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H N P D I S C U S S I O N P A P E R

# Public and Private Roles in Health

## Theory and Financing Patterns

Philip Musgrove

July 1996





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## **Health, Nutrition and Population (HNP) Discussion Paper**

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# **Health, Nutrition and Population (HNP) Discussion Paper**

## **Public and private roles in health Theory and Financing Patterns**

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**Abstract:** The appropriate role of the state in health is complex both in economic theory and in practice. Theory identifies three reasons for state action: public goods or services with large externalities (involving efficiency); poverty (involving equity); and failings peculiar to insurance markets for health care (where both inefficiency and inequity arise). The insurance domain presents the most costly and difficult problems, and explains why—in contrast to other sectors—governments tend to finance an increasing share of health care as incomes rise. Regulation, mandates and provision of information are also crucial public instruments; public provision of care is less important. As income rises, governments finance an increasing share of health care, displacing out-of-pocket expenditure by either tax-financed care or social security contributions. Private voluntary insurance is rare in most countries.

**Keywords:** public health, state and market in health, economic theory of health, health financing

**Disclaimer:** The findings, interpretations and conclusions expressed in the paper are entirely those of the authors, and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

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## Contents

<b>Foreword.....</b>	<b>x</b>
<b>Acknowledgements.....</b>	<b>xiv</b>
<b>Executive Summary.....</b>	<b>xvi</b>
<b>PART I: INTRODUCTION.....</b>	<b>1</b>
<i>Why The Public Role In Health Care Matters.....</i>	<i>1</i>
<i>Choices For State Intervention.....</i>	<i>2</i>
<i>A Road Map.....</i>	<i>4</i>
<b>PART 2: A CONCEPTUAL BASIS FOR PUBLIC AND PRIVATE ROLES.....</b>	<b>5</b>
<i>The Three Domains Of Health Care.....</i>	<i>5</i>
<i>Intervention for Public Goods in Health.....</i>	<i>10</i>
<i>The Public Role In Low-Cost Private Interventions.....</i>	<i>11</i>
<i>Risk-Sharing For Catastrophically Costly Private Goods.....</i>	<i>14</i>
<i>Market Failure And Health Care Needs.....</i>	<i>19</i>
<i>Dealing with poverty.....</i>	<i>19</i>
<i>A Minimal State Role In The Absence Of Poverty.....</i>	<i>19</i>
<i>How Poverty Complicates Public Roles.....</i>	<i>21</i>
<i>Summary: justifications and risks of state intervention.....</i>	<i>24</i>
<b>PART 3: EMPIRICAL PATTERNS AND EXPLANATIONS.....</b>	<b>26</b>
<i>Economic issues and health system objectives.....</i>	<i>26</i>
<i>Overall Health Spending And Public/Private Composition.....</i>	<i>28</i>
<i>What is known about health expenditure.....</i>	<i>28</i>
<i>How expenditure level and composition are related to income.....</i>	<i>29</i>
<i>Explaining Health Outcomes.....</i>	<i>32</i>
<i>Life Expectancy At Birth.....</i>	<i>34</i>
<i>Childhood Mortality.....</i>	<i>35</i>
<i>Summary: Expenditure And Results.....</i>	<i>40</i>
<i>Out-Of-Pocket Spending Versus Private And Public Insurance.....</i>	<i>41</i>
<i>The Income-Related Expansion Of Insurance.....</i>	<i>41</i>
<i>The Two Forms Of Publicly-Financed Insurance.....</i>	<i>44</i>
<i>State Intervention In The Insurance Domain.....</i>	<i>47</i>
<i>Why Social Insurance Is So Widespread.....</i>	<i>48</i>
<i>Non-Financial State Intervention.....</i>	<i>50</i>
<b>PART 4: CONCLUSIONS.....</b>	<b>51</b>
<i>The Appropriate Public Role In Health.....</i>	<i>52</i>
<i>What Government Should Not Do.....</i>	<i>52</i>
<i>What Government Should Do.....</i>	<i>54</i>
<i>How To Spend Public Money On Health Care.....</i>	<i>59</i>
<b>REFERENCES.....</b>	<b>63</b>
<b>STATISTICAL ANNEX.....</b>	<b>77</b>



## Figures

	Page
1 Three Domains of Health Care	6
2 Need, Demand and Supply for Health Care	20
3 Share of GDP Spent on Health, Related to Income	30
4 Public Expenditure on Health as a Share of Total Health Expenditure, Related to Income	31
5 Share of GDP Devoted to Health Expenditure, and its Distribution between Public and Private Spending Countries Classified by Income	33
6a Life Expectancy and Health Expenditure: Countries Classified by Income	36
6b Life Expectancy and Health Expenditure: Countries Classified by Share of Public Expenditure	37
7a Child Mortality and Health Expenditure: Countries Classified by Income	38
7b Child Mortality and Health Expenditure: Countries Classified by Share of Public Expenditure	39
8 Distribution of Health Expenditure among Out-of-Pocket Spending, Private Insurance and Social Insurance: Countries Classified by Income	42
9 Distribution of Health Expenditure among Private Spending Mandated Social Insurance and Directly-Financed Public Expenditure: Countries Classified by Income	46
10a Appropriate Use of the Instruments of Public Intervention in Health Care	56
10b Typically Inappropriate Use of the Instruments of Public Intervention in Health Care	57



## **FOREWORD**

In few areas of the economy are the relations between the state and the market as complex as they are in the health sector. Substantial market failures provide reasons for much greater public involvement than in many other activities. At the same time, public intervention has often given rise to what may be called government failures. Economic theory provides a valuable but incomplete guide to what governments ought to do to improve efficiency and equity in health care and in the mechanisms, particularly insurance, to finance it. Conceptual argument therefore needs to be complemented by empirical study of how countries organize health financing and delivery, and how those decisions are related to a population's health status, to the level of expenditure on health, to people's satisfaction with the resulting system and to the medical and financial equity with which it operates.

This paper was written primarily for World Bank staff and their colleagues in borrowing countries. It summarizes both the theoretical discussion of appropriate public and private roles in health, and factual information about what is spent on health care, how health systems are organized, and which financing mechanisms are used. It concludes that there are three reasons for the state to interfere in health markets: to ensure the right production and consumption of interventions that provide public goods or externalities; to avoid the waste and inequity of unregulated, private voluntary insurance for costly health interventions; and to protect the poor, who can afford little or no care or insurance out of pocket. Each of these tasks calls for particular instruments; if they are not used, or used wrongly, intervention can make things worse rather than better.

Particularly now that health expenditures are a large and growing share of many economies, and many countries are engaged in efforts to reform their health systems, this analysis may be useful to public debate and decisions in this crucial and controversial sector.

David de Ferranti  
Director  
Human Development Department



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## **EXECUTIVE SUMMARY**

Health systems are complicated in principle and extremely varied in practice, so it is not easy to reach conclusions about the appropriate role of the state in the health sector. Governments can employ five different instruments to affect the outcomes a private market would generate--they can create and disseminate information, regulate private activity, mandate certain actions by individuals or firms, finance health-related services or deliver those services through public facilities and staff. Choices about the state role mean deciding what should be left to the private sector, how heavily those private activities should be regulated or otherwise influenced by public policy, and what activities are best dealt with by substantial state intervention such as provision of care and mandating or financing insurance coverage. Both theory and the available empirical evidence suggest that there is a small plateau of somewhat different, but all moderately successful, combinations of public and private activities which different countries have reached. Over this area, all the major objectives of a health system can be more or less well satisfied, although there are always conflicts between one objective and another. There does not seem to be a sharp peak of ideal public and private relations rising above the plateau. The most important conclusions or recommendations for public policy then have to do with assuring a place on the plateau, and avoiding the numerous chasms which surround it. These chasms, which represent failures of various kinds, result from too much, too little or the wrong kind of state intervention.

Economic theory indicates three distinct justifications for state intervention in the health care market. These are to assure the optimal production of public goods; to correct or offset failings in the market for health insurance; and to subsidize consumers too poor to buy insurance or the inexpensive health care that the non-poor can finance out-of-pocket. Appropriate intervention in any of these areas can contribute to one or more of the four main general results that people appear to want from a health care system: good health, low cost, satisfaction on the part of both consumers and providers, and equity, both medical and financial. This paper develops the arguments for intervention and their limitations; relates them to the instruments available to governments for affecting market outcomes; and examines how health care is actually paid for and provided in a large number of countries and how the level, composition and mechanisms of finance appear to affect health outcomes. The theoretical and empirical analyses lead to a consideration of why health systems have typically evolved in certain ways, whether that is consistent with the theoretically appropriate roles of the state and the private sectors, and what advantages or failings the systems show.

Some conclusions can be drawn from theory alone; others emerge from empirical study; and some findings depend on both kinds of analysis. These conclusions are developed in the body of the paper and are briefly summarized here--

- ◆ The health sector is neither just like any other economic sector nor totally distinct from them. While none of the reasons for state intervention is unique to the health sector, certain market failures are worse there than elsewhere in the economy. A larger state role is

generally warranted than in other sectors, but still not a role of the size and nature the government actually takes in many countries.

- ◆ Empirically, the state role, particularly in financing, tends to expand as income increases. The expanded role for the state is a consequence of the increased importance of health care interventions which can be catastrophically costly; it parallels the historical expansion of the importance of insurance against these risks.
- ◆ There is a small but extremely important collection of health-related activities which must be financed by the state if they are to be provided at all, or provided at the socially optimum level of consumption. These interventions appear to account for much of the impact of health spending on health improvements. They probably explain why public health expenditure is somewhat more effective than private expenditure in extending life expectancy.
- ◆ These public health activities are especially important at low income levels, for both epidemiological and economic reasons, so that public financing may be particularly crucial for health in poor countries. Public finance becomes less urgent, but not less common, at higher incomes. (Public provision, in contrast, becomes less common.)
- ◆ Despite the potential importance of state intervention in poor countries, there is little relation in those countries between what is spent on health care and life expectancy or child mortality. This is partly because health status at low incomes depends more on factors outside the health care sector; once the health gain possible from those factors is realized, health expenditure appears in some respects to be more effective in richer countries.
- ◆ For those activities which do not have to be financed by the state, and which can be provided privately to non-poor consumers, pooling of risks through private insurance is theoretically the appropriate financial solution. However, private insurance markets have failings of their own, which have led in most countries to a large or even predominant share of insurance being financed socially.
- ◆ Trying to do without social insurance and rely on private risk-sharing requires extensive state intervention of other kinds, if the consequences of market failure are to be avoided. Thus the state role remains important even when both public goods and poverty cease to be major determinants of public intervention. The option for the state simply to stay out of the health care market requires that a society be willing to pay substantial costs in both efficiency and equity.
- ◆ The appropriate public role does not necessarily include providing health care; the state need not deliver services to make them available. (There may be exceptions for a few crucial services, or perhaps for some geographic areas, where competitive private provision is infeasible.)

- ◆ All people face potentially catastrophic health risks, but some cannot afford enough insurance to protect themselves. This accounts for much of the state role in all countries, and affects the nature of state intervention. If it were not for poverty, public intervention in health care could be more limited, and might require less public finance.
- ◆ Overall, the evidence is that for governments to achieve the four distinct objectives of cost control, good health outcomes, equity and popular satisfaction, all five instruments of state intervention are relevant, and are typically applied. Partly because of conflicts among the different objectives of a health system, it is not clear which combination of actions is best. It is clear that "success" depends on such interference, and not simply on who pays for or provides health care.

Many countries in all parts of the world are now engaged in efforts to reform their health sectors, efforts which often involve substantial changes in the relation between the government and the private sector. The discussion here of where and how to draw the boundary between public intervention and private activity is meant to aid understanding of the issues involved and to contribute to better public policy.



## PART 1: INTRODUCTION

The question of what governments ought to do, and particularly when and how they ought to intervene to change the outcomes of private activities, is one of the perennial issues of development. Much economic theory is devoted to determining under what conditions intervention by the state can improve on private outcomes. Empirically, it appears that excessive state interference is responsible for much economic development failure, and that countries which have prospered have generally limited such interference and allowed private activity to contribute more to progress [World Bank 1991]. If this is largely true in industry, agriculture, transport and other sectors of the economy, it is reasonable to ask whether the same conclusion holds for health care. This question of what the state should and should not do in the health sector has been taken up at intervals by the World Bank [1980, 1987, 1993b], in parallel with a large and steady increase in lending for health projects and a growing empirical knowledge of the health sectors of a variety of countries [World Bank 1995]. More generally, the issue of the state versus the market in health care has inspired much recent study and debate [Bennett 1991, Birdsall and James 1992, Campos *et. al.* 1987, Department of Public Health and Policy 1993, McLachlan and Maynard 1982, Pan American Health Organization 1991, Reinhardt 1992]. Particularly in low- and middle-income countries contemplating or undertaking health sector reform, this debate is often characterized by some confusion over the definition and scope of the terms "public" and "private", as well as related terms such as "competition", "privatization", and the various meanings of "market" in health care [Saltman 1995]. This paper synthesizes current theoretical understanding of the subject and provides supporting empirical information referring particularly to the question of how health care is paid for.

### **Why the Public Role in Health Care Matters**

Health care in about 1990 cost at least \$ 1.7 trillion, or about 8 percent of world income [Murray, Govindaraj and Musgrove 1994], making it one of the largest industries in the global economy. On average, 60 percent of this is public spending. If this spending is excessive or otherwise inappropriate, the consequences for the economy and for health outcomes could be substantial. Governments also provide a large share of health services, sometimes as large as the share in spending, and often intervene in various ways in the private health care market. Since most health care is a private good, it is surprising that so much of it is provided, financed or regulated by the state. In contrast to what happens in many other sectors of the economy, this substantial public role is most pronounced in high-income countries which are generally very market-oriented; the state usually finances a smaller share of in health care in poorer countries. Does this pattern provide models for the future development of the health sector and the public role in it, for low-income countries ? And is the variation among countries in the amount and kind of public intervention associated with differences in people's health, in what is spent on health care or in how well health systems function ?

Besides consuming large resources, many health systems are regarded as inefficient or inequitable or both; they are often described as in "crisis", as needing "reform", or as having "failed". Are the supposed failures of health systems real? If so, they might be caused by misguided public intervention, so they could be corrected by a smaller or different public role and a greater reliance on private markets. Or governments might intervene for sound reasons, to correct or compensate for failings in those markets; that is, outcomes would be even worse if left entirely to the private sector. Is there an appropriate frontier between private and public action, and a best combination of instruments for the state to use when it intervenes? These and related questions must be confronted in any reform effort [Aaron 1994, Cutler 1994, OECD 1994]. It is relatively simple to conclude that governments should do certain things and should leave others to private activity; but often there is a variety of possible solutions and no obviously best approach. Theory does not always provide clear answers, and the empirical evidence is incomplete, extremely varied and difficult to interpret.

### **Choices for State Intervention**

It matters not only *whether* governments intervene, but also *how* they do it: the second essential question is what the public sector should do, given that some problem in the private market appears to warrant some public action. This is particularly important because government failings in the health sector are also common, and often result from intervening in the wrong ways or with the wrong instruments. There are five distinct instruments of public intervention: arranged from the least to the greatest intrusion into private decisions, these are to--

- ◆ *inform*, which may mean to persuade, but does not require anyone to do anything. Governments do this when they publicize the health risks of smoking, or include health and basic hygiene education in public schools. These are examples of information directed at consumers, but governments also inform health care providers and suppliers of health care inputs, as by conducting research and disseminating information on disease patterns and on the effects and risks of medical procedures.
- ◆ *regulate*, which determines how a private activity may be undertaken. Governments sometimes regulate the medical profession by setting standards for doctors or accrediting hospitals, although these activities may also be undertaken by private bodies. And government regulation is common in the insurance industry, in the importation of medical equipment, drugs and supplies and in the protection of food and water quality. More generally, governments can influence private health care activity in many ways, often combining regulation with some financial incentives to offset the costs [Bennett et. al. 1994] but without public financing. Regulation is usually pursuant to a law, and is often determined by an executive or administrative body.
- ◆ *mandate*, which obligates someone to do something and (usually, though not always) to pay for it. Compliance with regulations can also imply substantial private costs; but a mandated activity is different in that it *must* be performed, whereas a private producer can

react to regulation by choosing not to undertake the activity. Mandates are usually specified in law, which may subsequently be adumbrated by regulation. The most important mandates, in financial terms, are the requirements that employers provide health services or insurance to their employees, or contribute to social insurance funds for that purpose. Governments can also impose mandates on individuals, as by requiring that children entering school be immunized.

- ◆ *finance* health care with public funds. Because mandated insurance is effectively paid for by an earmarked, involuntary contribution which is equivalent to a tax, "public" health expenditure is commonly defined to include such costs along with expenditures from public budgets. (Some important differences between these two ways of paying for health care are treated further in Part 3.) The obverse of spending public funds is to tax particular activities or goods, such as alcohol and tobacco, at least partly for health reasons. This issue is not treated here; while taxation which reduces consumption of specific goods may have substantial health effects, it is always limited to very few goods and is not used systematically to promote health. Finally, the state may--
- ◆ *provide* or deliver services, using publicly-owned facilities and civil service staff. This is what Ministries of Health in most poor countries do; so do various governmental bodies in many countries at all income levels. Once a society has decided to finance health services with public funds, the choice arises of whether to provide them through public facilities or to pay private producers to provide them. The appropriate way to consider this choice is as a standard "make or buy" decision. The issues for a government are the same as for a private firm, and turn on costs--is it cheaper to produce something than to buy from an outside supplier ?--and on the risks and difficulties of enforcing contracts and avoiding fraud when dealing with such suppliers [Coase 1988].

Because public financing requires public resources, it is perhaps the crucial choice about state action. However, all the instruments mentioned have costs; even information is not free. The benefits from any intervention have always to be weighed against these costs. In addition, sometimes two instruments overlap, or one requires the use of another: mandates imply regulation, and public provision usually implies at least partial public finance. (User fees or even private insurance payments to public facilities may cover part of the cost and could in principle cover all of it.) And two instruments can be alternatives: for part of the population, governments can either finance health care or mandate financing by employers or other private institutions. Differences in ability to pay make it natural to operate mixed systems of public intervention, such as mandated coverage for the non-poor and public finance for the poor. There are alternatives even within mandated coverage, such as "play or pay" arrangements in which employers can finance health care directly for their employees or pay into a social security scheme.

These instruments can all be applied to the delivery of health care *services*, but they can also be used to influence the markets for various *factors* or *inputs* used to produce those services. Thus governments may set standards for medical supplies (especially drugs) and

equipment, and sometimes operate laboratories or factories to produce them. State intervention in factor markets may greatly influence which services are produced, for whom, and at what cost, even with minimal public interference in service production. Although these markets are also susceptible to failings--and governments also may fail when they intervene in them--the analysis here is limited to health care and insurance.

## A Road Map

The essential question to ask in determining the appropriate roles of the private and public sectors is whether health services differ from other goods and services in some fundamental ways that justify or explain the extensive and varied public intervention observed in the health sector. The object is not to divide the sector into separate public and private spheres, but rather to determine what functions or activities are best undertaken by the state and by the market, whether they operate separately in or various forms of collaboration [van der Gaag 1995]. Part 2 of the paper is devoted to a conceptual discussion of the peculiarities of health and the cases in which public intervention appears necessary or at least advisable to improve on the outcomes that private markets would generate.

To simplify this discussion, it is initially assumed that no one is poor. Poverty is, of course, both an important cause and a consequence of ill health [Behrman 1990]. Taking it into account greatly complicates the issue of what the state should and should not do in health care, so it is appropriate to treat this issue separately and in somewhat more detail. The last section of Part 2 therefore is devoted to a discussion of how concern for the poor affects financial and institutional arrangements, both theoretically and in practice.

The conceptual discussion is necessarily abstract, and says little about how health systems are actually organized or function--and in particular, whether governments in fact play the role that theory suggests they should play. Part 3 is therefore empirical: it presents information on the level and composition of health care spending and its relation to sectoral organization. Financing is emphasized partly because it is the easiest type of intervention to quantify. The presentation in Part 3 is primarily descriptive, but includes some discussion both of the historical development of health systems and of the apparent benefits and drawbacks of particular financing and institutional arrangements. The intention is to explain, so far as possible, what the state actually does in different health systems and why that role does or does not correspond to the conceptually appropriate role for public action.

Finally, Part 4 draws together the conclusions that it seems legitimate to derive from the combination of conceptual discussion and empirical information. As a guide to policy and state action, these are expressed as a set of *Dos* and *Don'ts* for governments--things that governments generally ought not to do, and others they should do, to approach a social optimum in health care. Part 4 ends with a discussion of how best to spend public money for health care.

## PART 2: A CONCEPTUAL BASIS FOR PUBLIC AND PRIVATE ROLES IN HEALTH

The health sector is sufficiently complicated, and the conditions of countries are sufficiently different, that economic theory by itself is an inadequate guide to where the frontier should be drawn between the private economy and state action, or to which state interventions should be undertaken, and in what degree. Nonetheless, theory is essential, particularly where two issues are concerned. Both of these refer to *market failure*, or circumstances in which private markets either cannot be expected to function at all, or can be expected to yield undesirable outcomes which appropriate public intervention might improve on. Some such failures may occur in any sector of the economy; traditional public finance theory [Musgrave 1959] explains these cases and provides guidance for public action. Other possible failures arise where insurance is involved, and for reasons specific to the health sector, present particularly acute problems for health insurance [Arrow 1963, 1985].

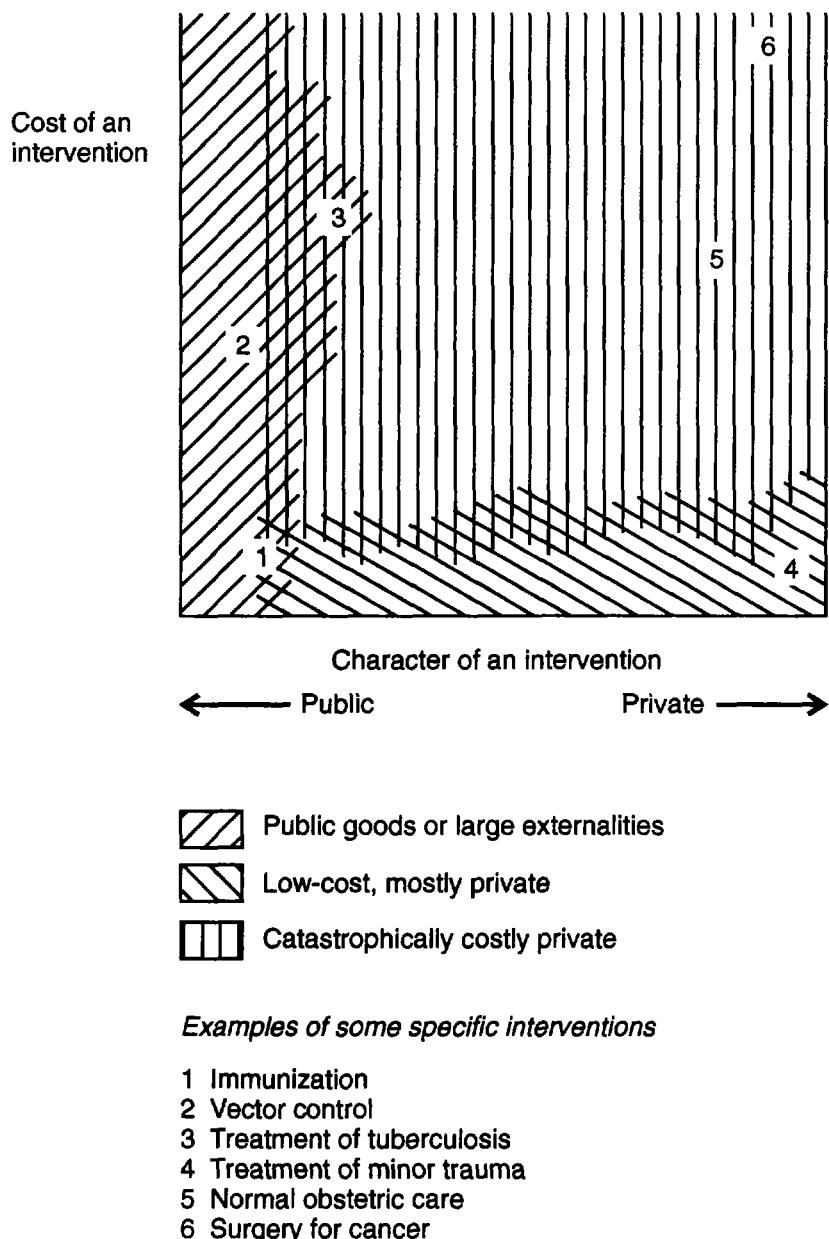
Since what the health care sector provides to consumers and beneficiaries are specific activities or *interventions*, it is useful to organize a conceptual basis according to distinctions among these activities. The next section provides this classification; three subsections elaborate on the peculiarities of each area.

### The Three Domains of Health Care

While the activities that promote, protect or restore health are very heterogeneous, they fall into three natural domains, corresponding to *public goods*, to *low-cost private interventions* and to *catastrophically costly private goods*. These domains are constructed by classifying health-related activities along two dimensions, as shown in Figure 1: first by the degree to which they are private or public goods, and second, by how much they cost. Both dimensions refer only to characteristics of particular activities or interventions themselves, *not* to who consumes them or pays for them. As the descriptions of the three domains indicate, private goods are separated into low-cost and high-cost, whereas all public goods constitute one domain, regardless of their cost. The reason for this is that while the costs of public goods matter for deciding whether they should be produced, the issue of market failure related to such goods is independent of costs. With private goods, in contrast, some problems of market failure occur only with those services costly enough to be financed by insurance; and poverty, or the inability to buy even low-cost services, is a distinct reason for public intervention.

This classification of health-related activities does not reserve a place for "merit goods", interventions which everyone "ought to have". To exclude this category is not to deny the social or political importance of views about what people "have a right to". The difficulty is that there is no good way to define such goods *a priori*, and societies make different choices about them. Moreover, so far as these goods are supposed to justify public intervention, there are often other grounds for state financing, mandating or regulating of the goods or services regarded as meritorious. For example, it is widely believed that all

**Figure 1 Three Domains of Health Care**



children have a right to immunization, but public promotion of immunization can also be justified by the market failures involved.

A particular intervention occupies a small space in Figure 1; to indicate how different interventions would be classified into the three domains, some typical health care activities are located approximately. The cost of an intervention can vary depending on many factors, such as how widespread the intervention is; there can also be variation in the public or private good nature of an activity. Because a health *system* produces a variety of interventions in all three domains, it is spread widely over the space. Figure 1 therefore does not serve to compare different systems.

Public goods are goods or services such that one person's consumption does not reduce the amount available for others to consume. Typically these are goods from which consumers cannot be excluded: if they are made available to anyone, they are available to all, at least locally or temporarily. Since people can consume such goods without having to pay for them, no one will produce them for sale to individual consumers. Therefore they will be produced only if government (or some other source such as a charitable organization) pays for their production. The notion of a public good is no different in health than in any other sector: wherever such goods or services are to be available, they must be financed by government or some other non-market alternative.

Control of disease vectors and protection of food and water safety are examples of (nearly) pure public goods in health. Individual action may be ineffective (if one's neighbor's house harbors rats or mosquitoes), costly (water purification) or virtually impossible (testing for food safety). Most activities in this category are preventive, but some curative actions are also partly public. And not all preventive interventions are public goods. For example, at low levels of coverage immunization confers some public good benefits--because the immunization of part of the population reduces the likelihood that unimmunized people will become infected--but it still produces mostly private benefit for the immunized individuals. However, as immunization coverage approaches 100 percent, the benefit becomes more and more public through the mechanism of "herd immunity": a lone unimmunized individual would be just as well protected as if he had been immunized, and could enjoy this protection without paying for it. When the disease can be *eradicated* by complete immunization coverage, a pure public good is created. This is an example of how the public or private nature of an intervention may depend on the degree of coverage. When smallpox was endemic, individuals had a strong incentive to be vaccinated, without regard for how many other people were also protected. Now that the disease has been eliminated, everyone benefits.

While the distinction between public and private goods is crucial, it does not by itself define the appropriate boundary between private and state action. Moreover, the boundary between public and private goods is not sharply defined, because some interventions provide substantial *externalities*. (Figure 1 treats such interventions as partly public and partly private, rather than locating them in a separate domain.) In these cases, individuals can and

do buy an intervention and benefit from it, but they cannot prevent non-consumers from also deriving some benefit. Because the purchasers do not capture all the benefit, they may be unwilling to pay for all of it: in consequence, private markets can exist but will produce less of these interventions than would be optimal for society as a whole.

This problem arises most readily with communicable diseases, because the infected person puts others at risk. Curing one case therefore also prevents others. Tuberculosis control is a clear example: no victim of tuberculosis is likely to ignore the disease, so there is no problem of people undervaluing the private benefits of treatment. Rather, the cost of treatment--and the fact that they may feel better even though the disease has not been cured--may lead people to abandon treatment prematurely, with bad consequences not only for themselves but for others. The rest of society therefore has an interest in treating those with tuberculosis, and assuming at least part of the cost. Asymptomatic communicable diseases, such as some sexually transmitted infections, also create externalities; but because people may not realize they are infected, the demand for care is too low even when care is free (zero price). There is then an argument not only for subsidizing treatment, but for persuading those infected to seek care.

Public intervention to ensure efficient provision of true public goods and goods with significant positive externalities usually requires public finance, because free-riding makes it difficult to get the same results by other means. However, at the level of small communities, it may be possible to encourage collective action with only limited public finance. In the extreme case, a community can internalize the externalities and people may contribute even though they could ride free, because their immediate neighbors are involved and can apply moral suasion or sanctions. The same role can sometimes be played by a private entrepreneur, whether for profit or not [Foldvary 1994]. Where such small group collaboration is not feasible and public finance is necessary, the chief issue for public policy is which activities to promote or pay for. The average income of a country obviously limits what it can spend on public goods in health, but individual incomes are largely irrelevant, because people do not buy the services and sometimes do not even choose to consume them. (Individual income *is* relevant for many private goods with externalities, for which private demand would be too low but not zero.)

Most health care, however, is a (nearly) pure private good: Figure 1 reflects this by showing public goods as only a narrow band at the left-hand side, with private goods occupying most of the space. Largely or exclusively private activities include most curative care--especially for non-communicable diseases which pose no threat to others--and all rehabilitative care, and also some preventive or "pre-curative" care (such as well-baby visits, and screening for hypertension, cervical cancer, or glaucoma). They include home treatment, using health-specific purchased inputs, as well as medical or other professional care. This area shades into the myriad activities of daily behavior which also affect health, such as diet, exercise, safety precautions, sexual behavior, and the use of alcohol, tobacco or drugs. Among these activities, child-rearing is of crucial importance, both for the immediate effect on health--young children are especially vulnerable to infections and accidents--and for

the formation of life-long habits. The health effects of these behaviors are usually small on a daily or episodic basis, but can be very large cumulatively.

Figure 1 distinguishes among private interventions according as they are cheap or costly. This is not a sharp boundary, because what is affordable for some people is out of reach for others. And activities which are individually not very expensive may have to be repeated often, creating large cumulative expenditures: renal dialysis and physical therapy are examples. Nonetheless it is crucial to distinguish interventions according to whether they can be paid for out-of-pocket, or financed from accumulated savings, or are so expensive as to represent a catastrophic burden. The cost of medical care is catastrophic if a family or individual can meet it only by selling assets, or taking on debt, to such an extent as to leave it permanently poor. As indicated in Part 1, it is initially assumed that no one is too poor to pay for interventions in the "low-cost" domain.

In any health system there is always some private out-of-pocket spending, corresponding to the band along the bottom of Figure 1. Before the modern understanding of disease and medicine, *all* health interventions were of this kind, and were paid for by consumers or by charity. Historically, health expenditure began in the lower right corner of the Figure and has expanded into public goods (to the left) and also into very costly private interventions (toward the upper right) as knowledge, wealth and institutional capacity have increased. While this pattern is general, countries have followed different paths in the expansion.

Interventions which are needed unpredictably, because disease strikes randomly, and are also too costly for households' ordinary budgets or savings to finance, define the domain of catastrophically expensive care. The only way to deal with the combination of high cost and uncertainty about needs is by risk-sharing, in which people finance health care collectively by contributions which are related to the expected expense in the group but not to any individual's (unknown) likely consumption of care.

Although the boundaries are blurred, the domain of risk-sharing is conceptually quite distinct from the other two. It normally does not extend into the many routine low-cost, health-related activities, because risk is unimportant there. (It is true that famine relief and other responses to unforeseen disasters amount to sharing the risk of inadequate food or other daily needs, but under normal circumstances it is impossible to buy food insurance.) And *explicit* insurance--a contract between the consumer who agrees to contribute, and someone else who agrees to pay for specified care--is simply not feasible for public goods. Of course, when the government or a private charity pays for public goods, it assumes the financial risk. This can be thought of as *implicit* insurance, and in this sense all publicly-financed health care is a form of insurance, even if there is no explicit contract and no payment of individual claims.

Risk-sharing presents the most numerous and complex issues for public policy. The growth in total health care costs is concentrated in this domain because it includes the

catastrophically expensive activities. It also shows the greatest variety of institutional arrangements, including substantial participation by private but non-profit providers and financing institutions [Frank and Salkever 1994]. The reason is that while insurance is the natural solution to the risk of needing costly interventions, private insurance markets tend to fail in ways that affect both efficiency and equity, and different institutions represent different partial solutions to those failures. These problems are quite distinct from the inability of markets to deliver public goods or to assure the right level of production of goods with significant externalities. The question is how and how far governments can and should try to correct for the failings of the insurance market, and whether public finance is necessary or whether other instruments can be substituted for it. Because neither economic theory nor common sense provides as much of an answer as in the domains of public goods and low-cost interventions [Diamond 1992, Zeckhauser 1994], judgements in the domain of risk-sharing are more tentative and depend more on empirical information.

**Intervention for Public Goods in Health** By definition, public goods cannot be sold in private markets and so create a straightforward justification for collective action. However, the good or service also must be worth the required public expenditure: simply being a public good is an insufficient condition for state intervention. To take an extreme example, erecting giant fans to blow away polluted air would provide a public good, but would almost surely cost too much to be justified. The questions to answer then are, which goods are sufficiently public that private markets cannot provide them adequately ? and how should they be valued to determine whether it is justified to pay for them ?

As to the first question, governments usually try to provide such indisputably public goods as disease surveillance and sanitary inspection. They often err, however, by trying to cover too wide a range of interventions; Ministries of Health sometimes appear to regard all of health as a public good. An alternative explanation is that they regard all health care as a merit good; the belief that everyone has an unlimited or ill-defined right to free care is sometimes enshrined in legislation or national constitutions [Fuenzalida-Puelma and Connor 1989]. When public financing is insufficient to fulfill that promise, and particularly when public provision is poorly managed, the result is likely to be both inefficient and inequitable. Governments may err in another way, by recognizing that it can be efficient for the public sector to supply a service--the alternative being to regulate private provision--but subsidize it when most users could pay for it. Water supply and sanitation services are good examples [World Bank 1992a]; they generate large public health benefits but are nonetheless mostly private goods for which non-poor consumers are willing to pay.

Still, the state is not always wrong when it treats a largely private good as if it were entirely public. The most striking example is immunization. Had it been left to private markets during the last few decades, it is inconceivable that today some 80 percent of the world's children would be immunized against the six major vaccine-preventable childhood diseases [Geoffard and Philipson 1994]. Treating the Expanded Program of Immunization as a public good made possible high coverage even in very poor countries [EPI 1993]--often higher than in the United States, which has relied more on private finance and provision [EPI

1995, Haveman and Wolfe 1993]. This "mistake" doubtless imposed some costs, in the form of public expenditure which was unnecessary because some people would have paid for immunization privately, and in the distortions caused by the taxes to pay for the program. But such costs are negligible in comparison with the health gains. And the public intervention in organizing and largely financing the EPI did not crowd out, but probably stimulated, much private participation in both the financing and the delivery of vaccinations [van der Gaag 1995].

The second question is how to value a public-good health intervention. This is the natural domain of cost-effectiveness and cost-benefit analyses. Any valuation of effects involves a series of subjective choices as well as objective measures of results: whether and how much to discount the future; whether to make distinctions among beneficiaries by age, sex, income or other features; how to value different states of health; and how to add effects across beneficiaries. There is no single answer; even when the calculations are limited to cost-effectiveness in producing different health outcomes, with no allowance for other benefits such as increased productivity and incomes, different choices of these parameters yield somewhat different priorities [Murray, Lopez and Jamison 1994].

If the only benefit from an intervention is improved health, it does not matter whether that is measured in health terms (lives saved, healthy life years gained) or monetized. When there are also significant collateral benefits, different approaches can lead to different rankings of interventions. This is the case for education, water supply and sanitation, and other activities which are valuable for health but also for other reasons--and which may not be justified for the health benefits alone [World Bank 1993b]. Cost-benefit or cost-effectiveness comparisons are also relevant to public intervention in the other domains of health care, but they are particularly important for public goods for which no private market prices exist.

The issues of which activities to consider public, and whether they deserve to be financed publicly, are difficult. Nonetheless, there are several reasons why this is the simplest domain in which to determine public policy. There is broad agreement on the substantial benefits from a few crucial interventions, which are extremely cost-effective [Jamison, Mosley, Measham and Bobadilla 1993]. Individual poverty is not a major source of problems, as it is with private goods: only society's overall capacity to pay matters. Individual ignorance or absence of demand is also of little importance. Finally, this area does not contribute much to the explosion of health care costs, and its financial importance declines as income rises.

**The Public Role in Low-Cost Private Interventions** This domain includes so many different activities, which are undertaken repeatedly and usually have little health impact per episode, that continued, universal, direct public intervention is simply impossible. Governments cannot be responsible for everyone's daily life, and can probably contribute most by improving households' capacities to look after their own health. Promoting development generally--not only increased incomes but more education and access to all

kinds of knowledge, goods and services--seems to be the best way to do this [World Bank 1993b, Chapter 2].

How far interference in people's ordinary behavior is justified, depends on whether the health benefits outweigh the curtailment or modification of individual choices, including non-health benefits. Apart from indefensible extreme positions--for example, that only health matters, and is worth any price; or that only people's private appreciation of their own utility matters, and should be treated as sacrosanct--there is no straightforward answer to this question. Public action cannot be justified simply because of a health improvement; neither can it be rejected just because individual liberty might be limited. Specific public intervention for improved health may be justified under three conditions: ignorance or incomplete knowledge, externalities, and the failure of adults to act as appropriate agents for children. Each of these involves some kind of market failure, or violation of the private-market assumption that rational adults are making informed choices and paying the consequences of their decisions.

The first problem is *ignorance*: people might take better care of their health if they knew how. For example, vitamins are crucial to health but are not observable in food, and people may already believe untruths about diet that help cause vitamin deficiencies [Johns, Booth and Kuhnlein 1992]. In general, ignorance on the part of one or both parties to a transaction is a major source of failure in the health care market. Of course, "perfect decision making is not ever possible, so the real issue is when the government can or ought to intervene in the information market to improve the market's performance" [Beales, Crasswell and Salop 1981]. Moreover, information is not entirely free, and people do not always act on it. Thus while the cost-effectiveness of efforts to make behavior more efficient can be very high, it is also quite variable, and people's reactions to information are hard to predict.

Correcting ignorance is not simply a matter of telling people something new, but a larger question of changing beliefs and behavior. Pure cases of ignorance, where simply being told something is enough to affect how people behave, are probably rare. In fact, it is difficult to be sure when people "know" something relevant to their health: if they say they know it but do not change their behavior, they may be expressing an informed choice or they may claim to know what they have not really understood. Where better knowledge alone does not lead to changed behavior, regulation or mandates may also be justified even though they imply more intrusive or coercive intervention. In all such cases, the difficult question is how far it is legitimate to try to change people's views of what they want or what is good for them. Information often complements these other instruments, to reduce opposition to them or improve their effectiveness. The interaction between information and other instruments of behavior change is seen clearly in the successful effort to reduce smoking in the United States [U.S. Dept. of Health and Human Services 1989, 1992].

This situation raises a second problem, of *externalities*, or interactions among presumably informed adults. Driving while drunk is an example, as is dumping feces or

trash in communal water supplies. These activities impose both health damage and financial costs on others, and individual protection may be impossible or very costly. The chief instrument for public action is regulation, perhaps supported by mandates; these instances do not typically require public finance of health care activities. They may of course also require negative mandates, in the form of laws against certain activities or behaviors. In practice, there is no sharp boundary between this and the first problem, because some of the behavior that imposes costs on others may also arise from ignorance: thus reducing the harm from a particular behavior may require both information and monetary, legal or other incentives. It is more effective to criminalize drunk driving if people are also informed of the dangers, and the health damage can be limited by mandating the use of seat belts.

The third condition is an *agent-principal problem* [Stiglitz 1989], and in contrast to the externalities just discussed, is intergenerational. Children are not yet informed, sovereign adults; they are vulnerable not just to accidents and disease but to the indifference and even sadism of their parents. This problem is somewhat similar to the situation of doctors acting as imperfect agents for their patients. However, patients often can choose and contract with the doctors who act as their agents, whereas children have no choice of who acts for them. (Similar problems arise for adults who are mentally retarded or incapacitated by some kinds of disease.) What should the state do when parents are inadequate agents for their children? Requiring that children be immunized is relatively easy, but it is harder to deal with child-beating or exposure of children to secondhand smoke, and still harder to confront parents' beliefs in such matters as sexual education. Where sexual behavior, vehicle use and consumption of alcohol, tobacco and drugs are concerned, these issues continue through adolescence.

This is an exceptionally contentious topic, where it is hard to draw the frontier between public and private responsibilities. Different societies have adopted different solutions, and there is often bitter disagreement within societies over the rights and duties of parents and the degree to which the state can or should interfere in family life. There are potentially very large health gains at stake in this debate: eight or nine of the ten worldwide leading causes of illness in young children are substantially correctable at low cost [World Bank 1993, Annex Table B.6], and four of these--diarrheal disease plus three nutritional deficiencies--can be largely controlled by the family, with little public expenditure. These diseases account for about 20 percent of young children's ill health; the total share of child health that depends on parental behavior is of course substantially larger.

In all these instances, the principal instruments of state action should probably be information and regulation. Mandates are justified *for* a few activities such as requiring schoolchildren to be immunized, or that foodstuffs be fortified, and *against* a few other activities. Substantial public finance, however, is usually justified only because some people are too poor to pay for health-related goods and activities, whether these involve medical care or such necessities as food.

**Risk-Sharing for Catastrophically Costly Private Goods** When risks cannot be fully controlled, and the associated costs may be catastrophic, the only solution is to share the risk. None of the features of this domain is unique to health care, but the magnitude and interaction of certain problems are especially important in health care markets. Moreover, the health risk is only partly associated with income or employment, and the financial risk is hardly associated at all with income or occupation.

Health insurance differs sharply from insurance for nonhuman assets such as homes or vehicles, where the value of the asset, and therefore the cost of insurance, is usually related to income. Another fundamental difference is that medical care allows for preventive maintenance and for repair, but not for complete replacement of the damaged capital, which in this case is a human body. Insurance for nonhuman assets operates in just the opposite way, protecting against the loss of the asset but not paying for its upkeep. Insurance may even cover the cost of a temporary substitute for the lost home or vehicle, which is impossible with health insurance. Risks are also harder to estimate for health insurance, both because of the inherently much greater complexity of the body than of nonhuman property and because there are often different possible treatments for a given health problem, with different costs, outcomes and risks.

Insurance against health risks raises some well-known difficulties [Arrow 1985], leading to various kinds of market failure. One such problem arises because insurance is a contract by which someone other than the patient agrees to pay for his or her health care. As with all contracts, there is an incentive for the insured to behave differently because of the insurance; this is called *moral hazard* [Pauly 1968]. One consequence is that consumers who do not pay the full cost of health care will consume more of it. This is desirable, since the point of insurance is to let people consume health care they could not otherwise afford. It means, however, that the price must cover the increased demand that results from insurance, and not simply the care that people would otherwise want to buy out-of-pocket.

In theory, there are two potentially more worrisome problems associated with this moral hazard. The first is that people may not only consume more medical care generally, but care that costs too much relative to its effectiveness, yielding smaller health gains per dollar spent. The second risk is that people may take poorer care of their health via daily activities, because they pay the full cost of those, but only part or none of the cost of the resulting increased curative care. Both problems imply excess resources being dedicated to health care. They may also imply worse health, if increased curative care does not fully compensate for reduced prevention and protection.

Some degree of moral hazard is intrinsic to all kinds of insurance, but it is more limited in the case of nonhuman assets because the insurance does not cover ordinary wear and tear. And cheating the insurer, by burning down one's house or abandoning one's car and reporting it stolen, is illegal, to prevent the insured person from fraudulently collecting cash. Such compensation is generally not possible under health insurance. (Cash payment for permanent disabilities is usually included with life insurance and represents compensation

for the loss of part of a life. The only significant moral hazard for such insurance appears to be suicide, which is often specifically excluded from the causes of death for which compensation will be paid.)

Moral hazard in health insurance is independent of how it is financed, so it does not by itself determine whether insurance should be paid for privately or publicly. A consumer who voluntarily buys private insurance ends up paying for the additional medical care consumed by other purchasers, and judges whether this cost is justified by his or her own greater access to care. When insurance is paid for by taxes or mandatory contributions, however, this choice cannot be made. Moral hazard may then justify controls on what public money is used for, to avoid expenditure on interventions of little health value which consumers would not voluntarily agree to buy for other people [Musgrave 1995b].

There is scant empirical evidence on the importance of these problems, particularly as to whether insurance leads people to be *more* careless about their health than they would be if uninsured. As to the relation between insurance and less cost-effective medical care, the evidence in the United States is that higher out-of-pocket cost for medical care (higher copayments or lower deductibles on insurance) does not make consumers choose more cost-effective services, and may even make poor consumers forego highly justified care [Lohr *et. al.* 1986, Newhouse *et. al.* 1993]. Except in the latter case, there is little evidence that making the consumer pay higher costs under insurance leads to worsened health.

Inefficiency in a competitive insurance market also takes the form of *excess purchases of insurance*--that is, insurance for interventions which could be more efficiently financed out of pocket [Pauly 1974], or insurance which leads to needless or unjustified use of medical care. This is inefficient to the degree that it leads to excess administrative costs for handling numerous small claims, and because of the excess consumption of health care [Feldstein 1973]. Private insurers can only partly control this tendency through deductibles (which remove small risks from coverage, until out-of-pocket payments reach some limit). This problem arises partly because of ignorance: people tend to overestimate small risks and may buy too much insurance even when they pay its full cost. Moral hazard, however, is a greater problem: people who do not pay the full cost of insurance will buy too much of it, just as with medical services.

Market failure in the form of over-insurance happens primarily through the tax system. Many governments allow private employers to treat insurance cost as an expense, but then--in contrast to salaries--do not treat the value of insurance as income to workers. Subsidy through the tax system is notorious in the United States [Pauly 1986], both for insurance for workers which is financed by employers and for part of the Medicare insurance for the elderly. It is estimated that employer-financed insurance would decline by one-sixth or more in the absence of this subsidy, and that in consequence the overall demand for medical services would fall by about five percent [Chernick, Holmer and Weisberg 1987]. Alternatively, governments directly subsidize social security health benefits (mandated insurance) out of general revenue. General revenues are used to support social security

systems throughout Europe and Latin America [McGreevey 1990]. In Chile, payroll taxes can also be used to finance private insurance. All these direct and indirect subsidies to insurance are not only inefficient, but highly inequitable when only part of the labor force is covered. The poor typically benefit only when coverage is (close to) universal.

When various profit-maximizing insurers compete to sell insurance, there are two further and closely related problems, of *adverse selection* on the part of consumers and of *risk selection* on the part of insurers [Arrow 1985, Milgrom and Roberts 1992]. The former refers to selection of customers which would be adverse to the interests of insurers--fundamentally, it describes the danger of enrolling people who would cost more on average than the insurance could finance. This can happen because the amount of insurance coverage people want and are willing to pay for depends partly on their knowledge of their own health conditions and risks. People who expect to need little health care are unwilling to pay as much as those who expect to need much care, so a policy costly enough to cover high-risk people will lose out in the market to a cheaper policy adequate for low-risk people. Universal coverage at the same price for everyone may therefore be impossible to achieve, or may not generate enough revenue to finance all the health care demanded [Summers 1989].

To protect themselves against the combination of low premiums and high potential costs, insurers engage in risk selection or "cream-skimming" : they spend more on administration, or create barriers to enrollment, to screen out high-risk individuals (such as the aged) or conditions (such as cancer). Such "underwriting", as it is called, is particularly costly for individual applicants for insurance, and gives rise to large scale economies because when a large group is enrolled, the insurer needs to estimate only the average risk of needing care [Diamond 1992]. This practice is the natural market response to the problem of adverse selection. Inefficiency takes the form of increased administrative costs, and also increased health risks for those excluded from insurance. Particularly when pre-existing conditions are not covered, people with health problems who are insured by their employers cannot readily change jobs without losing their insurance; other differences in insurance coverage may also create "job lock" among workers. This labor immobility is another source of inefficiency, of unknown magnitude [Congressional Budget Office 1994].

One answer to the problems of adverse and risk selection is price differentiation according to risk, which is theoretically efficient in that it allows everyone to have the insurance he or she is willing to pay for. Such price variation is common to other forms of insurance: for example, rates for automobile insurance often vary by age and by the way a vehicle is used. Unfortunately, there are serious difficulties with letting the market create comparable differentials in health insurance. One is that some people are willing to pay only a small amount, because they expect to need little medical care. Faced with a price that would cover the cost of care for everyone, they will not purchase insurance. When they drop out of the market, the price of coverage for those who expect to need more care is driven up because the risk is spread over fewer and higher-cost people. Even if they are willing to pay more than those who anticipate needing very little care, the price of insurance may rise beyond their capacity to pay. They will be unable to buy insurance, despite a

willingness to pay more than the average consumer. Such failures do not occur in other insurance markets because risks are more uniform or predictable, or more closely related to income.

Of course, people's willingness to buy insurance depends on their expectation about future needs for medical care, and they may guess wrong. People who are young and healthy today, and therefore unwilling to spend much on insurance, may when they are older want much more medical care than they now anticipate. But if they become willing to buy substantial coverage only late in life, the cost will be higher than if it were spread over a longer period, so they may be unable to pay for insurance once they recognize the need for it. The difficulty of predicting health care needs is exacerbated by the rapidity of technical change in this sector [Weisbrod 1991].

Another problem with differential prices is that despite the importance of many behaviors for specific health problems, rather little of total health risk is under the individual's control. People cannot be held personally responsible for much of their ill health since it is genetic in origin, or due to the actions of others. Often the best that people can do by controlling their own behavior is to postpone problems, which is very valuable but does not necessarily save money over a lifetime [Russell 1986]. Behavioral change may also take a long time to show effect on the burden of disease or the volume of treatment [World Bank 1994a]. Because so little health risk is under people's control, behavior-related prices--whether for health care or for insurance itself--are of only limited value in making markets work. One can charge people for smoking (by taxation) or for not wearing seat belts (by fines), or reward them for careful driving (by lower insurance rates), but prices are not feasible for most health-related behaviors. People have some choice of where to live and whether to drive a car, but no choice about inhabiting the body they were born with [Miller 1978].

Notions of fairness are involved in the choice of how far to allow or control price differentiation in health insurance, because people often do not think others should be punished financially, in addition to their physical suffering, for bad luck. In addition, the possibility of death or substantial permanent disability sometimes makes treatment urgent. Adverse selection is therefore a problem of equity as well as of efficiency.

The problems of moral hazard and adverse selection arise partly from the fact that consumers and insurers possess only *incomplete information*, which causes market failure in the sense that markets work perfectly only when both buyers and sellers possess full information [Arrow 1985]. Of course, insurance is wanted in the first place because people do not know what will happen to their health, and they agree to share risks when they do not know what will happen to others' health. A further complication is that of *information asymmetry*: information available to only one side of a market readily leads to market failure. For example, consumers who know their health risks have an incentive to conceal them from insurers so as to avoid higher premiums. They also know how they have modified their behavior, or mean to do so, because of insurance. Insurers, in contrast, generally know

more than consumers about average risks and about costs of care; consumer ignorance of these matters can also lead to inefficiency.

Unfortunately, it does not follow that the problems of incomplete and asymmetric information could be corrected just by supplying information. Better knowledge on the part of consumers about health risks may lead to more efficient purchase and use of insurance. However, obtaining the information needed to restore symmetry would be impossible or very costly; too much is still unknown about how much people can control their health through behavioral choices. Even if it were symmetrically available to consumers, insurers and providers, more information might make it easier for insurers to practice risk selection and discriminate among customers, and thereby exacerbate inequity. In fact, in an unregulated market, this is the probable consequence of the increasing availability of information linking genetic endowment to the likelihood of developing specific illnesses or health problems [House of Commons 1995].

Information asymmetry also arises between patients and doctors, since the latter typically know much more about medical conditions and treatments. Patients may accept, or even demand, treatments they would not buy if fully informed, but which are advantageous, financially or otherwise, to medical professionals. There is however little firm evidence as to how much of this potential "supplier-induced demand" actually occurs [Pauly 1988]. In any case, this is not simply a problem of rich countries, where most people have insurance and therefore do not worry about costs; it has also been documented in poor societies where lack of education and information may make it particularly easy to exploit consumers [Bennett et. al. 1994].

In summary, the consequence of these market failures is that in an unregulated, competitive private market in third-party insurance those with chronic conditions or high health risks will be under-insured, administrative costs will be higher than necessary because of insurers' efforts to screen out risks and the costs of processing claims in a market with many insurers and many providers, and procedures of low or questionable value will be performed because neither the provider nor the consumer pays for them. It is in these specific senses that "the market does not work" in health care; these are primarily failures of the insurance market rather than shortcomings of the market for health care itself.

Private markets have developed other forms of insurance which reduce, but do not eliminate, these problems, such as health maintenance organizations (HMOs). Under this arrangement, providers also act as insurers and assume the risk. Insofar as this controls costs by shifting the burden to suppliers of medical care rather than to consumers or third-party insurers [Ellis and McGuire 1993], it may allow more coverage of the chronically ill, and may reduce the utilization of relatively ineffective procedures. However, without some form of public intervention such arrangements will have little effect on the problems caused by poverty and adverse selection. The question remains which kinds and degrees of public intervention can best mitigate the problems inherent to private insurance markets without introducing worse inefficiencies or inequities.

## Market Failure and Health Care Needs

Since the unregulated, unsubsidized private market is the extreme alternative to government intervention in health care, much of the debate as to appropriate public and private roles in the sector turns on whether, how, and how badly markets may fail. Market failure, as an economic notion, refers to possible mismatches or disequilibria between what the market supplies, and what fully-informed, rational consumers of health care would demand. It does not deal with the concept of *need* for health care, which is theoretically an unsatisfactory concept but is also difficult to do without [Culyer 1995]. People want health care not for any intrinsic utility but because they think they need it, that if care is not provided their health will deteriorate or fail to improve. In contrast, much of the criticism by both health care professionals and consumers of how health systems operate deals explicitly with needs.

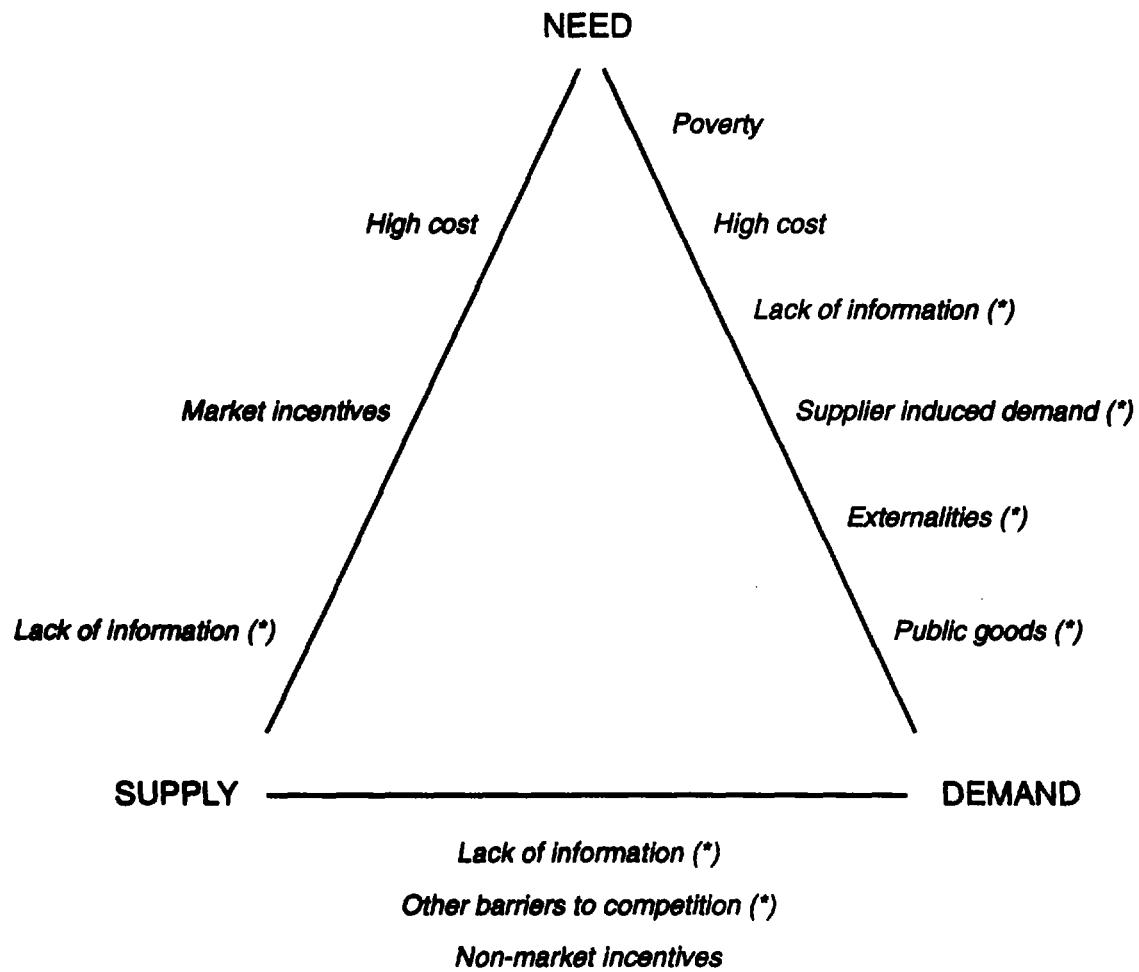
Just as demand and supply may be out of balance, there can be imbalance between demand and need or between need and supply of services, as shown in Figure 2. Market failures in the narrow economic sense are among the reasons for these imbalances (these are indicated on the Figure by asterisks). Some failures result from barriers to the operation of competitive private markets in bringing supply and demand together. Others distort demand from what it would be if based on complete and symmetric information and if there were no public goods or externalities; this causes imbalance between demands and needs. While competitive private markets are generally the best way to bring demand and supply together, they are much worse suited to make either demand or supply match people's needs. Public intervention in the health market, in contrast, is aimed at satisfying those needs, and runs the corresponding risk of failing to take account of demand. Either a purely private or a purely public health care system is likely to control one of the three potential imbalances, at the cost of failing to control or even worsening one or both of the others [Musgrove 1995c]. This is a major reason why most health care systems are far from being all private or all public [Dunlop and Martins 1995].

## Dealing with Poverty

In the discussion thus far, it has been assumed that no one is too poor to buy a variety of health interventions out of pocket. Similarly, it is assumed that no one is too poor to buy insurance against catastrophic health risks; people differ in income and in their assessment of risks, but everyone can afford some insurance. This means that the distinction between the "low-cost" domain in Figure 1 and the domain where insurance is needed is roughly the same for everyone.

**A Minimal State Role in the Absence of Poverty** Under these conditions the state's role in the domain of private, inexpensive health-related activities would be limited mostly to information and regulation; there would be no reason to finance this kind of health care publicly if everyone could afford it out-of-pocket. (Mandates might still be justified to deal with some of the externalities mentioned above.) In the domain of risk-sharing, people who

**Figure 2 Need, Demand and Supply for Health Care**



(\*) Sources of market failure

Source: Musgrove (1995b).

chose not to buy insurance, or bought too little of it, would have to pay for care out-of-pocket or do without it.

Because doing without care would sometimes pose the risk of avoidable death, some kinds of care--emergency services, at least--are typically available even to the uninsured. People's willingness to let others suffer the consequences of imprudence does not usually include letting them die because they bought too little catastrophic protection. This kind of imprudence constitutes moral hazard, and unlike some behavior on the part of insured people, it cannot be dealt with by differential premiums. Motorcyclists who prefer not to wear helmets can in principle be charged more for their insurance, just as smokers can; the more difficult problem is how much care to provide for the uninsured cyclist whose injuries are worse because of failure to wear a helmet.

This situation provides a justification for enough public finance or mandated insurance to cover the cost of a few crucial services to which everyone would have access and for which everyone would have to pay through taxes [Summers 1989]. Except for these services, there would be no requirement for the government to subsidize insurance for anyone. If there were no poverty, then, the role of the state in the health sector might be relatively limited, and would--except for the minimum insurance requirement just described--concentrate on the adequate provision of public goods and the correction of market failure in the domain of risk-sharing. Whether in order to correct or compensate for that failure the state should mandate or finance insurance beyond that minimum of emergency care, is a question of the social efficiency of doing so, rather than leaving insurance to the private market, as discussed below in Part 3. The fact that insurance would not need to be subsidized--the removal of an equity justification for interfering in the insurance market--does not mean that governments should do nothing, because the efficiency failings of private voluntary insurance are as important as the inequities to which it gives rise.

**How Poverty Complicates Public Roles** The existence of poverty, of people too poor to buy many "inexpensive" health activities or an "adequate" amount of insurance, complicates the question of what the state should and should not do in several ways. These complications are not limited to the domains of private goods, because problems of public health are often more severe among the poor. They are likely to be at particular risk from contaminated air and water and so to benefit more than the non-poor from public health interventions [World Bank 1992a, 1993b], and they often suffer more serious consequences from common illnesses. In general, imbalance between need and demand may be more important where the poor are concerned, because they have less knowledge on which to base their wants for health care as well as less resources with which to express demand.

Medical indigence is in most respects no different from poverty with respect to food and other basic needs, and, as with those needs, the rest of society may agree to subsidize the poor. The difference is that poverty relative to predictable, low-cost needs such as food can be dealt with either by transfers or subsidies in kind, or by supplementing income [Srinivasan 1994]. With health, the risk of needing very costly care generally makes it more

efficient to deal with medical indigence by subsidizing insurance than through income transfers.

However, there is little experience in most poor countries in subsidizing private providers or insurers to meet the health needs of the poor. This requires government administrative capacity and appropriate pricing mechanisms, to prevent excess provision and even outright fraud, which has been a major problem, for example, in Brazil [World Bank 1993c; Medici and Czapski 1995]. A public subsidy to private insurance, as an alternative to dealing directly with large numbers of providers, also requires premiums differentiated by age, sex or other conditions, to reduce the scope for risk selection and make it feasible to mandate universal coverage. In consequence, one of the most important effects of poverty is that it makes public provision, with all its typical problems, look attractive or even necessary in poor countries.

Aside from the problems of regulation, it is financially difficult to provide the poor with the same level of services enjoyed by those already covered by private or social insurance. Even extending social security coverage to the poor, to replace the more limited services offered by Ministries of Health, would be very costly in many Latin American countries [Mesa-Lago, 1992]. Public provision often means poor health care for the poor, but public financing of private services would not easily solve the underlying financial problem even if it led to improved quality of care.

Finally, in countries where all public money now flows through government or parastatal facilities, shifting to public finance of private providers requires that public hospitals and clinics be privatized or at least given sufficient autonomy and capacity to manage themselves and compete for public funds against other providers. Such changes are potentially very valuable, but they are likely to be particularly difficult, since public facilities need to be exposed to some financial risk without the danger of collapse in publicly funded provision.

The difficulty of incorporating the poor into the same insurance schemes which cover the non-poor, whether by extending social security coverage or by subsidizing the purchase of private insurance, leads to efforts to create insurance specifically for the poor, typically at the community level. Any such scheme is intrinsically limited by the low incomes of participants, so it cannot finance very costly interventions and can only yield subsidies from the less poor to the more poor. It may nonetheless be appropriate when the insurance is meant to pay for only such health care as can also be provided locally and which therefore is not very costly--although perhaps still catastrophic for a poor family to finance.

Unfortunately, the problems of moral hazard and adverse selection arise even in these circumstances. For example, if insurance is sold for short periods to accommodate families' fluctuations in income, then, as occurred in Burundi, people may buy the "health cards" entitling them to services only when they are already sick or can anticipate a medical need [McPake, Hanson and Mills 1993]. That effectively eliminates the difference between an

insurance payment and a fee, and reduces the amount of money that can be raised by the scheme. These problems lead to complications such as rewarding people who use less (curative) health care by reducing the cost of their cards for the next period or by charging an additional fee or "fine" to those who pay for insurance only when ill [Chabot, Boal and da Silva 1991]. Such incentives work against moral hazard and adverse selection, but if they are large enough to have much effect they may greatly reduce the scheme's revenue or the demand for services. And administrative expenses may absorb a large share of revenue.

Poverty also creates or strengthens reasons for the state to intervene in low-cost, health-related activities, whether these are inexpensive medications and services or such non-medical items as food supplements. Some interventions can be accommodated by broadening public health services, for example by including micronutrient supplements or treatment for intestinal parasites. Others can be covered by financing private providers, such as the clinics which operate under "covenants" with the Brazilian social security system [World Bank 1993c]. However these activities are dealt with, poverty pushes governments to finance a wider range of low-cost interventions and to rely less on information and regulation. If this were the only force at work, it would lead to a larger public share of health expenditure in poor than in rich countries, simply because there are more poor people who cannot pay for those interventions. In the sum of health spending, however, this effect is overwhelmed by the tendency (and the capacity) of governments to mandate or finance more insurance for the non-poor, as income rises.

A third effect of poverty is to limit the use of prices to curtail demand or control costs. Being poor already greatly constrains demand, and poor people are necessarily more sensitive to prices for health care than the non-poor [Gertler and van der Gaag 1992]. This means both that user fees can raise relatively little revenue from the poor, and that unless there are offsetting improvements in quality, utilization may be sharply reduced [Lavy 1994, Litvack and Bodart 1993]. The experience with user fees has been extensively analyzed, notably in Sub-Saharan Africa in connection with the Bamako Initiative [Griffin 1987, Creese 1991, World Bank 1992, Vogel 1993, Makinen and Raney 1994, Nolan and Turbat 1994, Shaw and Griffin 1995]. There is evidence that--as might be expected--utilization declines, sometimes sharply, if fees are raised but nothing else changes. There is rather less information on service characteristics, such as whether user fees improve the availability of drugs. And almost nothing is known about the impact on health outcomes or on system efficiency or cost-effectiveness. Fees are sometimes set arbitrarily or with inconsistent criteria; charges low enough to have no effect on the poor may or may not be worth collecting; and targeting by exempting the destitute from fees does not have to be expensive [Grosh 1992], but there is a risk of high administrative costs and low net revenues. The same problems arise for collecting insurance deductibles and copayments from the poor.

Not only does poverty increase the risk of ill health; sickness and disability can make or keep people poor. The relation between health and poverty is sometimes regarded as another reason for the state to invest in health, in order to raise productivity. However, the fact that some health care increases incomes is not a *separate* objective for government

action. If health care made people so much more productive that the extra income could pay for the health care, then in perfect markets people could borrow against their future productivity. When capital market failures prevent such borrowing, and those failures cannot be corrected directly, then any public intervention--such as financing the health care or providing loans to consumers--that secures the health gains will also yield the increase in productivity.

### **Summary: Justifications and Risks of State Intervention**

As the foregoing analysis shows, there are three distinct, independent arguments for governments to intervene in health care rather than leaving it entirely to private markets. One is to ensure the optimal level of production and consumption of public goods and goods which have a partly public character because of externalities. These can be health care services themselves, activities protective of health, or information that helps people take better care of their health and make better use of services. A second reason is to make insurance work more efficiently and more equitably, for those services which can be produced in private markets but for which risk-sharing is required because of high costs and uncertainty about needs. The third reason is to subsidize those too poor to buy insurance or even, sometimes, those inexpensive activites and services which the non-poor can afford out-of-pocket. These three reasons derive from the three domains of health care defined by cost and by the public or private nature of services.

Market failures underlie two of these reasons, but in different ways. In the case of public goods and externalities, the failure arises from the nature of the good or service. In contrast, problems in insurance markets arise from the way the good is financed. None of the three reasons is unique to the health sector, but all are more important in this sector than in much of the rest of the economy. Communicable diseases generate major externalities and even some pure public goods; health insurance is more complex than insurance for nonhuman assets; and poverty is both a cause and a consequence of ill health, in the absence of which the appropriate state role in the sector might be smaller than it is when poverty is widespread. Finally, agent-principal problems between patients and health care providers keep markets from working perfectly where individual clinical care is concerned, whether or not the interventions are costly enough to require insurance. Third-party payment simply worsens the inefficiencies generated by incomplete and asymmetric information.

The arguments for not leaving health care and health insurance to uncontrolled private markets are all arguments that efficiency or equity can be improved, if the state intervenes appropriately. They are not arguments that anything the public sector does, will improve matters. Just as there is a well-defined set of market failures typical of the health sector, there are consistent government failures, ways in which governments act to create worse outcomes than could be reached, and in some respects even worse outcomes than markets would generate. The most common and severe criticism of public action concerns provision [World Bank 1980 and 1987, Birdsall and James 1992]: especially in poor countries, governments offer medical care which is supposed to be free to users, on equity grounds, but

which is centrally-controlled, under-financed and of poor quality in both medical and human terms. Because the budgets of public facilities often are unrelated to service output, and civil service rules make it difficult to fire, transfer or discipline unproductive staff, the costs of health gains may be very high even if salaries and other input costs are low. And the pervasive lack of incentives for efficiency mean that capital is also bought in excess, not maintained, and under-utilized. The result is that even rather poor people, the supposed beneficiaries of the public system, often pay out of pocket for those private services they can afford. This makes them pay twice for some of their care, exacerbating the inequities arising from the tax system and from difficulties of access due to the geographic location of facilities.

Governments typically fail where provision is concerned, by trying to do too much and by competing with private providers only in price terms--that is, subsidizing provision rather than competing on quality and satisfaction. With respect to the other instruments of state action, failures are more varied, and often result from doing too little rather than too much. This is likely to be the case particularly for regulation and for the dissemination of information. Mandates show a very mixed pattern: middle-income countries in particular often mandate insurance for part of the population through social security schemes, but do not effectively mandate either insurance or care for everyone. Richer countries, in contrast, appear much less prone to government failure largely because they rely much more heavily on regulation and mandates, and much less on public provision. Where public facilities are important, as in some European countries, they operate under greater autonomy than in poor countries, and this is balanced by greater regulation of private providers. The result is to concentrate more on the right *roles* for public action, and less on dividing the health sector into disjoint private and public spheres. The distinction is particularly important because in many countries, the two sectors overlap greatly: the same professionals work part-time in each, private providers often use public facilities to treat private patients, and so on.

To provide public goods and to subsidize health-related activities for the poor, two of the three main reasons for state action, both require public finance. In both these areas there is also room for the other instruments of state action; and the problems associated with risk-sharing can lead to various combinations of interventions, which may or may not include spending public money. Societies therefore have much latitude in how much, and by what means, the government intervenes in health care markets, just as they have in deciding how much to spend on health in relation to income and to their health problems or needs. Part 3 takes up the empirical questions of what choices different countries have made, why they seem to have done so, and with what consequences for health.

### PART 3: EMPIRICAL PATTERNS AND EXPLANATIONS

To say that governments may or should intervene in health "to make markets work better" is a reason drawn from economic theory, rather than from medicine or public health. Even the argument for intervention to alleviate or reduce poverty is largely economic: it refers only to some people's incapacity to pay for services, or insurance, that are considered a desirable minimum for everyone to have. Societies' choices about what kind of health system to have, how much to spend on it, and who should pay for it, in contrast, are not primarily choices about market failure or about poverty. They refer to objectives that mix economic, medical and social considerations, and may or may not lead to the most appropriate kind and degree of public intervention in health. These objectives can be characterized in various ways [OECD 1995]; one classification is summarized briefly below, before proceeding to an empirical examination of the level and composition of health care spending and its relation to health outcomes. Part 3 concludes with a discussion of the reasons for the observed patterns in health expenditure and health system organization.

The empirical data referred to in the text, and from which Figures 3-9 are constructed, are reported in Annex Table 1, unless otherwise indicated. The number of countries for which data are available varies greatly from one variable or Figure to another, with 69 observations for the largest number of analyses. For some or all of the OECD countries, several sources provide brief descriptions of how the health sector is organized [OECD 1992 and 1995, Schieber, Pouillier and Greenwald 1992, Dunlop and Martins 1995]. Institutional descriptions for some Latin American and Caribbean countries are found in [Pan American Health Organization 1994], for Asian countries in [Griffin 1992] and for Africa in [Shaw and Griffin 1995].

#### Economic Issues and Health System Objectives

What people most obviously want from a health system is good health. People seek care for the relief of pain or disability, to reduce fear and shame concerning actual or potential medical problems [Miller 1978, Chapter 1], for information and for comfort--but all these reasons are related to some dimension of good health. It does not matter that people may have different views of the intrinsic awfulness of being sick or hurt in various ways; without the goal of better health status there would be no health care system.

A second objective is low cost, whether that of medical care, protective and preventive activities, administration of insurance or any other resource use. Low cost has both a macroeconomic interpretation--spending no more than is reasonable on health care in total--and a microeconomic interpretation--buying each intervention at the lowest cost consistent with adequate quality. The objective of holding down cost in both these senses is clearly important for individuals paying for care out-of-pocket. As insurance reduces the importance of costs for individuals, this becomes more of a social than a personal goal, with control of costs becoming a major concern of private insurers. And as the public share of health spending increases, holding down expenditure becomes an objective of governments.

This begins as a goal of controlling public expenditure, but may quickly encompass the objective of holding down costs to employers and consumers as well. In fact, if the only goal were only to reduce or contain government spending, it might be met by shifting costs to the private sector--with the possible result of worsening equity, satisfaction or health outcomes. This is equally true of the costs of other kinds of government intervention in health care markets, particularly regulation and mandates.

A third general objective is satisfaction on the part of the consumer, patient or citizen. "Satisfaction" may mean slightly different things; in particular, there is a difference between being satisfied with how one is treated when sick, and how one feels about the system while well. The notion of satisfaction includes such intangibles as freedom to choose one's doctor or treatment, and all the elements of "caring" as distinct from "curing" in health interventions. This objective is often ignored under subsidized public provision, because people will use even unsatisfactory services if they are free, but dissatisfaction undermines public support and can reduce the effectiveness of public health efforts. The satisfaction of health care providers is also important, and sometimes conflicts with that of customers.

People are often said to want "quality" health care, but this is not treated here as a separate objective. When the term refers to medical quality, to whether the care received is effective in improving health with the minimum risk or damage to the patient, then quality is essential to meeting the objective of good health. And when "quality" refers to all the non-medical aspects of care, it is a major determinant of patient or consumer satisfaction. There is similarly no need to consider either macroeconomic or microeconomic "efficiency" a separate goal, since it is defined by the relation between the health gains a system produces and what it costs to achieve them, in total or for individual interventions.

A fourth overall objective is equity, which may refer to access to health care or to utilization of services. It is harder to define equity relative to health status, because of genetic and behavioral contributions having nothing to do with health services. Equity is also a question of fairness in how health care is paid for--how much subsidy (if any) from the rich to the poor, how much from the healthy to the sick, how much from the old to the young or vice-versa. All these comparisons are often made across income levels, leading to at least two income-related notions of equity: whether richer people use or benefit from health services more, and whether they pay proportionately to their incomes. To make it still more difficult to judge the overall equity of a health system, what is equitable with respect to health care may or may not correspond to equity in financing. And equity along any one of these dimensions can vary from one disease or treatment to another [Musgrove 1986].

These objectives are only some of the many criteria by which health systems might be judged [Cumper 1991], and it is not easy to say how well any system "works". The goal of better health is the most important, in the sense that what a system costs, how well it satisfies people and how equitable it is, matter only if it also produces health improvements. A system that worked well in those other senses but did nothing to better people's health status would have no reason to exist.

The various objectives are also commonly in conflict [Weisbrod 1991], with particularly hard choices to make between equity and efficiency [Okun 1975]. Much of the variation among national health systems may reflect not only different degrees of performance but different choices about the relative importance of different goals. For example, both Canada and the United Kingdom finance most health care publicly [Abel-Smith 1995, Evans and Law 1995], relying on general revenues for nearly universal coverage. But Canada spends one of the world's highest shares of GDP on health (over 9 percent) and the United Kingdom spends a low share among high-income countries (just over 6 percent). Health care was consequently much more rationed in the United Kingdom, with long waiting lists for many procedures, at least until 1991 [Feldman 1994]. When health systems are evaluated across two or more dimensions at once, neither system appears to be clearly better than the other.

### **Overall Health Spending and Public/Private Composition**

Governments can intervene in the health sector via five different instruments, as indicated in Part 1. Three of these--informing, regulating and mandating (other than financial mandates)--do not lend themselves to easy summary or comparison across countries or systems. Even provision of care is difficult to compare, except by crude measures such as total consultations, hospitalizations, hospital beds or professional providers, without adjustment for the type and severity of health problems treated. Quantification is easiest where financing is concerned, and the emphasis here is on three aspects: the level of expenditure, the distribution between public and private finance, and the distribution between out-of-pocket spending and insurance. This means paying less attention to equity in the financing of health care, which has been studied in detail only for the United States and nine European countries, and in less detail for five poor countries [Van Doorslaer, Wagstaff and Rutten 1993].

**What is Known about Health Expenditure** Information on health-related spending does not exactly match the distinction among health care domains in Figure 1: there is no clear boundary to the out-of-pocket spending which affects health, nor is public expenditure always classified into public and private goods. In countries with national health accounts on the OECD model, the data approximate the theoretical distinctions more closely, so far as financing is concerned. Public goods correspond to the category of Government Public Health Activities. True public goods usually absorb only a small fraction of public and total money for health, and do not present major problems or controversies of classification. In the United States, for example, public health activities account for only three percent of total spending; personal services account for 90 percent, and administration for the other seven percent [Lazenby *et. al.* 1992]. Even if three percent is too low, because some highly-justified activities are under-financed, the optimum level in a rich country is still probably only a few percent.

All other health care, however financed, is classified as Personal Health Care Services and corresponds closely to private goods--including those treatments which provide

externalities and therefore are partly public. Program Administration, including the costs of administering private insurance as well as public programs, makes up the rest of the recurrent cost of health care. Total national health expenditure includes medical research and construction of health care facilities and laboratories as well as recurrent spending.

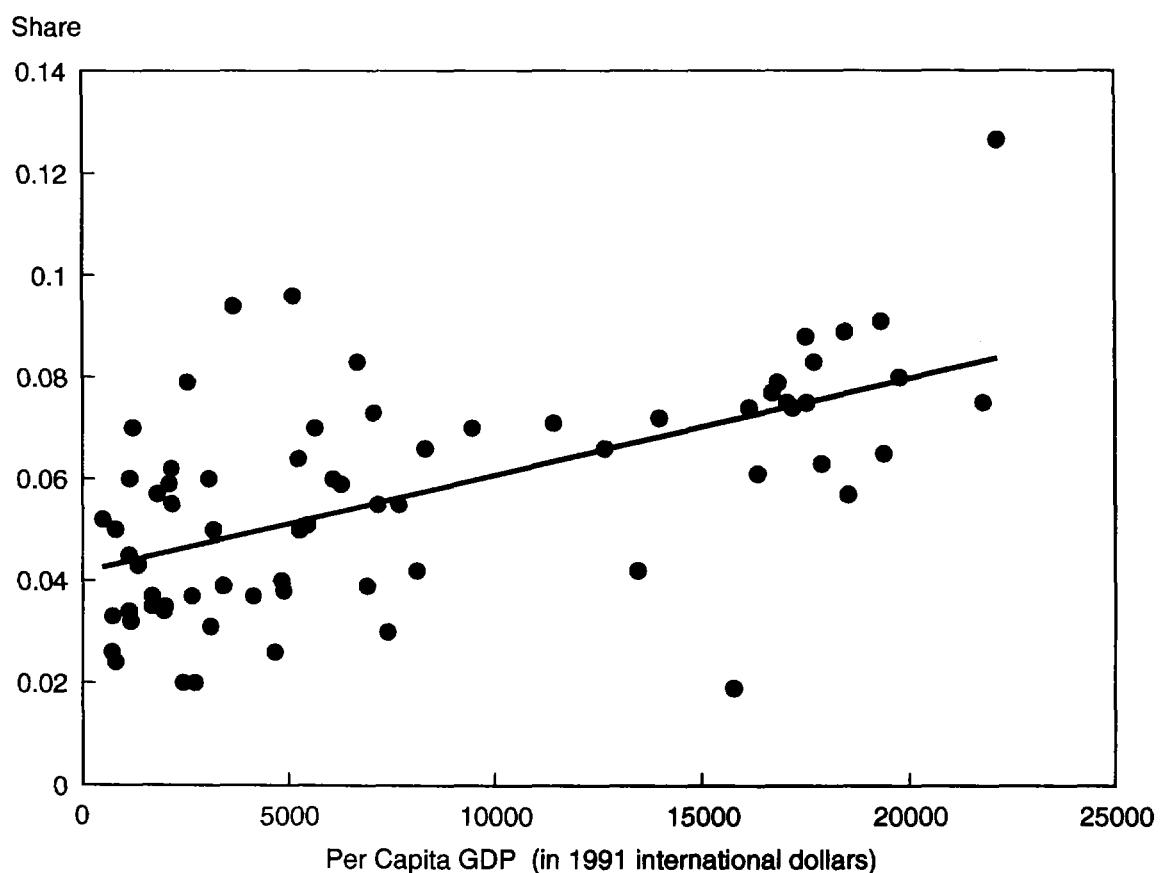
It is possible to distinguish public from private health care spending in many countries, and at least for some of them, to make either or both of two further distinctions. One is between insurance and out-of-pocket costs in private spending. Since all public expenditure can be regarded as an implicit form of insurance, this allows a distinction between insurance of all types, public and private, and uninsured out-of-pocket expenditure. The other distinction is between direct financing and mandated social insurance in public spending. Health systems differ greatly in the relative importance of these two ways of paying for health care.

**How Expenditure Level and Composition are Related to Income** Like nearly all previous analyses of this question [McGuire *et. al.* 1993, OECD 1995] Figure 3 shows that health care is a "superior" or "luxury" good, which takes a steadily larger share of income as income rises. At the low incomes typical of Sub-Saharan Africa and poor countries of Asia, total health spending is about 3-4 percent of GDP. It rises to 6-9 percent of gross product in most OECD countries. This increasing importance relative to income is not surprising, given the large contribution health care can make to welfare and the very high costs of some interventions. What is surprising is that the *public* share of total health expenditure also rises with national income. As Figure 4 shows, the fraction that is either financed directly or mandated by the state increases from under 40 percent in most low income countries, to over 80 percent in some European countries.

The data here and in subsequent analyses refer to expenditure and not to the public or private provision of services. However, a general pattern exists: in high-income countries, finance and provision are usually separated, with public expenditure going to private providers. In poorer countries, public money is mostly or entirely spent through public facilities. Both theory and the empirical evidence suggest that competition makes sense in the provision of care; it may improve health status, and it should certainly lower costs and increase consumer satisfaction compared to a situation in which consumers must choose between free or low-cost services with no choice of provider, and competitive services at higher out-of-pocket cost. Many of the problems of health services in poor countries appear to arise from the monopoly linkage of public money to public provision. None of the three general arguments for state intervention in finance of health services also justifies state delivery of those services, although, as indicated in Part 2, widespread poverty makes such public provision more attractive and may help account for its greater prevalence in poor countries.

Both the share of income devoted to health and the division between private and public spending vary greatly around the trends in Figures 3 and 4, which makes it difficult to see any association between the two. Figure 5 therefore relates these two variables directly,

**Figure 3 Share of GDP Spent on Health, Related to Income**



Points represent individual countries. The straight line show the OLS regression,

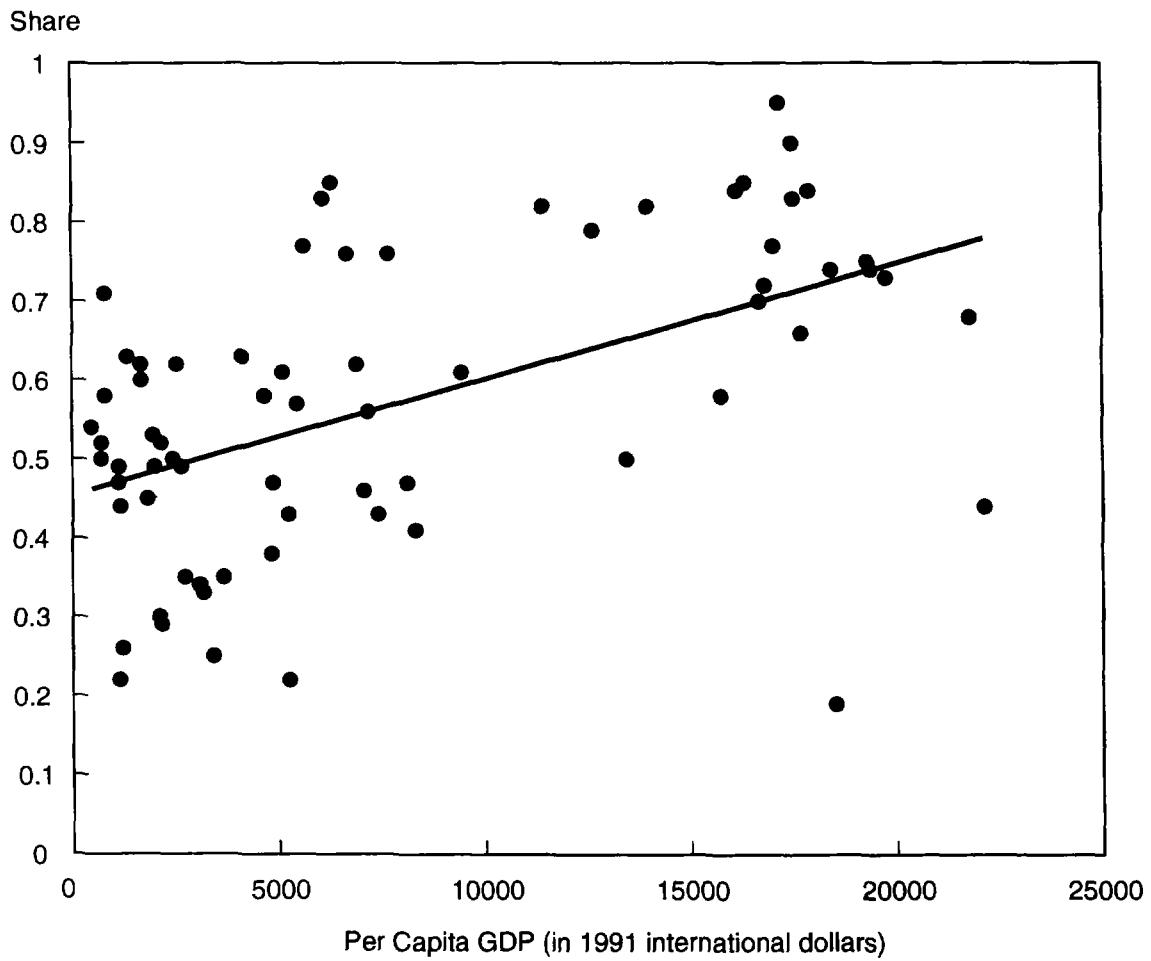
Health Expenditure as a percentage of GDP

= 4.17(0.32) + 0.1905(0.031) GDP per capita in thousands of 1991 international dollars

(Standard errors in parentheses) N = 69 Countries R-squared = 0.3505

Source: All data from Annex Table 1.

**Figure 4 Public Expenditure on Health as a Share of Total Health Expenditure, Related to Income**



Points represent individual countries. The straight line show the OLS regression,

Health Expenditure as a percentage of GDP

= 45.44(3.00) + 1.469(0.288) GDP per capita in thousands of 1991 international dollars

(Standard errors in parentheses) N = 69 Countries R-squared = 0.2762

Source: All data from Annex Table 1.

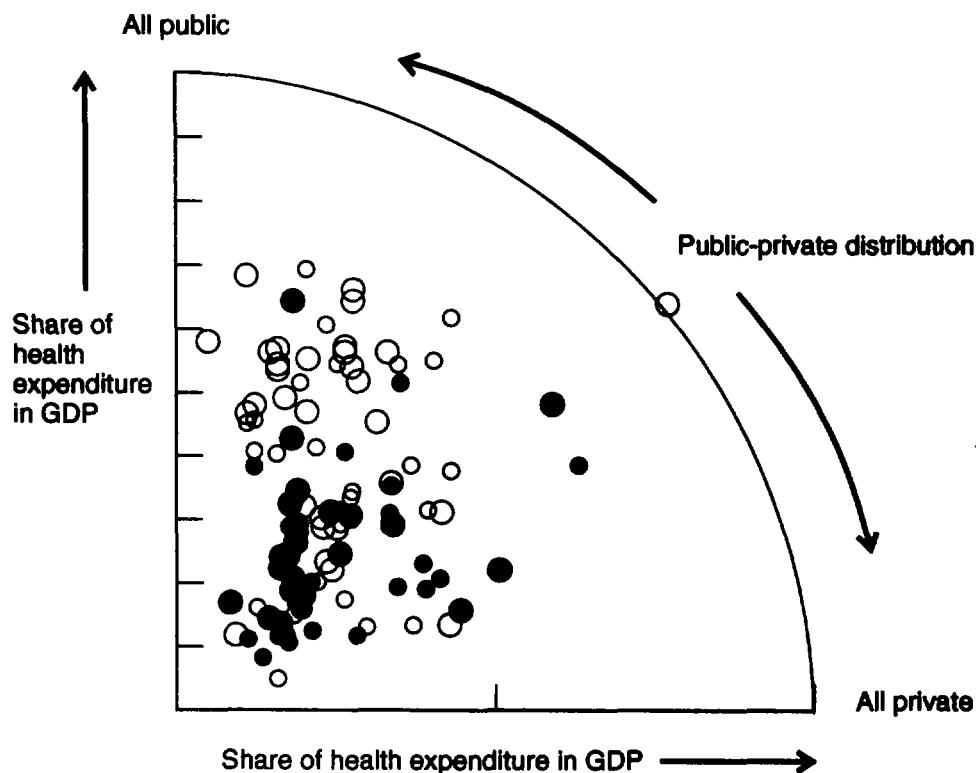
omitting per capita income. The radial dimension (distance from the origin) shows the share of GDP devoted to health, while the angular dimension (from the horizontal toward the vertical axis) shows the distribution between public and private expenditure. The 69 countries are distinguished according to quartiles of income per capita. This way of presenting the data shows that there is no narrow path that all countries follow, but that there is nonetheless something of a pattern. First there is an expansion in the share of income devoted to health, driven by private expenditure; subsequently, private spending is displaced by public expenditure and a further increase occurs in the fraction of GDP that is spent on health care. Since these phenomena are related to increasing income, health systems can be said to evolve along this path as a country develops. However, this relation applies only for countries over all income levels taken together, not for smaller groups of countries at comparable incomes. A comparison of 24 OECD countries, for example, shows a random scatter, as do the data for poor countries separately. This is evident from the distribution of small circles corresponding to each quartile of the distribution of income per capita.

Although particular subsystems such as social security or private insurance are said to "cover" certain population groups, in fact the same consumers often utilize a variety of providers and draw on different sources of finance. Where public provision is available at low cost but also low quality, people tend to use it for high-cost services such as hospitalization and to buy cheaper care, mostly ambulatory, from private providers [Baker and van der Gaag 1993, Bitrán and McInness 1991]. Thus the composition of what is financed privately depends on what is offered publicly, and so does the total spending level. In contrast, public spending does not seem to take private expenditure into account [Murray, Govindaraj and Musgrove 1994]. Ministries of Health, in particular, seldom know what is being spent in the private sector and do not base their own programs on it. (To the extent that they plan their spending on the basis of the population's health problems, and those have been partly prevented or treated by the private sector, governments do of course respond indirectly to what is happening in the private sector.) Moreover, the tendency of consumers to use care that is financed in different ways means that there is no simple association between sources or mechanisms of finance, and different population groups or different health problems.

### **Explaining Health Outcomes**

The patterns of spending shown in Figures 3-5 pose the question, how do the amount spent on health care, and the shares of public and private expenditure, affect the performance of the health system? Given the difficulty of obtaining and summarizing comparable information on either satisfaction or equity, this is easiest to do with measures of health outcomes. Since health status is very strongly associated with a country's income [World Bank 1993b, Baker and van der Gaag 1993], the effect of income needs to be accounted for in any comparison of spending and results. If this is not done, it may falsely appear that more health expenditure is extremely effective in producing better health outcomes, and also, because the public share of spending rises with income, that more public expenditure in particular yields better health.

**Figure 5 Percentage of GDP Spent on Health Care, and Its Distribution between Public and Private Spending: Countries Classified by Income**



Key: quartile of GDP per capita

- First (poorest) quartile
- Second quartile
- Third quartile
- Fourth (richest) quartile

Source: All data from Annex Table 1.

Several previous studies [Cochrane, St. Leger and Moore 1978, McGuire *et. al.* 1993, OECD 1995] have analyzed the relation between health care spending and health outcomes, including a number of other explanatory variables. These variables may refer to characteristics of the health care system, or they may relate health outcomes to the degree of literacy [Tresseras *et. al.* 1992] or schooling of the population as well as its average income [World Bank 1993b, Figure 3.1], since there is abundant evidence of an independent effect of schooling on health status. In the present analysis, regression estimates were made relating two measures of health status--life expectancy at birth, and child mortality--to income and various combinations of the share of GPD spent on health, the share of health spending that is public, and interactions among these variables. In all such combinations, only income per capita was clearly significant in determining health status. Therefore in the analyses discussed below, both health status and health expenditure were predicted on the basis of income only. Countries' income levels, and the share of health spending that is public, were then introduced as classifying variables, to see if they help explain the observed patterns.

**Life Expectancy at Birth** As income per capita increases, life expectancy tends toward a maximum of about 80 years. Within a country, the effect of extra income in reducing mortality is most pronounced at very low incomes, even after taking account of the consumption of medical consultations [Heysen and Musgrave 1986]. Figures 6a and 6b take the deviations from a regression relating income and life expectancy, and compare them to the deviations from the regression pictured in Figure 3, between income and the share of GDP devoted to health. (The income-life expectancy relation is described in the Key to the Figure.) The small circle representing an individual country shows both whether it spends more or less than expected on health, and whether life expectancy is greater or less than predicted, given its per capita income. A country occupies the same position in Figure 6b as in Figure 6a, so the pattern of deviations is the same. The difference is in a third classifying or explanatory variable: countries are classified in Figure 6a by quartile of income level and in Figure 6b by quartile of the share of expenditure that is public.

It is clear from either figure that not only do some countries spend more (or less) and buy more (or less) life expectancy, but the deviations in these indicators are not closely correlated. Countries which spend a large share of income on health care do not necessarily buy greater longevity, and some countries manage to spend less than expected and still enjoy longer life. When countries are distinguished by quartile of GDP per capita, in Figure 6a, it is evident that large deviations in life expectancy--people dying much younger or much older than would be predicted from a country's income level--are concentrated in poorer countries. It also appears that among these countries, higher spending on health, relative to income, *does* pay off in greater life expectancy. The dark circles indicating poor countries are distributed around an upward-sloping line, with a coefficient of 1.22 more years of life for each additional one percent of GDP spent on health care (significantly different from zero at the ten percent confidence level). At high incomes, life expectancies converge closely and become largely independent of both income and health expenditure: the open circles indicating upper-income countries are scattered along a line with a slope of 0.26 years of

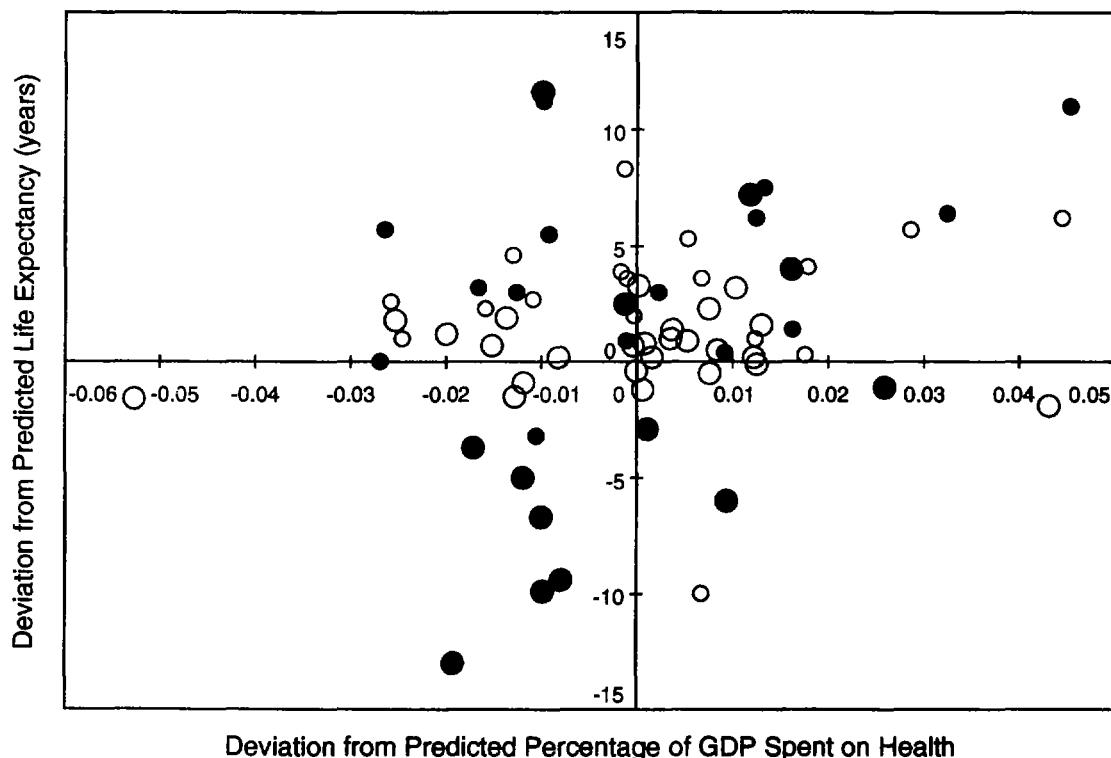
extra life for each additional one percent of GDP devoted to health (significant only at the 20 percent confidence level). Increased expenditure at those income levels may be buying substantial improvements in the quality of life by reducing disability, but it no longer has much effect in extending life. This result is consistent with the finding that within the European Community, health care expenditure seems to have little impact even on mortality from amenable or preventable conditions [Mackenbach 1991]. Health care spending does however appear to improve health status in six high-income countries when several life-style determinants of health are also taken into account [Wolfe 1986].

Figure 6b tests whether there is any association between these deviations and the share of public spending in total health expenditure. Countries with a relatively high public expenditure share (the open circles in the Figure) which spend a larger-than-predicted share of GDP on health, also show a higher-than-predicted life expectancy. Thus more health expenditure appears to pay off in greater longevity, when a large share of that expenditure is public. The slope of the relation between spending and life expectancy is 0.88 (significant at the six percent confidence level). That means it takes a increase of almost six percent of GDP to increase life expectancy by five years. No such relation is evident among countries with a relatively low share of public expenditure: spending more has no significant effect on mortality. These findings suggest that public money is usually concentrated somewhat more than private expenditure on those interventions which make a real difference to life expectancy, including those public health activities which are not provided in private markets.

These results are partly consistent with analyses based directly on public expenditure alone, without considering private spending. In Latin American countries at mid- to high incomes, more public spending does extend life [Govindaraj, Murray and Chellaraj 1994, Appendix 17], although for a set of 58 countries at all income levels, there is no significant relation between public spending and longevity [Murray, Govindaraj and Musgrove 1993, Figure 2]. Since these studies do not take account of total health spending, it is not surprising that public expenditure does not show a systematic effect. In the present analysis, when life expectancy is related to income, the total health share in GDP and the actual level of health spending, the share of GDP that is spent on health is almost significant at the 20 percent confidence level.

**Childhood Mortality** Since much of the difference among countries in life expectancy is due to differences in mortality at early ages, this same kind of analysis is repeated using mortality before age five as the measure of health status. Child mortality is strongly related to income per capita, with convergence at high incomes to a level of about five deaths per thousand. Poorer countries show more variation and larger deviations from the values predicted by a regression relating child mortality to income. Figure 7a shows these deviations and the regression from which they come, together with the deviations from expected health care spending: the dark circles represent low-income countries. The open circles representing richer countries, in contrast, show great variation in the share of GDP

**Figure 6a Life Expectancy and Health Expenditure: Countries Classified by Income**



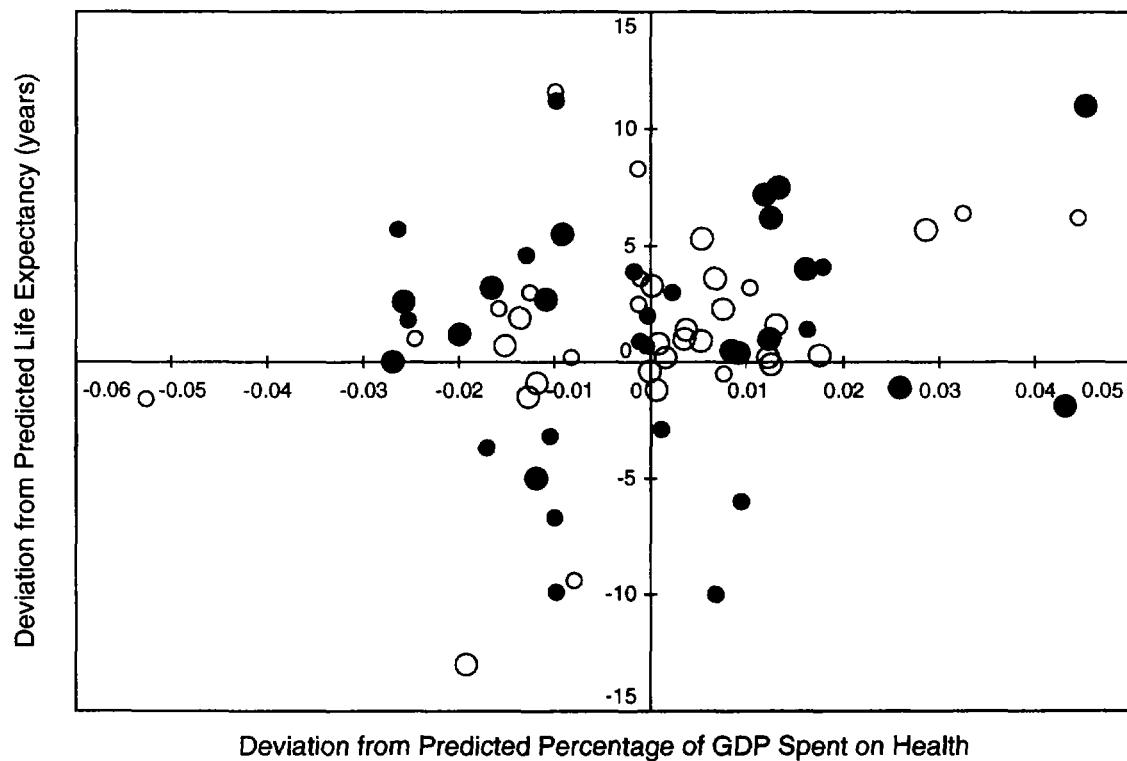
Key: quartile of GDP per capita

- First (poorest) quartile
- Second quartile
- Third quartile
- Fourth (richest) quartile

Deviations from the predicted share of GDP spent on health are taken from the regression in Figure 3. Deviations from predicted life expectancy are taken from the OLS regression (not shown),  
 $\ln(80 - \text{Life Expectancy}) = 3.1336 (0.0671) - 0.000116 (0.000006)$   
 GDP per capita in 1991 international dollars. (Standard errors in parentheses) N = 69 countries R-squared = 0.8252

Source: All data from Annex Table 1.

**Figure 6b Life Expectancy and Health Expenditure:  
Countries Classified by Share of Public Expenditure**



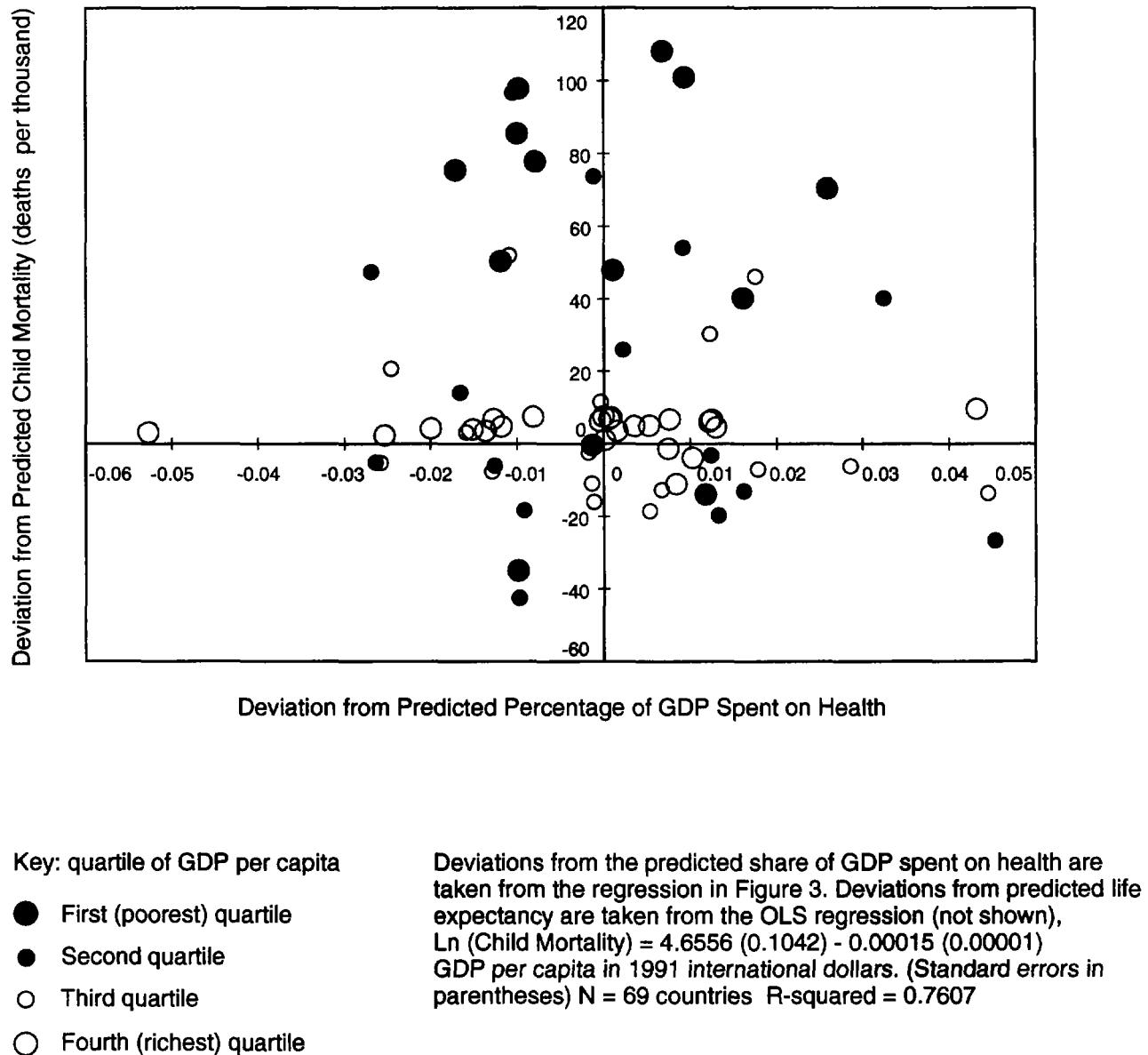
Key: quartile of Public Share in Health Expenditure

- First (lowest) quartile
- Second quartile
- Third quartile
- Fourth (highest) quartile

Deviations from the predicted share of GDP spent on health and from predicted life expectancy are the same as in Figure 6a; only the classification of countries is different (see Key).

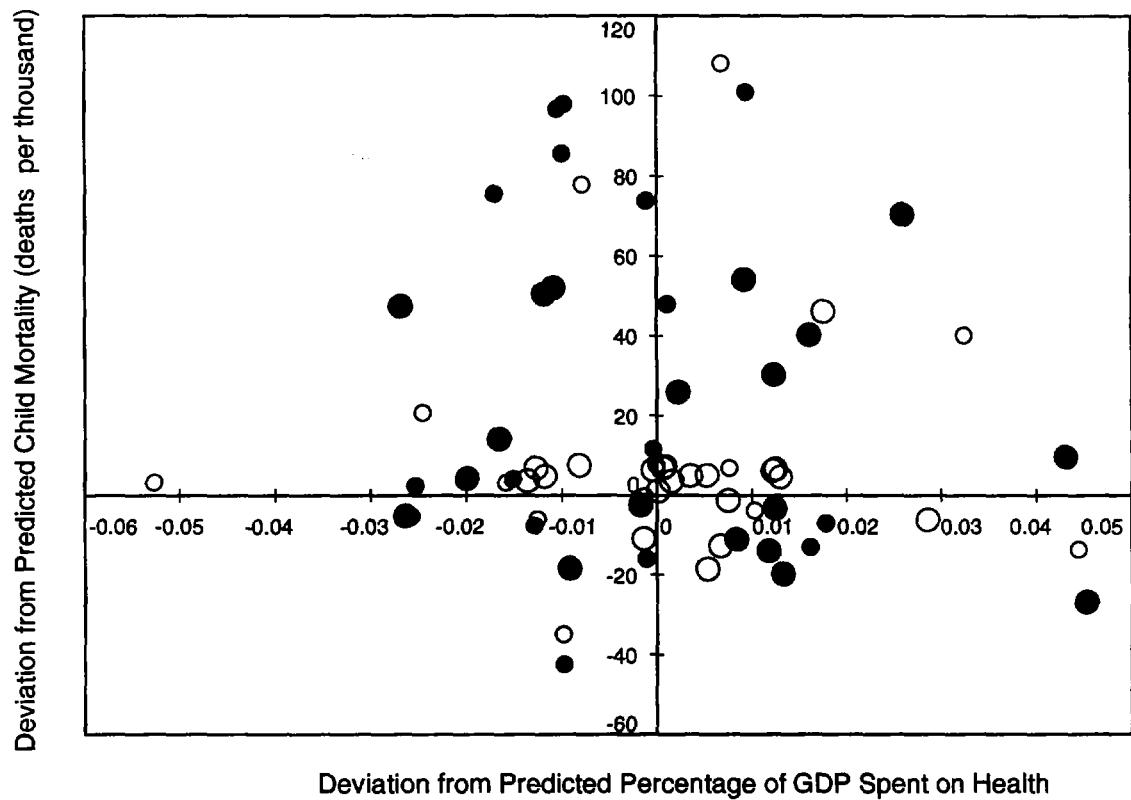
Source: All data from Annex Table 1.

**Figure 7a Child Mortality and Health Expenditure: Countries Classified by Income**



Source: All data from Annex Table 1.

**Figure 7b Child Mortality and Health Expenditure:  
Countries Classified by Share of Public Expenditure**



Key: quartile of Public Share in Health Expenditure

- First (lowest) quartile
- Second quartile
- Third quartile
- Fourth (highest) quartile

Deviations from the predicted share of GDP spent on health and from predicted child mortality are the same as in Figure 7a; only the classification of countries is different (see Key).

Source: All data from Annex Table 1.

devoted to health, but almost no variation in child deaths. Contrary to the finding relative to longevity, there is no indication that spending a larger share of GDP, at a given income level, results in lower child mortality, for either rich or poor countries. This is consistent with an analysis of infant mortality which also finds little effect of health care expenditure and substantial effects of income, education and calorie intake [Kim and Moody 1992].

Figure 7b relates the same deviations in expenditure and child mortality as in Figure 7a, to the share of health spending that is public. It indicates that there is no relation between that share and child mortality, whether for all countries together or separately for those that spend either a high or a low public share. Multivariate estimates of the determinants of child mortality give much the same answer: income is always significant, but the health share in GDP, the public share in health spending and the share of public expenditure on health in GDP never are. These findings are consistent with two kinds of evidence: that child survival is strongly related to other factors such as adequate nutrition [Pelletier 1992, Beaton *et. al.* 1993], and that the crucial health care interventions for saving children's lives are relatively inexpensive [Bobadilla, Cowley, Musgrove and Saxenian 1994]. Thus a small part of public expenditure may be extremely effective at increasing child survival, but thereafter more health expenditure affects life expectancy more by preventing deaths at later ages than by saving children. This is probably true whether the expenditure in question is public or private. The result is that overall spending levels show little relation to child mortality despite the great importance of expenditure on a few interventions such as immunization. Since the data available on health spending for most countries do not permit disaggregation by type of intervention, it is impossible to judge the health impact of parts of that expenditure. This also makes it difficult or impossible to tell whether public spending follows the conceptually appropriate pattern discussed in Part 2.

**Summary: Expenditures and Results** Since aging is a complex biological process which responds only very little to health care interventions [Ricklefs and Finch 1995], life expectancy appears to have a natural upper bound. It is not surprising that as populations approach that limit, additional spending on health care ceases to extend life. Nonetheless, when life expectancy is still well below any biological limit, health care does make a difference. What is more, public expenditure seems systematically to be more effective than private spending in this regard, presumably because it is devoted to a slightly different set of interventions. These probably include some of the interventions that are particularly effective at preventing child deaths--but because those commonly take up only a small fraction of expenditure, there is no discernible relation between total spending and child mortality. Without information on the composition of spending, little more can be said. Thus the evidence does not favor public over private spending irrespective of what is being financed, but does indicate the importance of enough public expenditure to ensure that the most valuable public health interventions are adequately provided.

The crucial role of a few services may explain why China has been so successful in improving health over the last few decades, despite the fact that the government has acted more to provide than to finance health care, and people have had to pay for much of their

care out-of-pocket, even at public facilities [World Bank 1992b]. This is in contrast to the general finding that expenditure seems less effective in countries where the public share is relatively low. It should also be noted that in other respects, such as coverage of insurance and appropriate incentives to technical and allocative efficiency in the production of health interventions, China since about 1980 should be considered more of a failure than a success. Health outcomes are the most important objective of a health system, but the other, harder to measure, goals of equitable treatment and client satisfaction at reasonable cost also matter.

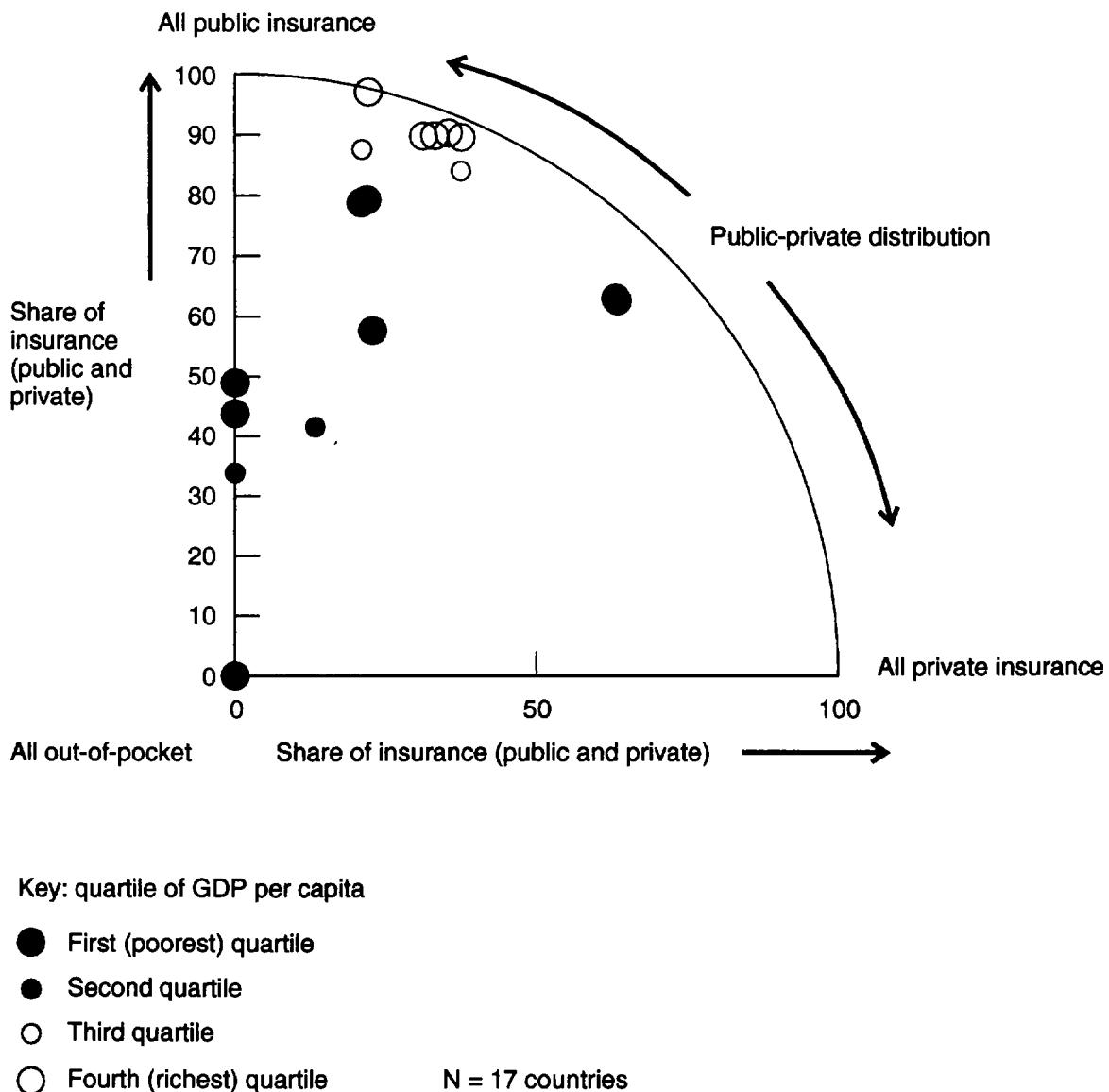
The preceding analysis shows that the question of how effectively either kind of expenditure improves health status, depends on the outcome measure used. Mortality measures of course do not account for many of the less dramatic health gains which also explain why individuals and societies spend as they do on health care. And the patterns of early mortality or life expectancy at birth may be very different from those of life expectancy at higher ages; much health expenditure may go to extend life after age 60, for example. Comparisons of this sort using a more inclusive notion of health status, taking account at least of the major kinds of long-term disability from non-fatal illness and traumas, might reveal still other relations. Unfortunately, more complete estimates of health status or of the total burden of disease exist for very few countries and are not always comparable because of differences in the coverage of causes of death or in the inclusion of disability [Bobadilla and Cowley 1995, Bobadilla 1996].

### **Out-of-Pocket Spending versus Private and Public Insurance**

Another reason why there is not more relation between health outcomes and the level and composition of expenditure may be that the private component includes two very different modes: explicit private insurance and out-of-pocket spending. The distribution of spending between these categories, like that between public and private expenditure, affects which interventions are purchased, and therefore the effect on health status. Unfortunately, it is extremely difficult to estimate how private expenditure is divided; data are available for very few countries. Figure 8 shows both the distinction between out-of-pocket spending and insurance (on the radial dimension), and the split between public and private financing of insurance (on the angular dimension--all public on the vertical axis and all private on the horizontal axis). Countries are classified by income level, from which it is evident that as income rises, insurance takes over from out-of-pocket financing. This is to be expected: security is a "normal" good, meaning that people buy more of it as their incomes increase. Insurance, which provides security, is also a normal good, and it is needed to finance the catastrophically expensive interventions that health systems more frequently provide at higher incomes. If it is supposed that in poor countries virtually all private expenditure is out-of-pocket, then the dark circles representing those countries would all lie along the vertical axis.

**The Income-Related Expansion of Insurance** Out-of-pocket expenditure is half or more of health expenditure in very poor countries, but even in rich countries where the bulk of health expenditure is public it absorbs 4-20 percent of spending [Schieber, Pouillier and Greenwald 1992]. Outside the OECD countries, private insurance is still relatively rare (but growing)

**Figure 8 Distribution of Health Expenditure among Out-of-Pocket Spending, Private Insurance and Social Insurance: Countries Classified by Income**



Source: All data from Annex Table 1.

and nearly all private spending is out-of-pocket, whether it is a large or a small share of total expenditure. And while for some countries the only insurance is public, there being essentially no private insurance industry, there are no health systems financed more than half by private insurance. Among high-income countries, only the United States and Switzerland rely heavily on private insurance, and even there the share is only about 40 percent.

It appears from Figure 8 that public and private insurance are substitutes relative to out-of-pocket expenditure. That is, the level of non-insurance spending does not depend on the composition of insurance. This is somewhat surprising, since private insurance generally requires higher copayments and deductibles than public insurance, and therefore generates more out-of-pocket expenditure. But the amounts may be small enough that no connection is apparent when all countries are considered together. It may also be that when public funds go to finance public provision of poor quality, especially in low-income countries, consumers end up paying out-of-pocket to offset the deficiencies of those services, although there are no formal copayments.

Even in countries with close to universal public insurance, there is often substantial private insurance. This is bought primarily to supplement public coverage (in Canada, Italy, Portugal, Spain and the United Kingdom) or to cover the copayments required under public insurance (in France, Denmark and the Medicare program in the United States). In Ireland, it is purchased primarily to replace social insurance altogether; the same is true in the Netherlands (particularly for the wealthy, who can opt out of the public system) and in the United States (for a large share of the population who are not entitled to public insurance). Such insurance is bought by a majority of the population in France and in Canada, but by only 15 percent in the United Kingdom and 19 percent in Germany. Private insurance accounts for only 7 percent of spending in Canada, despite the high coverage, because the public system covers nearly all medical needs; the private insurance share is about 9 percent in France and 12-16 percent in the United Kingdom, Japan and Germany [Van Doorslaer, Wagstaff and Rutten 1993; Schieber, Pouillier and Greenwald 1992]. In the United States, about one-third of the beneficiaries of Medicare, the social insurance program for the elderly, also buy supplemental private insurance out of pocket [Shea and Stewart 1995].

The tendency across countries for more and more of health care to be financed by insurance at higher incomes, mirrors the historical tendency for insurance to expand relative to out-of-pocket spending as income increases and a country's health sector becomes more complex. In the United States, for example, patients paid directly for an estimated 88 percent of their health care in 1929, when the private insurance industry was minuscule and government (national, state and local) financed only nine percent of care. By 1960, the out-of-pocket share had fallen to 56 percent, and private insurance had expanded to 23 percent, slightly surpassing the government share. The Medicaid and Medicare programs did not exist yet, so there was no mandated social insurance. The share of private insurance continued to grow until 1990, when it was about 35 percent, but public spending grew even faster, reaching 41 percent. (This figure includes the tax subsidy to private insurance.) Out-of-pocket expenditure has continued to fall steadily, to about 23 percent [Bovbjerg, Griffin

and Carroll 1993]--which is still high compared to most OECD countries, where insurance has even more thoroughly replaced direct payment by consumers. In very poor countries, part of private out-of-pocket spending goes for allopathic or traditional medicine which is never financed publicly and seldom covered by insurance. The shift from this traditional health care to modern medical care also helps account for the increase in insurance expenditure, although the amounts spent on traditional medicine are usually quite small in absolute terms since it caters to poor people and uses no modern purchased inputs.

**The Two Forms of Publicly-Financed Insurance** Another way of classifying health expenditure is to combine all private spending (insurance plus out-of-pocket), and to separate public expenditure into direct finance and mandated social insurance. Information is available for more countries than when distinguishing private expenditures by whether they are paid by insurance or not, because the two kinds of public finance usually correspond to distinct institutions. In practice, direct finance is typical of ministries of health, whereas mandated insurance usually takes the form of a social security system. Both employees and employers are required to contribute a specified fraction of wages, usually up to some ceiling; employers are usually not required to provide private insurance or to self-insure.

These systems cover only a few percent of the population in many middle- and low-income countries, sizeable fractions in Italy, the United States, Argentina, Mexico, China and Korea, and nearly the entire population in Japan, some countries of Europe (France, Germany, Spain and the Netherlands) and a few middle-income countries such as Brazil and Costa Rica. Nearly universal coverage is achieved only in high-income countries, or where social security benefits are extended even to non-contributors (as in Brazil and Costa Rica) rather than being limited to contributors. In those cases the social security system takes over what is usually the function of the Ministry of Health to finance care for the "informal" sector, from which wage taxes cannot be collected. Although both arrangements coexist in many countries, one or the other usually dominates public expenditures, so that countries can be classified as depending chiefly on direct finance or on social insurance.

Mandated insurance systems differ from direct public finance primarily in using payroll taxes rather than general revenues, although they may also be financed partly from such revenues or from other, non-labor earmarked taxes. The two forms of public expenditure may therefore have different macroeconomic effects. The effect of financing health care by one or the other route depends on such factors as the incidence of different taxes--payroll taxes are usually slightly regressive whereas direct taxes, at least in high-income countries, are slightly progressive [Van Doorslear and Wagstaff 1993] and on administrative cost and convenience. Mandated insurance generally allows for more choice by consumers, and may be preferable for that reason [Summers 1989]. There is nothing unique to health about the choice of financing mechanism: the same considerations apply to pensions, for example.

These two ways of financing health care also differ politically, in that mandated expenditures are commonly earmarked, whereas budgets do not include any guarantee of

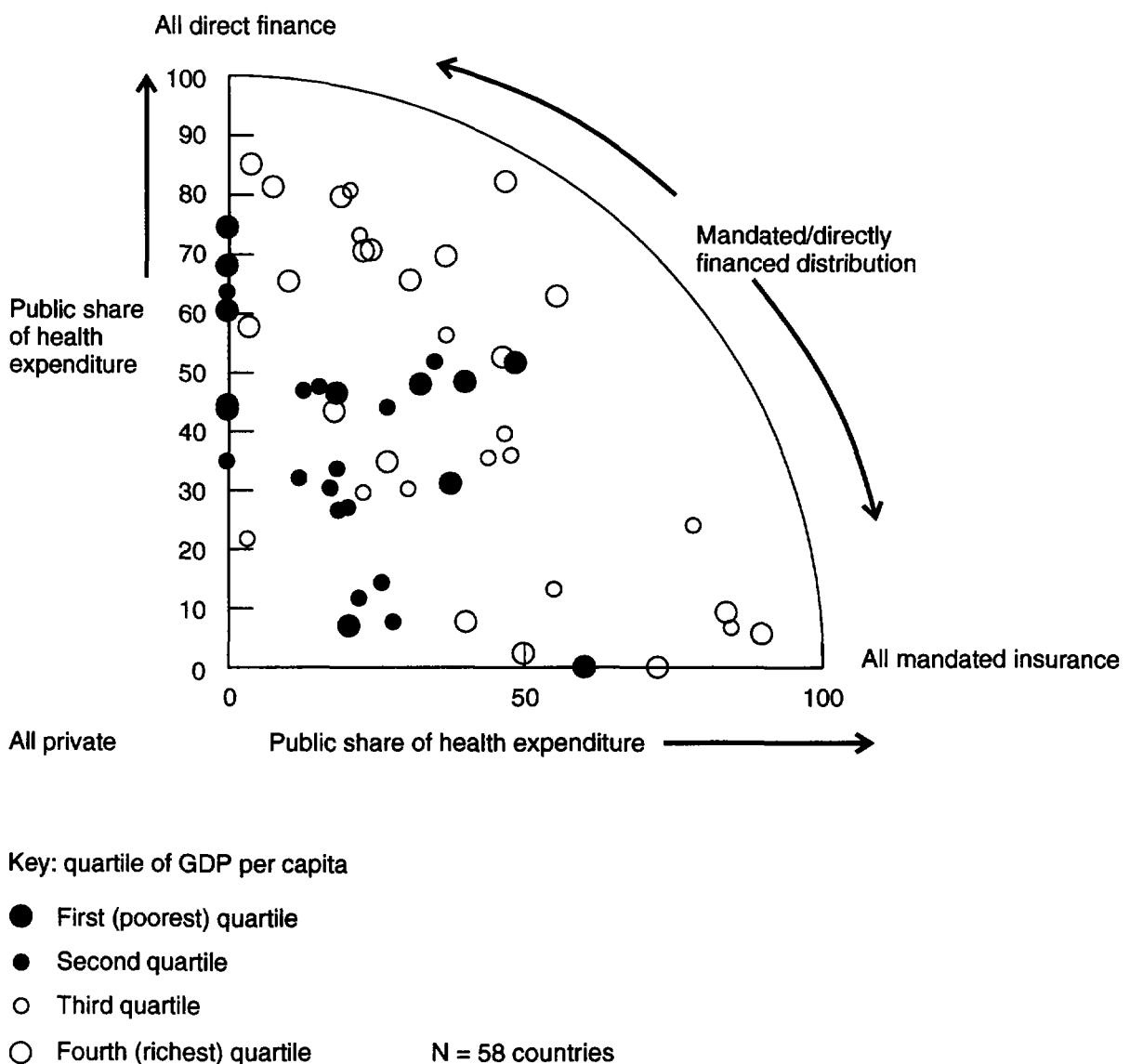
spending on health. And the workers who pay for mandated insurance commonly think of the payment as "their money", which gives them a right to services, perhaps more than taxpayers think of general revenues as being their own resources or as conferring specific rights. Public subsidy of health care for the poor is generally financed from general revenues, which means that in most systems, the poor have less of a guarantee of resources available than the population covered by employment-related insurance.

These differences are important, but some other features of a health care system do not vary according to how public financing is organized. With either mandated insurance or general revenue financing, when the state pays for but does not deliver services, there is no reason for providers to be paid differently than they would be paid from private sources. The incentives and relative advantages of the different mechanisms--salaries, fee-for-service, capitation, diagnostic related treatment groups, etc.--depend on the inherent incentives under each arrangement and on the type of service [Ellis and McGuire 1990, Barnum and Saxenian 1994] but are independent of who pays for it. Similarly, when services are financed by government the right level and type of user fees are independent of whether the provision is public or private, depending rather on the nature of the services and the incomes and other characteristics of the users.

Figure 9 classifies expenditures as private, direct public finance and mandated public insurance. The radial dimension corresponds to the distinction between total public and total private spending: all private expenditure at the origin and all public expenditure at the circumference. The angular dimension then shows the proportions in which a country uses general revenue financing (along the vertical axis) or mandated social insurance paid for largely by payroll taxes (along the horizontal axis). As in Figures 6a, 7a, and 8, countries are classified by income level. As the Figure shows, low-income countries are more likely to rely on direct finance than to pay for care largely or exclusively via social insurance. This probably reflects the difficulty of collecting wage taxes and achieving substantial coverage in an economy with little formal employment. Nonetheless some poor countries do spend much more on social insurance than through general revenues, and a number of other low-income countries spend close to equal amounts through the two mechanisms, because while mandated insurance covers fewer people it often spends much more per beneficiary than is spent through Ministries of Health. Public servants, for example, may be covered by relatively generous social insurance even in quite poor countries. This kind of inequality is also pronounced in middle-income Latin American countries with only partial social insurance coverage [Mesa-Lago 1992].

Among higher income countries there seems to be no pattern to the form of public financing. Some, like the United Kingdom and Canada, use direct finance exclusively, whereas others, such as Germany, rely largely on employment-based social insurance. The United States uses substantial shares of both general revenues (to finance care for the poor through the Medicaid program) and social insurance (to cover the elderly through the Medicare program). Reliance on both forms of finance also characterizes Italy, Russia, China, Korea, and most Latin American countries.

**Figure 9 Distribution of Health Expenditure among Private Spending, Mandated Social Insurance and Directly-Financed Public Expenditure: Countries Classified by Income**



Source: All data from Annex Table 1.

Does it make any difference to health outcomes, whether public finance is direct or operates through mandated social insurance ? The majority of OECD countries can be classified as using chiefly one mechanism or the other; when this distinction is added to a relation between life expectancy and health care expenditure, it appears that countries that rely on direct finance achieve somewhat greater reductions in mortality as spending increases. That is, additional expenditure is more effective in extending life when it occurs through direct public finance [Elola, Daponte and Navarro 1995]. This probably reflects more nearly universal coverage of those interventions which are most effective in preventing early mortality, although the distribution of income within a country and the amount and nature of private health spending may also matter.

The same comparison between health outcomes and the form of public health care finance can be made for a larger number of countries at all income levels, using the same regression deviations as in Figures 6a-7b. At least among poor countries, reliance on direct financing appears to be associated with a tendency to spend somewhat more on health care than expected. However, there does not seem to be any systematic relation between the way that public health care expenditure is paid for, and child mortality. This is consistent with supposing that when direct finance is a small share of public expenditure, it is concentrated on the most effective life-saving interventions, particularly for children. But as the direct finance share increases, it comes to cover the same range of interventions and the same population as the alternative, mandated social insurance, so that there is no difference between the two in health outcomes.

### **State Intervention in the Insurance Domain**

The available evidence suggests that there is no clearly best way to organize the risk-sharing domain of health care [Griffin 1992], as between private and public insurance, or between direct public finance and reliance on mandated social insurance. This is partly because many questions about optimal prices and provision have not been answered, so the welfare effects of different institutional and financial arrangements are not fully understood [Diamond 1992]. Nonetheless the problems typical of private insurance, discussed in Part 2, are potentially so severe and so difficult to control without substantial public intervention by way of mandates and financing, that public insurance does appear superior to unregulated private voluntary insurance [Barr 1992]. Corresponding to this theoretical conclusion, there is a clear tendency for publicly-financed insurance to expand, as income rises--relative to both private insurance and out-of-pocket spending. Why have most countries followed the path toward public insurance? And what sort of public role does this approach imply ?

Governments can fully solve one of the problems of private insurance, lack of coverage for the poor, only by at least partial subsidy. Mandating coverage by employers is feasible only for those poor people with formal employment, who are never the poorest in society. To address two other problems--the lack of coverage for high-risk consumers, and high costs--requires regulation, at a minimum. However, it is rare for governments to do nothing more than regulate private insurance, and more common to mandate or finance social

insurance. Part of the reason for this may be an unwise effort on the part of governments to do too much, particularly in poor countries. But governments in poor and middle-income countries generally have not "done so much" as to eliminate the need for a large share of out-of-pocket expenditure, and much of the population is too poor to buy health insurance voluntarily.

**Why Social Insurance is so Widespread** Several reasons explain most of the concentration on social insurance, even at incomes high enough that private insurance is feasible for much of the population. The first is historical, and refers to mandates rather than direct government finance. Since mandated insurance benefits identified groups, the existence of such protection for some workers leads to efforts by other workers to obtain the same benefits. This effect should be expected to be stronger, the more labor is unionized [Navarro 1989]. There is a "ratchet effect", by which social insurance tends to grow once started; it is easier to extend coverage to new groups than to reduce it for those already insured. Direct finance, in contrast, is in principle available for everyone's health care and so its expansion should depend more on a generalized social decision to extend coverage than on competitive or emulative pressures from particular groups in society. Also, mandated insurance is a second-best policy according to either an extreme liberal or an extreme conservative view, and so is easier to agree on than either directly financed universal coverage or purely voluntary private insurance [Summers 1989].

Non-mandated private insurance provided voluntarily by employers and made obligatory for their employees also tends to spread once introduced. However, since it is not required by law, it can more easily be reduced, or competitive benefits can be provided in other forms such as higher wages. And there is of course no obligatory mechanism for including the self-employed. Thus private employer-related insurance does not tend toward universal coverage. This explanation of why social insurance expands applies to Japan, many European countries, and to a lesser extent to such countries as Argentina, Brazil and Costa Rica. It does not explain the (near) universalization of social insurance by direct government finance in Canada or the United Kingdom. Nor does it explain the attempt to copy such coverage in low- and middle-income countries, including many former English colonies; historical models of what is appropriate for a government may greatly affect the public role in ex-colonial poor countries today [van der Gaag 1995].

Another factor behind the expansion of social insurance--independently of how it is financed--is a sense of social solidarity or equity, which supports a public financing system to guarantee universal access, with substantial subsidies from rich to poor as well as from the healthy to the sick. The increased equity in access to care appears to outweigh the inequity that arises when social insurance is financed by slightly regressive payroll taxes. The reality of such solidarity, as opposed to the rhetoric, has been widely achieved only in OECD countries; few low- and middle-income countries have managed to finance approximately equal health care for almost everyone. And the degree to which such solidarity exists appears to differ among OECD countries, being notably less important in the United States than in most of Europe.

Universal social insurance has the advantage that it reduces adverse selection, with the attendant inequities, by pooling risks in relatively large groups and including every individual in some group. (Risk selection by the insurers is eliminated, if insurance is compulsory for all those in a pool.) To eliminate adverse selection completely, however, the insurance must not only cover all the population but put them all in just one pool: when there are several mandated schemes, contributions and benefits can still differ greatly among them, and people's choice of where to work or live may still depend in part on how they view their health risks. An extreme form of this differentiation occurs in Argentina, where there are some 300 mandated pools, but much of the population is not included in any of them and there are huge income-related differentials in the value and coverage of insurance [World Bank 1993a]. Direct finance with a single-payer system is more effective in controlling selection problems than social security schemes with several payers and risk groups.

In principle the problems of adverse selection might be controlled by regulation of private insurance, but that would be difficult or impossible without the leverage provided by public money to subsidize high-risk consumers. Partly as a result, social insurance reduces or avoids the problem of labor immobility because of employer-related insurance. When coverage is close to universal, quality can be maintained because almost everyone uses the system. (Quality is more of a problem when public finance is concentrated on the poor, who have no alternative for expensive care.) Moreover, dominance of the health market by public expenditure still allows for supplementary private insurance, so at least those consumers who can afford to, can make marginal choices about more spending and more health care. The result is that compulsory social finance can be described as "socially efficient", compared to the failings of private health care markets [Barr 1992]. It does not follow that social insurance is efficient at the level of individual health care decisions, so that marginal expenditure is always directed where it will have the greatest health impact or contribute most to consumers' welfare. But private health care markets do not achieve that kind of efficiency either.

Another important factor explaining the political acceptance of social insurance is that it is easier to hold down total health expenditure, than with private insurance which is subsidized through the tax system. The average increase in health care spending of all OECD countries together between 1980 and 1990 was only 0.6 percent of gross product, with a further, almost equally large, increase in the next two years. Canada, which also relies on public spending but has less strict controls on it, has been less successful in this regard than most Western European countries, with a two percent of GDP increase during the 1980s. The extreme case of failure to control health costs is the United States, one of only two rich countries to rely extensively on private insurance. Expenditure went from 9.3 to 12.6 percent of GDP in ten years (1980-1990) and has continued to expand. In Switzerland, where private insurance is an even larger share of expenditure than in the United States, health spending grew by one percent of GDP in the 1980s and then by another one percent in the next two years [Schieber, Pouillier and Greenwald 1994].

The OECD experience suggests that public expenditure is an efficient mechanism for reaching, and enforcing, a social decision to spend somewhat less, even if it means accepting somewhat poorer health status than might be achieved with much more spending. The willingness to make this choice appears to rise as health conditions improve and as expenditure on health becomes a large share of GDP. Absent any such mechanism to arrive at a social decision, it is difficult to reach consensus, as the failed efforts to reform the United States health system in 1993-94 demonstrate [Skocpol 1995; Blendon, Brodie and Benson 1995].

There is also some evidence that administrative costs rise with the *number* of public insurers [Pouillier 1992, OECD 1995], being lowest with a single payer (as in Canada or the United Kingdom), higher where there are a large number of them, as in Germany, with about 1200 "sickness funds", and Argentina, with some 300 employment-related insurers, and intermediate in countries with a small number of large social insurance funds, as in France [Lachaud and Rochaix 1993] or Japan [Schieber, Pouillier and Greenwald 1992]. However, these differences have little effect on total costs.

**Non-Financial State Intervention** In principle, there is nothing inevitable about the dominance of public insurance at high incomes; and if it were not for such state-financed or state-mandated insurance, the public share of health expenditure could be much smaller. A country could rely on private insurance for everyone except the poor, with public spending going only to finance public goods and to subsidize coverage for the poor. However, the state could not retire from other forms of intervention, particularly regulation, unless society were prepared to accept the resulting inequities and the likelihood of much higher total costs. Part of the problem of inequity would probably arise from differences in quality of health care between the poor and the non-poor, in a system where public finance for insurance went only to those in poverty.

In fact, no country in the world has achieved a highly equitable system with a stable share of health spending relative to GDP, while relying predominantly on private insurance. The combination of finance, regulation and mandates necessary for such an outcome may be theoretically attractive but is politically and operationally very difficult to reach. Any government wishing to achieve the same degree of equity and cost-control as a typical OECD country, while holding the share of public spending in health to much less than half, would have no models to follow. And there might be substantial transition costs in trying to reach such a state, starting from where any of the OECD countries are now. That is probably why even major reforms in how public money is allocated, as in the United Kingdom in recent years, have not greatly affected the share of health care expenditure that is financed publicly [Abel-Smith 1995, OECD 1994].

In the OECD countries which rely on direct public finance or mandated insurance, regulation is pervasive. Governments negotiate or control providers' fees, establish payment mechanisms that create incentives to hold down costs, set global budgets for regions, subsystems or individual hospitals, and specify or influence the services covered by social

insurance [Abel-Smith 1984, Culyer 1990]. Even in the United States, where less than half of health expenditure is public, such interference characterizes the two large public programs (Medicare and Medicaid). Doctors' fees payable under the programs are controlled, and hospitals are reimbursed by a fixed price for a condition or treatment (Diagnostic Related Groups or DRGs) rather than by fee-for-service. Partly in consequence, during the 1980s expenditures per person insured under these programs rose less than private insurance spending per insured person [Bovbjerg, Griffin and Carroll 1993]. And private insurers are also increasingly involved in influencing or controlling providers' decisions either directly or by way of payment mechanisms. Pure, arm's-length markets in health insurance do not exist anywhere.

#### PART 4: CONCLUSIONS

The conceptual discussion in Part 2 establishes that the activities which comprise health care can be classified into three domains, each of which corresponds to a distinct reason for the state to intervene in the market for such care. This leads to the conclusion that governments ought to undertake three broad kinds of intervention:

- ◆ They should finance public goods and health services with substantial externalities, to ensure that they are produced and consumed in the right amounts.
- ◆ They should regulate private health insurance, or else finance insurance publicly, to reduce the consequences of adverse selection for both efficiency and equity.
- ◆ They should subsidize the poor by financing some minimum of care, whether by providing it directly or by financing private providers.

Although these are valid general principles, they do not constitute specific advice on what the public role should be in the health sector--which instruments to use for which purposes, how much to spend and how to allocate it, and so on. The empirical evidence in Part 3 offers some guidance in this regard. It shows that governments typically do intervene considerably, in particular by financing health care or by mandating health insurance; and that the degree of such intervention tends to increase as countries become richer. The reasons for this include the increasing importance of insurance at higher incomes, and the greater ease of controlling expenditures when they are publicly financed. There is also some evidence that public expenditure is more effective than private spending in improving health, presumably because of its greater concentration on a few extremely effective interventions.

Still, countries vary greatly in the degree and kind of state interference, and display only a few empirical regularities linking the public role to health outcomes or other results [Dunlop and Martins 1995; OECD 1994; Saltman 1995]. What more can be said by way of recommendations for government policy or action? It is convenient to separate this into two questions. The first is, what general advice can be given about what governments should and

should not do to assure equity and efficiency in the health care market? The second is, how should public money be spent on health-related interventions? The rest of this paper offers some conclusions in each of these areas, drawing on the theoretical and factual material presented above.

### **The Appropriate Public Role in Health**

As a first approximation, it is easier to say what governments *should not do* in health than to specify what they *should do*. That is, it is clear that certain actions are likely or certain to violate one or more of the objectives of a health care system to an important degree. In the topographic metaphor used earlier, such actions correspond to falling off the plateau of satisfactory outcomes and into one of the surrounding chasms. Four "don'ts" are discussed in what follows: they refer to the way the public is taxed, charged or exempted to pay for health care; the providers to which governments transfer public funds; the way providers are paid; and the services they are paid to provide.

**What Government Should Not Do** The first thing governments should not do is to use the tax system, or any system of fees at public facilities, to make the poor subsidize the health care of the rich. Conceptually, subsidies are justified only for the poor, and broader financing of care through insurance is a question of efficiency rather than of equity. This is not only a matter of whether the rich use more of publicly-financed services than the poor do, although great inequities often arise because the rich have more access to those services. Financial equity also depends on who pays the taxes. More narrowly, governments should not contribute to social security financing from general revenues, unless coverage is universal, because when only part of the population is covered it is usually the poor who are excluded. And governments should not treat private insurance coverage as a cost to employers unless it is also treated as income to beneficiaries. Such practices are not only inequitable; they are also inefficient to the extent that they lead to excessive spending on health care, or reduce labor mobility.

Controlling inequitable subsidies does not mean that social security systems should be dismantled or must be made universal. Even when incomplete, such mandated insurance includes substantial progressive subsidies from high-paid to low-paid workers, and the mere fact that some people in society receive more generous health care is necessarily not a problem, so long as they pay for it. What matters is that governments not make everyone pay for what some are excluded *ex ante* from receiving. Perverse subsidies not only cause immediate inefficiencies or inequities, they also create interests that oppose subsequent health system reform. This is evident in the United States [Skocpol 1995] and Chile [Musgrove 1995d], and it is the reason why the design of subsidies is a crucial part of any reform to extend or improve coverage for the poor.

The second thing governments should not do is tie public finance to public provision. The choice of whether to provide care through public or parastatal facilities should be treated as a "make or buy" decision, subordinate to the larger decision about what to pay for. That

does not necessarily mean eliminating public provision, which will sometimes be the best solution. It means rather that competition between public and private providers should be based on costs and on quality, and not on price to the consumer, as is commonly the case. If the volume of public provision were determined by when it was actually superior, instead of by artificial price differences, there would almost certainly be less of it. Consumers would use more private provision, if they could obtain it at the same price or benefit from the same subsidy, as when going to public providers. The surviving public facilities would almost surely be more efficient in the use of resources and more satisfactory to users. Another valuable consequence would be to give the poor access, at least for some services, to the same providers used by the rich, thus reducing inequity.

To achieve those goals, however, requires other changes in how public institutions operate, changes that probably cannot occur so long as public funds go automatically and exclusively to government facilities. This conclusion is most pertinent to poor countries where public systems are most likely to be inefficient and to be used only because they are free or nearly so. High-income countries with a large share of public provision, particularly in hospitals, suffer less from these problems.

A third thing governments should not do is pay for health care by fee-for-service, unless other mechanisms are used to control expenditures. This is seldom a problem with publicly provided services, but makes it hard to control costs when governments finance private providers. Even negotiating or controlling the fees is not enough, as the Canadian experience demonstrates, since providers can respond to fees they consider too low, by increasing output [Evans, Barer and Labelle 1988]. This helps explain why Canadian health expenditure has risen faster than that in European countries which rely on other payment mechanisms. European countries which pay for health care by fee-for-service also rely on global budgets, utilization reviews or other instruments of cost containment [OECD 1994, 1995]. Since expenditures equal prices times quantities, and since quantities of services respond to prices and are difficult to control directly, countries which pursue both macroeconomic and microeconomic efficiency in health spending usually control both prices and expenditures. In contrast to European and North American experience, Brazil applies this system to block grants for federal expenditure in states with relative financial autonomy; but in states where federal money is paid directly to providers, the federal government also controls one crucial quantity, the number of hospitalizations that federal money will pay for [World Bank 1994b]. In all cases, the government sets prices for services.

It also helps, in controlling expenditures, to define "services" as complete treatments for specific conditions rather than as all the individual components of such treatments, so they can be financed by mechanisms such as the Diagnostic Related Group (DRG) payments used in the United States and the provider can be required to assume part of the financial risk. Changing from a system based on overall budgets and on salaries for providers, to a fee-for-service system without offsetting the resulting incentives to over-provision can lead to an explosion of costs, as in the Czech Republic [Boland 1995].

Finally, if governments mean to pursue some combination of better health and lower costs, they should not--in fact they cannot--simply finance whatever people demand when care is free to consumers. This does not mean governments should not "subsidize demand" rather than "subsidizing supply" or providing services. It means only that there must be limitations on what will be paid for publicly: this issue is taken up at the end of Part 4. Such limitations are a particularly contentious matter, because both good health and cost containment may be opposed to consumer or provider satisfaction, which are also politically important objectives. Nonetheless, two empirical observations are germane to this decision. One is that private insurance always carries some limitations, either as to the services covered or as to cost-sharing. Except where poverty is important, so that cost-sharing is more difficult, there is no reason for public finance to be systematically more generous in this regard than private risk-sharing arrangements.

The second observation is that, as the discussion concerning Figure 2 in Part 2 indicates, private markets will tend to supply what people demand, and public intervention typically acts to emphasize needs instead. In other forms of public subsidy, it is common to distinguish between wants and needs, and concentrate spending on the latter. This is the case, for example, with food subsidies, which are also very much health-related. Price subsidies are usually limited to "basic" foodstuffs, and food stamps cannot legally be used to buy alcohol or other non-necessities. This may be considered partly a matter of efficiency, assuring more health gain than would otherwise occur. But it is also a matter of equity: in contrast to actuarial private insurance, where every purchaser buys the expected value of the health services needed, public finance is involuntary. It comes from taxpayers who have a legitimate interest in meeting needs, and thereby getting value for their money, but not necessarily in paying for wants.

None of these "don'ts" is easy to implement, because some consumer or provider interests can be expected to oppose every one of them, in every country. But they are arguably the most important conclusions about where the public/private frontier should run in the health sector. It is notable that none of these conclusions depends solely on features unique to the health sector. The peculiarities of health matter most for the difficulty of distinguishing "needs" from wants, and--partly as a consequence--for the dangers of paying providers for whatever they choose to provide, without incentives to control costs. A system which avoided the problems described above would still present complex and difficult questions for the proper role of the state, but it would have more latitude to pursue improvements. And it would not matter so much, exactly what objectives the government pursued or which combination of instruments it applied.

**What Government Should Do** Beyond the prescriptions for how the state should deal with the problems of each of the three domains of health care, several "dos" appear to be generally valid for governments. If the objective is to minimize deadweight losses from public intervention and leave as much room as possible for private choices, then the first thing governments should do is to use each less-intrusive instrument to the point where a more intrusive intervention is justified, following the sequence of increasingly greater

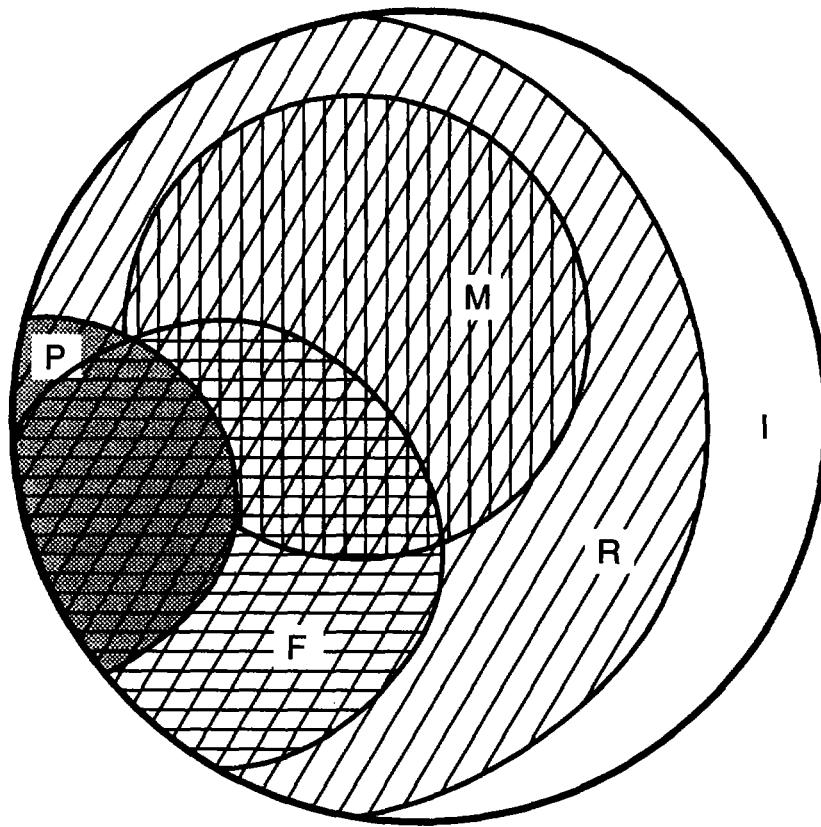
interference--inform, regulate, mandate, finance and provide services. That is, governments should regulate private activity when merely improving people's information is not enough, deliver services if it is infeasible to finance private providers equitably, and so on. Public finance is inescapable for some actions, but particularly in low- and middle-income countries much can probably be accomplished by better use of information and regulation. Failure to use these other instruments well, can increase the need for public finance.

Sometimes the problem is that governments exploit these instruments too little. They do not regulate private insurance when it first begins to expand, which makes subsequent regulation politically more difficult [World Bank 1994b; Musgrove 1995d]; or they do not initially react when health-damaging behaviors such as smoking become more entrenched. Sometimes the problem is inappropriate regulation, which needlessly restricts competition, or enforces inefficiency in the public sector by centralizing nearly all decisions. And poor countries in particular often get the worst of both worlds by paying for activities which should be, but are not, regulated: government subsidy of medical education without adequate control of quality or relation to needs is a common example. In the worst of cases, governments use all the available instruments in exactly the reverse order. They try to provide more health care than they can pay for, with the result that most services are under-financed and of poor quality; they try to finance services some of which might be mandated and paid for by consumers or employers; they mandate care, as by social security systems, without adequately regulating it; and they do too little to inform the public and providers either of dangers to health or of how the health care system is actually working. Much of the criticism of government failure in the health sector, especially in poor countries, describes the result of getting things backward.

These ideas are represented in Figure 10A, which shows the appropriate relation among the instruments by which the state can intervene in health care, and Figure 10B, which portrays the kind of inappropriate or imbalanced relation often found in poor nations. Figure 10A indicates that whatever is mandated, financed or provided publicly should also be regulated, and much else besides. The state can finance some care that is not anyone's mandated responsibility, and can also mandate care or insurance coverage which is financed privately. And most if not all public provision should be fully financed by government, but possibly with much more scope for finance than for provision by the state. The largest sphere pertains to information, covering activities in which there is no other public interference with the market. In contrast, Figure 10B shows a much smaller effort to inform or regulate, very little use of mandates that are not also publicly financed, and a sphere of provision as large as, or even larger than, that of finance.

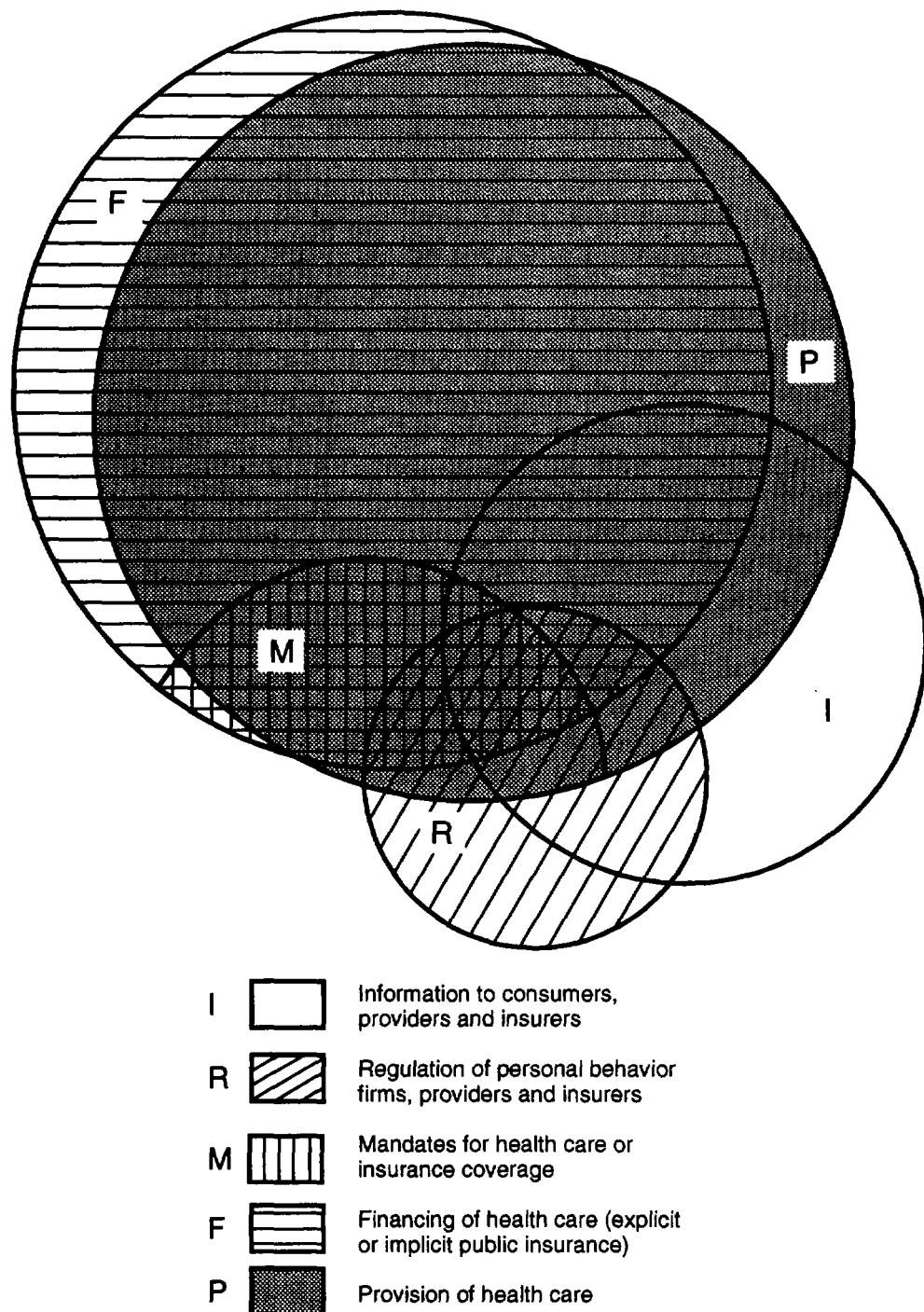
Of all the instruments of public action, regulation may be the most under-utilized. Brazil and Chile both provide examples of the resulting problems. In Brazil, the state finances three-quarters of medical care but directly provides only about one-quarter of it, so the instruments of finance and provision are used in the appropriate order. But there is very little regulation of the competence of medical professionals, of the quality of care, or of the rapidly-growing private insurance industry. The lack of regulation even interferes with

**Figure 10a Appropriate Use of the Instruments of Public Intervention in Health Care**



- |   |                       |   |
|---|-----------------------|---|
| I | [Empty square]        | Information to consumers,<br>providers and insurers                 |
| R | [Diagonal hatching]   | Regulation of personal behavior<br>firms, providers and insurers    |
| M | [Vertical hatching]   | Mandates for health care or<br>insurance coverage                   |
| F | [Horizontal hatching] | Financing of health care (explicit<br>or implicit public insurance) |
| P | [Cross-hatching]      | Provision of health care  |

**Figure 10b Typically Inappropriate Use of the Instruments of Public Intervention in Health Care**



financing the system, since private insurers sometimes send their customers to publicly-financed facilities without paying for care, and until recently fraud was widespread [World Bank 1994b; Medici and Czapski 1995]. In Chile, the private insurance industry was created by public action, with essentially no regulation--but with a mandate allowing people to spend on private insurance, the tax contributions that formerly were used to finance the public system [World Bank 1994a]. The lack of regulation may not have affected medical quality, but it has worsened the financial situation of public facilities, raised administrative costs, and promoted risk selection. Even more serious failures to regulate have arisen in Eastern and Central Europe, as former state monopolies of health finance and provision have given way to competitive private provision.

A second thing governments should do is to stimulate competition in the *provision* of health care. This is largely a matter of promoting public/private competition, for the reasons described above, but it also includes removing any unjustified barriers to competition within the private sector, and between for-profit and non-profit providers such as non-governmental organizations. The lack of competition is usually less of a problem in the domain of low-cost, health-related activities than in the domain of costlier activities requiring insurance. This recommendation extends *a fortiori* to non-medical components of health care such as the "hotel" services of hospitals. How far competition should be carried is not always obvious. For example, whether public facilities should make their own purchasing decisions for such inputs as drugs, depends on whether central bulk purchasing reduces costs while maintaining adequate supplies. Even in the latter case, there should of course be competition among suppliers for such purchases.

Except for the risk that providers will compete by offering more services rather than by raising quality or reducing costs--a risk that is greatest when payment is by fee-for-service--competition appears to be beneficial in health care provision, just as in other industries. Competition is less desirable in health care *financing*, both because administrative costs are likely to be higher and because it is competition among insurers that leads to risk selection. Experience in OECD countries suggests that good results can be obtained with one or with many insurers, but only if they are closely regulated.

Third, governments should put as much of the incentive for cost containment as possible on the supply side of the market, rather than on consumers. This is almost a necessity where poor consumers are concerned, since their poverty already sharply limits what they can spend. But the evidence is that even non-poor consumers do not respond to higher prices by using health services more cost-effectively. It also appears that providers have considerable scope for controlling expenditure by limiting volume as well as unit costs. And theory indicates that an optimal payment system should use supply-side measures to control costs; reimbursing providers fully according to costs is never the best solution [Ellis and McGuire 1990, 1993]. As income increases and poverty declines, of course, it becomes easier to pass the burden of cost containment to consumers. However, it does not become medically any more effective or economically any more efficient to do so. Moreover, as

income increases the capacity for supply-side responses by providers also increases, so it continues to be preferable to keep cost control incentives on the supply side of the market.

Finally, it is urgent to deal with the pervasive problem of government failure, and to improve the capacity to do whatever government ends up doing. This is especially important when market failures are so important that for the public sector to withdraw, on the ground that it also is subject to failure, would only make matters worse. Much of the criticism that governments, particularly in poor countries, try to do too much in health arises because of how *badly* they appear to operate, more than from any evidence that they have exceeded some optimum degree of state intervention. More skill and understanding, and fewer internal barriers to efficiency, make sense whether the state's role shrinks, as by leaving more provision to the private sector, or expands, to finance more coverage for the poor. One of the things governments generally need to do better, particularly in poor countries where much private medical practice may be of low quality, is to use regulation, mandates, training and other interventions to help the private sector function better. This is increasingly recognized as an essential component of almost any health sector reform, and the need for it will only increase as health systems become more expensive and complex. All five instruments of intervention--information, regulation, mandates, finance and provision--need to be used well, and using less of one instrument and more of another will not, in general, reduce the need for governments to perform capably.

### **How to Spend Public Money on Health Care**

Governments that promise, or try, to pay for all the health care that people want, find that they cannot do it. Either total expenditure expands more than the population is politically willing to pay, or non-price rationing becomes increasingly severe. To mitigate these problems, it is crucial to set some criteria for the use of public expenditure on health care. This is particularly important, given the tendency for public financing to expand as countries become richer and the health sector becomes more complex. As the evidence in Part 3 indicates, it is difficult to avoid the need for public choices about expenditure by financing relatively little care, relying on other mechanisms such as regulation, and leaving such decisions to private markets.

A first rule about how to spend public funds (including those mandated by earmarked taxes such as social security contributions) is to give priority to highly cost-effective public goods. This advice is most pertinent for poor countries, where these activities could absorb (nearly) all of what the state now spends on health, and where there is the least doubt about what should be included in a publicly-financed package of services. However, it is still relevant for rich countries, despite the very small share of spending represented, if they have not achieved universal coverage of such services as immunization or exploited all the justifiable possibilities for influencing behavior through information and regulation.

Once public goods and services with substantial externalities are adequately financed, the question becomes how to spend public funds on individual, clinical services which are

largely private goods. At low income levels, the best answer starts with defining an "essential package" of services, with everything outside the package regarded as "discretionary" and to be paid for privately [World Bank 1993b, Chapter 3]. If the criterion for what goes into the package is cost-effectiveness, this approach maximizes the potential health gain. A package can also include only interventions known to be highly effective, with less regard for their cost, as in the revised version of the publicly-financed Medicaid Plan for the poor in the state of Oregon [Hadorn 1991]. This has the effect of giving life-saving interventions for a few individuals priority over low-cost, low-gain care for large numbers of people: in effect it treats gains in health non-linearly across beneficiaries.

However, there is always a trade-off between financing some services for the entire population, irrespective of people's capacity and willingness to pay for them, and financing more services for the poor. Making this distinction requires discriminating among beneficiaries in some way, such as by geographic differences in the services financed or differential user charges. The evidence on how easily and effectively that can be done is mixed and incomplete, as Part 3 indicates, so the only general rule that can be suggested is not to use public funds to pay for a service for non-poor beneficiaries unless the poor have access to the same service on equal or more favorable terms [Bobadilla, Cowley, Musgrove and Saxenian 1994]. Services that fall in the domain of low-cost activities not requiring insurance should be subsidized only for the poor; services which may be catastrophically costly but are still cost-effective because they yield large health gains, can be financed--but obviously not subsidized--for everyone.

As countries become richer, there are three broad choices to follow. One is to continue to use the same criteria of costs, effectiveness and equity, but to cover a wider range--a more generous package--of publicly-financed care, maintaining the distinction between what is essential and what is discretionary. There are two chief limitations to this approach. One is the difficulty of choosing among the thousands of medical procedures available, including the need for repeated decisions as new procedures are invented. This approach is followed in Canada, and in the publicly-funded programs of the United States. In practice, the range of interventions funded publicly becomes very large. The other limitation is the necessity to regulate the providers that deliver the package and ensure that public money actually goes to the desired interventions and is not spent on those considered discretionary. Unfortunately, this is easiest under fee-for-service payment to private providers, where the government can choose to pay for some interventions but not for others. It is probably hardest under public provision with budgets that do not depend on service output, where economic incentives are weak and simply exhorting providers to deliver the services in the package may be ineffective [Musgrove 1995a].

A second approach is to maintain a smaller essential package, which will not exhaust the available public funds, and leave more discretion to providers as to what to do with public money--subject to overall spending controls such as global budgets or other incentives for cost containment. This requires less explicit, central decision and may take better account of the variation among patients by leaving more decisions to doctors. One advantage

of this approach is to make it easier to "include" a particular procedure in the package and still limit the number of people who receive it, which may reduce inappropriate care and avoid the political difficulties of explicit exclusion. Several European countries, including both direct finance systems such as the United Kingdom and mandated social insurance as in Germany, have followed this approach. When providers can deliver almost any service they choose, but are constrained by a total budget, the result is often queueing or waiting lists for non-emergency care. This clearly reduces patient satisfaction, but it can be medically efficient. And the total welfare loss to society may be no larger than when such controls are absent and some resources are wasted on excess use of medical care [Feldman 1994].

A third possibility is to circumscribe public funding to a small essential package and allow everything else to be financed privately, subject to some combination of mandates and regulation. Under this approach, the poor would be covered only for the essential package. No country has really succeeded with this approach in controlling adverse selection or in holding health expenditure steady as a share of income. And for countries which have already reached a large share of expenditure through social insurance, reducing the public share and expanding private insurance would probably raise costs and increase inequity. Supplemental private insurance can always exist at the margin, even in countries such as Canada with generous public finance [Hicks 1996]; the choice for public policy is where to draw the margin. With some exceptions, high-income countries have drawn it to include a large public share in finance. The question is whether lower-income countries could copy the success of such arrangements with a significantly smaller dependence on government finance. There is little empirical evidence as to whether that would be easy to do.

The notion of a package as a way to determine how to use public resources for health, follows the distinction among domains of health care developed in Part 2. That is, it is based on the properties of the health interventions themselves. So far as any distinction is made among *population groups*, it is limited to favoring--or at least not discriminating against--the poor. This follows from the distinction between services that the non-poor can afford out of pocket, and those which would be catastrophically costly for much of the population. In consequence, a package of publicly-financed health care should not be based in the first instance on the notion of "vulnerable groups" in the population, defined by any other criterion such as age or sex. There is no ethical basis for giving preference to certain population groups independently of their health problems and of the scope for state intervention. Moreover, as the discussion of "merit goods" indicates, many examples of "vulnerability" correspond to other justifications for a public role. This is the case for some public goods which preferentially benefit certain groups, and for poverty in general.

Neither the "dos" nor the "don'ts" suggested here specify just how much health care should be publicly financed (or provided), or which taxes to use, or which payment mechanisms. Still less do they describe the ideal mixture of mandates, regulations and information governments should adopt. Countries display a variety of choices on these matters. Nonetheless it is clear that some state intervention in the health sector is highly justified, and that much could be gained by avoiding certain common and costly mistakes of

inadequate, excessive or inappropriate interference in health care markets. If the frontier between private and public activity is properly drawn, the state can perform better and thereby help ensure that the health sector as a whole performs better.

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## STATISTICAL ANNEX

Each observation in Figures 3 through 9 refers to a country; observations are limited to those countries for which both public and private expenditure are estimated directly (not from regressions). Income estimates are for 1991, expenditure and demographic estimates for 1990 or 1991; estimates are sometimes based on data for a year as close to 1990 as possible, between 1983 and 1987, with adjustment proportional to changes in GDP for expenditure data. The variables used to generate Figures 3 through 9 are shown in Annex Table 1 and are described below. The table lists all countries for which data were used in any of the Figures; the number of countries for which data were available varies from one Figure to another.

### Income (*italicized figures are derived from regression estimates*)

1. Income per capita, purchasing power parity (PPP) dollars
2. Income quartile, among all countries (not just those for which health expenditure is estimated). Values = 1 (poorest), 2, 3, 4 (richest)

### Health Status

3. Life expectancy at birth (years)
4. Child mortality under age five (per thousand children in age group)

### Health expenditure and public/private shares

5. Total health expenditure as share of GDP
6. Public expenditure on health as share of total health expenditure
7. Public expenditure share quartile, among all countries for which var (6) is available. Values = 1 (lowest), 2, 3, 4 (highest)

### Composition of finance

8. Directly-financed public expenditure (expenditure by Ministry of Health and all other public agencies except social security organizations) as share of total public expenditure
9. Insurance (non out-of-pocket) expenditure as share of total health expenditure,
10. Public expenditure as share of total insurance (non out-of-pocket) expenditure,

### Variables used to generate each Figure

Figure 3 relates variables 1 and 5.

Figure 4 relates variables 1 and 6.

Figure 5 relates variables 5 and 6, with countries classified by variable 2.

Figure 6a relates deviations from a regression relating variables 1 and 5 to

deviations from a regression relating variables 1 and 3, with countries classified by variable 2.

Figure 6b is identical to Figure 6a, except that countries are classified by variable 7.

Figure 7a relates deviations from a regression relating variables 1 and 5 to deviations from a regression relating variables 1 and 4, with countries classified by variable 2.

Figure 7b is identical to Figure 7a, except that countries are classified by variable 7.

Figure 8 relates variables 9 and 10, with countries classified by variable 2.

Figure 9 relates variables 6 and 8, with countries classified by variable 2.

### Display of variables in Figures

Figures 3 and 4 show the variables directly.

Figures 5, 8 and 9 show the information in polar coordinates: one variable is displayed radially (distance from the origin) and the other in angular form (share of the angle between the horizontal and vertical axes).

Figures 6a, 6b, 7a and 7b show deviations from estimated values rather than the values of the variables.

### Sources of data

Variables 1-4 were taken for all countries from World Bank [1993b] and the World Bank's Economic and Social Data Base. Variables 5-7 were taken from Govindaraj, Murray and Chellaraj [1994] for Latin American and Caribbean countries and from Murray, Govindaraj and Musgrave [1994] for all other countries. Variables 8-10 were estimated from a variety of sources, including the Government Financial Statistics Yearbook; Mesa-Lago [1992] for Latin American countries Argentina, Brazil, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay and Venezuela); Griffin [1992] for Asia (Bangladesh, Bhutan, China, Malaysia, Myanmar, Nepal, Papua New Guinea); Shaw and Griffin [1995] for Ethiopia, Nigeria and Tanzania; Vogel [1993] for ten African countries (Burkina Faso, Burundi, Cote d'Ivoire, Ethiopia, Ghana, Guinea, Kenya, Lesotho, Madagascar and Malawi); OECD [1992] and Schieber, Pouillier and Greenwald [1992] for OECD countries (Canada, France, Germany, Japan, the United Kingdom and the United States); and World Bank reports on individual countries as indicated at the end of the list of references (India, Jamaica, Mozambique, Nicaragua, Nigeria, Pakistan, Tunisia, Venezuela and Zimbabwe).

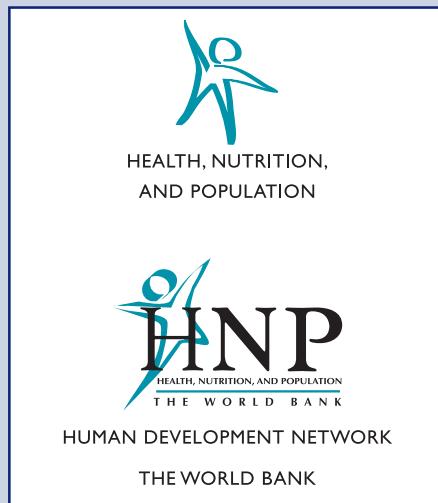
Annex Table 1

COUNTRY	VARIABLE NUMBER									
	1	2	3	4	5	6	7	8	9	10
<b>SUB-SAHARAN AFRICA</b>										
Mozambique	600	1	47	280	0.06	0.75	4.00	1.00	0.75	
Tanzania	570	1	51	165	0.05	0.68	3.00	1.00	0.82	0.83
Ethiopia	370	1	48	197	0.04	0.61	3.00	1.00		
Uganda	1120	1	46	185	0.03	0.47	2.00		0.62	0.76
Burundi	720	1	48	180	0.03	0.52	2.00			
Madagascar	710	1	51	170	0.03	0.50	2.00	0.76		
Sierra Leone	800	1	42	360	0.02	0.71	4.00	0.52		
Malawi	800	1	45	201	0.05	0.58	3.00	0.62		
Rwanda	680	1	46	222	0.04	0.54	2.00			
Mali	480	1	48	200	0.05	0.54	2.00			
Burkina Faso	750	1	48	159	0.09	0.82	4.00			
Niger	790	1	46	320	0.05	0.68	3.00		0.81	0.83
Nigeria	1360	1	52	191	0.03	0.44	1.00	1.00	0.89	0.50
Kenya	1350	1	59	83	0.04	0.63	3.00	0.56		
Benin	1500	1	51	170	0.04	0.65	3.00			
Togo	1310	1	54	143	0.04	0.61	3.00			
Cote d'Ivoire	1510	1	52	90	0.03	0.52	2.00			
Senegal	1680	1	48	156	0.04	0.62	3.00			
Ghana	2000	2	55	170	0.04	0.49	2.00			
Zimbabwe	2160	2	60	58	0.06	0.52	2.00	0.65		
Cameroon	2400	2	55	125	0.03	0.38	1.00	0.68		
Guinea		1	44	268	0.04	0.59	3.00			
South Africa		3	63	91	0.06	0.57	2.00			
<b>ASIA</b>										
India	1150	1	60	127	0.06	0.22	1.00	0.21	0.26	
China	1680	1	69	43	0.04	0.60	3.00	0.00		1.00
Nepal	1130	1	53	135	0.05	0.49	2.00	0.44	0.49	1.00
Bangladesh	1160	1	51	137	0.03	0.44	1.00	1.00	0.44	1.00
Bhutan	620	1			0.02			1.00		
Myanmar		1			0.03			1.00		
Pakistan	1970	2	59	139	0.03	0.53	2.00	1.00		0.53
Laos	1930	2	50	171	0.03	0.40	1.00			
Sri Lanka	2650	2	71	22	0.04	0.49	2.00	0.83		
Indonesia	2730	2	60	111	0.02	0.35	1.00	0.67		
Philippines	2440	2	65	62	0.02	0.50	2.00	0.80		
Papua New Guinea	1830	2	56	169	0.04	0.64	3.00	1.00		0.64
Thailand	5270	3	69	36	0.05	0.22	1.00	0.90		
Malaysia	7400	3	71	20	0.03	0.43	1.00	1.00		0.43
Korea, Rep.	8320	4	70	10	0.07	0.41	1.00	0.12		
<b>LATIN AMERICA AND CARIBBEAN</b>										
Haiti	1220	1	55	156	0.07	0.26	1.00			
Honduras	1820	1	65	62	0.06	0.45	1.00			
Bolivia	2170	2	59	125	0.06	0.29	1.00	0.17		
Dominican Republic	3080	2	67	56	0.06	0.34	1.00	0.77		
Ecuador	4140	2	66	42	0.04	0.83	3.00	0.62		
El Salvador	2110	2	66	52	0.06	0.30	1.00	0.32		
Guatemala	3180	2	64	84	0.05	0.33	1.00	0.61		
Jamaica	3670	2	73	26	0.09	0.35	1.00	1.00	0.44	0.80
Nicaragua	2550	2	68	106	0.08	0.62	3.00	1.00		
Paraguay	3420	2	67	37	0.04	0.25	1.00	0.31		
Peru	3110	2	64	73	0.03	0.34	1.00	0.59	0.34	1.00
Argentina	5120	3	71	26	0.10	0.61	3.00	0.45		
Brazil	5240	3	66	69	0.06	0.43	1.00	0.50	0.49	
Chile	7060	3	72	20	0.07	0.46	2.00			
Colombia	5460	3	69	21	0.05	0.57	2.00	0.43		
Costa Rica	5100	3	76		0.09	0.82	4.00	0.19		
Mexico	7170	3	70	38	0.05	0.56	2.00	0.15		
Panama	4910	3	73		0.09	0.60	3.00	0.41		

Annex Table 1

COUNTRY	VARIABLE NUMBER									
	1	2	3	4	5	6	7	8	9	10
Uruguay	6670	3	73	23	0.08	0.76	4.00	0.81	0.90	0.85
Trinidad & Tobago	8380	4	71		0.05	0.59	3.00			
Venezuela	8120	4	70	26	0.04	0.47	2.00	0.75		
Antigua & Barbuda		3	74		0.05	0.54	2.00			
Bahamas		4	69		0.05	0.54	2.00			
Barbados		4	75		0.08	0.52	2.00			
Belize		2	68		0.06	0.48	2.00			
Virgin Islands		4	74		0.05	0.57	2.00			
Dominica		3	72		0.08	0.64	3.00			
Grenada		3	70		0.06	0.69	3.00			
Guyana		1	65		0.10	0.44	1.00			
St.Kitts & Nevis		3	70		0.07	0.51	2.00			
St. Lucia		3	72		0.08	0.72	4.00			
St. Vincent		2	71		0.06	0.63	3.00			
Suriname		3	68		0.04	0.26	1.00			
EASTERN EUROPE, MIDDLE EAST AND NORTH AFRICA										
Kazakhstan	4490	2								
Poland	4500	2	71	20	0.05	0.80	4.00			
Egypt	3600	2	61	56	0.03	0.38	1.00			
Morocco	3340	2	63	71	0.03	0.35	1.00			
Bulgaria	4980	3	72	21	0.05	0.81	4.00			
Czechoslovakia	6280	3	72	13	0.06	0.85	4.00	0.05		
Hungary	6080	3	70	20	0.06	0.83	4.00	0.84		
Romania	6900	3	70	31	0.04	0.62	3.00			
Turkey	4840	3	67	94	0.04	0.38	1.00	0.58		
Algeria	5640	3	66	82	0.07	0.77	4.00			
Iran	4670	3	65	64	0.03	0.58	3.00			
Jordan	4870	3	69	34	0.04	0.47	2.00			
Syria	5220	3	67	44	0.02	0.19	1.00			
Tunisia	4690	3	67	45	0.05	0.87	3.00	0.83	0.92	0.73
Saudi Arabia	10850	4	69	81	0.05	0.85	3.00			
Yemen		2	52	183	0.03	0.47	2.00			
OECD AND OTHER WESTERN EUROPE										
Greece	7680	3	77	13	0.06	0.76	4.00			
Portugal	9450	4	74	13	0.07	0.61	3.00			
Ireland	11430	4	75	10	0.07	0.82	4.00	0.94		
Israel	13460	4	76	10	0.04	0.50	2.00	0.03		
New Zealand	13970	4	76	11	0.07	0.82	4.00	0.85		
Spain	12670	4	77	10	0.07	0.79	4.00	0.69		
Hong Kong	18520	4	78	7	0.06	0.19	1.00			
Singapore	15760	4	74	8	0.02	0.58	3.00	0.96		
United Kingdom	16340	4	75	9	0.06	0.85	4.00	0.97	0.99	0.86
Australia	16680	4	77	9	0.08	0.70	4.00	0.54		
Italy	17040	4	77	11	0.08	0.77	4.00			
Netherlands	16820	4	77	9	0.08	0.72	4.00	0.00		
Belgium	17510	4	76	11	0.08	0.83	4.00			
Austria	17690	4	76	10	0.08	0.66	3.00	0.90		
France	18430	4	77	9	0.09	0.74	4.00	0.80	0.96	0.78
Canada	19320	4	77	9	0.09	0.75	4.00	0.79	0.95	0.79
United States	22130	4	76	11	0.13	0.44	1.00	0.58	0.89	0.50
Germany	19770	4	76	9	0.08	0.73	4.00	0.72	0.97	0.75
Denmark	17880	4	75	10	0.08	0.84	4.00	0.07		
Finland	16130	4	76	8	0.07	0.84	4.00	0.54		
Norway	17170	4	77	10	0.07	0.95	4.00	0.67		
Sweden	17490	4	78	8	0.09	0.90	4.00	0.04		
Japan	18390	4	79	6	0.07	0.74	4.00		0.97	0.76
Switzerland	21780	4	78	9	0.08	0.68	3.00			





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