



THE GLOBAL EXPENDITURE GAP

*Securing Financial Protection and
Access to Health Care for the Poor*

Alexander S. Preker, Jack Langenbrunner and Emi Suzuki

September 2001 and December 2002

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The Global Expenditure Gap *Securing Financial Protection and Access to Health Care for the Poor*

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Report Submitted to Working Group 3 of the Commission on Macroeconomics and Health, Jeffrey D. Sachs (Chairman), September 2001

Abstract: What is the optimal amount of health care spending needed to achieve a given outcome and how much is a country able and willing to afford? These are questions that have been asked by health sector experts and policymakers for years. During recent years, the Millennium Development Goals (MDGs) have become a quantitative set of targets for poverty reduction and improvements in health, education, gender equality, the environment and other aspects of human development. To help focus national and international priority-setting, the goals and targets that were selected were intended to be limited in number, be stable over time, and communicate clearly to a broad audience. This paper attempts to estimate the expenditure needed to achieve the health-related targets set by the Millennium Development Goals (MDGs) – reducing the number of children who die before their fifth birthday, reducing the women who die from complications of childbirth and reversing the spread of HIV/AIDS, malaria, tuberculosis, and other major diseases – using a production frontier technique. The paper compares this expenditure estimate with current expenditure trends in low- and middle-income countries.

Keywords: Global health expenditure, expenditure gap, health care financing, frontier analysis, millennium development goals

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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PREFACE

In January 2000, Dr Gro Harlem Brundtland, Director General of the World Health Organization (WHO), established a Commission on Macro-Economics and Health (CMH) to provide evidence on the importance of health to economic development and poverty alleviation.

This HNP Discussion Paper is based on a Report on community financing that was submitted in September 2001 to Working Group 3 of the CMH. The mandate of Working Group 3 was to examine alternative approaches to domestic resources mobilization, risk protection against the cost of illness, and resource. The working group was chaired by Professor Alan Tait (Former Deputy Director of Fiscal Affairs, International Monetary Fund, and currently Honorary Fellow at University of Kent at Canterbury and Honorary Fellow at Trinity College, Dublin) and Professor Kwesi Botchewey (Director of Africa Research and Programs at the Harvard Center for International Development).

Professor Jeffery Sachs (Chairman of the Commission and Director of the Harvard Center for International Development) presented the findings of the CMH in a Report that was submitted to WHO on December 20, 2001 – [*Macro-Economics and Health: Investing in Health for Economic Development*](#).

The Report of the CMH recommended a six pronged approach to domestic resource mobilization at low-income levels: “(a) *increased mobilization of general tax revenues for health, on the order of 1 percent of GNP by 2007 and 2 percent of GNP by 2015; (b) increased donor support to finance the provision of public goods and to ensure access for the poor to essential health services; (c) conversion of current out-of-pocket expenditure into prepayment schemes, including community financing programs supported by public funding, where feasible; (d) a deepening of the HIPC initiative, in country coverage and in the extent of debt relief (with support from the bilateral donor community); (e) effort to address existing inefficiencies in the way in which government resources are presently allocated and used in the health sector; and (f) reallocating public outlays more generally from unproductive expenditure and subsidies to social-sector programs focused on the poor.*”

Most community financing schemes have evolved in the context of severe economic constraints, political instability, and lack of good governance. Usually government taxation capacity is weak, formal mechanisms of social protection for vulnerable populations absent, and government oversight of the informal health sector lacking. In this context of extreme public sector failure, community involvement in the financing of health care provides a critical albeit insufficient first step in the long march towards improved access to health care by the poor and social protection against the cost of illness.

The CMH stressed that community financing schemes are no panacea for the problems that low-income countries face in resource mobilization. They should be regarded as a complement to – not as a substitute for – strong government involvement in health care financing and risk management related to the cost of illness.

Based on an extensive survey of the literature, the main strengths of community financing schemes are the degree of outreach penetration achieved through community participation, their contribution to financial protection against illness and increase in access to health care by low-income rural and informal sector workers. Their main weaknesses are the low level of revenues that can be mobilized from poor communities, the frequent exclusion of the poorest of the poor from participation in such schemes without some form of subsidy, the small size of the risk pool, the limited management capacity that exists in rural and low-income contexts, and their isolation from the more comprehensive benefits that are often available through more formal health financing mechanisms and provider networks.

The work by the CMH proposed concrete public policy measures that governments can introduce to strengthen and improve the effectiveness of community involvement in health care financing. This includes: (a) increased and well targeted subsidies to pay for the premiums of low income populations; (b) use of insurance to protect against expenditure fluctuations and use of re-insurance to enlarge the effective size of small risk pools; (c) use of effective prevention and case management techniques to limit expenditure fluctuations; (d) technical support to strengthen the management capacity of local schemes; and (e) establishment and strengthening of links with the formal financing and provider networks.

The Report presented in this HNP Discussion Paper has made a valuable contribution to our understanding of some of the strengths, weaknesses and policy options for securing better access for the poor to health care and financial protection against the impoverishing effects of illness, especially for rural and informal sector workers in low-income countries.

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I. INTRODUCTION

During recent years, the Millennium Development Goals (MDGs) have become a quantitative set of targets for poverty reduction and improvements in health, education, gender equality, the environment and other aspects of human development (see Box 1).¹ This paper attempts to estimate the expenditure needed to achieve the health-related targets set by the Millennium Development Goals (MDGs) – reducing the number of children who die before their fifth birthday, reducing the women who die from complications of childbirth and reversing the spread of HIV/AIDS, malaria, tuberculosis, and other major diseases – using production frontiers as an analytical technique. The paper compares this expenditure estimate with current expenditure trends in low- and middle-income countries, to arrive at an estimate of the global health care expenditure gap.

Table 1: Millennium Development Goals (1990-2015)

1. Eradicate extreme poverty and hunger
 - Halve the proportion of people with less than one dollar a day
 - Halve the proportion of people who suffer from hunger
2. Achieve universal primary education
 - Ensure that boys and girls alike complete primary schooling
3. Promote gender equality and empower women
 - Eliminate gender disparity at all levels of education
4. Reduce child mortality
 - Reduce by two thirds the under-five mortality rate
5. Improve maternal health
 - Reduce by three quarters the maternal mortality ratio
6. Combat HIV/AIDS, malaria and other diseases
 - Halt and reverse the spread of HIV/AIDS
 - Halt and reverse the spread of malaria & tuberculosis
7. Ensure environmental sustainability
 - Integrate sustainable development into country policies and reverse loss of environmental resources
 - Halve the proportion of people without access to potable water
 - Significantly improve the lives of at least 100 million slum dwellers
8. Develop a global partnership for development
 - Increase official development assistance, especially for countries applying their resources to poverty reduction
 - Expand market access
 - Encourage debt sustainability

¹ The proposal to develop such a set of goals was first made by the Ministers of Development from the OECD Development Assistance Committee (DAC) in 1995 O.E.C.D. (1996). *Shaping the 21st Century: The Contribution of Development Co-operation*. Paris, OECD. The General Assembly of the United Nations incorporated these goals in the Millennium Declaration in September 2000, while setting new targets for reducing the proportion of people suffering from hunger, increasing access to improved water sources, improving the lives of slum dwellers, and reversing the spread of HIV/AIDS, malaria, tuberculosis, and other major diseases (United_Nations (2000). *A Better World for All: Progress Toward the International Development Goals*. New York, United Nations.and United_Nations (2001). *Road Map Towards the Implementation of the United Nations Millennium Declaration*. New York, United Nations.)

II. PROGRESS TOWARDS ACHIEVING THE MDGS

Progress since 1990 in achieving the MDG has been uneven across countries, and regions, and uneven among the goals themselves (Devarajan, Miller et al. 2002) and (Preker, Langenbrunner et al. 2002). For the purpose of monitoring progress, the baseline year for monitoring the targets was set by the UN for 1990 with a target date for achieving the goals set at 2015.

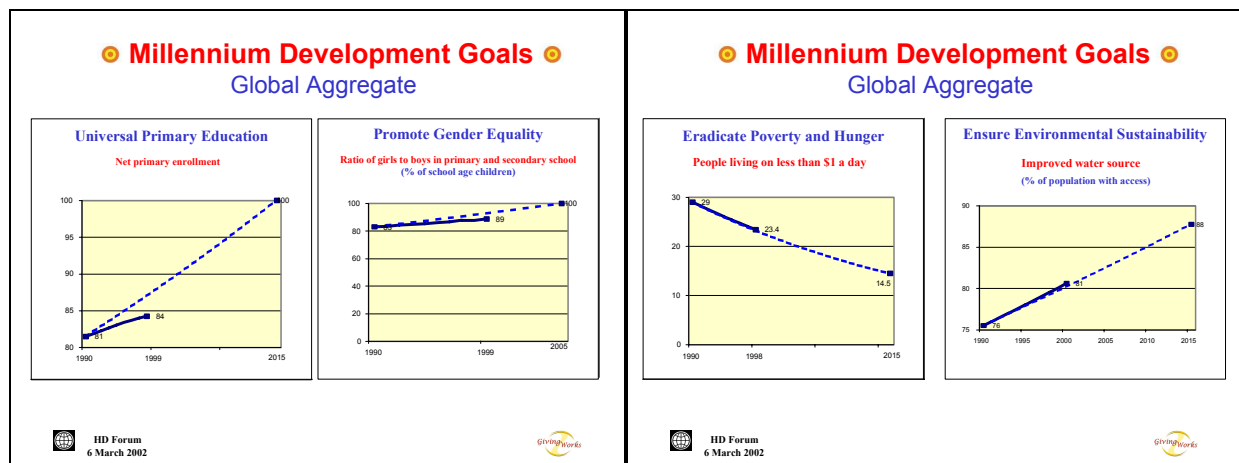
In 1990, 29 percent of the global population or 1.3 billion people lived in extreme poverty (first component of Goal 1). This had dropped to 22.7 percent of the population or 1.15 billion in 1999. During the same time period, the percent of undernourished dropped from 22 of the global population to 18 percent or 780 million (second component of Goal 1). The global targets for both poverty reduction and hunger are broadly on target (Figure 1).

The income poverty indicator, is important since it correlates highly with the overall social indicators such as health status and financial protection against the cost of illness. Although growth translated into poverty reduction, the total head count of poor people depends on significantly on historical levels of income distribution, policy choices and institutional constraints (World Bank 2000). The best progress globally has been in the East Asia and Pacific region. Sub-Sahara Africa and South Asia, where the majority of the world's poor live, have experienced the worst progress. Sub-Sahara Africa failed to grow during the 1990 and leaving a large share of the population in poverty. And, in Eastern Europe/Central Asia and the Middle East/North Africa hunger increased during the 1990s

During this time period, those without access to water decreased from 27 percent to 21 percent of the population (first component of Goal 7). This still left 900 million without access to clean water. Those without access to sanitation systems dropped from 56 to 48 percent of the population (second component of Goal 7). Improved policies and significant additional financial resources are required to address these problems.

Data for the global indicator on education and gender equality (Goals 2 and 3) is not complete. Based on the data that is available both of these targets appear to modestly off target (Figure 2). Net primary enrollment rates increasing only from 81 percent to 84 percent and the ratio of girls to boys education increasing only from 82 percent to 86 percent during the period from 1990 to 1999. Improved policies and significant additional financial resources are needed to address these problems.

Figure 1 and 2



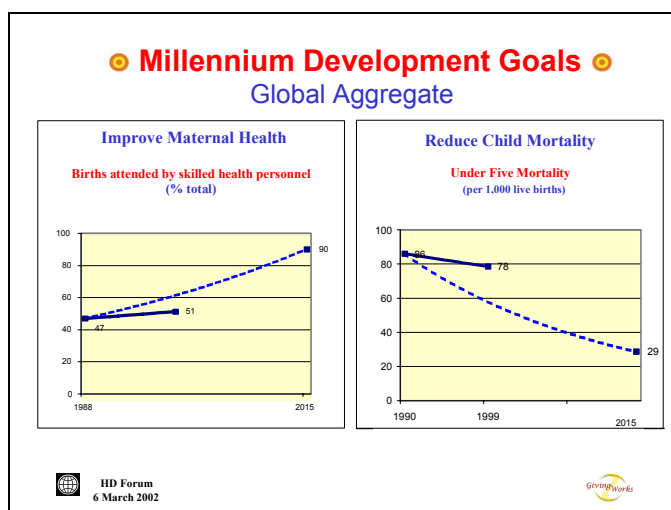
Among all the MDGs, it is the health goals – maternal and child health – that are the most seriously off track (Figure 3). The MDG for maternal and child health calls for reducing maternal mortality by three-quarters and under-5 child mortality rates by two-thirds of their 1990 levels by 2015. Tracking progress in reducing maternal mortality is difficult. Deaths related to pregnancy and child birth occurs infrequently and often outside the formal health system compared with other health problems. This leads to a small sample size which is made worse by underreporting. The last estimate of maternal mortality for 1995 estimated that 500,000 die annually during pregnancy and childbirth, most of them from conditions that could be prevented or treated in equipped medical facilities. Nor surprisingly, maternal mortality is low in the Latin American and Eastern European regions where skilled attendants and equipped medical facilities are readily available, while high maternal mortality occurs in the Africa and South Asia regions where they are not.

Tracking progress of in reducing infant and child mortality is more reliable. Yet global progress towards achieving this goal is seriously off track. This is particularly vexing, since much is also known about the causes of infant and child mortality. Furthermore, progress already made in some countries, even at very low income levels, indicates that both effective interventions are already readily available and affordable to most countries.

Part of the problem is that progress in achieving under 5 mortality targets relies significantly on both non specific intersectoral actions and specific health care interventions (preventive and curative services). The former includes activities such as poverty programs, nutrition, education, gender equality, access to clean water, improved sanitation systems and insecticide treated bednets. Many of these activities require focused government policies across different sectors, coordination and ongoing monitoring and evaluation of progress. This is often lacking at low-income levels and in settings with severely constrained management and institutional capacity.

But even with good general hygiene and other preventive and health promotion measures, children get sick and need medical interventions. Many interventions are as simple as oral hydration during diarrhea, vaccination and antibiotics at the time of complicated upper respiratory infections. Health providers with only basic skills are able deal with most of the conditions of childhood using simple protocols such as those available through integrated management of childhood illness. Other interventions, skilled birth attendants, inpatient care at the time of complicated pregnancies and knowledge about the appropriate treatment and referral at the time of trauma and other more serious illnesses .

Figure 3



Many of the old and a few new scourges of poverty are still ravaging low- and middle-income countries, threatening both human welfare and also the potential for medium term growth (Figure 4). In 2000, there were 34.7 million adults and 1.4 million children with HIV/AIDS, 300-500 million cases of malaria each year with 1-2 million deaths, mainly in children under 5 years of age and 8.4 million new TB cases each year of which 10-15 percent are children. The incidence of new cases of HIV/AIDS and TB infections is still increasing, global targets under the MDG being severely off track. The Sub Sahara Africa and the South Asia regions are most severely affected.

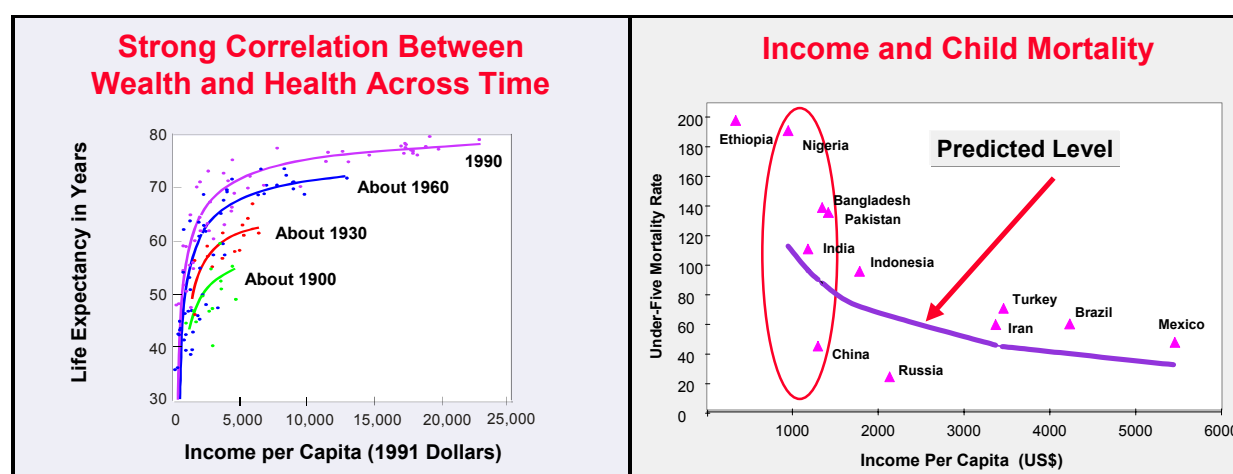
These health sector specific programs need to be underpinned by a well functioning health system if they are to be effective. This includes strong government stewardship (policy making, coordination, regulations, contracting, information dissemination and monitoring and evaluation systems) health care financing (prepaid revenue collection, risk pooling and resource allocation/purchasing mechanisms) input generation and management (human resources, research, pharmaceuticals, medical technology, consumables and capital), effective and responsive service delivery systems (public health and curative services) and the market forces created by demand for service by individuals and households. Many known effective and affordable interventions do not get to the children or household that need them due to failures in the health system. Once again, improved policies and significant additional financial resources are needed to address these problems in the underlying health systems.

III. KEY DRIVERS OF ACCELERATED PROGRESS TOWARDS ACHIEVING THE MDGS

INCREASED INCOME FROM ECONOMIC GROWTH IS NECESSARY ...

Richer countries do better across a wide range of health indicators. As a result of complex synergies among income levels and expenditure on education, health seeking behavior, public policy, and health services, people all over the world live almost 25 years longer today than they would have at similar income levels in 1900 (Figure 4). This relationship between income, health spending and health outcomes in developing countries is now well established (World Bank 1993), (Pritchett and Summers 1996), (World Bank 1997), and (World Health Organization 2000).

Figure 4 and 5



This story is equally true in the case of maternal and child mortality as for the major disease challenges that face low income countries (Figure 5). Child mortality decreases with an increase in income levels, a relationship that some have used as a performance indicator for a country's overall

development policy (Wang, Jamison et al. 1999). The “black box” assumption is that income mediates through a variety of intermediate factors, including non health sector determinants of better health outcomes (education, nutrition, safe water, roads, sanitation systems etc) health enhancing policies (maintaining health and preventing disease), health services (treating disease, palliative care and preventing death).

But recent work indicates that even at very high economic growth during the next few years, most countries would not reach the MDG targets of two-thirds reduction in under-five mortality rate (U5MR), a three quarters reduction in maternal mortality (MMR) and a halving of the prevalence of underweight (UW) among children (Devarajan, Miller et al. 2002); (Alderman, Appleton et al. 2000). By projecting the current level of several of the health related MDG indicators forward to 2015, using the historical elasticity of U5MR, MMR and UW with respect to income, Wagstaff demonstrated that even an unlikely 8 percent growth in income between 1990 and 2015 would only reduce U5MR by 20 percent, MMR by 30 percent and UW by 40 percent, compared with the target reduction of 67 percent, 75 percent and 30 percent respectively (Wagstaff 2002a).

Furthermore, in another paper, Wagstaff argues that the importance of extrasectoral programs may be misleading because they often act by improving the effectiveness of more specific health programs. For example, investment in roads allows pregnant mothers to get to delivery services on time and vaccines to get to health centers without having the cold chain broken. Education allows mothers to make the right choices when faced with health episodes (Wagstaff 2002b).

The advantages of investments across sectors are therefore likely to have important synergies and complementarities across sectors that specific investments in the health sector alone would fail to achieve. A disadvantage of this approach is that it may still fail to correct known constraints in the health sector that could be addressed effectively and at lower cost by focusing directly on the specific problems and their solutions. It is also a leap of faith to think that the marginal untargeted dollar would always be spent on health enhancing activities related to the MDGs. The alternative choices, some of which might even shunt resources away from priority activities, are almost limitless.

... BUT INCOME FROM ECONOMIC GROWTH ALONE IS NOT ENOUGH TO ACHIEVE THE MDGs

As seen in Figures 4 and 5 above, at any given income level, there is a wide range of performance in terms of child health outcomes. And the high performers in absolute terms are not always the best performers in relative terms. For example, both China and Singapore do well in terms of absolute performance but have lagged behind progress made during the 1980s (Wang, Jamison et al. 1999). The variability in performance at any given income level is thought to be due to a combined effect of a number of several factors that include both difference in the effectiveness of interventions and the health systems that deliver these interventions (World Health Organization 2000); (Anell and Willis 2000); and (O.E.C.D. 2001).

Increased Total and Public Spending on Health Care

A second driver of accelerated progress towards achieving the MDG targets, is increased public and total spending on health or nutrition services – with or without increases in income.² Past work has shown a positive, *albeit* modest correlation between health spending and health outcomes even when controlling for income and possible confounding factors (Filmer and Pritchett 1999). However, caution should be used

² Other outcome measures such as birth rate and population composition (e.g., proportion of the population under 15 years) are not significantly associated with health spending Gbesemete K.P. and U.G. Gerdtham (1992). "Determinants of health care expenditure in Africa: a cross-sectional study." *World Development* 20(2): 303-308.

when attributing improvements in health outcomes to non targeted health spending since it is very hard to fully isolate all the confounding factors.

Notwithstanding this constraint, it is possible to project the current level of several health related MDG indicators forward to 2015 using the historical elasticity of U5MR, MMR and UW with respect to health expenditure. Wagstaff demonstrated that between 1990 and 2015 U5MR would drop by an additional 40 percent, MMR by 30 percent and UW by 35 percent, compared with the target reduction of 67 percent, 75 percent and 30 percent respectively (Wagstaff 2002a). A sustained health expenditure growth rate of over 15 percent would be needed to reach the U5MR target of 75 percent.

These findings refute earlier work that suggested that health care services are not significant contributors to health status relative to other measures such as sanitation, income, and education (Newhouse and Friedlander 1980).

An advantage of such broad systems-wide expenditure increases on health services is that it allows policymakers and managers to exercise decision rights over the allocation and use of funds in areas that they think are most effective and where there is greatest demand. This is likely to be highly context specific and not readily specified under a blueprint.

A disadvantage of this approach is that it may fail to correct known constraints in financing, inputs, service delivery the delivery of programs and interventions that could be addressed more effectively and at lower cost through a more direct targeting of scarce public resources in priority areas. It is a leap of faith to think that, without some strategic priority setting and targeting, the marginal dollars spent on the health sector will always be spent in areas that will have the greatest impact on accelerating progress towards achieving the MDGs.

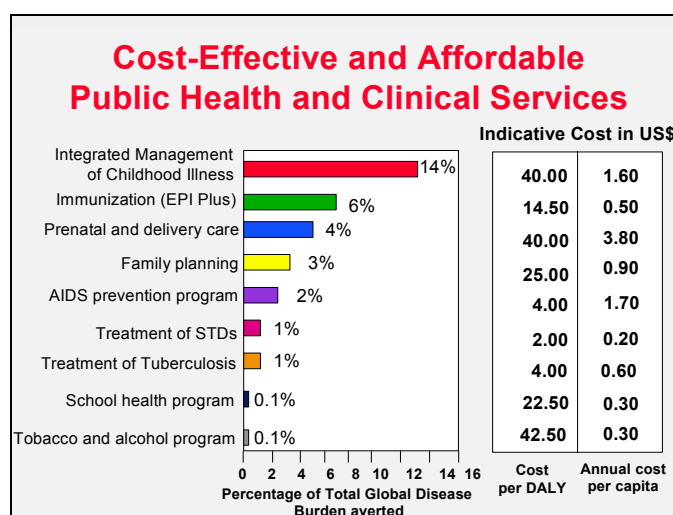
Increased Spending on Priority Populations, Priority Interventions and Priority Health Programs

A third driver of improved outcomes is knowledge about the determinants of poverty, and poor health related to the MDG targets (e.g. the links between hygiene and infections, maternal nutrition and low birth weight, diet and malnutrition, poverty and health etc) and the implementation of effective health programs and interventions.

We have a much better understanding today on the determinants of poverty (World_Bank 2000), the intersectoral synergies that are needed to achieve good health outcomes (Wagstaff 2002b), and the role that health, prevention, and curative health services play in this story (World_Bank 1993); (World_Health_Organization 2000); (van Doorslaer, Wagstaff et al. 2000); and (Wagstaff 2002c). Extensive work has been done in the area of targeting health programs to benefit the poor (Claeson and Waldman 2000), (Gwatkin 2000), and (Gwatkin and Heuveline 1997).

During the past few years, a considerable body of knowledge has also accumulated on the cost and effectiveness of alternative interventions for specific health conditions (Murray, Evans et al. 2000); (Evans 1990b). Early work using such techniques in developing countries looked mainly at the cost-effectiveness of specific interventions (Barnum 1986), disease control programs (Barnum, Tarantola et al. 1980) and investment projects (Barnum 1987); (Prescott and de Ferranti 1985); (Mills 1985b); (Mills 1985a). This type of work exploded following publication of the *World Development Report 1993: Investing in Health* (World_Bank 1993), (Jamison, Mosley et al. 1993) and subsequent extensive work by the World Health Organization in this area. Figure 6 below provides a few examples of specific interventions that, if implemented well, would have a large impact on reducing the burden of disease, especially among the poor (World_Bank 1997), (Gwatkin and Heuveline 1997) and (Claeson, Mawji et al. 2000).

Figure 6



These interventions rank high in terms of their: (a) potential to avert a large percentage of the global disease burden; (b) low cost per DALY averted; (c) low annual cost per capita; and (d) potential impact on socially excluded and poverty groups; and (e) relevance to the MDGs.

At the heart of the broadened policy use of cost effectiveness is a belief among health professional that resources in the health sector should be allocated across interventions and population groups to generate the highest possible overall level of population health. Stated in other terms, allocative efficiency of the health sector could be enhanced by moving resources from less cost-ineffective interventions to more cost-effective ones (World_Bank 1993).

Musgrove provides a decision tree for rational use of public financing in the health sector (Musgrove 1999). It starts with the overarching issue of allocative efficiency by asking if the proposed expenditure is for public goods, generally population-based services. If the answer is “yes,” the next step is to rank such expenditures in terms of cost-effectiveness—or even better, benefit-cost analysis—to decide which will be funded. If proposed expenditures do not meet public goods criteria, the tree asks whether significant externalities are involved, whether risk of catastrophic costs are involved, and whether the proposed beneficiaries are poor. Thus allocative efficiency, risk, equity, and cost-effectiveness interact to determine public financing decisions in health. Economic principles govern each decision point, but many other factors are often weighed, so the outcomes will vary considerably from country to country. The overriding principle is to maximize the potential impact on people, especially the poor.

Several challenges have emerged to this wider use of cost-effectiveness analysis (CEA) especially when use as a basis for priority setting or allocative efficiency within a given budget envelope or when used to undertake “bottom up” costing to estimate marginal extra dollars spent on the health sector (Williams 1997); (Filmer, Hammer et al. 2000); (Filmer, Hammer et al. 2002) and (Jack 2000), while its proponents defending their position with equal vigor (Musgrove 2000b; Musgrove 2000a; Rivlin 2000).

First, analysts and decision-makers have correctly noted that resource allocation decisions affecting the entire health sector must also take into account social concerns for the sick, reducing social inequities in health, the well-being of future generations, the insurance effect (spreading the cost of infrequent but expensive care across population groups) and the political economy of the middle classes who pay taxes (Hauck, Smith et al. 2002). Second, current CEA practice often fails to identify existing misallocation of resources by focusing on the evaluation of new technologies or strategies. Third, for all

but the richest societies, the cost and time required to evaluate the large set of interventions required to use CEA to identify opportunities to enhance allocative efficiency may be prohibitive. Fourth, the difficulties of generalizing context-specific CEA studies have been institutionalized by the proliferation of multiple national and subnational guidelines for CEA practice, all using slightly different methods.

For example, costs can vary greatly from one country, context, and intervention modality to another. A naïve generalization of the finding from one study to another can lead serious mistakes in planning and implementing otherwise effective interventions. For example, in the case of the management of malaria, it is suggested that at low income levels one would choose case management and prophylaxis for pregnant women. At higher income-levels one would add bed-nets. And at middle-income levels one would add spraying. A single estimate of cost-effectiveness of malaria treatment could lead to the wrong conclusion that malaria programs are un-affordable if the estimate was based on a multi-therapy program in a low-income. Or it could lead to a serious under-estimate of the actual cost of the program if the estimate was based on single therapy calculations but implementation of a multi-therapy program in a middle-income country.

Factors other than income may also alter the actual cost of a given program during implementation. Major overlooked factors include: availability, mix and quality of inputs (especially trained personnel, drugs, equipment and consumables); local prices, especially labor costs; implementation capacity; underlying organizational structures and incentives; and supporting institutional framework. Other confounding factors include; poor quality of data; confusion between marginal, average and shared costs; competing risks and synergies; failure to include non monetary cost such as time and lost income; miscalculation of discount rates (Hammer 1996; Peabody 1999)

The counter argument often used by proponents of cost effectiveness analysis is that, although international estimates may not fully reflect local circumstances, there is a risk that excessive contextualized analyses will be too complex and resource intensive for most low income countries (Murray, Evans et al. 2000). A move in this direction could ultimately lead to less use of evidence based policy dialogue. The alternative approach recommended by this school of thought is to focus on the general assessment of the costs and health benefits of different interventions based on general league tables of the cost-effectiveness of interventions for a group of populations with comparable health systems and epidemiological profiles. Such information on generalized cost-effectiveness can then be used alongside consideration of the effect of different resource allocations on other important social goals.

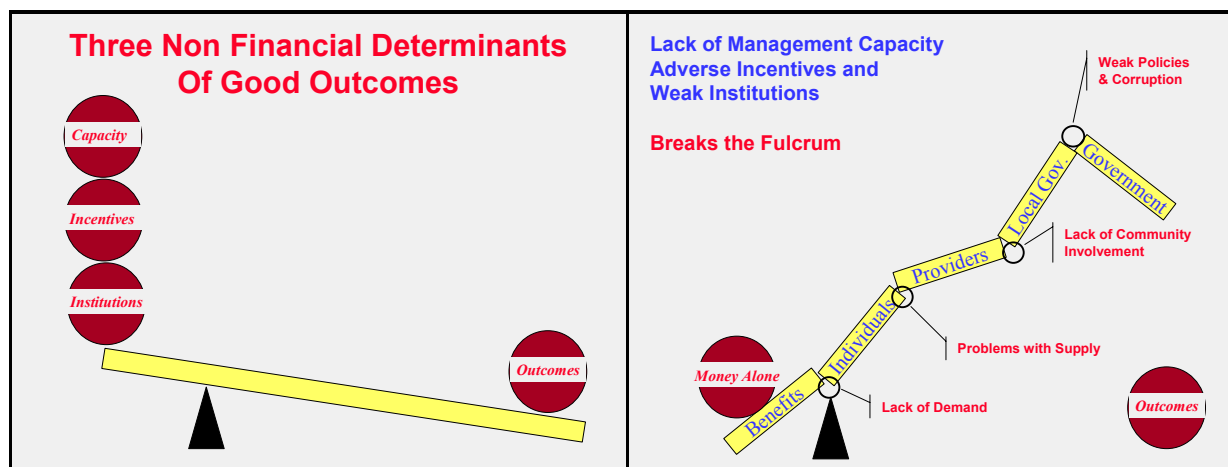
Spending on Management Capacity, Organizational Structures and Institutional Environment

Several systemic factors in the health system may also act as drivers of improved outcomes. These include (Figure 7):

- management capacity
- organizational incentives; and
- institutional environment

Many countries that are currently fail to make progress towards the MDGs are plagued by weak management capacity, negative organizational incentives, lack of a strong regulatory environment to ensure quality control and deal with the private sector etc (Figure 8). Often they ignore the demand side of utilization of health services. Critical supply chains such as in the case of pharmaceuticals and vaccines are broken. And top down centralized control over public services exclude participation by the private sector, communities and household in the care that they are receiving.

Figure 7 and 8



Notably the strategic use (Preker, Langenbrunner et al. 2002) of stable and pooled (Preker, Carrin et al. 2002) revenue flows remain critical factor in the performance of a country's ability to achieve good overall health outcomes (including those related to the MDGs) and protect populations against the impoverishing effects of illness (World_Health_Organization 2000); and (Carrin, Zeramardini et al. 2001). Countries and communities that channel health care financing through risk sharing and collective purchasing arrangements do significantly better on outcome indicators than countries that rely more heavily on out of pocket spending (Jakab, Preker et al. 2001) and (Preker, Carrin et al. 2001).

The exact contribution of management, organizational and institutional variables to the MDGs has not yet been quantified. And the cost of reforms in this area are highly context sensitive, making it risky to apply estimates from one setting to another. An early attempt has been made by WHO to quantify the benefits of health systems in terms of the level and distribution of health outcomes, financial fairness and responsiveness to patient expectations in terms of quality and ethical dimensions of care (World_Health_Organization 2000). Unfortunately, as in the case of cost effectiveness, this initiative has been met by great resistance from the international development community and countries themselves (Williams 2001); (Murray, Frenk et al. 2001); (Wagstaff 2001); (Wagstaff 2002d); (Navarro 2000); (Navarro 2001); (Blendon, Kim et al. 2001); and (Murray, Kawabata et al. 2001).

IV. ESTIMATING THE COST OF ACHIEVING THE MDGS

Notwithstanding these caveats, several traditional approaches have been used to estimate the cost of accelerated progress towards achieving the MDGs. This includes:

- estimates of the cost of achieving the MDG goals based on known expenditure elasticities of health outcomes (Wagstaff 2002b) and (Devarajan, Miller et al. 2002).
- estimates of additional public expenditure needed to achieve outcome based production frontiers
- estimates of the total cost of introducing new programs using “bottom up” costing (Evans 1990a); (World_Health_Organization 2001); (World_Health_Organization 2002b); and (Kumaranayake, Kurowski et al. 2001);
- estimates of the marginal cost of addressing major constraints (Soucat, Lerberghe et al. 1992); and
- Specific estimates of scaling up child health and other interventions and treatment for priority diseases (Tulloch 1999); (Lambrechts, Bryce et al. 1999); (Weissman 2001); (Weissman, Bustreo et al. 2001); and (Garrison and McCall 1990).

THE USE OF PRODUCTION FRONTIERS

In this paper we used production frontiers to estimate the costs of accelerated progress towards achieving the MDGs. Production frontiers have been the subject of a great deal of research on inefficiency (Farrel 1957). The production function shows the maximum level of a given output (e.g. real observed outcome in terms of health) that can be obtained from a given level of input mix such as factors of production (e.g. capital, human resources, drugs, equipment, consumables), product market (e.g. hospital services, ambulatory services, and diagnostic clinics) and prevailing technology. Alternatively, it can also be used to describe the minimum amount of inputs required to achieve the given various levels of outputs (MDG targets). The production frontier describes the limits to the outputs (outcome) that can be achieved using different combinations of inputs.

Variations in maximum output can occur either as a result of stochastic effects (e.g. random events, unpredictable economic shocks, or bad weather) or it can occur from the fact that firms (health care providers) may operate at various levels of in-efficiency due to sub-optimal use of existing technology (input mix, throughput processes, outputs), mismanagement, inefficient organizational structures (e.g. lack of economy of scope or scale, compromised decision rights, and adverse incentives) or dysfunctional institutional environment (e.g., lack of an appropriate legal framework to deal with market failure, or promote efficient competition). Outputs (e.g. health outcomes) that fall short of a given target can sometimes be brought up to the production frontier by changing one or more of these critical variables.

Recently there has been widespread application of stochastic production frontiers to assess firm inefficiencies in various settings (Aigner, Lovell et al. 1977); and (Battese and Coelli 1995). In theoretical models one can specify a wide range of input and output variables. In real life, one is constrained by observable output levels and available data on the inputs. Thus, an initial challenge is to construct an empirical production function or frontier based on the observable data (Lewin and Knox 1990); and (Coelli, Prasada_Rao et al. 1998).

Past use of Production Frontiers in the Health Sector

The use of production frontiers in the health sector in developing countries is not new. Production frontiers have been used for many years to study efficiency in the health sector of the OECD. Production frontiers based on cost effectiveness data were used by the 1993 World Development to select among alternative cost effective treatment modalities that would be most effective and affordable at low income levels (World_Bank 1993). They have been used to examine hospital performance issues (Wagstaff 1989); and (Wagstaff and Lopez 1996). Expenditures, linked with inputs (e.g., beds and staff) intermediate measures (e.g., average lengths of hospital stays, waiting times) and outcomes (e.g., infant mortality), can begin to provide some relative notions of efficiency of health systems (Schieber, Poullier

et al. 1991); (O.E.C.D. 1992); (O.E.C.D. 1994); and (Anderson and Poulter 1999). They have been used to compare different levels of input mix (Anell and Willis 2000). And production frontiers have been used to examine efficiency issues related to public-private mix in service delivery and financing (Musgrove 1996).

Production frontiers have also been used to assess the overall country performance in achieving good health outcomes and more specifically U5MR (Wang, Jamison et al. 1999). WHO used production frontiers to rank the performance of health systems in different countries using the relationship between health expenditure and three outcome indicators – financial fairness, patient responsiveness, and outcomes (World_Health_Organization 2000). The OECD also made use of production frontiers but using a different set of indicators (O.E.C.D. 2002).

Application of Production Frontier Analysis in Estimating the Global Expenditure Gap

As described earlier, the production function for health and the determinants of U5M, MMR and UW are complex and multi-sectoral. A number of different production frontier models could be constructed that would shed some light on various dimensions of the input and product mix needed to attain maximum outcomes in terms of the MDG related indicators.

The production frontier approach was one of methodologies to estimate the global expenditure gap for the Macro Economic Commission on Health (World_Health_Organization 2002c). For the purpose of establishing a production frontier relative to health spending and the MDGs, two assumptions were made (Preker, Langenbrunner et al. 2001). First, the maximum level of total resources for health care that a country can mobilize (if it could) is likely to be less than or equal to the current highest spender at similar income levels. Although there is some variation within income bands, the income vs health spending elasticity is well known and documented by past research (Schieber and Maeda 1997). Second, although countries that are already spending much more than the best performers in outcomes at similar income levels, may still benefit from additional spending (based on spending/outcome elasticities) there is probably also considerable scope for improving the efficiency of existing spending in these countries since other countries are able to do much better with less resources.

SOURCE OF DATA

We examined 135 countries where GDP per capita is less than or equal to \$7,000. This cut off point was chosen so that the analysis would correspond to low- and middle-income. The analysis was done for both total and public expenditure on health care. We used the most recent data on health expenditure available in the WHO health expenditure data base (usually 1998 data) and GDP per capita from the World Bank SIMA database (matching as closely as possible the 1998 health data). For most of the health indicators we also matched as closely as possible the date of the health expenditure (HIV prevalence 1999, Incidence of tuberculosis 1999, life expectancy 1997, Adult male mortality 1997, Adult female mortality 1997, Maternal mortality 1995). To assess relative performance in improving U5M mortality we use the 1990 to 2000 trend.

ESTABLISHING THE PRODUCTION FRONTIER FOR HEALTH EXPENDITURE PER CAPITA

To establish the production frontier, we used the health expenditure level (total and public) for the 20 percent of countries that performed the best in absolute terms on several health indicators (most but not all related to the MDGs). The health indicators used to select the best performers in absolute terms included: U5M, MMR, HIV prevalence rate between the ages of 15 and 49, incidence rate of tuberculosis, life expectancy at birth, adult male mortality rate, adult female mortality rate.(World_Bank 2002c) For the U5M, we also created a second production frontier based on the health expenditure level for the 20 percent of countries that performed the best in relative improvement between the years 1990 and 2000.

A exponential regression on a double log scale was used to construct the production frontier using the health expenditure (total and public) per GDP/capita data points for the high performers under each of the selected health indicators. Given the small size of the resulting dataset for the production frontier countries, the application of more refined statistical techniques such as stochastic analysis was not relevant.

Once the production frontier was established, it was possible to calculate the gap between the target health expenditure corresponding to the best performers and the observed health expenditure for any given country, adjusting for the population size. Figure 9 and 10 provides an example of the expenditure gap using the absolute level of spending in countries that performed the best on U5M compared with the expenditure for the production frontier countries. It illustrates the expenditure gap that would have to be filled in the case of six countries (these countries were used as case studies examples on “scaling up” for the September 2002 Development Committee Report (World_Bank 2002a).

It is worth noting that for China and India, where over 90 percent of the world poor live, total expenditure in health care is already higher than in the corresponding production frontier countries. Public spending on health in India is, however, well below the best performance expenditure frontier, while public spending on health in China is slightly above expenditure in the production frontier countries for U5M. Table 1 provides the numerical estimate of the expenditure gap for these six countries using different outcome indicators to establish the production frontier.

Figure 9 and 10

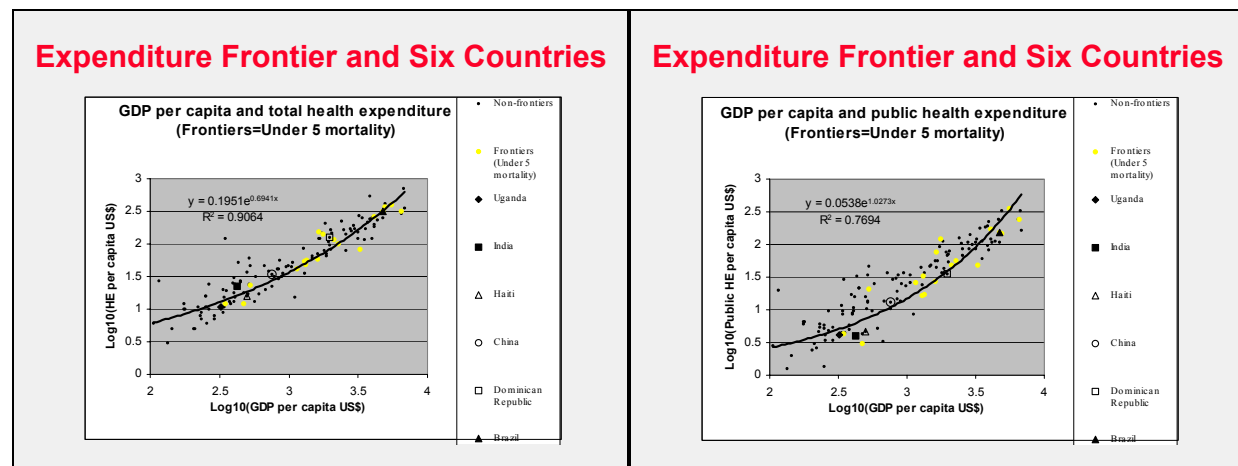


Table 1: Public expenditure on health in US\$ needed more to be like frontiers, using exponential regressions, and log10 for HE and GDP

Frontiers are the best 20% performers of:

Country	Public expenditure on health per capita (US\$)	Under 5 mortality % change between 1990-2000				HIV prevalence 1999				TB incidence 1999				Life expectancy 1997			
		Needed/capita	Gap /capita	Gap as Total Public Exp	Needed/capita	Needed/capita	Gap /capita	Gap as Total Public Exp	Needed/capita	Needed/capita	Gap /capita	Gap as Total Public Exp	Needed/capita	Gap /capita	Gap as Total Public Exp	Needed/capita	Gap as Total Public Exp
Uganda	4	6	2	31,600,000	8	4	4	75,000,000	11	7	7	144,000,000	6	2	47,300,000		
India	4	7	3	2,740,000,000	9	5	5	5,350,000,000	13	9.2	9.2	8,970,000,000	8	4	3,600,000,000		
Haiti	5	8	3	22,000,000	11	6	6	46,300,000	15	10	10	76,600,000	9	4	29,500,000		
China	13	12	0	0	17	4	4	4,690,000,000	21	8	8	10,200,000,000	13	0	5,381,798		
Dominican Republic	36	40	4	36,300,000	58	22	22	177,000,000	55	19	19	155,000,000	41	5	39,000,000		
Brazil	154	224	70	11,600,000,000	301	147	147	24,300,000,000	177	23	23	3,820,000,000	189	35	5,780,000,000		

Frontiers are the best 20% performers of:

Country	Public expenditure on health per capita (US\$)	Adult male mortality 1997				Adult female mortality 1997				Maternal mortality 1995			
		Needed/capita	Gap /capita	Gap as Total Public Exp	Needed/capita	Needed/capita	Gap /capita	Gap as Total Public Exp	Needed/capita	Needed/capita	Gap /capita	Gap as Total Public Exp	Needed/capita
Uganda	4	9	5	110,000,000	6	2	2	39,600,000	7	3	3	62,400,000	
India	4	11	7	7,130,000,000	7	3	3	3,210,000,000	9	5	5	4,500,000,000	
Haiti	5	13	8	60,600,000	8	3	3	26,400,000	10	5	5	37,800,000	
China	13	19	6	6,850,000,000	13	0	0	0	15	2	2	2,140,000,000	
Dominican Republic	36	51	15	121,000,000	43	7	7	59,400,000	47	11	11	87,100,000	
Brazil	154	181	27	4,460,000,000	234	80	80	13,300,000,000	216	62	62	10,300,000,000	

Table 2: Total health expenditure Gap in US\$ (in millions) to achieve frontier expenditure levels, among countries with GDP<US\$7000 per capita

Frontiers are the best 20% performers of:									
GDP per capita	(N)	Under 5 mortality % change 1990-2000	HIV		Life		Adult male mortality 1997	Adult female mortality 1997	Maternal mortality 1995
			prevalence 1999	TB incidence 1999	expectancy 1997				
0-300	22	\$345	\$505	\$1,137	\$1,356	\$1,133	\$654	\$916	
300-1000	47	\$1,947	\$3,462	\$10,875	\$14,670	\$11,731	\$3,992	\$5,134	
1000-3000	40	\$1,472	\$3,891	\$4,475	\$4,322	\$5,110	\$2,905	\$2,562	
3000-7000	26	\$28,488	\$60,986	\$20,958	\$13,882	\$25,731	\$29,728	\$15,003	
Total:	135	\$32,252	\$68,844	\$37,445	\$34,230	\$43,705	\$37,279	\$23,616	

Table 3: Public health expenditure Gap in US\$ (in millions) to achieve frontier expenditure levels, among countries with GDP<US\$7000 per capita

Frontiers are the best 20% performers of:									
GDP per capita	(N)	Under 5 mortality % change 1990-2000	HIV		Life		Adult male mortality 1997	Adult female mortality 1997	Maternal mortality 1995
			prevalence 1999	TB incidence 1999	expectancy 1997				
0-300	22	\$154	\$407	\$1,079	\$241	\$725	\$186	\$337	
300-1000	47	\$4,606	\$14,211	\$26,414	\$6,125	\$19,537	\$5,478	\$9,954	
1000-3000	40	\$675	\$3,901	\$3,617	\$823	\$2,613	\$972	\$1,547	
3000-7000	26	\$47,864	\$86,565	\$19,280	\$28,657	\$21,859	\$51,968	\$40,807	
Total:	135	\$53,299	\$105,083	\$50,390	\$35,846	\$44,734	\$58,603	\$52,644	

The production frontier trend-lines for total expenditure on health care using best performance on various health outcomes – under 5 mortality, maternal mortality, life expectancy, adult male mortality, adult female mortality, TB prevalence, HIV/AIDs prevalence – are seen in Figure 11 below. Both the countries used to determine the frontier (large circles) and non frontier countries (small circles) are indicate on each graph. The production frontier trend-lines for public expenditure on health care using best performance on various health outcomes are seen in Figure 12 below.

The total and public expenditure gap for countries with a per capita income of less than US\$7,000 was estimated by summing the gap for each of the individual countries within several income bands (Table 2 and 3 above).³ Countries spending more than the expenditure frontier were assigned a value of zero even though they might still benefit from additional spending in terms reaching the target outcome indicator.

Country gap= $Y-y$, where $Y=ce^{bx}$ (if $Y>y$) and gap = 0 where $Y<y$

where:

c and b are constants

e is the base of the natural logarithm

y is observed log10(HE per capita US\$) of all countries

Y is the estimated log10(HE per capita US\$) from frontiers

x is observed log10(GDP per capita US\$) of frontiers

³ We ultimately used exponential regressions in log scale both for health expenditure and GDP, after observing patterns of relative fit for simple linear regressions, power regressions, polynomial regressions, as well as in ordinary scale both for health expenditure and GDP. Log scale for both GDP and health expenditure was used as converting them into log scale gave a higher R-squared than the one in ordinary scale. Exponential regressions were chosen because the fitted line showed higher R-squared (0.91) than R-squared of power regression line (0.87) and polynomial regression line (0.83), and also because the exponential regressions gave a higher intercept than simple linear regressions, where the values of R-squared of these two regressions were almost the same (0.91). We also fitted the exponential regression line by controlling for levels of female primary education, but this did not produce a significantly different result.

Figure 11: Production Frontiers for Total Expenditure on Health Care Using Best Performance on Various Health Outcomes

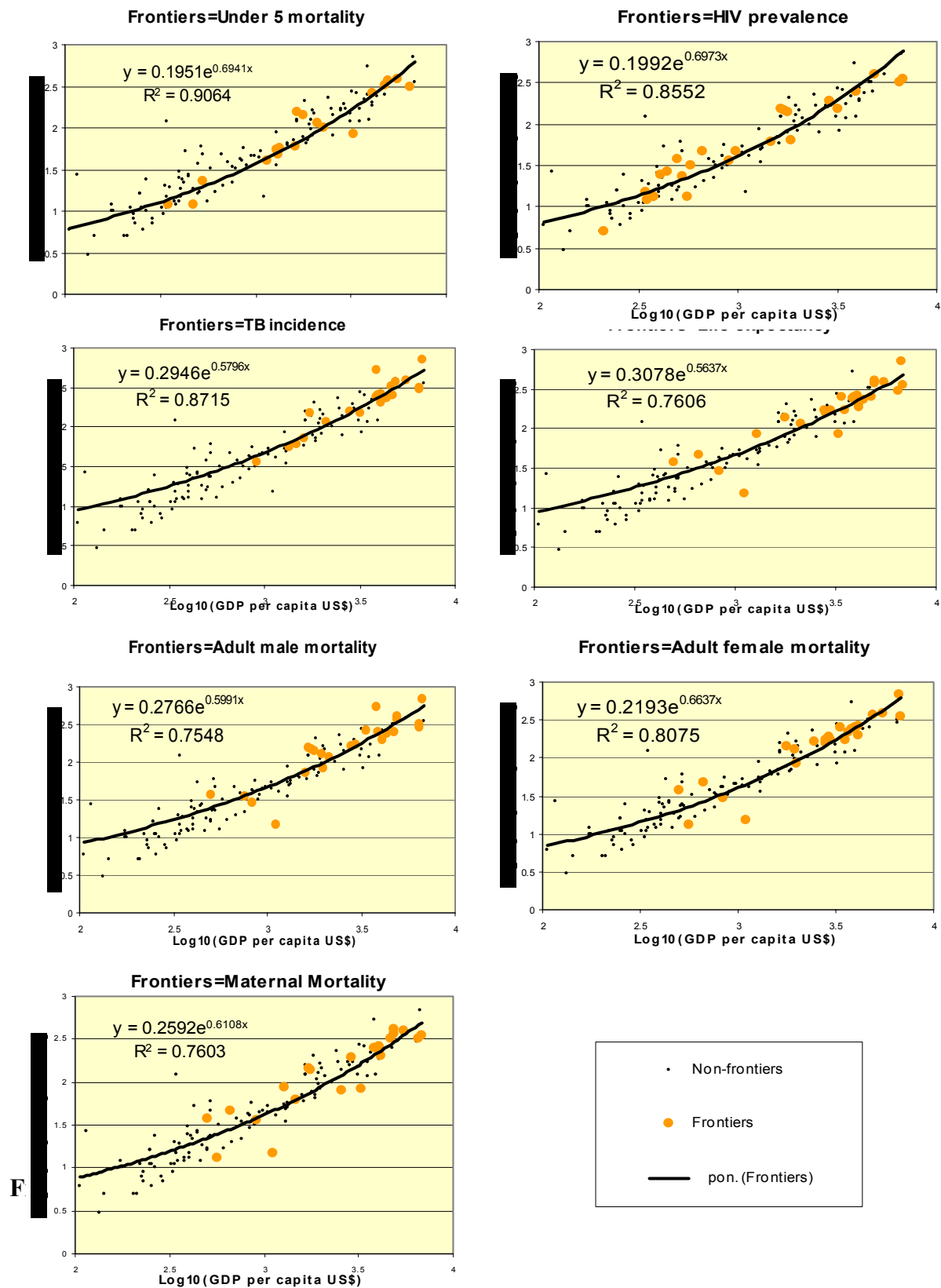
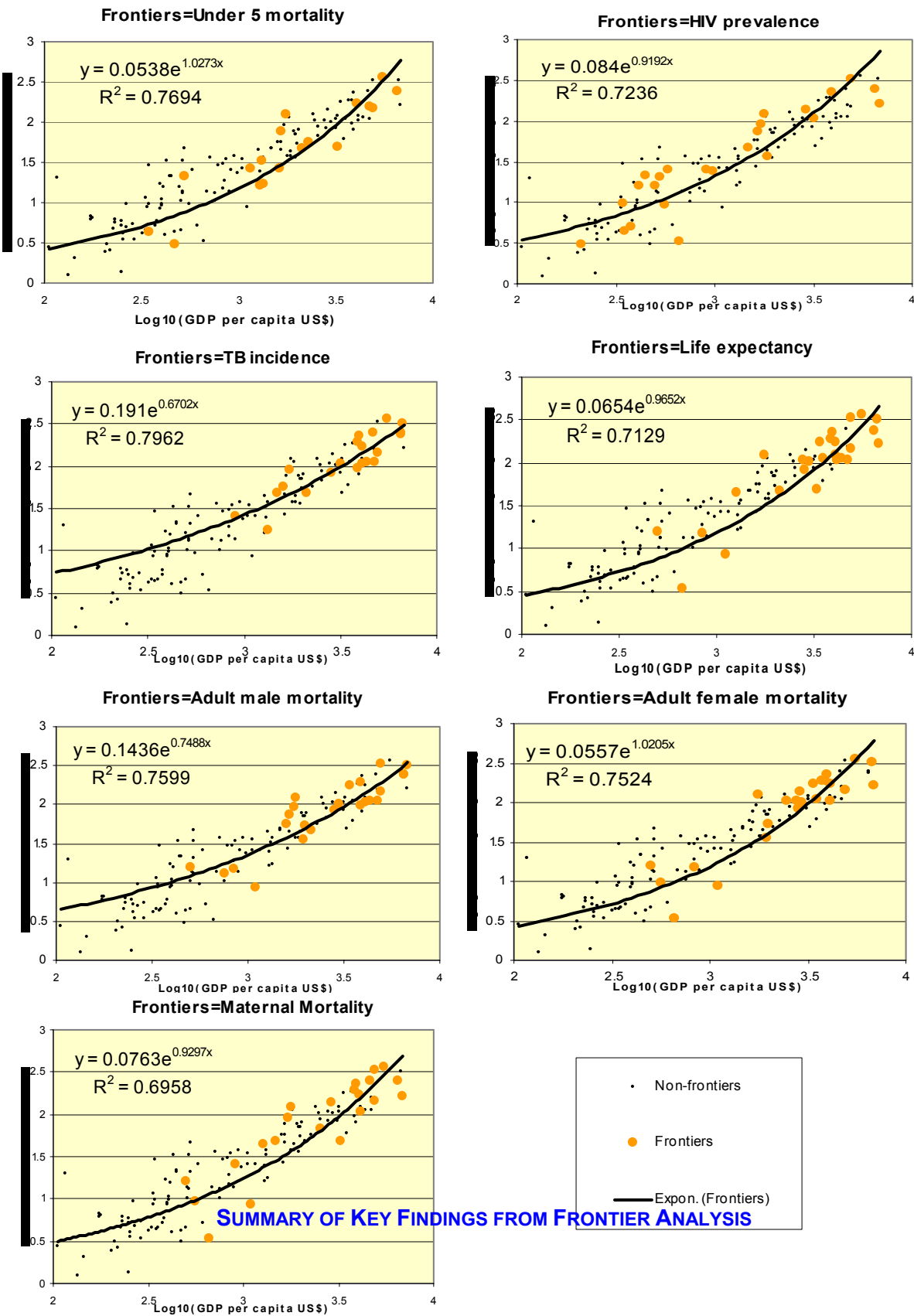


Figure 12: Production Frontiers for Public Expenditure on Health Care Using Best Performance on Various Health Outcomes



The use of production frontiers to estimate the cost of scaling up provides some insights that can be used to supplement other insights gained from work on elasticities of health spending and outcomes, bottom up costing, and marginal constraints costing. Notably:

- For the 135 countries where GDP per capita is less than \$7,000, around \$25 billion to \$70 billion of additional spending would be needed to bring the low spenders up to the level of the high performers, depending on the outcome indicator used to establish the frontier.
- The best performers on health outcome are not always the highest spenders. Both India and China, where the largest share of the world's poor live, already spend more in terms of total expenditure on health than the frontier spending in the best performing countries.
- The best performers are not evenly distributed across income groups. The best performers for HIV prevalence rates are seen across all GDP levels, while the best performers for tuberculosis are seen only higher GDP levels ($\log_{10}(\text{GDP per capita}) > 2.9$) or GDP per capita $> \$900$. Other health outcomes start having best performers around the GDP levels of $\log_{10}(\text{GDP per capita}) < 2.7$ or GDP per capita $< \$500$, Armenia, Azerbaijan, Georgia, etc.

More than anything, the use of production frontiers indicates the constraints that developing countries face in “scaling up” spending that is needed to accelerate progress towards the MDGs. Since the limit is not the “sky” and since developing countries have to live within realistic budget constraints, this analysis points to a need for significant targeting and selectivity in additional spending. One way to reduce the total gap in needed spending would be to target specific income groups where the needs might be deemed the greatest. For example:

- For the 22 countries where GDP per capita is less than \$300, around \$350 million to \$1.4 billion of additional spending would be needed to bring the low spenders up to the level of the high performers, depending on the outcome indicator used to establish the frontier. For public expenditure on health, the additional amount would be \$150 million to \$1 billion.
- For the 47 countries where GDP per capita is between \$300 and \$1,000, around \$2 billion to \$15 billion of additional spending would be needed to bring the low spenders up to the level of the high performers, depending on the outcome indicator used to establish the frontier. For public expenditure on health, the additional amount would be around \$5 billion to \$26 billion.
- For the 40 countries where GDP per capita is between \$1000 and \$3000, around \$1.5 billion to \$5 billion of additional spending would be needed to bring the low spenders up to the level of the high performers, depending on the outcome indicator used to establish the frontier. For public expenditure on health, the additional amount would be \$700 million to \$4 billion.
- For the 26 countries where GDP per capita is between \$3000 and \$7000, around \$14 billion to \$61 billion of additional spending would be needed to bring the low spenders up to the level of the high performers, depending on the outcome indicator used to establish the frontier. For public expenditure on health, the additional amount would be \$19 billion to \$87 billion.

The use of efficiency frontiers for this type of analysis has several significant constraints. Unlike the work using elasticities of health spending and outcomes, production frontiers do not provide any insights into the potential impact of additional spending. The lagging countries could potentially spend up to and even surpassing the efficiency frontier without actually improving health outcomes. Although the frontier approach sheds some light on the limits to spending, like elasticities using aggregate spending levels, it does not inform the policymaker about the contents of those reforms. To understand the policy contents and implementation issues other tools of investigation are needed.

V. FINANCING THE EXPENDITURE GAP

Although the various costing methods provide different estimates for the global funding gap all of them indicate that additional funding will be needed to accelerate progress towards the health related MDGs. Without additional funding, many countries are likely to continue tracking along the same path as during the past few year, significantly missing the 2015 outcome targets. Other management, organizational and institutional reforms are necessary as well but not sufficient without additional funding. Prospects for significant increases in health spending are however grim for several reasons.

POTENTIAL SOURCES OF FUNDING

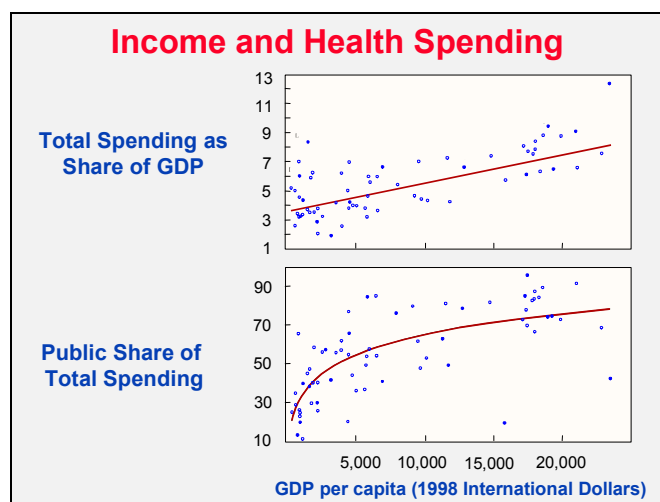
One can identify several potential sources of additional funding. This includes:

- increase in total health expenditure that will accompany economic growth even if the share of GDP remains constant
- Increase in health expenditure as a share of GDP (i.e., reallocation of some public funds from other spending programs towards health and increase in private health consumption)
- Reallocation of part of the health budget towards priority programs
- Donor Aid from multi-laterals, bi-laterals and NGOs
- Private sector donation and differential pricing

GDP GROWTH

Health care behaves as a superior good in economic terms – the share of expenditure increases with GDP – and public expenditure on health as a share GDP also increases with income levels (World_Bank 1993); (Schieber and Maeda 1997); (World_Health_Organization 2000); and (O.E.C.D. 2001). These trends are demonstrated in Figure 13 below. Economic growth is therefore good for health spending.

Figure 13



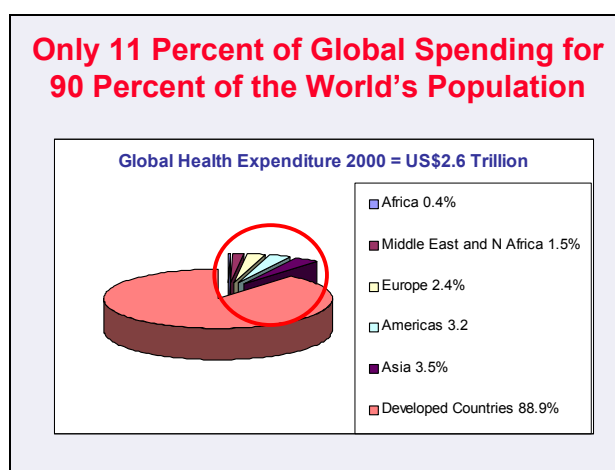
Unfortunately, the sluggish global economic outlook, with slower growth in the next 12 to 18 months than previously anticipated, will impede poverty reduction and health spending in many developing countries (World_Bank 2002b). According to the latest forecasts, global GDP is now expected to rise by 2.5 percent. This is higher than during the previous two years, but significantly below previous long-term growth rates. High-income countries are expected to grow at about 2.1 percent in 2003. On average, developing countries will grow considerably faster, at 3.9 percent.

Health spending in low and middle-income countries is currently around US\$280 billion. Since the elasticity of health spending to income is just over one in low income countries, an annual growth in GDP of 3.9 percent would yield US\$11 billion in additional funding for the health sector.

But such averages masks wide regional differences, with East Asia leading the pack at 6.1 percent, followed by South Asia at 5.4 percent. Other regions are expected to grow less than 4 percent, with Latin America managing a mere 1.8 percent. Outside of Asia and Eastern Europe, growth rates in most developing countries are too low to generate any significant increase in health expenditure during the immediate future.

Even though global spending has increased dramatically during the 20th century, many of the world's poor did not benefit from this increase in overall spending. This is reflected in the large differences in the proportion of national GDP spent on health — from under 1 percent in some countries to 15 percent in the United States. Per capita health expenditures (public and private) vary almost 1,000-fold among countries — from around US\$3 to \$5 per capita per year in some low-income countries such as Mali to \$3,600 in the United States (the ratio would be 225 using PPP-adjusted dollars). Once again, Sub-sahara Africa and South Asia are the hardest hit in terms of both current spending and dismal prospects for increased spending due to economic growth (Figure 14).

Figure 14



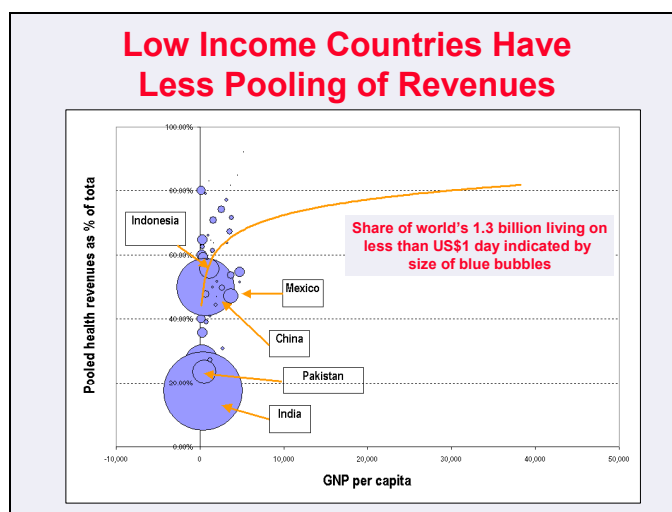
INCREASE IN HEALTH EXPENDITURE AS A SHARE OF GDP

Domestic funds can be raised for the health sector through a number of different mechanisms: general revenues, earmarked social health insurance premiums, community financing, private insurance and direct user charges. Many low income countries spend less than two percent of GDP and some even less than one percent of GDP on health care. The production frontier for health spending at different income levels indicates that with good public policies and taxation practices, even poor countries can mobilize and allocate enough financial resources through public channels to reach spending levels of up to seven percent of GDP.

An small increase in the share of health spending in GDP would yield huge gains (a 0.5-1.0 percent increase would yield US\$25-50 billion in additional resources for the health sector. Unfortunately, once again the poorest countries in Africa and South Asia would benefit the least for several reasons. Weak taxation capacity prevents many low income countries from mobilizing more than 5-10 percent of GDP through the public sector (Dror and Preker 2002) and (Preker, Langenbrunner et al. 2002). Private spending is much greater than public spending at low income levels (e.g., in India,

Bangladesh and many other low income countries private spending comprises over 80 percent of total spending). As a result of these factors, low income countries have little protection against the financial burden of illness even when, like India, they spend a significant part of their income on health care – 6 percent of GDP (Peters, Yazbeck et al. 2002). As seen in Figure 15, a large share of the population in some of the poorest countries of the world do not benefit from insurance protection against the cost of illness.

Figure 15



REALLOCATION OF HEALTH BUDGET TOWARDS PRIORITY PROGRAMS

One frequently hears rhetoric about mobilizing additional resources through efficiency gains or channeling health expenditure from within the existing health budget towards priority health programs such as child and maternal care, or the priority infectious diseases. In reality this is not a easy policy to implement. For example, existing budget categories are often rigid, allowing for little fugibility among spending programs. Strong vested stakeholders will resist their budgets being channeled to other programs. And any resources that might be freed up through efficiency gains are better absorbed by expanding the scope and activities of the programs where the gains were made: “Why scrimp and save if you cannot keep the results of your frugality?”(Wilson 1989) It is therefore prudent not to anticipate additional resources mobilized in this manner.

DONOR AID FROM MULTI-LATERALS, BI-LATERALS AND NGOS

Total Overseas Development Assistance (ODA) on health was estimated at 6-7 billion by Working Group 6 of the Macro Economic Commission on Health The prospects for additional funding from the international donor community is unlikely (World_Health_Organization 2002a).

Annual World Bank lending has remained around US\$1.0-1.5 billion despite efforts to increase this during the past few years. And although there was much posturing about increasing donor aid for the health sector during creation of the Global Trust Fund for HIV/AIDs, Tuberculosis and Malaria, replenishment of the fund has been slower than expected and disbursement so far almost non existent.

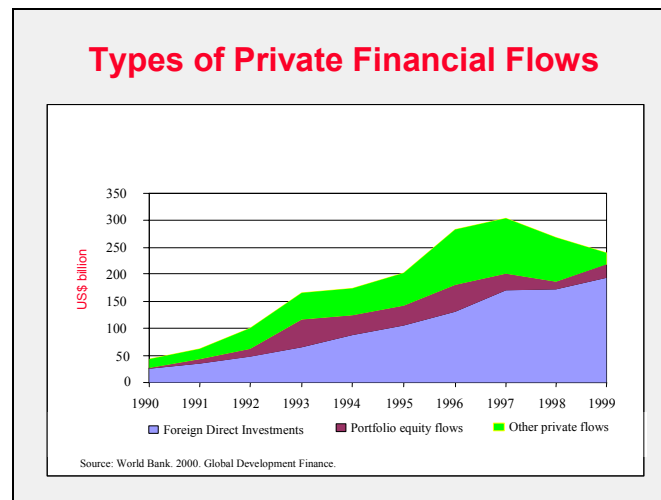
Hence, donor aid has “hit a wall” both in terms of additional commitments and ability by developing countries to absorb such aid under existing procedures. Even an unrealistically optimistic scenario of a 15 percent increase would only yield an additional US\$1 billion in donor assistance.

DIRECT PRIVATE SECTOR INVESTMENT AND DIFFERENTIAL PRICING POLICIES

The sagging global economy has also reduced private capital flows to developing countries (Figure 16). Net commercial bank lending has turned negative, and foreign direct investment flows to developing countries have fallen since their peak in 1999. FDI flows to developing countries peaked at \$180 billion in 1999, and have fallen back to the \$160 billion range (World_Bank 2002b). Although only a small amount of these resources benefit the health sector directly they often contribute significantly to the health enhancing environment of a country (e.g., roads, clean water, telecommunications systems)

Rising global risk premiums have led to a reversal in debt capital flows. The precarious market conditions have also reduced infrastructure investment sharply. Besides the fall in investment in absolute terms, investors are becoming more selective in choosing their investment destinations. As a result, investment is flowing to countries with better domestic investment climates: good governance, sound institutions and a system of property rights. These are precisely the conditions that are often lacking in some of the poorest countries in Subsahara Africa and South Asia making future private sector engagement in those regions less attractive.

Figure 16



Adopting policies that promote competition are central to raising productivity. Policy barriers to competition in developing countries are common — legal restrictions prevent entry of foreign participants, trade barriers limit import competition, state monopolies protect domestic firms from private sector competition and poorly designed regulatory regimes in privatized industries shun competitors—stifling productivity growth. The same observation is true in the health sector of developing countries (Harding and Preker 2003). Health care providers in Korea, Malaysia and Thailand are more productive than in India and China partly because of lower trade restrictions and administrative barriers to entry.

Introduction of competition in corporatized and privatized industries is also helpful. Private restraints on competition can also have adverse affects on prices for consumers and producers in developing countries, and harm their ability to compete in global markets. For example, international cartels such as in the pharmaceutical industry can tax consumers in developing countries. Ending exemptions to anti-trust laws can help reduce private anti-competitive practices (Preker and Harding 2003).

Corporate social responsibility has also been evoked recently as a way to engage the private sector in helping developing countries (European_Commission 2002). Assistance ranges from direct

donations in cash and kind by the pharmaceutical industry to differential pricing of products that gives low-income countries access to vaccines, medicines and supplies at a reduced price. Gross annual revenues in the pharmaceutical industry are currently around US\$300 billion. Even a modest one to two percent “robin hood” tax on their revenues or differential reduction in prices would yield significant marginal additional resources (US\$3 – US\$6 billion). Other industries such as the private health insurance industry, medical equipment industry and health service providers could be called upon to make an equally modest contribution.

VI. CONCLUSIONS

During recent years, the Millennium Development Goals (MDGs) have become a quantitative set of targets for poverty reduction and improvements in health, education, gender equality, the environment and other aspects of human development. The health related goals and targets that were selected were limited in number to help focus national and international attention on a few priority areas reducing the number of children who die before their fifth birthday, reducing the women who die from complications of childbirth and reversing the spread of HIV/AIDS, malaria, tuberculosis, and other major diseases.

This paper reviews several approaches that have been used to estimate the cost accelerating progress towards achieving the MDGs – the elasticity of outcome with respect to health spending, health spending production frontiers with respect to outcomes, “bottom up” costing and “marginal benefit” costing. The paper concludes that improvements in clinical effectiveness, management capacity, organizational incentives, and institutional environment are necessary elements but not sufficient in themselves to make progress towards achieving the health related MDGs. In many low- and middle-income countries additional money is also necessary.

The level of aid needed might be much more than the \$25-50 billion estimated by the research done for the Macroeconomic Commission on Health (World_Health_Organization 2002a); (World_Health_Organization 2002b); and (World_Health_Organization 2002c). The expenditure gap increases dramatically when the scenarios include countries with a GDP above US\$1,000. The gap could be almost 3 times previous estimates, especially if middle-income countries and countries that are already high spenders are included in this aid effort.

The additional funding could come from growth in income (which would be automatically translated into higher health spending), a shift of some public spending towards the health sector, increased private consumption of effective care, increased international aid (public and private), and direct foreign investment in the health sector of developing countries. Unfortunately, in many of the worst performing countries, the needed additional resources outstrip both potential domestic and international sources of revenues, especially in the case of South Asia and Sub Sahara Africa.

National governments, households, the international development community and private sector could do better in mobilizing these additional resources and provides some estimates of the order of such action. In many low-income countries, however, the targets appear unattainable. Caution should be exercised not to discourage countries that could make modest progress towards better health outcomes through the fervor of the current debate on achieving the MDGs.

The argument that health levels are always “lower than they need be” could be said of every country in the world. The diseases would be different, but even in the US there are diseases where technology is available to improve health but whose cost is considered prohibitive for parts of the population, given competing claims on scarce resources.

Donor aid alone is, however, also unlikely to be a solution by itself but may be important at the margin if well targeted to the poor and if it contributes to systemic reforms. This suggests that any analysis should not assume away the problem of governments' inability to allocate resources and deliver services effectively. Indeed, donor support should tie in with government performance in terms of resource allocation and outcomes. Much more work is needed to fully understand the variation in performance of different countries and their health systems in achieving maximum value for money.

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