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Economic Analysis for Health Projects

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A project evaluation in the health sector should establish a firm justification for public involvement; establish what happens with and without the project, taking reactions of the private sector into account; determine the fiscal effect of the project; and acknowledge the fungibility of project resources and examine the incentives for public servants.

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Summary findings

Hammer applies to the health sector an approach to analyzing projects advocated in a recent paper by Devarajan, Squire, and Suthiwart-Narueput. In the health sector, a project evaluation should:

• Establish a firm justification for public involvement. Hammer identifies a number of common failures in the markets for both health services and insurance but argues that this should be the starting place for economic analysis, not a reason to ignore economics.

• Establish the counterfactual: what happens with and without the project. Project outputs should be predicted *net of the reaction of consumers and providers in the private sector*. This requires knowledge of the market structure (supply, demand, and equilibrium) for health services.

• Determine the fiscal effect of the project. The issue of appropriate levels for fees should be handled jointly with project evaluation.

• Acknowledge the fungibility of project resources and examine the incentives facing public servants.

Ministries of health may shift their own resources away from activities that are funded by project to those that are not evaluated at all. Project outputs depend on the incentives for civil servants to provide good service — a consideration rarely taken into account in project evaluations.

Hammer concludes that much of the analysis relevant to projects should be done before project evaluation. If the issues of fungibility and incentives are given due respect, the donors' best form of intervention may not be traditional projects at all but rather general loans with conditions related to general sector strategy and reform. For a standard project, a fair amount of information from supporting sector work is needed before evaluation. If clinical services (or anything depending on people's behavior) are part of the project, information is needed about the supply and demand for substitute services. The market structure of health care is an essential part of the background work.

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In a recent article, Devarajan, Squire, and Sethaput-Narueput (henceforth DSS for obvious reasons) discuss considerations that should be taken into account in order to improve the economic analyses of projects in general. They suggest that an analysis of a project and its supporting sector work should do four main things:

(1) First and foremost, it should establish a firm rationale for the *public* involvement in the sector and the provision of project outputs;

(2) It should be able to establish the counterfactual to the project, i.e., to determine what happens in the nongovernmental sectors with and without the project;

(3) It should identify the fiscal impact of the project, since public funds to finance projects come at a premium due to the distortionary effects of the taxes needed to raise them; and

(4) It should consider the possibility that loaned funds are fungible between uses and therefore that the real effect of any given loan is not from the identified project but from a totally different one, chosen by government (either centrally or within line agencies), and made possible by the additional funds.

This paper discusses selected issues of project evaluation in the health sector with particular attention to the concerns raised in DSS. It is not, therefore, a complete treatment of

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how to do project evaluation in health. For a discussion of methods of assessing costs of inputs and estimating the direct outputs of a project there is a large body of literature available.[1] Rather, this paper focuses on the new directions suggested in DSS. In the first section, characteristics of health which make these new directions most relevant to the sector are discussed. Next, issues in assessing the counterfactual to the project are discussed. The third section is a discussion of the fiscal effects of expenditures, emphasizing the interrelated decisions of providing services and collecting appropriate fees, if any.

The fourth section deals with issues of fungibility in the use of funds in the public sector as applied to health. It leads to a broader issue which was not emphasized in DSS but which is implicit in approaches which take the decisions of government as endogenous: that of assessing incentives in the provision of services in the public sector. Together with the first three concerns, this one underscores the conclusion in DSS that a great deal more economic analysis is needed in establishing the value of health projects but that the bulk of this analysis should be in the context of a supporting analysis of health markets and less in the evaluation of individual projects.

I. Rationale for Public Sector Involvement in Health

As stressed in DSS, the policy environment for projects today is considerably different than that of the late 1960s when the basic ideas of contemporary project evaluation were formulated. At that time, economies in the developing world were highly distorted as a result of government policies (inward-looking protectionist policies and heavily regulated or directly controlled industry) and it was assumed that the government would take a leading role in the industrial sectors. The project evaluation literature emerged as a way to help governments make

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[1] See, for example, Over (1991) and the references included there.

socially profitable investment decisions without addressing the question of whether these activities should be in public hands.

The world has changed significantly since then. Many countries have liberalized their policies and have become more market oriented. The absolute level of distortions due to taxes, trade barriers, and regulations have fallen and many countries, including those which had been centrally planned, have more active and competitive private sectors in industry, manufacturing, and agriculture. The premise that the government will be carrying out or ruling on all investment projects is no longer true (if it ever was).

Our analytic techniques of project evaluation should adapt to take into account this changed environment. Government investment, as with any government intervention, should be justified in terms of the benefit the project would have for society over and above that which would take place without the public sector. For any investment opportunity, the focus of analysis should be on the *difference* between social and private benefit — not the costs and expected returns to private goods.

The standard way to assess this benefit would be to identify the market failures which characterize the private sector equilibrium and, preferably, to quantify the welfare loss from those failures. Priorities for investments should be based on the degree to which they ameliorate these losses.

On this criterion, the health sector as a whole is on firmer ground than industrial and commercial sectors and would probably be favored if this criterion were applied even-handedly across public portfolios. Taking a "health project" to mean any investment in which the improvement of people's health status is an important output, such projects comprise a mixed bag of activities, some under the traditional jurisdiction of ministries of health; others, such as sanitation and safe water, often are the responsibility of other ministries. They are a mixed bag in

a different sense as well. Components of health projects span the spectrum from almost pure public goods to almost pure private goods with services having various degrees of market failure in between. It is worth revisiting some of the major market failures associated with the sector and how projects can be used to ameliorate them. This is well-worked-over territory[2] and only a few points need to be made.

While much has been made of the "epidemiological transition," i.e., the shift of causes of mortality from infectious diseases to noncommunicable, chronic diseases characteristic of richer countries, infectious diseases are still responsible for a large fraction of deaths in poor countries and within poorer groups in those countries. These types of diseases make a prima facie case for government intervention on three grounds. First, they are themselves perfect examples of problems with distinct externalities — even with a good reason to seek medical care, people with such a disease may not seek care quickly enough for social benefits (in preventing spread of the disease) and they may be less likely to complete a full course of treatment than is socially optimal. The consequence of a decision to discontinue taking drugs, either to save on the cost of paying for them or for suffering side effects, can lead to resurgence of the disease — and the attendant increase in transmission — as well as increased risk of promoting resistance to known drugs. This effect is not confined to curative measures. Recent research on the use of pesticide-treated bednets in the Gambia has shown a decrease in incidence of malaria among those who do not use the bednets (Tropical Disease Research Program 1995). Similarly, while the main beneficiary of immunization is the child who is actually immunized, for some diseases, transmission is affected by the number of children who are immunized, thereby conferring an external benefit.

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[2] An extensive discussion is found in Musgrove (forthcoming) or see WHO (1993).

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Second, some of the policy options available to combat infectious diseases are in the nature of almost pure public goods. Vector control (pests — mosquitoes, rats, snails that carry schistosomiasis, etc.) is sometimes a pure public good, meaning that people cannot be excluded from benefiting from a service even if they refuse to pay for it. Therefore the service cannot possibly be provided by the private sector. Another type of public good in the health sector involves the collection and dissemination of information. Epidemiological surveillance for disease control, its supporting laboratories, and laboratories to monitor safe food, drugs, and water are a central government responsibility. A recent project in Malaysia helped build and develop national laboratories to improve epidemiological surveillance capabilities and to monitor food and drug quality (World Bank 1994, Malaysia).

Finally, infectious diseases disproportionately affect the poor and are one of the scourges of poverty. Table 1 shows the distribution of mortality by different causes across different income groups among adult women in China. As is clearly apparent, while poorer people have higher mortality from all causes, the proportion by which the poor die relative to nonpoor is very much higher for infectious than for noncommunicable diseases (a factor of 3.5 for the former and 1.3 for the latter). If this table were extended to all age groups (particularly children), the relative effects of the types of diseases would be similar though the communicable disease component would rise relative to noncommunicable diseases. Basic principles of targeting (Besley and Kanbur 1993) and common sense would indicate that, all else held equal (such as costs), any reallocation from infectious disease control (or even injury prevention) to noncommunicable disease control would hurt the poor disproportionately.[3]

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[3] Oddly, that is not the conclusion drawn in the paper presenting the data..

Table 1. Female adult mortality rates by cause of death and income
(entries are the probability of dying between the ages of 15 and 60)

Income quartile	Communicable diseases	Noncommunicable diseases	Injuries
Richest	.4	6.7	1.2
2	.4	7.9	2.0
3	.6	7.6	2.4
Poorest	1.4	8.9	2.7

Source: Adapted from Murray et al (1992).

The Infectious and Endemic Disease Control Project in China (World Bank 1992, China) exploits this complementarity of efficiency (externality-reducing) and poverty alleviation effects of infectious disease control. This project focuses on tuberculosis and schistosomiasis control in rural areas. Tuberculosis, in particular, is a virulently communicable disease that fits the description of individual behavior with externalities perfectly. The drug treatment available is effective but expensive. People feel better and tend to want to stop treatment long before the course of drugs is completed. This runs the risk of resurgence of the disease, resumed infectiousness for other people and increased resistance of the disease to available drugs.

The second set of market failures revolve around the key characteristic of the sector: problems of uncertainty and incomplete information. This reason for intervention is commonly raised but should be used with a great deal of caution depending on context. There is no such thing as "complete" information in any market. We rarely know everything about any product that we buy and we should be wary of using this argument too freely. If the real problem of, say, low use of medical services is imperfect information on the part of consumers, one might ask why simple messages in an information campaign would not be sufficient to deal with it. If people do not change their behavior with the information, we might want to reconsider whether

we are talking about a market failure in health or simply differences in opinion about the value of goods and services.

This being said, imperfect information takes a few specific forms in the health field. First, particularly for things in which there is no marketable product associated with a preventive health action (such as the value of washing hands after defecation or of wearing long sleeves in the evening [to protect against malaria]) such that private advertising could be relied upon, there may be no mechanism for delivering sufficient information. One might wonder why media such as radio or newspapers don't cover this adequately. This is an empirical matter, conditional on the extent of freedom of the press and literacy.

A second area in which imperfect information is a common problem in health is the natural asymmetry of information in curative health services.[4] Sometimes referred to as "supplier-induced demand," this problem relates to the fact that medical practitioners know more about health problems than do patients (which is why the patients solicited their help in the first place). The problem arises when the practitioner has other (usually financial) motives in undertaking the transaction than helping the consumer. This is a classic example of the "principal-agent" problem in economics and can induce socially suboptimal behavior in the medical services market in the sense that some government intervention will exist which can improve efficiency. While many people have modeled some aspect of this problem (usually with a lot of specific institutional features in the U.S. or the U.K. context) there are few examples of good models for this problem in general or for the developing world.

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[4] "Curative" in this case means clinic-based, patient-initiated services. The distinction between curative and preventive, while perfectly clear to nonmedical people, appears to be controversial in the health field.

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Most critical for the functioning of the sector is the problem of catastrophic loss and therefore the role (and frequent failure) of insurance markets and their interaction with medical care markets.[5] Routine care is not necessarily a big problem for people to handle from their own budgets. It is the infrequent but financially devastating incidents that are of concern here. Expenditures on health care in all countries are extremely skewed, that is, a quite small proportion of the population accounts for a large fraction of total expenditure or, equivalently, that expenditures for most people in most years are small. Insurance markets may fail to exist for several well known reasons. The most important is adverse selection in which those who know they are likely to need care will buy insurance, those who don't expect to need it may not. This drives up the cost of coverage for those who self-select to buy insurance. The then-higher premia needed to cover the cost might then drive out others who are relatively healthy (and therefore don't want the insurance at the higher price) and the entire market may unravel. The other main problem deals with moral hazard — in this case not on the part of the patient necessarily (who has good reasons to want to stay healthy independently of insurance coverage) but of service providers. They might charge more or over-treat in order to get reimbursed from a third party with less ability to monitor the specific care delivered. This effect may also lead to suboptimal coverage due to insurers' refusal to insure for certain types of illnesses, treatments, or patients.

The absence of a well functioning insurance market means that large numbers of people who would be willing to pay the actuarially fair rate to protect themselves from the financial burden of expensive illnesses (with known treatments) are prevented from doing so. The welfare loss associated with this market failure will be largest in the cases of relatively rare health problems (since low probability events have low expected costs) and of very expensive procedures (since this increases demand from risk-averse consumers) (Hammer and Berman

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[5] The central role of insurance in the medical market has been emphasized by Griffin (1990).

1995). The unpredictable nature of demand for health care, combined with the widespread absence of insurance is a key feature leading to large discrepancies between social and private benefits from care as observed in markets. A particularly under-researched element in health economics in developing countries is the latent demand for medical insurance (as opposed to medical care)[6] and the efficiency loss induced by its absence.

Finally, the health sector is frequently called on to help in the alleviation of poverty. This justification of public intervention in health needs to be treated with care. In general, the type of goods which are the best vehicles for redistribution (via subsidized services) are those that have very low (preferably negative) income elasticities — i.e., they should be things that poor people consume relatively more of than others. While it is true that poor people's health is worse than other people's, it is generally not true that they demand more health *care* than others. In fact, it is more often the case that income elasticities for expenditures on health care are very high — usually greater than 1 and often around 1.5. This means that relatively rich people spend a higher fraction of their income on health care than do the poor. Across-the-board subsidization of services would transfer money toward the wealthy. Citing examples from China, Cote d'Ivoire, Indonesia, Peru, and Tanzania, van der Gaag (1995) notes that many public health systems, while often justified on the basis of ensuring equity, tend to provide higher subsidies to the relatively affluent. Solon et al (1991) show that in the Philippines, high income people receive much more of the marginal dollar spent on public health facilities than they pay of the marginal dollar collected in taxes.

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[6] An exception is the recent experiment in Indonesia conducted by the RAND Corporation. See Gertler and Molyneaux (1995).

On the other hand, as seen above, prevention of infectious disease will usually help the poor more than others. Therefore, the wide variety of services have an equally wide variety of effects on different income groups. Before interventions in the health sector are designed with poverty alleviation as an objective, the ultimate beneficiaries need to be carefully examined. There are just too many kinds of health subsidies that will have a perverse incidence.

The fact that market failures exist is not a justification for just *any* intervention. It is also not a reason for ignoring economic analysis but rather is the reason why careful analysis is needed. When markets work well, the standard prescription of laissez-faire policies is adequate. It is precisely when they don't that you need to take a closer look. Unfortunately, the fact that markets do not work well in the sector has not been used as a starting point for a more detailed analysis of *how* they fail and what can most effectively improve welfare. This would require more attention on the behavior of consumers, of providers, and of the markets for medical care and insurance in order to assess how big a problem the market failures are and how much government intervention can improve matters.

Some methods of analysis which have been proposed for use in the sector do not address these key characteristics of the health market. In spite of the recognition that the public sector should *not* rely on the concept of the cost-effectiveness of medical procedures as an allocative criterion (World Bank 1993, p. 65), the *1993 World Development Report* presents calculations that rely on this concept, one that bears no resemblance to the concerns expressed here. In that methodology, the ratio of clinical benefits to procedure costs are calculated and the higher the ratio, the higher the priority of the use of *public* money granted the medical intervention. No consideration is given to infectious disease (or any other externality) or the degree with which a private sector might substitute for the public, and no extra advantage is given to problems which disproportionately hurt the poor. As to the treatment of risk and uncertainty, the cost-

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effectiveness approach[7] gets things backwards. If the main market failure in a particular context is the faulty insurance market, the highest priority items for government intervention from a welfare improving point of view should be relatively expensive items, holding possible health benefits constant. This, of course, is inversely related to the criterion of publicly funding the most cost-effective procedures.[8]

The discussion above illustrates how private markets in health are subject to serious potential failures. It also points to the need to analyze behavior: people's (as patients as well as in trying to avoid becoming sick), providers' and potential insurers'; and how this behavior leads to those failures. Balancing this list of potential problems with the private sector is the mirror image set of concerns regarding the public provision of services. Just as markets fail, so do government bureaucracies. Just as the behavior of private agents needs to be examined in order to judge how serious these failures may be, so too does the behavior of civil servants delivering health related services. The issue of monitoring quality and providing appropriate incentives within the public sector is left in the concluding section of the paper.

II. Establishing the Counterfactual

After establishing a strong rationale for public involvement, the second goal of economic analysis advocated in DSS is to assess what would happen with and without the project. Three

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[7] As well as the other method of prioritization — the burden of disease. Here, priorities are given to the biggest causes of death (regardless of the ability to do anything about them). Besides being irrelevant to decisionmaking — resources should be allocated according to marginal benefits not total possible returns unless strong economies of scale can be demonstrated — this criterion for ranking priorities is also backwards. The types of conditions most likely to be left out of the market due to insurance market failures are rare, not common.

[8] This is discussed in more detail in Hammer and Berman (1995).

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characteristics of the health sector make the concerns expressed in DSS particularly germane. These are:

(1) health care in most developing countries is characterized by a substantial private sector alongside a large public sector,

(2) as a service sector, health is largely a nontraded good and,

(3) a primary output of the sector, health status, is difficult to value in monetary terms leading to a need to carefully, and separately, account for this one component of the net output of the project.

The following line of argument shows that these three characteristics make the points in DSS particularly relevant to health. First (point 3), it is unlikely that we will ever agree on a measure of the value of life and will always need to keep separate account of the health effects of a project rather than aggregating them into a single summary monetary measure with other project components. The health effect will be related to the actual *level of consumption* of services (as opposed to the *value* of consumption of tradable goods in a standard analysis). As a nontraded good, consumption is equal to production and with a competing private sector, nontraded good production can "crowd out" (or "in," possibly) private production (points 1 and 2) leaving net changes in consumption to be the topic of analysis.

Therefore, establishing the "counterfactual" requires explicit modeling of demand for and (nongovernmental) supply of services. To some extent, this underscores the point made concerning pinpointing the market failure motivating the project. Here, though, rather than being

used as a means of providing basic justification of the project, determining the behavior of the system lets us know the actual outcome of adding capacity to a market with an active private sector. The standard project evaluation literature takes nontraded goods into account by modifying the *prices* at which project outputs are valued (the price capturing the net effect of project output on total market output). In health, the reluctance to use prices on outputs such as lives saved means that the net contribution should be calculated explicitly. The behavior of providers in the private sector should also be analyzed to see if there are opportunities for improving services through regulation or subsidy which may be less expensive than direct, public, provision. Some elaboration of these points follows.

The private sector in health. As the following table makes clear, a large private sector is the rule in health care and is generally larger the poorer the country (with the likely underestimation of the use of traditional healers, the true relationship is probably more pronounced). This gives a strong presupposition that the reaction of the private sector to public provision is necessary in assessing the net impact of the latter.

Table 2. Public and private shares of health expenditures

Region	Percentage of total health expenditures	
	Public	Private
Established market economies	61	39
Middle East	57	43
Former socialist economies	71	29
India	22	78
China	59	41
Other Asia and the Pacific Islands	39	61
Latin America and the Caribbean	61	39
Sub-Saharan Africa	53	47

Source: Murray, Govindaraj, and Chellaraj 1994.

Valuing output. As mentioned, one principal reason why health projects have been exempt from formal economic evaluation has been the difficulty in valuing outputs which entail extensions to life. There is a long and ultimately unsatisfying literature on undertaking this valuation to which this paper will not contribute. Some judgment on this value will be needed for an informed decision on public interventions in health. A few points relevant to practical project evaluation are noted here.

First, it should be kept in mind what it is we want valuation for. In a sense, all valuation is simply a way of aggregating disparate inputs and outputs of a project in order to get a single number as a measure of its profitability. Most of the time prices (shadow or otherwise) are the appropriate weights (comparable across commodities) for this adding up. In health, the most visible problem is the weight to put on life versus money. However, there are a large number of other kinds of outputs within the health sector which do not necessarily entail life and death but which may be similarly difficult to compare. Loss of abilities to perform daily functions, pain and discomfort associated with different diseases and other aspects of morbidity for which there is no market mechanism to get valuations (it is hard to trade my backache for three of your bouts of the flu). Similarly, the value (to society) of health problems of people of different ages or functions (mothers, say) is often debated in this literature — another dimension of aggregation. Further, many of the characteristics of the output of health systems are themselves not specifically health-related. Time spent traveling (or taking off from work) to get to clinics, waiting time, courtesy of service provider,s and many other aspects of a very personal service are important to consumers, judging from their demand for different services and providers.

There is no correct solution to the valuation problem. Any method we choose will have to be accepted as arbitrary, treated tentatively, and with some degree of scrutiny. When we take any one seriously, there is usually trouble. For example, it is sometimes proposed that the present

discounted value of a person's income stream be used as the value of life. This is sometimes called the "human capital" approach to valuation. The obvious fact is that retirees consider their own life valuable and there is no reason why society should not include this consideration. It is not obvious, either logically or ethically, why such people should be ignored in social calculations.[9]

Prices are usually treated as appropriate values for aggregating commodities in a way which is consistent with peoples' preferences. We assume that people are equating prices to their own marginal utilities and so represent a commonly shared value. In health we are reluctant to use market prices in the same way due to the various market failures described above. An ideal measure of the value of different types of health outcomes would combine the personal preferences of patients (with their own valuation of discomfort, inconvenience, life prospects and responsibilities) with a more accurate appraisal of medical effectiveness of care. As this mixture of knowledge — technical from the provider and personal from the patient — does not reside in any one person, it is fundamentally unobservable.

A method which most closely approximates this perspective is the Quality Adjusted Life Year (QALY) which is used in some OECD countries (Barnum 1995) This technique relies on extensive interviews with people asking them to trade off certain kinds of health problems against others. Even here, however, the number is an average and does not allow for individuals to value things differently.

Other methods often have no way of incorporating any preferences of patients. Methods such as Healthy Life Years Gained or Disability Adjusted Life Years (as used in the *1993 World Development Report*, World Bank) make arbitrary judgments concerning the relative weights of

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[9] Of course, if an evaluation is done using lost human capital as a lower bound for the true cost of a disease and still shows a project to be worthwhile, this approach can be effective. See Kim and Benton (1995) for such an application.

different kinds of afflictions and the relative social weights of deaths occurring at different ages. Anand and Hanson (1995) challenge the underlying logic and ethical judgments implicit in the latter measure. Any measure that ignores informed personal preferences (i.e. all measures) will have serious limitations.

Even if we were to get a defensible measure of a value of life, carefully measured for certain situations, there is a further problem related to making generalizations to contexts other than that captured in the measurement exercise. A particular consideration is the degree of choice involved in the exposure to risks of death. For example, one way of empirically estimating the value of life is to estimate wage differentials between safe and (otherwise comparable) risky professions. Results of such studies are frequently interesting but care must be taken in their interpretation. The people in the samples for the empirical work take risky jobs voluntarily. They may, therefore, be relative risk takers and not representative of the general public. Even if they are not too different from others, there is still the (ethical) concern that taking on risk voluntarily is of a different kind than exposing people to risk without their consent. Thus, people might look at deaths from smoking or (less controversially) motorcycle racing differently from those from diseases where no personal behavior (that we know of) is so clearly the cause such as those caused by air or water pollution (Viscusi 1992).

While there is no solution to this problem, there is no way to avoid it either. It has sometimes been suggested that the problem can be circumvented by methods for which no value of life is needed. One such proposal is to use cost-effectiveness, which calculates the ratio of a given health impact (the one in use at the Bank currently is DALY's saved) by a medical intervention to its cost. Interventions with lower costs per health impact are then said to be preferred and no explicit value of life is required. This turns out to be illusory in many of its proposed applications, in particular, the choice between alternative treatment options in a clinical

setting. This is an example of using a rate of return calculation to evaluate mutually exclusive

options — a practice ruled out by the standard project evaluation literature (Hammer 1993). An

example of how this method can yield unacceptable results can be found in a paper comparing

different treatment options for malaria (Sudre et al 1992). Alternative program costs and the

expected savings in lives for two different drugs are presented in table 3.

Table 3. Costs and effects of alternative treatments for malaria

	Chloroquine	Pyrimethamine-sulfadoxine
Lives saved	1382	1723
Program cost	$1812	$2622
Cost-effectiveness	$1.31 per life saved	$1.52 per life saved

Source: Sudre et al (1992).

The authors note that if cost-effectiveness were used as the criterion for deciding between the

two, chloroquine would win out. However, they note that given the larger number of lives saved

by pyrimethamine-sulfadoxine, there is an implicit value of a life that would make the two

equivalent (solving: [value of life] × 1382 - 1812 = [value of life] × 1723 - 2622 or [value of life]

= 2.38). Therefore they conclude that "Chloroquine would be the drug of choice only if the value

of a death prevented were less than US$2.38 (but greater than US$1.31)" Not only is there an

implicit value to life in the (supposedly value-free) use of cost-effectiveness ratios but it turns

out to be absurdly precise and absurdly low.

Since the problem cannot be avoided, the best advice is to be modest and to examine the

logical consequences of alternative valuations. Health effects should be presented separately (at

whatever level of aggregation the policy analyst feels comfortable with) from other outputs in

order to allow alternative estimates for the same value.

One way around the valuation of life issue is provided by the National Schistosomiasis

Control project for Egypt (World Bank 1992, Egypt). In this case, the rate of return to the project

was calculated under the following assumptions concerning the value of life. The "switching

value" which would make the project fail to pass a 10% rate of return test can be calculated and

show to be unreasonably low. This approach will not always give clear answers. Sometimes the

value of life so obtained will be within a reasonable range for such a number. At the least,

though, this could give the policy maker something to talk about.

Table 4. Rate of return to a schistosomiasis control program — Sensitivity analysis

Implicit value of a year of life	Deaths averted each year	
	4600	2300
US$800	40%	17%
US$600	28%	12%
US$400	18%	

Source: World Bank 1992, Egypt.

Determining private sector behavior. As argued above, the fact that medical care is a

nontraded service, public production or provision (or financing) can have displacement effects in

the private sector. The consequence of this is that any estimate of improved health status to be

compared to public expenditure should be net of the displacement of private services. The size of

the effect is an empirical matter and should be a substantial part of the sector work leading up to

the project. It can be derived from the overall market structure, which should have been a central

feature of that work.

There has been a substantial amount of research in recent years on the determinants of

the demand for health care in developing countries including the substitutability of public and

private providers. While much of the emphasis has been on determining the effect of public

sector pricing on the use of health services[10], a growing number of studies have been done which examine other aspects of demand which projects in health are likely to affect. A recent review by Alderman and Lavy (1996) in this journal[11] examined, among other things, the impact of location and quality of public health facilities on utilization. Table 5 reproduces a few of the results presented there.

Table 5. Effects of public facility characteristics on service use

Country/policy simulation	% Change in patient use		
	Self care	Public facilities	Private facilities
Ghana			
Improve quality of care (infrastructure, materials, and staff)	-3.5%	127.6	-19.5
Reduce distance to public facilities (50%)	-2.6	95.9	-14.9
Share of market	51%	14%	35%
Kenya			
Increase drug availability	-4.1%	3.6%	-4.1%
Reduce distance to public facilities (20%)	-1.8%	1.6%	-1.8%
Share of market	39%	36%	25%

Source: Alderman and Lavy (1996), Ghana — Lavy and Germain (1995), Kenya — Mwabu, Ainsworth, and Nyamete (1995).

The policy changes listed here (a small part of the results in the original paper) are those which could be standard project components — extending the public clinic network to new areas or improving the (easily observable aspects of the) quality of care. Both of the types of projects

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[10] Early contributions to this literature are Akin et al (1985, 1986) and Gertler and van der Gaag (1990), the latter using data from the World Bank's Living Standards Measurement Surveys.
[11] Several of the examples in that paper come from Shaw and Ainsworth (1995).

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in both countries could be counted on to reduce the proportions of people who self-treat (don't visit any modern provider) which is an important achievement. However, when percentage changes are weighted by the share of visits to each type of provider to determine how many new users of public facilities would come from private facilities, they show that in Ghana, 38% of the new visits to public facilities due to improved quality are attributable to reductions in visits to private facilities as are 36% of those due to better access to public facilities. In Kenya, fully 80% of the increase in patient use of public facilities due to better drug availability is accounted for by the drop in private facility use. If a project were to accurately predict the increase in public facility use due to the improvement but failed to account for the decrease in private sector use, the benefits of the project (as some multiple of cured people, say) would be overstated by a factor of five.

It is possible that the public sector provides better medical service than does the private sector and this quality differential should be examined.[12] It is also possible that improved access to free public facilities (in Kenya) is good for redistributive purposes. This depends on whether the average clinic user is poorer than the average tax-payer. If public clinics are disproportionately in urban areas and taxes come from agriculture, even this benefit is unlikely to be realized. In either case, the analysis underpinning the project should identify the market structure, the degree of substitutability and differences in the quality of care between public and private sectors, and relevant characteristics of the beneficiaries (consumers) in order to assess improvements in health care or equity.

While the demand side of the market has been analyzed in some depth, the supply of services is less well known and market analyses combining both supply and demand are rare.

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[12] The interaction of cross-price elasticities and differential quality characteristics in the evaluation of public provision is discussed in Hammer (1993).

One example of an analysis which incorporated information from both the demand and supply sides of the market is found in Gertler and Molyneaux (1995). They estimated the impact of public facility fees on private sector fees in an experiment performed in Indonesia and found a close connection. Net demand changes were dependent on both prices.

Alderman and Gertler (1989) estimated the effect on *demand* for both publicly and privately provided services of changing the public sector price of care in Pakistan. While there were no data available to estimate the private sector supply response, possible net market effects were explored by a sensitivity analysis. In their work, the total effect of raising fees in health centers depended on the induced price rise in the private sector as both prices were determinants of service use. In the project evaluation context, the same kind of information could be used to examine the effect of making extra services available through the public sector (that is, with changes in quantities provided rather than fees charged).

Since direct information on the supply response of private providers is rare (the Indonesia study is quite unusual in that the private supply response was actually measured), experimentation with different values in a sensitivity analysis, as in the Pakistan study is a possible way out. The appendix of this paper gives a short-cut method for estimating the net effect of providing a competing service publicly. There, a simplifying assumption is that new public capacity enters the same market and has the same effect as new private capacity. If more detailed information is available such that the new public capacity has some other effect on the private sector, this should be included in sector work (and may well lead to interesting stories to tell about the operation of the sector). For example, new public capacity may reduce waiting times, and it is time wasted waiting for free public sector services which generates the demand for private services. Whether the parameters (waiting time as determined by capacity, private sector demand as determined by waiting time) is known with certainty or not (most likely not),

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estimates can be used to approximate the net effect of capacity. Alternatively, new facilities may decrease travel time (which was the source of private demand). Estimates of time savings and increased service use could be directly used in the project evaluation, combining information on demand as a function of distance with data on the geographical distribution of potential beneficiaries.

As the examples above make clear, corrections for the impact of substitution with a private sector can be quite large. The degree of correction will be larger: (1) the larger is the cross-price elasticity between public and private sectors, (2) the larger is the elasticity of supply of the private sector and, (3) the smaller is the overall elasticity of demand for services. Since many projects are quite long lived (expansion of clinic networks, establishing prevention programs) the relevant elasticity of supply is likely to be the long run elasticity. This is harder to estimate accurately but is also likely to be much larger than the short-run elasticity. In the short run, established private sector practitioners may not move from their current location or change the number of hours they work. With a longer time horizon, practitioners can decide to enter or leave a local market depending on how much the public sector draws potential clients. Similarly, potential professionals (university students) may choose to enter more profitable fields if the medical profession becomes less attractive.

From the consumers' side, services can differ greatly in the elasticity of demand. Several studies have found that the price elasticity of demand for clinical care is higher among poor people than among others (Gertler and van der Gaag 1990). Projects which are designed to reach the poor may therefore have less of a need to adjust for displacement effects (provided that this empirical regularity holds true in the project area). On the other hand, Pritchett (1994) finds that the number of children a family has is highly correlated with its desired number of children and that the demand for contraceptives is likely to be highly inelastic. The reason is that the cost of

contraceptives is very small compared to the cost of having children. Contraceptive products are likely to be very elastic in supply (though methods which require professional providers will share supply characteristics of other medical services). If supply were inelastic as well, we would note widely fluctuating prices of contraceptives. With elastic supply and inelastic demand, one would expect very little effect of public programs of subsidizing or providing family planning services. His empirical work confirms this expectation.[13]

Another approach to the issue of determining the net outcome of projects is to estimate the effect of previous expenditures in the public sector on health outcomes. This approach was followed in an analysis of Malaysia and repeated for several other countries.[14] The analysis, using a panel of regions within the countries estimates the effect of different types of public expenditures (usually contrasting primary preventive services with subsidized curative, clinical care) on measures of health status, controlling for income (among other things). The results for Malaysia and the Philippines are reported in table 6.

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[13] Similar results have been found in Indonesia using very different types of data. See Pitt, Rosensweig, and Gibbons (1993) and Gertler and Molyneaux (1994).
[14] World Bank 1992, Malaysia. See also World Bank 1995, Philippines.

Table 6. Determinants of infant mortality

| Variable	Malaysia	Philippines
Income	-1.06	-.223
	(.97)	(.042)
Safe water	-.147	-.026
	(.05)	(.027)
Immunization (Diptheria,	-.113	-.018
Pertussis, Tetanus -DPT)	(.04)	(.013)
Publicly employed medical	1.03	
personnel per capita	(.79)	
Public health expenditure		-.404
		(.113)
Public health expenditure ×		.041
income		(.012)
Adjusted R^2	.55	.988

Standard errors in parentheses

Source: Hammer, Nabi, and Cercone (1995), Philippines Public Expenditure Review (1995). Data and statistical technique: Malaysia — 14 provinces over 4 years (1986–89) fixed effects panel estimation, Instrumental variables estimation (for immunization — DPT as endogenous). Philippines: 13 regions over 8 years (1983–90) fixed effects estimation.

For Malaysia, robust results were obtained which indicated that variations in traditional public health types of interventions (immunization and safe water provision) were highly significant in explaining declines in infant mortality whereas public provision of clinical care services had no effect on health status. In the Philippines, the results were less robust but in some specifications indicated very much the same thing. However, the best fitting specification, reproduced in the table, indicates something quite different. Here, the presence of a significant interaction term between regional income and public health subsidies indicates that providing services in poor areas does have an important effect on health status while providing services in richer areas has no effect at all. The best explanation for this is that the (large) private sector substitutes closely with the public sector in richer areas resulting in very elastic supply of private

providers. In poor areas, public provision substantially increasing access to health care due to a

substantially less elastic private supply response. This situation can be described as in figure 1.

Figure 1. Public provision and health care markets in the Philippines

Poor area   Not-so-poor area
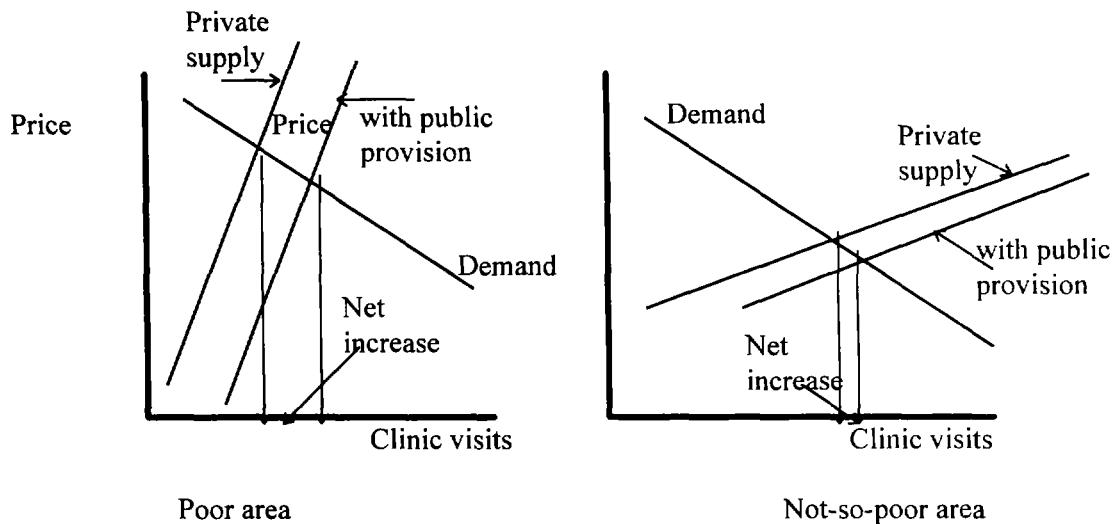
In the context of project evaluation, for certain kinds of projects such as (some forms of)

vector control, sanitation or some types of health education and promotion activities,[15] the ability

to charge for specific services is impossible and there will be no private sector at all. For such

nonexcludable public goods, no correction for the displacement of services (in terms of health

improvement) needs to be done. For the kinds of services which have private sectors competing

with the public sector, the assessment of the private sector counterfactual should be routine. In

terms of substantive changes, this method is likely to lead to an increase in the priority of

population based, "public goods" projects — which have a substantial overlap with traditional

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[15] As mentioned above, the types of health education activities that satisfy this criterion are those which are not tied to the promotion and sale of specific commodities, in which case one might expect advertisements or promotional activities on the part of the producer. These promotional activities can also be a cause of concern (and needs regulation) as evidenced by the behavior of manufacturers of infant formula or ineffective medicines.

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public health interventions and lower the priority of clinic-based, patient initiated services for which a private sector can, and almost always does, exist.

However, universal generalizations are not warranted as the case of the Philippines illustrates. Indeed, consideration of the effect of projects on the private sector will not *necessarily* reduce the value of the public investment. For example, the analysis of the health sector in Malaysia (World Bank 1992, Malaysia) indicated the possibility that the existence of a reliable public health service provided competition to the private sector which effectively held down fees. This "indirect regulation" may be more effective than trying to monitor and control many individual practitioners. The welfare improvement from the public service could not be estimated from its own characteristics alone but needed to be understood in the context of a fuller analysis of the industrial organization of the sector. The only general lesson (and one which is emphasized as well in Alderman and Lavy) is that market structures in poor countries differ substantially and predicted effects of health projects can go quite wrong if the preparatory sector work is lacking.

III. Fiscal Impact, Fees, and Projects

The third main point in DSS is that public funds for investment come at a premium due to the distortionary effects of the taxes needed to collect them. Estimates in the literature indicate losses on the order of 30–50% in industrial countries and higher for less developed countries. In many poor countries, with underdeveloped tax systems which rely heavily on export taxes on agriculture, the distributional effects of higher taxation can make this cost even higher. This leads to three main conclusions. First, too many projects are accepted using conventional project evaluation methods. Second, opportunities for recovering costs in the project should be explored.

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Third, alternative methods of correcting the market failure which initially justified the project and which may be cheaper than direct provision (or financing) should also be examined. Regulations, partial subsidies, or even taxation may be equally effective in improving the market outcome and could well be cheaper.

These considerations all have relevance to the health sector, though to differing degrees. As to the first, since conventional project analysis is not commonly done in health projects, it cannot be the source of a bias toward public provision. On the other hand, while private market failures are sometimes mentioned as a justification for public provision, the fact that public money comes at a premium is rarely mentioned. The public sector must be correcting market failures in which the social value of public provision (or finance) relative to the private sector is at least as high as the tax distortion. While *formal* analysis has not led to any bias in favor of the public sector in health, the lack of consideration of the cost of public funds has probably led to a similar, though informal, bias.

The second consideration, exploring options for cost recovery, lands squarely in the middle of a long standing controversy in the health field.[16] No attempt to resolve this controversy is made here, but a few points follow from the analysis in DSS. First, many of the services offered in health care are private goods, whether or not they are delivered by the private sector. That is, they *can* be charged for and services *could* be refused to nonpayers even if this is not currently done. With a premium on public funds (or, similarly, with an overall budget constraint for a health ministry), the two decisions as to which projects to support and how much to charge need to be made jointly. Whether or how much to charge depends on balancing two opposing concerns (Hammer 1993).

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[16] See, for example, Creese (1991) or Griffin and Shaw (1995).

On one hand, charging fees obviously reduces the drain on the government budget of a given project (or, equivalently, allows a fixed budget to be stretched farther). With a premium on public funds, cost recovery will translate into a higher priority for any given project. The ability to avoid raising taxes while still expanding or improving services is a decided advantage.

On the other hand, raising fees in public facilities will reduce demand for publicly provided services. The question is: what are the likely consequences of failing to get that care? How many people would be dissuaded from seeking publicly provided care and what difference would it make to their health?

The effect on people's health depends on a number of factors. First, do people stop seeking treatment altogether or do they switch to health care provided by the private sector? Related, are the health conditions which they stop seeking care for likely to be serious illnesses or not? Second, what is the relative effectiveness of the public sector and the private sector (or any alternative that people are taking instead of visiting public clinics)? To put it starkly: if, as a result of higher fees, people are staying away from clinics for treatment of muscle aches and skin rashes (a large component of demand for local hospital services in Indonesia) or are buying the same over-the-counter treatments that they would get from the public facility, that is one thing. If they are sitting home and dying of tuberculosis, that is quite another.

Who benefits from fee increases and how also depends on whether money collected is retained by clinics and used to improve quality. Jimenez (1987) shows the conditions under which the improvement in quality can outweigh the financial burden of the fees. Litvack and Bodart (1993) demonstrate just such an effect in Cameroon and argue that poor people, in particular, benefit in terms of overall access to services from the combined effects of fees and quality improvements.

Fees are least likely to harm the health status of the people under the following circumstances:

(1) Demand for care at public facilities is inelastic — i.e., people are not dissuaded from using public clinics due to higher fees.

(2) Demand at public facilities is elastic but people continue using facilities for more serious conditions and stop using them for minor ailments.

(3) Demand at public facilities is elastic but private facilities are close substitutes — i.e. the cross-price elasticity of demand is high and private supply is also elastic — meaning that people stop using public facilities but still receive care at private clinics.

(4) Private care is effective. If the private sector is characterized by modern providers, such as NGOs or public providers in their off hours (as is legal and standard practice, for example, in Indonesia [World Bank 1994, Indonesia]) a shift in use from public to private does no harm to health status. If the private sector consists of traditional healers with no particular skills (which does not apply to all traditional healers) then increasing demand for them is harmful.

Therefore, in order to make a judgment concerning fees, it is again necessary to know a fair amount about the demand for services and the nature of private supply of services. As mentioned above, such characteristics of markets as demand elasticities (sometimes with cross-price effects) are known from research but vary substantially from country to country. Therefore,

they cannot be confidently inferred from other countries and should be investigated in the context of sector work. Some of these characteristics, such as symptom-specific demands for services (which can help us understand if people stop using life saving care) are not well researched at all and need to be examined. Note that information about the cost-effectiveness of medical treatments is *not* part of the essential information needed to determine which services should be provided at subsidized rates in the public sector. It would show up only in regard to the difference in effectiveness between public and private care.

Finally, the high cost of public funds implies that more effort be given in looking for policies other than subsidized provision or financing to correct market failures. Monitoring and regulating a private sector may be such an option for ensuring high standards of care at a lower cost to the government. The same might be true for private insurance. Similarly, if imperfect information is a key element in the health market, the provision of information concerning the quality and effectiveness of private providers can be an important public role (van der Gaag 1995, p. 25).

Unfortunately, the information needed to choose between regulating and providing services is usually lacking. Similarly, the workings of insurance markets in health are not sufficiently well known to be able to confidently prescribe the appropriate regulatory framework. Recent experiments in the provision of insurance (Griffin and Shaw 1995) should shed light on this issue but research in the area is still in its infancy.

Is it easier to regulate a private sector or to manage a public system? To answer that we need to have a more complete understanding both of the workings of the private markets of health care and health insurance and of the behavior and incentives facing employees in the government service. This is addressed in the next section.

IV. Fungibility and Other Issues of Public Servant Behavior

Fungibility

DSS make the point that the true effect of project funds may have little to do with the specifics of the project being evaluated. Governments may have intended to do the project anyway and the extra money merely allows them to finance the project which *they* consider marginal. Donors may not even be aware of the project they are really funding, much less be able to evaluate it. A great deal of the force of this argument comes from the much larger scope for reallocations between rather than within sectors. But there is a distinct issue related to possible reallocations within ministries of health. Since the Alma Ata conference in 1977, the international public health community has stressed the need to shift resources toward basic primary care. As a result, much of the public health resources available from donors have been directed toward primary health care. Yet when governments' actual allocations are examined, we find that large portions of their budgets go to services which do not conform to the primary care model.

Whether the primary care paradigm is appropriate, the fact that actual allocations differ from it to the extent they do indicates that decisions of the ministries are determined by other factors such as political pressure from providers or affluent consumers. It is entirely possible that governments feel that donors' project financing can be counted on to fund the basic services (immunizations, rural care) leaving the ministry to satisfy other pressures for the provision or subsidy of urban, tertiary services.

A recent paper (Feyzioglu et al 1996) analyzed the effect of foreign aid on public expenditure patterns. Within the health sector, they found that while foreign aid to countries earmarked for the health sector reduced infant mortality, government's own resources spent on

health did not. This is roughly consistent with the fungibility argument since it leaves open the possibility that governments' allocations compensate for the preferences of donors.

If donors tend to fund items, such as primary health care, which are likely to have an impact on infant mortality this can leave governments with the ability to fund other kinds of health care such as hospitals or other services which are of lower priority to the donor community. In DSS, the suggestion was made that projects be evaluated in the context of the overall sectoral strategy or via reviews of public expenditures across the board. To the extent that money is fungible within ministries, this focus seems warranted.

Incentives

Finally, a critical area for analysis of projects (of all kinds — not simply health) has been lurking in the background throughout this paper: that of coming to grips with the behavior of governments and their workers. This means understanding their goals, incentives, and constraints. It is at the heart of the issue of "government failures" (the counterpoint to market failures), fungibility, and the decision to provide rather than regulate services. Understanding the fungibility of resources requires knowledge of the behavior of, and the incentives facing, senior policymakers. Understanding the true impact of a project requires knowledge of the behavior of, and the incentives facing, civil servants who will be responsible for its implementation. Deciding between regulation and provision requires knowledge of the behavior of, incentives facing and the relative ability to influence those incentives for both civil servants and private providers.

One general criticism can be leveled at the literature on project evaluation on this score. While a great deal of intellectual effort has gone into defining the right prices by which to value outputs, to a large extent, the inputs and outputs themselves (often extending well out into the

future) are treated as given.[17] It seems as if the relationship between inputs and outputs was assumed to be a matter of simple, given, engineering parameters which could be completely described before economists needed to get involved.

Merely assuming that project inputs will achieve their intended results without considering the incentive structure facing those responsible for them is quite naive. The incentives are of two kinds: (1) those specific to people in the actual construction of the project and running of an enterprise if kept in public hands, and (2) those facing private agents (such as farmers in an irrigation project) during the period when project benefits are reaped. The former raises issues of ownership at the higher levels of supervision and civil service remuneration or contracting procedures at lower levels. The latter depends on the policy framework in which the project operates and has been the subject of numerous analyses. In a recent analysis, Pritchett (1996) finds that the discrepancies between the value of capital as determined by accumulated costs of investments and as determined by contribution to output (marginal productivity) varies enormously between countries. The discrepancy is attributed to the economic environment in which the investments were made and argues strongly against using simple input/output relationships independent of the incentives (of both types) people working with invested capital face.

While this criticism applies to all project evaluations, consideration of the overall incentive structure is especially important in the health sector because of the fact that health care is a service. As such, its value depends on maintaining incentives for continual good

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[17] In the UNIDO guidelines, one of the original, standard texts in the field, a project evaluation is divided into 10 steps. The first is: "Ascertain the 'net output' of the project and split it into adding to supply and saving resources" (UNIDO 1972, p. 50) after which the next nine deal with shadow pricing and the like. Further, much of the discussion on the first step concerns the second part of the sentence (splitting up the outputs) and almost nothing on the first.

performance to the providers of that service and an analysis requires looking at those incentives for those working in the public sector.

Just because a health clinic is built does not mean that the providers will show up for their jobs. And if they do show up, there is no guarantee that they will devote themselves to the care of their patients. The actual output of an investment will depend on the policies concerning pay and other incentives for good performance in public employment. In the same way that incentives facing people in the private sector should be examined for evidence of market failures, so too should those in the public sector be examined for evidence of government failures. This will give a better appraisal of what can be realistically expected from the project.

Recent analyses of public health systems point to some serious problems in this regard. One indication of these problems is the common occurrence of bypassing of local public health facilities for private (or higher level public) facilities even if the public service is free (Kloos 1990, Korte et al 1992, among many). There are many reasons for this but some frequently cited factors are the lack of concern shown by the provider, social distance between medical practitioners and their clients (exacerbated by assigning doctors to areas of different ethnic background) and other aspects of the behavior and degree of commitment of the civil service doctor.

Other studies (Lewis et al 1991, 1996) point to serious problems in the technical efficiency of public hospitals and clinics. In one study in the Dominican Republic, the proportion of expenditures that actually reached patients in the form of services was estimated to be as low as 12%. Once again, the incentive structure, this time for hospital administrators, is at the heart of the problem. If the financial viability of the enterprise has no impact on pay and promotion, the quality of management is likely to suffer.

In sector work on Indonesia (World Bank 1994, Indonesia), a particular dilemma was identified. On the one hand, regional variation in epidemiological conditions and the variety of tasks expected of public health employees argued for increased local discretion in the allocation of resources. On the other hand, the incentive system in place which allowed doctors to maintain private practices in public facilities (in the afternoon when the public facilities were closed), raised the possibility that this discretion would be used perversely, leading to heavier reliance on clinic-based activities to the detriment of outreach and population-based public health concerns. Reforms such that the remuneration of public providers better served public priorities was recommended.

A widely-believed consequence of fee-for-service private care is the tendency of doctors to over-treat, since the doctor gets a higher income the more extensive the service (assuming the lack of knowledge on the part of the patient can be exploited). A fair question is whether the same doctor on salary will under-treat or badly treat if there are no financial consequences for unsatisfied customers. Both problems could, in principle, be addressed with careful monitoring and appropriate sanctions. However, we know very little about governments' relative abilities to administer the two systems — managing a public system or regulating a private one. This is a topic of great importance but one beyond the scope of this paper (and the abilities of the author).

V. Conclusion

Devarajan, Squire and Sethaput-Narueput identify four considerations critical for the evaluation of any project. This paper has argued that they are particularly appropriate in the health sector and has tried to show how they might be applied. DSS advocate doing the following:

(1) Establish a firm justification for public involvement in the sector and project outputs. The health sector is characterized by a number of market failures which can justify public sector involvement. However, the existence of imperfectly competitive markets should not be used as a talisman to ward off economists and to justify *any* intervention. Specific market failures should be identified (which will vary in nature and severity in different contexts) and the analysis identifying them should give guidance on how to correct for them. Characteristic of the sector is the inadequacy of insurance markets. This should lead to analysis of and attempts to measure the value of reduced insecurity a project might offer to project beneficiaries. Also important are the existence of services which are either in the nature of a true public good (pest control) or have distinct external effects (infectious disease control). Finally, health projects are often advocated for their role in poverty alleviation. This, too, should not be an article of faith since different kinds of services have very different distributional characteristics. Basic sanitation, hygiene, and even education of girls from poor families may have greater effect on the health of the poor than general subsidies to clinical services (a product that frequently has a high income elasticity). It was noted that none of these three areas: risk, external effects, or poverty alleviation are handled by current applications of cost-effectiveness analysis. Evaluations should address the degree to which specific market failures will be ameliorated by the particular project — not by reference to generalities.

(2) Establish the counterfactual. Any project must compare the situations which would obtain with and without the project. In health, the trick is to give a full account of what will happen with the project *net of the reaction of other actors in the health system*:

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consumers, private providers (including traditional healers), NGOs and insurers (including informal credit or private transfers). Since health is largely a nontraded good, the participation of the government will affect overall consumption of health services (whose value is difficult to determine in money terms). Knowing such features of the medical service market as demand elasticities (with respect to prices as well as other project-manipulable variables, such as location or quality of services) and supply elasticities of private providers (particularly with regard to price or the existence of a competitive public sector) is critical in being able to establish this reaction.

(3) Determine the fiscal impact of the project. A premium on public money due to the need to raise money in taxes should lead to a search for alternatives to subsidized provision. In health, the setting of fees for clinical services is most important area in which this issue arises. This paper argues that higher subsidies should go to services which have higher social returns relative to private returns and, of those which warrant subsidy, to those with more elastic demand. We should know when we do damage by raising prices (in highly price elastic services) and when we can conserve money for other high priority needs by charging fees (in services with low price elasticities).

(4) Acknowledge the fungibility of project resources. This paper has argued that the issue of fungibility of project funds is part of a much broader issue of the need to understand the behavior (motivation and incentives) of public servants. The motives of high level public servants affect the fungibility of project funds as in DSS. In health, this is likely to be an issue if donor funds earmarked for primary health care free up domestic funds for services on which those donors would place low priority. More fundamental,

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however, is understanding the incentives to civil servants or to contractors to the government for the provision of high quality, responsible care. Virtually all projects assume that project inputs are used appropriately and that the output (at least in terms of numbers of patients seen at some assumed level of quality) is, therefore, known. In the analysis of services, in particular, this assumption is not valid and the incentive structure of those charged with delivering services should be a much larger focus for analysis and research.

The overall conclusion of DSS and this paper is that a great deal of the analysis relevant to projects should be done prior to project evaluation stage. Indeed, with the issue of fungibility and incentives given due respect, the best form of intervention by donors may not be via traditional projects at all but rather through general loans with conditions related to overall sector strategy and reform. If a standard project is done, however, a fair amount of information from supporting sector work is needed before evaluation. In particular, if clinical services (or anything that requires the participation of the public) are part of the project, the supply and demand for substitute services is needed. Just as shadow exchange or wage rates for project evaluation were to be derived from supporting economic work that was not part of the specific project, so too should the market structure of health be part of background work.

Since adequate market analyses are quite rare in developing countries, what should project evaluation look like before such information becomes available? It's hard to say. We should be taking the collection of this information seriously. In the meantime, projects can be designed to focus on the key market failures that such research is likely to uncover. We know that traditional public health activities are often true public goods or address genuine externalities. Evaluations of these activities will not be much affected by more detailed market

analysis and we can go easy on them. For projects in which poverty alleviation is an important

motivating factor, we should ensure that project beneficiaries are, in fact, the poor. Unless by

geographic placement or other means of encouraging use by the poor and discouraging use by

others, health care should be used with care as a redistributive device. For other projects with

large clinical components, a little more caution is needed. Without knowing much about the

market in which the government will enter or the incentive structure for public providers, it is

hard to know what health effects (or even service use) will come about as a result of the project.

This should be the focus of future analyses of the sector and a source of doubt on the part of

project evaluators.

Appendix: Assessing the impact of additional public provision

Information about how the public and private sectors interrelate can come in a variety of forms and it is not possible to anticipate every possible way of incorporating that information. Good sector work need not be standardized but should be able to provide some guesses at the relevant information. Here are two examples of how to estimate the weight on project outputs to use in getting the net impact of provision.

Case one: close substitution between public and private sectors. In this case, the following model is relevant:

$$S_v(P_v \; ; Z) + S_b = D(P_v \; ;X)$$

where: S_v = private supply

S_b = public supply

D = market demand (indifferent between sources)

P_v = private sector price

Z = other determinants of private supply

X = other determinants of demand for health care

It is easy to show that the net impact on total services rendered as a result of a unit increase in available public supply is:

$$dD/dS_b = \varepsilon_D / (\varepsilon_D - \theta_v \bullet \varepsilon_S)$$

where $\varepsilon_{S,D}$ = elasticity of supply, demand

         θ_v = share of demand (visits) provided by private sector

Case two: not-so-close substitution between public and private sectors. In this case the effect on private supply is:

$$dD_v /dS_b = (-\partial D_v /\partial S_b)/ (\varepsilon_D - \varepsilon_S) \bullet D_v$$

which must be added to the direct change in public service, dS_b .

The advantage of assuming case one is that you don't need to know about direct substitution parameters (and therefore there is one less number to invent). The advantage to case two is that if you do know the degree of substitutability from, say, directly estimated demand equations, then you can incorporate this information directly.

It is true that little is known about some of these parameters, particularly those related to supply responses of the private sector. It is a shame that such standard economic analysis has been neglected for the calculation of technical cost-effectiveness coefficients — of no direct use in policy analysis for the sector.

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