

What Role for Health Economics in the Health Programs of Christian NGOs?

Paul E. McNamara
University of Illinois at Urbana–Champaign
Department of Agricultural and Consumer Economics
mcnamar1@uiuc.edu

December 24, 2002

DRAFT: FOR COMMENT AND CRITICISM
PLEASE DO NOT CITE

Abstract: How can health economics as a discipline and Christian academic practitioners, in particular, contribute to the design, implementation, and evaluation of the health programs of faith-based NGOs in developing countries? This essay argues that economics has much to offer faith-based NGOs and their health programs. From insights concerning pricing policies for health services to practical examples of using economic methods to target public health programming in poor countries, NGO managers and the donor agency decision-makers they work with can draw upon these economic insights to help improve the effectiveness of health programming. However, greater impact from health economics would be realized if more Christian NGOs embraced the evidenced-based public health framework for their programming and clearly documented the effectiveness of health investments channeled through them. Christian economists also have an important role in helping faith-based NGOs contribute to the policy sphere and in helping educate Christians in countries like the United States and England about the effective health work Christian NGOs are delivering.

1. Introduction

For a Christian health economist, motivated by the biblical themes of justice, solidarity with the poor, and the welfare of all people, the international health programs of Christian non-governmental organizations (NGOs) present a wonderful challenge: how can health economics inform and assist in the design, implementation, and evaluation of international health programs that are distinctively Christian? At first glance, to the health economist, the answer might appear patently obvious: health economics provides a theory and a body of empirical research explaining the demand for health and health inputs (like vaccinations, nutrition, and curative medical services), the supply of health care, and arguments about the optimal system to finance these services. In addition, health economists bring skills in economic statistics to the analysis of health programs, and can partner with colleagues from epidemiology and health services research. Lastly, and perhaps most importantly, the toolkit of health economists includes the theory of demand for health and health inputs, which gives rise to benefit/cost analysis (as well as its cousins, cost-effectiveness analysis and cost-utility analysis), thereby providing a means to value health programs and offer insight into the effective targeting of health resources.

However, to the health program manager operating in the context of an NGO, the answer might just as clearly be that no role exists for health economics in this endeavor. The NGO manager notes that health economists appear to aim their real-world analysis and thinking to government policy-makers and not to managers, particularly not managers in international development NGOs. In addition, economists seem to have the greatest interest in analyzing things they have never run, like public health programs, and then pronouncing judgements on the program and

stating whether or not the program is “worth” its cost. Moreover, interacting with health economists consumes significant time for program staff, and since the program manager’s mission is to deliver health services or implement a public health program, how can such an interaction be justified? This validity of this concern becomes apparent when the observer appreciates the crisis nature of many public health situations and the pressing need for action. Lastly, health economists subscribe to an approach to human life that appears to be antithetical to a Christian NGO’s ministry in the area of health services and public health. That is, economists are quick to place a money value on human lives, while Christian approaches in health and public health view each life as a sacred creation and worthy of great effort to save and protect. In addition, public health workers often view each individual as having a right to access to health and health care, and that poor people should not be forced in the market to trade-off their health for their shelter and food.

In response to the skeptical health program manager, what argument can convince him or her of the usefulness of health economics to the design of international public health programs and health services? How can health economics as a discipline and Christian academic practitioners, in particular, contribute to the design, implementation, and evaluation of the health programs of faith-based NGOs in developing countries? My overall argument in this paper is that health economists do have the analytic tools to make a valuable contribution to the health programs of international Christian NGOs, provided that care is taken in building fruitful collaborations between academic health economists and NGO managers and staff. Particularly useful tools for health programs are burden of disease analysis and the cost-benefit analysis (and its cousins,

cost-effectiveness and cost-utility analysis), but economists have more to offer. The economic thinking around the relationships between income and health, education and health, and insurance and health care, have important implications for the design of NGO health programs. Additionally, economic methods of policy analysis and statistical analysis apply directly to NGO program design questions. Health economics also can contribute to the health programs of NGOs when they venture into discussions of poverty reduction strategies at the national level. Indeed, a significant contribution of health economics relates to its emphasis on health systems, and this emphasis raises a challenge to NGOs to include building the national health infrastructure explicitly into their program objectives.

To develop my analysis and argument about the contribution of health economics, this essay reviews the context of the health services and public health programs of Christian NGOs in developing countries in the following section. Section 3 highlights three key contributions from the discipline of health economics for international health programs, along with concrete examples. In Section 4, some ways that public health as a discipline, and international health programs of Christian NGOs as an endeavor, might leaven the scholarly work and faith of a Christian health economist are addressed. The following section presents a set of practical measures that might be taken to begin to build collaborations between Christian health economists and the programs of Christian NGOs. Section 6 presents some concluding thoughts on the theme of using health economics to strengthen the programs of international health NGOs.

2. The Context of Health Programming for Faith-based NGOs

A critical step in understanding where and how health economics can make a contribution to Christian NGO international health efforts, is to have an appreciation for the goals, objectives, program designs and areas of operation of these programs. Christian NGO efforts in the area of international health address myriad issues and utilize a variety of program strategies to reach their multiple goals. Today, Christian NGO health programs range from running hospitals in Zimbabwe, to implementing community-based health education efforts to confront HIV/AIDs in West Africa, to child survival programs in Asia and Africa, to providing care to AIDs orphans in Brazil, and to training pastors throughout the world about HIV/AIDs in order to craft a Christian response to the epidemic. To my knowledge there is no survey or centralized database of Christian efforts in international health that documents program objectives, areas of operation, program size, and program outcomes, so making a general assessment of the activities is impossible. Instead, we gain an appreciation for the distinctive aspects of NGO international health programming through example programs and through written sources.

Table 1 provides a summary of Christian projects that address the diseases of poverty (HIV/AIDs, Malaria, and Tuberculosis) (CCIH, 2002). Descriptions of these projects were found on the Christian Connections in International Health web page and, of course, these projects only represent a small fraction of the efforts by Christian NGOs in this area. However, as a group they illustrate a number of design strategies pursued by Christian NGOs. Of the 27 projects summarized here, the African continent is the best represented with 21 projects, while 4 of the project descriptions came from Asian project, and two were from Latin America (Brazil).

In this group of projects, health education and prevention approaches were the most common, with 20 projects including health education and prevention in their main objectives. (Some project objectives cut across all three programmatic approaches.) Nine of the projects focused on treatment and care and seven projects focused on social services, orphan care, and visitation.

The diseases of poverty projects listed a variety of approaches to defining the target audience. Many of the health education projects use a train-the-trainer approach, with pastors or church members taking the role of a community-health promoter and educator. Thus, 17 of the 22 HIV/AIDs projects were aimed primarily at pastors and church members. Some projects directed their attention through churches to entire communities, so 18 HIV/AIDs projects were listed as having the entire community as a part of their target audience.

We can assess some other important dimensions of the project design from the CCIH descriptions. Nearly all of the projects involve collaborations and partnerships across denominational lines, and 23 of the 27 project descriptions explicitly mentioned a strategy of working with a variety of denominations. In addition, a significant percentage of the projects (12 of 27) mentioned working directly with the local government (Ministry of Health or other agency). Another important dimension is the extent to which project receive funding from international development agencies (bilateral or multilateral agencies), since I hypothesize that only larger NGOs with a well-documented capacity for project implementation are likely to receive funding from these agencies. Another aspect of receiving external donor agency funding is that many important aspects of project design may be determined in consultation with or by

the external agency, so that any economic implications for health project design should be communicated to the donor agencies as well as to the NGOs. For this group of projects, 15 of 27 projects received at least partial funding from donors such as USAID or CIDA (the Canadian development agency). Many of the projects reported mobilizing local resources (beyond in-kind contributions) and others reported funding from overseas (such as United States or United Kingdom) church mission agencies.

With respect to monitoring and evaluating the impact and program outcomes, 18 of 27 project descriptions mentioned the project outcomes or indicators that would be used to measure project impact. Some projects made no mention of an evaluation strategy or careful thought of measurable project outcomes that were expected. Less than half of the project descriptions indicated a concern or appreciation for evidence or a research base for the project design. Of the 27 projects, 11 made some mention of an evidence-base or a concern for identifying the most cost-effective method of addressing the health problem. Since economic analysis plays a prominent role in health policy analysis, I searched the project descriptions for indicators of a project intention to affect national policy on the disease of poverty of interest. Only 5 of the 27 project indicated an objective of affecting national policy, though other Christian NGO efforts may be underway in this area. While it is not feasible to assess the capacity of NGO efforts to shape or contribute to national-level health policy discussions, the indicators of ongoing collaboration across denominational lines, the involvement with government agencies such as the MOH, and the collection of monitoring and evaluation data, all suggest a capacity to inform and contribute to national discussions on the diseases of poverty.

After reviewing the NGO project descriptions, one has an appreciation for the enormous variety of NGO activities and programs in the health arena. Some projects are large, multi-million dollar efforts addressing a disease such as HIV/AIDs over a large portion of a country. Others include small (in terms of staff size or budget, not vision or ability) local NGO efforts run by a local leader with a small staff. This variety is important, as economics may have a different role to play with different types of NGO health programs. To see more evidence of the variety of efforts that fall under the NGO umbrella, consider Table 2, which summarizes a list (found on the Christian Connections in International Health website, www.ccih.org) of HIV/AIDs programs sponsored by churches in Zimbabwe. In examining Table 2, note the wide variety of activities these programs are involved with: from microcredit to maternal and child HIV testing, and, from awareness education and prevention to orphan care and home-based care. These church-supported efforts are covering the field in terms of programmatic areas in HIV/AIDs. The most common areas of operation listed were counseling/psychological support (62%) and material/spiritual support (54%). How do we apply economics to a church-sponsored program that aims to support people living with AIDs (PLWA) materially or spiritually? Note also the wide variety of audiences the programs are reaching out to: youth (73%) and entire communities (36%) are the most common target populations for these programs. However, some programs focus directly at pastors and lay people in churches. Is there evidence that demonstrates the effectiveness of project strategies that are church-based and church-focused in the area of HIV/AIDs prevention?

The program listing also describes the number of people that have been served by a program,

with most programs having served either less than 50 people (28%) or between 50 and 500 people (51%). Only 5 of the programs have served more than 10,000 people. How deep is the coverage of Christian NGO programs relative to the need? How much capacity exists for additional programming?

From these project descriptions we obtain some stylized facts about the health programs of Christian NGOs in the developing countries. The organizations with the largest programs (in terms of budget and staff) tend to work under contract with USAID and other multilateral and bilateral aid agencies. It appears that the projects of these NGOs are more likely to have received input on outcome measurement and program design. A second observation is that few of the NGOs have explicit goals of shaping public health policy at the national level. It appears that some NGO programs operate in a country without much connection or communication with the Ministry of Health or other agencies, perhaps as part of a strategy to reduce the potential for conflict or interference. Nonetheless, in some cases NGOs can clearly demonstrate an institutional comparative advantage in delivering health services, as evidenced by indicators such as available medicines in clinics, trained staff on duty, up-to-date record keeping, and others. This raises the issue of what broader contribution to the health sector can NGOs make in the countries where they operate. Possibilities include: responding to national level policy dialogue invitations; providing a base of comparison for government-run health programs in terms of management and efficiency; providing a capacity building function in the country where it is recognized that staff move from agency to agency and that organizations learn from each other; and, contracting with government and/or international agencies to provide health services

in certain locales.

The potential contribution of economic analysis increases when one considers an important constituency for many US-based Christian NGOs: evangelicals. Political scientists have noted and measured the relationship between US evangelical Protestantism and conservative moral and economic teachings (Hoover, et al., 2002). A distinctive theme to American evangelicalism is the combination of conservative moral teaching with a strong agreement to conservative economic teachings and a suspicion of government efforts to redistribute wealth and to lift people from poverty. Hoover and his co-researchers show using regression analyses of a survey of Canadians and Americans that, while American evangelicals share an adherence to conservative moral teachings and a support for conservative moral social policies with their Canadian evangelical neighbors, they are unique in their strong adherence to a conservative economic position. To measure support for a conservative economic position the researchers create an index based upon responses to four questions about government and its role in the economy, such as “government should spend more to fight hunger and poverty even if it means more taxes”(Hoover, et al., 2002). Their research shows with quantitative evidence that, while Canadian evangelicals do not differ from their countrymen on the issue of inequality and economic fairness, American evangelicals are significantly more likely than their countrymen or Canadian evangelical brethren to oppose the welfare state and government attempts to alleviate economic inequalities. How can Christian NGOs appeal for funds in the context of this inclination of American evangelicals to distrust government attempts to reduce economic inequalities. Clear demonstrations of program and project effectiveness is one component of the

strategy to increasing support from evangelicals.

Beckman (2002) has argued for the need for increasing the political will to address poverty issues such as hunger in countries like the United States. He states that in the case of the United States the political support increases when the call to “do more is combined with a ‘conservative’ commitment to making anti-hunger programs more effective and to designing them in a way that encourages self-reliance.” He notes that Americans harbor skepticism about government-run social programs. Hence, the need to link a push for effectiveness (including documented evidence of better health outcomes) in any international development programs and strategies. The state-of-the art of public health practice is evidence-based public health and sufficient methods have been developed in the international health arena in order to appropriately apply this to methodology to help ensure the effectiveness and sustainability of the public health programs of Christian NGOs.

3. Three Key Themes from Health Economics

Health economics is the branch of economics that studies the production, supply, organization, and financing of health and health-related services and products. Its growth as a sub-discipline in economics has been remarkable over the past 30 years, and the dramatic increases in health care expenditures in the economies of countries such as the U.S., Germany, and the United Kingdom has fueled the demand for health economic analyses. One component driving this demand has been the press for evidence-based medicine, where the evaluation of medical and public health treatments considers the effectiveness of treatments and programs in producing the

desired health outcomes in a cost-effective manner. In this role health economics can assist policy makers in allocating limited health care budgets to the most productive uses and, thereby, increase overall population health (Kindig, 1997).

The field of health economics also has responded to the demand in international health for studies of health and health care in developing countries. The World Bank and the World Health Organization and their partner institutions across the globe lead the movement to bring economic tools to the analysis of health projects and programs. While much of the attention of this movement has been at the level of national health policy setting, health economics provides ways of thinking and analyses that may improve the programs of Christian NGOs operating in the international development context. Three key insights from health economics for these NGOs come in the form of the theory of health investment and the demand for health, the tools of economic measurement, and cost/benefit analysis.

3.A. Health Investment and Demand for Health

Economists generally credit the Nobel-prize winning economist, Gary Becker (1965), along with Michael Grossman (1972), with developing an economic approach to the production of health and the demand for health inputs within a household context. The economic approach to the demand for health inputs posits that utility is defined over health status and a composite commodity representing all other goods. An individual does not choose a level of health status, but instead chooses a consumption bundle consisting of a level of the health input and the composite good, that maximizes his or her utility level subject to an income constraint and a time

constraint, as well as a technology for producing health (a health production function).

Becker's time-price formulation emphasizes the way increases in health status might allow additional time in the labor market and therefore provide a labor-market rationale for the demand for health inputs. Thus, this model provides an explanation of a possible route for improvements in health to increase incomes, thereby linking public sector investments in health to possible increases in economic activity. This formulation also shows how, in situations where the money price of health services may be low or non-existent (because of public provision or full insurance), the time-price of health care may ration the demand for health services (Acton, 1972).

The Grossman model of health investment highlights the dynamic nature of changes in health status and the investment role of health input purchases. With the stock of health depreciating over time, investments in health inputs are necessary in order to maintain the stock of health. As health status declines due to the increased depreciation resulting from aging, demand for health inputs will increase. In addition, Grossman's model of health investment provides a rationale for education to play a role in the production of health, a concept that has intrigued economists due to the commonly observed differential of health status according to educational attainment.

Grossman's model also highlights the way in which health capital differs from other types of human capital. In Grossman's formulation, an increase in the stock of a person's health capital leads to an increase in the amount of time available to the person for labor market activities or at

home production. The model also raises several different sources of demand for health inputs and increases in health capital. There is a pure investment motivation, where a person's utility does not depend on his or her health status. The demand for health capital arises from its ability to increase labor income or household production through an increase in healthy days. An alternative motivation is the consumption value of health, where health appears directly in the person's utility function and increases in health capital directly affect the level of utility. The demand for health capital formulation of Grossman also provides a role for income and education to affect the demand and production of health capital. Grossman's model allows education (human capital) to affect the production efficiency of household production function for health, and raises one economic explanation for association observed between people with higher education levels and better health status.

Income and Health

The household model of health production serves as the analytic framework for a large body of economic research in developing countries, and the model's hypotheses about links between income and health, health input demand and the full cost of care (time and out-of-pocket costs), as well as the role of education and health have been important research foci. Cross-country comparisons of health status measures, such as infant mortality or life expectancy, portray a strong income gradient with respect to health indicators. Figure 1 presents World Bank data on human health from countries around the world, along with a plot of the predicted value of the infant mortality rate (IMR) based on a simple linear regression of infant mortality per 1000 upon GDP and the log of GDP. The amount of variation displayed in the plot is enormous, with the

country with highest IMR in 1999 (Sierra Leone) having a rate roughly 20 times higher than the countries with very low IMR. The effect of income portrayed graphically also shows the strong positive correlation between income and improved IMR. However, such a correlation might be due to a number of factors related to income (such as cultural norms, status of women, preferences about work and time horizon) that are unaccounted for in the plot? To what extent does income have a distinct effect on health status and how large do economists think the income effect is?

A cross-country study that provides an estimate of the effect of incomes on IMR as well as child mortality and life expectancy was conducted by Pritchett and Summers (1996). Using time-series (1960–1990) and cross-country data on economic growth (national income) and health variables, they estimated the distinct impact of income growth on IMR to be in the range of -0.2 to -0.4. Estimating an income effect on health status poses several methodological problems, with the most important of these being the possibility of reverse causation and the presence of an unobserved factor related to income that generates an incidental regression effect. To deal with these issues, Pritchett and Summers use time-series data to difference out unobserved country-level effects (i.e. cultural values or differences in the quality of governance), and they use instrumental variables (predicting income based upon a separate regression that includes variables that determine income but are not determined by the unobserved causal factor) to identify a causal link instead of a simple association between income and health. Their income elasticity estimates demonstrate the powerful role of economic growth in shaping population health: in 1990, if developing country incomes were 1% higher, 33,000 infant deaths

and 53,000 child deaths would have been prevented. One implications these results holds for Christian NGOs in the health arena is the need to participate in the coalitions that advocate for improved policies to help developing country economies (including fair trade policies, well-crafted debt relief programs, effective micro-enterprise and micro-finance programs, and, investments in agriculture and other productive sectors). An example of such a coalition would be the Alliance to End Hunger here in the United States, which aims to work to change the politics of hunger and includes a wide array of institutions from NGOs, foundations, food companies, and others. Another initiative on the policy front would be to encourage NGO supporters to write their elected representatives so that the President's Millenium Change Account proposal will be approved and funded by Congress. For Christian NGOs operating in developing countries, this evidence demonstrates the need to support and push for effective national-level economic development policies and excellent governance of the essential government services.

Economists also have focused on the important contribution of health to economic growth and raising incomes, what Grossman (1972) labeled the investment effect of health. This investment effect highlights the central role that health capital formation can play in increasing national incomes. The opposite effect, where neglected health investments or where significant health shocks reduce national income, is evidenced by the economic impact of the HIV/AIDS epidemic in places like Southern Africa. Haacker (2002) builds an open economy neo-classical growth model of nine economies in Southern Africa and estimates that the long-run impact of the HIV/AIDS epidemic on per capita GDP ranges from between a 1.2% decline in Mozambique to a

decline of -3.2% in Botswana. The differing impacts arise from different HIV/AIDS infection rates and from the differing prevalence of the disease across types of workers. In Haacker's analysis, most of the decline in national income due to HIV/AIDS is due to increased mortality of workers in their productive years, which results in the costs of training new workers and productivity declines from lowered levels of experience in the workforce. Additional economic costs arise from the opportunity cost of treating HIV/AIDS infected people. Haacker acknowledges the limited nature of his simulation-model results, since they do not include a detailed demographic and disease growth database that highlights the likely disease dynamics. NGOs have played a central role in addressing the HIV/AIDS epidemic through prevention, treatment, and outreach and care programs. The economic evidence, along with the realization of the crushing human burden of the disease, highlights the importance for research that documents the effectiveness of NGO efforts in the area of preventing new cases of the disease. If faith-based NGOs are indeed highly effective means of reducing disease transmission, then the argument is strengthened for additional resources to be channeled through them.

Education and Health

The demand for health capital framework also raises the possibility that education or knowledge might affect the demand for health inputs, as well as the productivity of health capital production. The strong correlations between health measures and education have generated a large economic literature about the role of health in health production, with a particular emphasis on maternal education and child health. Behrman and Deolalikar (1988) and Behrman (1990) survey number of studies on the effect of maternal education and children's health. While a

number of studies present positive correlations between the years of maternal education and decreased child mortality, difficult econometric questions surrounding the potential influence of unobserved variables and whether it is schooling or knowledge (perhaps gained through exposure to the media or other sources) that affects child health production. For example, Wolfe and Behrman (1987) studied data on child's health (using anthropometric measures of weight/height score and height/age) as a function of mother's schooling. Using a unique Nicaraguan data set with information on the education of the mothers and their siblings, Wolfe and Behrman found that the estimated effect of mother's education disappeared when unobserved fixed effects at the family level were differenced away using the sibling education information. Thus, the commonly detected effect of maternal education on health in fact be a proxy for unobserved causal factors.

Glewwe (1999) helps explain this puzzle with a study of maternal education and child health using Moroccan data from 1990-91. His overall conclusion is that the most important contribution of mother's schooling on health is an indirect effect that acts through health knowledge. The literacy and numeracy skills obtained in formal school affect the mother's ability to acquire health knowledge. The health knowledge does have a significant effect on child health, where child health is measured by height for age Z score. Glewwe identifies a number of policy implications from his paper: first, the need to teach health in the Moroccan schools; second, increased schooling for girls; third, the need to provide health education programs for women of child-bearing age; lastly, a need to focus on school quality so that literacy and numeracy skills are imparted in schools.

The research on the links between education and health might contain several implications for Christian NGOs with international health programs. First, in national level policy dialogues on health, NGOs might advocate for both improved quality and coverage of primary education. Second, for those NGO programs doing health education and prevention education, building in specific attention to literacy and numeracy skills needed to produce health might be warranted. Indeed, the literacy efforts of other Christian NGOs not operating in the health sphere may have an indirect health impact through this health knowledge pathway. Third, there may be a point where limited education funds ought to be targeted to adult education programs or non-formal education programs as opposed to secondary or university-level education, if child health is one objective or rationale for the spending. Targeting adult learners would open an opportunity for partnerships with Christian NGOs since many of them possess expertise in non-formal adult-education programming in areas such as agriculture, health, and theological education by extension.

Estimates of the Demand for Health Care and User Fees

Health economists argue, despite the contention of some that health and health care are such distinctly unique goods that prices do not ration their use, that when the full cost of seeking health care is considered and when the quality of service is controlled for, convincing empirical evidence exists that demonstrates the important role of prices on the demand for health care in developing countries. Gertler and van der Gaag (1990) examined the demand for health care using a provider choice models for rural people in Peru and the Côte d'Ivoire. The demand elasticities from their models imply that compared to free care (which still imposes time costs on

consumers) a system of across the board user charges will be regressive. That is, poor peoples' demand for care will be reduced much more than the rationing effect experienced by wealthier households. They also find (1990, p. 87) that demand for children is more price elastic than demand for adults, implying that users fees will disproportionately affect the utilization of health care by children. Gertler and van der Gaag also find that travel time elasticities compare closely with price elasticities, so that an increase in distance to the provider reduces utilization of poor people more than for wealthier people. This result argues for the geographic targeting of health care services, where poor people live, if equitable access to health care is a policy or program goal. In addition, targeting user fees may be one means of avoiding the regressive impact of health care user fees.

The evidence from demand analyses highlights the fact that user charges are not needed to reduce frivolous use of health care, since time-prices imply an already significant cost to using free care. User charges assist with cost-recovery and resource mobilization, thereby allowing higher quality of services and greater coverage of services than would otherwise be the case (WHO, 1995). The extent of cost recovery varies, but NGO hospitals and clinics have long used user charges to recover some of their costs. Moreover, in the case of community pharmacies, 100% cost recovery is sometimes observed.

Leonard (2002) provides a theoretical framework and empirical evidence supporting the argument that African health care NGOs dominate government providers in their ability to create an informal agreement or contract with patients regarding the value of care delivered. The

NGOs under consideration by Leonard often charge more than government providers for the same service, but they offer greater consistency on quality dimensions such as available pharmaceuticals and staff performance. Leonard's analysis supports the contention that NGOs offer at least a partial solution to the improvement of African health care systems, because of their institutional form which allows them to overcome some of the institutional difficulties (including informational asymmetries in health care markets and pernicious rent-seeking behaviors) found in these health care markets.

3.B. Economic measurement and burden of disease

In addition to the theory of the demand for health and health care that economics contributes to international health efforts, economics provides a set of techniques for measuring health phenomena and for testing hypotheses about programs or health behaviors. Perhaps the two most important sets of techniques that economists have are: 1) econometric (statistical approaches to test economic hypotheses and to measure economic phenomena) methods for health studies; and, 2) health accounts, which combine demographic and health economics ideas to calculate the burden of disease. These two sets of methodologies differ substantially, but both can make valuable contributions to the international health programs of NGOs.

For managers in NGOs with international health programs, a significant challenge is to interpret reported empirical results from the journal literature on health and development, and program effectiveness. Another significant challenge is the evaluation of program data to assess the effectiveness of an NGO's specific health program. This paper is not the forum to delve into

technical details concerning econometric issues, however, program managers should realize that health economists have a background and training in addressing these sorts of statistical issues. In addition, program managers can be aware of the statistical issues posed an effort to demonstrate the effectiveness of a public health or health care program. Mullahy and Manning (1995) describe the statistical issues faced in conducting a cost-effectiveness analysis for a health care treatment. The type of statistical issues faced in evaluating a health program include: non-random selection of participants into the program; variations in program treatment (for example, drop outs in an education program); unobserved factors correlated with treatment; measurement problems with the program outcomes; measurement error associated with control variables in the study; and, missing variables on factors that would be expected to affect outcomes. The point here is that in order to demonstrate the effectiveness of an NGO's international health program, the standard of evidence is that of scientific journals in public health and international development. Many simple evaluation designs are limited by their ability to treat issues such as non-random program treatments or participation and the other statistical issues raised here.

An important methodology to help in targeting health resources and health programming efforts is the notion of the burden of disease. The World Health Organization, the World Bank, and other institutions (including academic health economists) have led important efforts in developing the burden of disease methodology, conducting studies, and disseminating results to affect policy and planning (see, for example, WHO's The World Health Report 2002). The burden of disease approach seeks to determine the magnitude and relative contribution of specific diseases and health practices (health behaviors, environmental health factors, and injury-

types) to the overall amount of illness and disease (measured in morbidity and mortality terms) observed in a country or region. Ezzati and co-authors (2002) present a global analysis of health risks and the burden of disease with direct implications for the design and implementation of NGO health projects. They considered 26 major health risks, including underweight, Vitamin A deficiency, high BMI, unsafe sex, tobacco, alcohol, and illicit drugs, air pollution, and occupational health risks. Using Disability Adjusted Life Years (DALYs) for their outcome measure, they found that in the set of countries with high mortality rates (including all of Sub-Saharan Africa and countries like Egypt, India, Afghanistan, Bolivia, Haiti, and Peru), underweight (15%) and unsafe sex (10%) were the risk factors that contributed the most (about 25 % of DALY in the region combined) to the overall burden of disease. Obtaining an overall ranking of the relative contribution of disease risk factors to the overall level of morbidity and mortality is one step towards efficient allocation of health resources.

One NGO (the International Development Research Center, IDRC, based in Canada) has partnered with the Tanzanian Ministry of Health (MOH) to apply the burden of disease concept to health program targeting (The Economist, 2002). The Tanzania Essential Health Interventions Project (TEHIP) operates in two rural districts (Morogoro and Rufiji) and the basic thrust of the project was that IDRC would augment MOH spending in the districts if the health ministry would align health spending and programs to address the relative burden of diseases in the district. To achieve this goal of better matching of resources to health burdens, the project conducted a door-to-door survey (not an inspection of clinic records or disease registries) to find out whether anyone had died or been sick and obtain a description of the symptoms. This

allowed the construction of district-wide burden of disease estimates and a comparison with the health budgets identified major discrepancies between disease burdens and resource allocation. For example, prior to the project, malaria accounted for 30% of the disease burden in Morogoro, but health spending was only 5% of the 1996 budget. In addition, some diseases attracted more spending than the burden indicated, with tuberculosis at 4% of life years lost and 22% of spending providing one example. The project used this information to reshape the budget somewhat, with the additional funding from IDRC allocated to neglected diseases where cost-effective interventions were available. This is one example of how the burden of disease concept could be applied to help better target health problems in developing countries. Another use for the burden of disease concept would be in national-level health planning discussions where NGOs might work with the MOH to make sure that overall health resources (private sector, including NGOs, and public sector) match the burden of disease.

3.C. Theory of value – a focus on value in health programs

Many of the conclusions of these burden of disease type analyses confirm what community-based public health approaches have been emphasizing for a long-time, that the emphasis needs to be on primary care and prevention services (a package of prevention and treatment of infectious diseases, programs targeted at childhood diseases and maternal health, basic primary health care services, and health education for issues like HIV/AIDs, tobacco, and sexually transmitted diseases) instead of on the development of capacity for complicated hospital treatments and expensive pharmaceuticals. The unique contribution of the burden of disease approach is the measurement and quantification of the relative affect of diseases and risk factors

on the overall population health. However, knowledge of the burden of disease is not sufficient to ensure an efficient allocation of health spending. Depending on the availability of effective interventions and their costs, it may make economic sense to forgo treating or preventing some diseases with a high burden in order to focus resources on diseases with a lower burden with an inexpensive and effective treatment or prevention strategy.

Cost-effectiveness analysis and cost-benefit analysis represent two common ways for health economists to compare alternative health projects or interventions and assist decision-makers with making an efficient use of their limited budgetary resources. Both cost-effectiveness analysis (CEA) and cost-benefit analysis (CBA) take the societal perspective in considering the relevant costs and benefits for inclusion in the analysis. The societal perspective is consistent with the public health perspective of population health. In addition, CEA and CBA are the analytic methods used (along with expert reviews and meta-analyses) for evidence-based public health (Brownson, Gurney, and Land, 1999; Brownson, et al., 2003). Evidence-based public health is a best practice for public health agencies and organizations, where the design of major programs rest upon scientific analyses that demonstrate the effectiveness of the program at producing outcomes in a manner that is consistent with resources used to deliver the program.

In CEA the analysis aims at comparing the costs of a health care intervention with its outcomes. Alternative methods of producing the same outcomes (ie. discounted life years saved) can be compared to find which method is the most efficient way to produce population health given a limited budget. CBA analyses the costs of a health program with an economic measure of the

program's entire impact, where the impact is measured in money terms. The impacts captured in a CBA may be broader than in a CEA, since impacts like improved labor productivity can be valued in money terms. For example Kim and Benton (1995) use a CBA approach to value the West African onchocerciasis control program (OCP), which provided health benefits to rural West Africans and opened up previously oncho-infested land areas to agricultural production.

International public health examples of the CEA include Jha, Ranson, and Bobadilla (1996). They calculate the burden of disease for Guinea and then conduct a CEA of forty selected health interventions in use at clinics and hospitals. Conducting a CEA requires estimates of the efficacy or treatment effect of the selected interventions, as well as information on the average number of life years lost to each treated disease or risk to health. In addition, information is required about the pre- and post-intervention coverage for the treatment. Once the cost structure of the intervention is known, then a calculation of the CEA can be made. A table that compares CEA results for a set of interventions is called a league table, and such a table allows the selection of the most efficient measures to produce additional life years at the societal level. Jha, Ranson, and Bobadilla (1996) provide a ranking of all forty interventions and they find that the three most effective ways to produce additional life years include: 1) treatment of children with pneumonia at health center (\$3/life year saved); 2) rehydration therapy at health center (\$7/life year saved); 3) rehydration therapy at health post (\$8/life year saved). A cost-effectiveness analysis such as Jha, Ranson, and Bobadilla (1996) provides an easy to understand research result useful for targeting program budgets and health interventions. In addition, the analytic framework highlights some additional questions for anyone in health program design: what is the

efficacy of the program's treatment? How effective is the program in terms of producing public health or clinical outcomes?

The World Bank has developed a decision-making tool based on CEA called the ABC (Allocation by Cost-Effectiveness) Model (World Bank, 2002). While designed for allocating HIV prevention resources, the framework could easily be extended to other prevention or treatment arenas. The model provides a set of Excel-based spreadsheets that can be used to compare alternative HIV Prevention programming strategies to find out which programs should receive the limited funds from an HIV Prevention budget.

This section has surveyed some of the main tools of health economics with an eye towards their potential contribution in designing, implementing, and evaluating the international health projects and programs of Christian NGOs. Readily applicable examples exist of tools and methods that might help NGOs hone project designs for greater effectiveness. These methods can also be used to shape project monitoring instruments and to conduct evaluations. While health economics has a potential contribution to make to the work of international NGOs, thinking about the context and operational issues faced by the health programs of Christian NGOs might also contribute to the work of an academic researcher.

4. Engaging With International NGOs Health Might Leaven a Health Economist's Work

In many parts of the developing world, certainly in many parts of the poorest countries, the NGOs represent the most effective organizations on the ground with a capability of delivering

health programs. Interacting with these programs, either formally in a cooperative-research capacity or less formally, perhaps through research that examines a dimension of the operational environment of international health NGOs, offers an economist researcher a real-world problem with potential significance for research literatures on international health and public health. However, sincere engagement or interaction with NGOs will challenge economists not only because of the quick pace of the NGO world, but also because of the clear statements of mission and purpose of the Christian NGOs.

In my conversations with NGO managers, they repeatedly mention the desire for economists to contribute to discussions and analyses of health equity concerns across countries. As Table 3 shows, their concern is rooted in the obvious fact that \$1000 dollars spent in Sierra Leone, for instance, can produce many more additional years of life than that same dollar used here in the U.S. Sincere engagement with international public health raises the extreme differences in net benefits in terms of life years saved or QALYs per dollar of health spending across rich and poor countries. How do economists respond to this enormous variation? Are we willing to raise our voices in our churches and in communities to ensure that people are aware of the enormous inequities in health spending at the present time? Do we work to live in solidarity with the poor?

The Catholic writer and theologian Henri Nouwen wrote about the need for both excellent analysis combined with a life of practical grace:

“There is no question about the need for critical analysis of the world we live in. We have to try to constantly identify the dynamics that create poverty, hunger, homelessness, oppression, and war. Helping individual people in need is not the final answer. But when we become so overwhelmed by the abstract problem that we no longer consider the

concrete, daily pain of men, women, and children worthy of our attention, we have already been seduced by the demon of death. Jesus understood the problems of the world in the most radical way, but wherever he went he responded to the concrete needs of people.” (Nouwen, p. 47)

This tension between grace and efficacy also characterizes the work of some of the Christian NGOs and their health programs, where joint goals of health and spiritual ministry are present.

Gutierrez addressed the tension between grace and efficacy that all Christians face, stating

“Concern for effective action is a way of expressing love for the other. The gratuitousness of the gift of the kingdom does not do away with effective action but rather calls for it all the more.” (Gutierrez, 1984, p.108)

Another dimension of this tension, is that in the Christian perspective (as opposed to a market value or willingness to pay value), our value as persons comes from our createdness. In our economics we need to make sure that we call for effectiveness and transparency, but never let a distorted market price (from the Kingdom’s perspective) drive us to a conclusion that is contrary to the Gospel. Richard Foster has written on our value as humans:

“Our uniqueness and dignity is rooted in our creation in the image of God. Our value is not tied to wealth, status, accomplishments, or position. It is a gift. Obviously, this wonderful truth flies in the face of the modern tendency to define people by what they produce or what they have.” Foster (Freedom of Simplicity, 1981, p. 16)

Another area where the NGOs and their health programs raise questions for health economists is with respect to the church. Where does the church fit in the literature on health and development? The striking thing about the Christian NGOs and their development practitioners is their contention of the church’s ability to be one of the most effective institutions to effect behavioral change with respect to health behaviors. Yet, to my knowledge, no development economists or health economists have seriously entertained this question in the published literature. Does this assertion hold up to the evidence-based public health criteria? If so, does

the church's effectiveness as a grassroots channel for public health development arise because of organizational economies (getting groups together to form an audience), a clear call to biblical morality which is healthy, or because of a selection effect? Can this "church" effect be measured? Do development economists interested in health have an economic theory which might explain this effect, such as Leonard's institutional solution to a contracting problem approach?

This section has put forth the brief argument that serious engagement with Christian NGOs will pose questions for an academic researcher and might serve as the catalyst for growth. As Garrett (2002) notes, engagement with NGOs requires commitment from the researcher but also has the great potential for benefit.

5. Practical Steps to Build Collaborations and Make Contributions

What are some practical ways to facilitate the incorporation of health economics into the design, implementation and management, and evaluation of international public health programs of faith-based NGOs? For economics to contribute to the health programs of NGOs, academic economists are going to have think a bit outside the box and work on doing research and teaching activities in concert with NGOs and in collaboration with them. Christian professors at major universities that allow consulting days, might consider donating some consulting days directly to an NGO.

One very practical step is to work to assist with staff in-services, training workshops, and

distance education training for NGO staff and for field practitioners. Russell Mask at the Chalmers Center for Economic Development at Covenant College offers a distance learning course on microenterprise development via the internet with adult learners from around the world. A simple email-based course of readings and facilitated discussion might be a useful place to start. Some examples of workshop topics that might prove useful would be: “How to Use the Burden of Illness Approach to Help Inform National Level Health Policy Discussions” or “Using Cost-Effectiveness Analysis to Target Health Project Interventions” or “Pricing Strategies for Public Health and Health Care Projects in Africa.”

A second starting point might be collaborative research. However, as James Garrett from the International Food Policy Research Center has noted (2002), a number of issues arise in doing collaborative research with NGOs. Garrett notes that there are conflicting perceptions, with some people feeling that researchers are too theoretical, slow, expensive, and ignorant of the real world, while others perceive NGOs as too grassroots, ideological, small to affect real change, and slipshod. He points out that for such research collaborations to work the focus must be on commonalities, where differences are agreed upon and acknowledged. Researchers do things like produce information, analyze policies, program evaluation, and think at a general level with an audience of research peers and policy makers. NGOs use information to deliver programs and to advocate, work within a policy framework, and target households and individuals. Garrett states that NGOs desire information that is practical and that adds value to their programs, such as stating how to design or deliver a given program. The benefit of acting on the information should be readily apparent and the information should assist the NGO in advancing its agenda.

To bridge the gap between NGOs and researchers, Garrett (2002) reflects on the experience of IFPRI's urban food security program with CARE and other major NGOs. By working together with the NGO, Garrett and his colleagues worked to define the common issue of interest, where the researchers can make a contribution and that fit within the organizational mission of the NGO. A gap in the knowledge was defined, which researchers could address and specific outputs of interest to the NGO in the short term and longer term were identified. These outputs included technical assistance, guidelines on program evaluations and measures, research insights into how urban families were making a living. In addition, the researchers followed the organization's timing of the project cycle so that technical assistance and project support occur throughout the project cycle. The researchers also worked on a dissemination strategy that developed web papers, best practice guidelines, and presentations, all of which enhanced the NGO's reputation as a leader in its field. In Garrett's experience, the research process: helped the NGO with conceptual frameworks; provided general knowledge that gave insight into the project context; assisted with methods for data collection and analysis in assessments and evaluations; assisted with defining best practices; provided support for the design, monitoring, and evaluation of the projects.

Another way for researchers to contribute would be to focus on research of direct relevance to the NGOs and agencies like USAID through research into questions like:

- the economics of the church in developing countries as a social network for changing health behaviors;
- balance between child/maternal health and adult health;

- optimal geographic targeting – for example, spending on HIV/AIDS prevention in large; emerging infection countries (such as India, China, and Russia and Eastern Europe) versus spending on HIV/AIDS in SSA; and,
- balance between HIV/AIDS treatment versus HIV/AIDS prevention.

A further means to contribute to their programming is to assist with the academic training of key staff. In the past, Cornell has trained World Vision staff from Ghana, and doubtless, many other similar relationships have been funded for staff training at the Master's Degree level and perhaps at the PhD level.

Researchers also need to think carefully about the need and opportunity of speaking and writing about these issues. A central question is one of advocacy versus the researcher's viewpoint of detachment. Adding one's voice to the many Christians involved in Bread for the World offers a straight forward beginning. Participating in or leading a Sunday School class that examines the church's response globally to hunger and health problems might be another.

6. Conclusion

This essay has argued that economics has a role to play in helping NGOs make their programs more effective. However, that contribution may be modest and it certainly is tempered by the operational environment of NGOs, where deadlines, project schedules, and funding agency requirements play prominent roles. In the area of health programming, the burden of disease approach and the cost-effectiveness approach to targeting health programs offer immediate ways

to incorporate economic ideas into health programs. To increase the usefulness of the contribution of economics in the health program of NGOs internationally, collaborative relationships will need to be fashioned that take into account the realities of the NGO operating environment.

References

- Acton, Jan Paul. 1975. Nonmonetary Factors in the Demand for Medical Services: Some Empirical Evidence. *Journal of Political Economy*. Vol. 83 (3): pp. 595-614.
- Baldyga, William, Edith Sternberg, and Karen Peters. 2002. Evidence-Based Public Health: An Overview. *Public Health Practice in Illinois*. Vol. 5, No. 1(Winter), pp. 3-10.
- Becker, Gary. 1965. "A Theory of the Allocation of Time." *Economic Journal*. September. Vol. 82, pp. 1063-94.
- Beckman, David. 2002. "Changing the Politics of Hunger." 13th Annual Martin J. Forman Memorial Lecture. Presented at the Institute for Food Policy Research (IFPRI) on October 15, 2002 in Washington DC. Accessed on the web December 10, 2002 at <http://www.ifpri.org/>.
- Behrman, Jere R. 1990. *The Action of Human Resources and Poverty on One Another: What We Have Yet to Learn*. LSMS Working Paper No. 74. Washington DC: The World Bank.
- Behrman, Jere R. and Anil B. Deolalikar. 1988. Health and Nutrition. Chapter 14 in *Handbook of Development Economics*, Vol. 1. Edited by H. Chenery and T.N. Srinivasan. Elsevier Science Publishers.
- Brownson, RC, Gurney JG, Land GH. 1999. Evidence-Based Decision Making in Public Health. *Journal of Public Health Management Practice*. 5(5): 86-9.
- Brownson, Ross C., Elizabeth A. Baker, Terry L. Leet, and Kathleen N. Gillespie, 2003. *Evidence-Based Public Health*. New York, New York: Oxford University Press. 235 pp.
- Ezzati, Majid, Alan D. Lopez, Anthony Rodgers, Stephen Vander Hoorn, Christopher J L Murray, and the Comparative Risk Assessment Collaborating Group. 2002. Selected Major Risk Factors and Global and Regional Burden of Disease. *The Lancet*. Vol. 360, November 2, 2002. pp. 1347-1360.
- Foster, Andrew D. 1995. Prices, Credit Markets, and Child Growth in Low-Income Rural Areas. *The Economic Journal*. Vol. 105, Issue 430 (May): 551-570.
- Foster, Richard J. 1981. *Freedom of Simplicity*. New York, New York: Harper Collins. 200pp.
- Garrett, James. 2002. Considerations on Urban Research: Priorities and Partnerships. Presentation at the World Bank Urban Research Symposium held at the World Bank, Washington DC, December 11, 2002.
- Gertler, Paul, and Jacques van der Gaag. 1990. *The Willingness to Pay for Medical Care*:

Evidence from Two Developing Countries. Baltimore: The Johns Hopkins University Press for the World Bank. 139 pages.

Glewwe, Paul. 1999. Why Does Mother's Schooling Raise Child Health in Developing Countries? Evidence from Morocco. *The Journal of Human Resources*. Vol. 34, Issue 1(Winter): 124-159.

Grossman, Michael. 1972. On the Concept of Health Capital and the Demand for Health. *Journal of Political Economy*. (April) Vol. 80, No. 2, pp. 223-55.

Haacker, Markus. 2002. *The Economic Consequences of HIV/AIDs in Southern Africa*. IMF Working Paper WP/02/38. Washington DC: The International Monetary Fund.

Hoover, Dennis R., Michael D. Martinez, Samuel Reimer, and Kenneth D. Wald. 2002. Evangelicalism Meets the Continental Divide: Moral and Economic Conservatism in the United States and Canada. *Political Research Quarterly*. Vol. 55(2): pp. 351-374.

Jack, William. 1999. *Principles of Health Economics for Developing Countries*. Washington, DC: The World Bank.

Jha, Prabhat, Kent Ranson, and Jose Luis Bobadilla. "Measuring the Burden of Disease and the Cost-Effectiveness of Health Interventions: A Case Study in Guinea." World Bank Technical Paper Number 333, 1996 (ISBN 0-8213-3727-0).

Kindig, David. 1997. *Purchasing Population Health*. Ann Arbor, Michigan: The University of Michigan Press. pp. 194.

Leonard, Kenneth L. 2002. When both states and markets fail: asymmetric information and the role of NGOs in African health care. *International Review of Law and Economics*. Vol. 22, pp. 61-80.

Mullahy, John, and Willard Manning. 1995. Statistical Issues in Cost-Effectiveness Analysis. Pages 149-184 (Chapter 8) in *Valuing Health Care*, Edited by Frank A. Sloan. New York: Cambridge University Press.

Nouwen, Henri. *The Road to Peace*. Edited by John Dear. Orbis Books. 1998.

Over, Mead. *Economics for Health Sector Analysis*. Economic Development Institute of the World Bank, Technical Materials. Washington, DC: The World Bank. 1991. 214pp.

Pritchett, Lant, and Lawrence H. Summers. 1996. Wealthier is Healthier. *The Journal of Human Resources*. Vol. 31, Issue 4(Autumn): 841-868.

Smith, Steven C. 2002. Village Banking and Maternal and Child Health: Evidence from

Ecuador and Honduras. *World Development*. Vol. 30, No. 4, pp. 707-723.

The Economist. For 80 cents more. August 17, 2002. pp. 20-22.

Wolfe, Barbara L. and Jere R. Behrman. 1987. Women's Schooling and Children's Health: Are the Effects Robust with Adult Sibling Control for the Women's Childhood Background? *Journal of Health Economics*, Vol. 6, No. 3: 239-254.

World Bank. 2002. Optimizing the Allocation of Resources for HIV Prevention: The Allocation by Cost-Effectiveness (ABC) Model. Accessed on the web at <http://www.worldbank.org/lachealth/> on December 10, 2002.

World Health Organization. 1995. Lessons from Cost-Recovery in Health. Forum on Health Sector Reform, WHO/SHS/NHP/95.5. Discussion Paper No. 2.

World Health Organization. 2002. The World Health Report 2002: Reducing Risks, Promoting Healthy Life. Geneva, Switzerland: The World Health Organization.

Table 1 Summary of Christian Projects Addressing the Diseases of Poverty

Program Characteristic	HIV/AIDs	Disease of Poverty		
		Malaria	Tuberculosis	Child Survival
Number of Projects/Programs	22	3	1	1
Geographic Region				
Africa	17	3		1
Latin America	2			
Asia	3		1	
Primary Focus of Program				
Health Education and Prevention	15	3	1	1
Treatment and Care	6	1	1	1
Social Services, Orphan Care, Visitation	6		1	
Target Audience				
Church Members	10			
Pastors	7			
Entire Community	18	3	1	1
Program Description Mentions: (yes is tallied)				
Collaboration, Involvement Across Denominations	18	3	1	1
Local Government Involvement (MOH, etc.)	7	3	1	1
External Donor Gov't Financing (i.e. USAID, CIDA)	12	2		1
Monitoring and Evaluation Strategy or Indicators	13	3	1	1
Evidence, Effectiveness, or Cost-Effectiveness	8	2		1
Objective of Influencing National Policy	4		1	

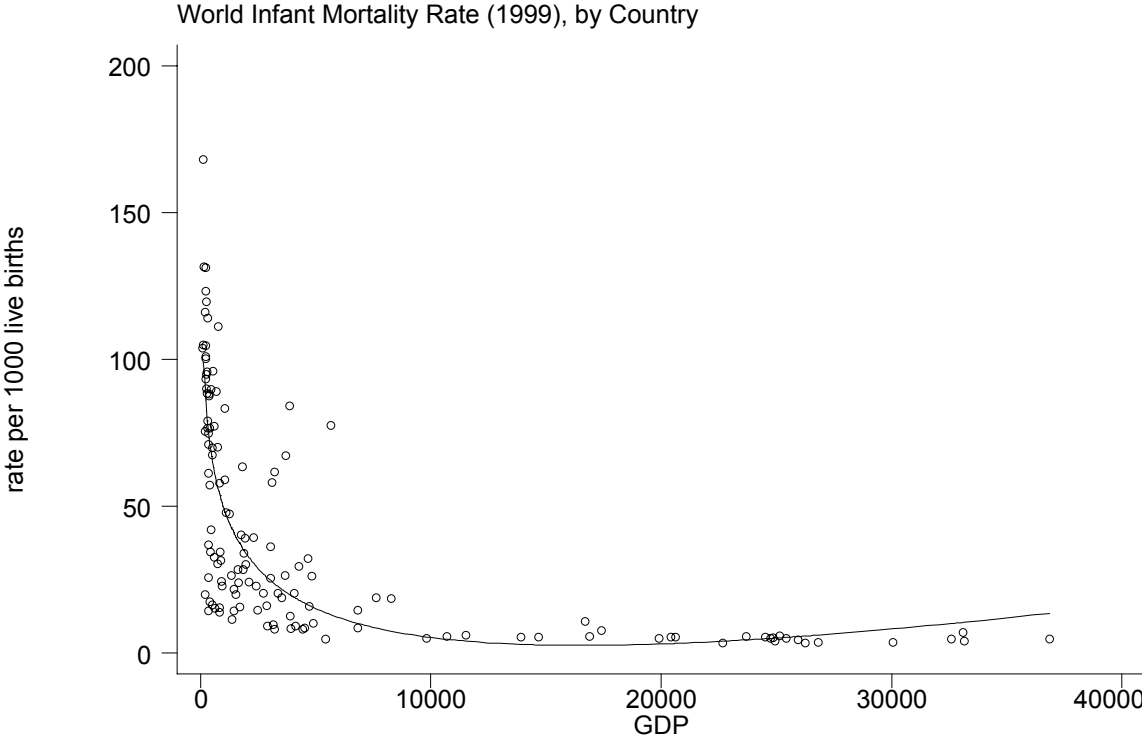
Note: Project Descriptions found on the website of the Christian Connections for International Health on 12/15/2002. Some programs had cross-cutting foci and audiences.

Table 2: Summary of Church Sponsored HIV-AIDS Programs in Zimbabwe

	<i>Number</i>	<i>Percent</i>
<i>Total Programs</i>	74	100%
<i>Area of Operation</i>		
Awareness/Prevention	32	43%
Advocacy	23	31%
Counseling/Psychological support	46	62%
Homebased care	21	28%
Material/Spiritual support	40	54%
Maternal/Child Testing	1	1%
Orphan Care	30	41%
Testing	10	14%
Training	28	38%
Skills Training	30	41%
Microcredit	4	5%
<i>Target Group</i>		
Clergy	3	4%
Laity	6	8%
Adults	16	22%
Youth	54	73%
Destitutes	10	14%
Communities	27	36%
<i>Program Size (Number of People Served)</i>		
Less than 50	21	28%
50-500	38	51%
1000-10000	8	11%
Greater than 10000	5	7%
<i>Point of Contact</i>		
Hospital	7	9%
Church/Mission	12	16%
Other	55	74%

Source: Christian Connections in International Health website <http://www.ccih.org/> accessed on 12/15/2002.

Figure 1 Infant Mortality and GDP Around the World



Source: Author's analysis of World Bank data, 2001.

Table 3 Cost-Effectiveness of Selected Prevention and Health Care Interventions in the US and Guinea

Country and Intervention	Year of Analysis	Cost/Life Year ^a
US, Kidney transplant (with retransplantation if required) compared to no kidney transplant	1997	\$10,000
US, Tuberculosis screening at age 50 compared to no screening for a 20 year-old black man	1990	\$63,000
US, Rabies vaccination compared to no rabies vaccination for a 135-kg 56 year-old man with opossum bite	1994	\$61,000
US, Policy of driver-side air bag compared to no air bags in driving population	1997	\$27,000
Guinea, Legislation/fines/seat belt policy for traffic injury prevention	1994	\$65
Guinea, Use of impregnated bednets for malaria prevention	1994	\$43
Guinea, AIDs education via media strategy	1994	\$12
Guinea, Rehydration therapy at health center	1994	\$7
^a Cost per life year for all Guinea figures; \$ per QALY for all others.		
Source: US figures are from Harvard Center for Risk Analysis website on medical effectiveness; Guinea figures are from Jha, Ranson, and Bobadilla, 1996.		