining companies.

In Zambia the government provided missions with 6.6 million kwacha in 1980-81 (about US\$9.4 million), which was over half of the missions' expenditures on health care. Mining companies received 80,000 kwacha to reimburse them for health care services to indigents, representing approximately 2.5 percent of total health expenditures by the mines.

Contracting to nongovernment providers. In Indonesia the government employees' health insurance scheme pays nearly 20 percent of its total health expenditures to private health providers.

In Colombia the Social Security Institute contracts for beds in private hospitals.

In the Philippines the government compensates private hospitals to maintain charity beds in areas not covered by the public system, and it pays private hospitals for services that are unavailable through public hospitals. The Philippine social insurance system pays the full cost of inpatient ser-

vices in public hospitals, but patients are free to use the cash value of that coverage as a partial payment for services from more expensive private providers. In some rural areas where there are people covered by the insurance system but few providers, the government has supported the construction of at least twenty-nine new private hospitals.

Incentives. In Chile, following legislative changes in 1979-80, all employees make mandatory contributions of 6 percent of their income for health care either to the public social security health system (FONASA) or a private social security fund (ISAPRE). Those who choose the public social security scheme can opt to receive private health services through a voucher system. Most of the private social security funds are financial intermediaries that receive fees and reimburse the provider of the patient's choosing. Some provide services directly; the largest operates a complete range of outpatient and inpatient health care facilities. Overall the result has been an expansion of private services. A decrease in government spending has been more than offset by an increase in nongovernment spending during 1980-82.

In Uruguay the social security system does not have its own facilities, but encourages the use of nongovernment health maintenance organizations. HMOs are now the primary source of care for beneficiaries of the system and provide services to 45 percent of the population. Monthly fees, copayments, and required services in Uruguay's twenty-three HMOs are closely regulated by the Ministry of Health.

In Brazil services financed by the social security fund may also be purchased from the private for-profit sector. Since the early 1960s firms have been allowed to contract with prepaid health organizations and to retain their social security contribution for that purpose. This has fostered an enormous expansion of health maintenance organizations. Between 1961 and 1979 more than 200 HMOs were organized. In 1981 this provision was frozen, except for firms already contracting with HMOs, because of financial problems within the social security system.

- Transferring the operation of government health facilities to nongovernment providers (through sale, lease, or contract). Such a step is appropriate for curative care facilities where the benefits of care accrue directly to those served (box 10).

Regulating Nongovernment Health Care

There are certain critical functions the public sector must perform. In virtually every country the government plays an important role in training—and must do so, for example, to ensure that health professionals are trained in public health and preventive care. (Those trained should pay most or even all of the costs, however, through fees or service after training.) In addition, governments in developing countries need to protect their populations by supporting research and development to improve control of local diseases.

Most important, and most difficult, the government sector must take steps to make the private for-profit market for individual health services as competitive as possible. This requires heavy emphasis on consumer information programs. The government can aid individuals to become better purchasers of health care by providing such information as the prices charged by health providers for specific types of care, the effective methods and appropriate equipment for treating various ailments, and the importance of insurance coverage. Even when information is available, however, the effort to increase competitive incentives will also require regulation. A nongovernment health sector will need to be regulated because not all consumers will always be sufficiently informed about their own needs (indeed, this is why they seek help) and the options available to them.

QUALITY CONTROL. Fostering the expansion of the nongovernment sector will not necessarily threaten quality. In fact, World Bank health analysts report that nongovernment providers in many countries (Ecuador, Thailand, and Zambia) offer better care than government facilities. In Nigeria and Uganda mission hospitals and clinics have medicines and other supplies when public facilities do not. In Malawi consumers walk miles past nearly free government health centers to get to mission clinics that charge many times as much. In the Philippines, low-income people pay to use very

good private for-profit facilities when free government clinics are available. (One aspect of quality to which consumers are likely to be sensitive is waiting time. “Free” government clinics may cost more if many hours are lost waiting in line.)

But some government monitoring of quality is likely to be critical to prevent untrained people from providing incorrect or harmful treatments and to prevent unscrupulous health providers from charging for services which are not needed or for charging exorbitant prices for necessary services over which they have a monopoly.

Certification of private facilities together with periodic reviews by government monitoring teams is one option, although in poor countries it may be too costly. Examination and licensing of individuals at the time they enter the health profession is common and practical. Governments can also encourage and monitor self-policing by providers. Private for-profit providers frequently develop their own means of maintaining quality through professional associations and accreditation requirements (as in the case of various types of healers in India even before the government intervened).

Where health resources are extremely scarce (as they are in most of Africa and the poorer rural parts of many other countries), the benefits of quality control must be balanced against the costs. Where shortages are severe, the most constructive approach to quality control may be to help support private practitioners through advisory visits to build up skills, periodic free training at various levels, and professional workshops. Where the nongovernment sector is already active but offering services of lower quality than the government sector, it may be less costly to upgrade them through training than to restrict or regulate these activities. This is obviously not true where government health services are not widely accessible. Many countries now train traditional midwives in modern techniques of prenatal, birthing, and postnatal care. Traditional practitioners have been licensed to provide psychiatric care in parts of West Africa. Several countries have schemes under which the public sector subsidizes the commercial distribution of contraceptives.

COST CONTROL. An effective way to regulate costs is to require that payments to providers be through prepayment plans or capitation (a set fee

per patient served during the period). Under such systems physicians and hospitals cannot increase their revenues by choosing more expensive treatments for their patients. If the patient has a choice among doctors or prepaid plans there will be more incentive to provide high-quality care. Governments or insurance authorities retain the power to regulate both the quality of service and the medical conditions that must be met by providers.

Governments need to maintain some control over cost in fee-for-service insurance systems—especially where competition has not developed among insurance providers. As discussed above, deductibles and copayments are vital to the control of health costs. Another method is the use of diagnostically related groups (DRGs) which eliminates some of the administrative costs of dealing with voluminous price lists and creates incentives for cost-conscious behavior by providers. Related medical procedures are aggregated into a DRG, and payments for each group of procedures are based on previous average costs in various institutions. Providers who can reduce their costs below the average keep the difference, and this incentive tends to reduce current costs on which future reimbursements will be based.

Competition for Scarce Resources

Price regulation is always difficult. In the long run, competition among service and insurance providers to attract customers by providing good service for a specified cost will be a better solution to the problem of cost escalation. But would encouraging the expansion of private for-profit providers create competition between public and private providers? And would this in turn cause shortages or sharp price increases for scarce health resources?

The principal concern is that shortages of skilled personnel in the government sector, especially doctors and nurses, will be exacerbated if the private sector expands. Shortages of trained health professionals are severe in many countries and to train more—the solution—takes a long time. Increasing the supply of physicians, for example, requires at least three to five years—even more if medical schools must be expanded or upgraded before additional students can be admitted. Worse, where the training itself is highly subsidized, training more people raises public costs.

There are several ways countries can deal with this problem. In a number of countries, including the Philippines, a period of public service is required of doctors before they can open a private practice. In many places in Asia, allowing private practice in off-duty hours has helped attract doctors to the public sector. Where shortages are severe, countries may need to rely for a time on foreign staff in public programs—a sensible interim solution for countries that can afford it or have access to external funds. Foreign funding might also be used to raise the salaries of highly trained personnel in the public sector or to provide international professional contacts and in-service training of a caliber that would attract the best local graduates to public careers.

In the long run, the training of high-level health professionals, especially doctors, should not be so highly subsidized from public funds. Few countries today in Africa, South Asia, or even East Asia charge the full costs of training physicians and other health personnel, and the cost of training a physician is often in the range of \$10,000–20,000 a year. Because the training is subsidized, leakage of personnel to the private for-profit sector represents a considerable loss to the public system. (Ironically, the result of free training in countries such as India is an apparent oversupply of doctors; students have little to lose by going to a medical school that is free even though they face future underemployment.) Training could be financed by government-backed loans to students. If students must borrow for their training, publicly sponsored loans can stipulate that part of the loan will be forgiven for persons who serve in rural areas or accept lower salaries in the public sector. This is one example of how increased cost recovery in one sector (education) can reduce problems in another (health).

A more fundamental problem is that a large, rich, and privileged private medical sector can affect public perceptions of what constitutes “good” health care—it may confuse the difference between good care and costly care. The solution to this problem is not, however, for governments to restrict the nongovernment sector. Restrictions are likely to drain talent away from the health sector altogether and to place the full administrative burden of curative care on already overburdened public sectors. The solution is for governments to play an aggressive role in developing truly public,

usually preventive, programs and in educating consumers about these programs and their critical role in improving health.

Decentralizing Government Health Services

Even when the nongovernment sector provides a considerable proportion of health services, the role of the government will remain large. The government will continue to be responsible for public programs such as the control of communicable diseases and other preventive care for which there is no real market. In low-income rural areas and even in many urban areas it will provide modern curative care for the foreseeable future because of the difficulty of attracting private health practitioners. In most developing countries government service networks sensibly combine curative and preventive care at the local level.

Thus the issue of improving the efficiency of public services cannot be neglected. In countries where managerial resources are scarce, communication is difficult, transportation is slow, and many people are isolated, decentralization of the government health system should be considered as one possible way to improve efficiency.

Decentralization of government health services means granting greater financial and management autonomy to local units of the system. Decentralization is appropriate primarily where scattered facilities provide services directly to their clients and have instituted charges for drugs and curative care. It is less likely to make sense for tax-supported public goods, such as immunizations and control of vector-borne diseases. These programs are more logically administered centrally, even though they can be, and are in some countries, contracted out by the central government to local governments.

Decentralization gives local units greater responsibility for planning and budgeting, for collecting user charges, and for determining how collected funds and transfers from the central government will be spent. It does not imply any loss of control by the central government over broad policy development. Even with decentralization, the central government should continue to retain control over such areas as training policy, assignment of some personnel, and overall planning—such as deciding when and where to invest in new facilities.

There should be two general objectives of financial devolution to facilities where fees are charged. The first is to give managers planning and budgeting autonomy, including the freedom to economize on inputs and adjust their service mix to demand. The second is to give managers incentives to generate fee revenue. These incentives are controversial; they include crediting fees to the management accounts rather than to the central government and maintaining central government budgetary support, not automatically reducing it in proportion to fees collected.

Control of Fees at What Level?

In practical terms, there are two questions concerning the control of revenues from cost recovery. First, should revenues be controlled by the ministry of finance or by the ministry of health? Second, if controlled within a particular ministry, how centralized should that control be? For optimal allocation of given resources, one view is that all revenues should go to a central government fund, where they can be allocated across all sectors and activities to ensure their best possible use. In extreme cases, revenues collected in health clinics might best be used to improve agricultural research, to retire part of the national debt, or to reduce highly distortionary levels of taxation. Within any one sector, an analogous argument applies: central control of health revenues within the health ministry could allow fees collected for hospital meals to finance immunizations, if that were viewed as optimal for the sector as a whole.

Several other considerations, however, argue for control of revenues as close as possible to the point of collection. These have to do with possibly high costs of administering a system to collect fees and with the need to guard against the misuse of collected revenues.

- *Improving incentives for fee payment and collection.* When fees are not retained at the point of service delivery, local users are less likely to see any value from their payments, and local health care providers will have less of an incentive to enforce payment by their clients. In some situations collusion could develop between local providers and their clients. When providers do not collect fees from friends and acquaintances the benefit to those so favored is obvious, but

the benefit of collecting fees to add revenue to central government funds is less readily perceived. In hospitals, for example, staff will have little incentive to collect fees if they do not know how the money is to be used; if they believe it will be used to improve the hospital environment, however, they will have good reason to insist on payment.

- *Accountability.* When fees are retained at the point of service delivery and used to replenish drug supplies, to maintain buildings, or to support valued programs, service users are aware of the results. They can monitor the use of their payments by the local service staff and considerably reduce the costs to the public sector of monitoring.
- *Signaling the center.* When revenues are collected and controlled at the service level, local staff have more say in how the funds are spent. Their choice—for example, whether to replace the clinic well or purchase more drugs—is more likely to reflect local need than a central decision. The center itself receives signals as to what resources are valued and needed by observing the spending patterns of the service units.
- *Community development.* The collection and allocation of revenues in small communities can provide an impetus for more generalized community participation in development activities. For example, local management of a village revolving fund for drugs can spur related community health work such as environmental sanitation. The involvement of local persons in decisions of local importance develops the capacity for decisionmaking and self-government in the community.
- *Minimizing administrative costs.* The immediate cost of collection is the staff time needed to enforce the payment of fees at the service delivery point. Additional administrative costs are incurred for the necessary accounting if revenues are then shifted to higher levels.

In general, the higher the transactions and information costs of collecting fees and administering revenues—that is, the smaller the amounts being collected, the more differentiated the charges (as when there is a lengthy price list for drugs), and the more frequent the collection—the stronger are the arguments for controlling revenues close to the

point of service delivery. This point of service delivery is often a local health post. In China local facilities have paid all nonsalary costs from locally collected user charges and drug fees for many years, and in Pakistan the government is considering allowing local facilities to keep fees. The delivery point can also be a drug dispensary: in a revolving fund for drugs local stocks are periodically replenished through fees. And it can be a public hospital, as in Jamaica. In Zambia a public hospital operates as a parastatal with complete financial autonomy; Burkina Faso and Côte d'Ivoire are considering a similar arrangement. Setting up a hospital as a parastatal can make it financially more self-sufficient and less of a drain on public health funds.

Is there a point at which revenues collected in public health facilities should be used to reduce the central budgetary allocation to the health sector, thus relieving fiscal pressure on the central government? The thrust of the argument throughout this study is that certain health programs with public benefits are now underfunded. As revenue collection in public facilities makes large curative services with private benefits financially self-sustaining, the freed government funds should be absorbed in truly public health activities and in subsidizing curative care for the poor. The situation in every country will be different, but this principle implies that the overall central budgetary allocation to health should be protected for a time when user charges are introduced. Only if and when there is adequate provision of health activities with public benefits and of critical curative care for the poor should a reduction in public funding for health be considered.

Appropriate Transfers from Central Government to Local Facilities

Decentralization and greater local control of finances by no means imply the complete financial independence of each individual facility. Government facilities that provide integrated curative and preventive services in rural areas and to the urban poor will continue to require budgetary transfers from the center. In fact, in rural areas the appropriate unit for purposes of decentralized planning and budgeting is likely to be a regional or district office, not a small health post. Government hospitals in urban areas could, however, eventually transfer

some of their revenues to the center to supplement general revenues that finance other government health programs.

Ideally, transfers from the center to local areas would be in the form of vouchers issued directly to individuals, who could then spend the funds at the facility of their choice, whether in the public or private sector. Thailand (see box 7 above) and Chile are experimenting with this approach. In most countries, however, central government transfers are made directly to local facilities on an annual basis. The amount of the transfer is usually based on a dialogue between the central government (usually the health ministry) and the local facilities—an approach that relies heavily on the quality of the dialogue. Frequent and honest interchanges can allow units to defend and explain their requests—and to understand better the central government's constraints. But such interchanges may not always operate well, especially for the areas and units farthest from the center. Full annual reviews require a large staff with special capabilities that many health ministries lack.

An alternative is to rely on one of three formulas for the size of the annual grant:

- In a matching grant the amount is set per unit of output, and output is measured as some proportion of fee revenue. The proportion of fee revenue that is subsidized can be adjusted to reflect the social value of different services. For example, children's medical fees might have a matching grant of 200 percent while general geriatric care would have no matching grant. The proportion can also be adjusted for different regions according to need and the ability to pay. This approach is likely to work best for hospitals in middle-income countries where insurance systems are sufficiently developed to allow fees close to costs. It will not work in primary health care facilities at district levels, where many services carry no fee at all.
- The capitation approach distributes resources according to the number of participants in a pre-paid plan. Some such plans also take account of socioeconomic characteristics such as age and income distribution, since these affect needs. The capitation approach is sensible for annual transfers to regional or district systems from a central health ministry.

- The DRG approach is based on the number of patients served in each diagnostically related group rather than on the number and characteristics of all participants in a plan. The DRG approach is appropriate for inpatient facilities. The resources required to treat each group of patients adequately are estimated according to the reported diagnoses. Under this system, a service unit that sees many patients needing expensive care receives more transfer funds than one that deals with mostly minor cases. A DRG strategy is more equitable and easier to apply than capitation because information is more readily available on actual patients than on entire populations of communities. However, administrative and record-keeping costs are high (the U.S. system has more than 450 groups and a similar system in Chile has more than 3,000), and frequent and careful reviews of categories and allowable payments are needed. Experience in the United States and the Federal Republic of Germany also shows that the diagnoses tend to respond to the system, with more patients appearing in the more highly compensated categories once the system is in place.

For developing countries, a sensible early step is small-scale experimentation with a capitation system for regional facilities and a simple DRG system for hospitals.

In making annual budgetary transfers to local facilities the central government should neither take away any surplus that a local facility has achieved by its efficient operation nor should the government make good any deficit by adjusting the next year's amount. In Java's Cirebon district the government hospital receives a central government grant for about 40 percent of its revenue. This amount is paid regardless of how well or poorly the facility provides services to the surrounding population. Hospital managers therefore have no incentive to save on costs.

Decentralization of government health services is not an easy task and it has been tackled probably less than the other policy recommendations. If other parts of a government are highly centralized, any attempt to decentralize will meet considerable obstacles. But it will reap considerable benefits as well since health activities are more widely dispersed geographically than perhaps any other

government service except agricultural extension. In health services with weak overall administrative systems, poorly trained staff in remote areas, and personnel shortages because of difficulties in attracting staff away from the cities, decentralization will require careful planning and a gradual introduction. In some countries, inexperienced staff of regional agencies, local hospitals, and clinics will need to be trained to manage revenues and expenditures, and they will need time to practice their newly acquired skills before decentralization is implemented.

Problems and Pitfalls of Reforms

Of course, these reforms will not solve all the problems of the health sector. User charges will not generate foreign exchange to pay for imported pharmaceuticals. Insurance programs alone will not be enough to ensure better quality. Nor will decentralization eliminate the need for difficult political decisions regarding new investments, training subsidies, and wage scales for public workers. And a private sector—no matter how good—will not fill critical needs such as environmental disease control and may not adequately serve the poor in remote rural areas. Reforms in financing health care will have little impact without a political commitment by the government to making the sector more effective. As noted above, user charges and other reforms will free government resources but cannot ensure that they will be used wisely. Decisions made largely in the political arena will determine whether freed funds are used for the poor and for public services—rather than for urban hospitals and expensive nonessential equipment—and whether services are accessible enough and of a caliber to induce clients to pay fees and buy insurance. Only government action can bring the necessary changes in management and training programs—for example, revising medical education to make the training of doctors more appropriate to the country's needs and to strengthen paramedical personnel.

The entire finance policy package is difficult to implement; each of the four parts has possible drawbacks unless introduced with care. User charges could deter those with the greatest need from seeking care, and there would be little revenue to recycle into health services. Risk-sharing schemes could raise costs and augment existing

disparities. Deregulation of the nongovernment sector and decentralization could increase geographical inequality and decrease the quality of services.

Avoiding the pitfalls requires not only political and social boldness in innovating policy but also systematic and sustained attention to monitoring programs. Each country needs to monitor their specific approaches to implementation as they are tried and to maintain flexibility in such decisions as the size of user charges and the approach to decentralization.

For these reasons, implementation must be expected to take time. Indeed, the pace of implementation is bound to differ with the circumstances in each nation. For example, in many countries, changes in policy will require changes in administrative support systems (for example cash-handling rules) and legislation. In countries where overall administration is weak, change will need to be introduced gradually.

But in every country, some initial steps are possible (see box 11). The most important first step is to begin to charge some amount to most users of publicly provided curative health services. In some countries the ability to differentiate the poor from the not so poor will allow charges for these services with private benefits to be raised toward marginal cost quickly; in others overall fees will have to remain modest until methods to identify the poor are tested.

The pace at which risk coverage is introduced will be determined by the speed with which fees can be instituted and increased toward full service cost for the nonpoor. As fees become higher the necessity for risk-coverage plans will increase.

Timing of the reforms for more effective use of the nongovernment sector will vary greatly by society. In some nations the nongovernment sector is strong and prevalent, in both a technical and a political sense, and the important issues are ones of appropriate regulation and cost control. In other nations political reality and the weakness of the nongovernment sector mean that more effective use of nongovernment activities will be a longer-term goal.

How quickly government health systems can be decentralized will also vary by nation. In some cases management ability, record-keeping, and local resources will be available in many localities and decentralization of certain facilities will be

relatively easy. In others the movement toward local decisionmaking and control of resources will be feasible only after training and experientia-

tion, the development of costing and accounting procedures, and the design of complementary regulatory and supervisory programs.

Box 11. Reforms of Health Financing Already Under Way

Several nations have already begun to institute the reforms discussed here.

Jamaica. After discussions with the World Bank, the government made several changes in the health finance system. A procedure was adopted for exempting the poor from fees, based on eligibility for an already operating food aid program. The Ministry of Health obtained central government approval for a decentralization plan under which 50 percent of fees are kept by the collecting health facility and the remaining 50 percent go to the Ministry of Health. A study of risk-sharing alternatives has been commissioned, and plans are being made for a pilot test of a prepaid health system for rural areas.

Thailand. A card system which effectively provides risk coverage and subsidizes the use of medical care by the poor has been put into operation in several rural areas (see box 7).

Somalia. The private practice of medicine, which had been forbidden, has recently been legalized. World Bank staff are recommending increased levels of cost recovery for selected health services.

Zambia. Because the constitution prohibits charging citizens for health services, plans are being made to turn the university hospital at Lusaka into a parastatal that charges expatriate clients for services and drugs. Public funds replaced by the fee revenues at the hospital will be transferred to finance the operating costs of new maternal, child health, and family planning services.

Zimbabwe. The government has introduced a fee for patients who bypass lower levels of the health system and raised room fees for private patients in

public hospitals. A national health insurance scheme is being initiated as part of the social security system.

The Gambia. A plan has been implemented under which fees are charged for drugs and the revenues collected are used by the village development council to purchase replacement drug supplies—a so-called revolving drug fund (see box 5).

Peru. Plans are being made to increase user fees and allow them to be retained by the Ministry of Health (rather than be sent to the Finance Ministry) and to have the private for-profit sector largely take over the supply of pharmaceuticals.

China. A risk-coverage plan is being tested in selected rural areas. Plans are being made for a provincial revolving fund (with capitalization financed by a World Bank loan) to make loans to provincial hospitals, which in turn would generate funds to repay the loans by raising fees for hospital services.

Brazil. The recession beginning in 1981 prompted Brazilian authorities to contain health costs. The social security medical system closed several underused hospitals for tuberculosis and psychiatric care. Contracts with private hospitals were rewritten so that payments are now made on the basis of diagnostically related groups. The system expanded its payments to state and local governments that provide basic health care on the basis of capitation rather than services delivered. Costs had been growing by 22 percent a year in the 1970s but fell in the early 1980s and are projected to grow by no more than 6 percent a year through 1989. Cost containment has been achieved with no evidence of declining quality; more effective incentives have prompted providers to eliminate waste and unnecessary services.

3

What the World Bank Can Do

The World Bank began direct lending for health in 1980. By 1983 the Bank had become one of the largest funders of health projects, lending more than \$100 million annually. Lending operations in more than twenty countries have focused on the development of basic health care programs, including expansion of primary health care, provision of drugs, and support for training and technical assistance. Lending operations have generally been preceded by systematic studies of the health sector as a whole. These studies have enabled the Bank to carry on a policy dialogue regarding systemwide issues with government officials (see box 12).

Stimulating Consideration of Finance Policy Reforms

The Bank is now broadening that dialogue, both with borrowers and with other lending agencies, to encourage consideration of new financing approaches and to rethink prevailing strategies and the concepts on which they are based. Many countries, before they can carry out policy reforms, must clarify for themselves what their alternatives are and why change may be desirable. The financing climate in the health sector differs markedly from that in, say, public utilities. For example,

although charging prices for electricity is acceptable everywhere, the argument for charging fees for government-provided health services is not widely appreciated.

Policy dialogue is supported by staff analysis of health finance issues in the form of sector studies, in the context of work on project design, and in economic studies of overall public investments. Opportunities are being sought for discussions with the highest levels of government (inside and outside the health ministries). The issues addressed are being expanded and altered. To the main agenda—expenditure and revenue trends, public sector fees, and financial management problems—are being added risk coverage, stimulation of the nongovernment sector, and decentralization of the public sector. Operational studies of these are being suggested and supported.

The evidence and experience accumulated from staff analyses should increase the Bank's ability to make sound suggestions on specific programs. New operational studies should help the Bank to acquire practical information about the progress of reforms in health financing and thus to improve future discussions and advice.

Discussions and exchanges of ideas and research findings are also going on with multilateral and bilateral aid organizations and are meant to forge greater agreement on approaches to health finance

Box 12. World Bank Health Lending and Sector Work

A March 1975 Health Policy Paper limited World Bank health operations to support for project components in other sectors; direct lending for health was not approved until late 1979. Since then nineteen projects have been approved by the Board of Executive Directors. More than \$600 million was committed during the five fiscal years from 1981 through 1985. The 1980 Health Sector Policy Paper identified activities for possible inclusion in health projects:

- Development of basic health infrastructure
- Training of community health workers and paraprofessional staff
- Strengthening the logistics and the supply of essential drugs
- Promotion of proper nutrition
- Provision of maternal and child health care, including family planning
- Prevention and control of endemic and epidemic diseases
- Development of management, supervision, and evaluation systems.

World Bank lending operations are generally preceded by health sector work—staff studies designed to improve knowledge of specific country situations. Sector work by the Bank has often had a positive effect on governments' approaches to financing health. In Zambia the National Committee for Development Planning appointed a committee that produced a comprehensive response to the Bank's sector report. The president of Zambia held a press conference at which he discussed the need for greater efficiency in the health sector and the need for cost recovery. The Jordan Health Sector Review probably contributed to the government's decision to scale back planned hospital construction. In Burkina Faso, China, Comoros, and the Philippines, Bank sector reports have contributed to new thinking about finance issues. Bank reports also serve as a means of communication with other lending agencies on financing and other issues in the health sector.

in developing countries. The Bank is one of the few institutions able to press strongly for greater attention to health financing. It is doing so aggressively through routine meetings, through special conferences on the subject, and through interaction with other lending agencies with respect to specific countries. The coordination of strategies and approaches should benefit the developing countries, which must respond to what have been at times contradictory suggestions on health financing.

The Bank is also increasing its support for training courses for country officials in health finance and health economics. The Bank's Economic Development Institute offers courses on health care that include a financing module; special courses on financing issues for government staff of health, finance, and planning ministries are planned. Support for training is also provided by including funds for fellowships in project loans.

Expanding Lending

Bank lending operations can be and are being used

to assist countries with the reform of health financing. Finance-related activities are being incorporated into projects focused mainly on other health care issues. For example, a project might include support for training health managers in the fundamentals of new approaches to financing. Or assistance for a new drug program might be accompanied by the introduction of new charges for drugs that would over time ensure that the program could be sustained. Lending can cover the start-up costs of new finance policies, such as the design and testing of pilot insurance schemes or new programs of user charges, and the development of accounting systems for health facilities. Lending can also be used to implement decentralization and to improve the quality of public services so that they will attract fee-paying customers.

Conducting Research

Progress in spreading new ideas and challenging old ones has been slow because evidence on some topics is scarce. Sector studies can help, but more extensive collection and analysis of data are also

required and can be undertaken in conjunction with operational work. The knowledge of health financing has reached a stage at which the potential payoff to well-chosen research projects is high. The central issues are clear, the hypotheses exist, the audience to be persuaded is large and important, and the techniques needed to obtain the needed information are available.

Some of the possibilities for Bank-supported research are:

1. How accessible are services now and how good are they? What are nongovernment expenditures on health care? How much do people now pay? How much can they afford? How would utilization of services be affected if prices were raised? Would demand fall for important health services? Would utilization by the poor decline?

2. What fees should be charged and how much revenue can be raised from them? What are collection costs likely to be? What is a reasonable schedule of charges at different levels of the system?

3. What health insurance programs now exist? Who is covered at what cost? Are there informal insurance systems within extended families?

4. How equitable is the existing health system? What groups now benefit from what services, at what cost to the government purse? What are practical means of identifying and protecting those unable to pay for health care?

5. How active is the nongovernment health sector? Is the for-profit sector competitive? Are there private physicians, pharmacists, and other trained

health practitioners in rural areas? What income groups does the nongovernment sector serve? What are alternative means, and their relative costs, for improving information to consumers about the quality and prices of private health services? How can both public and private health providers be regulated and supervised so that their clients are protected from ill-advised and overpriced services?

6. How can the management of government health facilities be organized and overseen so that resources are used efficiently and workers perform well? What steps can be taken to ensure sustained political and popular support for the reform of health financing?

Fostering improvements in health sector finance is among the most valuable contributions the World Bank can make to better health care in low-income countries. Through its sector work, through innovative lending strategies, through dialogue with other lending agencies, and through research and operational evaluation, the Bank can help direct the attention of governments and international agencies to the neglected matter of health sector finance. The Bank consistently has advocated that overall economic policy be grounded in sound principles of finance and project selection; the agenda proposed here for the reform of health financing is consistent with and would reinforce those principles in the health sector.

Appendix Tables

Note: See the technical notes following the appendix tables for explanations of the tables' content, form, symbols, and sources.

Table A-1. Basic Indicators

	Population (millions) mid-1984	Area (thousands of square kilometers)	GNP per capita		Life expectancy at birth (years) 1984
			Dollars 1984	Average annual growth rate (percent) 1965-84	
Low-income economies	2,389.5 t	31,795 t	260 w	2.8 w	60 w
China and India	1,778.3 t	12,849 t	290 w	3.3 w	63 w
Other low-income	611.2 t	18,946 t	190 w	0.9 w	52 w
Sub-Saharan Africa	257.7 t	15,646 t	210 w	-0.1 w	48 w
Ethiopia	42.2	1,222	110	0.4	44
Bangladesh	98.1	144	130	0.6	50
Mali	7.3	1,240	140	1.1	46
Zaire	29.7	2,345	140	-1.6	51
Burkina Faso	6.6	274	160	1.2	45
Nepal	16.1	141	160	0.2	47
Burma	36.1	677	180	2.3	58
Malawi	6.8	118	180	1.7	45
Niger	6.2	1,267	190	-1.3	43
Tanzania	21.5	945	210	0.6	52
Burundi	4.6	28	220	1.9	48
Uganda	15.0	236	230	2.9	51
Togo	2.9	57	250	0.5	51
Central African Rep.	2.5	623	260	-0.1	49
India	749.2	3,288	260	1.6	56
Madagascar	9.9	587	260	-1.6	52
Somalia	5.2	638	260	..	46
Benin	3.9	113	270	1.0	49
Rwanda	5.8	26	280	2.3	47
China	1,029.2	9,561	310	4.5	69
Kenya	19.6	583	310	2.1	54
Sierra Leone	3.7	72	310	0.6	38
Haiti	5.4	28	320	1.0	55
Guinea	5.9	246	330	1.1	38
Ghana	12.3	239	350	-1.9	53
Sri Lanka	15.9	66	360	2.9	70
Sudan	21.3	2,506	360	1.2	48
Pakistan	92.4	804	380	2.5	51
Senegal	6.4	196	380	-0.5	46
Afghanistan	..	648	..	..	..
Bhutan	1.2	47	..	..	44
Chad	4.9	1,284	..	..	44
Kampuchea, Dem.	..	181	..	..	..
Lao PDR	3.5	237	..	..	45
Mozambique	13.4	802	..	..	46
Viet Nam	60.1	330	..	..	65
Middle-income economies	1,187.6 t	40,927 t	1,250 w	3.1 w	61 w
Oil exporters	556.1 t	15,510 t	1,000 w	3.3 w	58 w
Oil importers	631.5 t	25,417 t	1,460 w	3.1 w	64 w
Sub-Saharan Africa	148.4 t	6,228 t	680 w	2.4 w	50 w
Lower middle-income	691.1 t	19,132	740 w	3.0 w	58 w
Mauritania	1.7	1,031	450	0.3	46
Liberia	2.1	111	470	0.5	50
Zambia	6.4	753	470	-1.3	52
Lesotho	1.5	30	530	5.9	54
Bolivia	6.2	1,099	540	0.2	53

Table A-1 (continued)

	Population (millions) mid-1984	Area (thousands of square kilometers)	GNP per capita		Life expectancy at birth (years) 1984
			Dollars 1984	Average annual growth rate (percent) 1965-84	
Indonesia	158.9	1,919	540	4.9	55
Yemen Arab Rep.	7.8	195	550	5.9	45
Yemen, PDR	2.0	333	550	..	47
Cote d'Ivoire	9.9	322	610	0.2	52
Philippines	53.4	300	660	2.6	63
Morocco	21.4	447	670	2.8	59
Honduras	4.2	112	700	0.5	61
El Salvador	5.4	21	710	-0.6	65
Papua New Guinea	3.4	462	710	0.6	52
Egypt, Arab Rep.	45.9	1,001	720	4.3	60
Nigeria	96.5	924	730	2.8	50
Zimbabwe	8.1	391	760	1.5	57
Cameroon	9.9	475	800	2.9	54
Nicaragua	3.2	130	860	-1.5	60
Thailand	50.0	514	860	4.2	64
Botswana	1.0	600	960	8.4	58
Dominican Rep.	6.1	49	970	3.2	64
Peru	18.2	1,285	1,000	-0.1	59
Mauritius	1.0	2	1,090	2.7	66
Congo, People's Rep.	1.8	342	1,140	3.7	57
Ecuador	9.1	284	1,150	3.8	65
Jamaica	2.2	11	1,150	-0.4	73
Guatemala	7.7	109	1,160	2.0	60
Turkey	48.4	781	1,160	2.9	64
Costa Rica	2.5	51	1,190	1.6	73
Paraguay	3.3	407	1,240	4.4	66
Tunisia	7.0	164	1,270	4.4	62
Colombia	28.4	1,139	1,390	3.0	65
Jordan	3.4	98	1,570	4.8	64
Syrian Arab Rep.	10.1	185	1,620	4.5	63
Angola	9.9	1,247	..	..	43
Cuba	9.9	115	..	..	75
Korea, Dem. Rep.	19.9	121	..	..	68
Lebanon	..	10	..	..	..
Mongolia	1.9	1,565	..	..	63
Upper middle-income	496.6 <i>t</i>	21,795 <i>t</i>	1,950 <i>w</i>	3.3 <i>w</i>	65 <i>w</i>
Chile	11.8	757	1,700	-0.1	70
Brazil	132.6	8,512	1,720	4.6	64
Portugal	10.2	92	1,970	3.5	74
Malaysia	15.3	330	1,980	4.5	69
Panama	2.1	77	1,980	2.6	71
Uruguay	3.0	176	1,980	1.8	73
Mexico	76.8	1,973	2,040	2.9	66
Korea, Rep. of	40.1	98	2,110	6.6	68
Yugoslavia	23.0	256	2,120	4.3	69
Argentina	30.1	2,767	2,230	0.3	70
South Africa	31.6	1,221	2,340	1.4	54
Algeria	21.2	2,382	2,410	3.6	60
Venezuela	16.8	912	3,410	0.9	69
Greece	9.9	132	3,770	3.8	75
Israel	4.2	21	5,060	2.7	75

(Table continues on the following page.)

Table A-1 (continued)

	Population (millions) mid-1984	Area (thousands of square kilometers)	GNP per capita		Life expectancy at birth (years) 1984
			Dollars 1984	Average annual growth rate (percent) 1965-84	
Hong Kong	5.4	1	6,330	6.2	76
Trinidad and Tobago	1.2	5	7,150	2.6	69
Singapore	2.5	1	7,260	7.8	72
<i>Iran, Islamic Rep.</i>	43.8	1,648	..	..	61
<i>Iraq</i>	15.1	435	..	..	60
High-income oil exporters	18.6 <i>t</i>	4,311 <i>t</i>	11,250 <i>w</i>	3.2 <i>w</i>	62 <i>w</i>
Oman	1.1	300	6,490	6.1	53
Libya	3.5	1,760	8,520	-1.1	59
Saudi Arabia	11.1	2,150	10,530	5.9	62
Kuwait	1.7	18	16,720	-0.1	72
United Arab Emirates	1.3	84	21,920	..	72
Industrial market economies	733.4 <i>t</i>	30,935 <i>t</i>	11,430 <i>w</i>	2.4 <i>w</i>	76 <i>w</i>
Spain	38.7	505	4,440	2.7	77
Ireland	3.5	70	4,970	2.4	73
Italy	57.0	301	6,420	2.7	77
New Zealand	3.2	269	7,730	1.4	74
United Kingdom	56.4	245	8,570	1.6	74
Belgium	9.9	31	8,610	3.0	75
Austria	7.6	84	9,140	3.6	73
Netherlands	14.4	41	9,520	2.1	77
France	54.9	547	9,760	3.0	77
Japan	120.0	372	10,630	4.7	77
Finland	4.9	337	10,770	3.3	75
Germany, Fed. Rep.	61.2	249	11,130	2.7	75
Denmark	5.1	43	11,170	1.8	75
Australia	15.5	7,687	11,740	1.7	76
Sweden	8.3	450	11,860	1.8	77
Canada	25.1	9,976	13,280	2.4	76
Norway	4.1	324	13,940	3.3	77
United States	237.0	9,363	15,390	1.7	76
Switzerland	6.4	41	16,330	1.4	77
East European nonmarket economies	389.3 <i>t</i>	23,421 <i>t</i>	..	..	68 <i>w</i>
Hungary	10.7	93	2,100	6.2	70
Poland	36.9	313	2,100	1.5	71
<i>Albania</i>	2.9	29	..	..	70
<i>Bulgaria</i>	9.0	111	..	..	71
<i>Czechoslovakia</i>	15.5	128	..	..	70
<i>German Dem. Rep.</i>	16.7	108	..	..	71
<i>Romania</i>	22.7	238	..	..	71
<i>USSR</i>	275.0	22,402	..	..	67

Table A-2. Central Government Expenditure

	Percentage of total expenditure												Total expenditure (percentage of GNP)	
	Defense		Education		Health		Housing; amenities; social security and welfare		Economic services		Other			
	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983
Low-income economies	17.2 w	19.5 w	12.7 w	4.7 w	4.6 w	2.7 w	7.3 w	5.8 w	22.8 w	24.0 w	35.4 w	43.3 w	18.2 w	16.3 w
China and India	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other low-income	17.2 w	18.5 w	12.7 w	9.9 w	4.6 w	3.3 w	7.3 w	8.1 w	22.8 w	23.8 w	35.4 w	36.4 w	18.2 w	19.9 w
Sub-Saharan Africa	13.2 w	10.3 w	15.5 w	15.9 w	5.2 w	4.5 w	5.7 w	5.0 w	20.9 w	21.5 w	39.5 w	42.8 w	21.0 w	20.1 w
Ethiopia	14.3	..	14.4	..	5.7	..	4.4	..	22.9	..	38.3	..	13.7	..
Bangladesh	5.1	..	14.9	..	5.0	..	9.8	..	39.3	..	25.9	..	9.3	..
Mali	..	7.9	..	10.1	..	2.5	..	4.6	..	7.1	..	67.8	..	68.9
Zaire	11.1	7.9	15.2	16.3	2.3	3.2	2.0	0.4	13.3	16.8	56.1	55.4	38.6	27.5
Burkina Faso	11.5	20.7	20.6	19.6	8.2	6.8	6.6	8.0	15.5	16.3	37.6	28.6	10.9	13.6
Nepal	7.2	5.4	7.2	9.9	4.7	4.5	0.7	4.3	57.2	53.1	23.0	22.7	8.5	17.2
Burma	31.6	..	15.0	..	6.1	..	7.5	..	20.1	..	19.7	..	20.0	..
Malawi	3.1	6.2	15.8	13.4	5.5	6.8	5.8	1.3	33.1	35.2	36.7	37.1	22.1	32.0
Niger	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	11.9	..	17.3	..	7.2	..	2.1	..	39.0	..	22.6	..	19.7	..
Burundi	10.3	..	23.4	..	6.0	..	2.7	..	33.9	..	23.8	..	19.9	..
Uganda	23.1	17.0	15.3	12.9	5.3	4.6	7.3	2.6	12.4	9.5	36.6	53.4	21.8	4.5
Togo	..	6.8	..	19.6	..	5.7	..	8.2	..	18.2	..	41.6	..	34.1
Central African Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
India	..	20.0	..	1.9	..	2.4	..	4.6	..	24.1	..	47.0	..	14.9
Madagascar	3.6	..	9.1	..	4.2	..	9.9	..	40.5	..	32.7	..	20.8	..
Somalia	23.3	..	5.5	..	7.2	..	1.9	..	21.6	..	40.5	..	13.5	..
Benin	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rwanda	25.6	..	22.2	..	5.7	..	2.6	..	22.0	..	21.9	..	11.7	..
China	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kenya	6.0	13.8	21.9	20.6	7.9	7.0	3.9	0.7	30.1	24.6	30.2	33.3	21.0	26.6
Sierra Leone	..	4.2	..	14.8	..	6.2	..	1.5	..	32.1	..	41.2	..	21.2
Haiti	..	..	..	..	..	..	..	..	..	..	..	..	14.5	17.6
Guinea	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ghana	7.9	6.2	20.1	18.7	6.3	5.8	4.1	6.8	15.1	19.2	46.6	43.3	19.5	7.8
Sri Lanka	3.1	2.4	13.0	7.1	6.4	5.1	19.5	11.4	20.2	13.1	37.7	60.8	25.4	33.6
Sudan	24.1	9.5	9.3	6.1	5.4	1.3	1.4	2.3	15.8	23.5	44.1	57.3	19.2	16.9
Pakistan	39.9	34.8	1.2	3.1	1.1	1.0	3.2	9.3	21.4	28.0	33.2	23.8	16.5	17.8
Senegal	..	9.7	..	17.6	..	4.7	..	8.6	..	19.2	..	40.3	17.4	26.8
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bhutan	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chad	24.6	..	14.8	..	4.4	..	1.7	..	21.8	..	32.7	..	18.1	..
Kampuchea, Dem.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lao PDR	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mozambique	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Viet Nam	..	..	..	..	..	..	..	..	..	..	..	..	..	..

(Table continues on the following page.)

Table A-2 (continued)

	Percentage of total expenditure												Total expenditure (percentage of GNP)	
	Defense		Education		Health		Housing; amenities; social security and welfare		Economic services		Other			
	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983
Middle-income economies	15.1	11.4	12.8	12.1	6.3	4.5	20.0	17.0	24.3	21.9	21.5	33.1	20.0	26.2
Oil exporters	22.5	15.4	14.5	12.8	3.9	3.7	4.3	9.3	26.5	25.7	28.3	33.1	16.7	26.7
Oil importers	14.3	14.4	11.9	10.9	6.9	4.8	26.8	21.2	21.9	19.8	18.2	28.9	21.4	25.1
Sub-Saharan Africa	..	13.2	9.1	17.2	4.9	6.3	4.3	8.4	21.6	24.0	47.0	30.9	13.1	32.4
Lower middle-income	18.4	15.5	16.4	15.0	4.1	4.2	5.5	7.6	30.3	26.5	25.3	31.2	16.8	24.4
Mauritania	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Liberia	..	7.9	..	15.8	..	7.3	..	2.7	..	28.6	..	37.7	..	34.9
Zambia	..	..	19.0	15.2	7.4	8.4	1.3	1.8	26.7	23.9	45.7	50.7	34.0	41.5
Lesotho	..	..	19.5	17.4	8.0	7.2	6.5	1.3	24.5	29.4	41.5	44.7	16.6	27.6
Bolivia	16.2	10.8	30.6	26.9	8.6	3.1	2.9	18.0	12.4	12.9	29.3	28.3	9.2	11.3
Indonesia	18.5	11.7	7.5	9.4	1.3	2.2	0.9	1.4	30.4	37.8	41.4	37.4	16.2	24.0
Yemen Arab Rep.	..	36.7	..	16.6	..	4.9	..	..	..	8.7	..	33.1	..	43.2
Yemen, PDR	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cote d'Ivoire	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Philippines	10.9	13.6	16.3	25.6	3.2	6.8	4.3	4.9	17.6	44.6	47.7	4.5	13.4	11.8
Morocco	12.3	14.6	19.2	18.6	4.8	2.9	8.4	7.1	25.6	28.8	29.7	27.9	22.4	33.2
Honduras	12.4	..	22.3	..	10.2	..	8.7	..	28.3	..	18.1	..	15.3	..
El Salvador	6.6	15.8	21.4	16.6	10.9	8.4	7.6	4.7	14.4	21.3	39.0	33.1	12.8	17.4
Papua New Guinea	..	4.2	..	20.9	..	9.3	..	1.8	..	19.6	..	44.2	..	36.2
Egypt, Arab Rep.	..	15.7	..	10.7	..	2.8	..	14.9	..	8.6	..	47.3	..	39.0
Nigeria	40.2	..	4.5	..	3.6	..	0.8	..	19.6	..	31.4	..	10.2	..
Zimbabwe	..	18.3	..	21.5	..	6.1	..	7.8	..	20.9	..	25.4	..	36.3
Cameroon	..	9.6	..	13.2	..	3.7	..	8.5	..	26.0	..	39.0	..	21.8
Nicaragua	12.3	..	16.6	..	4.0	..	16.4	..	27.1	..	23.6	..	15.5	49.2
Thailand	20.2	19.8	19.9	20.7	3.7	5.1	7.0	4.6	25.6	21.8	23.5	28.0	17.2	19.6
Botswana	..	7.0	10.0	19.4	6.0	5.6	21.7	9.1	28.0	27.4	34.5	31.5	33.7	44.7
Dominican Rep.	8.5	8.7	14.2	15.3	11.7	10.5	11.8	14.7	35.4	29.7	18.4	21.0	18.5	15.6
Peru	14.8	27.6	22.7	18.5	6.2	6.2	2.9	0.8	30.3	..	23.1	46.9	17.1	18.6
Mauritius	0.8	0.9	13.5	15.6	10.3	7.8	18.0	21.1	13.9	9.2	43.4	45.3	16.3	28.7
Congo, People's Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..	43.9
Ecuador	15.7	10.6	27.5	26.0	4.5	7.5	0.8	1.3	28.9	13.9	22.6	40.7	13.4	14.3
Jamaica	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Guatemala	11.0	..	19.4	..	9.5	..	10.4	..	23.8	..	25.8	..	9.9	13.1
Turkey	15.4	13.2	18.2	12.5	3.3	1.8	3.3	2.0	41.9	31.8	17.9	38.7	21.8	24.3
Costa Rica	2.8	3.0	28.3	19.4	3.8	22.5	26.7	17.1	21.8	20.2	16.7	17.8	18.9	26.4
Paraguay	13.8	12.5	12.1	12.0	3.5	3.7	18.3	32.2	19.6	14.0	32.7	25.7	13.1	11.7
Tunisia	4.9	..	30.5	..	7.4	..	8.8	..	23.3	..	25.1	..	22.8	37.1
Colombia	..	..	..	..	..	..	..	..	..	..	..	..	13.0	..
Jordan	..	25.6	..	11.5	..	3.6	..	13.7	..	33.2	..	12.3	..	46.3
Syrian Arab Rep.	37.2	..	11.3	..	1.4	..	3.6	..	39.9	..	6.7	..	28.1	..

Table A-2 (continued)

	Percentage of total expenditure												Total expenditure (percentage of GNP)	
	Defense		Education		Health		Housing; amenities; social security and welfare		Economic services		Other			
	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983
Angola	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuba	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Korea, Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lebanon	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mongolia	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Upper middle- income	14.0 w	9.8 w	11.5 w	11.0 w	7.0 w	4.7 w	24.9 w	20.6 w	22.3 w	20.2 w	20.3 w	33.7 w	21.3 w	26.9 w
Chile	6.1	12.0	14.3	13.7	8.2	6.0	39.8	45.7	15.3	6.3	16.3	16.3	42.3	34.8
Brazil	8.3	4.1	6.8	3.7	6.4	7.3	36.0	35.1	24.6	23.8	17.9	25.9	17.8	21.4
Portugal	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Malaysia	18.5	..	23.4	..	6.8	..	4.4	10.5	14.2	..	32.7	..	27.7	..
Panama	..	..	20.7	11.0	15.1	13.1	10.8	12.2	24.2	13.5	29.1	50.2	27.6	40.4
Uruguay	5.6	12.7	9.5	6.5	1.6	3.4	52.3	52.1	9.8	8.7	21.2	16.5	25.0	25.9
Mexico	4.2	2.0	16.4	11.0	5.1	1.2	25.0	12.5	34.2	26.2	15.2	47.2	12.0	27.9
Korea, Rep. of	25.8	31.9	15.9	20.5	1.2	1.6	5.8	5.9	25.6	13.6	25.7	26.5	18.1	18.3
Yugoslavia	20.5	..	..	..	24.8	..	35.6	..	12.0	..	7.0	..	21.1	..
Argentina	8.8	9.1	8.8	7.6	2.9	1.4	23.5	33.9	14.7	22.7	41.2	25.2	16.5	22.3
South Africa	..	..	..	..	..	..	..	..	..	..	..	..	21.8	28.0
Algeria	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Venezuela	10.3	5.2	18.6	19.1	11.7	8.6	9.2	9.7	25.4	20.6	24.8	36.9	21.3	27.4
Greece	14.9	..	9.0	..	7.3	..	30.2	..	26.4	..	12.3	..	27.5	..
Israel	39.8	29.0	9.0	8.4	3.5	4.3	7.8	21.5	16.3	6.4	23.5	30.4	44.0	48.8
Hong Kong	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Trinidad and Tobago	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Singapore	35.3	18.5	15.7	21.6	7.8	6.4	3.9	5.6	9.9	14.3	27.3	33.7	16.8	23.7
Iran, Islamic Rep.	24.1	8.7	10.4	13.9	3.6	5.7	6.1	13.3	30.6	23.0	25.2	35.4	30.8	28.1
Iraq	..	..	..	..	..	..	..	..	..	..	..	..	..	..
High-income oil exporters	13.0 w	27.7 w	13.6 w	9.4 w	5.6 w	6.0 w	14.9 w	12.1 w	17.8 w	21.9 w	35.1 w	22.9 w	24.2 w	30.9 w
Oman	39.3	51.3	3.7	7.4	5.9	3.5	3.0	1.9	24.4	21.6	23.6	14.3	62.1	54.3
Libya	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Saudi Arabia	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kuwait	8.4	13.3	15.0	10.1	5.5	6.2	14.2	15.5	16.6	28.7	40.1	26.2	34.4	39.2
United Arab Emirates	24.5	43.2	16.2	9.8	4.5	7.7	6.4	5.2	18.2	7.0	30.2	27.2	4.3	16.5
Industrial market economies	20.8 w	14.3 w	5.4 w	4.7 w	10.0 w	11.2 w	37.2 w	41.1 w	12.0 w	9.2 w	14.6 w	19.5 w	22.9 w	30.0 w
Spain	6.5	4.4	8.3	6.0	0.9	0.6	49.8	64.2	17.5	10.1	17.0	14.8	19.8	31.5
Ireland	..	..	..	..	..	..	..	..	..	..	..	..	33.0	58.1
Italy	6.3	3.5	16.1	8.6	13.5	11.5	44.8	34.3	18.4	6.1	0.9	36.0	31.8	52.8
New Zealand	5.8	4.9	16.9	11.9	14.8	12.6	25.6	30.2	16.5	17.6	20.4	22.7	28.5	41.7
United Kingdom	16.7	..	2.6	..	12.2	..	26.5	..	11.1	..	30.8	..	32.7	41.4

(Table continues on the following page.)

Table A-2 (continued)

	Percentage of total expenditure												Total expenditure (percentage of GNP)	
	Defense		Education		Health		Housing; amenities; social security and welfare		Economic services		Other			
	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983	1972	1983
Belgium	6.7	5.2	15.5	13.9	1.5	1.7	41.0	42.8	18.9	16.3	16.4	20.1	39.2	56.7
Austria	3.2	3.2	10.2	9.6	10.1	11.5	53.7	48.6	11.2	13.2	11.5	13.9	29.7	39.9
Netherlands	..	5.3	..	11.2	..	11.3	..	41.2	..	10.0	..	21.0	40.8	59.4
France	..	7.3	..	8.2	..	14.6	..	47.6	..	6.9	..	15.4	32.5	44.8
Japan	..	..	..	..	..	..	..	..	..	..	..	..	12.7	18.6
Finland	6.1	5.5	15.3	13.8	10.6	10.6	28.4	32.0	27.9	25.1	11.6	13.0	24.8	31.6
Germany, Fed. Rep.	12.4	9.3	1.5	0.8	17.5	18.6	46.9	50.3	11.3	7.0	10.4	13.9	24.2	31.1
Denmark	7.2	..	15.9	..	10.0	..	41.4	..	11.9	..	13.6	..	32.8	46.6
Australia	14.1	9.7	4.4	7.9	8.2	7.1	21.0	30.0	13.1	8.4	39.2	37.0	19.8	26.7
Sweden	12.5	6.9	14.8	9.2	3.6	1.5	44.3	49.4	10.6	9.3	14.3	23.7	28.0	46.9
Canada	..	8.0	..	3.6	..	6.3	..	37.6	..	16.7	..	27.8	..	25.6
Norway	9.7	8.6	9.9	8.8	12.3	10.6	39.9	36.2	20.2	20.5	8.0	15.3	35.0	39.7
United States	32.2	23.7	3.2	1.9	8.6	10.7	35.3	36.3	10.6	8.8	10.1	18.6	19.4	25.3
Switzerland	15.1	10.4	4.2	3.1	10.0	13.4	39.5	49.7	18.4	12.6	12.8	10.8	13.3	19.4
Eastern European nonmarket economies	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hungary	..	..	..	..	..	..	..	..	..	..	..	..	..	55.2
Poland	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Albania	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bulgaria	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Czechoslovakia	..	..	..	..	..	..	..	..	..	..	..	..	..	..
German Dem. Rep.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Romania	..	5.5	..	2.5	..	0.8	..	24.9	..	50.4	..	15.8	..	27.4
USSR	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Table A-3. Health Expenditure as a Percentage of Total Central Government Spending

Country	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Argentina	..	4.5	2.8	2.2	1.7	1.7	1.4	1.1	1.4	..
Australia	7.9	13.0	11.0	10.4	10.2	10.0	10.1	7.1	7.1	7.8
Austria	12.3	12.6	13.2	12.8	12.9	13.0	12.9	12.2	11.5	..
Bangladesh	5.4	5.0	4.7	5.3	..	6.4	..	..	..	..
Belgium	1.6	1.5	1.8	1.8	1.9	1.6	1.7	1.7	..	..
Benin	..	..	6.4	6.6	5.6	..	..	..	..	..
Bolivia	8.4	8.0	8.0	8.3	8.6	12.1	7.2	..	3.1	..
Botswana	6.3	6.4	6.8	6.0	4.7	5.4	5.9	4.9	5.6	..
Brazil	6.5	7.5	6.9	7.3	7.4	6.5	7.4	7.8	7.3	..
Burkina Faso	6.6	6.5	5.3	5.6	4.9	5.8	5.8	6.6	6.8	..
Burma	6.6	6.6	5.9	6.7	6.4	5.3	6.1	7.0	..	..
Burundi	7.2	5.9	4.7	..	..	..	..	..	..	..
Cameroon	..	4.8	4.8	4.6	4.3	5.1	2.7	..	3.7	4.4
Canada	7.7	8.3	6.9	7.6	7.6	6.7	6.2	5.2	6.3	..
Chad	3.7	4.2	..	..	..	..	..	..	..	..
Chile	7.0	6.9	6.9	6.9	6.5	7.4	6.5	6.8	6.0	6.2
Colombia	6.1	6.4	6.0	6.8	6.1	6.8	..	..	..	..
Costa Rica	4.5	5.0	3.3	25.4	25.0	..	..	32.8	22.5	..
Denmark	3.6	2.9	1.9	1.7	1.6	1.7	1.4	..	..	..
Dominican Rep.	6.8	8.9	9.0	9.4	9.1	9.3	9.7	10.7	10.5	..
Ecuador	7.3	7.2	6.8	8.2	8.4	7.8	7.8	7.7	7.5	..
Egypt	2.7	2.6	3.2	3.6	3.0	..	2.2	2.4	2.8	2.7
El Salvador	8.2	9.2	9.8	8.9	8.7	9.0	8.4	7.1	8.4	8.1
Ethiopia	4.7	4.5	4.9	4.0	3.8	3.4	..	..	..	..
Finland	10.7	10.8	11.5	11.1	10.5	10.5	11.2	10.9	10.6	..
France	15.0	14.8	11.6	14.8	15.0	15.0	14.7	14.6	..	..
Gambia, The	8.2	8.6	9.1	6.3	..	..	..	..	..	..
Germany, Fed. Rep.	19.8	19.8	19.3	19.3	19.0	19.0	19.2	19.3	18.6	..
Ghana	8.3	8.0	7.4	7.3	6.0	7.0	6.4	5.8	..	8.6
Greece	7.9	8.1	8.1	9.9	10.5	10.3	10.5	..	..	..
Guatemala	8.6	8.3	7.6	7.1	7.6	..	..	..	..	..
Honduras	12.8	14.7	8.5	8.5	8.0	..	..	..	..	..
India	2.4	2.5	2.0	2.1	1.7	1.6	2.0	2.3	2.4	..
Indonesia	2.1	1.9	2.5	2.1	2.4	2.5	2.5	2.5	2.2	..
Iran	3.2	2.9	3.0	3.5	4.4	6.4	5.4	5.5	5.7	..
Israel	3.7	3.4	4.3	4.6	5.2	3.5	3.5	4.3	3.7	..
Italy	16.8	..	..	7.6	10.5	12.6	10.7	10.6	11.5	11.5
Jamaica	9.3	8.2	7.8	..	..	..	..	..	..	..
Jordan	4.1	4.4	3.6	3.7	4.1	..	3.7	3.8	3.6	..
Kenya	8.0	7.9	8.2	7.4	7.2	7.8	7.8	7.3	7.0	..
Korea	..	1.1	1.7	1.6	1.1	1.2	1.3	1.4	1.6	1.4
Kuwait	..	..	5.9	5.9	6.3	5.1	4.9	5.4	6.2	6.3
Lesotho	5.5	5.2	5.4	..	..	..	..	..	7.2	..
Liberia	9.3	7.2	7.9	8.2	6.1	5.2	7.6	7.2	7.3	6.2
Malawi	5.8	6.4	5.4	5.3	1.7	5.5	5.2	5.2	6.8	..
Malaysia	6.9	5.7	7.4	6.4	6.5	5.1	4.4	..	..	..
Mali	..	6.9	6.2	5.3	5.3	3.1	4.6	2.8	2.5	..
Mauritania	..	..	..	3.5	2.8	..	..	..	..	..
Mexico	4.2	4.1	4.4	4.0	3.9	2.4	1.9	1.3	1.2	..
Morocco	3.6	3.3	3.0	3.6	3.1	3.4	3.0	2.9	2.9	..
Nepal	5.9	6.7	5.5	5.3	5.1	3.9	4.1	4.5	..	..
Netherlands	11.7	11.6	11.8	11.9	11.7	11.7	11.6	11.6	11.3	11.0

(Table continues on the following page.)

Table A-3 (continued)

Country	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
New Zealand	15.0	15.7	15.0	15.0	15.2	15.2	14.2	13.5	12.6	..
Nicaragua	8.4	11.8	9.6	10.0	10.3	14.6	..	..	..	..
Niger	..	4.9	4.5	4.6	4.7	4.1	..	..	..	..
Nigeria	2.2	2.7	2.2	2.5	..	..	..	..	..	..
Norway	13.4	13.3	11.2	..	..	..	10.3	10.6	10.6	..
Oman	3.2	3.2	2.7	3.2	3.2	2.9	3.0	3.1	3.5	4.1
Pakistan	1.5	1.8	1.6	1.6	1.3	1.5	1.6	1.1	1.0	..
Panama	14.5	13.2	14.5	15.1	12.1	12.7	13.2	13.1	..	..
Papua New Guinea	6.3	8.5	8.3	8.2	7.9	8.6	9.5	9.4	9.3	..
Paraguay	2.8	2.8	2.7	2.7	3.7	3.6	4.5	3.7	..	..
Peru	5.1	5.8	5.9	5.6	6.1	4.5	5.3	6.2	..	..
Philippines	3.9	4.5	4.6	4.3	4.7	3.9	4.1	4.1	5.8	..
Portugal	4.4	..	..	..	..	..	..	..	..	..
Romania	0.3	0.4	0.4	0.4	0.3	0.6	0.7	0.8	0.8	..
Rwanda	6.5	5.0	4.8	6.2	4.8	4.5	..	..	..	..
Senegal	5.9	..	..	..	..	4.7	4.6	3.9	4.7	..
Sierra Leone	4.6	5.0	5.2	4.3	4.1	..	..	..	6.2	8.0
Singapore	8.5	7.7	7.4	8.5	7.0	6.9	7.2	6.4	6.4	..
Somalia	5.9	5.7	4.9	3.2	..	..	..	..	..	..
Spain	0.9	0.8	0.7	0.7	0.8	0.7	0.6	0.6	0.6	..
Sri Lanka	6.1	6.2	6.0	4.2	5.2	4.9	3.5	3.3	5.1	..
Sudan	1.6	1.8	1.5	1.7	1.5	1.4	..	1.3	..	..
Swaziland	6.4	6.8	6.5	4.9	6.3	7.2	5.4	7.1	7.4	..
Sweden	3.1	3.1	2.6	2.6	2.5	2.2	2.0	2.1	1.5	1.4
Switzerland	10.4	10.1	10.6	10.9	11.4	11.7	12.7	12.9	13.4	..
Syria	0.8	1.0	0.9	0.7	1.0	0.8	1.1	..	..	..
Tanzania	7.0	7.1	7.1	7.3	5.7	6.0	6.0	..	..	..
Thailand	3.7	4.4	4.7	4.4	4.5	4.1	4.2	4.9	5.1	5.4
Togo	..	..	4.7	4.6	5.6	..	5.3	6.1	5.7	5.4
Trinidad and Tobago	..	7.0	7.8	6.9	6.4	5.8	5.9	..	..	..
Tunisia	6.2	6.7	7.0	7.3	6.4	7.2	7.7	6.7	..	..
Turkey	..	2.5	2.5	2.2	2.9	3.6	2.1	..	..	..
Uganda	4.0	5.6	8.1	8.2	5.2	5.8	5.9	5.2	4.6	2.6
United Arab Emirates	10.1	7.0	8.9	9.2	9.3	7.9	6.2	7.1	7.7	..
United Kingdom	12.9	12.9	12.6	12.5	12.4	..	..	..	..	..
United States	9.3	9.7	10.0	10.2	10.5	10.4	10.8	10.8	10.7	11.0
Uruguay	3.9	3.9	3.8	5.0	4.7	4.9	3.8	3.3	3.4	..
Venezuela	9.1	9.1	8.0	7.8	8.5	8.8	7.6	7.6	8.6	7.6
Yemen, Arab Rep.	2.7	2.9	2.8	3.9	3.4	4.0	3.3	4.5	4.9	4.2
Zaire	1.5	3.0	4.0	3.9	3.2	2.5	2.6	3.2	..	..
Zambia	5.8	7.0	7.3	7.7	6.9	6.1	6.0	8.4	..	..
Zimbabwe	..	6.9	5.8	5.7	5.9	5.4	7.1	6.4	6.1	..

Table A-4. Index of Constant Per Capita Central Government Health Expenditure

Country	1975	1976	1977	1978	1979	1980	1981	1982	1983
Argentina	..	189.7	100.0	79.7	65.0	69.7	59.6	43.5	60.0
Australia	63.2	118.5	100.0	97.9	95.5	93.5	96.5	68.5	72.5
Austria	84.6	92.1	100.0	105.1	109.6	114.0	117.4	112.3	108.9
Bangladesh	54.1	94.1	100.0	95.2	..	114.5	..	..	..
Belgium	81.6	82.6	100.0	106.8	117.2	107.4	120.3	118.7	..
Benin	..	..	100.0	85.8	79.1	..	..	..	..
Bolivia	89.4	98.0	100.0	108.4	108.9	..	87.3	35.3	..
Botswana	88.6	96.4	100.0	121.2	91.0	108.9	135.6	139.8	146.0
Brazil	82.1	100.6	100.0	110.7	106.1	108.1	119.8	134.0	114.0
Burkina Faso	105.4	121.8	100.0	112.7	110.3	117.1	119.0	151.6	118.2
Burma	94.8	99.3	100.0	128.4	122.8	115.7	144.2	177.1	..
Burundi	122.6	117.8	100.0	..	..	..	..	..	..
Cameroon	..	110.6	100.0	100.6	93.2	110.7	82.2	..	113.1
Canada	107.3	114.9	100.0	114.1	111.9	103.9	100.2	87.6	110.0
Chile	113.5	96.8	100.0	97.8	82.8	89.5	81.0	98.0	..
Colombia	113.1	102.8	100.0	125.0	127.9	159.5	..	..	..
Costa Rica	124.3	149.6	100.0	950.1	1,021.4	..	..	..	..
Denmark	170.9	142.7	100.0	93.4	93.3	106.5	91.0	..	..
Dominican Rep.	85.1	106.5	100.0	113.2	124.7	127.1	129.4	118.7	..
Ecuador	89.7	97.6	100.0	106.1	104.3	134.2	151.7	142.8	110.8
Egypt	97.0	98.3	100.0	106.6	101.2	..	74.3	..	..
El Salvador	77.5	96.4	100.0	97.8	92.9	98.8	89.6	72.0	..
Ethiopia	90.1	92.5	100.0	94.5	90.2	93.1	..	..	..
Finland	89.1	91.9	100.0	98.6	99.3	102.4	112.3	117.0	121.4
France	94.8	98.3	100.0	108.0	113.7	116.9	122.1	127.1	..
Germany, Fed. Rep.	94.3	99.2	100.0	102.7	103.2	110.4	114.1	115.8	111.7
Ghana	133.7	127.1	100.0	81.5	63.9	54.4	42.1	37.9	..
Greece	81.6	95.2	100.0	128.3	137.3	143.5	164.6	..	..
Honduras	126.9	157.5	100.0	118.6	113.8	..	..	..	..
India	112.6	119.5	100.0	114.7	92.3	85.9	112.5	136.9	..
Indonesia	78.8	81.8	100.0	99.7	125.2	143.2	168.7	145.1	133.1
Iran	110.0	96.7	100.0	110.9	96.9	127.1	109.4	..	..
Israel	80.7	79.6	100.0	100.8	129.4	89.8	95.1	115.6	119.8
Jamaica	114.0	105.8	100.0	..	..	..	..	..	..
Jordan	91.3	100.2	100.0	98.4	132.9	..	115.5	120.3	111.3
Kenya	102.3	99.9	100.0	116.6	123.3	132.3	142.4	130.4	105.1
Korea	..	62.9	100.0	100.7	76.7	86.2	96.7	115.3	139.3
Kuwait	..	..	100.0	119.8	84.7	69.8	81.8	..	..
Lesotho	73.9	81.4	100.0	..	..	..	..	..	..
Liberia	92.7	104.4	100.0	121.7	119.4	73.1	123.5	..	..
Malawi	123.9	111.8	100.0	125.3	49.1	166.3	146.8	115.5	154.2
Malaysia	77.4	68.9	100.0	81.2	79.4	85.1	102.9	..	..
Mexico	59.6	71.4	100.0	107.7	137.1	117.2	137.4	217.2	..
Morocco	94.1	106.0	100.0	103.0	91.9	103.2	102.3	97.2	83.4
Nepal	71.8	100.2	100.0	98.2	95.1	74.2	84.1	109.8	..
Netherlands	92.2	95.0	100.0	104.9	109.0	112.1	113.5	116.2	116.5
New Zealand	101.2	96.0	100.0	108.2	107.2	111.3	114.1	113.1	..
Nicaragua	71.7	95.5	100.0	82.9	71.6	151.7	..	..	..
Niger	..	113.6	100.0	122.6	137.2	146.3	..	..	..
Nigeria	87.8	99.4	100.0	63.4	..	..	..	..	..
Norway	100.0	111.8	100.0	..	..	..	102.7	108.0	111.1

(Table continues on the following page.)

Table A-4 (continued)

Country	1975	1976	1977	1978	1979	1980	1981	1982	1983
Pakistan	99.3	118.0	100.0	117.4	103.8	113.1	138.5	92.1	99.3
Panama	102.4	93.9	100.0	106.8	111.4	112.7	124.7	140.9	..
Papua New Guinea	97.1	117.5	100.0	108.9	101.4	114.7	132.4	126.5	118.6
Paraguay	88.5	97.9	100.0	110.1	149.6	152.8	213.8	183.3	..
Peru	93.5	104.4	100.0	85.2	85.2	85.4	103.2	103.8	..
Philippines	82.6	98.6	100.0	96.5	101.7	88.3	99.0	97.3	121.9
Rwanda	108.0	96.0	100.0	131.1	118.4	105.5	..	..	..
Sierra Leone	110.1	100.3	100.0	93.7	90.7	..	..	..	143.7
Singapore	88.8	94.9	100.0	119.2	106.5	119.5	155.1	133.2	152.2
Somalia	90.9	87.9	100.0	96.6	..	..	..	..	..
South Africa	..	..	100.0	97.6	92.5	93.6	96.5	131.6	..
Spain	107.4	93.4	100.0	103.8	127.7	106.3	103.6	101.9	110.8
Sri Lanka	107.6	118.2	100.0	126.1	153.8	168.0	101.6	102.0	155.6
Sudan	87.4	104.4	100.0	103.2	80.4	67.9	..	60.3	..
Swaziland	83.6	99.9	100.0	108.1	93.9	104.8	90.2	113.9	101.3
Sweden	99.8	108.0	100.0	105.2	111.1	98.6	95.9	102.4	80.2
Switzerland	84.2	91.0	100.0	101.1	108.3	113.1	117.5	124.4	130.0
Syria	92.8	119.8	100.0	75.5	99.5	101.4	114.5	..	..
Tanzania	111.3	93.0	100.0	107.2	105.2	94.3	87.8	..	..
Thailand	63.7	89.4	100.0	105.4	114.0	112.1	120.8	155.1	162.3
Togo	..	..	100.0	105.1	97.7	..	88.3	93.4	80.5
Trinidad and Tobago	..	87.6	100.0	120.7	119.5	98.2	99.1	..	..
Tunisia	74.1	84.9	100.0	109.6	100.8	109.7	126.9	132.9	..
Turkey	..	84.5	100.0	81.9	116.9	128.7	69.6	..	65.9
United Kingdom	102.4	105.2	100.0	103.5	104.9	..	..	..	..
United States	85.1	93.6	100.0	103.5	107.4	113.8	121.4	127.4	131.9
Uruguay	96.8	103.5	100.0	137.1	121.6	142.9	..	..	..
Venezuela	89.4	98.5	100.0	96.4	80.1	81.4	91.4	87.5	..
Yemen	72.5	87.9	100.0	190.2	250.1	291.4	340.2	518.7	..
Zaire	47.7	101.3	100.0	77.0	60.2	49.0	60.8	70.9	..
Zambia	101.3	105.7	100.0	88.5	72.6	78.7	78.4	109.3	..
Zimbabwe	..	108.7	100.0	110.1	103.1	109.5	136.3	148.5	..

Table A-5. Health-Related Indicators

	Population per:				Daily calorie supply per capita	
	Physician		Nursing person		Total 1983	As percentage of requirement 1983
	1965	1981	1965	1981		
Low-income economies	8,357 <i>w</i>	5,375 <i>w</i>	5,037 <i>w</i>	3,920 <i>w</i>	2,336 <i>w</i>	102 <i>w</i>
China and India	4,218 <i>w</i>	2,096 <i>w</i>	4,443 <i>w</i>	2,917 <i>w</i>	2,415 <i>w</i>	105 <i>w</i>
Other low-income	26,631 <i>w</i>	17,234 <i>w</i>	7,951 <i>w</i>	7,546 <i>w</i>	2,275 <i>w</i>	102 <i>w</i>
Sub-Saharan Africa	38,649 <i>w</i>	42,670 <i>w</i>	5,714 <i>w</i>	3,022 <i>w</i>	2,084 <i>w</i>	90 <i>w</i>
Ethiopia	70,190	88,120	5,970	5,000	2,162	93
Bangladesh	..	9,010	..	19,400	1,864	81
Mali	49,010	25,380	3,200	2,320	1,597	68
Zaire	39,050	..	..	..	2,136	96
Burkina Faso	74,110	49,280	4,170	3,070	2,014	85
Nepal	46,180	30,060	..	33,430	2,047	93
Burma	11,660	4,660	11,410	4,890	2,534	117
Malawi	46,900	52,960	49,240	2,980	2,200	95
Niger	71,440	..	6,210	..	2,271	97
Tanzania	21,840	..	2,100	..	2,271	98
Burundi	54,930	..	7,310	..	2,378	102
Uganda	11,080	22,180	3,130	2,000	2,351	101
Togo	24,980	18,550	4,990	1,640	2,156	94
Central African Rep.	44,490	23,090	3,000	2,120	2,048	91
India	4,860	2,610	6,500	4,670	2,115	96
Madagascar	9,900	9,940	3,620	1,090	2,543	112
Somalia	35,060	15,630	3,630	2,550	2,063	89
Benin	28,790	16,980	2,540	1,660	1,907	83
Rwanda	74,170	29,150	7,450	10,260	2,276	98
China	3,780	1,730	3,040	1,670	2,620	111
Kenya	13,450	7,540	1,860	990	1,919	83
Sierra Leone	17,690	17,670	4,700	2,110	2,082	91
Haiti	12,580	..	12,870	..	1,887	83
Guinea	54,610	..	4,750	..	1,939	84
Ghana	12,040	6,760	3,710	630	1,516	66
Sri Lanka	5,750	7,620	3,210	1,260	2,348	106
Sudan	23,500	9,070	3,360	1,440	2,122	90
Pakistan	3,160	3,320	9,900	5,870	2,205	95
Senegal	21,130	13,060	2,640	1,990	2,436	102
Afghanistan	15,770	..	24,450	..	..	..
Bhutan	..	18,160	..	7,960	..	..
Chad	73,040	..	13,620	..	1,620	68
Kampuchea, Dem.	22,500	..	3,670	..	..	..
Lao PDR	26,510	..	5,320	..	1,992	90
Mozambique	21,560	33,340	5,370	5,610	1,668	71
Viet Nam	..	4,310	..	1,040	2,017	93
Middle-income economies	11,192 <i>w</i>	4,764 <i>w</i>	3,526 <i>w</i>	1,474 <i>w</i>	2,611 <i>w</i>	110 <i>w</i>
Oil exporters	20,085 <i>w</i>	6,587 <i>w</i>	5,454 <i>w</i>	1,684 <i>w</i>	2,512 <i>w</i>	109 <i>w</i>
Oil importers	3,943 <i>w</i>	2,902 <i>w</i>	1,876 <i>w</i>	1,273 <i>w</i>	2,692 <i>w</i>	111 <i>w</i>
Sub-Saharan Africa	35,741 <i>w</i>	8,445 <i>w</i>	4,876 <i>w</i>	2,208 <i>w</i>	2,066 <i>w</i>	89 <i>w</i>

(Table continues on the following page.)

Table A-5 (continued)

	Population per:				Daily calorie supply per capita	
	Physician		Nursing person		Total 1983	As percentage of requirement 1983
	1965	1981	1965	1981		
Lower middle-income	18,215 w	8,235 w	4,783 w	1,783 w	2,448 w	106 w
Mauritania	36,580	..	..	..	2,252	97
Liberia	12,450	8,550	2,300	2,940	2,367	102
Zambia	11,390	7,110	5,820	1,660	1,929	84
Lesotho	22,930	..	4,700	..	2,376	104
Bolivia	3,310	1,950	3,990	..	1,954	82
Indonesia	31,820	11,320	9,500	..	2,380	110
Yemen Arab Rep.	58,240	7,070	..	3,440	2,226	92
Yemen, PDR	12,870	7,120	1,850	820	2,254	94
Cote d'Ivoire	20,690	..	1,850	..	2,576	112
Philippines	1,310	2,150	1,130	2,590	2,357	104
Morocco	12,120	17,230	2,290	900	2,544	105
Honduras	5,450	..	1,540	..	2,135	94
El Salvador	4,630	3,220	1,300	..	2,060	90
Papua New Guinea	12,520	16,070	620	960	2,109	79
Egypt, Arab Rep.	2,260	800	2,030	790	3,163	126
Nigeria	44,990	10,540	5,780	2,420	2,022	86
Zimbabwe	5,190	6,650	990	1,000	1,956	82
Cameroon	29,720	..	1,970	..	2,031	88
Nicaragua	2,490	2,290	1,390	590	2,268	101
Thailand	7,230	6,770	5,020	2,140	2,330	105
Botswana	22,090	9,250	16,210	700	2,152	93
Dominican Rep.	1,720	1,390	1,640	1,240	2,368	105
Peru	1,620	..	880	..	1,997	85
Mauritius	3,850	1,730	1,990	570	2,675	118
Congo, People's Rep.	14,210	..	950	..	2,425	109
Ecuador	3,020	..	2,320	..	2,043	89
Jamaica	1,930	..	340	..	2,493	111
Guatemala	3,830	..	8,250	1,360	2,071	95
Turkey	2,860	1,500	2,290	1,240	3,100	123
Costa Rica	2,040	..	630	..	2,556	114
Paraguay	1,840	1,310	1,550	650	2,811	122
Tunisia	8,040	3,620	1,150	950	2,889	121
Colombia	2,530	..	890	..	2,546	110
Jordan	4,670	1,170	1,810	1,170	2,882	117
Syrian Arab Rep.	4,050	2,160	11,760	1,370	3,156	127
Angola	12,000	..	3,820	..	2,041	87
Cuba	1,150	600	820	..	2,914	126
Korea, Dem. Rep.	..	..	..	..	2,968	127
Lebanon	1,240	..	2,500	..	..	..
Mongolia	710	440	310	240	2,841	117
Upper middle-income	2,473 w	1,374 w	1,914 w	975 w	2,830 w	116 w
Chile	2,080	950	600	..	2,574	105
Brazil	2,180	1,200	1,550	1,140	2,533	106
Portugal	1,170	450	1,160	..	3,046	124
Malaysia	6,220	3,920	1,320	1,390	2,477	111
Panama	2,170	1,010	680	..	2,275	98

Table A-5 (continued)

	Population per:				Daily calorie supply per capita	
	Physician		Nursing person		Total 1983	As percentage of requirement 1983
	1965	1981	1965	1981		
Uruguay	870	510	590	..	2,647	99
Mexico	2,060	1,140	950	..	2,934	126
Korea, Rep. of	2,740	1,440	2,990	350	2,765	118
Yugoslavia	1,190	670	850	300	3,575	141
Argentina	640	..	610	..	3,159	119
South Africa	2,050	..	500	..	2,897	118
Algeria	8,400	..	11,770	..	2,750	115
Venezuela	1,270	930	560	..	2,451	99
Greece	710	390	600	370	3,601	144
Israel	410	400	300	130	3,110	121
Hong Kong	2,400	1,260	1,220	800	2,787	122
Trinidad and Tobago	3,820	1,390	560	390	3,120	129
Singapore	1,910	1,100	600	340	2,636	115
<i>Iran, Islamic Rep.</i>	3,770	2,630	4,170	1,160	2,855	118
<i>Iraq</i>	4,970	1,790	2,910	2,250	2,840	118
High-income oil exporters	8,836 w	1,408 w	4,626 w	573 w	3,345 w	..
Oman	23,790	1,680	6,380	440	..	..
Libya	3,970	660	850	360	3,651	155
Saudi Arabia	9,400	1,800	6,060	730	3,244	134
Kuwait	830	600	270	180	3,369	..
United Arab Emirates	..	720	..	390	3,407	..
Industrial market economies	867 w	554 w	425 w	177 w	3,352 w	130 w
Spain	810	360	1,220	280	3,237	132
Ireland	960	780	170	120	3,579	143
Italy	1,850	750	790	250	3,521	140
New Zealand	820	590	980	110	3,493	132
United Kingdom	860	680	200	120	3,226	128
Belgium	700	380	590	130	3,705	140
Austria	720	580	350	170	3,479	132
Netherlands	860	480	270	..	3,477	129
France	890	460	..	110	3,514	139
Japan	970	740	410	210	2,653	113
Finland	1,290	460	180	100	3,077	114
Germany, Fed. Rep.	680	420	500	170	3,475	130
Denmark	740	420	190	140	3,525	131
Australia	720	500	110	100	3,068	115
Sweden	910	410	310	100	3,115	116
Canada	770	510	190	120	3,459	130
Norway	800	460	340	70	3,088	115
United States	640	500	310	180	3,623	137
Switzerland	750	390	270	130	3,472	129

(Table continues on the following page.)

Table A-5 (continued)

	Population per:				Daily calorie supply per capita	
	Physician		Nursing person		Total 1983	As percentage of requirement 1983
	1965	1981	1965	1981		
East European nonmarket economies	564 <i>w</i>	329 <i>w</i>	300 <i>w</i>	199 <i>w</i>	3,409 <i>w</i>	132 <i>w</i>
Hungary	630	320	240	140	3,563	135
Poland	800	550	410	..	3,336	127
Albania	2,100	..	550	..	2,907	121
Bulgaria	600	400	410	190	3,675	147
Czechoslovakia	540	350	200	130	3,555	144
German Dem. Rep.	870	490	..	..	3,718	142
Romania	740	650	400	280	3,341	126
USSR	480	260	280	..	3,381	132

Table A-6. Population per Hospital Bed

Country or area	Population per bed					Country or area	Population per bed				
	1950	1960	1970	1980	1981		1950	1960	1970	1980	1981
<i>Africa</i>						Bahamas	156	182	195	256	...
Algeria	448	320	342	...	...	Barbados	176	170	98	119	...
Angola	...	488	362	...	...	Belize	205	214	185	...	...
Benin	...	770	861	704	904	Bermuda	155	144	98	...	...
Botswana	1,041	500	...	383	...	Bolivia	...	619	491	...	...
Burkina Faso	...	1,851	1,671	...	...	Brazil	320	309	262	...	...
Burundi	...	899	787	...	...	British Virgin Islands	389	229	256	382	...
Cameroon	581	453	480	...	...	Canada	97	90	102	...	...
Cape Verde	...	403	638	513	...	Chile	216	275	247	292	...
Central African Republic	...	650	464	616	...	Colombia	...	355	446	609	...
Chad	...	1,394	776	...	...	Costa Rica	198	224	254	297	...
Comoros	...	473	429	...	...	Cuba	...	224	213	...	...
Congo	...	205	177	...	...	Dominica	295	219	230	...	...
Côte d'Ivoire	...	606	676	...	...	Dominican Republic	400	404	349	...	...
Djibouti	158	123	106	...	286	Ecuador	...	509	434	...	...
Egypt	...	466	462	518	500	El Salvador	465	436	516	...	...
Equatorial Guinea	...	194	...	...	...	Falkland Is.	118	63	74	118	118
Ethiopia	...	3,090	3,035	2,787	...	French Guiana	64	71	86	...	...
Gabon	...	162	98	...	...	Greenland	...	...	75	...	...
Gambia	957	731	...	...	...	Grenada	161	163	139	188	...
Ghana	2,196	1,283	758	...	...	Guadeloupe	132	149	93	...	...
Guinea	...	1,325	585	...	...	Guatemala	438	365	456	...	...
Guinea-Bissau	...	576	613	398	529	Guyana	109	184	213	...	...
Kenya	789	779	774	...	...	Haiti	1,616	1,723	1,374	1,264	...
Lesotho	1,040	740	487	...	...	Honduras	619	593	568	781	...
Liberia	2,094	728	527	...	...	Jamaica	230	241	244	...	...
Libya	...	363	256	...	201	Martinique	112	101	99	...	...
Madagascar	388	426	353	...	...	Mexico	1,114	612	812	...	...
Malawi	1,366	884	639	...	...	Netherlands Antilles	...	110	109	...	...
Mali	...	1,406	1,386	...	...	Nicaragua	411	424	409	...	...
Mauritania	...	4,680	2,786	...	...	Panama	245	250	319	...	...
Mauritius	229	213	248	318	...	Paraguay	...	398	624	...	...
Morocco	1,037	626	688	...	848	Peru	502	419	474	...	...
Mozambique	...	1,090	771	795	...	Puerto Rico	214	194	220	246	...
Niger	...	2,356	1,903	...	...	St. Christopher	283	284	187	177	...
Nigeria	3,795	2,516	1,849	1,251	...	Saint Lucia	252	232	225	...	...
Reunion	228	151	119	...	...	St. Pierre and Miquelon	83	54	...	...	...
Rwanda	...	...	768	640	648	Saint Vincent and Grenadines	224	212	205	...	...
St. Helena	147	66	88	...	...	Suriname	138	151	192	123	...
Sao Tome and Principe	...	25	33	...	...	Trinidad and Tobago	234	191	217	...	...
Senegal	...	743	728	...	...	United States	104	109	127	171	...
Seychelles	225	145	144	...	...	Uruguay	162	187	176	...	...
Sierra Leone	1,718	1,286	1,037	884	...	Venezuela	276	282	316	...	...
Somalia	866	583	571	...	...				
Sudan	1,135	1,034	1,044	1,086	1,091						
Swaziland	1,136	498	290	...	...				
Tanzania	771	659	...	...	...			
Togo	911	749	655	...	...				
Tunisia	655	373	410	469	...						
Uganda	901	687	641	...	689						
Zaire	221	163	319	...	...				
Zambia	664	365	315	...	289						
Zimbabwe	273	266	295	344	...						
<i>North America, South America, and Caribbean</i>						<i>Asia</i>					
Antigua	131	131	140	...	...	Afghanistan	9,958	8,075	6,894	...	3,700
Argentina	153	159	179	...	...	Bahrain	...	214	241	329	...
						Bangladesh	...	...	6,790	...	4,545
						Brunei	153	209	263	326	390
						Burma	2,220	1,561	1,197	1,222	1,226
						China	...	...	...	493	491
						Cyprus	292	221	190	182	180

(Table continues on the following page.)

Table A-6 (continued)

Country or area	Population per bed					Country or area	Population per bed				
	1950	1960	1970	1980	1981		1950	1960	1970	1980	1981
Kampuchea, Democratic	1,513	1,233	929	...	...	German Dem. Rep.	98	84	90	...	...
East Timor	...	2,248	377	...	...	Germany, Fed. Rep.	94	95	90	87	...
Hong Kong	498	380	240	250	245	Gibraltar	82	87	126	...	...
India	3,074	2,149	1,629	1,254	1,265	Greece	285	173	161	160	162
Indonesia	1,564	1,343	1,466	...	...	Hungary	178	144	123	110	109
Iran, I.R.	2,148	1,079	759	646	640	Iceland	104	94	68	61	...
Iraq	993	542	517	517	532	Ireland	70	66	79	103	...
Israel	177	148	171	196	...	Italy	...	110	94	...	...
Japan	258	111	79	89	86	Luxembourg	123	92	86	86	84
Jordan	766	557	961	1,163	1,230	Malta	101	108	99	...	...
Kuwait	...	147	211	238	...	Monaco	77	...	74	...	...
Lao People's Democratic Rep.	4,775	2,273	1,176	...	...	Netherlands	131	128	94	80	...
Lebanon	212	240	260	...	...	Norway	114	103	91	67	67
Macau	...	103	239	...	...	Poland	...	143	131	...	...
Malaysia:						Portugal	249	183	164	...	...
Peninsular	206	254	273	...	370	Romania	236	137	120	107	114
Sabah	598	341	378	...	...	Spain	284	250	194	...	...
Sarawak	496	409	394	...	...	Sweden	81	72	67	68	...
Mongolia	191	114	108	90	90	Switzerland	69	79	89	...	...
Nepal	...	8,060	6,752	5,477	...	UK: England and Wales	92	95	109	...	...
Oman	...	3,021	...	499	492	Northern Ireland	91	83	86	90	90
Pakistan	...	4,022	1,657	1,739	1,746	Scotland	84	81	83	88	...
Philippines	...	1,208	854	518	...	Yugoslavia	321	200	179	167	...
Qatar	...	...	130	...	338						
Korea, Rep.	...	2,482	1,922	587	607	Oceania					
Saudi Arabia	...	1,894	1,140	...	645	American Samoa	78	88	169	...	...
Singapore	247	226	270	250	247	Australia	89	84	83	...	...
Sri Lanka	366	319	331	340	340	Cook Islands	188	124	...	...	126
Syrian Arab Republic	1,492	929	1,005	934	904	Fiji	248	247	344	354	364
Thailand	...	1,393	846	658	...	French Polynesia	218	136	114	158	...
Turkey	1,106	601	489	445	474	Guam	203	209	...	...	...
United Arab Emirates	...	...	...	268	234	Kiribati	133	178	100	196	208
Viet Nam	...	...	...	278	272	Nauru	24	20	34	...	...
Yemen Arab Rep.	...	2,901	1,552	...	1,838	New Caledonia	107	73	86	101	93
Yemen, P.D.R.	1,002	1,154	978	679	...	New Zealand	77	93	98	...	...
						Niue	250	139	200	71	...
Europe						Pacific Islands	147	186	198	292	223
Albania	277	196	147	...	...	Papua New Guinea	162	...	152	243	...
Austria	110	93	92	89	89	Samoa	...	200	215	224	231
Belgium	141	125	120	...	107	Solomon Islands	228	145	135	...	175
Bulgaria	235	161	129	90	90	Tokelau	...	...	...	51	51
Channel Islands:						Tonga	625	394	404	299	296
Guernsey	...	81	95	104	104	Tuvalu	...	...	...	97	97
Jersey	...	100	86	89	89	Vanuatu	135	121	90	153	...
Czechoslovakia	...	101	98	80	80	Wallis and Futuna Islands	...	90	69	77	108
Denmark	104	108	103	...	...				
Faeroe Islands	138	142	167	123	123	USSR	178	123	91	...	...
Finland	135	100	78	64	...						
France	118	119	139	...	...				

Table A-7. Life Expectancy and Related Indicators

	Life expectancy at birth (years)				Infant mortality rate (aged under 1)		Child death rate (aged 1-4)	
	Male		Female		1965	1984	1965	1984
	1965	1984	1965	1984				
Low-income economies	49 w	60 w	51 w	61 w	125 w	72 w	19 w	9 w
China and India	51 w	63 w	53 w	64 w	115 w	59 w	16 w	6 w
Other low-income	44 w	50 w	45 w	52 w	147 w	114 w	27 w	18 w
Sub-Saharan Africa	41 w	47 w	43 w	50 w	155 w	129 w	36 w	26 w
Ethiopia	42	43	43	46	166	172	37	39
Bangladesh	45	50	44	51	153	124	24	18
Mali	37	44	39	48	207	176	47	44
Zaire	42	49	45	53	142	103	30	20
Burkina Faso	40	44	42	46	195	146	52	30
Nepal	40	47	39	46	184	135	30	20
Burma	46	57	49	60	125	67	21	7
Malawi	38	44	40	46	201	158	55	36
Niger	35	42	38	45	181	142	46	29
Tanzania	41	50	44	53	138	111	29	22
Burundi	42	46	45	49	143	120	38	24
Uganda	43	49	47	53	122	110	26	21
Togo	40	50	43	53	156	98	36	12
Central African Rep.	40	47	41	50	169	138	47	27
India	46	56	44	55	151	90	23	11
Madagascar	41	51	44	54	..	110	..	22
Somalia	36	44	40	47	166	153	37	33
Benin	41	47	43	51	168	116	52	19
Rwanda	47	46	51	49	141	128	35	26
China	55	68	59	70	90	36	11	2
Kenya	43	52	46	56	113	92	25	16
Sierra Leone	32	38	33	39	221	176	69	44
Haiti	46	53	47	57	138	124	37	22
Guinea	34	38	36	39	197	176	53	44
Ghana	45	51	49	55	123	95	25	11
Sri Lanka	63	68	64	72	63	37	6	2
Sudan	39	46	41	50	161	113	37	18
Pakistan	46	52	44	50	150	116	23	16
Senegal	40	45	42	48	172	138	42	27
Afghanistan	34	..	35	..	223	..	39	..
Bhutan	34	44	32	43	184	135	30	20
Chad	39	43	41	45	184	139	47	27
Kampuchea, Dem.	43	..	45	..	135	..	19	..
Lao PDR	39	43	42	46	196	153	34	24
Mozambique	36	45	39	48	172	125	31	22
Viet Nam	47	63	50	67	89	50	8	4
Middle-income economies	51 w	59 w	54 w	63 w	115 w	72 w	18 w	8 w
Oil exporters	47 w	56 w	50 w	60 w	138 w	89 w	22 w	12 w
Oil importers	55 w	62 w	58 w	67 w	97 w	57 w	15 w	5 w
Sub-Saharan Africa	41 w	49 w	44 w	52 w	168 w	107 w	33 w	19 w

(Table continues on the following page.)

Table A-7 (continued)

	Life expectancy at birth (years)				Infant mortality rate (aged under 1)		Child death rate (aged 1-4)	
	Male		Female		1965	1984	1965	1984
	1965	1984	1965	1984				
Lower middle-income	47 w	56 w	50 w	60 w	133 w	83 w	22 w	11 w
Mauritania	39	45	42	48	171	133	41	25
Liberia	40	48	44	52	172	128	32	23
Zambia	42	50	46	53	123	85	29	15
Lesotho	47	52	50	56	143	107	20	14
Bolivia	42	51	46	54	161	118	37	20
Indonesia	43	53	45	56	138	97	20	12
Yemen Arab Rep.	37	44	38	46	200	155	55	35
Yemen, PDR	37	46	39	48	194	146	52	31
Cote d'Ivoire	43	51	45	54	176	106	37	15
Philippines	54	61	57	65	73	49	11	4
Morocco	48	57	51	61	147	91	32	10
Honduras	48	59	51	63	131	77	24	7
El Salvador	52	63	56	68	120	66	20	5
Papua New Guinea	44	51	44	54	143	69	23	7
Egypt, Arab Rep.	47	59	50	62	173	94	21	11
Nigeria	40	48	43	51	179	110	33	21
Zimbabwe	46	55	49	59	104	77	15	7
Cameroon	44	53	47	56	145	92	34	10
Nicaragua	49	58	51	62	123	70	24	6
Thailand	53	62	58	66	90	44	11	3
Botswana	46	55	49	61	108	72	21	11
Dominican Rep.	52	62	56	66	111	71	14	6
Peru	49	58	52	61	131	95	24	11
Mauritius	59	62	63	69	64	26	9	1
Congo, People's Rep.	48	55	51	59	121	78	19	7
Ecuador	54	63	57	67	113	67	22	5
Jamaica	63	71	67	76	51	20	4	1
Guatemala	48	58	50	62	114	66	16	5
Turkey	52	61	55	66	157	86	35	9
Costa Rica	63	71	66	76	72	19	8	(.)
Paraguay	56	64	60	68	74	44	7	2
Tunisia	50	60	51	64	147	79	30	8
Colombia	53	63	59	67	99	48	8	3
Jordan	49	62	51	66	117	50	19	3
Syrian Arab Rep.	51	62	54	65	116	55	19	4
Angola	34	42	37	44	193	144	52	30
Cuba	65	73	69	77	38	16	4	(.)
Korea, Dem. Rep.	55	65	58	72	64	28	6	2
Lebanon	60	..	64	..	57	..	4	..
Mongolia	55	61	58	65	89	50	11	4
Upper middle-income	56 w	63 w	60 w	68 w	91 w	56 w	13 w	5 w
Chile	56	67	62	73	110	22	14	1
Brazil	55	62	59	67	104	68	14	6
Portugal	61	71	68	77	69	19	6	1
Malaysia	56	66	59	71	57	28	5	2
Panama	62	70	64	73	59	25	4	1

Table A-7 (continued)

	Life expectancy at birth (years)				Infant mortality rate (aged under 1)		Child death rate (aged 1-4)	
	Male		Female		1965	1984	1965	1984
	1965	1984	1965	1984				
Uruguay	65	71	72	75	47	29	3	1
Mexico	58	64	61	69	84	51	9	3
Korea, Rep. of	55	65	58	72	64	28	6	2
Yugoslavia	64	66	68	73	72	28	7	2
Argentina	63	67	69	74	59	34	4	1
South Africa	45	52	48	56	124	79	22	7
Algeria	49	59	51	62	155	82	34	8
Venezuela	60	66	64	73	67	38	6	2
Greece	69	72	72	78	37	16	2	1
Israel	70	73	73	77	29	14	2	(.)
Hong Kong	64	73	71	79	28	10	2	(.)
Trinidad and Tobago	63	67	67	72	43	22	3	1
Singapore	63	70	68	75	28	10	1	(.)
Iran, Islamic Rep.	52	61	52	61	150	112	32	17
Iraq	50	58	53	62	121	74	21	7
High-income oil exporters	47 w	61 w	50 w	64 w	141 w	65 w	34 w	6 w
Oman	40	52	42	55	175	110	43	17
Libya	48	57	51	61	140	91	29	10
Saudi Arabia	47	60	49	64	148	61	38	4
Kuwait	61	69	64	74	43	22	5	1
United Arab Emirates	57	70	61	74	104	36	14	1
Industrial market economies	68 w	73 w	74 w	79 w	24 w	9 w	1 w	(.) w
Spain	68	74	73	80	38	10	3	(.)
Ireland	69	71	73	76	27	10	1	(.)
Italy	68	74	73	79	38	12	3	(.)
New Zealand	68	71	74	77	20	12	1	(.)
United Kingdom	68	72	74	78	20	10	1	(.)
Belgium	68	72	74	78	24	11	1	(.)
Austria	66	70	73	77	30	11	2	(.)
Netherlands	71	73	76	80	14	8	1	(.)
France	68	74	75	80	22	9	1	(.)
Japan	68	75	73	80	21	6	1	(.)
Finland	66	72	73	79	17	6	1	(.)
Germany, Fed. Rep.	67	72	73	78	26	10	1	(.)
Denmark	71	72	75	78	19	8	1	(.)
Australia	68	73	74	79	19	9	1	(.)
Sweden	72	74	76	80	13	7	1	(.)
Canada	69	72	75	80	24	9	1	(.)
Norway	71	74	76	80	17	8	1	(.)
United States	67	72	74	80	25	11	1	(.)
Switzerland	69	73	75	80	18	8	1	(.)

(Table continues on the following page.)

Table A-7 (continued)

	Life expectancy at birth (years)				Infant mortality rate (aged under 1)		Child death rate (aged 1-4)	
	Male		Female		1965	1984	1965	1984
	1965	1984	1965	1984				
East European nonmarket economies	66 w	66 w	73 w	71 w	31 w	19 w	2 w	(.) w
Hungary	67	67	72	74	42	19	3	1
Poland	66	67	72	76	46	19	3	1
Albania	64	67	67	73	87	43	10	3
Bulgaria	66	68	72	74	35	17	2	1
Czechoslovakia	64	66	73	74	23	15	1	1
German Dem. Rep.	67	68	73	75	27	11	1	(.)
Romania	66	69	70	74	53	25	1	1
USSR	65	65	74	74	30	..	2	..

Table A-8. Urbanization

	Urban population					Urban population			
	As percentage of total population		Average annual growth rate (percent)			As percentage of total population		Average annual growth rate (percent)	
	1965	1984	1965-73	1973-84		1965	1984	1965-73	1973-84
Low-income economies	17 w	23 w	4.5 w	4.6 w	Indonesia	16	25	4.1	4.5
China and India	18 w	23 w	..	..	Yemen Arab Rep.	5	19	9.7	8.8
Other low-income	13 w	22 w	5.2 w	5.1 w	Yemen, PDR	30	37	3.4	3.5
Sub-Saharan Africa	11 w	21 w	6.2 w	6.1 w	Cote d'Ivoire	23	46	8.2	8.3
Ethiopia	8	15	7.4	6.1	Philippines	32	39	4.0	3.7
Bangladesh	6	18	6.6	7.7	Morocco	32	43	4.0	4.2
Mali	13	19	5.4	4.5	Honduras	26	39	5.4	5.7
Zaire	19	39	5.9	7.1	El Salvador	39	43	3.6	3.6
Burkina Faso	6	11	6.5	4.8	Papua New Guinea	5	14	14.3	6.1
Nepal	4	7	4.3	8.4	Egypt, Arab Rep.	40	23	3.0	3.0
Burma	21	29	4.0	4.0	Nigeria	15	30	4.7	5.2
Malawi	5	12	8.2	7.3	Zimbabwe	14	27	6.8	6.1
Niger	7	14	7.0	7.1	Cameroon	16	41	7.3	8.2
Tanzania	6	14	8.1	8.6	Nicaragua	43	56	4.4	5.2
Burundi	2	2	1.4	3.3	Thailand	13	18	4.8	3.1
Uganda	6	7	8.3	-0.1	Botswana	4	20	19.0	11.3
Togo	11	23	6.4	6.5	Dominican Rep.	35	55	5.6	4.7
Central African Rep.	27	45	4.4	4.6	Peru	52	68	4.7	3.6
India	19	25	4.0	4.2	Mauritius	37	56	4.6	3.4
Madagascar	12	21	5.3	5.5	Congo, People's Rep.	35	56	4.4	5.4
Somalia	20	33	6.4	5.4	Ecuador	37	47	3.9	3.9
Benin	11	15	4.5	5.0	Jamaica	38	53	4.3	2.7
Rwanda	3	5	6.0	6.6	Guatemala	34	41	3.8	4.1
China	18	22	3.0	2.9	Turkey	32	46	4.9	4.0
Kenya	9	18	7.3	7.9	Costa Rica	38	45	3.8	3.3
Sierra Leone	15	24	5.0	3.5	Paraguay	36	41	3.2	3.4
Haiti	18	27	3.8	4.2	Tunisia	40	54	4.1	3.8
Guinea	12	27	5.0	6.2	Colombia	54	67	4.3	2.9
Ghana	26	39	4.5	5.3	Jordan	47	72	4.7	4.7
Sri Lanka	20	21	3.4	3.5	Syrian Arab Rep.	40	49	4.8	4.3
Sudan	13	21	6.3	5.5	Angola	13	24	5.9	6.0
Pakistan	24	29	4.3	4.4	Cuba	58	71	2.8	1.6
Senegal	27	35	4.2	3.8	Korea, Dem. Rep.	45	63	4.9	4.1
Afghanistan	9	..	5.6	..	Lebanon	49	..	6.2	..
Bhutan	3	4	-2.1	4.6	Mongolia	42	55	4.6	4.1
Chad	9	21	6.9	6.5	Upper middle-income	49 w	65 w	3.9 w	4.1 w
Kampuchea, Dem.	11	..	3.4	..	Chile	72	83	2.8	2.4
Lao PDR	8	15	4.6	5.7	Brazil	51	72	4.5	4.0
Mozambique	5	16	8.2	10.2	Portugal	24	31	1.2	2.5
Viet Nam	16	20	5.5	2.3	Malaysia	26	31	3.3	3.6
Middle-income	36 w	49 w	4.5 w	4.1 w	Panama	44	50	4.1	3.1
Oil exporters	29 w	42 w	4.4 w	4.4 w	Uruguay	81	85	0.8	0.8
Oil importers	40 w	55 w	4.5 w	3.6 w	Mexico	55	69	4.8	4.0
Sub-Saharan Africa	16 w	28 w	6.4 w	5.9 w	Korea, Rep. of	32	64	6.5	4.6
Lower middle-income	26 w	37 w	5.1 w	4.2 w	Yugoslavia	31	46	3.1	2.7
Mauritania	7	26	16.0	5.1	Argentina	76	84	2.1	2.1
Liberia	22	39	5.3	6.0	South Africa	47	56	2.6	3.7
Zambia	24	48	7.6	6.4	Algeria	32	47	2.5	5.4
Lesotho	2	13	7.8	20.1	Venezuela	72	85	4.8	4.3
Bolivia	40	43	8.9	3.6	Greece	48	65	2.5	2.5
					Israel	81	90	3.8	2.7

(Table continues on the following page.)

Table A-8 (continued)

	Urban population					Urban population			
	As percentage of total population		Average annual growth rate (percent)			As percentage of total population		Average annual growth rate (percent)	
	1965	1984	1965-73	1973-84		1965	1984	1965-73	1973-84
Hong Kong	89	93	2.1	2.6	France	67	81	2.0	1.2
Trinidad and Tobago	22	22	0.6	1.2	Japan	67	76	2.4	1.4
Singapore	100	100	1.8	1.3	Finland	44	60	2.8	1.9
<i>Iran, Islamic Rep.</i>	37	54	5.4	5.0	Germany, Fed. Rep.	79	86	1.2	0.3
<i>Iraq</i>	51	70	5.7	5.5	Denmark	77	86	1.3	0.6
High-income oil exporters	36 <i>w</i>	70 <i>w</i>	9.2 <i>w</i>	7.7 <i>w</i>	Australia	83	86	2.6	1.5
Oman	4	27	10.8	17.6	Sweden	77	86	1.6	0.7
Libya	29	63	8.9	7.9	Canada	73	75	1.9	1.2
Saudi Arabia	39	72	8.4	7.3	Norway	37	77	3.4	2.7
Kuwait	75	93	9.3	7.7	United States	72	74	1.6	1.3
United Arab Emirates	56	79	16.7	10.4	Switzerland	53	60	1.9	0.8
Industrial market economies	72 <i>w</i>	77 <i>w</i>	1.8 <i>w</i>	1.2 <i>w</i>	East European nonmarket economies	52 <i>w</i>	64 <i>w</i>	2.6 <i>w</i>	1.8 <i>w</i>
Spain	61	77	2.5	2.0	Hungary	43	55	2.2	1.4
Ireland	49	57	2.0	2.2	Poland	50	60	1.5	1.8
Italy	62	71	1.4	1.0	<i>Albania</i>	32	39	3.5	3.2
New Zealand	79	83	1.9	0.9	<i>Bulgaria</i>	46	68	3.2	2.1
United Kingdom	87	92	0.7	0.2	<i>Czechoslovakia</i>	51	66	1.8	1.7
Belgium	86	89	0.9	1.2	<i>German Dem. Rep.</i>	73	76	0.2	0.2
Austria	51	56	0.8	0.6	<i>Romania</i>	34	52	4.2	3.0
Netherlands	79	76	0.8	-1.0	<i>USSR</i>	52	66	5.9	-3.0

Technical Notes

In tables A-1, A-2, A-5, A-7, and A-8, economies are listed in their group in ascending order of gross national product (GNP) per capita except for those for which no GNP per capita can be calculated. These are listed in alphabetical order, in italics, at the end of their group.

The letter *w* after a summary measure indicates that it is a weighted average; the letter *m*, that it is a median value; the letter *t*, that it is a total. Data that are not available are indicated by "..."; "(.)" indicates less than half the unit designated. All growth rates are in real terms. Figures in italics are for years or periods other than those specified.

The statistics and measures presented in the appendix tables have been chosen to give a picture of the health sector in developing countries. Data for developed countries have been added for comparative purposes. Considerable effort has been made to standardize the data; nevertheless, statistical methods, coverage, practices, and definitions differ widely. In addition, the statistical systems in many developing economies are still weak, and this affects the availability and reliability of the data. Readers are urged to take these limitations into account in interpreting the indicators, particularly when making comparisons across countries.

All growth rates shown are in constant prices and, unless otherwise noted, have been computed by using the least-squares method. The least-

squares growth rate, r , is estimated by fitting a least-squares linear trend line to the logarithmic annual values of the variable in the relevant period. More specifically, the regression equation takes the form of $\log X_t = a + b_t + e_t$, where this is equivalent to the logarithmic transformation of the compound growth rate equation, $X_t = X_0(1 + r)^t$. In these equations, X_t is the variable, t is time, and $a = \log X_0$ and $b = \log(1 + r)$ are the parameters to be estimated; e_t is the error term. If b^* is the least-squares estimate of b , then the annual average growth rate, r , is obtained as $[\text{antilog}(b^*)] - 1$.

Table A-1. Basic Indicators

This table is adapted from World Bank (1986). The estimates of population for mid-1984 are based on data from the U.N. Population Division or World Bank sources. In many cases the data take into account the results of recent population censuses. Note that refugees not permanently settled in the country of asylum are generally considered to be part of the population of their country of origin. The data on area are from the 1984 FAO *Production Yearbook*.

GNP measures the total domestic and foreign output claimed by residents and is calculated without making deductions for depreciation. It comprises gross domestic product (see the note for

table A-2) adjusted by net factor income from abroad. That income comprises the income residents receive from abroad for factor services (labor, investment, and interest) less similar payments made to nonresidents who contributed to the domestic economy.

The GNP per capita figures are calculated according to the *World Bank Atlas* method. The Bank recognizes that perfect cross-country comparability of GNP per capita estimates cannot be achieved. Beyond the classic, strictly intractable "index number problem," two obstacles stand in the way of adequate comparability. One concerns GNP numbers themselves. There are differences in the national accounting systems and in the coverage and reliability of underlying statistical information between various countries. The other relates to the conversion of GNP data, expressed in different national currencies, to a common numeraire—conventionally the U.S. dollar—to compare them across countries. The Bank's procedure for converting GNP to U.S. dollars generally uses a three-year average of the official exchange rate. For a few countries, however, the prevailing official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, and in these cases an alternative conversion factor is used.

Recognizing that these shortcomings affect the comparability of the GNP per capita estimates, the World Bank has introduced several improvements in the estimation procedures. Through its regular review of member countries' national accounts, the World Bank systematically evaluates the GNP estimates, focusing on the coverage and concepts employed and, where appropriate, making adjustments to improve comparability. The Bank also undertakes a systematic review to assess the appropriateness of the exchange rates as conversion factors. An alternate conversion factor is used when the official exchange rate is judged to diverge by an exceptionally large margin from the rate effectively applied to foreign transactions. This applies to only a small number of countries.

In an effort to achieve greater comparability, the U.N. International Comparison Project (ICP) has developed measures of gross domestic product (GDP) using purchasing-power parities rather than exchange rates. So far the project covers sixty countries for the year 1980, but some inherent methodological issues remain unresolved.

The estimates of 1984 GNP and 1984 per capita GNP are calculated on the basis of the 1982–84 base period. With this method, the first step is to calculate the conversion factor. This is done by taking the simple arithmetic average of the actual exchange rate for 1984 and of adjusted exchange rates for 1982 and 1983. To obtain the deflated exchange rate for 1982, the actual exchange rate for 1982 is multiplied by the relative rate of inflation for the country and for the United States between 1982 and 1984. For 1983, the actual exchange rate for 1983 is multiplied by the relative rate of inflation for the country and the United States between 1983 and 1984.

This average of the actual and the deflated exchange rate is intended to smooth the impact of fluctuations in prices and exchange rates. The second step is to convert the GNP at current purchaser values and in national currencies of the year 1984 by means of the conversion factor as derived above. Then the resulting GNP in U.S. dollars is divided by the midyear population to derive the 1984 per capita GNP. The preliminary estimates of GNP per capita for 1984 are shown in this table.

The following formulas describe the procedures for computing the conversion factor for year t :

$$(e_{t-2,t}) = \frac{1}{3} \left[e_{t-2} \left(\frac{P_t}{P_{t-2}} \mid \frac{P_t^U}{P_{t-2}^U} \right) + e_{t-1} \left(\frac{P_t}{P_{t-1}} \mid \frac{P_t^U}{P_{t-1}^U} \right) + e_t \right]$$

and for calculating per capita GNP in U.S. dollars for year t :

$$(Y_t^U) = Y_t / N_t \div e_{t-2,t}$$

where

Y_t = current GNP (local currency) for year t

P_t = GNP deflator for year t

e_t = annual average exchange rate (local currency/U.S. dollars) for year t

N_t = midyear population for year t

P_t^U = U.S. GNP deflator for year t

Because of problems associated with the availability of data and the determination of exchange rates, information on GNP per capita is not shown for most East European nonmarket economies.

Life expectancy at birth indicates the number of years a newborn infant would live if patterns of mortality prevailing for all people at the time of its birth were to stay the same throughout its life. Data are from the U.N. Population Division, supplemented by World Bank estimates.

The summary measures for GNP per capita and life expectancy in this table are weighted by population. Those for average annual rates of inflation are weighted by the share of country GDP valued in current U.S. dollars for the entire period in the particular income group.

Tables A-2, A-3, and A-4. Central Government Expenditure

Table A-2 is adapted from World Bank (1986). The data on central government finance in tables A-2, A-3, and A-4 are from the IMF *Government Finance Statistics Yearbook* for 1986, IMF data files, and World Bank country documentation. The accounts of each country are reported using the system of common definitions and classifications found in the IMF *Manual on Government Finance Statistics*. Due to differences in coverage of available data, the individual components of central government expenditure and current revenue shown in these tables may not be strictly comparable across all economies. The shares of total expenditure and revenue by category are calculated from national currencies.

The inadequate statistical coverage of state, provincial, and local governments has dictated the use of central government data only. This may seriously understate or distort the statistical portrayal of the allocation of resources for various purposes, especially in large countries where lower levels of government have considerable autonomy and are responsible for many social services.

It must be emphasized that the data presented, especially those for education and health, are not comparable for a number of reasons. In many economies private health and education services are substantial; in others public services represent the major component of total expenditure but may be financed by lower levels of government. Great caution should therefore be exercised in using the data for cross-country comparisons.

Central government expenditure comprises the expenditure by all government offices, departments, establishments, and other bodies that are agencies or instruments of the central authority of a country. It includes both current and capital (development) expenditures.

Defense comprises all expenditures, whether by defense or other departments, on the maintenance

of military forces; including the purchase of military supplies and equipment, construction, recruiting, and training. Also in this category is expenditure on strengthening public services to meet wartime emergencies, on training civil defense personnel, on supporting research and development, and on funding administration of military aid.

Education comprises expenditure on the provision, management, inspection, and support of preprimary, primary, and secondary schools; of universities and colleges; and of vocational, technical, and other training institutions by central governments. Also included is expenditure on the general administration and regulation of the education system; on research into its objectives, organization, administration, and methods; and on such subsidiary services as transport, school meals, and medical and dental services in schools.

Health covers public expenditures on hospitals, medical and dental centers, and clinics with a major medical component; on national health and medical insurance schemes; and on family planning and preventive care. Also included is expenditure on the general administration and regulation of relevant government departments, hospitals and clinics, health and sanitation, and national health and medical insurance schemes; and on research and development.

Housing and community amenities and social security and welfare cover (1) public expenditure on housing, such as income-related schemes, on provision and support of housing and slum clearance activities, on community development, and on sanitary services; and (2) public expenditure on compensation to the sick and temporarily disabled for loss of income; on payments to the elderly, the permanently disabled, and the unemployed; and on family, maternity, and child allowances. The second category also includes the cost of welfare services such as care of the aged, the disabled, and children, as well as the cost of general administration, regulation, and research associated with social security and welfare services.

Economic services comprise public expenditure associated with the regulation, support, and more efficient operation of business, economic development, redress of regional imbalances, and the creation of employment opportunities. Research, trade promotion, geological surveys, and inspection and regulation of particular industry groups are among the activities included. The five major categories

of economic services are fuel and energy, agriculture, industry, transportation and communication, and other economic affairs and services.

Other covers expenditure on the general administration of government not included elsewhere; for a few economies it also includes amounts that could not be allocated to other components.

The summary measures for the components of central government expenditure are computed from group totals for expenditure components and central government expenditure in current dollars. Those for total expenditure as a percentage of GNP are computed from group totals for the above total expenditure in current dollars, and GNP in current dollars, respectively.

Table A-5. Health-Related Indicators

This table is adapted from World Bank (1986). The estimates of population per physician and nursing person are derived from World Health Organization (WHO) data. They also take into account revised estimates of population. Nursing persons include graduate, practical, assistant, and auxiliary nurses; the inclusion of auxiliary nurses allows for a better estimation of the availability of nursing care. Because definitions of nursing personnel vary—and because the data shown are for a variety of years, generally not more than two years distant from those specified—the data for these two indicators are not strictly comparable across the countries.

The daily calorie supply per capita is calculated by dividing the calorie equivalent of the food supplies in an economy by the population. Food supplies comprise domestic production, imports less exports, and changes in stocks; they exclude animal feeds, seeds for use in agriculture, and food lost in processing and distribution. The daily calorie requirement per capita refers to the calories needed to sustain a person at normal levels of activity and health, taking into account age and sex distributions, average body weights, and environmental temperatures. Because no later figures are available, 1977 calorie requirement data are used for these calculations. Both sets of estimates are from the Food and Agriculture Organization (FAO).

The summary measures in this table are country figures weighted by each country's share in the aggregate population.

Table A-6. Population per Hospital Bed

A review of the number of persons per hospital bed is given in this table. For the period 1950–70, data for the closest available year have been used whenever information was not available for the exact year.

A hospital bed is defined by WHO as a bed regularly maintained and staffed for the accommodation and full-time care of a succession of inpatients and is situated in a ward or a part of a hospital where continuous medical care for inpatients is provided. Cribs and bassinets used for healthy newborn infants who do not require special care are not included.

The source for the data is WHO (1983).

Table A-7. Life Expectancy and Related Indicators

This table is adapted from World Bank (1986).

Life expectancy at birth is defined in the note for table A-1.

The infant mortality rate is the number of infants who die before reaching one year of age, per thousand live births in a given year. The data are from a variety of U.N. sources—"Infant Mortality: World Estimates and Projections, 1950–2025" (United Nations 1982) and recent issues of the United Nations *Demographic Yearbook* and *Population and Vital Statistics Report*—and from the World Bank.

The child death rate is the number of deaths of children aged 1–4 per thousand children in the same age group in a given year. Estimates are based on the data on infant mortality and on the relationship between the infant mortality rate and the child death rate implicit in the appropriate Coale-Demeny Model life tables; see Coale and Demeny (1966).

The summary measures in this table are country figures weighted by each country's share in the aggregate population.

Table A-8. Urbanization

This table is adapted from World Bank (1986). The data on urban population as a percentage of total population are from United Nations (1985) supplemented by data from various issues of the United

Nations *Demographic Yearbook* and from the World Bank.

The growth rates of urban population are calculated from the World Bank's population estimates; the estimates of urban population share are calculated from the sources cited above. Data on urban agglomeration are from United Nations (1980).

Because the estimates in this table are based on different national definitions of what is "urban," cross-country comparisons should be interpreted with caution.

The summary measures for urban population as a percentage of total population are calculated from country percentages weighted by each country's share in the aggregate population; the other summary measures in this table are weighted in the same fashion, using urban population.

For reasons explained in the notes to the previous tables, the data presented are not comparable across the countries.

Bibliographical Notes

This report uses information from a wide variety of internal World Bank documents, Bank publications, and outside sources. World Bank sector reviews and project reports, ongoing economic analyses and research, as well as project reports for specific countries provided valuable facts; they have not been published for external dissemination, however, and are not listed in the references. *World Development Reports* for 1982, 1984, and 1986 were sources of information. Discussions of the major sources for each section of the report follow. Sources for tables and figures are shown at the end of each.

Chapter 1. The Health Sector and Its Problems

World Bank sector and appraisal reports provided much of the factual information; especially useful were reports on Colombia, Ethiopia, the Gambia, Lesotho, Niger, Nigeria, Somalia, Swaziland, Zambia, and Zimbabwe. For the section, "Health and the Health Sector in Developing Countries," other major sources were Birdsall (1986) on morbidity; Akin et al. (1985), Birdsall, Orivel, Ainsworth, and Chuhan (1983), and International Statistical Institute (1979) on service usage patterns, and Clower and Armstrong (1966) on the Firestone

Company's health care system in Liberia. The descriptions of existing health care systems are based on Bose and Desai (1983), Valenzuela (1981), and Jonsson (1986).

The discussion of the problem of insufficient spending for cost-effective programs used Patel (1986), WHO (1981b), de Ferranti (1985), and USAID (1985) for expenditure information and estimates of the cost of primary health care interventions. Examples for the section on inefficiency came from Bose and Desai (1983), Bloom (1983), and Gesler (1979), Gershenberg and Haskell (1972), and Lasker (1981) on rationing by queue. The discussion of supply problems is based on Ainsworth (1983a), Danzon (1985), Gray (1986), USAID (1985), WHO (1984), Jonsson (1986), and Gwatkin, Berman, and Burger (1986a-c). The discussion of the equity problem is based on sector and appraisal reports, and on Jonsson (1986) from which much Tanzanian information came; Jimenez (1987) for information on China, Colombia, Indonesia, and Malaysia; Melrose (1982) on high technology medicine in Bangladesh; and Mesa-Lago (1983) on Latin American social security systems.

Chapter 2. Policy Reforms

Especially useful for chapter 2 were World Bank sector and other reports on Argentina, Bangladesh,

Botswana, Brazil, Cameroon, China, Colombia, Ecuador, India, Indonesia, Ivory Coast, Kenya, Lesotho, Malawi, the Philippines, Rwanda, Thailand, Zambia, and Zimbabwe. The section on charging the fees relies for the general argument on de Ferranti (1985), Birdsall (1986), Akin et al. (1985), and Jimenez (1987).

The *World Development Report 1983* and Saunders and Warford (1976) were sources on marginal cost pricing methodology; Roemer and Shain (1959), Pauly and Satterthwaite (1981), and Feldstein (1972) on supplier induced demand; and Heller (1976), Birdsall et al. (1983), Akin and Schwartz (1985), Ainsworth (1983a), and de Ferranti (1983b)

on the responsiveness of health service purchases to prices. Sources for the section on risk coverage include Prescott and Jamison (1984), Abel-Smith (1985), and Newhouse (1981b). The discussion of the private sector benefited from Fisk (1978) and Savas (1982) on the pros and cons of contracting public services out to private providers; Olson (1981) and Dobson (1978) on the problems with the periodic review method of regulation for both facilities and individual practitioners; and Stinson (1982) on community-based health finance systems. The discussion of decentralization benefited from the *World Development Report 1982* and Birdsall (1986).

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