

Why and How Are We Studying Health Insurance in the Developing World?

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More than 2 billion people live in developing countries with health systems afflicted by inefficiency, inequitable access, inadequate funding, and poor quality services. These people account for 92% of global annual deaths from communicable diseases, 68% of deaths from non-communicable conditions, and 80% of deaths from injuries. The World Health Organization (WHO) estimates that more than 150 million of these people suffer financial catastrophe every year, having to make unexpected out-of-pocket expenditures for expensive emergency care (WHO various years).

Within countries, the burden of dysfunctional health systems is disproportionately felt by the poorest households. Their access and use of services, such as immunizations and attended deliveries, tend to be half those of richer households. They have limited recourse to purchase quality services from private providers. Their enrollment in health insurance tends to be marginal. And they are unable to shield themselves from catastrophic health expenditures by drawing on accumulated wealth.

In view of these shortcomings, policymakers in many low- and middle-income countries are debating the virtues of scaling up health insurance to improve health outcomes. Major international conferences have been convened in Berlin (2005) on social health insurance in developing countries and in Paris (2007) on social health protection in developing countries. Regional conferences have followed, as in Africa in 2009. Related to these initiatives, the World Health Assembly passed

a policy resolution whereby the WHO would advocate formally mandated social health insurance to mobilize more resources for health in low-income countries, pool risk, provide more equitable access to health care for the poor, and deliver better quality care (WHO 2005a).

All rich countries have adjusted their health finance systems to reduce out-of-pocket expenditures for health, which plunge as per capita income rises across countries (table 1.1). In terms of purchasing power parity (PPP), our preferred measure, per capita gross national income (GNI) is 29 times higher in the richest group than in low-income countries, but health spending per capita is 63 times higher. The share of gross domestic product (GDP) devoted to health more than doubles, the governments' share in the total rises, and the burden on individuals plummets as out-of-pocket spending falls as a proportion of the total. The bottom of table 1.1 shows how much this result reflects the situation in South Asia because of its large share of the total low-income population. The situation is slightly less dire in Africa, but only a bit.

Rich countries achieve these results through general revenue tax financing in support of national health insurance or subsidies for specific groups (such as the poor or the elderly), payroll taxes to support social health insurance, or, most commonly, some combination of both. Rich countries provide prepaid entitlement to health care benefits, reduce vulnerability to the expenses of care at times of illness or injury (financial risk protection), and use copayments and deductibles chiefly to manage demand rather than to raise revenue. They seek to reduce the discontinuity of care so common when people are navigating the system on their own and paying out of pocket at each point of contact. For the most part, richer countries have also separated financing from the provision of care, depend on a mix of public and private providers that are reimbursed through the insurance system, and rely increasingly on primary care providers as gatekeepers to more expensive higher level services. In a nutshell, poor countries want to mimic these successful and desirable behaviors of rich countries sooner rather than later. Mysteriously, donors have historically financed the direct delivery of health services in poorer countries with almost no attention paid to helping them build sustainable financial and purchasing institutions that could emulate some of the core successes of richer countries.

Whatever policymakers and donors want to do or think they should do to emulate successful health financing reforms, there are knowledge gaps that create enormous risks of failure for any reformer. This book attempts to begin filling some of them, but much more work remains.

The widest knowledge gap concerns the impact of health insurance on health status. Do people with health insurance in low- and middle-income countries, or

TABLE 1.1

Income and health finance indicators for select country groupings, 2007

Country group	Gross national income per capita (US\$)	Per capita health expenditure (US\$)	Gross national income per capita (PPP)	Per capita health expenditure (PPP)	Total health expenditure in GDP (%)	Public share of total health expenditures (%)	Out-of-pocket share of total health expenditures (%)
Low income	461	27	1,284	69	5	42	48
Lower middle income	1,752	81	4,234	182	4	42	53
Upper middle income	6,705	488	11,534	753	6	55	31
High-income OECD	39,540	4,618	37,328	4,327	11	61	14
East Asia and Pacific	2,190	96	4,946	208	4	46	48
Europe and Central Asia	6,013	396	11,123	647	6	66	29
Latin America	5,888	475	9,802	715	7	49	35
Middle East and North Africa	2,795	151	7,350	364	6	51	46
South Asia	879	26	2,535	98	4	27	66
Sub-Saharan Africa	966	69	1,858	124	6	41	35

Source: World Bank 2010.

even rich countries, have better health status indicators than those without? Evidence from rich countries suggests yes (box 1.1). But what about low- and middle-income countries? An affirmative on this issue would surely seem essential to consider health insurance as a health policy intervention rather than simply as a financial protection intervention. The vast array of people involved in health care because they want to improve health—nutrition advocates, family planning advocates, tuberculosis and AIDS activists, vaccine supporters, Millennium Development Goal supporters, health systems improvers—would have to see health insurance as an intervention that would be more effective in improving health outcomes than other directly focused options. Obviously, carrying a health insurance card by itself does not make one healthier, but if that card increases the use of appropriate services, makes a person more likely to access new proven technologies, creates incentives for providers to deliver the right services, and equalizes use among the rich and the poor, most analysts would be satisfied that it can have a powerful

impact on improving health. They then can devote themselves to making sure the services work.

A second knowledge gap concerns the impact of health insurance on out-of-pocket expenditures for health. Do people with health insurance have lower out-of-pocket spending than those who do not, especially when they are struck by health emergencies? Do the uninsured poor pay a higher proportion of their income for health care than the rich? When out-of-pocket spending is the principal means of securing health care, emergencies result in people borrowing, selling assets, not getting needed care, and engaging in other coping mechanisms. A high proportion of out-of-pocket spending also leads to poorer households spending more of their income on health care than richer households do, just as they spend a higher proportion on other necessities, like food and shelter. Health insurance should address this problem, yet the empirical evidence is slight in our focus countries. The more one explores this issue, the more it becomes apparent that success depends on the design of the program and who is covered; health insurance is not a homogeneous product. A yes on reducing out-of-pocket spending would be essential to argue that health insurance can help prevent people from sliding into health-related poverty.

We can stop with those two questions. Both must be positive to even consider health insurance as a sensible health policy tool in low- and middle-income countries. There are many other practical questions of implementation, but they reside in the realm of sufficiency, not necessity, for considering insurance as a health policy option rather than just a financial protection option.

Objectives of this study and how it was conducted

This study aims to contribute to current policy debates on scaling up health insurance in low- and middle-income countries by shedding light on these two issues: its impact on measures of health status and reducing out-of-pocket spending. Four objectives guide the research and analysis.

Objective 1. Rigorously review and synthesize published and unpublished studies to determine what we know about the impact of health insurance on access and use of health services, the impacts on financial risk protection, and the methodological and data issues in ascertaining causality.

Objective 2. Undertake new country case studies to assess the impact of health insurance on access and use of health services as well as financial risk protection using the latest data sources and statistical methodologies.

BOX 1.1

Impact of health insurance on health-related outcomes in rich countries

A committee sponsored by the Institute of Medicine of the National Academies in Washington, DC, reviewed 130 research studies that consider the impact of health insurance on health-related outcomes for adults ages 18–64 (IOM 2004, updated in IOM 2009). Findings suggest that uninsured adults are less than half as likely as those insured to receive needed care for a serious medical condition. Uninsured women and their newborns receive less prenatal care and are more likely to have poor outcomes during pregnancy and delivery, including maternal complications, infant death, and low birthweight. In addition, the uninsured more often:

- Lack regular access to medications to manage conditions, such as hypertension and HIV.
 - Do not receive care recommended for chronic diseases, such as timely eye and food exams to prevent blindness and amputations in people with diabetes.
 - Go without cancer screening tests, which delays diagnosis and leads to premature death.
 - Receive fewer diagnostic and treatment services after a traumatic injury or a heart attack, causing an increased risk of death even when in the hospital.
- Findings specific to children reveal the uninsured are:
- Less likely to get routine well-child care.
 - More likely to receive no care or delayed care, thus placing them at greater risk of being hospitalized for conditions such as asthma that could have been treated on an outpatient basis.
 - Using medical and dental services less frequently than insured children.

However, as Gruber (2009) observes, most of these studies simply document a correlation between no health insurance and poor health. Almost none attempted to control for the endogeneity of health insurance coverage with respect to health status. He cites only a handful of U.S. studies that have adequately controlled for endogeneity, but they too show strong impacts of health insurance coverage on health.

Objective 3. Cast more light on the inclusion of the poorest quintile of the population in health insurance in low- and middle-income countries, as well as the benefits they experience compared with the uninsured poor.

Objective 4. Identify the challenges, risks, and opportunities of undertaking retrospective evaluation of health insurance in developing countries using household data.

Shedding light on these objectives requires more than applying good econometrics. Researchers require a fundamental understanding of how health systems work to know what questions to ask and what models to use to find answers. This requires

familiarity with design elements that might affect the measured impacts of health insurance on health outcomes (such as enrollment criteria, benefits entitlements, and copayments). Beyond this, however, the study does not assess whether the organizational design of health insurance in different countries is the most efficient or most cost-effective arrangement in satisfying clients, providing quality care, paying providers, or being financially sustainable over the long term. These issues, while important, are complex and demanding enough to require another volume. In short, this study focuses on impacts of health insurance schemes as presently designed and implemented, not what such schemes might accomplish if implemented differently.

Reading this book may raise more questions than it answers, which is good, as we want to present the evidence available today on the topic. We began by identifying low- and middle-income countries that had experienced insurance reforms of interest. We narrowed the list according to whether data existed that could be used to measure what happened at the household level in response to these insurance reforms. We sought researchers who knew the country well and were qualified to do the work. We paired them with advisers and peer reviewers who would commit to read and advise as drafts of the chapters took shape. We tried to keep all of the individual projects advancing along the same timeline and hoped that the ensuing chaos would result in a good collection of work. We did not have the luxury of perfection in any part of this process.

There are many technical impediments to showing an impact of health insurance on anything. These are discussed in the literature review in chapter 2. For some of the chapters readers may conclude that the evidence provided does not get far past associations; in other chapters the evidence may look conclusive that causation has been established. The consistent theme that there is an impact—despite the variety of situations, data, methods, and policies examined—becomes inescapable after reading all the chapters.

Country case selection

Four considerations guided our selection of country case studies. First, we sought countries with sufficiently diverse backgrounds to shed light on the extent findings could be generalized across different contexts. Second, to gain insight into impacts of scaling up health insurance for relatively disadvantaged or poor households, we sought countries with a pro-poor orientation in the design and implementation of health insurance. Third, we sought countries with sufficiently well developed surveys or data systems that would facilitate rigorous statistical analysis of impacts of health insurance on measures of health status and financial

risk. Fourth, we sought researchers with a solid knowledge of health insurance who were capable of performing complex statistical modeling to tease out causal impacts. Table 1.2 provides summary data on the seven countries in this volume. We have two giant countries in the mix, China and Indonesia; however, except for Namibia and Costa Rica, all are sizeable. The data used in the chapters are nationally representative except in Namibia, Ghana, and China. There are some important differences across countries in the state of health, income, and health spending, but perhaps the widest range lies in out-of-pocket spending, ranging from 3%–8% of total health spending in Namibia and Colombia to over 50% in China. It is low in Namibia because of good penetration of private insurance; it is low in Colombia because of high government spending, primarily through its insurance system.

Namibia. The Namibian health insurance industry is better developed than that of most Sub-Saharan African countries. It is organized primarily into nonprofit

TABLE 1.2

Indicators for the country cases, 2007

Indicators	Namibia	Ghana	Costa Rica	Peru	Indonesia	China	Colombia
Population (millions)	2.1	22.9	4.4	28.5	224.7	1,317.9	44.4
Life expectancy (years)	60	56	79	73	70	73	73
Infant mortality rate (per 1,000 live births)	32	53	10	23	32	19	17
GNI per capita (US\$)	4,110	590	5,530	3,340	1,520	2,410	4,070
GNI per capita (PPP)	6,080	1,330	10,530	7,060	3,280	5,430	8,200
Health expenditures per capita (US\$)	319	54	488	160	42	108	284
Health expenditures per capita (PPP US\$)	467	113	878	327	81	233	516
Health expenditures in GDP (%)	8	8	8	4	2	4	6
Public share of health spending (%)	42	52	73	58	55	45	84
Out-of-pocket in total health expenditures (%)	3	38	23	32	30	51	8
Population enrolled in health insurance (%)	<30	61	88	42	36	80–90	90

Source: World Bank 2010. Data on population enrolled in health insurance are based on information from the chapters in this book.

medical aid funds—about one-third mandatory social health insurance funds and about two-thirds voluntary, private plans. Many of the funds are closed, with membership limited to employees in a particular firm or industry or to government civil servants. This has resulted in large disparities in enrollment across socioeconomic categories; only 5% of individuals in the poorest quintile are enrolled, compared with 70% of individuals in the richest quintile. While some private insurance plans aim to broaden the insured population through low cost plans, the challenge is huge because of the country's high prevalence of HIV/AIDS, estimated at 20% for people ages 15–49, concentrated largely among the poor (Feeley, Preker, and Ly 2007).

The case study assesses differences in the consequences of health shocks between the insured and uninsured—stemming from death, hospitalization, weight loss, and HIV/AIDS—specific to households in different income quintiles. The impact of health insurance has been assessed using multiple regression analysis, using 2006 survey data that include both socioeconomic and biomedical information.

Ghana. In 2003 the government passed the National Health Insurance Act, with a vision of insuring 40% of the population by 2010 and 60% by 2015. About 60% of the population was enrolled by 2008, exceeding expectations, with the success attributable to the generous benefit package and prior familiarity with enrolling households in district level mutual health organizations. Other African countries are closely watching Ghana's attempt to scale up health insurance, given the far reaching implications for raising funds, purchasing, and providing care to a largely poor population.

The case study applies a pre-post evaluation design in two districts, one classified as deprived, the other as less deprived. The impact of the health insurance reform is assessed using pre-post bivariate comparisons of key indicators, multivariate regression analysis, and a tentative application of propensity score matching analysis (tentative because of the small sample sizes), using data from a baseline household survey in 2004 and an endline survey in 2007.

Costa Rica. This country has become a benchmark of health insurance attaining wide coverage with no copayments, based on a direct delivery model. Social health insurance was introduced in 1950, and the Universal Coverage Act passed in 1961. Since then, health insurance coverage grew from about 18% in 1961 to 45% in 1971, 60% in 1975, and a high of 92% in 1990. In 2009 about 88% were covered, although the surveys used by the authors in this book put coverage closer to 81% in 2006.

The case study looks at the 19% of the population without health insurance in the 2006 surveys to establish differences in their health status and other characteristics and to investigate whether their health-seeking behavior and results are different. The impact of health insurance on health and related behaviors has been assessed using instrumental variables and data from the 2006 National Health Survey; expenditure results are based on the 2004 Income and Expenditure Survey; and a database of hospital discharges from 2006 provides a unique perspective on how the insured and uninsured use the system differently when they are sick.

Why study a country where everyone is either insured or, if they are not, have equal access to hospital care if they need it? One would not expect to see differences in financial protection in such a system for sure, but because we are interested also in health outcomes, it might be a unique opportunity to see whether not being covered by the formal insurance program has any impact even with Costa Rica's equal access provision.

Peru. With about 35% of the population covered by employer-mandated social security and other forms of health insurance, the government consolidated and began scaling up two pro-poor schemes initiated in 2001: one targeting children in public schools, the other targeting maternal and child health. Enrollees in the new consolidated program doubled from 3.6 million in 2001 to 7.3 million in 2007.

The case study assesses the impact of this publicly subsidized health insurance program that explicitly targets the poor. The impact of health insurance has been assessed with several models, using data from two household surveys: the Demographic and Health Surveys (DHS) for 2000 and 2004 (heavy on health information but light on economic data) and a nationally representative panel survey from 2004 to 2006 (with substantial economic data but limited health data).

Indonesia. With about 36% of the country's population covered by social security schemes as well as a public health insurance scheme, the government greatly increased public spending on health from about \$1 billion in 2001 to \$4 billion by 2007. Much of this additional spending was due to the expansion of the Askeskin health insurance program, which targets the poor.

Our case study examines changes in health status associated with movements in and out of health insurance, to shed light on how health insurance might affect health status and financial risk protection where only formal sector insurance coverage exists. The impact of health insurance has been assessed with individual fixed effect models, using panel data from longitudinal surveys in 1991, 1997, and 2000. The panel data used in this analysis provide a unique contribution even though the

most recent installment of the survey was not yet available to the researchers, which would have allowed them to include the Askeskin reform in the analysis.

China. In 2002 the government announced a new national policy for rural health care, the New Cooperative Medical Scheme (NCMS), which aimed to recapture successes of China's past health policies. In the late 1970s China's Cooperative Medical System, a communal-based approach, covered 90% of China's rural population. But it collapsed after the government introduced the Household Responsibility System in 1979, and communes disappeared as a result. The revised NCMS is a voluntary scheme that gives priority to covering catastrophic health expenditures and subsidizes premiums. By the end of 2008 it was credited with reaching more than 90% of the rural population.

The case study reports on a social experiment of a community-based prepayment scheme—Rural Mutual Health Care—undertaken as an implementation of the NCMS in several counties. Operating from 2002 to 2007, the experiment aimed to contribute to knowledge on the impacts of insurance, tailored to conditions in the poorest regions of China. The impact of health insurance has been assessed using differences-in-differences statistical methods and propensity score matching, using a pre-post treatment-control study design in two of China's rural provinces. A baseline longitudinal survey was conducted, along with two more panels following the same individuals during implementation of the experiment.

Colombia. A commitment by the government in 1993 to reorganize its dual health care system (a Ministry of Health direct delivery system alongside a social security direct delivery system), to expand coverage of the population by insurance, and to offer more choice to citizens on both insurer and provider offerings, has increased coverage from 24% in 1993 to 90% in 2007. Health insurance is financed through a contributory regime by employees in the formal sector and a subsidized regime in the informal sector. A major accomplishment of government efforts to scale up health insurance is an eightfold growth of enrollment among the poorest quintiles.

The case study uses the gradual implementation and still incomplete coverage of the subsidized regime to identify differences in health outcomes between those with health insurance and those without. The impact of health insurance has been assessed with a variety of semiparametric methods—including propensity score matching, double difference, and matched double difference—and instrumental variable analysis, using data from various Colombian DHS (1995, 2000, and 2005) as well as Living Standard Measurement Survey data for 2003 and administrative data.

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While there is considerably more interest in insurance as a financing option for health care even in poor countries, progress has been greatly hampered by a lack of knowledge of what the future would look like after such a reform. The first questions that arise from policymakers and reformers are:

- What country has done something like this that faces our constraints?
- What has been the impact?
- How did they implement it?
- What would they do differently in hindsight?

This book cannot explain much about how the reforms covered were implemented (the third question); that requires a different type of case study. But it does provide considerable information on the first two questions. On the fourth, each of the chapters has suggestions for what the authors think the authorities should have done in hindsight. Whether the suggestions will be taken up is another step entirely.

One thing that is essential to keep in mind in reading this book is that in no case is a perfect laboratory experiment being described. In fact, there is no chance of one being developed to assess the impact of insurance. Why? Because you can never take away from people all the other options they face. The most important other option in this book is the availability, in all cases, of free or low cost government-provided care in its own facilities. In Namibia the government system is reputed to function well and to be well financed. Yet even with this option we see substantial differences between the insured and uninsured. In Colombia, in comparisons of the insured poor against the uninsured poor, it is not that the uninsured poor have no services available because they can use the public system still in place. In Peru the insurance analyzed not only sits next to the subsidized public system, the insured are required to use the public system. So, as with all such analysis in low- and middle-income countries, there is always the unobserved impact of a free or low cost public system option (however well or poorly it functions) that confounds the results, more than likely by attenuating the impacts of insurance. For countries considering a complete switch from the supply side funding of free public services to demand side funding under insurance, we can say only that the evidence in this book is just a starting point.

The good news for reformers is that this book demonstrates—we think—that to know something about the impact of insurance, clever use of available data can obtain reasonably robust results. Moreover, to introduce health insurance as a health policy reform, it is not necessary to wait for results of randomized or social experiments. By now, we know that insurance can improve access and use of

services and can protect from the risk of financial loss. We see this in the literature review and in all the cases in this book. How much and for whom depend on the specifics of the design of the insurance scheme. Despite the statistical challenges researchers face, countries can reasonably expect that by introducing a pro-poor insurance scheme they can obtain improved results for access and use of services and for financial protection. The obvious alternative is to invest in providing free services directly, but we see in Namibia, Costa Rica, Peru, and Colombia that insurance or an insurance-like alternative may have a greater impact.

Does use of more health services and improved financial protection lead to better health? The cases in this book demonstrate the difficulty in establishing that link with the available data and measures of health outcomes; even so, there are many tantalizing clues that should encourage more effort in this area. What is needed are explicit goals for health outcomes embodied in an insurance system, disaggregated measures of health outcomes that insurance (and alternatives to it) can affect, and data suitable for measuring impacts without bias. There is much more to be done on this topic and, as well, on the impact of insurance on providers. In this book for the most part we focus on the demand, or patient, side of the equation.

Queries about each chapter should be directed to the corresponding authors, whose email addresses are listed in the Editors and Authors section after chapter 10.

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