

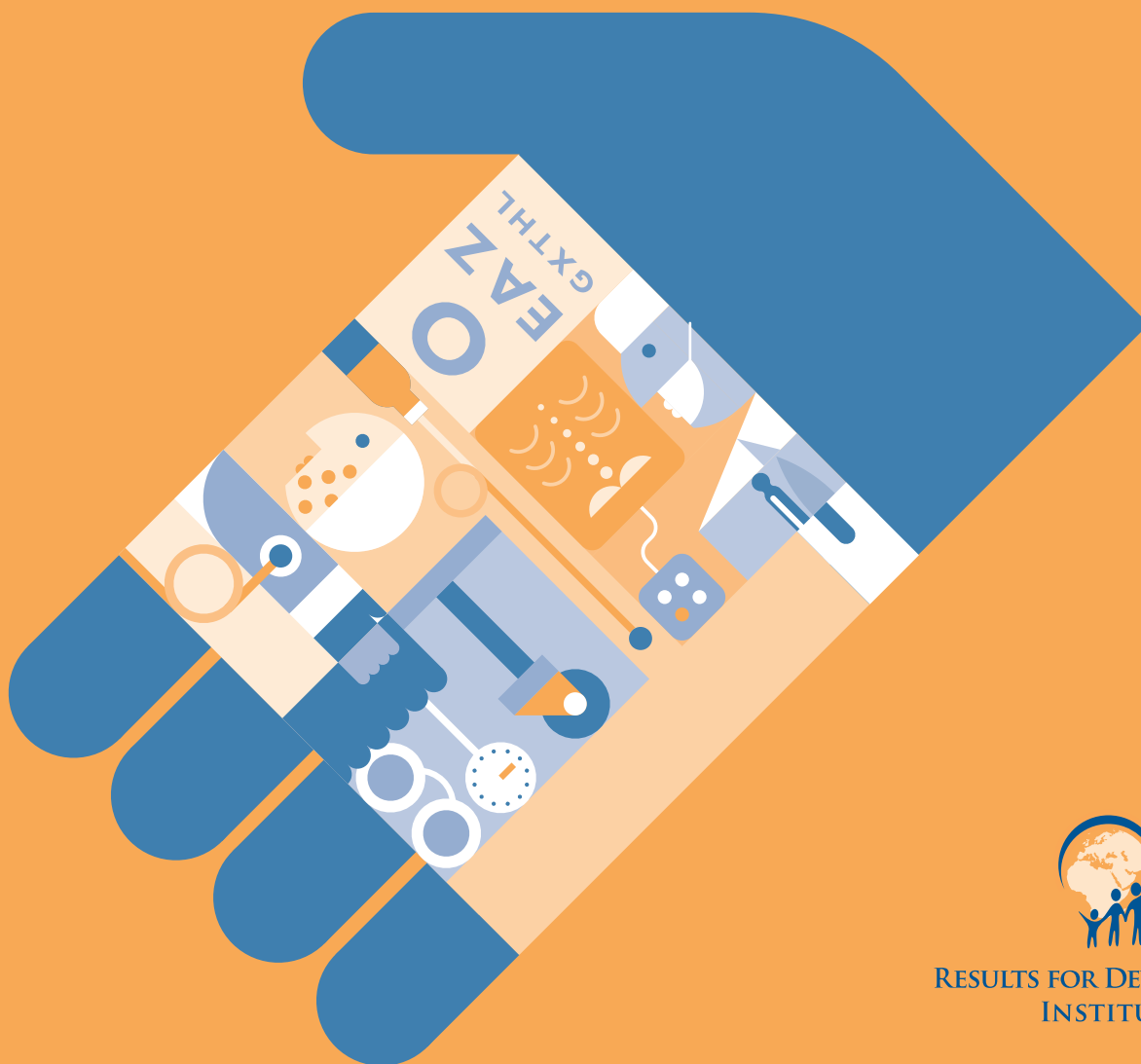
The Rockefeller Foundation–Sponsored Initiative on the Role of the Private Sector in Health Systems in Developing Countries

# Technical partner paper 3

Toward a New Paradigm  
for Health Sector Development

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RESULTS FOR DEVELOPMENT  
INSTITUTE

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# **Toward a New Paradigm for Health Sector Development**

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## 1. Introduction

The problems and shortcomings of health care systems in the developing world are well documented: resources are far too scarce to provide quality health care services to the entire population; hospitals lack equipment; clinics are dilapidated and lack water and electricity; drugs have to be bought in private pharmacies or kiosks (where there is often no quality control), the poor have little or no access unless they pay out of their pockets, the upper income groups benefit disproportionately from public services; inequalities in health outcomes between the poor and the rich are very large, new diseases (such as HIV/AIDS) exert added stress on an already overburdened system. The list goes on.

Although the problems are clear, the solutions are hotly debated. Everyone seems to agree that the health systems are underfunded, but just calling for more money is unlikely to be sufficient. The main challenge is how to develop functioning health systems that efficiently make use of available resources and provide quality care in an equitable way to the entire population. This challenge is mostly debated with political and ideological overtones. To those on the ideological left, the answer is clear: health is a human right, and access to health care for all should be provided by the government, free of charge. What the left seems to overlook is that this is exactly the model that exists in most developing countries—a model that suffers from the shortcomings mentioned above. To those on the ideological right, the answer is equally clear: in light of massive government failure to provide quality care for all, the government should get out of the health care business and leave it to the private sector. What the right seems to overlook is that there is no country in the world where the health care sector is run entirely as a private enterprise.

There are good reasons for the government to be involved in the health care sector. The question is not whether the government should be involved, but exactly what role it needs to play (regulator, funder, provider). That question needs to be answered without recourse to ideology. The world has more than 50 years of experience with the development and reform of health care systems in both the developed and the developing world. What can we learn from this experience? Are there patterns or trends in development that provide insight into which measures can, or cannot, be taken to improve the efficiency, quality, and equity of a health system?

In this paper, we present some of the empirical evidence that has accumulated over the years and that should be taken into account in the discussions about health sector development and reform, especially in the developing world. We first look at some studies by the Organisation for Economic Co-operation and Development (OECD) and present evidence on two broad questions: first, what determines overall spending on health care and, second, is a large role for the public sector (as measured by the public share of spending) beneficial for the health sector? As outcome measures for the sector, we look at health levels and at equity issues regarding health and health care financing.

In section 3, we turn to the world as a whole to see whether some of the patterns found in OECD countries hold for all countries of the world. In section 4, we document additional patterns that are relevant for the future debate on how to improve the performance of health care systems in the developing world. In the concluding section, we make the case that, in light of the many old and some new empirical findings, the debate regarding health care reform should move away from the ideological public or private sector arguments and into an area where the realities on the ground call for new and innovative public-private partnerships that can accelerate the implementation of desperately needed health sector improvements.

## 2. The First Law of Health Economics: Some Basic Facts about OECD Countries

Some countries spend as little as \$17.00 (in U.S. dollars) per person per year on health care (the amount spent by Burundi in 2005), while others spend \$6347.00 (the United States, 2005). What can explain the very large differences in per capita spending on health care across countries? We find that the answer to this question is an old one: almost all (more than 90 percent) of these differences can be explained by variation in per capita income (gross domestic product).

“What determines the quantity of resources a country devotes to medical care?” This was the question Joseph Newhouse tried to answer for a sample of OECD countries<sup>1</sup> in a brief paper (Newhouse 1977). Given that the lack of adequate resources is generally recognized as the number one problem for health care in the developing world, we address the same question in this paper. But first we look at Newhouse’s answer.

Using cross-country data for the sample, Newhouse estimated the following equation, where HEXP/cap is total (public and private) per capita expenditures on health care and GDP/cap is per capita gross domestic product (or income):

$$\text{HEXP/cap} = -60 + 0.0788 \times \text{GDP/cap} \quad \text{R-squared} = 0.92$$

(11.47)

This equation presents two surprises: first, the coefficient of 0.078 (measures very precisely, with T-value 11.47) implies an income elasticity for medical care of 1.31 at the mean country-income level, making medical care a luxury good. The second surprise is that this simple equation can explain 92 percent of the variation in per capita health care expenditures.

The first result has led to a cottage industry in the health economics literature, where various functional forms are being tested to decide whether the income elasticity is exactly 1, or indeed greater than 1. This issue is beyond the scope of this paper. Suffice it to note that total public and private resources for health care increase at about the same rate as the income level of a country.

The second result has been less noticed but, we believe, is at least equally important. If income alone can explain 92 percent of the variation in health care expenditures among countries, there is not much room left for various degrees of government involvement in financing and delivery to have an impact, or for alternative reimbursement systems such as fee-for-service versus capitation, or a host of other institutional, regulatory, and organizational issues, to have an effect. An econometric study by Gerdtam and colleagues (1992) extends the Newhouse model by including variables such as the number of physicians per population (to measure the effect of supplier-induced demand),

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<sup>1</sup> The sample consisted of the following OECD members: Australia, Canada, Greece, Ireland, Israel, Japan, New Zealand, Spain, and the United States. The data were from the 1973 United Nations Yearbook of National Accounts Statistics.

urbanization, fee-for-service payments (for physician services), the share of total health care expenditures used on inpatient care, global budget financing (for hospitals), and the share of public financing over total health resources.<sup>2</sup>

The results show some evidence that systems that are largely based on fee-for-service payments and systems with a relatively large in-patient share have higher levels of health expenditures. Countries that have a larger share of public financing show a lower level of health expenditures. The effects of the other variables are largely insignificant. The negative effect of public financing is interesting for OECD countries where the public debate is mostly about how to bring health care costs under control. But it hardly bodes well for developing countries, where most of the debate is about how to increase resources for health care. In any case, the result is small and may not hold for developing countries (see below).<sup>3</sup>

### *The first law in health economics*

In the extended analysis of Gerdtham and colleagues (1992), the main fact remains that per capita GDP explains almost all the variation in total per capita health expenditures and, as shown below, this result is so pervasive that it seems justified to label it the first law of health economics. This law consists of two parts:

1. Based on cross-country comparisons, the income elasticity of medical care is 1.0 or larger.
2. Variation in per capita GDP alone accounts for about 90 per cent of the variation among countries in HEXP/cap.

How can we explain this close relationship between total health expenditures and per capita GDP? Newhouse discusses various alternative explanations but concludes as follows:

[I]n the developed countries, medical-care services at the margin have less to do with common measures of health status such as mortality and more to do with services that are less easily measured, such as relief of anxiety, somewhat more accurate diagnosis, and heroic measures near the end of life. That per capita income can explain much of the cross-national variation in expenditure also suggests *that a country will find methods by which to ration services consistent with its income* despite variation in out-of-pocket prices paid by the consumer in various countries or alternative methods of reimbursing the physician (Newhouse 1977, p. 123; emphasis added).

Of course, the total amount of resources is just one aspect of the health care system. Other issues include equitable access and financing, and most important, the resulting

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<sup>2</sup> See also Leu (1986).

<sup>3</sup> The authors caution that the results are based on a small sample and that the quality of the data is poor.



health status of the population. Before we move on to those issues, we look briefly at some outcome measures for health systems in OECD countries.

### *Health outcomes in OECD countries*

First, using the relatively crude health outcome variables for infant mortality, life expectancy, and child mortality, we test whether public spending on health “buys” better health outcomes.

**Table 1: Health outcomes in OECD countries, 2004**

<b>Dependent Variable</b>	<b>Infant Mortality Rate</b>	<b>Life Expectancy</b>	<b>Under-Five Mortality Rate</b>
Constant	-0.73 (5.62)	70.35 (8.02)	*** 5.60 (5.83)
Logarithm of GDP/capita	0.93 (0.58)	0.64 (0.83)	0.34 (0.60)
Public share of total health expenditures (percentage points)	-0.06 (0.02)	*** (0.02)	0.03 (0.02)
			*** -0.05 (0.02)
R-squared	0.40	0.14	0.32
N	22	22	22

*Note:* In all tables with regression results \*, \*\*, and \*\*\* stands for significant at the 10, 5 and 1 percent, respectively. N is the number of countries

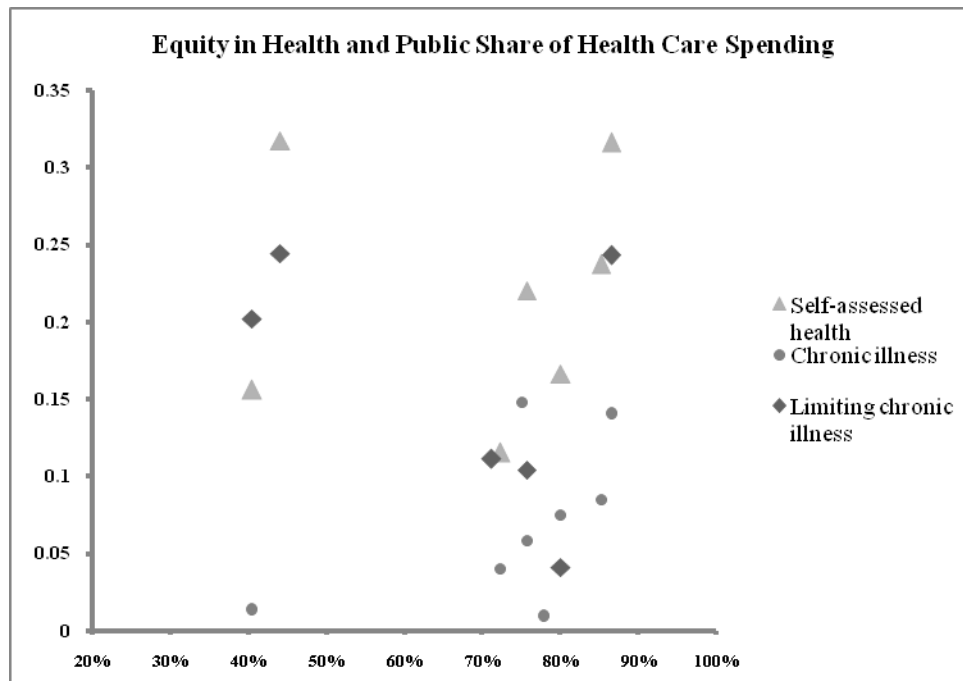
As shown in table 1, given per capita GDP, infant mortality and child mortality are lower in countries with a relatively high share of public spending on health care, which suggests that public health money is probably used more to finance such well-known effective health interventions as pre- and post-natal care and immunization. The magnitude of the effect, however, is small, and not enough to have an effect on life expectancy. Of course, infant and child mortality data are very crude health measures, especially for high-income countries. We take a more detailed look at health outcomes below, when we expand our analysis to the rest of the world.

### *Equity in health outcomes*

Is any evidence that public health care financing results in a more equitable distribution of health outcomes? Figure 1 shows the public share in health care financing (on the horizontal axis) and an index of inequality over the income distribution of health outcomes (on the vertical axis). A positive number for this index indicates inequality in health outcomes. There are three health outcome measures: self-assessed health status, chronic illnesses, and limiting chronic health illnesses. They all show the same picture: there is no systematic relationship between the type of health care financing and equity in

health outcomes. The two countries with the most inequitable results are the United Kingdom (a 100 percent public system) and the United States (depending heavily on private financing). The two countries with the least inequitable results are Switzerland (with large share of private financing) and the Netherlands (with a large public share).

**Figure 1: The relationship between the public share of health care spending and equity in health outcomes, OECD countries**



Source: Adapted from Van Doorslaer, Wagstaff, and Rutten 1993.

### *Equity in health care financing*

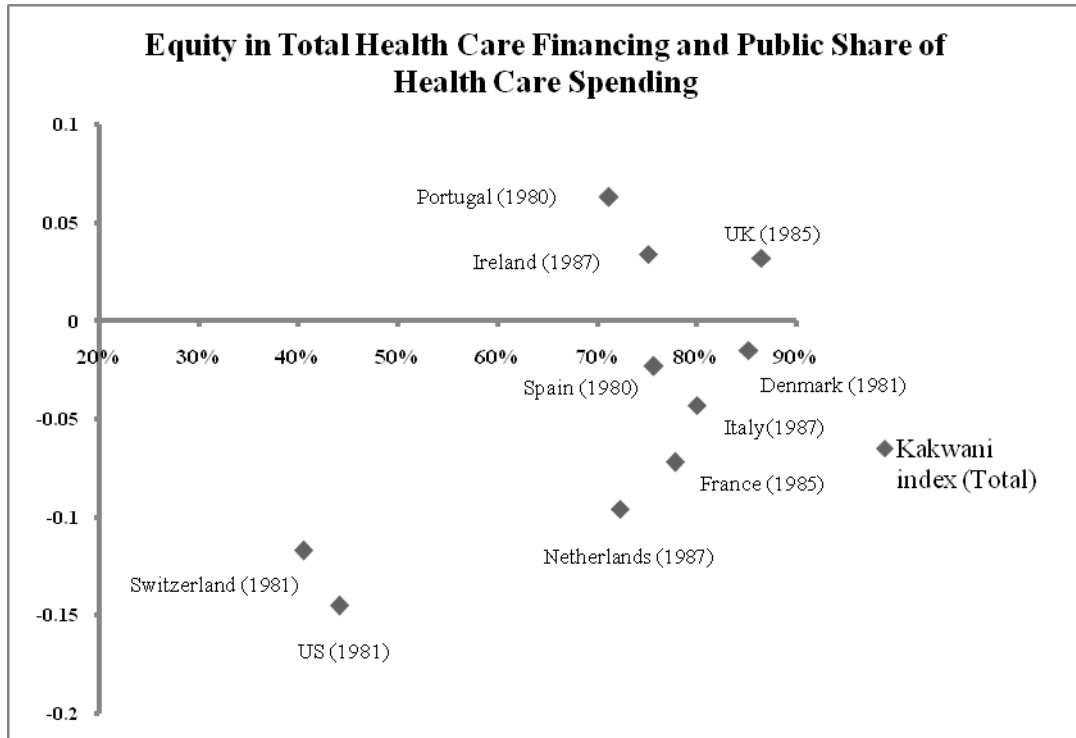
Does public financing result in a more equitable distribution of health care financing? Figure 2 shows how inequality in health care financing is related to the public share of total financing. It presents the share of public financing as a percentage of total health care financing (on the horizontal axis) and an index of relative inequality over the income distribution in health care financing (on the vertical axis). A negative number indicates financing that benefits the wealthier (that is, as a percentage of income, the rich contribute less to the health care system than the poor); a positive number indicates progressive financing.

As the figure clearly shows, there is no relationship between the public share in health care financing and the resulting equity outcome. Switzerland and the United States, two countries that rely heavily on private financing, show the most inequitable overall financing picture, but France, Italy, and the Netherlands—countries that rely on a mixture

of public and private financing, with a large public share—are not far behind. Only four countries manage to show financing with a relative benefit to the poor (Denmark, Ireland, Portugal, and the United Kingdom). They rely mostly on tax-based financing for health care.

It is important to point out that whether various types of financing turn out to be progressive or regressive depends very much on how the various financing methods are implemented. For instance, in the Netherlands, long-term care is financed by a social premium that is a percentage of income. In general, this would be a progressive way of financing long-term care. However, the premium is capped at a certain income level, and as a result this financing mechanism is regressive. To give another example, private insurance is always considered to be regressive, but if it is used to complement public insurance, it turns out to be progressive. In general, it would be wrong to claim that any type of financing will always be progressive or regressive, with the exception of out-of-pocket payments, which are, without exception, the most regressive way of financing health care.

**Figure 2: The relationship between the public share of health care spending and equity in total health care financing, OECD countries**



Source: Adapted from Van Doorslaer, Wagstaff, and Rutten 1993.

This brief overview of systematic analyses of health care systems in OECD countries yields surprisingly few hard results when it comes to the question of which is the better way to finance health care, public or private funding? As it turns out, systems that rely more heavily on public financing show slightly lower levels of overall health care expenditures. And there is some evidence that public money is more effective in targetting childhood diseases, thus lowering infant and child mortality. But, in general, a large public share in health care financing does not “buy” more health or a more equal distribution of the financial burden for health care, and it does not lead to more equality in health outcomes either. In short, there is little empirical basis for the claim that one system is “better” than the other. Overall income level basically determines how much is being spent on health care, and although the countries show a large variety in the financing and organization of their health care systems, there is no systematic relationship between system characteristics and outcomes.

In the next section, we repeat part of the analysis presented above and expand on it, using data for all countries in the world.

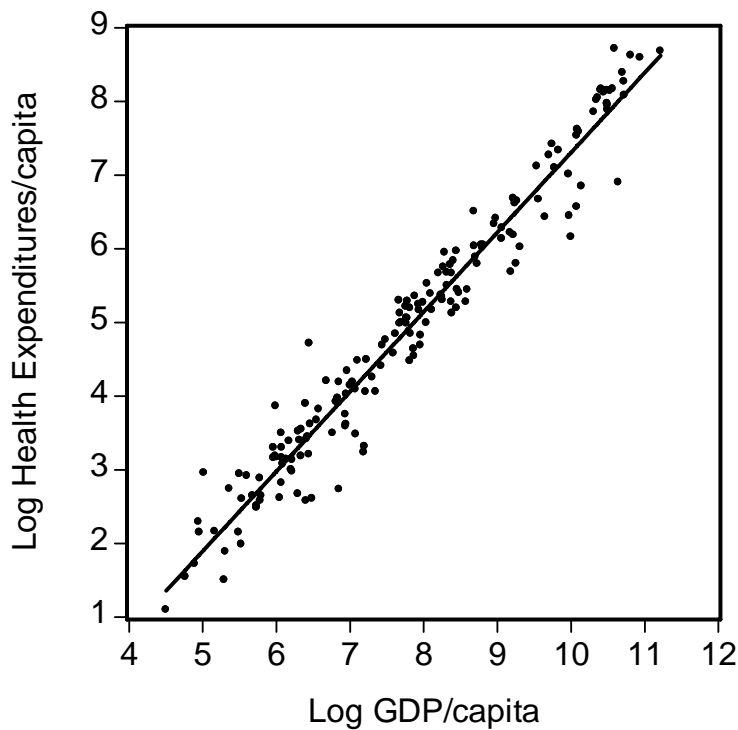
### 3. Does the First Law of Health Economics Hold for Developing Countries?

We first re-estimate the simple regression of GDP per capita on total per capita health expenditures. The results, shown in table 2, are very similar to the results for OECD countries alone. Figure 3 shows the close relationship between the two variables.

**Table 2: Health expenditures/capita as a function of GDP/capita, global data, 2004**

Dependent Variable: Log Health Expenditures / capita		
Constant	-3.62	***
	(0.000)	
Log GDP/capita	1.09	***
	(0.000)	
R-squared	0.96	
N	175	

**Figure 3: The first law of health economics, global data, 2004**



We re-estimate the same equation adding the public share in financing to see whether, given per capita GDP, countries with a relatively large public share have higher overall health care spending levels.

**Table 3: Health expenditures/capita as a function of GDP/capita and the public share of financing**

<b>Dependent Variable: Log Health Expenditures/capita</b>		
Constant	-3.60 (0.000)	***
Log GDP/capita	1.09 (0.000)	***
Public expenditure share	0.0002 (0.01)	
R-squared	0.96	
N	175	

We would have expected that, given per capita GDP, countries with governments that place a high priority on health issues, as measured by their public health care budget, would show higher overall levels of health expenditures per capita. The results in table 4 show otherwise. The public share of health care expenditures has no impact on overall financial resources for health care. We will come back to this important result later on.

Before investigating whether other variables, such as foreign aid, can influence overall spending for health care, we examine whether there are regional differences that may mask any impact the public share has on total spending. In table 4, we present the impact of per capita GDP on health care spending by region, and then we add the public share to the equations.

**Table 4: Are there regional effects explaining overall health care spending?**

<b>Region</b>	<b>Point Estimate of GDP/capita</b>	<b>R-squared</b>	<b>N</b>	<b>Point Estimate of Public Share Coefficient When Added to the Regression</b>
Central Asia	0.915	0.99	5	0.010
Centrally planned Asia	1.059	0.91	4	0.005
Eastern Europe	1.033	0.98	11	-0.002
Former Soviet Union	1.073	0.97	10	0.005
Latin America	0.901	0.92	31	0.002
<b>Middle East</b>	<b>0.830</b>	<b>0.86</b>	<b>12</b>	<b>-0.021</b>
North Africa	1.080	0.89	5	-0.013
<b>Pacific Asia</b>	<b>0.923</b>	<b>0.87</b>	<b>15</b>	<b>0.014</b>
South Asia	1.032	0.70	8	-0.013
Sub-Saharan Africa	1.007	0.90	41	0.001
Western Europe	1.074	0.94	21	0.005
<b>High-income OECD</b>	<b>1.197</b>	<b>0.86</b>	<b>22</b>	<b>-0.008</b>

Of the 12 regions identified, 9 regions show income elasticities for total health care expenditures that are statistically equal to the global estimate (1.09). Of the remaining three regions (bold faced), two show slightly lower estimates (the Middle East 0.830, and Pacific Asia 0.923), while the OECD countries show a significant higher elasticity, 1.197. The effects of the public share are either not statistically significant (nine regions) or negligible. The first law of health economics is clearly a global phenomenon.

It stands to reason that, given income, countries that have received large amounts of development aid (official development assistance, or ODA), either in general or specifically for health, show higher levels of health care spending than countries that have not received ODA. The left-hand panel of figure 4 shows ODA levels per capita plotted against per capita income. The levels are average annual ODA, net of debt servicing, received over the period 1989–2004. As expected, there is negative correlation between ODA received and per capita income, but the variance around the regression line is surprisingly large.

The right-hand panel of figure 4 shows average annual donor support provide specifically for the health sector, for the period 1999–2004. Again we see a large variation around a downward sloping trend with increasing per capita income.

**Figure 4: Net per capita ODA and health-specific ODA/capita, by per capita income**

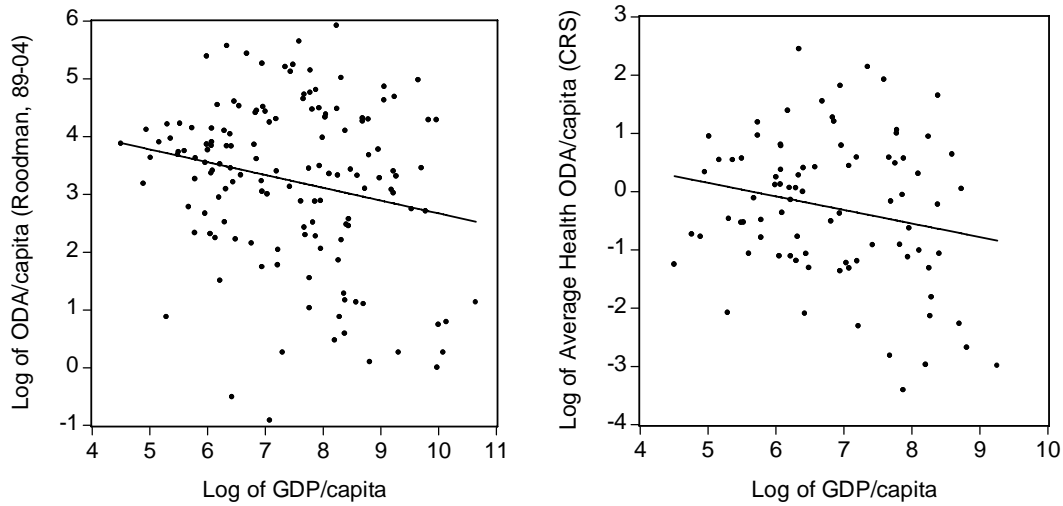
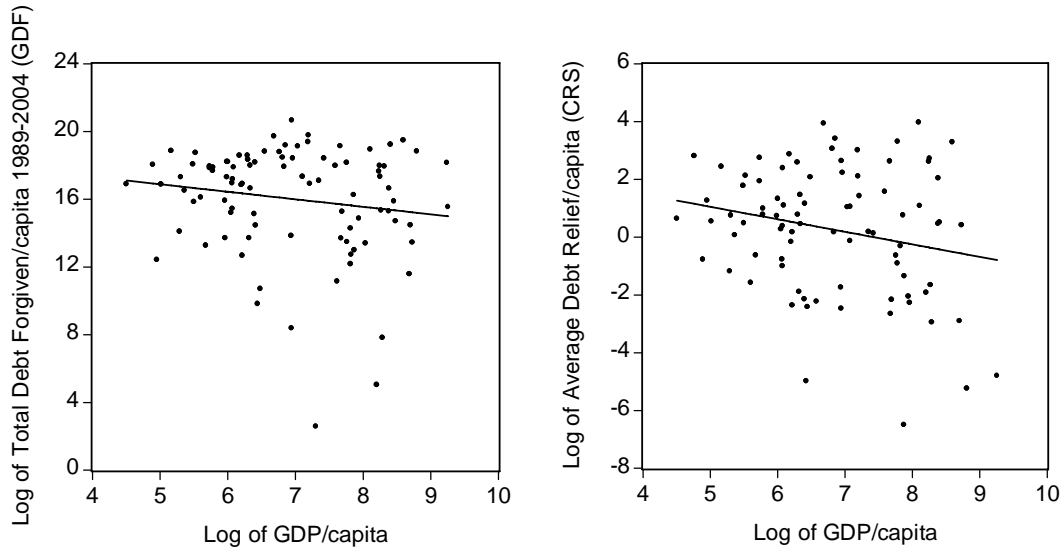


Figure 5 shows total debt forgiveness (left-hand panel) and net debt forgiveness (right-hand panel) per capita, for the period 1999–2004. Again it is striking how much variation there is around a modest negative trend for per capita income.

**Figure 5: Total debt forgiven per capita and net debt forgiven by per capita income**



In table 5, we try to answer the question of whether general or health-specific ODA can help poor countries increase overall health care spending. We also look at the effect of debt relief. The first column of regression results shows the basic relationship between total health expenditures and per capita income. In the next column, we add the public share. Subsequently, we add general ODA and then debt relief.



**Table 5: The impact of ODA on overall health care spending**

<b>Dependent Variable: Logarithm of Health Expenditures/capita</b>										
Constant	-3.516	***	-3.490	***	-3.316	***	-3.342	***	-3.322	***
	(0.144)		(0.145)		(0.182)		(0.319)		(0.349)	
Logarithm of GDP/capita	1.082	***	1.068	***	1.044	***	1.057	***	1.089	***
	(0.018)		(0.022)		(0.024)		(0.035)		(0.042)	
Public share of health expenditures (percentage points)			0.002						-0.001	
			(0.002)						(0.003)	
Logarithm of ODA/capita (89-04)					0.084	***			-0.082	
					(0.025)				(0.047)	
Logarithm of debt relief/capita (89-04)							-0.002		-0.001	
							(0.013)		(0.002)	
R-squared	0.95		0.96		0.93		0.91		0.91	
N	176		168		141		93		87	

First, we find a small effect that can be attributed to ODA, but the effect disappears when debt relief is also included. Before we draw too strong conclusions from these results, a number of caveats need to be stated. First, neither ODA nor debt relief is distributed at random across developing countries. Often, countries receive ODA or debt relief either when they are in dire straits, or (as is sometimes the case after a change in government) when they roll out promising reform efforts that deserve donor support. To take the endogeneity of donor support into account (if only partly), we included the sum of all ODA and the sum of all debt relief that was received over the period 1989–2004. Still, we cannot rule out that the endogeneity of donor aid may bias our results.

Second, donor support is notoriously erratic, which may reduce its effectiveness. We hope that by averaging donor support over the previous years (for which we have data) we may have reduced this problem.

Finally, for a number of reasons, donor financing in the form of government support may not have any impact on overall health care spending. We discuss this issue later on.

In table 6, we repeat the exercise, but now general ODA is replaced by health-specific ODA. The result is the same: ODA does not increase overall health care spending.

**Table 6: The impact of health-specific ODA on overall spending for health care**

<b>Dependent Variable: Logarithm of Health Expenditures/capita</b>										
Constant	-3.5156	***	-3.5199	***	-3.4563	***	-3.2051	***	-3.1976	***
	(0.1435)		(0.1437)		(0.2335)		(0.3610)		(0.3529)	
Logarithm of GDP/capita	1.0823	***	1.0724	***	1.0782	***	1.0381	***	1.0014	***
	(0.0180)		(0.0215)		(0.0331)		(0.0526)		(0.0570)	
Public share of health expenditures (percentage points)			0.0015						0.0060	
			(0.0017)						(0.0038)	
Logarithm of health ODA/capita					0.0191				0.0599	
					(0.0186)				(0.0447)	
Logarithm of debt relief/capita							0.0103		-0.0122	
							(0.0230)		(0.0254)	
R-squared	0.95		0.95		0.93		0.91		0.92	
N	176		176		90		42		42	

Before we discuss these results further, we look at one possible impact of health-specific ODA, namely, its effect on public health spending. In table 7, we see that health-specific ODA does increase overall government spending on health care.

**Table 7: The effect of health-specific ODA on public spending for health care**

<b>Dependent Variable: Log Public Health Expenditures/capita</b>		
Constant	-2.37	***
	(0.48)	
Log GDP/capita	0.957	***
	(0.07)	
Logarithm of health ODA/capita	0.138	**
	(0.06)	
R-squared	069	
N	85	

On the basis of this result, we conclude that donor support shifts the financial burden for health care to the private sector, but, as we have seen above, this does not result in an overall increase of total financial resources. How can we explain these counterintuitive results? There are at least six possible explanations:

First of all, the data may not be suitable for this type of analysis. Perhaps the most reliable data are the overall levels of government spending for health care, but even here we can not be sure of the quality of the information. It is not uncommon in low-income countries that the health ministry runs out of money after having paid all salaries. Money for upgrading hospitals or clinics or for buying medical equipment may have been budgeted, but in reality it may simply not be there.

More problematic are the data on private health care spending. These data can be collected only by conducting large-scale household surveys, which are rare. For many of the years evaluated, the numbers reflect interpolations, so any sudden change in private spending—for instance, as a result of a large increase in public spending—will not immediately show up in the data.

We already mentioned the problem with the endogeneity of ODA and debt relief. We tried to deal with this problem by adding total ODA received over the period 1989–2004 and total debt relief over the past six years, but we cannot be completely sure whether this sufficiently deals with the problem.

A second problem is that donor money (as reported in the ODA data) does reach the country but, even if it is earmarked for the health sector, it may never reach the ministry of health. ODA enters a country through its central bank, but there is no guarantee that it will be passed on to the line ministries. A recent report by the International Monetary Fund's Independent Evaluation Office analyzed how aid was used in Sub-Saharan Africa. It estimated that, on average, 37 percent of general ODA is used to accumulate reserves, 37 percent is used for domestic debt reduction, and only 27 cent of every dollar is being spent.<sup>4</sup> Assuming that the numbers are roughly similar for ODA that is earmarked for a specific sector, and given that ODA for health is a relatively small percentage of overall health resources, we should not be surprised that the effect of ODA on overall health resources is negligible.

It is easy to criticize the International Monetary Fund for playing a role in diverting ODA from spending by the line ministries to debt relief and reserve accumulation, but the trade-offs between spending now and more growth, and thus more resources later, are not always clear.

Unfortunately, the evidence that more aid leads to more economic growth is mixed at best. In an influential article, Burnside and Dollar (2000) conclude that aid has a positive impact on growth in developing countries with good fiscal, monetary, and trade policies. However, Easterly (2003) finds that these results do not stand up to further scrutiny and

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<sup>4</sup> These results are quoted in CGD 2007.

concludes that the idea that aid buys growth is on shaky ground theoretically and empirically. For our discussion, it suffices to note that ODA does not directly result in higher spending levels for health care (or any other line ministry),<sup>5</sup> and that the indirect effect through future economic growth is questionable.

A third possible explanation for the lack of impact of donor money on overall spending levels is that donor money is crowding out the government's own resources for health. Though there is some anecdotal evidence of this,<sup>6</sup> our results do not support this hypothesis. Health-specific ODA does seem to increase public spending on health.

A fourth explanation is that government financing may crowd out private resources. This is an old issue in the economic literature. In an early paper on crowding out, Lampman and Smeeding (1983) study the impact of formal government transfers on informal interfamily transfers. They find evidence that, after the introduction of government transfers, the magnitude of preexisting informal transfers is reduced by half. A fair body of literature exists on crowding-out effects in the health insurance market. Cutler and Gruber (1996), among others, conclude that 20 percent of an expansion in Medicaid coverage came from previously insured persons. Kronick and Gilmer (2002) also find that the number of privately insured persons declined after the Medicaid system was expanded. Yazici and Kaestner (1998) find relatively modest crowding-out effects for children.

Awareness of possible crowding-out effects is important for at least two reasons. First, such effects reduce the net benefits of any government program. Second, crowding out changes the socio-economic characteristics of those who will benefit from such programs. In the health care sector, if an increase in the number of public facilities to better reach the poor, or an increase in public insurance to protect the poor, results in an increase in use of public services by persons who were previously using private care or were covered by private insurance, the benefits to the poor will be lower than intended. This mechanism is likely behind the so-called elite capture of public services.

That crowding out occurs in the health care sector should not come as a surprise if one thinks about how health systems usually develop. In general, they evolve as follows: in low-income countries, the resources for health are scarce and the patients compete for limited services mostly through non-price rationing schemes (concentration of facilities in urban areas, long waiting times, and the like). When the country grows, the middle class grows. Patients become dissatisfied with the quality of services and are willing to pay out-of-pocket for better access, higher quality care, or both. Private clinics and private hospitals are built. An unregulated private sector emerges. Private resources pour into the sector to fill the gap left by the government. When the government has more money to spend, it may decide to spend more resources on health and improve access to and the quality of the public services. When that happens, private resources may decline, leaving overall sources constant. As already mentioned, the data used in this study are

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<sup>5</sup> CGD 2007 provides a balanced discussion of the International Monetary Fund's role on spending levels.

<sup>6</sup> For instance, in some countries with high HIV prevalence, the total HIV/AIDS budget is provided by donors.

probably not suitable to prove decisively such that such crowding out occurs in the health sector, but case studies of countries that recently went through major health sector reforms should be able to shed more light on this.<sup>7</sup>

Finally, it is important to mention off-budget support, though this has not influenced our results because the information is not reflected in the data. Off-budget support can be a large part of overall resources, though the data on this are scarce. There is reason to believe that through mechanisms such as the Global Fund, the President's Emergency Fund for AIDS Relief (PEPFAR), and the increasing presence of large private donors, off-budget support may grow in importance. That should lead to net increases in overall resources for health. However, such support can also lead to major distortions in resource allocation. For instance, in Rwanda, more than US\$ 30 million donor money per year was allocated in 2003–2006 for HIV/AIDS by three donor organizations: the Global Fund, PEPFAR, and the World Bank.<sup>8</sup> The country's HIV prevalence rate is 3.1 percent. Its annual budget for all other health needs is US\$ 37 million. In Zambia, AIDS funding from donors and government was US\$ 20.60 per capita in 2006 (Oomman, Bernstein, and Rosenzweig 2007). The total budget for all other health needs was US \$25.96. Only when non-budget support is well integrated into an overall health strategy can we expect an overall beneficial effect on the sector.

In addition to the five explanations offered above, a sixth explanation is possible: much promised aid does not materialize because donors renege on their promises. This, however, does not show up in our data, but it is a warning against too much optimism regarding "increased donor funding."

In sum, although at first it comes as a surprise that we cannot find any evidence that neither a more active government nor larger donor support can increase overall health care spending, we have to conclude that through a combination of fiscal policy (in part induced by the International Monetary Fund) and well-understood crowding out mechanisms, the overall resources remain steadily where you would expect them to be on the basis of a country's per capita income level. Of course, this result, if it holds under further scrutiny, has major ramifications for future health sector development and reform efforts. We return to this in the concluding section.

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<sup>7</sup> Colombia and Chile may be good cases.

<sup>8</sup> CGD (2008).

#### **4. Other Persistent Patterns in Health Care Systems in Poor Countries**

To complete the search for additional patterns across the globe, we first take a closer look at health outcomes using data that were put together by David Gwatkin and colleagues from recent DHS surveys<sup>9</sup>. Table 8 shows the impact of income and public financing on standardized mortality rates for a number of diseases. We find that, with the exception of cancer-related deaths, mortality rates decline with income. Whether the system is mostly publicly or privately financed appears to be irrelevant.

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<sup>9</sup> See [www.worldbank.org/povertyandhealth/countrydata](http://www.worldbank.org/povertyandhealth/countrydata)

**Table 8: The impact of GDP/capita and the public share on mortality, by type of disease**

<b>Dependent Variable (Log of)</b>	<b>Age-Standardized Mortality Rate for Cancer (per 100,000 population)</b>	<b>Age-Standardized Mortality Rate for Cardiovascular Diseases (per 100,000 population)</b>	<b>Age-Standardized Mortality Rate for Injuries (per 100,000 population)</b>	<b>Age-Standardized Mortality Rate for Non-communicable Diseases (per 100,000 population)</b>	<b>Neonatal Mortality Rate (per 1,000 live births)</b>	<b>Prevalence of Tuberculosis (per 100,000 population)</b>	<b>Years of Life Lost to Communicable Diseases (%)</b>
Constant	4.951 *** (0.089)	7.204 *** (0.107)	6.048 *** (0.163)	7.569 *** (0.057)	6.814 *** (0.186)	10.348 *** (0.318)	7.015 *** (0.240)
Logarithm of GDP/capita	-0.016 (0.014)	-0.191 *** (0.016)	-0.227 *** (0.025)	-0.147 *** (0.009)	-0.545 *** (0.029)	-0.790 *** (0.049)	-0.472 *** (0.037)
Public share of total health expenditures  (percentage points)	0.001 (0.001)	0.001 (0.001)	-0.002 (0.002)	0.001 (0.001)	-0.003 (0.002)	0.001 (0.004)	-0.003 (0.003)
R-squared	0.008	0.507	0.432	0.678	0.764	0.679	0.597
N	174	174	174	174	174	175	174

Next, we look at a number of equity measures regarding health outcomes. Table 9 shows that differences in infant and child mortality between the rich and the poor decline with income, but the share of public financing has no impact.

**Table 9: Inequality in infant and child mortality as a function of GDP/capita and the public share of health care financing**

Dependent Variable:	Infant Mortality Rate Concentration Index				Child Mortality Concentration Index									
	Constant	0.13864 (0.0514)	***	-0.1087 (0.0262)	***	0.13053 (0.0541)	**	0.14146 (0.0477)	***	-0.1397 (0.0254)	***	0.11475 (0.0500)	***	
Logarithm of GDP/capita	-0.03751 (0.0080)	***			-0.0393 (0.0081)	***			-0.040745 (0.0075)	***			-0.0418 (0.0075)	***
Public share of health expenditures (percentage points)			0.00023 (0.0006)		0.00065 (0.0005)				0.00054 (0.0006)				0.00099 (0.0005)	**
R-squared	0.295		0.003		0.316		0.365		0.018			0.82		

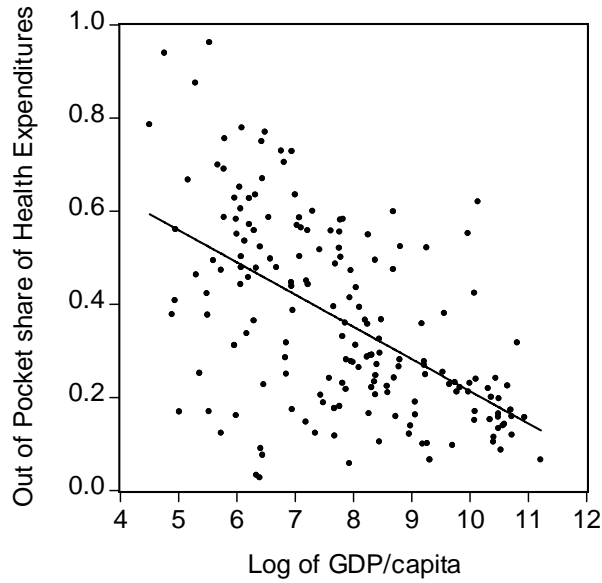
We then looked at the impact of public health care financing on the burden of disease at the country level (both incidence and inequality along the income distribution), by disease type. As before, we did not find any difference between countries that have a large public share in financing and countries that rely more on private financing. (See appendix table 1.)

We also looked at differences in health care infrastructure. We expected to find that public financing would result in relatively more nurses per capita and more primary facilities, while private financing would be more biased toward higher levels of staff and facilities. However, we can find no evidence that public money “buys” a different mix of health care infrastructure than private money. (See appendix table 2.)

Finally, we report two well-known patterns that are highly relevant for the discussion below. Figure 6 shows the relationship between the share of health care financing that is covered by out-of-pocket payments and per capita GDP. Although the variance is relatively large, the figure clearly shows that the share of out-of-pocket payments is the highest in poorer countries.



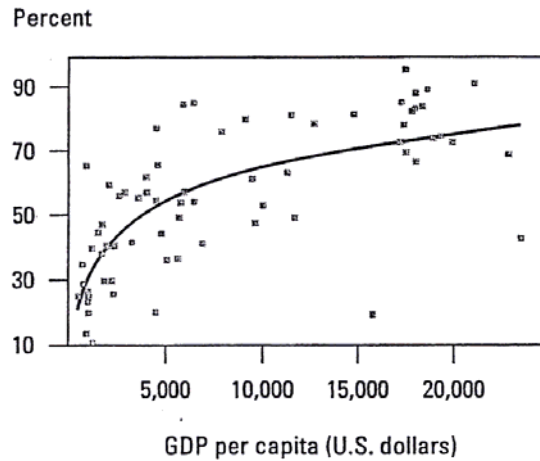
**Figure 6: The share of out-of-pocket payments, by GDP/capita**



*Source: WHO 2007.*

Figure 7 shows that spending through risk-sharing arrangements increases with per capita income. What we can conclude from these two observations is that countries that are the most in need of risk-sharing arrangements (because they have high levels of out-of-pocket-payments) have the least of such arrangements.

**Figure 7: Spending channeled through risk-sharing arrangements**



*Source: Dror and Preker 2002.*

## 5. Conclusions: The Public/Private Non-debate and Beyond

### *Beyond the current debate*

The main objective of this paper is to move the debate over health care development in low- and middle-income countries out of the political domain so that it may be based on empirical evidence on how health systems work. In this section, we first summarize the main empirical findings and then draw out the implications for future health care reform efforts.

The main empirical result is one that has long been known: total health expenditures per capita can almost perfectly be predicted by GDP per capita. Further analyses show that neither additional government efforts (in financing), nor general ODA or health-specific ODA, nor debt relief appears to have any impact on overall health spending. The only effect of donor support appears to be a shift from private funding to government funding, leaving total resources unchanged.

We investigated whether a larger share of government spending “buys” better health or has other measurable beneficial outcomes. Although there is some evidence that public spending on health care can be better targeted to benefit child health, we could not find any evidence that public financing is different from private financing in terms of health sector outcomes. Neither general health levels nor equity in health outcomes change when the public share of financing increases. We cannot find any impact of more public financing on the mixture of health care infrastructure in the system (doctors versus nurses, primary versus hospital care, and so forth). And, based on the analysis of OECD data, we do not find any evidence that public financing is, in practice, more equitable than private financing.<sup>10</sup>

These results are very troublesome for the current debate on health sector development. For instance, the main recommendation of the Commission on Macro Economics and Health<sup>11</sup> is that per capita spending on health care in low-income countries needs to be increased to about US\$ 35. But our analysis shows that, even if we would have the necessary resources, we simply do not know how to do that (except through economic growth). To put it more succinctly, if we expand current donor efforts in a business-as-usual way, the most likely result will be a shift from private financing to government financing while total resources are left unchanged. As we have shown, in terms of health sector outcomes, there is no evidence that public money “performs” better than private money.

To take another example, OXFAM International (2006) notes that the shortcomings of health systems in the developing world are extensively documented. Its report recommends that “governments [of developing countries] must feel the heat. They must be pressured [by donor countries] to spend more .. and spend it better” (OXFAM International 2006). Surprisingly, the report overlooks the fact that the health systems analyzed are already for the most part run by

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<sup>10</sup> This is because, in OECD countries, most private spending is channeled through (private) insurance arrangements. The extensive reliance in poor countries on out-of-pocket expenditures is, of course, highly regressive.

<sup>11</sup> Macroeconomic and Health: Investing for Economic Development. Report of the Commission on Macroeconomics and Health; World Health Organization, Geneva, 2001

governments. Moreover, in poor countries, the largest share of financing comes from private sources. Ignoring these private contributions to the sector by focusing solely on the role of the government has, no doubt, contributed to the dismal results of past health sector reform efforts.

On the basis of the evidence, we have to conclude that the debate over public versus private financing is a non-debate. It has no empirical basis and is solely driven by ideological arguments. Furthermore, there is very little reason to believe on a priori grounds that public delivery of services is preferable to private provision. It is time for a more pragmatic approach.<sup>12</sup>

### *The way forward*

Before speculating on “the way forward,” we need to make sure that the reader does not draw two erroneous conclusions from the results presented above. The first that, because ODA does not work, we may as well stop donor support. This conclusion is wrong for three reasons: First, in the samples of countries on which the analysis was based,<sup>13</sup> health-specific ODA averaged \$1.48 per capita, per year, or 1.1 percent of total health spending.<sup>14</sup> Can we really expect a measurable impact on the population’s health status for a per capita contribution of 12 cents per month? The call for a significant increase in donor support to improve the health sectors in developing countries may well be right.

Secondly, our analyses were based on country-wide data, which ignore the myriad of small-scale efforts by nongovernmental organizations and faith-based organizations that improve the health status of the local population but not on a scale large enough to influence national outcomes. More donor support for scaling up successful local initiatives—that is, for developing the health sector “from the bottom up”—may well be justified.

And, finally, there may be a case for significant increases in off-budget support, provided that the use of these resources are (or, over time, can be) properly integrated into an overall sector development plan.

The second erroneous conclusion is that, given all the evidence of massive government failure, it would be better to leave the health sector to the private sector. There are many good reasons that the government should be involved in the health care sector, and there are many productive ways in which it can be involved. Health education and communication to better inform the population, quality control through licensing and regulation, and financial support to provide access to the poor are all valid roles that the government can and should play.<sup>15</sup> The question is not *whether* the government should be involved, but *how* it is involved: as regulator, funder, or provider.

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<sup>12</sup> For an early discussion of the appropriate public-private mix and “pragmatic decision making” for the health sector, see Culyer and Jonsson (1986). See also Roth (1987). Preker and Langenbrunner (2005) provide many examples of how the interests of the poor can be better served by new approaches to “buying” health services that often involve public and private providers.

<sup>13</sup> The countries were included solely on the availability of the data.

<sup>14</sup> General ODA was just 1 percent of per capita income.

<sup>15</sup> The economic literature on the role of the government is voluminous. For a more extensive discussion, see, for instance, Peabody (1999).

Part of the way forward includes, therefore, new ways in which the government and the private sector can work together to improve the functioning of the entire health system. Donors should rethink their singular attention to and support for the government's involvement in the health care sector. In low-income countries, 50 percent or more of the financial resources are private resources. Private services are purchased by rich and poor people alike. Drugs are sold in private pharmacies and kiosks. One cannot ignore these realities. Sector development involves both public and private parties.

Governments need to rethink their relative strengths and weaknesses. Only the government can put regulations in place and enforce them. But, for many functions in the health sector including the procurement of drugs and the delivery of services, the private sector may be better equipped.

Perhaps most importantly, donors and governments should look for ways to leverage the financial resources that are already in the sector, rather than crowding them out. In India, for instance, 80 percent of health care financing comes from private sources. If the government of India wanted to be solely responsible for the health sector, it would have to increase its budget by a factor five, just to stay even. It would, of course, be much better if the government could find a way to keep the private resources in the system and use them better and more equitably.

One possible way of doing this is through the development of voluntary low-cost health insurance for low-income people. The out-of-pocket expenditures that make up the vast majority of current private resources could be channeled through pre-paid insurance schemes, and the steady income flow from the premiums could be used to pay for service delivery and investment in health care infrastructure.<sup>16</sup> Premiums could be subsidized for low-income workers and even fully subsidized for the very poorest. The government (supported by the donor community, in many cases) regulates and subsidizes the premiums, but health services are provided by the private sector. Government and the private sector can work together in developing the insurance market for various segments of the population. Such an approach would be particularly beneficial in low-income countries where, as we have shown, out-of-pocket expenditures form a large share of overall financing and risk-sharing arrangements are scarce.

The way forward will probably be full of new and innovative ways to finance and provide high-quality health services. In most cases, if not all, this will involve both public and private parties. Where new and innovative solutions are put in place, often at the local level, rigorous evaluations should accompany them, to learn what works and what does not work, and under which circumstances. The donor community should be much more open to such experiments and new developments, and it should develop and finance mechanisms to make sure that we learn from experience and avoid the mistakes made in the past. Donor support should be made available, indiscriminately, to both public and private parties involved in such experiments.

Although these conclusions seem modest given the task at hand, they represent a major break with current government and donor efforts in health sector development. They call for a paradigm shift, from ideology-based support for the public sector, to pragmatism based on what works and what does not work. In the end, we need to harness the resources and ingenuity of

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<sup>16</sup> For an inventory of such schemes in developing countries around the world, see Lagomarsino and Singh Kundra (2008).

both the public and the private sector in order to improve the dismal state of health care sectors in the developing world.

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**Appendix Table 1: Determinants of health levels and health inequality for selected diseases**

<b>Dependent Variable: Fever Prevalence</b>									
Constant	53.7582	***	54.3508	***	51.5740	***	48.4501	***	49.6620
	(7.7539)		(7.9445)		(9.9384)		(10.1799)		(11.1828)
Logarithm of GDP/capita	-3.5891	***	-3.4372	***	-3.1879	**	-2.4123		-2.6546
	(1.1532)		(1.2183)		(1.5286)		(1.5456)		(1.9468)
Public share of health expenditures (percentage points)			-0.0360						0.0039
			(0.0864)						(0.1489)
Logarithm of health ODA/capita					0.2111				-0.7852
					(1.3804)				(2.2964)
Logarithm of debt relief/capita							-0.2803		-0.1290
							(0.7074)		(0.8644)
R-squared	0.16		0.16		0.13		0.10		0.11
N	54		54		41		27		27
<b>Dependent Variable: Fever Concentration Index</b>									
Constant	-0.0167		-0.0117		-0.0021		-0.0085		0.0000
	(0.0421)		(0.0431)		(0.0625)		(0.0591)		(0.0620)
Logarithm of GDP/capita	-0.0014		-0.0006		-0.0048		-0.0037		-0.0007
	(0.0064)		(0.0066)		(0.0098)		(0.0096)		(0.0103)
Public share of health expenditures (percentage points)			-0.0002						-0.0006
			(0.0004)						(0.0005)
Logarithm of health ODA/capita					0.0031				0.0044
					(0.0061)				(0.0072)
Logarithm of debt relief/capita							0.0044	*	0.0049
							(0.0024)		(0.0027)
R-squared	0.00		0.01		0.02		0.16		0.24
N	53		53		39		24		24



<b>Dependent Variable: Diarrhea Prevalence</b>					
Constant	27.7995 *** (5.4969)	26.4492 *** (5.5840)	23.7577 *** (7.2521)	22.7625 *** (7.2707)	21.2899 ** (7.8629)
Logarithm of GDP/capita	-1.5836 * (0.8137)	-1.8768 ** (0.8452)	-0.9322 (1.1154)	-0.5255 (1.1039)	-0.8814 (1.3689)
Public share of health expenditures (percentage points)		0.0746 (0.0614)			0.0861 (0.1047)
Logarithm of health ODA/capita			0.2422 (1.0073)		0.0943 (1.6146)
Logarithm of debt relief/capita				0.1843 (0.5052)	-0.0135 (0.6078)
R-squared	0.07	0.09	0.03	0.01	0.05
N	56	56	41	27	27
<b>Dependent Variable: Diarrhea Concentration Index</b>					
Constant	0.0504 (0.0606)	0.0421 (0.0624)	0.1570 (0.0957)	-0.0286 (0.1060)	-0.0159 (0.1103)
Logarithm of GDP/capita	-0.0165 (0.0092)	-0.0175 (0.0094)	-0.0347 ** (0.0150)	-0.0041 (0.0172)	-0.0132 (0.0183)
Public share of health expenditures (percentage points)		0.0004 (0.0006)			0.0010 (0.0008)
Logarithm of health ODA/capita			-0.0128 (0.0093)		-0.0167 (0.0128)
Logarithm of debt relief/capita				0.0083 (0.0043)	0.0096 (0.0048)
R-squared	0.06	0.06	0.14	0.17	0.26
N	55	55	39	24	24

<b>Dependent Variable: Acute Respiratory Disease Prevalence</b>										
Constant	27.8095	***	28.5363	***	29.0635	***	29.5532	***	27.6030	***
	(6.2091)		(6.3792)		(8.0774)		(9.0008)		(9.5337)	
Logarithm of GDP/capita	-1.7760	*	-1.6202	*	-1.9618		-2.0413		-2.8795	*
	(0.9186)		(0.9645)		(1.2424)		(1.3666)		(1.6597)	
Public share of health expenditures (percentage points)			-0.0398						0.1652	
			(0.0701)						(0.1269)	
Logarithm of health ODA/capita					-0.1852				-0.3604	
					(1.1219)				(1.9577)	
Logarithm of debt relief/capita							-0.8595		-1.1294	
							(0.6255)		(0.7369)	
R-squared	0.07		0.07		0.07		0.16		0.22	
N	55		55		41		27		27	
<b>Dependent Variable: Acute Respiratory Infection Concentration Index</b>										
Constant	0.0565		0.0487		0.0892		-0.0710		-0.1173	
	(0.1097)		(0.1132)		(0.1787)		(0.1147)		(0.1207)	
Logarithm of GDP/capita	-0.0122		-0.0131		-0.0187		0.0556		0.0099	
	(0.0167)		(0.0171)		(0.0280)		(0.0172)		(0.0199)	
Public share of health expenditures (percentage points)			0.0003						-0.0005	
			(0.0010)						(0.0009)	
Logarithm of health ODA/capita					-0.0091				0.0121	
					(0.0173)				(0.0140)	
Logarithm of debt relief/capita							0.0051		0.0019	
							(0.0046)		(0.0049)	
R-squared	0.01		0.01		0.01		0.06		0.13	
N	53		53		39		24		24	

**Appendix Table 2: Health infrastructure regressions**

<b>Dependent Variable (Log of)</b>	<b>Number of Physicians (per 10,000)</b>	<b>Dentistry Personnel Density (per 10,000 population)</b>	<b>Laboratory Health Workers Density (per 10 000 population)</b>	<b>Other Health Service Providers Density (per 10,000 population)</b>	<b>Pharmaceutical Personnel Density (per 10,000 population)</b>
Constant	-1.542 *** (0.404)	-0.876 ** (0.390)	-2.308 *** (0.468)	-1.274 ** (0.618)	-1.169 *** (0.415)
Log GDP/capita	0.534 *** (0.062)	0.283 *** (0.056)	0.488 *** (0.067)	0.395 *** (0.107)	0.297 *** (0.057)
Public share of total health expenditures (percentage points)	-0.005 (0.005)	-0.001 (0.004)	-0.005 (0.005)	0.007 (0.009)	0.002 (0.005)
R-squared	0.411	0.284	0.655	0.325	0.325
N	141	95	35	64	89
<b>Dependent Variable (Log of)</b>	<b>Percentage of Births Attended by Skilled Personnel</b>	<b>Hospital Beds (per 10,000)</b>	<b>Anti-retroviral Therapy Coverage Among People with Advanced HIV Infections (%)</b>	<b>Antenatal Care Coverage, at least four visits (%)</b>	
Constant	2.763 *** (0.141)	0.314 (0.295)	0.621 (0.456)	2.431 *** (0.421)	
Log GDP/capita	0.197 *** (0.022)	0.312 *** (0.044)	0.320 *** (0.073)	0.241 *** (0.068)	
Public share of total health expenditures (percentage points)	0.001 (0.002)	0.007 (0.004)	0.004 (0.005)	-0.002 (0.004)	
R-squared	0.430	0.372	0.228	0.165	
N	162	163	99	69	