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The Impact of Universal Coverage Schemes in the Developing World:

A Review of the Existing Evidence

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The Impact of Universal Coverage Schemes in the Developing World: A Review of the Existing Evidence[1]

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The World Bank's Universal Health Coverage Studies Series (UNICO)

All people aspire to receive quality, affordable health care. In recent years, this aspiration has spurred calls for universal health coverage (UHC) and has given birth to a global UHC movement. In 2005, this movement led the World Health Assembly to call on governments to "develop their health systems, so that all people have access to services and do not suffer financial hardship paying for them." In December 2012, the movement prompted the United Nations General Assembly to call on governments to "urgently and significantly scale-up efforts to accelerate the transition towards universal access to affordable and quality healthcare services." Today, some 30 middle-income countries are implementing programs that aim to advance the transition to UHC, and many other low- and middle-income countries are considering launching similar programs.

The World Bank supports the efforts of countries to share prosperity by transitioning toward UHC with the objectives of improving health outcomes, reducing the financial risks associated with ill health, and increasing equity. The Bank recognizes that there are many paths toward UHC and does not endorse a particular path or set of organizational or financial arrangements to reach it. Regardless of the path chosen, successful implementation requires that many instruments and institutions be in place. While different paths can be taken to expand coverage, all paths involve implementation challenges. With that in mind, the World Bank launched the Universal Health Coverage Studies Series (UNICO Study Series) to develop knowledge and operational tools designed to help countries tackle these implementation challenges in ways that are fiscally sustainable and that enhance equity and efficiency. The UNICO Studies Series consists of technical papers and country case studies that analyze different issues related to the challenges of UHC policy implementation.

The case studies in the series are based on the use of a standardized protocol to analyze the *nuts and bolts* of programs that have expanded coverage from the bottom up—programs that have started with the poor and vulnerable rather than those initiated in a trickle-down fashion. The protocol consists of nine modules with over 300 questions that are designed to elicit a detailed understanding of how countries are implementing five sets of policies to accomplish the following: (a) manage the benefits package, (b) manage processes to include the poor and vulnerable, (c) nudge efficiency reforms to the provision of care, (d) address new challenges in primary care, and (e) tweak financing mechanisms to align the incentives of different stakeholders in the health sector. To date, the *nuts and bolts* protocol has been used for two purposes: to create a database comparing programs implemented in different countries, and to produce case studies of programs in 24 developing countries and one high-income "comparator," the state of Massachusetts in the United States. The protocol and case studies are being published as part of the UNICO Studies Series, and a comparative analysis will be available in 2013.

We trust that the protocol, case studies, and technical papers will provide UHC implementers with an expanded toolbox, make a contribution to discussions about UHC implementation, and that they will inform the UHC movement as it continues to expand worldwide.

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TABLE OF CONTENTS

Box

Figures

Map

Tables

Executive Summary

Although the concept of universal health coverage (UHC) is not new, over the last few years its importance and visibility have significantly increased. In 2005, the 58th World Health Assembly adopted a resolution encouraging countries to plan the transition to UHC in their health systems. In 2010, the World Health Organization devoted its *World Health Report* to a discussion of health care financing alternatives for achieving universal coverage. The current movement to promote UHC has been accompanied by other key actors in the field of global health such as the World Bank, the United Nations Children's Fund (UNICEF), the United States Agency for International Development, the Inter-American Development Bank, the Rockefeller Foundation, and the Bill and Melinda Gates Foundation, among others.

UHC initiatives have sought to create awareness in and provide guidance to countries on how to improve the design and functioning of their health systems based on evidence of what works for achieving the goal of universal coverage. Meeting this goal is, however, challenging, because the available evidence rarely explores the causal link between the design features of these UHC schemes and the outcomes observed, and substantial heterogeneity exists regarding the robustness of the available evidence. Under these circumstances, providing meaningful guidance is not easy. This report contributes to the debate by systematically reviewing and synthesizing evidence concerning the impact of universal coverage schemes and combining it with a structured assessment of the robustness of such evidence.

The review indicates that UHC interventions in low- and middle-income countries improve access to health care. It also shows, though less convincingly,[2] that UHC often has a positive effect on financial protection, and that, in some cases it seems to have a positive impact on health status. The review also shows that the effect of UHC schemes on access, financial protection, and health status varies across contexts, UHC scheme design, and UHC scheme implementation processes.

Regarding UHC design features, the review shows that there are several common features across countries and regions, such as the coexistence of UHC schemes, heterogeneity in design and organization, a widespread effort to include the poor in the schemes, and the prevalence of mixed financing sources (contributions plus taxes). Yet, in a majority of cases, evidence is scarce and inconclusive on the impact of specific UHC design features on their intended outcomes.

A closer look at UHC schemes and available evidence reveals the following four lessons, all of which have implications for both policy and future UHC research.

First, affordability is important but may not be enough. Although improving the affordability of services was often achieved by UHC schemes, improvements in affordability did not always translate into improvements in access. Evidence suggests that for UHC schemes to achieve improved access, a more holistic approach to the dimensions of access needs to be understood and incorporated in the intervention's design, highlighting the fact that affordability is important but may not be enough to achieve full access to health services.

[2] The evidence available shows a favorable impact only on out-of-pocket expenditures, and, as we argue in the report, out-of-pocket expenditures and related measures are partial and imperfect measures of financial protection.

Second, target the poor, but keep an eye on the nonpoor. Since the common UHC scheme designs are less effective for the nonpoor (the impacts are usually diminishing and sometimes even negligible), when extending coverage to the nonpoor, other dimensions of access may gain in relative importance, and therefore different strategies may be needed. Also, in extending coverage to the nonpoor, it seems important to look at how moral hazard effects may change across income groups.

Third, benefits should be closely linked to target populations' needs. Policy makers with a finite budget have to manage the tradeoffs between what and how much is covered. In doing so, they should carefully examine the target population's needs by looking at indicators such as the population's epidemiological profile, major barriers to access, unsatisfied demand, major sources of financial hardship, and so forth. Nevertheless, the evidence suggests difficulties in achieving UHC-scheme-specific goals of improvements in financial protection and health status when careful attention is not paid to how benefits match the target population's needs.

Fourth, highly focused interventions can be a useful initial step toward UHC. A few studies that evaluate highly focused interventions, with clearly defined targets, usually find positive effects on access, financial protection, and even on health status outcomes. Although the evidence does not suggest steps for a transition from these targeted programs to broader population coverage, such interventions can be regarded as effective to tackle a country's priorities, and may be a useful initial step toward UHC or toward complementing a larger and established UHC policy. In light of this evidence, policy makers in each country could evaluate their health needs and priorities and assess the role that targeted interventions can play on their path toward UHC.

Finally, in terms of future UHC research, the review shows that most of the studies fail to involve evaluators from the start, which has led to weak evaluation designs to assess the impact of UHC schemes. Because of this, most evaluations are retrospective and do not use monitoring data. A better understanding of the effects of UHC schemes on financial protection is also needed to address several drawbacks of the current available evidence, and more and better evidence on the impact of health status is also required. A key step to address these difficulties would be to incorporate the evaluation in the early stages of the program and, ideally, simultaneously design the intervention and the evaluation. This would result in better and more meaningful evaluations, which in turn should contribute to enhanced UHC interventions.

Abbreviations

AU	access and utilization
CBHI	community-based health insurance
DD	double difference
DHS	demographic and health survey
EQ-5D	European Quality of Life-5 Dimensions
FP	financial protection
GHI	general health insurance
HS	health-status
INSS	Nicaraguan Social Security Institute
IV	instrumental variables
MDD	matched double difference
MFIs	microfinance institutions
MIP	medical insurance program
MSA	Medical Savings Accounts
NCMS	New Cooperative Medical Scheme (China)
OLS	ordinary least squares
OOP	out-of-pocket
P4P	pay-for-performance
PSM	propensity score matching
RCTs	randomized controlled trials
RDA	regression discontinuity approach
RMHC	Rural Mutual Health Care
SHI	Social Health Insurance
SR	Subsidized Regime (Colombia)
UC	universal coverage
UHC	universal health coverage
UNICEF	United Nations Children's Fund
UNICO	Universal Coverage Challenge Program
USAID	United States Agency for International Development
WHA	World Health Assembly
WHO	World Health Organization

1. Introduction

Although the concept of universal health coverage (UHC) is not new, over the last few years its importance and visibility have significantly increased. In fact, one author asserts that we are witnessing a third movement of the last century in the promotion of universal health coverage and that the subject, "has risen to the forefront of the global health agenda in the past few years, as reflected by donor pledges, international declarations, and high profile publications" (Bump 2010, 1).

Together with other key actors, the World Health Organization (WHO) has played a significant role in efforts to promote UHC. In 2005, the 58th World Health Assembly (WHA) adopted a resolution encouraging countries to plan the transition to UHC in their health systems. In 2010, the WHO devoted its *World Health Report* to a discussion of health care financing alternatives for achieving universal coverage. The current movement in promoting UHC has been accompanied by other key actors in the field of global health such as the World Bank, the United Nations Children's Fund (UNICEF), the United States Agency for International Development (USAID), the Inter-American Development Bank, the Rockefeller Foundation, and the Bill and Melinda Gates Foundation, among others. They have contributed in many different ways that include financing and accompanying reforms, supporting initiatives,[3] and publishing research and literature on the subject.

In addition to creating awareness, UHC initiatives have sought to provide guidance to countries on how to improve the design and functioning of their health systems based on evidence of what works for achieving the goal of universal coverage. Meeting this goal is, however, challenging, because the available evidence rarely explores the causal link between the design features of these UHC schemes and the outcomes observed. In addition, substantial heterogeneity exists regarding the robustness of the available evidence. Under these circumstances, providing meaningful guidance is not easy. This report contributes to the debate by systematically reviewing and synthesizing evidence concerning the impact of universal coverage schemes and combining it with a structured assessment of the robustness of such evidence.

The report builds on an earlier literature review that examines available evidence concerning the impact of health insurance in low- and middle-income countries (see Giedion and Díaz 2008; 2011) and is an update of the earlier work with two noteworthy changes. First, four years of new evidence is included, and second, not only is health insurance reviewed, but so is a wider range of health schemes that fit under the universal health coverage umbrella. These two changes are important because there has been a boom in interest in UHC schemes and an increased interest in high-quality impact evaluations (see, for example, Savedoff, Levine, and Birdsall 2005 and Simon and Barmeier 2010), and, in light of the aforementioned movement to promote universal coverage (UC) within the global health debate, the report goes beyond the consideration of universal insurance schemes to achieve the UHC goal.

[3] Such as UHC Forward (http://uhcforward.org), Harmonization for Health in Africa (http://www.hha-online.org/hso/), Health Systems 20/20 (http://www.healthsystems2020.org/), Joint Learning Network for Universal Health Coverage (http://jointlearningnetwork.org/), and the Providing for Health (P4H) initiative on social health protection (http://www.who.int/providingforhealth/en/).

The document is organized as follows. Chapter 2 provides an introduction to the conceptual framework guiding this study. It is organized in three sections. First, it discusses the concept of universal coverage and the health schemes and programs the concept refers to. Second, it discusses the causal link between universal coverage schemes and health-related outcome indicators. Third, it presents key methodological challenges faced by analysts wishing to evaluate the impact of UHC schemes. Chapter 3 presents the methodology used to search, include, and evaluate the robustness of the existing literature. Chapter 4 presents the results of our search and inclusion criteria and describes the general characteristics of the literature reviewed. Chapter 5 provides an analysis of the robustness of the evidence. Chapter 6 synthesizes the evidence of the literature on the impact of universal coverage schemes in low-income and middle-income countries. Finally, the last chapter summarizes our findings and their policy and research implications.

2. Conceptual framework

2.1 Definition of Universal Coverage

The *World Health Report 2010* defines the concept of universal health coverage (UHC) as a target in which "all people have access to services and do not suffer financial hardship paying for them" (WHO 2010, ix). By this definition, UC's *goal* is clear—namely, guaranteeing access to health care and financial protection for all.

Although the goal of UHC is clear, to conduct a literature review we need to understand the concept further, specifically, we have to be able to identify the UHC schemes that have been evaluated, and therefore we need to know what a UHC scheme looks like, how the UHC's goals are being pursued and, ultimately, what makes a policy or intervention a UHC scheme. To that end, in the following pages we summarize the health system characteristics that we found frequently associated with UHC, based on discussions by a number of authors (Balabanova, McKee, and Mills 2011; Carrin and James 2004; Carrin, Xu, and Evans 2008; Gottret and Schieber 2006; Hu 2008; Lagomarsino et al. 2012; Mathauer and Carrin 2010; McIntyre et al. 2008; Mills 2007; Sachs 2012; WHO 2010).

Health system organization. It has been argued that there are essentially two broad models by which health systems are organized: (a) national health systems, typically financed by general revenues, and usually covering all the population with direct public provision of services (commonly referred to as the Beveridge model); and (b) Social Health Insurance (SHI) systems, typically envisioned for the working population, segmented according to the population's participation in the labor market and usually financed by payroll taxes (commonly referred to as the Bismarck model). The differences between these models have traditionally included how benefits are assigned, how providers are organized, and how services are purchased and paid (see Lameire, Joffe, and Wiedemann 1999; Sigerist 1999; van der Zee and Kroneman 2007).

However, several authors have argued that the Beveridge/Bismarck dichotomy is no longer adequate to describe health systems today, because health systems today are much more diverse and complex, and the differences go beyond those highlighted by the Beveridge/Bismarck dichotomy (Gottret and Schieber 2006; Kutzin 2000, 4; van der Zee and Kroneman 2007; WHO 2010, 4, 50). Those pushing for UHC have accepted this argument and do no try to classify the

UHC schemes in any of those categories. Most important, however, **it seems that the UHC concept does not imply—or advocate for—a particular health system organization** (Carrin, Xu, and Evans 2008; Mathauer and Carrin 2011; WHO 2010; World Health Assembly 2005).

Revenue collection. Those promoting UHC recognize that the attainment of UHC goals depends not only on revenue collection but also on how other functions, such as pooling, purchasing, and service delivery, are performed (WHO 2000, 25; 2005, 3). Accordingly, once again, the UHC concept does not imply—or advocate for—a particular organization for revenue collection. Rather, it builds on the understanding that UHC schemes can vary considerably in their revenue collection strategy and recognize that most countries rely on **mixed or hybrid sources of funding** (Carrin and James 2004, 3–4). Moreover, to raise additional funding, some UHC initiatives are focusing on innovative financing such as levies on foreign exchange transactions, taxes on airplane tickets, solidarity charges on mobile phone calls, and other **earmarked sources of funding**, in addition to the well-known and common sources of funding such as employment- and income-related contributions, insurance contributions, and government general revenue) (WHO 2010).

The UHC movement, in principle, does not prefer one revenue collection mechanism over another, as long as both raise sufficient resources and the people's contributions are affordable and fair. It seems that **any revenue collection mechanism**[4] **is acceptable for UHC, as long as it contributes to—and is not detrimental to—the UHC goals** (as will be discussed later, this proscribes certain mechanisms such as direct payments within the UHC's logic).

Prepayment and risk pooling. Avoiding (over)reliance on direct payments is a central issue in UHC. Direct or out-of-pocket expenditures can constitute a major barrier to access and are often an important source of financial hardship and inequity (Nyman 1999; WHO 2010; World Health Assembly 2005; Xu et al. 2007, 980). To eliminate, or at least reduce, direct payments, UHC is in favor of **prepayment and risk pooling**; these two characteristics are explicitly advocated in the policy documents promoting UHC, and they are frequently found in countries that have committed to UHC (Carrin, Mathauer, et al. 2008; Lagomarsino et al. 2012; WHO 2010).

These mechanisms spread risk over time (prepayment) and across people (pooling), and by doing so, help to facilitate access to health care and avoid financial hardship for system users (Ranson 2002). Indeed, it seems that the evidence "supports the hypothesis that prepayment and risk pooling can protect households from facing catastrophic financial consequences of illness" (Xu et al. 2003) and that those strategies can facilitate access to health care (Carrin et al. 2008; Mills 2007; Preker et al. 2007).

Although prepayment and risk pooling are features that are clearly associated with UHC, there is considerable heterogeneity in the specifics of how these mechanisms are implemented by each country.[5] Nevertheless, the WHO argues that the larger and more integrated the risk pool the

[4] Or any mix of different mechanisms.

[5] For example, there are national pooling funds that aim to achieve UHC using a unique integrated scheme such as PhilHealth in the Philippines, but there are also nonpooling arrangements as part of UHC schemes, such as the Medical Savings Accounts (MSA) implemented in China. The MSA was created not to pool a fraction of the risk for the whole population, but to spread the individual's risk over time.

better, because larger pools are more likely to be financially viable in the long run, and integrated pools are often more efficient (or at least less administratively consuming), making it easier to attain equity (WHO 2010).

Covering the poor. UHC "requires a commitment to cover 100 percent of the population," and this can only be achieved if the government[6] covers or subsidizes, fully or partially, the health service costs for those who are unable to pay. Thus, UHC schemes are usually associated with a **special effort to include the poor** and subsidize their contributions and/or health coverage (see Sachs [2012], among others, for a further discussion on why, within the concept of UHC, it is key to subsidize coverage for the poor or those unable to pay).

Trade-offs: population coverage, costs, and scope of services covered. Regardless of the institutional arrangement chosen and how well countries are able to raise funds and achieve efficiency gains, "pooled funds will never be able to cover 100% of the population for 100% of the costs and 100% of needed services" (WHO 2005, 2). This is reflected in the fact that "no country, no matter how rich, is able to provide its entire population with every technology or intervention that may improve health or prolong life" (WHO 2010, 21). This fact implies that societies must choose what to give precedence to "in three core areas: the proportion of the population to be covered; the range of services to be made available; and the proportion of the total costs to be met" (WHO 2010, 12). Accordingly, the World Health Assembly has urged Member States "to plan the *transition* to universal coverage" (World Health Assembly 2005) rather than aim to instantly achieve universal coverage. The tensions between these dimensions are common to most, if not all, UHC schemes and indeed, most countries have not reached UHC but rather are on the path toward it (Bump 2010; Carrin and James 2004; Carrin, Mathauer, et al. 2008; Carrin, Xu, and Evans 2008; Lagomarsino et al. 2012; Mills 2007; Sachs 2012; WHO 2010), so a state of transition is another common characteristic of UHC schemes.

Delivering care. There is no clear pattern in UHC schemes regarding delivery of health care. Delivery is undertaken through public, private, for-profit, or not-for-profit providers or a mix of them. There are schemes that rely mostly on public direct service delivery, while others (probably the majority) rely to some extent on a mix between public and private providers.

Concluding remarks on understanding what UHC is. UHC is an aspirational concept and its goals are clear: access and financial protection for all. However, when it comes to understanding how UHC is achieved, it becomes clear that it is a broad and perhaps somewhat vague concept that comprises an extensive and heterogeneous array of organizational arrangements. The boundaries of UHC and the limits of what can and cannot be considered a UHC effort are far from clear. Along the same lines, a 2012 *Lancet* paper citing the documents advocating for UHC, states that "UC can be achieved in many different ways. There is no single recipe, and advocacy on the issue in the past decade has explicitly recognized this fact" (Savedoff et al. 2012, 925). Nevertheless, as discussed by Kutzin (2012), this lack of a single recipe does not necessarily mean that "'anything goes' on the path to universal health coverage" (Kutzin 2012, 1); indeed, the discussion above highlights several features that are commonly associated with UHC schemes such as prepayment and pooling, mixed sources of funding, an effort to include the poor or those

[6] Or external donors, as frequently happens in Africa.

who cannot afford to contribute, and a state of transition of most health systems committed to UHC. Kutzin (2012) discusses several policy choices that must be faced by policy makers working toward UHC and identifies paths that may make it difficult to get there. For example, he argues that "moving towards universal health coverage … means moving away from the idea of a purely or even a predominantly contributory basis for entitlement and coverage" (Kutzin 2012, 2).

In sum, UHC establishes what is to be achieved but says little on how to get there, and even though there may be a few features commonly associated to UHC and a few paths that do not seem to lead to UHC, it does not fully clarify what can be considered a UHC effort. This conclusion is problematic for the UHC movement itself. While is provides guidance on the ultimate goals of a health system and helps to mobilize policy makers to that end, it provides little guidance on how to get there and how to design a system accordingly.

On a more concrete level, the above-mentioned vagueness of UHC design creates serious challenges for the present literature review. It implies that virtually every health system, program, or intervention could *potentially* be classified as a UHC scheme, as long as it pursues UHC goals. This makes it difficult to define a clearly delineated search protocol to find literature on the impact of UHC. It also means that the evaluations included in this review will include a heterogeneous group of interventions. This, in turn, indicates that comparing and contrasting the comparability of the evidence will be very challenging. Furthermore, the identification of the intervention to be evaluated and how to recreate a counterfactual situation creates other methodological challenges such as the difficulty of finding a situation where individuals lack any form of UHC coverage (this issue is discussed in further detail in the next section). Finally, it makes it difficult to formulate specific policy advice on what does and does not work.

2.2 Universal health coverage and the outcomes of interest

Regardless of the specific design features of a UHC scheme, it is clear that UHC efforts are meant to guarantee access for everyone, on a timely basis, to allow for use of "needed health services"[7] and "ensure that the use of these services does not expose the user to financial hardship" (WHO 2010, 6). Access and service utilization are intermediate goals and they are essential to achieve the ultimate goal of any health system: maintaining and improving people's health (Kutzin 2010; WHO 2000).

Based on that goal, the three outcomes of interest here are (a) access, (b) financial protection, and (c) health status.[8] In this section we briefly discuss each outcome and how UHC schemes are meant to impact them.

Access. Access is a complex and multidimensional concept that goes beyond the utilization of services. Access in health care may be defined as a measure of potential and actual entry for a given population into the health system. It is the outcome of a process that is determined by the

[7] Needed health care includes prevention, promotion, treatment, and rehabilitation services (WHO 2010, 6).

[8] Other relevant outcomes might also be analyzed, such as quality, equity, and efficiency. However, to keep the study manageable, we selected just three—access, financial protection, and health status—given their immediate relation to UHC and their importance.

interplay between the characteristics of the health care system and the characteristics of the potential user (Khan and Bhardwaj 1994). In this interplay between providers and populations at risk, Penchansky and Thomas (1981) identify five dimensions of access: availability, accessibility, accommodation, affordability, and acceptability. Availability measures the extent to which the provider has the necessary resources, such as sufficient and qualified personnel and adequate technology, to meet the needs of the client. Accessibility refers to geographic accessibility, which is determined by how easily the client can physically reach the provider's location. Accommodation reflects the extent to which the provider's operation is organized in ways that meet the constraints and preferences of the client, such as need to get the general practitioner's approval before seeing a specialist, appointment systems, and hours of operation. Affordability is determined by how the provider's charges relate to the client's ability and willingness to pay for services. Acceptability captures the extent to which the client is comfortable with the more immutable characteristics of the provider and vice versa. These characteristics include age, gender, social class, and ethnicity of the provider and the client, and the diagnosis and type of coverage of the client.

In theory, UHC schemes are meant to influence all dimensions of access; however, UHC programs often put a strong emphasis on improving the affordability dimension of access by reducing economic barriers, by covering part or all of the direct cost resulting from using health services. The rationale behind this emphasis is that when services become more affordable, patients will use them more often, will seek care with less delay, and will possibly be more likely to have a regular source of care, which contributes to the use of health services and to improving health. Improving affordability is also valuable because it facilitates access to health care that otherwise would not be affordable, which is particularly important because it allows for the initiation of care that otherwise would not take place at all (Nyman 1999).

However, as McLaughlin and Wyszewianski (2002) indicate, the different dimensions of access described earlier "form a chain that is no stronger than its weakest link [and] for example, improving affordability will not necessarily improve access and utilization if the other four dimensions have not also been addressed" (McLaughlin and Wyszewianski 2002, 1441). Therefore, the emphasis on reducing economic barriers that seem to exist among UHC schemes may sometimes lead to the neglect of other dimensions of access, which may be equally—and sometimes even more—important for access (see, for example, the case of Pakistan's access to maternal health care [Agha 2011]). The authors report that three out of four women who did not make a prenatal care visit thought it was unnecessary and only one reported that the cost was prohibitive. Similarly, the most common reason for not giving birth in a health facility was the lack of perceived benefit of doing so (65 percent of respondents) while the prohibitive costs were mentioned by only 29 percent of respondents. Accordingly, the intervention they evaluate is a demand-side strategy that aims to remove social and cultural barriers associated to obtaining care from a medical facility and to reduce the financial barriers; that is, the intervention aims to improve both acceptability and affordability.[9]

[9] Another example comes from Rwanda (Dhillon et al. 2012). The authors evaluate the impact of "subsidising community-based health insurance (mutuelle) enrolment, removing point-of-service co-payments and improving service delivery." In describing the intervention, the authors explain that "comprehensive health system upgrades

In summary, although UHC seems to emphasize affordability over other dimensions of access, there are several examples that demonstrate that UHC does not limit itself to improving affordability, but rather than that, depending on the context, can sometimes focus on tackling problems of other dimensions of access. UHC schemes that emphasize other dimensions are certainly right to do so, because, as is argued by Penchansky and Thomas (1981) and McLaughlin and Wyszewianski (2002), improving affordability is a necessary but not sufficient condition to improve access to health care.

Financial protection. The second outcome of interest is the protection against the economic impact of ill health, which implies preventing people from becoming poor or incurring expenditures as a result of a health problem that threatens subsistence expenses and forces them to choose between their physical and mental health and their economic well-being (Kutzin 2008, 3; WHO 2000, 8). Financial protection is primarily, but not exclusively, associated with out-of-pocket payments at the time of service delivery. Other expenses incurred in using health care may also cause financial hardship, such as transport costs or the opportunity cost associated with seeking care, inability to pursue income-generating activities (Saksena et al. 2010), or lost income due to illness (Himmelstein et al. 2005). UHC schemes may have an impact on financial protection, by reducing economic barriers to services. However, some authors[10] have indicated that this is not necessarily true since UHC schemes do not only reduce prices faced when accessing health services but, at the same time, encourage more use by reducing economic barriers, thereby increasing the quantity of services consumed. The net effect will depend on the relative magnitude of each of these consequences.

Health status. Health status is a common goal of any health system[11] and of any UHC scheme. A UHC scheme does not, however, have a *direct* impact on health. Rather, it might promote, restore, or maintain health through two main channels: (a) improved access—promoting health by making routine health care services more affordable, and (b) providing financial protection—preventing further health problems by avoiding impoverishment and financial catastrophe (WHO 2000, 23–25).

Regarding improved access, a UHC scheme changes individuals' and households' decisions related to seeking health care services and can consequently increase the utilization of health services and improve health. Providing financial protection improves health by avoiding the deleterious consequences of financial hardship that may prevent health improvements by, for example, protecting nonhealth consumption (primarily food) and increasing the likelihood of treatment completion (Quimbo et al. 2010; Wagstaff and Pradhan 2005).

The lack of a direct cause and effect relationship between UHC schemes and health status implies that if no effect on health is found from the implementation of such a scheme, this may be because the scheme does not in fact improve access to services or financial protection, or the

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were made including an expanded pharmacy, health centre electrification, the introduction of a free ambulance service and expansion of health centre staff," revealing that besides the affordability improvements (by subsidizing enrolment and removing copayments), the intervention also aims to improve availability and accessibility.

[10] See, for example, Wagstaff et al. (2009) and Giedion, Díaz, and Alfonso (2007).

[11] A health system has been defined as "to include all the activities whose primary purpose is to promote, restore or maintain health" (WHO 2000, 5).

medical care or financial protection provided has no measurable effect on health. If improved access or financial protection is the means by which health status may improve, then we should concentrate on those measures of health status that can result from access to health services or financial protection.[12] Similarly, a UHC scheme is not a homogeneous good and it does not improve access to *all* health services; therefore, we cannot expect changes in utilization, access, and related health outcome variables that are not related to the benefits offered by the program that is being evaluated.[13] Moreover, health status depends on many more variables beyond those reasonably affected by a UHC scheme. While out-of-pocket payments are arguably the most important barrier to access and a source of financial hardship, health-system-related determinants of health status are sometimes the least important.[14]

In summary, UHC schemes are meant to improve access and financial protection mainly by reducing economic barriers to health service utilization and by lowering direct payments at the point of service. In turn, UHC schemes are meant to improve health only indirectly through improved access to health care and better financial protection. UHC schemes may improve health as measured by selected indicators that are clearly and well connected to the intervention's improvements.

2.3 Conceptual issues when evaluating the impact of UHC[15]

Evaluating the impact of UHC schemes, and in general any health program meant to improve access, health status and financial protection, is difficult. Establishing the causal effect of an intervention requires mimicking a counterfactual situation (what would have happened in the absence of the intervention?) to rule out other factors that may simultaneously affect the outcome of interest. Although the counterfactual is impossible to observe in reality, it is usually estimated by using comparison groups. Therefore, an impact evaluation will typically analyze a group composed of those who participate in (or are affected by) the intervention being evaluated (also called the treatment group) and at least one comparison group (also called the control group). Ideally, the two groups should be identical in observable and unobservable factors that affect the outcome of interest except for the exposure to the intervention (which might be achieved by randomizing the exposure to intervention and or using other econometric methods to recreate such a case). Regardless of whether the intervention was randomized or not, an impact evaluation faces many challenges. Some of the key challenges in evaluating the impact of UHC schemes are discussed below, since they were an important consideration when reviewing the robustness of the available evidence.

[12] Renal failure specific mortality rates, for example, may not be reasonably improved, at least in the short run, by the elimination of copayments for preventive care (screening for kidney function deterioration). However, an indicator of the progression of kidney disease may be improved reasonably fast thanks to early detection and treatment.

[13] For example, we should not expect an improvement in disease detection services from a UHC scheme whose benefits focus primarily on treatment and rehabilitation care.

[14] For example, lifestyle and sanitation are hardly affected by a UHC scheme, and yet those are major determinants of people's health. Changing lifestyle is critical for treating many chronic diseases, and hence, no matter how good access to health care and financial protection people may be, if the physician does not convince people to change their lifestyles, little or no health improvement would be observed. However, improving access to outpatient care or to behavior change programs could raise the likelihood that the messages get through and that change actually takes place.

[15] This section is mostly based on Giedion et al. (2007).

The endogeneity issue. Health-related outcomes (such as access, health status, and financial protection) are affected by many more variables than just UHC. People benefiting from UHC schemes may differ in factors other than their coverage status from people who do not benefit from UHC schemes. Many studies indicate, for example, that people insured with voluntary private health insurance plans tend to be younger and more likely to be formally employed than the uninsured. These differences influence health-related outcomes. For example, young people tend to be healthier and use health services less often than their older counterparts. As a result, simple comparisons of health-related outcomes for those covered by UHC and those lacking coverage may reflect either an impact of UHC or other differences among the groups being compared. Under these circumstances, controlling for these differences becomes a key issue (the so-called "endogeneity issue") when evaluating the impact of health interventions such as UHC on health-related outcomes.

- ⇨ *Controlling for observed and unobserved differences when evaluating the impact of UHC is key for an accurate assessment of the cause and effect relationship. Different methods exist to control for endogeneity, and this is probably the most discussed methodological issue when evaluating the causal effect of UHC. Controlling for the endogeneity of participation status due to differences in observable and unobservable variables is, in fact, one of the most challenging methodological issues that must be addressed by analysts who wish to establish a causal link between UHC interventions and health-related outcome indicators. When these differences are not taken into account, erroneous interpretations may result.*

Bidirectional causality between health status and UHC schemes. Health status by itself may be one of the determinants of UHC enrolment, indicating that the causal relationship between UHC schemes and health status is likely to run in both directions. Endogeneity issues discussed earlier arise primarily as a result of the selection and omission of variables. But for health status, simultaneity[16] is another important and additional source of endogeneity explaining why evaluating the impact of UHC schemes on health status is possibly the most challenging methodological issue in this context.

- ⇨ *The bidirectional causal link between health status and UHC will make it difficult to identify the impact of UHC on health status unless either coverage is completely random or the data on health status prior to the intervention are available to correct the problem.*

Evaluating schemes that have reached nearly universal population coverage. An increasing number of UHC schemes in low- and middle-income countries, especially in middle-income countries, are approaching universal population coverage. Since a majority of the population is now covered by a UHC scheme (for example, Costa Rica, Chile, Colombia, and Mexico) in these countries, and therefore becomes the "treatment group," the possibility of finding a robust comparison group (similar in all factors except the intervention) becomes more and more difficult unless data have been selected at earlier stages.

[16] Health status is both a result and a determinant of participation in such programs.

⇨ *The evidence of the impact of UHC schemes will probably be available for only some schemes, particularly those that are still in early transition periods. Furthermore, there will probably be no causal evidence of the impact of UHC systems in certain countries (for example, little or no information exists on the impact of Chile's social security system or for certain types of UHC systems such as those that automatically entitle the whole population to the benefits without any formal enrolment procedure, as was done in Sweden or Spain).*[17]

Access, health status, and financial protection depend on much more than UHC. UHC schemes may improve access by making services more affordable but they may not influence other dimensions of access. Therefore, if no or little impact is found, this might be because of other barriers to access such as limited availability of services or limited acceptability of existing health services to affiliates (for example, due to cultural differences).

⇨ *When evaluating the impact of UHC schemes on access and financial protection, it is necessary to have a thorough understanding of the many other determinants of each of these performance dimensions. Results may be interpreted erroneously when ignoring them.*

Evaluating the impact of UHC schemes on health status outcomes. Methodological challenges are especially complicated when trying to evaluate the impact of UHC schemes on health status. UHC schemes per se do not have a direct impact on health. Rather, they change individuals' and households' decisions related to the use of health care services by reducing financial barriers to accessing health services. This access, in turn, improves health.[18] The lack of a direct relation between health coverage and health status implies that if we find no effect on health, this may be because the intervention does not in fact improve access to medical care, or because medical care provided to those covered has no measurable effect on health, or other aspects of access such as availability of services, accessibility may have deteriorated, or all of the above may have taken place. Furthermore, if improved access is the means by which health status may benefit from UHC schemes, then impact evaluations should concentrate on those measures of health status that can be reasonably attributed to access to health services. For example, under-five mortality can be related in many countries to acute diarrheal disease and acute respiratory infection, which are conditions whose fatal outcome is preventable through adequate access to health services. The incidence of malaria, however, is mainly related to environmental factors and preventive public health policies such as insecticide spraying and mosquito nets, and most probably depends only partially on access to individual health care that is typically provided by UHC schemes.

⇨ *When selecting health status variables to measure the impact of UHC schemes, care should be taken to ensure that a clear relationship exists between access to health care and the health status variables being considered. As indicated by Levy et al. (2001),*

[17] Although registration in the community is required.

[18] It may also indirectly impact more global health status measures by improving financial protection and thereby freeing up income for consumption. Increased consumption may, in turn, have a positive impact on global health status measures such as infant mortality.

"Mortality rates, for example, are a blunt instrument to measure health; studies that rely on these (as many do) may fail to capture changes in health-related quality of life. The less powerful our measures of health, the more cautious we need to be in interpreting the results of studies that find no effect of health insurance on health."

The link between interventions and outcomes. As discussed earlier, although UHC is clear in its goals, the interventions that should be implemented are less well defined. There might be schemes whose key interventions are not primarily directed to increasing access or improving financial protection, or do not change economic barriers or other aspects that may improve the outcomes of interest. In such schemes, even if labeled as UHC, it would not be appropriate to evaluate their impact on access and utilization, financial protection, or health status, because we cannot learn anything from an evaluation that assesses an intervention based on indicators that are not supposed to be affected. For example, suppose a scheme's main intervention is to change the purchasing agent of the scheme with the aim of improving efficiency by improving the strategic purchase of services. Little may be learned from an evaluation that assesses the impact of such a program on health status indicators. Rather, such a scheme should be evaluated based on its primary purpose (efficiency) and not on those outcomes whose relation to the intervention is not clear.

The selection of outcomes based on the intended effects of the program is, hence, essential for the evaluation of a program's impact. It is possible that in the example above, the efficiency improvements lead to freed resources that in turn can be wisely used to increase the number of health facilities, which might improve access to health care. That is, the outcomes of interest might be somewhere in the causality chain of the program, but its impact would be indirect. Similarly; before evaluating the impact on those outcomes at the other end of the causality chain, the evaluation should previously—or at least simultaneously—evaluate the intermediate outcomes that may lead to the final results. This, as discussed above, may sometimes be the case in the evaluation of the impact of UHC schemes on health status indicators.

- ⇨ *The program's theory of change should be explicitly stated when evaluating the impact of UHC schemes, and the outcomes should be carefully chosen according to that theory of change. Programs should not be evaluated based on outcomes that are not affected by the intervention.*

Heterogeneity of impact. The impact of UHC schemes may vary across different population groups, and there are many reasons to expect heterogeneous treatment effects of health interventions such as UHC. For example, it has been argued that health care is a normal good and exhibits diminishing marginal returns (Folland et al. 2001; Gertler et al. 1987); hence, lower-income households would react more strongly to the price reduction than wealthier households (Chen et al. 2007, 226). Therefore, the impact of reducing direct payments on utilization might be stronger for the worse-off than for the better-off. Similarly, the impact of UHC schemes on nonmedical consumption—an indicator of financial protection—may also be stronger among resource-constrained households, because those less constrained may reduce savings when facing out-of-pocket expenditures, while those unable to save may be forced to substitute (reduce) nonmedical consumption. Likewise, it is reasonable to expect some health status indicators to show greater improvements among the poor; low birth weight, for example, may be much more frequent among the poor because of greater barriers to access to prenatal care and lower food

consumption. However, for the better-off, the incidence of low birth weight may be almost negligible, and hence, no matter how much access and utilization or financial protection is improved, the incidence of low birth weight cannot be reduced further. Likewise, improvements in access and utilization and financial protection might have considerably stronger impacts among the poor. Similarly, the sick may benefit more from health care than the healthy, and therefore, the causal effect of UC-like interventions may be greater for those with chronic diseases than for the healthy or for the elderly than for the young (Chen et al. 2007, 226).

- ⇨ *Analyzing population groups separately could allow for the identification of an impact that would have otherwise been missed. The potential heterogeneity of the impact across different population groups should be incorporated into the study design.*

UHC schemes are not homogeneous interventions, even within each country. Although UHC sets a common goal, its implementation differs across countries and often within each country. Frequently, several distinct—and often complementary—schemes usually coexist. UHC schemes vary both in extent (degree of coverage of different health services, level of copayments, and conditions of access, among others) and time of implementation (longer or shorter exposure to UHC). Consequently, the impact will vary across those different configurations, and aggregating different schemes may hide the impact of each.[19]

- ⇨ *It is necessary to incorporate these differences carefully when designing the UHC impact studies and when interpreting the results.*

A placebo often does not exist. There is almost no country in the world where lack of access to a UHC scheme is equivalent to the total lack of coverage.[20] UHC schemes often supplement and overlap with already existing publicly financed health systems. For instance, in most Latin American countries, UHC schemes are implementing universal health insurance schemes *on top of* already operating public networks of providers where uninsured persons can often still seek care, and uncovered services can still be received either for free or with highly subsidized tariffs. Sometimes the conditions of access and economic barriers for those who are covered and the ones that are not covered by insurance schemes virtually disappear. It is important to carefully take into account this overlap of "types of coverage" when designing impact studies and interpreting their results. Serious methodological challenges arise in this context regarding heterogeneity and reliability of the impacts. On the one hand, differences in the degree of overlap might cause differential impacts.[21] Not recognizing such heterogeneity might hide the real

[19] Ekman (2007b) illustrates this point. Ekman finds no impact when analyzing the impact of an aggregate measure of health insurance in Jordan. When disaggregating the health insurance measure by type of health insurance (Ministry of Health Insurance Program, health insurance program for civil servants, and so forth) he finds a positive impact of health insurance for some of the health insurance schemes but not for others.

[20] For example, there are UHC strategies that involve one or more coexistent schemes. However, not being enrolled in any of those schemes formally inscribed in a UHC strategy sometimes does not imply a total lack of coverage, because there is a (legacy) safety net that provides some coverage, even though such safety net is not formally part of the UHC strategy.

[21] For example, geographic variation in the supply of care is one potentially important source of heterogeneity. In areas where there is a well-functioning safety net, the lack of insurance will not mean a complete lack of access to care and the impact of coverage will result in smaller changes in utilization than in localities where the insured have fewer options (Buchmueller et al. 2005).

impact. On the other hand, overlapping subsystems might have spillover effects on each other, and when those effects[22,23] are not accounted for it might result in an underestimation of the impact.

- ⇨ *Context must be taken into account when evaluating the impact of UHC schemes, and the potential overlap of subsystems should be considered in both the empirical strategy and the discussion of results.*

- ⇨ *International comparisons need to contextualize results according to the particularities of the country(s) under scrutiny.*[24]

As this discussion indicates, evaluating the impact of UHC schemes is a methodologically challenging endeavor that requires not only substantial econometric skills to tackle issues such as the potential selection bias issue or the bidirectional relation that exists between effects of a UHC scheme and health status, but also the quality of information to adequately measure outcomes of interest and correct for the possible differences among intervention and comparison groups. In addition, consideration of the above issues is not useful unless the evaluators have a profound knowledge of the specific scheme that is being evaluated and they understand in detail through what channels the "intervention" might or might not impact different performance dimensions being evaluated. This may seem an obvious requisite but, as we will see later in this report, sometimes there seems to be more emphasis on econometrically sound methods than on understanding how these UHC schemes actually work to impact performance of health systems.

3. Methods

The approach adopted in this systematic literature review elaborates on the general study protocol used by Ekman (2004) when reviewing the evidence on the impact of community-based health insurance. Furthermore, it builds upon the framework suggested by Levy and Meltzer (2001) to determine the robustness of the available evidence on impact evaluations.

As mentioned, this review is an update and extension of studies by Giedion and Díaz (2008, 2011), which systematically reviewed the literature on the impact of health insurance (a subset of UHC schemes) in low- and middle-income countries that was published between 2000 and 2008. This update not only includes studies published between 2008 and 2011 but also extends the scope of health interventions to include all schemes that fit into the broader concept of UHC.

This chapter is divided into four sections that outline our general study protocol and present the search strategy and the extraction and qualification matrixes used to extract the most relevant information from each study and determine its quality.

[22] For example, it has been argued that scaling up health insurance programs might have wide-ranging impacts on the health system as a whole, for instance, by means of increased efficiency through improved contracting. Since those effects may have a positive impact also on the uninsured, not being able to control for it might bias the impact estimates downward (Escobar et al. 2011, 189).

[23] See, for example, Yip, Wang, and Hsiao (2008), who find evidence of spillover effects in China.

[24] The literature on the determinants of infant mortality decline in Europe illustrates this point: "International comparison of the results showed that findings with respect to determinants of mortality (decline) for one country do not necessarily apply to other countries" (Wolleswinkel-van den Bosch et al. 2000).

3.1 Study protocol of the literature review

As Ekman (2007b) indicates, a systematic review of the literature (in contrast to a narrative review), develops a study protocol that specifies:

- A focused analytical question(s)
- A specific search strategy
- The types of data to be abstracted from each article
- A formal assessment of the quality of the individual studies and of the full body of evidence.

The remaining sections describe our study protocol with regard to these four aspects.

3.2 Analytical question

The key analytical question addressed in this report is: *According to existing literature, what is the impact of universal coverage schemes on access to health care services, financial protection, and health status?* Consequently, this review focuses on a circumscribed number of performance dimensions and excludes the literature that evaluates other consequences of UHC schemes such as changes in the organization of health systems or the overall efficiency of the system. Furthermore, we limit our review to those studies that mean to establish a causal relationship between the UHC-related intervention and the outcomes of interest. We therefore exclude from our analysis studies presenting descriptive statistics only, those that resort to qualitative analysis, and those that address outcomes other than access and utilization of health care, health status, or financial protection.

3.3 Search strategy

The search strategy involved the definition of our inclusion criteria and the identification of suitable databases and search terms. The inclusion criteria were:

- Intervention (object of study): health interventions that fit into the concept of UHC schemes as defined in chapter 2
- Outcome or effect: out-of-pocket spending, catastrophic health expenditure, access to care, utilization of health services, health status
- Type of analysis: quantitative study[25]
- Publication: academic journals (peer reviewed), books, or publicly available evaluation reports (for example, World Bank evaluation reports)
- Population: low-income countries and middle-income countries
- Time period: 2000–11
- Language: English.

[25] As Savedoff (2006) notes, a good impact evaluation has to focus on impact. There are many studies that are called impact evaluations that contain a lot of very valuable information about processes, institutions, operations, inputs, outputs, efficiency of the program, and implementation, but they do not measure impact. Nor do they attribute the outcomes observed in the population to the specific program. We therefore chose to limit our evidence base to studies that actually try to measure impact.

The literature search was conducted through four separate approaches: searches in electronic databases on the Internet, specific article searches, iterative reviews of reference lists of papers, and inquiries to health experts in multilateral institutions for literature referrals. The databases searched were the following: PubMed, Econlit, EconBase (Elsevier), Ingenta, Social Science Research Network, and ProQuest, Cambridge journals database, Jstor, Oxford journals database, Science Direct, Springerlink, Wiley Online, and the webpages of The Brookings Institution, the World Bank, the WHO, the Inter-American Development Bank, the Joint Learning Network, the International Initiative for Impact Evaluation (3IE), and the Campbell Collaboration.

Once the electronic search was completed, the papers were reviewed, by the authors for final selection. In cases where essentially the same study appeared both as a published article and an unpublished report, the published article was chosen.

The definition of the search protocol required the following terms to be paraphrased into a set of words and logic operators that allowed us to identify the studies that covered relevant topics: (a) the intervention (UHC schemes), and (b) its impact on, (c) performance dimensions. The definition of the intervention proved to be challenging, mainly because the concept of UHC is so broad that it could *potentially* include any health intervention committed to guaranteeing access to health care and providing financial protection for all. Although this broadens of the concept of UHC, it does not mean that "anything goes." As discussed in section 2.1, it is still not clear what can be considered a UHC effort and what cannot. Furthermore, no universally accepted terminology seems to exist defining which interventions may or may not be considered UHC efforts. Commonly used labels such as health insurance, tax-funded systems, Bismarck, Beveridge, and so forth, are neither helpful nor appropriate for pinpointing UHC interventions and clarifying the issue. We therefore had to settle on a pragmatic approach and, for the purpose of the search strategy, we did not rule out up front any health intervention, nor did we search specifically for only one kind of intervention. Thus, we decided on the following list of search terms to identify the interventions: universal access scheme, universal coverage, universal health coverage, health insurance, health intervention, health program, health scheme, and specific scheme words like card, mutual, and voucher. To search for impact studies, we used the following search terms: consequences, effect, evaluation, impact, quantitative methods, and result. Performance dimensions were translated into the following search terms: access, accessibility, catastrophic health expenditure, catastrophic health payments, financial protection, health status, out-of-pocket expenditures, out-of-pocket payments, private payments, use of health care, and utilization.

In striving to find literature on UHC schemes beyond the traditional labels such as health insurance, we conducted specific searches for several handpicked countries that are working toward UHC but that do not necessarily involve health insurance or fit into any of the above-mentioned list of interventions, including Bangladesh, Brazil, Malaysia, the Philippines, and Thailand. To this end, we used the list of countries on the Results for Development (R4D) website on UHC as a reference.[26]

[26] See http://uhcforward.org/.

The difficulties mentioned above suggest that although a systematic review might be the way to rigorously synthesize the evidence available on the impact of UHC-related health interventions, such an approach inevitably faces the limitations related to the broadness of the concept of UHC. Particularly, since virtually any health system design *potentially* fits under the UHC umbrella, we may be missing impact evaluations from schemes that, despite being committed to UHC, are not referred to as such by the evidence. Most important, given that the interventions specifically related to the concept of UHC are not clearly defined, it is also difficult to identify what exactly is the intervention to be evaluated (for both, researchers carrying out impact evaluations and for us in reviewing such studies).

Furthermore, another limitation may also arise due to the broadness of the outcomes of interest, particularly regarding health status. It was not possible to specify in our search terms specific indicators to measure health status; there are simply so many possible[27] specific terms that it is not possible to include them all in the search strategy. Therefore, we may be missing (hopefully a few) studies that do not have a generic reference to health status but only mention specific outcome indicators.

3.4 Types of data to be abstracted from each article: The extraction matrix

This study used the *extraction matrix* developed by Giedion and Díaz (2008) with the purpose of extracting the most relevant information from the literature. Following is a description of the key data extracted from each study on the basis of this matrix.

The *extraction matrix* (see Table 1.1) includes three sections. Section A provides general information on each paper, allowing the reader to locate and sort the literature across four criteria: general information (author, year, and so forth), geographic location, key characteristics of the scheme being evaluated, and research goals (specific research questions, outcome variables of interest, and an indication of whether a study design has taken into account potential differences in impact across different population groups (for example, by comparing outcomes across different income levels or urban/rural settings ("Distributional Analysis").

Section B of the *extraction matrix* provides information on the design, methodology, and data used by each study. *Study design* reports the category to which each study belongs according to a classification developed to assess how each study addresses the issue of endogeneity. This classification is explained in detail later. In addition, the specific econometric *methodology* used by each study is described (descriptive statistics, nonparametric, instrumental variables [IV], and so forth). Finally, the type of *data* used are described as being either panel, cross-sectional, or repeated cross section; and the year of data collection and a short description of the information (household survey, administrative registers, key variables) are provided.

Section C summarizes the key findings of each study.

[27] Selected specific terms analyzed in the literature reviewed for this study include acute infection, birth weight, height and weight for age, high blood pressure, life expectancy, mortality, postpartum hemorrhage, and self-assessed health. There are certainly others not analyzed by the literature we reviewed, such as avoidable hospitalizations.

Finally, section D describes the UHC efforts being evaluated in the literature reviewed along key UHC features and health system functions according to the health systems performance framework proposed by the WHO (2000). As mentioned, even within a country, several different—and often complementary—schemes coexist while the impact studies tend to evaluate just one of them. Therefore, Section D describes the scheme being evaluated along the key design features described above, based on (a) what is being described in each study, and (b) complementary information on the scheme being studied and other UHC schemes operating in the country obtained through specific searches.[28] The information extracted as described in section D is later condensed in **Annex 3**.

[28] Primary sources of information used for this purpose were the Universal Health Coverage Forward web page (http://uhcforward.org/) and the WHO country pages (http://www.wpro.who.int/countries/).

Table 1.1 Extraction Matrix Section A: General Information

Criterion	Characteristic			
Section A: General				
General information	Author's name			
	Year			
	Title			
Geographic location	Country			
UC scheme information	Background			
	Summary of the design of the scheme as discussed by the authors			
	Target population			
	Financing mechanisms			
Research goals	Main study question			
Section B: Design, Methodology, and Data				
Study design	Classification * Correlational (Corr) * Social experiments (EXP) * Natural Experiments (NE) * Endogenous treatment (ET)			
Data	Type	* Cross section * Panel data * Repeated cross section		
	Description of data			
	Years			
Methodology	Measured outcomes	Specific		
		Definition		
	Data analysis	a. Descriptive – Simple means b. Multivariate analysis c. Nonparametric (PSM, DD, MDD) f. RDA g. IV h. Other		
		Description of method		
	Is a distributional analysis across population groups carried out? If so, across which population groups?			
Section C: Findings and Robustness of Analysis				
Causal effect	Findings	Impact	Outcome	
			Sign (+/-)	
			Size	
			Significance	
	Main conclusions			
Score (Provided by qualification criteria matrix)				
Section D: Description of Schemes being Evaluated				
UC	Target population			
	Proportion of the costs covered			
	Services covered			
Functions of health systems framework (WHO)	Financing (collecting and pooling)			
	Purchasing (who, how)			
	Delivering (who, public/private)			

Source: Authors, based on Giedion and Díaz 2008.
Note: DD = double difference. IV = instrumental variables. MDD = matched double difference. PSM = propensity score matching. RDA = regression discontinuity approach. UC = universal coverage.

3.5 Formal quality assessment: The qualification matrix

Extracting information contained in the literature helps to identify key findings but does not provide information on which to assess the quality of the evidence. We therefore complemented the *extraction matrix* with a *qualification matrix.* As this section shows, the quality of the evidence was evaluated along many different dimensions including econometric aspects.

The starting point for our assessment of the quality of the evidence was a "must read" article by Levy and Meltzer (2001). These authors evaluate the robustness of the existing literature on the impact of health insurance on health status in the United States and Canada by focusing on the endogeneity of health insurance. These authors consider this "both one of the most important and most neglected issues in the health insurance impact evaluation literature" (Levy and Meltzer 2001). Levy and Meltzer classify the available evidence into three groups according to the design of each study: observational studies,[29] studies relying on natural experiments,[30] and studies relying on randomized controlled trials (RCTs).[31] While agreeing on the importance of the endogeneity issue, we believe that their approach is too blunt to take into account the substantial heterogeneity that exists in the literature on health insurance in low-income and middle-income countries to deal (or not to deal) with this problem. For example, Levy and Meltzer's category of "observational studies" does not differentiate between studies which do and do not explicitly address the issue of endogeneity, even though the latter group clearly provides more robust evidence on the impact. This is even more important given that most of the impact evaluation literature in low-income and middle-income countries belongs to this category, and gold-standard RCT studies tend to be a rare exception rather than the norm.

Based on Levy and Meltzer (2001), Giedion and Díaz (2008) introduced a more refined qualification tool (see the section on study design below) and designed a *qualification matrix*, which takes into account many other aspects besides the endogeneity issue, all of which contribute to the quality and robustness of the evidence (such as the consistency between the analytical question formulated and the model used to answer it; the accuracy of the implementation in the methodological approach). The remainder of this section describes the way studies were classified according to their study design.

The qualification system was developed on a 100-point scale, taking into account five general issues:

- Study design (maximum score: 24 points)[32]
- Data (maximum score: 13 points)

[29] According to Levy and Meltzer, "observational" studies are the ones that examine the relationship between health insurance and health-related outcomes; the endogeneity of insurance status is either ignored or at best addressed by controlling for observable (and sometimes unobservable) differences between people with and without health insurance.

[30] Levy and Meltzer (2001) include in this category studies that rely on naturally occurring situations in which variation in health insurance coverage is plausibly exogenous. See Dunning (2008) for a paper on natural experiments.

[31] Levy and Meltzer (2001) include as RCT the only truly randomized "experiment" examining the effects of health insurance on health, the RAND Health Insurance Experiment.

[32] Numbers in parentheses refer to the maximum score for each category.

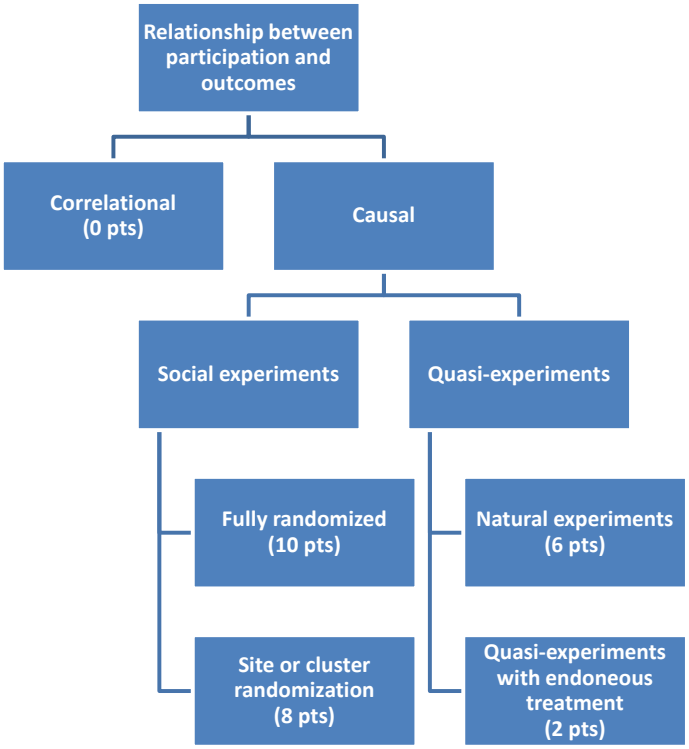
- General methodological issues (36 points)
- Specific methodological issues (14 points)
- Discussion of results (13 points).

No scientific method exists to weigh each of these issues. Therefore, the suggested relative weights represent the authors' view of the relative importance of each criterion in its contribution to establishing solid evidence on the impact of such interventions. Interestingly, however, robust studies tend to fare well on most dimensions. The following briefly describes the questions asked with regard to the previous five evaluation dimensions.

(i) *Study design* (total maximum score of 24 points).

The quality evaluation protocol uses the following five criteria to evaluate the study design: (a) how reasonable is the role of exogeneity in the participation status in the study design (see the classification presented in Figure 1.1 and described in Box 1.1) and how likely is the role of exogeneity a key determinant of the robustness of the available evidence (maximum of 10 points). Note that in this context, Levy and Meltzer (2001) focus exclusively on this criterion when evaluating the robustness of the available evidence; (b) whether the study clearly states its research questions (3 points); (c) whether the study clearly describes the chosen outcome variables and their relationship with the intervention (3 points); (d) whether the study allows for enough time between the implementation of the scheme and the impact evaluation (4 points); and (e) whether the study explicitly considers the existence of alternative health care schemes when evaluating impact.

Figure 1.1 Score Assignment According to the Plausibility of Exogeneity in the Participation in the Scheme being Evaluated



Source: Based on Giedion and Díaz 2008.
Note: Numbers in brackets indicate the points assigned to each of the categories included in our classification system.

The latter criterion aims to address a common feature of UHC schemes as explained in the conceptual framework: the overlapping of different health schemes that might create challenges to the robustness of the impact estimates. The overlap of schemes might not be a problem at all, might create heterogeneity of impact issues, or might bias the estimates. It is therefore important to take into account the relationship among different schemes in discussing the implications of this relationship and adjusting for it in the estimation procedures when needed (for example, calculating the marginal increasing effect from one scheme to another or finding an exogenous source of variation to account for possible spillover effects among schemes that may bias the estimates, usually downward).

Box 1.1 The Classification of Study Designs used by the Evaluations in the Literature Reviewed: The Plausibility of Exogeneity in the Participation in the Scheme being Evaluated

According to Figure 1.1, the current review first labels the studies either *correlational or causal*. While correlational studies can suggest that there is a relationship between the intervention and an outcome variable of interest, finding a correlation does not prove that one variable *causes* a change in another variable. In other words, correlation does not equal causation.

Descriptive statistics and multivariate analysis usually do not explicitly address the endogeneity problem and are therefore considered to be using a correlational methodology. Our scoring system assigns 0 points to such correlational studies since no causal inferences can be made on the basis of these studies.

Studies labeled "causal" make some attempt to determine not only the correlation between the intervention and outcome variables of interest, but also try to establish a causal relationship by explicitly addressing the issue of endogeneity in the intervention's placement. This category was further subdivided into two groups: (a) social experiments (10 points), and (b) quasi-experiments. Whereas in well-designed social experiments the exogeneity of participation status can be safely assumed, quasi-experimental studies use different statistical methods to "mimic" an experimental design. The "social experiments" group is subdivided into fully randomized studies in which the participation in the health scheme is completely exogenous (the group that receives the maximum score) and site or cluster randomization for those social experiment studies that introduce an exogenous source of variation (usually at a higher level like geographic site, clusters, facilities, and so forth) but that still have endogenous participation at the individual level. The latter group does not receive the maximum score (just 8 points), because although the randomization might indeed be used to address the endogeneity problem, the lack of fully exogenous participation suggests that a simple means comparison would not suffice, and further techniques should be used to address the problem.

Finally, the group of quasi-experimental studies was further subdivided into natural experiments (6 points) and "quasi experiments with endogenous treatment" (2 points). Natural experiments arise when a "natural experiment" causes the UHC scheme coverage to vary for some measurable reason or reasons not related to the outcome variable being evaluated (access, financial protection, health status, utilization); when this variation is not correlated with other, unobserved determinants of the outcome variables; and when there are identifiable individuals whose coverage is not affected who can be used as a control group to pick up any secular (that is, unrelated to the scheme) changes in outcomes (Levy and Meltzer 2001, 14). Studies that resort to quasi experiments with endogenous placement are all those in which participation is not random but a range of different statistical methods (such as DD, MDD, PSM, IV) are used to mimic an experimental situation. These are able to correct at least in part for endogeneity problem.

Note: DD = double difference. IV = instrumental variables. MDD = matched double difference. PSM = propensity score matching.

(ii) *Data issues* (total maximum score of 13 points).

The type of data used to evaluate the impact of UHC schemes critically influences the robustness of results and yet seems to be an often neglected issue. According to Heckman, Lalonde, and Smith (1999), "*too much emphasis has been placed on formulating alternative econometric methods for correcting for selection bias and too little given to the quality of the underlying data. Although it is expensive, obtaining better data is the only way to solve the evaluation problem in a convincing way."* In terms of richness of the data, this protocol considers two main criteria: whether the study uses complementary sources of information to control for potential selection bias problems and to contrast survey data with administrative data (7 points), and the ability of the study to clearly describe the information sources (6 points).

(iii) *General methodological issues* (total maximum score of 36 points).

The qualification protocol evaluates both general and specific methodological issues. The previous section asks the following nine general methodological questions, all of which are related either to the precision of the description of the methods used or to the specific econometric approach taken: (a) Does the paper clearly describe the method used to answer the analytical question(s) (4 points)? (b) Does the paper clearly describe the method used to manage the endogeneity problem (4 points)? (c) Does the paper use statistical methods and sample restrictions[33] to control for observable differences between the participants and nonparticipants (9 points)? (d) Does the paper control for time-invariant differences between control and treatment groups (4 points)? (e) Does the paper address the issue of potential heterogeneity in impact across different population groups (4 points)? (f) Does the paper use more than one statistical method to evaluate the robustness of results (4 points)? (g) Does the paper discuss the possibility of spillover effects (4 points)?[34] (h) Does the paper pay attention to the proper measurement of the errors? Specifically, does it consider the possibility of correlation in the error terms (1 point), does it improve the robustness of results by bootstrapping (1 point)?[35] (i) Does the assumption about the dependent variable distribution seem valid (1 point)?[36]

(iv) *Specific methodological issues* (total maximum score of 14 points).

This section takes into account the relative strength of different impact evaluation methods in addressing the endogeneity problem. Advantages and disadvantages of the main impact evaluation methods that can be used when no randomized trial data are available as described in Annex 1. A set of questions was formulated to ensure that key assumptions and requirements were met when implementing each method. Table 1.2 describes the specific questions asked with regard to each method. The highest score was given to a well-performed IV[37] or RDA (14 points) and the lowest score to a descriptive simple means comparisons (2 points). In between, studies using a matched double difference (MDD) approach were assigned 13 points, those using a double difference (DD) received up to (10 points), studies using propensity score matching (PSM) received (7 points), and studies limited to a multivariate analysis received only 3 points. For each paper, our review protocol determined how well each method was implemented based on each of their specific requirements and characteristics (see Table 1.2)

[33] Without a substantial loss of the sample size.

[34] The program may have an impact not only on those treated (insured) but also on the untreated (not insured), for example, through an improved incentive structure for the supply-side interventions.

[35] To determine the statistical significance of the treatment effect, the standard error may be biased because the variance of the treatment effect should include the variance of the previous statistical procedures as the estimation of the propensity score and the imputation of the common support. Therefore, one way to estimate standard errors when they are biased or unavailable is Bootstrapping, which re-estimates the results N times, and then the distribution of these N results approximate the sampling distribution of the population mean.

[36] This question refers to the mis-specification problem and the proper use of linear or nonlinear specifications.

[37] If a study uses a multivariate analysis *after* performing an IV approach but finds exogeneity in health insurance status, it will still be scored as if it used an IV.

Table 1.2 Evaluation of the Methodological Strength of Different Impact Evaluation Methods

Method	Analytical Questions to Check
Descriptive simple means comparison (2 points)	Are significant levels and standard errors or variance for simple means included and clearly stated? Are the comparison groups reasonably comparable?
Multivariate analysis (3 points)	Are there any potential differences among groups that have been omitted (omitted variable problem)? Does the model control for possible problems in the specification of the error term such as correlation?
Propensity Score Matching (PSM) (7 points)	Does it uphold the common support condition? Is the matching procedure able to balance the distribution of the relevant variables in both the control and treatment group? Does it use the PSM preprogram information? Does the paper mention the procedure used for matching?
Double Difference (DD) (10 points)	Does the study control for observable characteristics? Does the paper use preprogram information as control? Does the study control for time variant bias? Does the study mention the percentage follow-up survey re-interviewed?
Matched Double Difference (MDD) (13 points)	Does the paper use the preprogram information in the matching? Does the paper mention the procedure used for the matching? Does the paper uphold the common support condition? Is the matching procedure of the study able to balance the distribution of the relevant variables in both control and treatment groups? Does the study control for differences in observable characteristics? Does the study control for time variant bias? Does the study mention the percentage follow-up survey re-interviewed?
Regression Discontinuity Approach (RDA) (14 points)	Are the control and treatment groups balanced? Is the observed discontinuity in the outcome measure along the "cut-off" point strong? Was the bandwidth selected adequately?
Instrumental Variables (IV) (14 points)	Does the study check the endogeneity of the health insurance? And only apply an IV approach in cases where evidence of endogeneity is found? Did the paper do the first stage or check the explanatory power of the instrument? In the case of two or more instruments: Did the paper apply the overidentification restriction test? Is the instrument good enough? (a) Does the chosen IV significantly explain the affiliation to health insurance? (in the case of first stage: is the instrument significant in the first stage?); (b) Is it really unrelated to the outcome? (directly and indirectly, specifically not related to unobservable characteristics affecting the outcome); (c) Is it really unrelated to other independent explanatory variables of the outcome, even if those variables are not controlled for in the outcome equation?)

(v) *Discussion of results* (total maximum score of 13 points).

The last topic discussed by the quality measurement matrix considers the discussion of the results; this topic takes into account whether the study clearly answers the research questions outlined at the beginning (4 points), whether the paper reports the precision and robustness of the results (2 points), whether the study discusses the findings and the potential source of bias or

limitations (4 points), and whether the study provides insight on how specific UHC scheme design features may be explaining the results found (3 points).

4. Description of the literature reviewed

The first section of this chapter describes the general characteristics of the literature reviewed by presenting the results of the search strategy, the geographic coverage, and the type of UHC schemes analyzed by the included studies. The second part discusses the methods used by the literature reviewed here in terms of the data used, outcome variables considered, study design, and impact evaluation methods applied.

4.1 General

Results of the search strategy. The search strategy resulted in 309 papers (Table 4.1). Roughly one-third (204) were eliminated due to one or several of the following reasons: (a) does not focus on a lower- or middle-income country, (b) is not an article[38]; (c) refers to a theoretical discussion and not an impact evaluation; (d) constitutes a slightly modified version of other papers included in the database; (e) refers to a literature review; and (f) the purpose (not impact evaluation),[39] outcome,[40] or intervention[41] is not relevant. As a result, 105 separate studies were selected to apply the evaluation protocol described earlier. See **Annex 2** for the full list of papers reviewed.

Table 4.1 Summary of Search Strategy Results

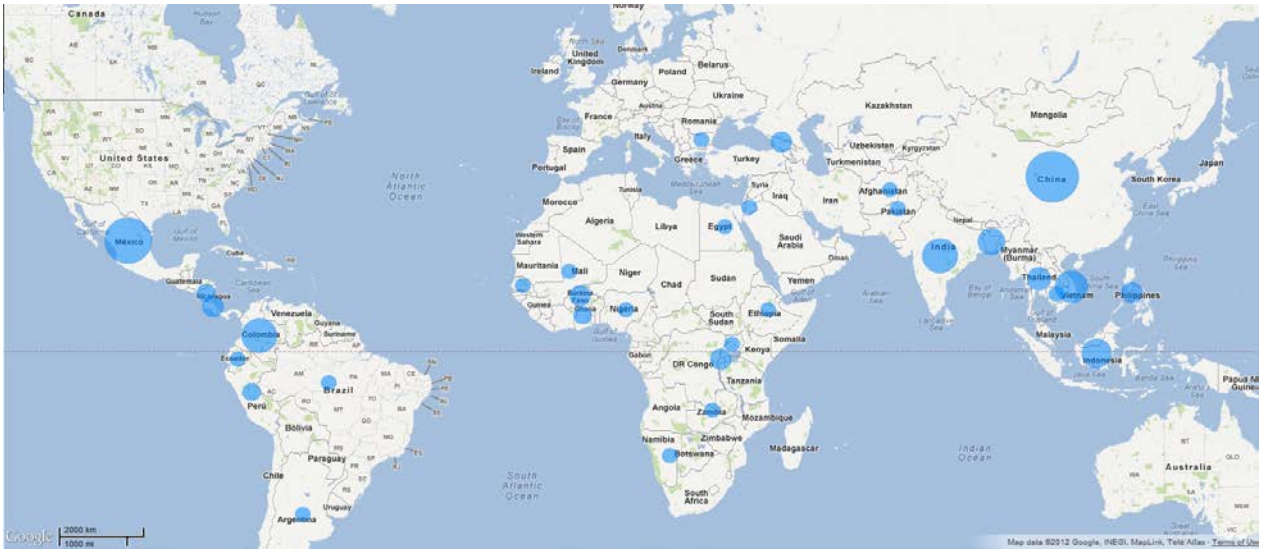
	Total
Identified:	309
Total number of papers to be reviewed in detail	105
Excluded	204
The study does not focus on a lower- or middle-income country	63
The referenced document is not an article	7
The paper is a theoretical discussion of the impact	2
The study is a modified version of a study already included	15
The paper is a review of the literature	10
The purpose of the paper, the outcome, or the intervention is not relevant	108

Geographic distribution. As Map 4.1 shows, the evidence in this systematic review comes from virtually all regions of the developing world. Note that some countries seem to have attracted greater interest from researchers and institutions as indicated by the number of papers included in

[38] For example, a PowerPoint presentation or congress poster.
[39] For example, qualitative approach exclusively or analysis of costs, efficiency.
[40] For example, health care supply, physician behavior, program uptake rate, school enrolment, equity.
[41] For example, evaluation of the causal effect of medical interventions, conditional cash transfer programs.

this systematic review (represented in the map by the size of the marker).[42] China, Mexico, Colombia, India, Vietnam, Indonesia, and Bangladesh stand out as the countries with the largest evidence in the developing world.

Map 1.1 Geographic Coverage of the Literature Review



4.2 The UHC schemes evaluated

This section describes the UHC schemes captured by our search terms and thus offers a clearer understanding of the UHC interventions being included by this literature review.

Annex Table 3 describes the UHC schemes of 18 countries with evaluations included in the literature reviewed. Schemes are described in terms of the key UHC dimensions (population coverage, cost coverage, and benefits coverage) and health system function design (financing, purchasing, and delivery). For each included country we provide a summary description of the UHC health system that has been evaluated by the literature.

Heterogeneity. Given the vagueness of the boundaries of the concept of UHC, it may come as no surprise that the schemes reviewed here vary significantly in their design. The variation can be found on three different levels: (a) across countries, (b) across the existing schemes *within* countries, and (c) even within schemes (for example, from one region to another). Across countries, heterogeneity is particularly evident with regard to whether countries are combining one or several schemes or rely on one central scheme to move toward UHC. Some countries, such as Brazil and the Philippines, rely on just a few schemes, while in other countries, such as China, India, and Indonesia, many different and highly diverse UHC schemes coexist.

[42] At least as far as the literature published in English is concerned. Also note that we only include studies using quantitative methods, hence, the universe of studies on the subject (for example, qualitative analysis or theoretical discussions) is much larger.

The heterogeneity among schemes is also evident along most of the key design features analyzed here, but it is especially noticeable with regard to the target population, the benefits design, and the revenue collection and pooling mechanisms that are used to promote UHC. In many countries, different schemes coexist to target different population groups, a segmentation which is often related to revenue collection and pooling; contributory schemes tend to target the population with the ability to pay, often in the formal sector, while schemes relying more on taxes tend to target the poor. Some countries, such as Costa Rica and Uruguay, have moved toward single systems providing the same services to all with mixed sources of financing (payroll and taxes). Benefits also vary significantly across schemes and countries; some countries provide more generous plans for the wealthier, while other countries provide larger plans to the most vulnerable (the Philippines-sponsored program is a clear example of this, as may be examples in Cambodia and India).

The variation in the financial coverage and the proportion of costs covered by scheme (at least on paper) and across countries also seems huge. There are schemes with no official out-of-pocket payments (Mexico's Seguro Popular or Georgia's Medical Assistance Program); others with moderate copayments not exceeding 10 percent of the cost of the service; and still others providing only a very shallow financial coverage, with demand-side cost sharing reaching as much as 75 percent of the cost of service (for example, some versions of China's New Cooperative Medical Scheme or PhilHealth for those opting for health care in private facilities).

Finally, substantial variation exists within schemes and across regions with regard to the benefits offered, level of financing, and kind of purchasing arrangements being implemented, in part as a result of the decentralization of the organization of government and health care. For example, in China's decentralized New Cooperative Medical Scheme, specific design features are defined by each local authority. In Mexico's Seguro Popular, the system is also decentralized, and some states are moving forward in improving purchasing faster than others.

Variation also exists across different population groups belonging to the same UHC scheme with regard to the proportion of costs covered, benefits received, and contributions made. This happens in the Philippines (PhilHealth) where certain population groups are exempted from contributing to the financing of the scheme, and those belonging to the sponsored program within PhilHealth receive greater benefits.

Coexisting schemes. In virtually all countries analyzed, there is more than one scheme working toward UHC. In a pragmatic move, most of the countries plan to achieve UHC by complementing existing schemes rather than by designing from scratch a single UHC scheme for all. China, Colombia, India, Mexico, Nigeria, Rwanda, Thailand, and Vietnam are all examples of countries planning to achieve UHC by combining (and sometimes integrating) different schemes targeting different population segments.

Existing schemes do not always seamlessly complement each other, however. Sometimes they overlap[43] and sometimes coverage gaps in the design remain.[44] When overlapping exists (as in

[43] The same population may have the chance the access health care and benefit from two different schemes.

[44] This can become a problem in countries with a large informal sector where those unable to pay are fully subsidized with general taxes, and the rest (including the nonpoor informal sector) are meant to contribute in theory but rarely

Colombia, Georgia, Indonesia, Mexico, and the Philippines, for example), it seems to be the result of previous and highly segmented health system arrangements that are trying to migrate toward UHC. This is clearly the case in Colombia, Mexico, and the Philippines, for example. These countries used to rely on a public network of providers as the core scheme for accessing health care, and later they introduced UHC reforms (Contributory and Subsidized regimes in Colombia, Seguro Popular in Mexico, and PhilHealth in the Philippines). However, the newly created schemes do not fully and instantly replace the previous schemes in force. Conversely, in the three countries, there has been a transition period in which the previous and newly created schemes coexist.

After reviewing the interventions, it is clear that in the majority of countries, UHC is not just one scheme or health intervention, but is usually a broader strategy that involves several schemes that should work together to achieve the goals of UHC. Moreover, the impact evaluations in our literature review do not evaluate the UHC strategies as a whole; rather, the literature usually evaluates only one scheme within a broader UHC strategy, typically using as a counterfactual the people not covered by the scheme being evaluated (but frequently covered, either explicitly or implicitly, by another scheme).

Population coverage. In the overwhelming majority of countries, there is at least one scheme that targets a specific population, usually the poor or vulnerable (the informal sector, the unemployed, the rural population, and so forth). These schemes usually combine a targeting effort with a subsidization of all or part of the health benefits.

Proportion of the costs covered. Although the proportion of the costs covered varies considerably across countries and schemes, some form of financial coverage for the direct payments of health care is probably the only feature that is common to *all* the schemes included in this review.

Services covered. Benefits are usually defined *explicitly* in the majority of cases included here. Regarding the extent of coverage, the majority of the schemes seem to have extensive coverage for primary care, while fewer schemes were found to provide substantial coverage for secondary and tertiary care. Just a few schemes seem to provide coverage only for tertiary care or for highly expensive services only.

Financing (collecting and pooling). Mixed sources of financing prevail in most countries. Although within countries there are schemes funded primarily by only one source of funding, at a country level, mixed sources of financing indeed prevail. In this regard, a frequently found pattern within countries is one or several schemes totally[45] or mainly financed with general taxes[46] (for example, Colombia's Subsidized Regime; India's Rashtriya Swasthya Bima Yojana, which is targeted to the poor; and Mexico's Seguro Popular), which coexist with schemes funded

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do so. An illustration of this problem can be found in the Dominican Republic, where a contributory system with partial subsidies for the informal sector was mandated by law but never implemented in practice.

[45] This classification has to do mainly with the coverage and not with total financing of the scheme, that is, taxes as opposed to contributions for the classification. However, beyond that, the sources of funding also include fees at the time of use.

[46] Either from the central government, subnational governments, or a mix.

mainly by contributions and, to a lesser extent, taxes (for example, Colombia's Contributory Regime, India's Employees State Insurance Scheme, and Mexico's Social Insurance System). In the majority of countries, there is fragmentation in the risk pooling; since there are usually many schemes coexisting in each country, frequently every scheme has its own risk pool, and sometimes even within a scheme there are several pooling arrangements. For example, resources are pooled at the *county level* in China's New Cooperative Medical Scheme (NCMS), and India's Aarogyasri Health insurance scheme and Mexico's Seguro Popular pool resources at the *state* level. Nonetheless, there are countries in which resources are pooled at the national level, such as the Philippine's Social Health Insurance Program (PhilHealth).

Purchasing. In the majority of schemes, there is at least some type of separation of the purchasing and provision functions. However, historical budgets still seem to play an important role in allocating resources.[47] In several schemes, there is a clear split between purchasers and provider, but purchasers do not always seem to be active strategic purchasers.[48] There are several schemes with a single public purchaser, but the majority of schemes seem to rely on multiple purchasers (usually insurance companies, either public, private, or mixed).

Delivery. In the majority of schemes, the delivery of health care is organized with a mix of public and private providers.

Concluding remarks on the features of the UHC schemes evaluated in this review. As expected, the UHC interventions evaluated here are highly diverse. Probably the only feature common to all the interventions is some form of financial coverage. Also, in the majority of countries, UHC refers to several coexisting schemes that are meant to complement each other. Targeting and subsidizing specific population groups also seems to be a common feature in many cases. UHC schemes also seem to define explicit benefits packages, but their content and design vary considerably across schemes and countries. Regarding the sources of revenue, hybridization seems to prevail, and although most schemes have some form of risk pooling, their design and implementation vary substantially. Regarding purchasing, there are many different arrangements, and delivery of health care is mostly organized with a mix of public and private providers.

As discussed in the conceptual framework, virtually any health system can be regarded as universal health coverage. This is confirmed by the huge heterogeneity in design found in the UHC schemes included in this literature review. Therefore, defining the boundaries of UHC schemes is elusive.

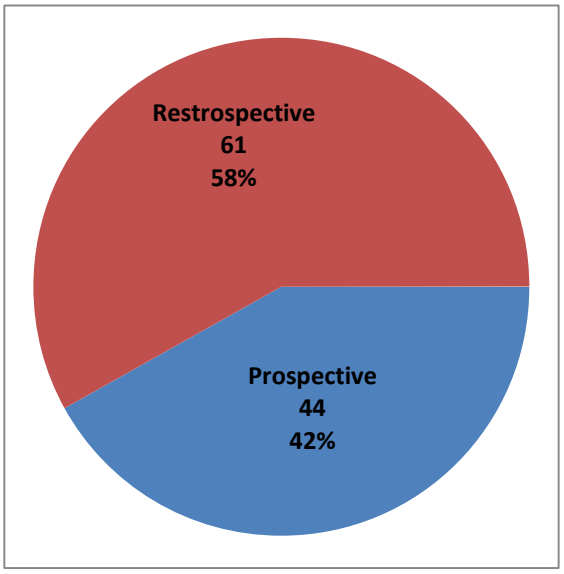
[47] For example, several papers discussing the design and goals of Mexico's Seguro Popular argue that the purchasing function needs to be improved because providers still tend to be financed based on their historical budgets and not on actual production of health services.

[48] In China, for example, most NCMS modalities involve a split between purchaser and provider. Actually, it is not rare to find private providers operating in the NCMS, and the purchaser is the local authority in charge of the scheme. However, in many provinces, the purchasing function is not active. The purchaser only reimburses or pays the providers on a fee-for-service basis but neither engages in price negotiations nor has a role in the decision where people may obtain care.

4.3 Evaluation methods used

Data specifically designed with the purpose of evaluation. Prospective data allow the collection of information tailored to the specificities of the intervention such as directly related outcome variables or data that might help control for confounding variables. Forty-two percent of the studies reviewed were in the position of using prospective data to evaluate the UHC intervention (see Figure 4.1). The rest relied on retrospective data, mostly on systematic surveys (living standards measurement surveys or demographic and health household surveys) and rarely on administrative data.

Figure 4.1 Prospective Compared to Retrospective Data

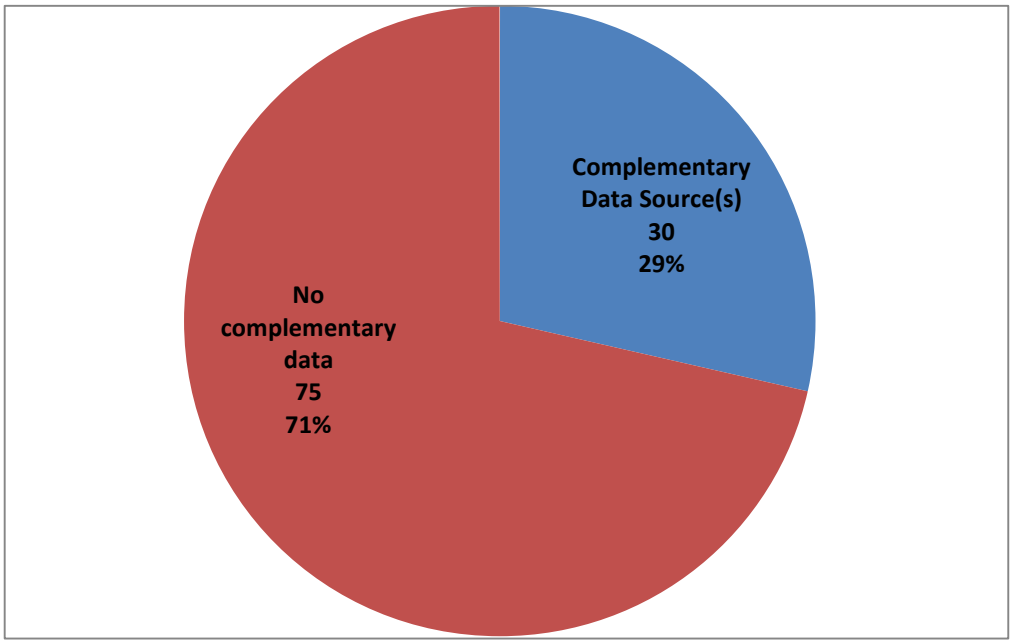


Complementary data sources. Complementary data sources such as administrative registers or census data help improve the precision of impact evaluation estimates by widening the spectrum to control for confounding variables (Figure 4.2). They also help contrast survey information with administrative data.[49] Almost one-third (29 percent) of the studies reviewed here use complementary data sources. Dow and Schmeer (2003) and Wagstaff et al. (2009) are noteworthy examples of this approach. Dow and Schmeer (2003) merge vital statistics and census and administrative data to understand whether, in Costa Rica, differential health insurance expansions at the county level can be related to variations in child and infant mortality rates. In their study, census data provide information on individual health insurance coverage, which is aggregated at the county level. Furthermore, census and administrative data are used to control for potential confounding variables (socioeconomic and health system characteristics at the county level). Similarly, Wagstaff et al. (2009) combine panel household-level data with data collected from program administrators and health facilities to improve the matching of insured individuals with

[49] For example, recall periods of up to one year in the utilization of health services in standard household surveys can result in considerable measurement error.

similar untreated individuals (and thereby reduce the impact of potentially confounding variables) to evaluate the impact of the New Cooperative Medical Scheme in some counties of China.

Figure 4.2 Use of Complementary Data Sources

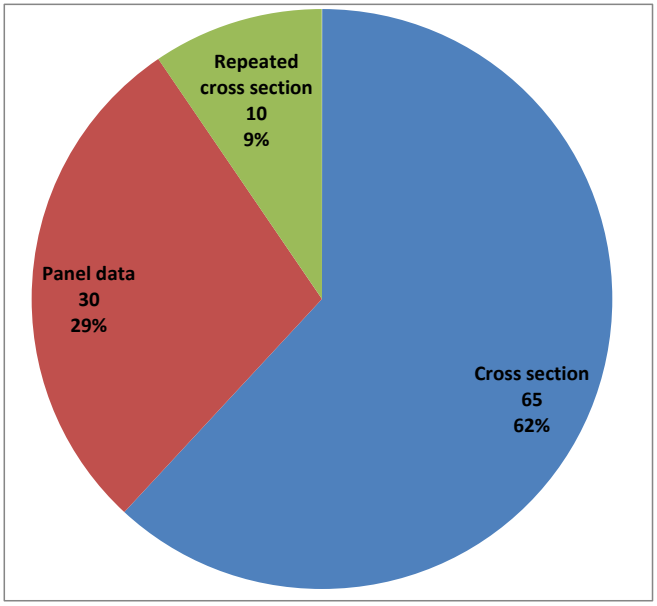


Cross-sectional versus panel data. The choice of method depends in part on the type of data available. Most of the studies reviewed here (62 percent) use cross-sectional data (Figure 4.3). These kinds of data limit the statistical methods available to tackle the endogeneity issue discussed earlier. A smaller share of studies uses either panel data (29 percent) or repeated cross-sectional data (9 percent), which support less restrictive estimators.[50] Most of the studies limit their data to those obtained from prospectively designed surveys, living standards measurement demographic surveys and health household surveys, or other similar household surveys. A few studies, however, use aggregate information at the local or country level[51] to assemble a panel of data (see Dow and Schmeer 2003; Wagstaff and Moreno-Serna 2009). Similarly, other studies use information at the health-facility level. For example Ir et al. (2010) use data on deliveries in public health facilities and expected birth rates to calculate the share of institutional deliveries.

[50] MDD or DD, for example, cannot be applied with cross-sectional data. See Blundell and Costa Dias (2000) and Ravallion (2001) for a description of using repeated cross-sectional data instead of panel data to evaluate impact by applying double difference or matched double difference estimation technique.

[51] Wagstaff and Moreno-Serra (2009) use annual data on health sector outcomes for 28 Europe and Central Asia countries to assemble a panel from 1990 to 2004.

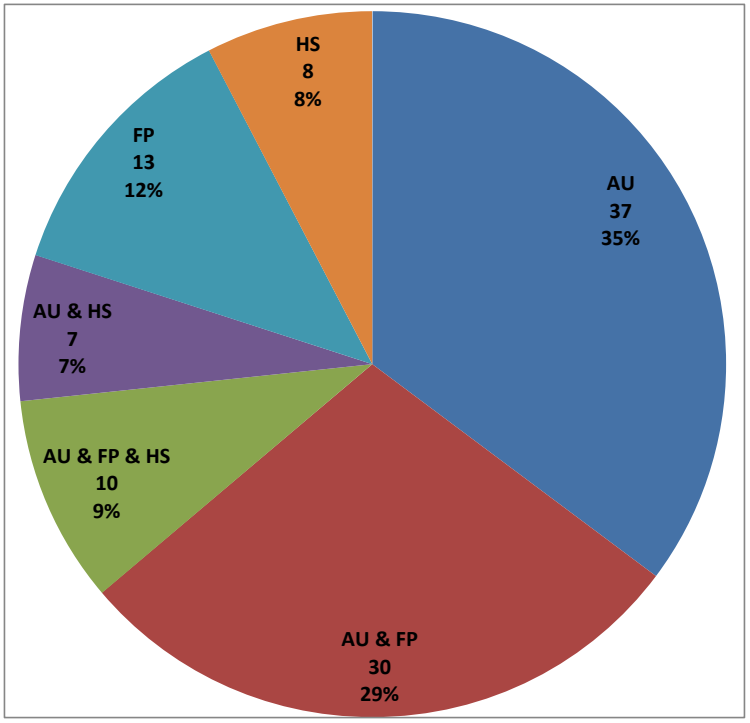
Figure 4.3 Type of Data Used



Outcome variables. Chapter 6 summarizes how different researchers have operationalized the concepts of access, utilization, financial protection, and health status. Overall, Chapter 6 shows an extremely rich set of options available when deciding on which variables to use when measuring the impact of UHC on access, utilization, financial protection, and health status. As emphasized repeatedly in this review, whatever the final choice, the variables should be directly related to the specificities of the scheme evaluated. As we will show later, this is not always the case. Figure 4.4 summarizes the outcomes that were analyzed by the studies reviewed here. Eighty-four of 105 studies examine the impact of the interventions on access and utilization (AU) variables and 53 deal with outcomes related to financial protection (FP). A smaller number of studies (25) evaluate the impact on health-status-(HS)-related variables. Forty-seven studies evaluate the impact of the intervention on several performance dimensions. The fact that most studies look at access/utilization/financial protection outcomes is not surprising, since UHC schemes are meant to improve them. The scarcer evidence related to health status is understandable for at least four reasons: (a) the impact of UHC schemes on health status is indirect;[52] (b) it might take longer for a UHC scheme to impact health status variables, and hence credible evaluations might be more difficult to put in practice;[53] (c) it is harder to find health status variables that are likely to depend mainly on improved access to health services promoted by UHC schemes; and (d) it might be more difficult to find health status data directly related to intervention and of appropriate quality for an impact evaluation.

[52] Or at least not as direct as in access, utilization, or financial protection, as discussed in the conceptual framework.
[53] For example, it would be difficult to sustain a randomized social experiment for long periods (say, five years) to wait for impacts on health status to occur.

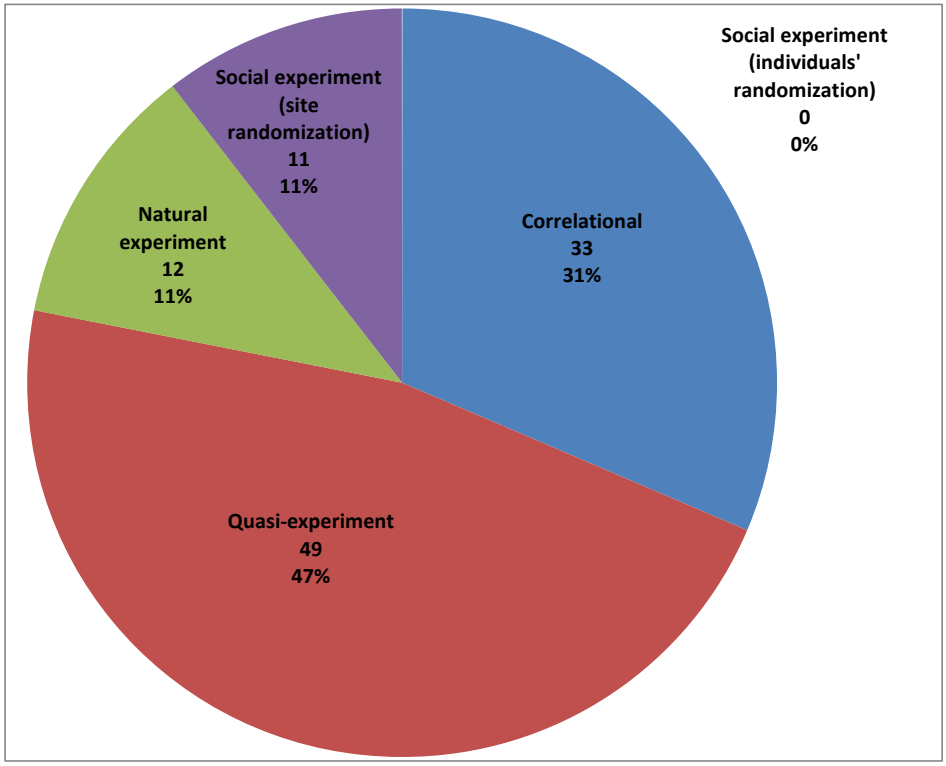
Figure 4.4 Outcomes Analyzed



Design of the study. Forty-seven percent of the studies reviewed here use a quasi-experimental design (Figure 4.5). As indicated, this type of design allows controlling, at least in part, for confounding variables when evaluating impact. Despite a rising awareness of the importance of dealing with confounding variables when evaluating causal effects, almost one-third (31 percent) of the studies reviewed here limit their approach to a correlational design. None of the studies reviewed here use data from a social experiment randomly assigning the intervention among individuals. Eleven studies use a social experiment to randomly assign program interventions to treatment and control *sites or clusters* (*but not individuals*). Within the intervention sites, individuals can usually choose whether to participate. Therefore, the participation status within sites is not random and the comparison of treatment and control groups may still be biased, which suggests that other methods may still be needed to appropriately identify the causal effect of the intervention. Likewise, 12 studies take advantage of natural experiments where participation can be reasonably claimed to be "as if" randomly assigned.[54] One example of these studies is an evaluation of health insurance in Costa Rica, where there was a substantial increase in insurance coverage that varied considerably across geographic locations and which ultimately allowed the authors to "exploit variation in county patterns in both baseline 1973 insurance coverage and 1973–1984 insurance expansions, allowing the estimation of panel fixed effects mortality models" (Dow and Schmeer 2003, 976).

[54] See Dunning (2008) for an excellent discussion on natural experiments.

Figure 4.5 Study Design



Impact evaluation methods. Figure 4.6 shows the percentage distribution (percent) of impact evaluation methods used by the studies in this review, and Figure 4.7 shows the number of studies using each method.[55] Figure 4.6 shows that 36 percent of the studies resort either to a multivariate analysis or to simple mean comparisons. This is worrisome since such methods, as indicated earlier, might not be appropriate to identify the causal effect of an intervention in the absence of randomization. Nonetheless, a few of those studies rely on social or natural experiments and therefore might still be fairly robust. The remaining studies use impact evaluation methods to establish the causal link between the intervention and the outcome variables of interest, in which the most common approach is instrumental variables, as shown in Figure 4.7.[56] Finally, 9 of the studies use a combination of different methods to evaluate the impact. This combined approach is useful to test the robustness of the estimates and to identify potential endogeneity problems.[57]

[55] The papers using more than one method are counted in more than one category. Therefore, the sum of totals is greater than the total of papers reviewed (105).
[56] See Annex Table 2 for a discussion of the relative advantages of different impact evaluation methods.
[57] "Even though all evaluation methods have risks for bias, the risk can sometimes be reduced by using a combination of methods. By combining methods, we can often offset the limitations of a single method and thus increase the robustness of the estimated counterfactual" (Gertler et al. 2010, 119).

Figure 4.6 Statistical/Econometric Method

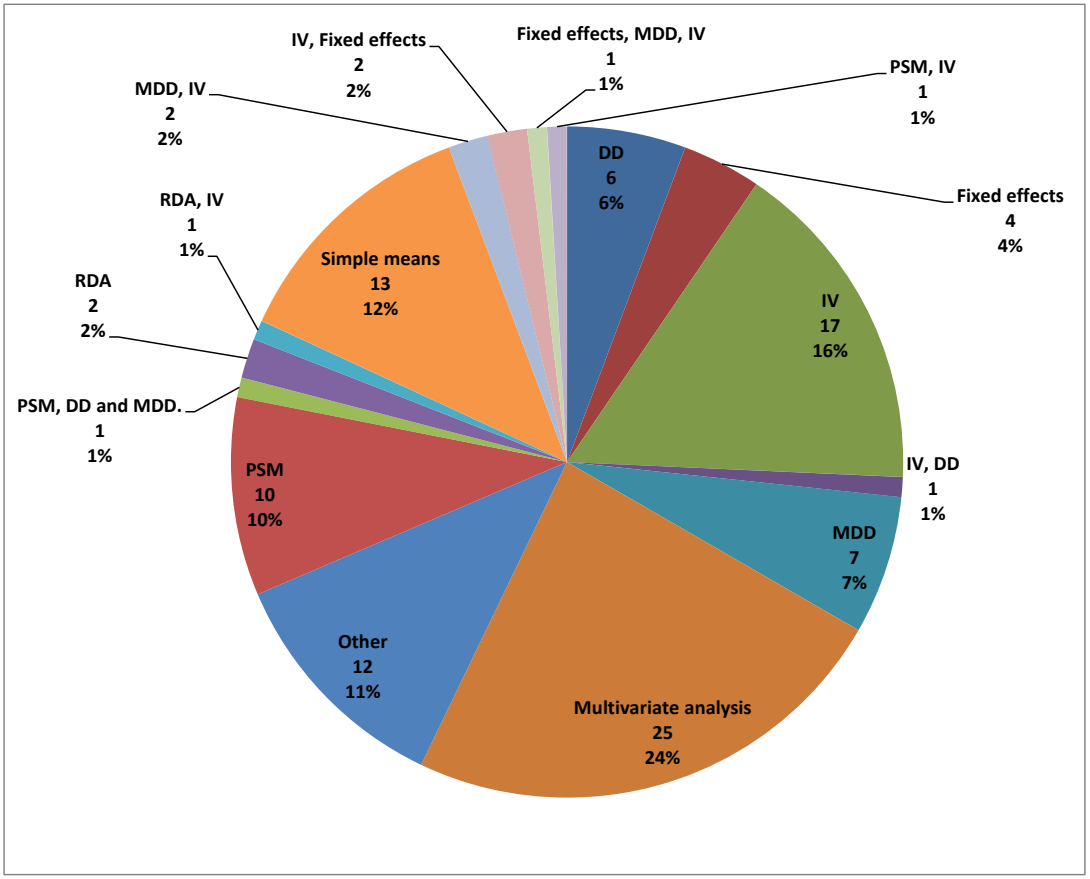
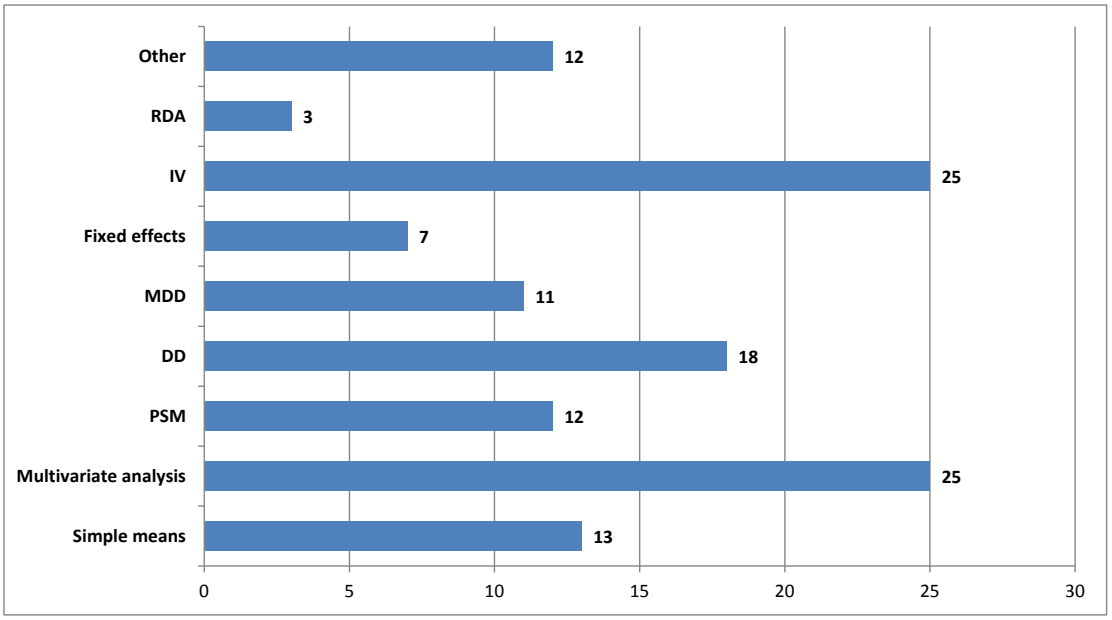


Figure 4.7 Statistical/Econometric Method



5. Robustness of the evidence

This chapter presents the key results of our evaluation of the robustness of the evidence reviewed. As described earlier, the robustness of the evidence was determined on the basis of five general criteria: (a) quality of the study design, (b) richness of data, (c) methodological strength of the impact evaluation method (mostly related to the way the potential selection bias problem was dealt with), (d) rigorousness with which each method was applied, and (e) quality of the discussion related to the findings of each study (see Chapter 3 for a description of the detailed quality assessment protocol used for this review). We first present the overall ranking of the studies included in this review and then discuss key issues emerging from the analysis of the robustness of the available literature.

5.1 Overall ranking

The application of the quality evaluation protocol assigns a maximum score of 100 points according to the above-mentioned five criteria. The scores obtained by the evidence varied between 9 points (least robust study) and 85 points (most robust study). The mean score is 55 (coefficient of variation 31 percent) and the median score is 59.

Since this review tries to summarize what we really know about the impact of UHC on access, utilization, financial protection, and health status, it was necessary to decide on a cut-off point of what might or might not be sufficiently robust evidence as indicated by the score. Note that any cut-off point is somewhat arbitrary. In an attempt to define a cut-off point as objectively as possible, we first explored the scores' behavior. As can be observed in Figure 5.1, the scores decrease rather smoothly, and there are no marked discontinuities that might suggest a possible cut-off point. Figure 5.2 shows that the greatest concentration can be found between 60 and 70 points, but it does not provide a compelling case for any particular value to be used as a cut-off point.

Figure 5.1 Sorted Scores

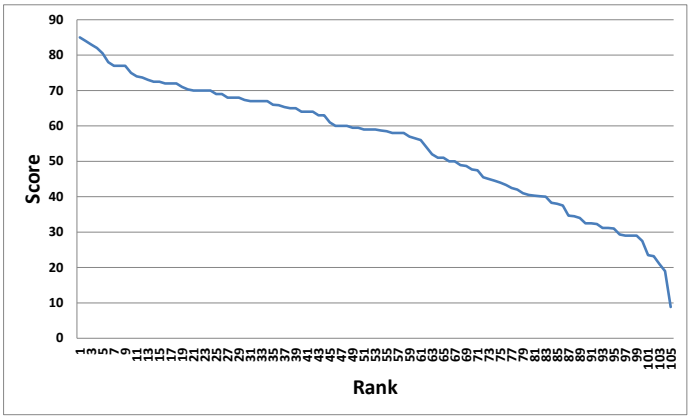
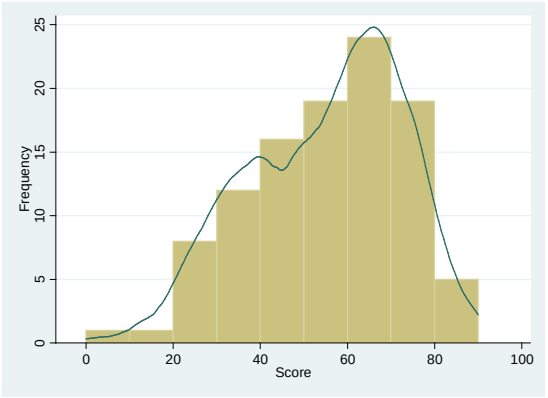


Figure 5.2 Scores Histogram



Given that the exploration above does not provide convincing arguments for choosing a reasonable cut-off point, to discriminate between strong and less robust evidence, we use a cumulative approach in which we create four groups according to their contribution to the total score (the sum of scores of all papers). Using this approach, the upper group comprises the papers that contribute the top 25 percent of the total score, the second group comprises the studies that

add the next 25 percent of the total score, and the lower-middle and lower group comprise those studies that contribute the lowest 50 percent of the total score.

As Table 5.1 shows, 39 of the 105 studies reviewed here score 49 points or lower. This clearly indicates the need to continue supporting the production of quality research. Table 5.1 also shows that among the top two groups, access is still the most frequently studied outcome, followed by financial protection and health status. Overall, the proportion of studies that analyze access is 80 percent, but in the top two groups it is just around 70 percent. Conversely, the proportion of studies analyzing health status is 23 percent overall and 31 percent in the top two groups.

Table 5.1 Distribution of the Literature by Score Group

Score Quartiles	Score	Total	Access and Utilization	Financial Protection	Health Status
Lowest	9–49	39	34	21	5
Lower-middle	50–63	25	21	11	7
Upper-middle	64–70	22	17	11	4
Upper	71+	19	12	10	9
Total		105	84	53	25

Figure 5.3 depicts normalized average scores[58] by group along each of the five main criteria (study design, richness of data, specific and general methodological issues, and discussion of results). The studies in the upper group perform well on most criteria of the score, particularly on the methodological issues, which indicates that these studies tend to explicitly address the issue of endogeneity, and clearly describe research goals, methods, results, and the limitations of their evaluations. Several also take into account the potential heterogeneity of the impact across different groups and schemes. Figure 5.3 also shows that the upper group outperforms in virtually all criteria the studies in the other groups, which suggests that the grouping method might be adequate to identify the studies providing the most solid evidence. Note that the upper-middle group also performs well on most criteria, and its average score is close to that of the top group in most dimensions (and is relatively far from lower-middle and lower groups), indicating that these studies also provide reasonably robust evidence.

These results also show that, overall, the study design is the most important weakness of the evaluations reviewed. The methodological issues constitute another major weakness, mainly because although there are several studies that are fairly robust and methodologically sound, many others do not address the fundamental methodological challenges of an impact evaluation. Another weakness of many studies is the discussion of results. These weaknesses and the key methodological issues arising from the quality assessment of the evidence will be discussed in detail in section 5.2.

[58] Average score as a percentage of the maximum score in each criteria.

Figure 5.3 Normalized Scores by Group and Criteria

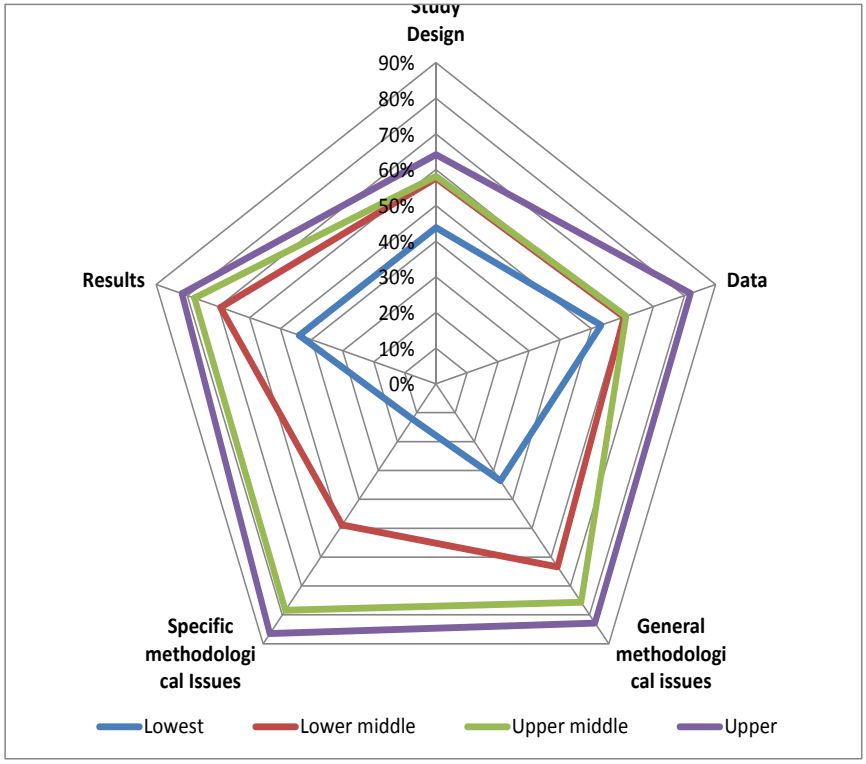


Table 5.2 presents the list of 41 papers (of a total of 105) in both the upper group (19) and the upper-middle group (22), with an indication of the performance dimension (access, financial protection, health status) they evaluate. The papers are presented alphabetically by country name. ***These studies provide the best available evidence, and therefore constitute the main basis for the synthesis of what we know about the impact of UHC presented in the rest of the document. These studies will be referred to hereafter as "the evidence base."***

Table 5.2 The Most Robust Evidence

	Country	Author	Title	AU	FP	HS
Upper group	Argentina	Gertler, Martinez, and Celhay (2011)	"Impact Evaluation of Maternal Child Provincial Health Investment Project in Argentina – Plan Nacer"			X
	Bangladesh	Nguyen et al. (2012)	"Encouraging Maternal Health Service Utilization: An Evaluation of the Bangladesh Voucher Program"	X	X	
	Burkina Faso	Parmar, Reinhold, Souares, Savadogo, and Sauerborn (2011)	"Does Community-Based Health Insurance Protect Household Assets? Evidence from Rural Africa"		X	
	China	Wagstaff and Yu (2007)	"Do Health Sector Reforms have their Intended Impacts? The World Bank's Health VIII Project in Gansu Province, China"	X	X	X
	China	Wagstaff and Lindelow (2008)	"Can Insurance Increase Financial Risk? The Curious Case of Health Insurance in China"		X	
	China	Yip et al. (2008)	"The Impact of Rural Mutual Health Care on Access to Care: Evaluation of a Social Experiment in Rural China"	X		
	China	Wagstaff et al. (2009)	"Extending Health Insurance to the Rural Population: An Impact Evaluation of China's new Cooperative Medical Scheme"	X	X	
	China	Wang, Yip, Zhang, and Hsiao (2009)	"The Impact of Rural Mutual Health Care on Health Status: Evaluation of a Social Experiment in Rural China"			X
	Colombia	Trujillo, Portillo, and Vernon (2005)	"The Impact of Subsidized Health Insurance for the Poor: Evaluating the Colombian Experience Using Propensity Score Matching"	X		
	Colombia	Giedion, Díaz, et al. (2007)	"The Impact of Subsidized Health Insurance on Access, Utilization and Health Status: The Case of Colombia"	X		X
	Costa Rica	Dow and Schmeer (2003)	"Health Insurance and Child Mortality in Costa Rica"			X
	Ethiopia	Admassie, Abebaw, and Woldemichael (2009)	"Impact Evaluation of the Ethiopian Health Services Extension Program"	X		X
	Georgia	Bauhoff, Hotchkiss, and Smith (2010)	"The Impact of Medical Insurance for the Poor in Georgia: A Regression Discontinuity Approach"	X	X	
	Mexico	King et al. (2009)	"Public Policy for the Poor? A Randomized Assessment of the Mexican Universal Health Insurance Program"	X	X	X
	Mexico	Galarraga, Sosa-Rubi, Salinas-Rodriguez, and Sesma-Vazquez (2010)	"Health Insurance for the Poor: Impact on Catastrophic and Out-of-Pocket Health Expenditures in Mexico"		X	
	Mexico	Barros (2011)	"Wealthier but not Much Healthier: Effects of a Health Insurance Program for the Poor in Mexico"	X	X	X
	Nicaragua	Thornton et al. (2010)	"Social Security Health Insurance for the Informal Sector in Nicaragua: A Randomized Evaluation"	X	X	
	Philippines	Quimbo et al. (2010)	"Evidence of a Causal Link between Health Outcomes, Insurance Coverage, and a Policy to Expand Access: Experimental Data from children in the Philippines"			X
	Uganda	Reinikka and Svensson (2010)	"Working for God? Evidence from a Change in Financing of Nonprofit Health Care Providers in Uganda"	X		
Upper-middle group	Bangladesh	Abdullah H. Baqui et al. (2008)	"Effect of Community-based Newborn-care Intervention Package Implemented through Two Service-delivery Strategies in Sylhet District, Bangladesh: A Cluster-Randomized Controlled Trial"			X
	China	G. G. Liu and Zhao (2006)	"Urban Employee Health Insurance Reform and the Impact on Out-of-Pocket Payment in China"		X	
	China	Yip and Hsiao (2009)	"Non-evidence-based Policy: How Effective is China's New Cooperative Medical Scheme in Reducing Medical Impoverishment?"		X	
	China	Chen and Jin (2010)	"Does Health Insurance Coverage Lead to Better Health and Educational Outcomes? Evidence from Rural China"			X
	China	Lu, Liu, and Shen (2012)	"Does China's Rural Cooperative Medical System Achieve its Goals? Evidence from the China Health Surveillance Baseline Survey in 2001"	X	X	
	Colombia	Panopoulou (2001)	"Affiliation and the Demand for Health Care by the Poor in Colombia"	X	X	

	Colombia	Trujillo (2003)	"Medical Care Use and Selection in a Social Health Insurance with an Equalization Fund: Evidence from Colombia"	X		
	Colombia	Giedion, Alfonso, and Díaz (2007)	"Measuring the Impact of Mandatory Health Insurance on Access and Utilization: The Case of the Colombian Contributory Regime"	X		
	Colombia	Flórez, Giedion, Pardo, and Alfonso (2009)	"Financial Protection of Health Insurance"		X	
	Colombia	Miller, Pinto, and Vera-Hernández (2009)	"High-Powered Incentives in Developing Country Health Insurance: Evidence from Colombia's Régimen Subsidiado"	X	X	
	Ecuador	Waters (1999)	"Measuring the Impact of Health Insurance with a Correction for Selection Bias—A Case Study of Ecuador"	X		
	Indonesia	Hidayat, Thabrany, Dong, and Sauerborn (2004)	"The Effects of Mandatory Health Insurance on Equity in Access to Outpatient Care in Indonesia"	X		
	Indonesia	Pradhan, Saadah, and Sparrow (2007)	"Did the Health Card Program Ensure Access to Medical Care for the Poor during Indonesia's Economic Crisis?"	X		
	Mali	Franco et al. (2008)	"Effects of Mutual Health Organizations on Use of Priority Health-care Services in Urban and Rural Mali: A Case-control Study"	X	X	
	Mexico	Harris and Sosa-Rubi (2009)	"Impact of Seguro Popular on Prenatal Visits in Mexico, 2002–2005: Latent Class Model of Count Data with a Discrete Endogenous Variable"	X		
	Mexico	Sosa-Rubi, Galarraga, and Harris (2009)	"Heterogeneous Impact of the Seguro Popular Program on the Utilization of Obstetrical Services in Mexico, 2001–2006: A Multinomial Probit Model with a Discrete Endogenous Variable"	X		
	Multicountry	Wagstaff and Moreno-Serra (2009)	"Europe and Central Asia's Great Post-communist Social Health Insurance Experiment: Aggregate Impacts on Health Sector Outcomes"	X	X	X
	Philippines	Kraft et al. (2009)	"The Health and Cost Impact of Care Delay and the Experimental Impact of Insurance on Reducing Delays"	X		
	Thailand	Panpiemras, Puttitanun, Samphantharak, and Thampanishvong (2011)	"Impact of Universal Health Care Coverage on Patient Demand for Health Care Services in Thailand"	X		
	Vietnam	Jowett, Deolalikar, and Martinsson (2004)	"Health Insurance and Treatment Seeking Behavior: Evidence from a Low-income Country"		X	
	Vietnam	Wagstaff (2010)	"Estimating Health Insurance Impacts under Unobserved Heterogeneity: The Case of Vietnam's Health Care Fund for the Poor"	X	X	
	Vietnam	Viet Cuong (2012)	"The Impact of Health Insurance for Children: Evidence from Vietnam"	X	X	

Note: Studies are first ordered alphabetically by country and then by year of publication.
AU = access and utilization. FP = financial protection. HS = health status.

5.2 Paths to improvement of the UHC impact evidence

This section summarizes some of the key methodological issues emerging from the assessment of the quality of the existing evidence. They indicate some of the aspects that need to be improved in future studies evaluating UHC schemes.

Study design. The key weakness of the evidence is the flaw of many study designs; 36 percent use standard regression or descriptive statistics only to explore causal relations. None of the studies included here is based on a fully randomized assignment of the intervention to participants. Just a few were able to implement site or cluster randomization. Furthermore, panel data[59] sources are used only in 29 percent of the studies. The majority of the studies rely on living standards measurement, demographic-survey-type data, and health household-survey-type data for the evaluation. This suggests the need to improve the design of the evaluation of UHC schemes and highlights the importance of planning the evaluation of interventions and corresponding data collection efforts along with the design of the intervention itself. Although the design of the evaluations seems to be improving—given that most of the well-designed evaluations have been recently published—there is still a long way to go to have an extensive and robust evidence base on the impact of UHC-like interventions. Thus, it is imperative for reformers, practitioners, donors, and supporters engaged in evidence-based policy making for UHC to endorse the ex-ante design and planning of the evaluation of their initiatives.

Evaluation questions and outcomes. "Impact evaluations take root in a program's theory of change" (Gertler et al. 2010, 13). This means that the evaluation question and outcomes of interest must have a clear relation to the intervention's design.[60] Therefore, a good impact evaluation is expected to clearly describe the intervention and how it is supposed to achieve the intended results and then explain the selection of questions and outcomes, accordingly.

Although the overwhelming majority of the papers in this review (90 percent) have a clearly defined research question, in most cases the "theory of change" is discussed rather superficially. Sometimes there are reasonable doubts about the rationale for choosing some outcome indicators. For example, several studies estimate the impact of recently implemented schemes on mortality rates. This might be questionable given that health status in general—but especially mortality—is affected only indirectly,[61] and certainly not mainly, by UHC schemes.[62] In addition, the impact may not show during the early stages of a UHC scheme. So, although mortality rates might indeed be a relevant outcome, they might not always be related to the intervention.

[59] A striking example of the importance of panel data may be found in the study by King et al. (2009, 1452), in which the baseline was crucial in clarifying the impact of Seguro Popular on self-assessed health status, because without such pretreatment data, in spite of having a cluster-randomized design, the results might have been misleading.

[60] A caveat applies here; unintended consequences (for either good or bad) are not uncommon and are also worth exploring through impact evaluation. However, such consequences might not be explicitly related to the intervention's design (which sometimes might be a flaw in the theory of change explicitly stated by the program).

[61] Mainly by means of improved access and avoiding impoverishment and financial catastrophe, which suggest that the impact is conditional on the achievement of such results.

[62] Health status depends on many other determinants (food-consumption habits, lifestyle, sanitation, socioeconomic conditions, water supply), and the contribution of a health system might not be among the most important.

There is clearly a need to more carefully choose the outcome indicators most directly related to the intervention. This is especially true when looking at health-status-related performance measures. In this context, more emphasis should be put on identifying indicators more directly related to improved access (for example, preventable hospitalizations). Similarly, several studies focusing on health service utilization do not clearly describe the benefits being covered by the UHC scheme under scrutiny. For example, some studies may be looking at the use of preventive care and outpatient visits as outcomes, whereas the benefits package covers primarily inpatient care. Along the same lines, some studies analyze the impact of UHC schemes on early detection for selected diseases without providing a discussion of how the detection of these diseases may be related to the benefits provided under the UHC scheme.

Overall, it seems that the choice of outcome variables is driven by data availability rather than being based on a careful discussion of the "theory of change" underlying the evaluated UHC program. We base this perception on (a) the common lack of a thorough discussion[63] of the selection of outcome variables and their relation to the intervention, and (b) the predominance of retrospective studies using living standards measurement demographic surveys and health household surveys, which were not designed for the purpose of the evaluation of a specific program. As a final point, it seems that prospectively designed impact evaluations tend to perform better when selecting outcome variables; in those evaluations, there is usually a more detailed discussion on the outcomes and their relation to the intervention and on how the outcomes should be measured. This hardly comes as a surprise, since they tend to incorporate the theory of change into the data collection design at the outset of the program by interacting with the stakeholders involved in design and implementation (Gertler et al. 2010, 21–23).

This discussion illustrates the importance of appropriately choosing the outcome variables for an impact evaluation. Incorrect outcome selection may sometimes explain a negligible impact and, more important, may sometimes lead to erroneous interpretations and misleading policy recommendations.

Methods. The sources of bias and confounding variables are often program specific, while each impact evaluation method has its own assumptions about the nature of the bias it is dealing with (Khandker, Koolwal, and Samad 2009, 27). Therefore, the selection of methods should be related to the design and implementation of the scheme under evaluation. Thus, a good impact evaluation is expected to provide a detailed description of the specificities of the scheme being analyzed, especially explaining how the targeting mechanisms, eligibility rules, and affiliation process might create biases in the evaluation. This should also be followed by a discussion regarding the methods available to tackle the potential biases. It should be clearly stated how the selected methods may or may not mitigate the existing problems and whether it is likely that methods' assumptions hold. Such a discussion, unfortunately, is largely absent in the correlational papers,

[63] The lack of such a discussion in several papers may have been the result of publication space constraints and not a lack of interest in choosing appropriate outcomes. For example, the discussion about it in King et al. (2009, 1452) is rather succinct, but there is a paper devoted to the study design where those topics are discussed a bit further (King et al. 2007). Similarly, the review identified several working papers that were later published in journals, and it is clear that the publication is much more space-constrained than the working paper (see, for example, You and Kobayashi [2009]).

which, as mentioned earlier, represent a significant proportion of the literature reviewed (36 percent). In most of the other papers, such a discussion is presented. However, the quality and depth of the analysis are highly variable; while there are several papers[64] with a thoughtful discussion about method selection and feasibility of the assumptions, there are others that describe the method applied rather than discuss its appropriateness in light of the impact evaluation problem at hand and the specificities of the program.[65]

Endogeneity: how much? In impact evaluations, endogeneity usually arises as a result of unobserved[66] variables that affect both the participation in the scheme being evaluated and the outcomes of interest (leading to correlation between participation status and the error term). But then, how much endogeneity is there or how easy or difficult is it to correct? To discuss this issue we rely on the papers using an instrumental variables (IV) approach, which includes specific tests that can be used by researchers to determine the existence of a potential endogeneity problem in their models.

Annex Table 4 summarizes the studies that use an IV approach, indicating in each case the instrumental variable that was chosen and whether an indication of endogeneity was found. The table shows that, first, endogeneity is not always tested, or at least not reported; second, the endogeneity problem is far from being omnipresent; and third, endogeneity is sensitive to the outcome variables under scrutiny. Each of these issues is discussed in further detail below.

Endogeneity is not always tested or reported. An IV approach, if applied when there is no endogeneity, worsens rather than improves the estimates, so testing for endogeneity is important when applying this approach.[67] It is therefore surprising that almost one-third (7) of the 25 studies using an IV approach neither report nor mention having carried out any tests of endogeneity. Even though it is plausible that the tests were actually applied but not reported due to space constraints, it is still worrisome that those tests are not even mentioned.

Endogeneity does not seem to be an omnipresent issue. The second fact emerging from Annex Table 4 is that evidence of endogeneity does not always exist. The existence of an endogeneity problem in evaluating the impact of UHC schemes depends to a large extent on the specific context being analyzed. We would, for example, expect much less endogeneity in a single-pool mandatory scheme for formal sector workers (where affiliation occurs by default) compared to a voluntary enrolment scheme for informal sector workers (where affiliation depends largely on the individual's decision and characteristics). Thus, endogeneity cannot be assumed up front, and it

[64] See, for example, Yip, Wang, and Hsiao (2008) and Wagstaff and Yu (2007).

[65] There are also examples of papers that inexplicably do not exploit what seem to be good data sources (that is, having panel data available apply multivariate analysis without any correction for potential selection bias). Furthermore, several papers using the differences-in-differences approach just describe the method and its assumptions, but never discuss the feasibility that the unobserved variables might in fact be time-invariant in the particular context of the evaluation.

[66] This is probably the most common cause of endogeneity, but not the only one. Endogeneity can also arise as a result of simultaneity, which might be common in evaluating the impact of UHC schemes on health status, and a consequence of measurement error.

[67] "[A]n important cost of performing IV estimation when x and u are uncorrelated: the asymptotic variance of the IV estimator is always larger, and sometimes much larger, than the asymptotic variance of the OLS estimator" (Wooldridge 2003, 490).

must therefore be tested for before using sophisticated methods to correct for this problem. Furthermore, conceptualizing endogeneity depends on understanding the context and functioning of the scheme being evaluated. In the absence of randomized enrolment into a UHC scheme, a simple comparison of participants and nonparticipants would suffer from endogeneity and, depending on the context, it may be easier or harder to correct.

Finally, Annex Table 4 also shows that even in the same specific context, endogeneity may be an issue for some outcomes but not for others. For example, suppose the enrolment into a UHC scheme is *completely* determined by a proxy means test score (hence, there are no unobservable variables affecting participation), but the score formula includes health status. In such a setting, endogeneity may not be a problem when evaluating the impact on access, but there might well be an endogeneity issue when looking at health status, since this variable may be both a result and a determinant of participation. This example highlights once again the importance of understanding in depth the context and the theory of change behind the intervention.

To sum up, it is clear that even though potential endogeneity is a central issue when evaluating the impact of UHC schemes, it can by no means be taken for granted and should always be tested for. In addition, the endogeneity problem is highly context specific, which stresses, once again, the importance of a thorough familiarity with the scheme that is to be evaluated.

Heterogeneity in schemes' design. Annex Table 3 presents the "UC schemes matrix," which provides a summary of the key design features of each of the schemes being evaluated by the evidence base and a summary description of the major health schemes in each country. As already discussed (see section 4.2), the schemes that are being evaluated vary considerably in design, target groups, benefits coverage (both services and costs), financing mechanisms, purchasing, and delivering arrangements. Note that variations in design are not only observed across countries but also *between* schemes coexisting in each country and even *within* schemes across population groups,[68] regions,[69] and other variables.

Heterogeneity in UHC design should be recognized and appropriately handled in the empirical strategy for at least two reasons. First, the methodological challenges for the unbiased estimation of causal effects may vary across different contexts or populations, and different methods may be needed to evaluate different UHC schemes, even within each country. For example, the estimation of causal effects in a voluntary enrolment scheme for informal sector workers may require an empirical strategy completely different from an impact evaluation of a mandatory scheme for formal sector workers. Different contexts may require a totally different empirical strategy, and it would be inappropriate to neglect such heterogeneity since it might lead to biased results. Second, lumping together schemes or interventions that differ in their design, and focusing only on the average impact of those different interventions, might hide the impacts and produce misleading results.

To illustrate these points, a few authors compare the impact across *different schemes*. A study by Ekman (2007b) evaluates the impact of multiple health insurance schemes in Jordan. The author

[68] Within schemes sometimes there are population groups with more generous benefits coverage than others (in terms of the services covered or the proportion of the costs covered).
[69] For example, sometimes budgets vary by regions, and then the benefits vary, as well.

first estimates the impact using an aggregate measure of health insurance (a dummy variable for health insurance) and finds no significant impact; however, after disaggregating the different insurance programs, the results show that the effect of insurance differs substantially across the schemes. Similarly, Yip, Wang, and Hsiao (2008) compare the impact of two rural schemes in China. Whereas they find a positive impact for a scheme operating in two Western provinces and providing first-dollar coverage for both inpatient and outpatient services, and using supply-side interventions to improve quality and reduce inefficiencies in health service delivery, they find no significant positive impact for another scheme commonly found in the Western and Central regions of China that combines an individual medical savings account with high-deductible catastrophic insurance providing coverage mainly for expensive hospital services.

Finally, the potential heterogeneity in design of different health insurance schemes points to the importance of taking this heterogeneity into account when defining the empirical strategy. Also, care should be taken when trying to generalize results across countries or schemes and when assessing and interpreting the results of some papers that do not differentiate clearly among the different schemes they are looking at.[70]

Understanding the counterfactual. As discussed above, UHC is a strategy that tends to involve more than just one intervention or scheme. The studies do not evaluate the overall UHC strategy, but usually only evaluate the impact of *one* of the existing schemes using as a counterfactual the people not enrolled in the scheme being evaluated. However, not being enrolled in one particular scheme rarely means a total lack of coverage, something we have referred to earlier as the "lack of a placebo" with regard to UHC.

The lack of a placebo may be problematic for an impact evaluation for several reasons: (a) it changes the hypothesis of the evaluation (we are rarely evaluating the total impact of a UHC scheme but rather its additional contribution to what already exists[71]; (b) it may change the outcome of interest of the evaluation[72]; (c) it increases the likelihood of spillover effects (see the next subsection); and (d) it may result in confusing conclusions, misleading policy advise, or both.[73]

[70] See, for example, van-Gameren (2010) and Wagstaff and Moreno-Serra (2009).

[71] In general, you should expect smaller impacts and sometimes no impact at all.

[72] For example, suppose you are evaluating a new policy that introduces free access to the highest-quality private providers, with a clearly defined and enforceable maximum waiting time. If the counterfactual is no coverage at all, you would probably expect an impact on access, financial protection, and health status, among others. However, if the counterfactual situation is a well-functioning public network of providers with the same enforceable waiting times but perhaps lower quality, you would probably not expect an impact on access or financial protection and only an effect on health status (due to the supposed higher quality of the private providers).

[73] Imagine the evaluation of an insurance scheme in a context in which the counterfactual is actually a well-functioning safety net of public providers for primary and emergency care. Researchers may not find any positive impact of the insurance scheme on access for those services. If the differences between the intervention and the situation used as a counterfactual are not well understood, the results may be erroneously interpreted as an indication of a worthless effort to allocate money to an insurance scheme, while the results should correctly be interpreted as a demonstration showing that the current system is just as good as the health insurance system with regard to the chosen outcome variables (access to primary and emergency care).

Unfortunately, many studies seem to assume that the lack of coverage by the scheme being evaluated is equivalent to the total lack of coverage in general[74]; indeed, half the studies reviewed here (52 out of 105) do not even mention the existence of alternative options that may be available for those not enrolled in the scheme being evaluated. Twenty-seven of 105 studies recognize the above may happen, but do not discuss in detail the differences between the enrollees and those used to recreate the counterfactual, and even though it is sometimes stated that this fact may be a limitation of the study, its implications are not discussed in depth. Nineteen studies do have a thoroughly thought out discussion of this issue, and 7 somehow build it into their quantitative strategy (by comparing several schemes and estimating marginal or differential effects).

This discussion suggests that the lack of a placebo situation should be considered by researchers in future evaluations. It is one of the methodological issues discussed in this paper where there is clearly considerable room for improvement. Researchers should at least be aware of the situation and its implications. Furthermore, if at all possible, researchers should tackle the issue in the quantitative strategy, for example, by comparing the marginal impact across several schemes. If that is not possible, researchers should at least understand and discuss the counterfactual situation, to be aware of the limitations of the study and avoid mistaken conclusions and misleading guidance.

Spillover effects. Spillover effects occur when the intervention has an impact (positive or negative) not only on the treatment group but also on the comparison groups. Results may be misleading when not explicitly taking into account these kinds of additional effects (White 2009). Note that spillovers, when present, are important to measure because doing so not only helps to remove the bias from the estimates of the direct effects of the treatment but also provides a measure of the indirect effects. The total program impact is the sum of the direct and indirect effects; thus, when they can be measured, it is important for policy purposes to do so (Gertler et al. 2010, 123–5; Khandker, Koolwal, and Samad 2009). Unfortunately, only eight of the papers in this review carefully discuss this issue, and only three explicitly incorporate it into their quantitative strategy.[75]

For example, Yip et al. (2008) analyze the impact of the community-based health insurance intervention on access to care in rural China, by comparing outcomes of *non*enrolled individuals in study and control sites. They find that the intervention had an effect not only on the insured, but also on the nonenrolled in the sites where the health insurance scheme had been introduced.

Similarly, Pradhan, Saadah, and Sparrow (2007) evaluate the impact of a health card program that allocates cards to vulnerable households, which entitles them to use subsidized health care in public facilities in Indonesia. These facilities received additional budgets to compensate for the increased demand. The authors acknowledge that the additional resources put into the scheme benefited the entire population in the health facilities' catchment area. They argue that comparing card receivers versus nonreceivers to measure impact would lead to biased results and an underestimation of the program's impact. The authors note that the overall impact of the program

[74] Our quality assessment tool assesses how well the "lack of placebo" situation is handled in each study.
[75] We also scored the literature on how the study handled potential spillover effects.

should include both the impact of the cards (lower/zero prices for card users) and the effect of the increased resources. They find that such spillover effects were indeed taking place. Increased resources lead to better results, even among those not enrolled. Interestingly, the impact of more resources for providers (the spillover effect) prevailed over the impact of the insurance scheme.

Hamid, Roberts, and Mosley (2011) evaluate the impact of micro health insurance in Bangladesh and hypothesize that this intervention is likely to produce important spillover effects, mainly because the scheme "provides health care directly to their clients through establishing health centers instead of simply paying coverage," thereby benefiting both members and nonmembers, since "the uninsured can seek health care from the health centers established by the program by paying the standard fees." They argue that the scheme improves accessibility for all but improves affordability only for members. The authors argue that only looking at differences between members and nonmembers would underestimate the program's effect.

Other papers discussing the spillover effect present the issue as a potential limitation of the study but do not—and frequently cannot—incorporate it into their models. Wagstaff et al. (2009), for example, carefully *discuss* the potential sources of spillover effects in China's New Cooperative Medical Scheme for the rural population, but then conclude that they are unable to shed any light on it due to data limitations.

The above discussion indicates that the consideration of spillover effects should be promoted in future studies on the impact of UHC schemes. It is in fact surprising that this issue is not regularly and systematically considered in the literature since these externalities occur frequently; UHC schemes tend to involve large-scale interventions that are likely to change both the demand and supply of health care, and changes in supply are usually available to all and not just to those participating in the program. For example, the introduction of active purchasers may promote changes in the way health care providers organize themselves that have an effect not only on the enrolled but also on those not participating. Similarly, the introduction of demand-side subsides for specific services (primary care, specific diseases) by a large-scale UHC scheme may significantly move the demand and change health care relative prices, once again having an impact beyond the enrollees (this might be an issue in Georgia or the Philippines, for example).

Along the same lines, providers delivering care for both enrollees and nonenrollees may have incentives to give preferential treatment to enrollees (selection effects against nonenrollees), or everyone might benefit from improvements in providers through increased budgets or a reorganization of health services. Finally, positive externalities of vaccination are well known since they reduce the likelihood of transmission to those not vaccinated. Therefore, if an intervention effectively increases vaccination among the treatment group, it might also affect health-related outcomes (for example, preventable deaths related to vaccination, utilization of related health services, and so forth) among nonparticipants.

To sum up, the limited consideration of spillover effects is a significant weakness in the impact evaluation literature of UHC schemes. This issue is particularly relevant because spillover effects are probably pervasive in UHC schemes. Once again, it calls for a detailed knowledge of the intervention, a clear explanation of how the counterfactual is created, and an in-depth understanding of how the intervention might affect both the treatment and control groups and how it might affect even services that are not necessarily related to the UHC scheme. In this

context, much more needs to be known and discussed in the UHC literature about the kinds of changes in the provision of health services being put into motion by the implementation of UHC schemes.

Heterogeneity of the impact.[76] As indicated earlier, impact varies by intervention, type of beneficiary, and context. Looking at the average impact may therefore be misleading (White 2009). In the literature reviewed, 58 of 105 studies compare the impact of the interventions across different groups and dimensions, most frequently by level of wealth (27 papers) and to a lesser extent by other types of heterogeneity: 7 papers focus on the differential impact across different schemes, 11 papers look at the differential impact across age groups or gender, 10 papers compare the impact across different geographic areas (mostly urban/rural), 3 papers explore how the impact might be related to the type of health care providers (public/private), and 9 papers analyze how the impact varies depending on the health status of the individuals (mostly people with chronic diseases versus healthy people). Most of those papers, as will be discussed in detail later, find evidence of impact heterogeneity; for example, several papers find that the vulnerable or the poor benefit most from UHC schemes (stronger impact),[77] while others find that the impact of UHC schemes varies across schemes,[78] and others find a differential impact according to health status differences.[79]

Different methods are used to analyze the differential impact. For example, Ekman (2007b) or Yip and Berman (2001) resort mainly to interaction terms when modeling the differential impact of health insurance, whereas authors using nonparametric matching methods tend to repeat the matching process to obtain subgroup-specific propensity scores and weights, as is done by Yip, Wang, and Hsiao (2008) and Giedion, Díaz et al. (2007).

Although it can hardly be argued that the heterogeneity of impacts is a neglected issue, several papers ignore the issue. This is worrisome, since heterogeneous effects are likely to occur frequently in UHC schemes. Two types of challenges seem to exist with regard to data in this context: sometimes there is a lack of accurate information on the variables for which heterogeneity might be expected[80]; and sometimes looking at subgroups and heterogeneity involves a reduction of the sample size, with a concomitant loss of statistical power.

Whatever the method chosen, potential heterogeneity in impact must be seriously considered by whomever is interested in evaluating the impact of health interventions. Therefore, whenever possible, the data sources should be designed or complemented to be able to explore the heterogeneity of impacts at least in the key relevant variables for the scheme under consideration.

[76] An earlier section looked at the importance of considering the heterogeneity in design, while this section looks at how one intervention may impact different groups differently.

[77] See, among others, Giedion, Díaz, et al. 2007; Hidayat et al. 2004; Panpiemras et al. 2011; Pradhan, Saadah, and Sparrow 2007; Trujillo, Portillo, and Vernon 2005; and van-Gameren 2010.

[78] See, for example, Ekman 2007b; Wagstaff et al. 2009; and Yip and Hsiao 2009.

[79] See, for example, Wang et al. 2009.

[80] For example, several studies might expect heterogeneity of impact across population groups with different health status indicators—the ill versus the healthy, people with chronic diseases versus acute illnesses—however, sometimes it is not easy to tackle such heterogeneity because there are no available objective health status measures, and then studies would have to rely on self-assessed health variables, which might frequently be endogenous.

Timing of the evaluation. The *time* lapse between the implementation of the UHC scheme and its evaluation emerges as an important issue in this literature review. The scanty impact of UHC schemes found by some authors may sometimes be related to the limited time allowed between the moment of the UHC schemes' implementation and the moment the data sources that are being used for the UHC evaluation were produced. This may well be the case, for example, in the study of Pradhan et al. (2004), which uses data from February 1999, while the scheme was implemented only a few months earlier (September 1998). Note, however, that these authors are careful to indicate that their results reflect only the experience of the first months of operation of the program. Similarly, Schneider et al. (2001) evaluate the pilot prepayment scheme introduced in Rwandan districts in 1999, with data from 2000. Bauhoff, Hotchkiss, and Smith (2010) and King et al. (2009) argue that the small impact they find for Seguro Popular in Mexico may be explained by the short implementation period. King et al. (2009) assess the impact in a 10-month period, which might be too short a time for some effects to appear (particularly on access and utilization and health status).

Timing might be particularly relevant for prospectively designed randomized evaluations. Although randomized evaluations might provide the most robust evidence on the causal effect of interventions, in most cases a randomized controlled trial design is not likely to remain valid in the long run (frequently, because policy makers need to scale-up interventions, covering those not originally selected by the randomization in a way that may not necessarily comply with the experimental design). Therefore, an experimental evaluation sometimes would have to resort to the limited set of outcomes that can feasibly be modified in the short run. However, such outcomes might not necessarily be the most relevant. Health status improvements are probably the ultimate goal of any UHC scheme, but most health status measures will only change in the long run. Thus, researchers carrying out randomized evaluations should carefully analyze the time horizon of their evaluation. They need to analyze how long the experimental design will likely remain valid, and they need to determine whether the chosen outcome variables are consistent with the timing of the evaluation. Not doing so may lead to sophisticated evaluation designs, but evaluations of little scientific or policy relevance. Furthermore, researchers should anticipate potential disruptions in their experimental design and define ex ante how they will deal with them. As King et al. (2007) put it:

> *The history of public policy experiments is littered with evaluations torpedoed by politicians appropriately attentive to the short-term desires of their constituents, such as those who wind up in control groups without new services or who cannot imagine why a government would randomly assign citizens to government programs. The fact that a scientific evaluation might maximize the interests of people in the long run is often no match for the understandable outrage of constituents and the embarrassment politicians may suffer in the short run. Scholars need to remember, however, that responsive political behavior by political elites is an integral and essential feature of democratic political systems and should not be treated with disdain or as an inconvenience. Instead, the reality of democratic politics needs to be built into evaluation designs from the start, or else researchers risk their plans being doomed to an unpleasant demise.* (pp. 479–80)

Even though no gold standard exists on how much time should pass after implementation before examining impact, Grossman (1994) suggests that 12 to 18 months after enrolment should be allowed before examining impacts (Baker 2000, 19). Note that the required time lapse possibly varies across countries, schemes, and different outcome indicators. For example, while insured affiliates will probably almost immediately experience a reduction in the price paid for covered health services, they will need some time to incorporate these changes into their health-care-seeking behavior. Even more, long-term health status gains related to UHC or other health interventions will possibly materialize only after many years of improved access. The latter example points out yet another difficulty related to time; what matters is not only the time of implementation of the UHC scheme, but also the *individual exposure* to it. To our knowledge, so far none of the studies evaluating the impact of UHC schemes in low- and middle-income countries has explicitly addressed this issue (Baker 2000, 19).

Testing the reasonableness of the assumption underlying each method. As noted, impact evaluation methods imply many assumptions, and their reasonableness should be analyzed and discussed in depth. For some methods, it is possible to empirically test several of the underlying assumptions. Not all the papers in this review carry out the available tests. Among the 25 studies using an IV approach, 7 do not test for endogeneity, 7 papers—in spite of having more than one instrumental variable—do not apply an overidentified restrictions test to examine whether the exclusion restriction holds.[81] Similarly, out of the 12 studies using propensity score matching, 5 do not provide information regarding the area of common support, and 5 do not report tests of balancing of the covariates used to estimate the propensity score between treatment and control groups, after the matching. Discussing the reasonableness of the assumptions underlying each method and testing them when possible is not only a matter of honesty by providing information on the reliability of the results, but also adds robustness to an impact evaluation. In this respect, there is still much room for improvement in the literature evaluating the impact of UHC schemes.

Discussion of results. Finally, we have emphasized the importance of thoroughly describing the context and particularities of each scheme being evaluated. It is not only a matter of informing the reader but, above all, it is key to choose a proper impact evaluation identification strategy, to select the appropriate outcome variables, and to correctly and convincingly interpret results. In this regard, there is considerable variation among the papers in the literature reviewed; there are papers that thoroughly discuss the results and the policy implications, keeping in mind the particularities of the context, while others simply describe the results but do not discuss it.

Some papers include in the discussion of results data that are not used to determine the impact of the intervention, but that are helpful to understanding and interpreting the results. For example, Bauhoff, Hotchkiss, and Smith (2010) and Yip et al. (2008) cite data from monitoring systems and administrative registers that help understand the changes brought by the programs under scrutiny. Likewise, Thornton et al. (2010) conducted interviews and focus groups to better understand the findings. Several other papers, although not using additional information, present a detailed and thoroughly thought-out discussion of results (see, for example, Giedion, Díaz et al. [2007]; Quimbo et al. [2010]; Wagstaff and Yu (2007); and Wagstaff et al. [2009], among

[81] For an explanation of this assumption and the test see, for example, Wooldridge (2000, 122–25).

others). Unfortunately, not every paper in the literature reviewed discusses in detail the results, and a few simply describe the results found and do not elaborate their policy implications.

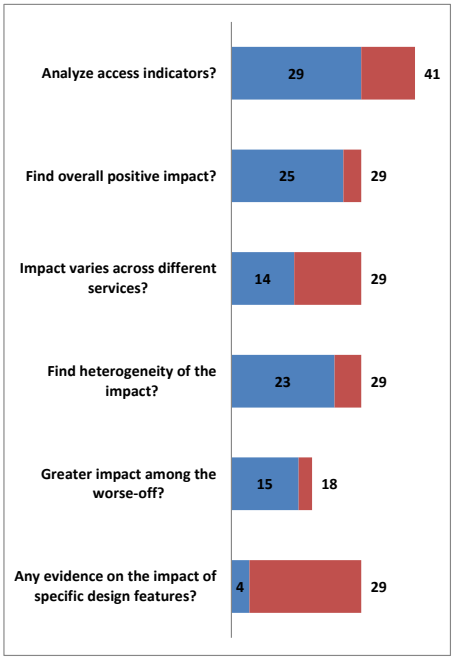
6. What do we really know about the impact of UHC schemes in low- and middle-income countries?

While the previous section analyzed the different limitations of the robustness of the evidence reviewed, this chapter focuses on the impact of universal health coverage (UHC) schemes. It synthesizes the best available evidence (top two quartiles of the reviewed literature as described in section 5.2) of the impact of UHC schemes in low- and middle-income countries on access, financial protection, and health status.

6.1 Impact on access

Overall impact. Of 41 papers of the two top groups included in this assessment, 29 evaluate the impact of different types of UHC schemes on access. Table 6.1 summarizes the results of the papers with the most robust evidence, and Figure 6.1 presents the major findings.

Figure 6.1 Major Findings: Access



A majority (25) of the 29 studies that analyze the impact of UHC schemes on access and that belong to the two top quartiles find favorable and statistically significant impacts of UHC schemes. This suggests that sufficient evidence exists indicating that UHC schemes do improve access. This finding is consistent with the results of previous reviews on the impact of health insurance in the developed world (see, for example, Buchmueller and Kronick 2005; and Hadley 2003) and in low- and middle-income countries (see Giedion and Diaz 2011). It also seems to confirm what is predicted by the "theory of change" of UHC schemes: by improving

affordability,[82] and sometimes other dimensions, it is possible to improve access. In addition, papers that do not find a positive impact (Bauhoff, Hotchkiss, and Smith 2010; King et al. 2009; Thornton et al. 2010) describe limitations in their study design[83] or in the program implementation[84] that may explain the unsatisfactory results. It is, therefore, safe to assume that these papers do not imply that the evaluated UHC interventions may not improve access and utilization, but rather that the impacts have not taken place yet and may still occur in the future (either because of a longer assessment period or after successful implementation of the programs).

The results of these 25 studies also confirm that the impact of UHC schemes is usually heterogeneous and varies considerably depending on variables such as population groups (demographic and socioeconomic) targeted by the scheme, regions covered, specificities of the context, and design features of the schemes such as the services and proportion of costs covered. The only source of heterogeneity that is frequently analyzed is the heterogeneous impact across socioeconomic groups; most studies find that the worse-off seem to reap greater benefits in terms of access. Further findings are discussed below.

Changing impact across outcome variables. In a study of a UHC scheme in Gansu province in China, Wagstaff and Yu (2007) find positive impacts of the scheme on the use of specific services (hepatitis B immunization and the incidence of nontesting of suspected TB patients), but no impact on more general measures of outpatient and inpatient utilization. The authors hypothesize that the lack of overall impact on utilization variables might be explained "because the project successfully reduced the 'need' for health care, or eliminated unnecessary visits," but they do not provide an explanation for why the impact is found on the use of certain services and not on others.

Similarly, Johar (2009) finds an increase in utilization of contraceptives among females eligible for a health card program targeted to the poor in Indonesia, but no effect on utilization of other services. Johar (2009) provides several possible explanations for this result. First, the demand for some services might be price-inelastic, and hence the price subsidy introduced by the health card program has no effect on the demand for health care. Second, the program might not be tackling other demand-side barriers such as information problems or pervasive nonseeking behavior when a health problem arises. Third, there might be supply-side problems such as low-quality care that might prevent an improvement in access and utilization (by keeping access dimensions such as acceptability or accessibility unchanged). Accordingly, the author concludes that in the Indonesian context, the price subsidy strategy might not be enough to increase utilization, because there might be other nonnegligible barriers preventing individuals from seeking care. Therefore, the price subsidy should be complemented with other demand-side strategies such as education and/or with supply-side interventions to improve quality of care and, more generally, to move toward UHC.

[82] Note that, as discussed in section 4.2, a common feature of all the schemes evaluated is some form of coverage for the direct costs of health care.
[83] Such as a short assessment period.
[84] Such as beneficiaries being unaware of their enrolment status, enrollees being unaware of their entitlements, or eligible people not receiving the vouchers to enroll.

Similarly, Waters (1999) finds that the general health insurance (GHI) program in Ecuador "is strongly associated with the use of curative health care, but does not seem to influence the use of preventive care" (p. 480). In explaining this result, the author argues that "GHI health facilities offer only limited preventive services and that is therefore not surprising that the GHI insurance program itself has no significant impact on the use of preventive care" (p. 481).

These findings suggest that the positive effect of UHC schemes on access and utilization does not occur "across the board." Many papers do not fully explain why these differences occur. Also, many authors find that a price subsidy alone may not be enough to increase access to care. The promotion of an effective UHC policy may therefore require much more than health insurance and should include a package of policies focusing not only on the demand side but also, critically, on the supply side.

Substitution or increase in utilization? The evidence presented in a number of papers suggests that in some cases, UHC schemes have an impact on the *type* of care used—changing from self-medication or alternative medicine to formal care. In some cases, UHC schemes have an impact on the type of provider chosen rather than on utilization levels. For example, Bauhoff et al. (2010) find no overall impact of the medical insurance program (MIP) for the poor[85] in Georgia on utilization rates, but identify a causal effect on provider choice for outpatient care; in the region with lower eligibility thresholds, enrollees were less likely to use pharmacies compared to nonenrollees. At the same time, in the higher eligibility threshold region, enrollees were more likely to use primary care facilities than nonenrollees. The authors argue that these differences could be due to differences in the provider infrastructure and differences in the benefits coverage available in both regions.

Similarly, Thornton et al. (2010) find no overall impact of social security health insurance for informal workers in Nicaragua, but they report a shift in provider choice away from public and private health facilities and toward health providers participating in the insurance program. The authors argue that although the program is designed to reduce financial barriers and increase access to quality services, qualitative data seem to indicate that financial barriers and low quality of care might still be an important barrier to access. Furthermore, the authors highlight that low-cost alternatives to access health care exist irrespective of an individual's affiliation status (public facilities and some not-for-profit private options). Both unresolved barriers and low-cost alternatives might explain why the program does not show an overall impact on utilization indicators and, therefore, for the program to achieve its goals, those issues should be tackled.

Finally, Yip et al. (2008) find that the Rural Mutual Health Care scheme in the Western and Central Regions in China has increased the probability of an outpatient visit by 70 percent and reduced the probability of self-medication by similar percentages, which, according to the authors, suggests that enrollees substitute self-medication for formal health care in the absence of the scheme. The authors highlight the success of the program and argue that the favorable results

[85] The intervention relates to an insurance program targeted to the poor in which the eligibility is determined by a proxy means test. The evaluation analyzed the impact in two different regions that differ in the eligibility threshold (lower and higher eligibility thresholds). Note, however, that "the regions differ in many other important aspects such as the benefit package design and the management of the program" (Bauhoff et al. 2010, 1376).

are due to a combination of demand-side (a cost reduction for the patient) and supply-side (to induce quality and efficiency improvements) interventions.

The examples above illustrate that UHC schemes sometimes lead to the substitution of care rather than to a net increase in utilization. This does not necessarily imply failure of the UHC scheme; sometimes substitution of care is a highly desirable result when lower-quality care is replaced by higher-quality care (for example, the substitution of self-medication for formal care).

As the former examples illustrate, the explanations of the substitution effect put forward by the above studies vary substantially. In some cases, the scope of the benefits package seems to be an important issue (lack of coverage of pharmaceuticals with coverage of primary care or emergency care, may shift health care demand away from pharmacies to primary or emergency care facilities). In some cases economic reasons seem to dominate (by reducing the cost of care, a shift from self-, informal, or alternative care to formal care may be achieved, because it reduces the need to seek informal low-cost care). In other cases, quality of care (sometimes perceived) or other context-specific unresolved issues have also been discussed as possible explanations for the observed substitution effect. The evidence shows that substitution of care rather than a net improvement in access happens, and although the authors provide reasonable explanations, more research may be needed to fully understand such substitution effects.

Impact on access only by means of improved affordability? UHC schemes focusing on the reduction of financial barriers to access are not expected to improve other dimensions of access beyond affordability. However, evidence suggests that even UHC schemes focusing mainly on price subsidies can sometimes improve access and utilization through mechanisms that go beyond affordability. One example is discussed in Giedion, Díaz et al. (2007), which evaluates the impact of Colombia's subsidized health insurance scheme providing subsidized health services for its affiliates. In the Colombian context, some services such as prenatal care, immunization, and other services are free for everyone irrespective of a person's insurance status. Therefore, no impact would normally be expected for these services. However, Giedion, Díaz et al. find that insurance affiliates use these kind of services more often than nonmembers. As they write, "Immunization coverage is higher among those affiliated despite the fact that immunization is provided for free in public establishments irrespective of individuals' insurance status. This indicates that the benefits of health insurance are not limited to a reduction of financial barriers and may provide other, more indirect paybacks" (Giedion, Díaz et al. 2007, 60).

Why might such "more indirect paybacks" be happening? Although hard data may not be detailed enough to answer the question, this is a clear example of the importance of understanding the counterfactual[86] to "read" the results and at least propose reasonable hypotheses. The authors show that in the case of immunization, there may be no difference in the affordability dimension of access between the factual and the recreated counterfactual situations, but there are certainly differences in other dimensions. For example, enrollees have an explicitly defined benefits package while nonenrollees have coverage for an implicitly defined benefits package given by the services provided in the public establishments. Similarly, those affiliated

[86] This is one of those "there is no placebo situations" in which nonenrollees do have some coverage. See the corresponding subsection (understanding the counterfactual) in section 5.2 for this discussion.

have a membership (and frequently a membership card) while nonenrollees do not. These differences may be the underlying causes of the somehow puzzling result discussed above; the first difference may create an awareness effect on the enrollees and the second difference may create an ownership effect. Both of these effects may have an influence on other dimensions of access such as acceptability, thereby improving access without any change in the affordability dimension.

Heterogeneity of the impact. The studies mentioned above corroborate the importance of looking at the heterogeneity of impact and the variation of impact across different groups. Twenty-three of the 29 studies analyzing the impact of UHC on access to care find differences across different population groups (demographic and socioeconomic), regions, countries, and/or the particular settings of the scheme.

The majority of the studies find that the most vulnerable (low-income, low-assets, rural) population groups benefit most[87] from the UHC schemes. Most authors seem to agree that a greater impact on these groups might be explained by the fact that the poor usually face greater economic barriers (as a fraction of their ability to pay) and have greater unmet needs. Therefore, when UHC schemes successfully reduce or eliminate user fees, the poor may reap earlier benefits, greater benefits, or both. The importance of a special effort to target UHC schemes to the poor seems therefore to be justified.

However, not all studies find that the poor benefit most. Sometimes the heterogeneity of impact across socioeconomic groups is much more complex. For example, Yip et al. (2008) find that "the lowest-and highest-income individuals experienced the greatest increase in outpatient utilization with village doctors" and, simultaneously, "the middle-income group also experienced a substantial increase of township health center services." Unfortunately, we cannot say much more about such effects because the authors explain that a full benefit-incidence analysis is beyond the scope of their study. However, this finding of what we consider to be one of the most robust papers in our review reveals that the heterogeneity of impact across different groups might be much more complex and may depend on socioeconomic status and on other factors that should be studied further. Finally, in some cases only the better-off are found to increase their use of and access to health services as a result of the UHC schemes (see Wagstaff and Yu 2007).

Heterogeneity of impact can be found not only across socioeconomic groups but also across geographic areas. An interesting example is provided by an evaluation of the impact of the New Cooperative Medical Scheme (NCMS) in 12 of China's 30 provinces. Wagstaff et al. (2009) analyze the differential impact of NCMS on a number of variables across socioeconomic groups and provinces. They find considerable variation across counties in the impact of the scheme. When looking only at the average effect they find no impact for some indicators. Moreover, they find little impact of the NCMS on access and utilization of inpatient care among the poor, while finding a significant impact on these variables for the richest quintile. These authors explain that "this likely reflects the fact that these individuals live closer to inpatient facilities and can more easily afford the substantial copayments in the NCMS scheme" (Wagstaff et al. 2009, 13).

[87] See Giedion, Díaz et al. 2007; Hidayat et al. 2004; Panpiemras et al. 2011; Pradhan et al. 2007; Trujillo et al. 2005; and van-Gameren 2010.

Heterogeneity of impact is also found to occur across different schemes. Examples can be found in the papers by Ekman (2007b), Hidayat et al. (2004), and Yip et al. (2008). A full discussion about the variation of the impacts in health-related outcomes related to variations in the design of UHC is presented in section 6.4.

Concluding remarks on the impact of UHC schemes on access. The evidence indicates that UHC schemes improve access and utilization of services, and this impact seems to vary across different groups and depends on the specificities of the design of each scheme. Unfortunately, studies all too often do not systematically look at design features (more on how design features may be influencing results in our evidence base can be found in section 6.4). More research should be conducted analyzing how UHC design variations affect outcomes. In addition, the impact of UHC schemes is heterogeneous, and the only dimension in which the results seem consistent across the studies is socioeconomic characteristics of the population (the worse-off reap greater benefits), which suggests that schemes should be targeted to the poor. However, there might be context-specific issues that must be analyzed in-depth since they may substantially affect the effectiveness of interventions.

Table 6.1 The Impact of UHC on Access[a]

	Author / Title	Access and Utilization Variables	Impact on A/U[b]	Access and Utilization Conclusions
Argentina	Gertler et al. (2011) "Impact Evaluation of Maternal Child Provincial Health Investment Project in Argentina – Plan Nacer"	* Early detection or identification of pregnant women (first prenatal care visit before 13th and 20th week of pregnancy). * Number of prenatal care visits. * Probability of healthy-child checkups according to guidelines.	+	Plan Nacer increases early detection of pregnant women by 2.5 and 4.9 percentage points, for visits before the 13th and 20th week of pregnancy, respectively. Consequently, the program reduces the probability of the first visit after the 20th week of pregnancy by 7.4 percentage points. The program also increases the number of prenatal care visits by 0.5 visits on average, which represents a 16% increase. In addition, the program also increases the probability of healthy-child checkups according to guidelines: a 32.7% increase for children between 45 and 70 days olds, 21.5% between 70 and 120 days old, 18.2% between 120 and 200 days old, but no significant effect is observed for children over 200 days old.
Bangladesh	Nguyen et al. (2012) "Encouraging Maternal Health Service Utilization: An Evaluation of the Bangladesh Voucher Program"	* Delivery by a qualified provider * Institutional delivery * C-section * Any ANC checkup * At least 3 ANC checkups * At least 1 ANC checkup with a qualified provider * At least 1 PNC checkup with a qualified provider	+/-	The authors evaluate the impact of a voucher program in Bangladesh that provides free access to selected maternal and child health services as well as coverage for transport costs, a gift box (worth US$7.29) and a cash incentive after delivering with a qualified provider. Results show a positive impact of the program in health care seeking behavior from qualified providers (for ANC, delivery and PNC) as well as an increase in institutional delivery. However, no significant effect of the voucher program was observed on the rate of deliveries by Cesarean section.

	Author / Title	Access and Utilization Variables	Impact on A/U[b]	Access and Utilization Conclusions
China	Wagstaff and Yu (2007) "Do Health Sector Reforms have their Intended Impacts? The World Bank's Health VIII Project in Gansu Province, China"	*Doctor visits yes/no and number of visits	+	A small impact of the World Bank Health VIII (containing an insurance component) was found on utilization. Even though the project was meant to combine supply-side interventions aimed at improving the effectiveness and quality of care with demand-side measures aimed at expanding *health insurance* and providing financial protection for the very poor, in reality health insurance seemed to be the most difficult component to implement. The authors conclude that "any impacts found in the analysis below for Gansu are unlikely therefore to be attributable to this first component of the project [the revival of health insurance, the cooperative medical scheme]." Impact of health insurance on utilization was concentrated among deciles 2 to 10 and no impact was found among those belonging to the poorest decile.
China	Wagstaff et al. (2009) "Extending Health Insurance to the Rural Population: An Impact Evaluation of China's NCMS (New Cooperative Medical Scheme)"	* Doctor visit in the last 2 weeks * Inpatient care in the last 12 months * Outpatient/Inpatient care by health facility (village clinic, THC, County Hospital)	+/-	Results indicate that the scheme has increased outpatient and inpatient utilization by 20 to 30%. No impact was found among the poorest. This result may be related to the fact that the budget is too small to make a significant difference in households' out-of-pocket spending. The revenue per enrolled is around only one-fifth of total per capita rural health spending, and copayments in the scheme are high, reflecting large deductibles, low ceilings, and high coinsurance rates. The "affordability dimension" of access among the poorest may therefore be only slightly changed, the NCMS explaining why no impact was found in this group.

	Author / Title	Access and Utilization Variables	Impact on A/U[b]	Access and Utilization Conclusions
China	Yip et al. (2008) "The Impact of Rural Mutual Health Care (RMHC) on Access to Care: Evaluation of a Social Experiment in Rural China"	* Outpatient/ Inpatient visit (any level) by health insurance status and type of health facility (village clinic, health center, hospital). * Number of outpatient visits by health insurance status. * Self-medication by health insurance status.	+	The RMHC scheme has increased the probability of an outpatient visit by 70% and reduced the probability of self-medication by a similar percentage. Furthermore, this study finds evidence of spillover effects in which no enrollees of the RMHC sites increased the probability of visits. The study further estimates the impacts of an alternative government-supported program that combines medical savings accounts and hospital insurance with high deductibles, finding little impact. Finally, the authors find that affiliates belonging to the lowest- and highest-income strata experienced the greatest increase in outpatient visits to village doctors, whereas the middle-income group experienced the most important increase in utilization of health services at the township level.
Colombia	Trujillo (2003) "Medical Care Use and Selection in a Social Health Insurance with an Equalization Fund: Evidence from Colombia"	Private Health Insurance * Physician visits for preventive care * Hospital use Social Health Insurance with Equalization Fund * Physician visits for preventive care * Hospital use * Outpatient medical care use	+	The author found a positive but small effect on the use of outpatient medical care and a positive impact on preventive care and hospital utilization. According to simulation results, enforcing universal coverage in the Social Health Insurance would slightly increase the consumption of preventive services. The results reflect a larger effect on the use of hospital services and outpatient services. The author argues, however, that since truly mandated social health insurance would not cause a significant change in the use of medical services, its impact on the costs of medical care may be lower than expected.
Colombia	Trujillo et al. (2005) "The Impact of Subsidized Health Insurance for the Poor: Evaluating the Colombian Experience"	* Preventive care used in the 12 months prior to the interview by area (rural and urban) * Outpatient care use in the 30 days prior to the interview by area (rural and urban) * Hospitalization in the 12 months prior to the interview by area (rural and urban)	+	Results suggest that the subsidized health insurance scheme for the poor, implemented in Colombia, increases medical care use by children, women, and the elderly—groups that are of particular interest to policy makers. These results are consistent across methods (i.e., PSM and IV estimation).

	Author / Title	Access and Utilization Variables	Impact on A/U[b]	Access and Utilization Conclusions
Colombia	Giedion, Díaz et al. (2007) "The Impact of Subsidized Health Insurance on Access, Utilization and Health Status: The Case of Colombia"	* Probability of use * Use of ambulatory health services in last 12 months * Child taken to a health care facility when coughing/ diarrhea. * Number of prenatal visits * Birth in a health facility/ attended by a skilled professional * Complete child immunizations	+	The evidence provided by the different methodologies consistently indicates that the subsidized health insurance scheme has considerably improved access and utilization of curative and preventive health services. This increase in access and utilization has also been found for services that are free to all irrespective of an individual's insurance status, indicating that health insurance may not only have an impact through the affordability dimension of access. The impact has been especially important among rural and the poorest populations.
Georgia	Bauhoff et al. (2010) "The Impact of Medical Insurance for the Poor in Georgia: A Regression Discontinuity Approach"	* Inpatient and outpatient utilization * Inpatient and outpatient out-of-pocket expenditures	—	The evidence suggests that there was no impact of this scheme on utilization outcomes. However, an impact was identified on provider choices; beneficiaries increased their likelihood of using primary care facilities in some regions while reducing the likelihood of using pharmacies in others. This result, according to the authors, might be explained by obstacles in program implementation, the fact that the main source of out-of-pocket expenses (pharmaceuticals) is not covered, the short implementation time, the perceived quality of care, or access restrictions imposed by insurance companies.
Mexico	Sosa-Rubi et al. (2009) "Heterogeneous Impact of the 'Seguro Popular' Program on the Utilization of Obstetrical Services in Mexico, 2001–2006: A Multinomial Probit Model with a Discrete Endogenous Variable"	* Obstetric Care Utilization	+	"[W]e found that the recently established Seguro Popular program in Mexico has had a significantly positive effect on the access of poor women to obstetrical care, an important outcome measure of maternal and infant health. Women in households that participated in the SP program, we found, had a much stronger preference for having a baby in a SP-sponsored unit rather than paying out-of-pocket for a private delivery. At the same time, participation in SP was associated with a stronger preference for delivering in the private sector rather than at an SSA-sponsored clinic. On balance, the Seguro Popular program reduced pregnant women's attendance at an SSA-sponsored clinic much more than it reduced the probability of delivering a baby in the private sector" (Sosa-Rubi et al. 2009, 12).

	Author / Title	Access and Utilization Variables	Impact on A/U[b]	Access and Utilization Conclusions
Mexico	Harris and Sosa-Rubi (2009) "Impact of Seguro Popular on Prenatal Visits in Mexico, 2002–2005: Latent Class Model of Count Data with a Discrete Endogenous Variable"	* Number of visits for prenatal care	+	"Seguro Popular increased access to prenatal care for Mexican women who gave birth during 2002–2005. Specifically, enrolment in SP was associated with a mean increase in 1.65 prenatal visits during pregnancy. Approximately 59 percent of this treatment effect was the result of increased prenatal care among women in the first latent class, that is, women who had with little or no access to care. The remaining 41 percent of the treatment effect was the result of a shift in membership from the second to the third latent class, which we interpret as increased recognition of complications of pregnancy prior to labor and delivery" (Harris and Sosa-Rubi 2009, 31–32).
Mexico	King et al. (2009) "Public Policy for the Poor? A Randomized Assessment of the Mexican Universal Health Insurance Program"	* Utilization of medical procedures and preventive care *Used outpatient services *Outpatient visits (count) *Hospitalizations (count) *Eye exam (past year) *Flu vaccination *Mammogram (past year) *Cervical (past year) *Pap test (past year)	—	No significant effect was found on the use of medical services, even though a wide range of measures was used. Furthermore, subgroup analyses for low-asset, high-asset, and female-headed households was carried out and also showing no significant effects. These results, however, do not mean that the program did not (and cannot) increase utilization, but only that such effects did not arise in the short assessment period (10 months).
Nicaragua	Thornton et al. (2010) "Social Security Health Insurance for the Informal Sector in Nicaragua: A Randomized Evaluation"	* Probability of seeking care * Number of visits The above variables for pharmacies; private doctors; laboratories, public providers (formerly called Empresas Médicas Previsionales [EMPs]; private clinic/hospital; public (Ministry of Health (Ministerio de Salud [MINSA]) health center; public (MINSA) hospital; all/any.	—	Findings show that having insurance does not increase the probability of seeking care overall, nor does it increase the number of visits. However, insurance creates a substitution effect in both indicators, driving care-seeking behavior away from public and private facilities to EMP facilities covered by the insurance.

	Author / Title	Access and Utilization Variables	Impact on A/U[b]	Access and Utilization Conclusions
Peru	Díaz and Jaramillo (2009) "Evaluating Interventions to Reduce Maternal Mortality: Evidence from Peru's PARSalud Program"	* Number of deliveries assisted * Number of deliveries assisted using oxytocin * Number of deliveries with caesarean intervention	+/-	The program aimed to increase demand and implement supply-side interventions to improve the quality of services (including personnel training and infrastructure investment primarily aimed at universalizing the use of oxytocin to prevent postpartum hemorrhage). The authors evaluate the impact of the supply-side component of the program and find a positive impact of the training provided by the program on the number of deliveries, deliveries using oxytocin, and caesarean deliveries. However, they find ambiguous effects of infrastructure investments. Furthermore, the authors find that different types of training lead to different effects (training in perinatal technology has positive effects, but negative effects on obstetric emergencies; training medical doctors and obstetricians has positive effects, but training technicians has negative effects).
Philippines	Kraft et al. (2009) "The Health and Cost Impact of Care Delay and the Experimental Impact of Insurance on Reducing Delays"	* Delay in seeking care	+	Authors find an impact of the insurance scheme in the Philippines, on the increase in the number of children whose hospital care is not delayed.
Thailand	Panpiemras et al. (2011) "Impact of Universal Health Care Coverage on Patient Demand for Health Care Services in Thailand"	* Number of outpatients * Number of outpatient visits * Number of admissions * Number of days for which the inpatients were admitted	+/-	The authors found that the program increased outpatient demand for health care, particularly among the elderly and the poor. This increase, however, was strong in the first year of the program and faded away in subsequent years. On the other hand, the authors find a decline in inpatient visits.
Vietnam	Wagstaff (2010) "Estimating Health Insurance Impacts under Unobserved Heterogeneity: The Case of Vietnam's Health Care Fund for the Poor"	* Number of outpatient visits and inpatient admissions during the 12 previous months	—	Vietnam's health insurance program for poor households (Health Care Fund for the Poor) does not seem to change utilization of health care.

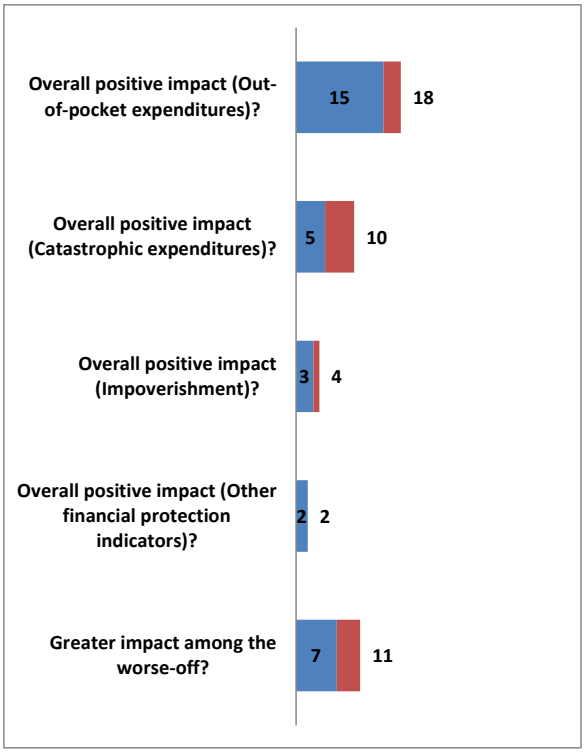
Note: a. Studies are first ordered alphabetically by country and then by year of publication. b. "+" indicates a positive and statistically significant impact; "+/-" indicates a positive impact for some services, variables, or population groups and not for others; and — indicates that no statistically significant impact was found.
ANC = antenatal care. A/U = access/utilization. IV = instrumental variable. PNC = postnatal care. PSM = propensity score matching.

6.2 Impact on financial protection

Overall impact. The impact of UHC schemes on financial protection is less often studied than their impact on access; among the studies in the top two groups, 21 of 41 analyzed financial protection indicators.[88]

The results of the studies in the top two groups are summarized in Table 6.2, and the major findings are depicted in Figure 6.2. The results indicate that UHC schemes may frequently reduce out-of-pocket expenditures, and sometimes prevent catastrophic expenditures and impoverishment. Furthermore, similar to what was found with regard to access and utilization, the worse-off seem to reap greater benefits from UHC schemes in terms of lowering their out-of-pocket expenditures and improving their financial protection. In some cases, the results are mixed; 5 of 10 studies find a reduction in the incidence of catastrophic health expenditures. In general, much more research is needed in this field since most studies rely heavily only on conventional measures of financial protection (out-of-pocket/catastrophic expenditures and impoverishment). As we will argue below, these are clearly insufficient to capture what really happens at the household level as a result of the introduction of a UHC scheme.

Figure 6.2 Major Findings: Financial Protection



Financial protection indicators. The majority of the studies analyze out-of-pocket expenditures and, to a lesser extent, catastrophic expenditures and impoverishment (18, 10, and 4 studies, respectively). Although these are the conventional measures of financial protection, there is rising

[88] And only 53 of 105 papers overall.

criticism of them pointing out that these measures do not fully capture the financial consequences of health needs.[89] Major concerns about the conventional measures of financial protection include that the measures (a) fail to capture cost barriers to access and, hence, categorize those who cannot afford care as spending little or nothing on care and regard them (erroneously) as financially protected; (b) frequently do not include other health-seeking related costs beyond direct payments, such as transportation costs or informal (under-the-table) payments; (c) do not capture other strategies to cope with costs of illness such as reduced household consumption of other goods and services or increasing debt to finance health expenses; (d) do not include indirect costs such as income loss due to illness (Lu et al. 2009; Moreno-Serra et al. 2011; Ruger 2012; Wagstaff 2008). In sum, several authors have argued that the conventional measures of financial protection "are simply too narrow to capture fully the detrimental financial consequences of health needs" and accordingly, have pointed out the need for a broader, multidimensional approach to measure financial protection (Ruger 2012, 1).

Despite the mounting criticism of these conventional measures, only two papers in this review try to go beyond them. Wagstaff and Pradhan (2005) try to understand whether health insurance helps to reduce the impact of illness on households' actual consumption patterns (nonmedical consumption). Parmar et al. (2011) evaluate whether community-based health insurance protects household assets in rural Africa. These studies are a valuable step forward in better understanding how households cope with the financial burden of health needs, but they still provide a too-narrow approach that does not address all the criticisms mentioned above.[90]

Most studies analyzing financial protection included in this review suffer from the limitations mentioned above. Therefore, the following synthesis of results should be regarded as indicative only and not as definite and conclusive evidence of how UHC schemes provide or do not provide financial protection. In this regard, it is worth highlighting that "conventional methods are likely to underestimate adverse consequences of inadequate financial protection in health … [and this] approach, by its inadequate representation of risk protection and of costs, can potentially mislead policy makers who, by relying on these conventional measures, might come up with misinformed policy prescriptions" (Ruger 2012, 1).

More research should be conducted to understand whether UHC schemes can really mitigate the economic consequences of illness at the household level rather than just indicating whether out-of-pocket increases or decreases or whether its level might be sufficiently catastrophic to *theoretically* create severe financial problems at the household level.

The link between financial protection and utilization. As discussed in the introductory section, financial protection is meant to be achieved primarily by reducing payments at the point of service. The price subsidy can—and is expected to—increase demand and improve access to health services. Therefore, out-of-pocket health expenditures may increase as a result of the increased utilization. Hence, the final impact on expenditures (PxQ) depends on the relative strengths of these variables. Thus, out-of-pocket expenditures, the most frequently used indicator

[89] See Giedion and Diaz 2008; Lu et al. 2009; Moreno-Serra, Millett, and Smith 2011; Ruger 2012; and Wagstaff 2008.
[90] It only addresses one of the major concerns discussed above (c).

of financial protection, are both cause and effect of access to health care, which is a bidirectional link that can sometimes generate a bias on the estimates and, probably more important, lead to (at first sight) counterintuitive results. Wagstaff et al. (2009) illustrate the point. Their evaluation finds no evidence of a reduction in household out-of-pocket expenditures attributable to China's New Cooperative Medical Scheme (NCMS). The authors explain that the scheme "has increased the likelihood of people seeking outpatient and inpatient care, as well as the volume of care provided [and] partly because of this increase in utilization, household out-of-pocket spending on health care does not appear to have been reduced by NCMS" (Wagstaff et al. 2009, 16).

This is an important message for researchers and policy makers alike; it suggests that the lack of impact on out-of-pocket expenditures does not necessarily imply a failure of a program, given that this result might be explained—at least partly—by a desirable effect (increased utilization).[91] Thus, the same outcome (lack of impact on out-of-pocket expenditures) might suggest a need for totally different policy actions if it is accompanied by an increase in utilization, or if there is a negligible effect on access and utilization indicators. Therefore, the link between access and financial protection variables should be carefully analyzed to fully understand the changes brought by a UHC scheme, and also to avoid erroneous interpretations and policy advice.

It is also important to study the link between financial protection indicators and other economic barriers to access, beyond direct payments. For example, out-of-pocket or catastrophic expenditure variables—as constructed by most authors—usually do not include health-seeking related costs (such as transportation costs) not paid at the point of delivery. Ekman (2007a) nicely illustrates this point. He evaluates the impact of different health insurance schemes in Zambia[92] not only on out-of pocket payments at the point of service, but also on the broader concept of health-care-related out-of-pocket expenditures.[93] He finds that being exempted from paying for care and having access to private or employment-based health insurance significantly reduces the risk of incurring a catastrophic out-of-pocket expenditure. However, when other costs related to health-care seeking are included—such as transportation, food, and other costs—Ekman finds that the probability of suffering from catastrophic health-care-related expenditures actually increases.

This result might also be explained by an increase in utilization as a result of the price reduction; those exempted from utilization fees might experience an increase in the likelihood of seeking care due to the reduced financial barriers and the increase in utilization. Fee-related out-of-pocket expenditures do not increase in this case, since the price is zero. However, the health-seeking behavior implies other associated costs that could indeed increase as a result of increased utilization. Thus, when examining only the out-of-pocket expenditures at the point of service, the effect of the reduction in price dominates, and there seems to be greater financial protection.

[91] That is, if utilization increases, sometimes there may be a net welfare gain even if out-of-pocket expenditures increase or do not vary.

[92] A voluntary prepayment scheme, private or employment-based insurance, and a user fee exemption scheme.

[93] Two different types of health care payment indicators are used: "one narrow that captures the direct out-of-pocket expenditures toward formal user fees reported by households, and one broader measure that also includes indirect health care related expenditures (HLTHREL), such as food and lodging expenses for the patient and relatives" (Ekman 2007a, 306).

However, when the other costs related to health seeking are included, the conclusions are reversed.

These studies provide examples of UHC schemes that may reduce out-of-pocket expenditures at the point of service by reducing the price of each service. However, this effect might sometimes be outweighed by the impact on the quantity of services consumed and the costs associated with increased health-care-seeking behavior. As a consequence, the total out-of-pocket expenditures related to health-care seeking may sometimes increase as a result of a UHC scheme.

The discussion shows that the impact of UHC schemes on financial protection variables is the result of a series of sequential decisions (the decision to seek care, the decision on how much care to consume, and the decision on which costs to incur) that create complex links among different variables. The analysis of the impact of UHC schemes on financial protection therefore requires a detailed exploration of how the intervention may affect each link within the chain of the health-care-seeking behaviors, to avoid misleading results or interpretations. Much more research should be carried out in this respect.

Heterogeneity of impact: the worse-off reap greater benefits. The evidence suggests that vulnerable population groups (the poor or those living in rural areas) seem to benefit most from UHC schemes in terms of financial protection (7 of 11 papers find a larger impact on the most vulnerable group). For example, King et al. (2009) find that low-asset households benefit the most from the Mexican universal health insurance program. Similarly, Wagstaff and Yu (2007) find that health insurance seems to have had a more important impact on out-of-pocket payments for nonfood consumption among the lowest income quintiles. Parmar et al. (2011) do not directly carry out a distributional analysis, but look at impact of the scheme across different moments in time. These authors find that the protective effect of a community-based health insurance scheme in Burkina Faso seems greater when there are economic difficulties. This result is somehow different from other papers, but it points in the same direction; a community may reap greater benefits when it is more vulnerable.

This result, at first glance, suggests that targeting the worse-off or more vulnerable may be an attractive UHC design option—particularly for countries in the first stages in the path toward UHC—given that such a policy would lead to greater impacts and also probably to greater value for money. Such "early victories" may be important to rally support for UHC policies in developing countries. However, UHC requires a commitment to cover 100 percent of the population. Therefore, sooner or later, countries will have to deal with those not initially targeted. According to the evidence, among the better-off, different and sometimes more challenging strategies (for example, affiliating the nonpoor informal sector) may sometimes be needed to have an impact. In sum, although targeting the worse-off might initially be a sensible approach, countries committed to UHC cannot forget about the rest of the population.

Heterogeneity of impact: design of the scheme. Some UHC schemes included in this review completely eliminate copayments at least for some population groups and some services,[94] while

[94] For example, the current regulation in Seguro Popular in Mexico requires no demand-side cost sharing (although the law allows for it in the future). Similarly, Georgia's Medical Assistance Program requires no copayments for the services included in the benefits package; however, medicines are not included and, hence, its cost should be fully

other schemes only reduce the copayments but still cover a considerable proportion of the costs.[95] The impact of a scheme critically depends on this issue, and therefore considerable heterogeneity might be expected.

The case of the New Cooperative Medical Scheme (NCMS) in China is a persuasive example of the importance of the details in the design of the scheme. The NCMS offers considerable variation in program design across provinces.[96] Provinces can work out the specificities of the scheme in their own jurisdictions, as long as they comply with two guiding principles: (a) voluntary enrolment, and (b) coverage of catastrophic expenses (Yi et al. 2009). These variations in design critically determine the results, as can be seen from the Wagstaff et al. (2009) and the Yip and Hsiao (2009) studies. Whereas Wagstaff et al. (2009) find that NCMS has no statistically significant effect on the average out-of-pocket spending by households, or on expenditures related to outpatient or inpatient care, Yip and Hsiao (2009) reach a different conclusion by looking at one NCMS *modality*, Rural Mutual Health Care (RMHC), and comparing the results with the prevailing NCMS model. Yip and Hsiao (2009) find that RMHC is much more effective than the NCMS in reducing impoverishment due to medical expenses.

Wagstaff et al. (2009) suggest three reasons that might explain the limited impact of the NCMS on financial protection. First, an increase in utilization may be offsetting the effect of price reduction. Second, the authors also highlight that there are high coinsurance rates among NCMS beneficiaries that vary around 60 percent across counties, which might limit the effect of the scheme on out-of-pocket expenditures. Third, participation in the scheme may have increased the cost per episode, borne by the patient, as a result of *"the fact that providers in China are paid by fee-for-service and face a fee schedule that strongly encourages demand shifting to drugs and high-tech care on which the margins are higher"* (Wagstaff et al. 2009, 17). The authors also suggest that the purchasing arrangements and provider payment mechanisms operating in these schemes in China might not be appropriate for the scheme's goals because providers are rewarded for delivering—presumably more costly—high-tech care.

Yip and Hsiao (2009) note that the NCMS model combines medical savings accounts for outpatient care with high-deductible catastrophic hospital insurance ("MSA/Catastrophic") while the RMHC covers primary care, hospital services, and drugs with no deductible but up to a defined ceiling. Deductibles in the prevailing model are typically high, and the resources put into the Medical Savings Account (MSA) are relatively small.[97] The RMHC has no deductibles, but the ceilings are considerably lower. Therefore, while the RMHC covers small and more frequent medical expenses, the prevailing model covers primarily expensive inpatient care. Yip and Hsiao

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covered out-of-pocket. Indonesia has a scheme for the poor that exempts the enrollees from payments at the place of delivery. Likewise, Colombia's Subsidized Regime requires no utilization fees for the poorest.

[95] PhilHealth, for example, reimburses costs up to a ceiling, and the actual level of protection (proportion of the costs covered) is around 90 percent in public hospitals, but may drop to as low as 40 percent for care obtained from private health facilities. Colombia's Contributory Regime has copayments that range between 11 percent and 23 percent. In China, as explained before, there is considerable variation across regions in the implementation of the Rural Cooperative Medical Scheme; some schemes, due to limited prepayment for outpatient care and high deductibles for inpatient care, provide little reduction in out-of-pocket payments, while others provide greater protection.

[96] Benefits, coverage, fees, pooling, purchasing.

[97] 8 yuan per year, while a village doctor visit costs about 15 yuan to 20 yuan.

(2009) find that the RHMC model does indeed improve financial protection. The authors argue that the epidemiological profile of the population and the differences in the schemes' design (benefits) might explain the result; 40 percent of the households in their study have members with chronic conditions who make frequent visits and routinely have to pay for medications. Such expenses do not qualify for reimbursement under the MSA/Catastrophic model, and the proportion of costs that can be covered using the MSA is small. Therefore, the greatest part of the costs must be borne by the households, which frequently leads to impoverishment. The RHMC in turn covers most of those costs and provides better financial protection in this particular context. The "RMHC was designed based on the community's epidemiological profile and villagers' preferences regarding benefit packages" (Yip and Hsiao 2009, 203) and, given the results, the authors argue that it would be a mistake to adopt the MSA/Catastrophic model without carefully considering the context in which it would operate. As the authors put it:

> "*Using China as an example, this paper demonstrates that an insurance scheme that ignores the disease profile and health expenditure pattern of the population can have only limited effectiveness in protecting the population from medical impoverishment. Our analysis shows that with almost the same premium as the MSA/Catastrophic, the RMHC model, which covers ambulatory services, drugs and inpatient services without a deductible (but with higher coinsurance rates and lower maximum caps), is more effective at reducing medical impoverishment. Without first examining the epidemiological profile or distribution of health expenses of the population, Chinese policymakers did not recognize that expenses incurred for treating chronic illnesses – not only hospitalizations – are a major factor in medical impoverishment. Consequently, the benefits that could be produced from the government subsidies and the farmers' contributions are not fully realized"* (Yip and Hsiao 2009, 207).

Yip and Hsiao's (2009) study confirms Wagstaff et al.'s (2009) results indicating that the prevailing NCMS model does not seem to provide financial protection. They also show that at the same cost but with different benefit design, another scheme provides better financial protection in a similar context. This is a clear illustration that design matters and of how it may lead to heterogeneity of impact.

Another important source of variation is the design of the benefits package (services covered by the scheme[98]). For example, Bauhoff et al. (2010) find that the health insurance scheme being evaluated in Georgia has stronger and more consistent[99] impacts on inpatient out-of-pocket spending than on outpatient care. The authors also find an effect on reduced variance for inpatient out-of-pocket expenses, suggesting a reduction in the risk of high inpatient medical costs. Such an effect is not found for outpatient out-of-pocket spending. Thus, although the scheme reduced

[98] By type of service we mean several different categories of services that may arise, which include outpatient care, inpatient care, or medicines, a classification according to the health facilities that delivered the services, and preventive versus curative care.

[99] The favorable impact for inpatient out-of-pocket expenditures holds in both regions analyzed, while for inpatient spending the reduction is significant only in one region.

out-of-pocket expenditures for both outpatient and inpatient care, there seem to be greater benefits on inpatient care. This result might be partly explained, once again, by a design feature: the benefits package *does not include drugs* that should be delivered as outpatient care, a feature that is highlighted by the authors as the main obstacle to reducing out-of-pocket expenditures further.

Similarly, with respect to Mexico's Seguro Popular, King et al. (2009) find a reduction in out-of-pocket expenditures for inpatient and outpatient care, but not in medicines or medical devices. Seguro Popular covers a wide range of services including a long list of medicines. However, "the improvement of drug supplies required purchase using open bids that, in the best of cases, took 6–8 months to be completed" (King et al. 2009, 1453) and, therefore, the covered medicines might not have been readily available in the short assessment period of the evaluation (10 months), which may explain why no impact was found for medicines. Galarraga et al. (2010) also evaluate the impact of Seguro Popular on the same outcome indicators, but with a longer assessment period and using national data, not just the experimental clusters used by King et al. (2009). Strikingly, the results of both evaluations coincide, *except for medicines* (the former finding no impact, while the latter demonstrates a favorable and statistically significant impact on utilization and access to medicines). This evidence illustrates the heterogeneity of impact according to the type of services covered by the UHC scheme, and in this case, probably related to the program's implementation processes.

Concluding remarks on the impact of UHC on financial protection. As discussed, all the UHC schemes evaluated the use of financial means to provide some form of cost coverage; some schemes remove the direct cost of using health services completely for their beneficiaries, while others maintain some form of copayment but reduce it from what it would have been without the scheme. While an earlier section provided convincing evidence on the positive impact of UHC schemes on access and utilization, this is much less so with regard to financial protection (as measured by the conventional indicators). Impact seems to depend on several context- and design-specific characteristics including (a) the increased utilization (an income effect of the price reduction) resulting from the scheme and its associated costs, (b) the socioeconomic characteristics of the population, (c) what is purchased (the services covered), and (d) how those services are purchased.

Table 6.2 The Impact of UHC on Financial Protection

	Author / Title	Financial Protection Variables	Impact FP	Financial Protection Conclusions
Burkina Faso	Parmar et al. (2011) "Does Community-Based Health Insurance Protect Household Assets? Evidence from Rural Africa"	* Per capita household assets.	+	Community-based health insurance (CBHI) in rural areas in Burkina Faso was shown to have a financial protection effect that ranges from a 1% to 24.6% increase in per capita household assets. Its maximum protective effect might have coincided with an economic downturn in the area and a spike in illness. The authors hypothesize that the observed increase in wealth may have been the result of the protective effect of CBHI through two important channels: (a) beneficiaries avoid selling productive assets (livestock), and (b) beneficiaries receive highly subsidized premiums.
Bangladesh	Nguyen et al. (2012) "Encouraging Maternal Health Service Utilization: An Evaluation of the Bangladesh Voucher Program"	* OOP payment (yes/no). * Amount of OOP payment.	+	The authors evaluate the impact of a voucher program in Bangladesh that provides free access to selected maternal and child health services and coverage for transport costs, a gift box (worth US$7.29), and a cash incentive after delivering with a qualified provider. They find that women in intervention areas are less likely to incur out-of-pocket expenditures and that they also paid approximately Taka 640 (US$9.43) less for maternal health services, which is equivalent to 64% of the sample's average monthly household expenditure per capita.
China	Wagstaff and Yu (2007) "Do Health Sector Reforms have their Intended Impacts? The World Bank's Health VIII Project in Gansu Province, China"	*OOP expenditures and catastrophic expenditure (OOP exceeding 10% of annual household per capita income). * Doctor visit and drug expenses.	+	The World Bank VIII Gansu project reduced OOP expenditures, the incidence of catastrophic spending, and impoverishment from health expenses. The impact has been especially important among the poorest.
China	Wagstaff and Lindelow (2008) "Can Insurance Increase Financial Risk? The Curious Case of Health Insurance in China"	* Probability of households incurring "large" OOP payments, defined in relation to the household's own per capita income (or consumption) and in relation to the local average income (or consumption) thresholds 5%, 10%, 15%, 20%, 25%. * Actual value of OOP payments.	—	The authors analyze the impact of having any health insurance in China, using three different surveys that vary in geographic coverage (second-poorest province, central and eastern provinces, central and western provinces), and a rural-urban focus (two of them only rural, one urban and rural). Although the results vary considerably, the three surveys suggest that health insurance in China increases rather than reduces OOP spending and the risk of catastrophic and large expenses.

	Author / Title	Financial Protection Variables	Impact FP	Financial Protection Conclusions
China	Wagstaff et al. (2009) "Extending Health Insurance to the Rural Population: An Impact Evaluation of China's New Cooperative Medical Scheme (NCMS)"	* Household and individual OOP health care and hospital expenses in the last 12 months. * Catastrophic payments (> 10%, 20%, 40% of income). * Net OOP expenses per outpatient visit, hospital stay, deliveries, formal ambulatory care, and inpatient care. * OOP expenses for household/ individual, total and for self-treatment.	+/-	The authors find that NCMS has had no statistically significant effect on average OOP spending by households overall or on any specific type of care per episode, for either outpatient or inpatient care. The analyses seem to suggest that NCMS may have increased the cost per inpatient episode. Furthermore, NCMS appears to have increased the incidence of catastrophic household OOP payments, at least where the catastrophic threshold is 20% or less of income. The program seems to have had little impact on the average OOP spending among the poorest deciles, but to have reduced the incidence of catastrophic spending among this group. By contrast, NCMS appears to have increased the incidence of catastrophic spending among deciles 3 to 10, leaving average spending unaffected.
China	Yip and Hsiao (2009) "Non-evidence-based Policy: How Effective is China's New Cooperative Medical Scheme in Reducing Medical Impoverishment?"	* Impoverishment and the proportion of the population below the poverty line. * The poverty gap—the average amount by which resources fall short of the poverty line as a percentage of that line, where the shortfall is counted as zero for those who were above the poverty line. * The positive poverty gap; poverty gap measured only for those who are below the poverty line.	+/-	"Under the poverty line of 663 RMB, the MSA/Catastrophic model would reduce the poverty headcount by 7.5–11%, the average poverty gap by 23.3–33.8% and the positive poverty gap by 17–25.6%. By comparison, RMHC would reduce the poverty headcount by 17–18.2%, the average poverty gap by 27.4– 31.7% and the positive poverty gap by 12.7–16.6%. These results show that even though they have similar premiums, RMHCs are more effective than the MSA/Catastrophic models at reducing medical impoverishment, particularly when measured by headcount."
Colombia	Panopoulou (2001) "Affiliation and the Demand for Health Care by the Poor in Colombia"	OOP for hospitalizations, medical consultations, and medicines.	+	For both urban and rural samples, individuals with a subsidized health card have lower OOP expenditures for medical consultations and medicines than individuals without a subsidized health card.
Colombia	Flórez et al. (2009) "The Mitigating Impact of HI on Catastrophic Expenditure"	* Catastrophic expenditure (10%, 20%, 30%, 40% of total household consumption net of subsistence consumption). * Impoverishing expenditure.	+	The study finds that subsidized and contributory health insurance reduces the incidence of catastrophic health payments. The mitigating impact of health insurance decreases with the size of the catastrophe.

	Author / Title	Financial Protection Variables	Impact FP	Financial Protection Conclusions
Georgia	Bauhoff et al. (2010) "The Impact of Medical Insurance for the Poor in Georgia: A Regression Discontinuity Approach"	* Inpatient and outpatient OOP expenditures.	+	Although the results vary across specifications and regions, the evidence seems to suggest that the MIP reduces outpatient OOP expenditures, especially among the elderly. For inpatient care, there is clear evidence of a reduction in OOP payments that are, for beneficiaries, about 42 to 60% of what nonbeneficiaries spend.
Mexico	King et al. (2009) "Public Policy for the Poor? A Randomized Assessment of the Mexican Universal Health Insurance Program"	* Catastrophic expenditure defined as household's health spending that exceeded 30% of the capacity to pay. * OOP expenditures.	+	Seguro Popular, overall, reduces the proportion of catastrophic health expenditures between 23 and 55%, and most of this effect occurred in low-asset households. Seguro Popular also reduces OOP expenditures for all services, particularly for low-asset households. The reduction in expenditures is especially noticeable for inpatient and outpatient medical care, although no impact was found on medicines and medical devices. The authors hypothesize that the fact that no effect was found on OOP expenditures for medicines might be explained by the short assessment period (10 months); although price reduction for inpatient and outpatient care is immediate, the delivery of medicines might require a longer implementation period since it involves more complex administrative processes (like open bids for purchasing medicines).
Mexico	Galarraga et al. (2010) "Health Insurance for the Poor: Impact on Catastrophic and Out-of-Pocket Health Expenditures in Mexico"	* Catastrophic health expenditures (exceeding 20, 30, and 40% of household's capacity to pay). * OOP health expenditures.	+	Similarly to the study by King et al. (2009), this study finds the following protective effect of Seguro Popular: a reduction of catastrophic health expenditures of 49% for the experimental evaluation database (the same used by King et al. but using a different method) and 54% for the whole country based on a DHS-like survey. Similarly, the authors also find a reduction of OOP expenditures for most types of services. Here, however, they also find a protective effect on medicine expenditures.
Nicaragua	Thornton et al. (2010) "Social Security Health Insurance for the Informal Sector in Nicaragua: A Randomized Evaluation"	* OOP expenditures on pharmacy, private doctors, laboratory, EMP, private clinic/hospital, public (MINSA) health center, public (MINSA) hospital, all/any.	+/-	Overall, there is no reduction in OOP expenditures; however, there is a reduction in the expenditures on laboratory tests.
Vietnam	Jowett et al. (2004) "The Impact of Public VHI on Private Health Expenditures in Vietnam"	* OOP expenditures	+	The study finds that Public Voluntary Health Insurance (PVHI) in Vietnam reduces average OOP expenditures. In terms of income-related inequalities in health expenditures, this study finds that, using an interaction term combining an individual's income level and insurance status, insurance reduces health expenditures more for patients with lower incomes than for patients with higher incomes.

	Author / Title	Financial Protection Variables	Impact FP	Financial Protection Conclusions
Vietnam	Wagstaff and Pradhan (2005) "Health Insurance Impacts on Health and Nonmedical Consumption"	* OOP spending between 1992/93 (pre-intervention) and 1997/98(post-intervention).	+	Results indicate that Vietnam's health insurance scheme covering (at the time) mostly formal sector workers) caused a reduction in annual OOP expenditures on health, and an increase in nonmedical household consumption, including food consumption but mostly nonfood consumption.
Vietnam	Wagstaff (2010) "Estimating Health Insurance Impacts under Unobserved Heterogeneity: The Case of Vietnam's Health Care Fund for the Poor"	* OOP spending on outpatient and inpatient care.	+	The evidence shows that Vietnam's health insurance program for poor households (Health Care Fund for the Poor) reduces considerably and significantly the OOP spending for outpatient and inpatient care.

Note: a. Studies are first ordered alphabetically by country and then by year of publication. b. + indicates a positive and statistically significant impact; +/- indicates a positive impact for some services, variables, or population groups and not for others; — indicates that no statistically significant impact was found.
FP = financial protection; OOP = out-of-pocket.

6.3 Impact on health status

Overall impact. Only 25 of the 105 papers reviewed evaluate the impact of UHC schemes on health status indicators, 13 of which belong to the top two groups of 41 papers. This comes as no surprise given that (a) access and utilization and financial protection are immediate goals of UHC, while health status is a longer-term indirect result (although probably the ultimate goal) mediated by improved access; and (b) the methodological challenges to evaluating the impact of UHC schemes on health status may constitute a significant barrier to carrying out these kind of studies. These results reveal that, by far, health status outcomes are less frequently studied than access and utilization and financial protection. Given the scarcity of evidence, we have included the results of five additional studies that are not included in the two top groups but that score relatively high. Summary results are presented in Table 6.3.

Overall, the evidence suggests that UHC schemes can indeed have a positive impact on health status, as illustrated by some papers (5 of 18), but that given their nature, impacts on health status are harder to achieve and/or detect. Several studies find mixed evidence or are inconclusive due to unresolved methodological challenges, important study limitations, and sometimes questionable relevance of the outcome variables that are chosen to evaluate impact.

UC can improve health status. There are a few studies that find improvements in health status as a result of a UHC scheme. Wagstaff and Pradhan (2005) use panel data and Matching Double Difference to evaluate the impact of health insurance on health status. They find that Vietnam's health insurance program had a positive impact on height-for-age and weight-for-age of young school children, and on body mass index among adults. This result is interesting because the aggregate health measures used depend only marginally on better access to health care and are more related to other determinants of health status.

Wang et al. (2009) find that the community-based health insurance scheme implemented in Guizhou province had a positive effect on health status among participants. Besides using self-perceived health status, they use European Quality of Life-5 Dimensions (EQ-5D), a standardized

measure of health status, as an innovative measure of health status. Their results indicate that among the five health status dimensions measured by EQ-5D, health insurance significantly reduced pain/discomfort and anxiety/depression for the general population, and had a positive impact on mobility and usual activity for those over 55 years of age. They also find that the positive impact is larger among the poorest.

Gertler et al. (2011) evaluate the impact of Plan Nacer in Argentina, a program aimed at providing health coverage to pregnant women, postpartum women, and children under 6 years of age. Plan Nacer involves two main components: (a) increased resources to invest in health services, and (b) an innovative pay-for-performance (P4P) financing model. The authors evaluate the impact of Plan Nacer on several health status indicators[100] using administrative registers of all the health services delivered in primary care and maternity public facilities (including prenatal care, delivery care, and health care for the children).

The evaluation by Gertler et al. (2011) finds that Plan Nacer increased birth weight by 2 percent, reduced the probability of very low birth weight by 26 percent, and caused significant improvements in newborn Apgar scores. Furthermore, Plan Nacer reduced the newborn early mortality rate by 1.9 percentage points. The authors argue that these results are achieved primarily by means of increased utilization and improved quality. Indeed, the authors also find significant and positive impacts of Plan Nacer on early screening for pregnant women, increased utilization of prenatal care (increased number of prenatal visits) and, notably, improvements in the quality of prenatal care as evidenced by two quality indicators: at least one ultrasound scan during pregnancy and a tetanus vaccination for the mother.

Similarly, the study by Baqui et al. (2008) finds significant improvements in neonatal mortality from an intervention focused on improving health status of newborn children with disadvantaged socioeconomic status in Bangladesh. The authors use a cluster-randomized design to estimate the impacts of two interventions: (a) a community-care intervention,[101] and (b) a household-care intervention.[102] Both interventions were accompanied by a government health system strengthening program, including refresher training for facility-level health providers in treatment of neonatal infections and supply of antibiotics for treatment of neonatal infections at facilities. The authors find a statistically significant improvement in neonatal mortality for the home-care intervention (a reduction of 30 percent to 34 percent), but not for the community-care intervention. Although both the household- and community-care interventions show

[100] These measures include birth weight, probability of low and very low birth weight, Apgar score (which evaluates the health of a newborn baby based on five criteria with a possible score ranging from zero to 10), and infant deaths during the first seven days.

[101] Including community meetings with pregnant women and female family members, meetings with husbands/heads of household in mosques and markets, advocacy meetings with local leaders, orientation for traditional birth attendants (2 days) on cleanliness during delivery, maternal danger signs, and newborn care.

[102] Which includes the interventions in the community design plus twice a month community surveillance to identify pregnant women by community health workers, two prenatal home visits at 12 to 16 weeks and 32 to 34 weeks to promote birth and newborn-care preparedness, postnatal home visits on days 1, 3, and 7 to reinforce birth and newborn-care preparedness and provide counseling for breastfeeding difficulties, algorithm-based routine household screening of newborns on days 1, 3, and 7; referral of sick newborns to government health facilities; and treatment in the home with injectable antibiotics if referral failed, continued monitoring and advice on home care if illness is not severe.

improvements in outputs such as the use of a clean cord-cutting instrument, first bath delayed until at least the third day, and breastfeeding initiated within one hour, only the household-care intervention actually improved neonatal mortality. The authors argue that such an intensive intervention might be needed to counteract fairly adverse access conditions (poor accessibility, availability, and also acceptability). They suggest that given the context, access and health outcome issues might not be fully resolved by just improving affordability, and even not by a "stronger" intervention such as the community-care intervention that was implemented in Bangladesh.

Finally, a study by Quimbo et al. (2010) evaluated a health insurance intervention targeted to the poor in the Philippines against health status outcomes for children discharged with the diagnosis of pneumonia or diarrhea. The study relies on data from the Quality Improvement Demonstration Study, a randomized study. The authors estimated a 9 to 12 percentage point reduction in the likelihood of wasting and a 4 to 9 percentage point reduction in the likelihood of having an infection as measured by a common biomarker C-reactive protein. Interestingly, these benefits were not apparent at the time of discharge; the beneficial health effects were manifested several weeks after the release from the hospital. The authors suggest that increased coverage of insurance had an effect on health status, not through improved treatment but by better financial protection. In the authors' words, "patients with expanded insurance would not have to borrow or borrow as much to pay for hospital bills, which in turn implies an ability to protect outpatient medical care, parental support, or more food consumption. This suggests that expanded insurance ensures the patient of being on a more stable long-term trajectory of health improvement" (Quimbo et al. 2010, 626).

One may argue that no result upon discharge might be explained by the fact that the authors focus on already sick patients. However, the authors explain that even among the sick patients, upon discharge, theoretically an impact could be found if the providers treat the affiliates and nonaffiliates[103] differently. Having verified no differences upon discharge and hence ruling out supply-side differences in treatment for enrollees, the postdischarge causal effect is attributed to improved financial protection. This is remarkable because it suggests that the underlying mechanism for a UHC scheme to achieve impact on health status is not necessarily increased access and utilization. These findings also suggest that what seems to matter in the impact of UHC schemes on health is the financial protection provided.

Mixed evidence. Another group of studies finds mixed evidence on the impact of UHC schemes on health status indicators. For example, Wagstaff and Yu (2007) examine the effects of the World Bank Health VIII project in China, an intervention that included supply-side improvements and a demand-side component expanding health insurance. Results from this study indicate that the evidence on the effect of this scheme on health outcomes is mixed; while the results point to a reduction of the number of sick days due to the project's impact, the evidence on incidence of chronic illness and self-perceived health status is not conclusive. The authors state that "it is puzzling why non-project counties came close to achieving a statistically

[103] "We might expect insurance effects at the time of discharge, for example, from provider-initiated moral hazard wherein insured patients are kept longer in the hospitals, thus potentially allowing them to achieve better health status before discharge" (Quimbo et al. 2010, 626).

significant reduction in their rates of infant mortality but Health VIII counties saw no change in theirs" (Wagstaff and Yu 2007, 531). Although the favorable results are given from a sound methodology, there is no detailed discussion regarding why these results are observed. The results are puzzling because the scheme's impact on utilization is negligible and even negative for some specifications. Nevertheless, the reduction in sickness days may be related to the reductions in out-of-pocket expenditures as a result of downward pressure on drug spending.[104] Thus, one may hypothesize that improved affordability of medications may improve recovery from illnesses and therefore reduce days of sickness.

Similarly, Cuevas and Parker (2011) evaluate the impact of health insurance in Indonesia and find no impact for the majority of health outcome indicators but improvements in a few (daily activities for adults, high blood pressure in adults for lower-income groups, child obesity in some groups but an increase in others). The authors question why insurance would increase the overall use of services without improving health status and discuss several explanations: (a) those without insurance may find ways of coping with health issues (for example, seeking nonformal care) that may be equally effective in terms of health outcomes, (b) the impact of health status may be difficult to observe due to the low prevalence of some of the illnesses analyzed by the authors, (c) insurance may have a small impact when compared with health status determinants and, (d) some of the health status variables analyzed may be particularly difficult to modify and less likely to change as a result of the UHC scheme (obesity for example).

A majority of inconclusive studies. Several studies cannot find conclusive evidence on the impact of health insurance when they use health status measures available in the routine (and not tailor-made) data sources. For example, the study by Giedion, Díaz et al. (2007) uses data from standard DHS surveys and finds that although the Colombian subsidized health insurance scheme has greatly improved the utilization of curative and preventive services for the poor, no conclusive evidence emerges on its impact on child mortality, low birth weight, or self-perceived health status. The authors explain this result by the limitations of the data available to measure health status: "The characteristics of the health status variables contained in the DHS surveys are strong limitations for the analysis: DHS surveys concentrate mainly on health status variables related to women of reproductive age and small children (for example child survival, complications after delivery, birth weight), mostly determined by contextual and individual characteristics (such as location, education of the mothers and access to safe water and sanitation) other than health insurance. Similarly, low birth weight is more related to insufficient calorie intake by the mother than to inadequate prenatal care. Therefore, if at all, only a minor impact of the Subsidized Regime on the kind of health status variables at hand could be expected. Most importantly, the variables included in DHS surveys are blunt measures of health status that cannot be sufficiently related to the health services covered by the insurance scheme" (Giedion, Díaz et al. 2007, 103).

In Bangladesh, the Grameen Bank has created a large-scale microcredit program that provides small loans to women to support the development of household-based microenterprises. In the

[104] According to Wagstaff and Yu, the reduction in out-of-pocket payments, catastrophic expenditures, and impoverishments were mostly the result of downward pressure on drug spending through supply-side interventions (treatment protocols, essential drug lists, two-way referrals).

late 1990s, a micro health insurance scheme was offered to Grameen Bank's clients, and hence the enrollees in this scheme are mainly female entrepreneurs. Hamid, Roberts, and Mosley (2011) evaluate the impact of this micro health insurance scheme on health status using two health indicators: self-assessed general health status and an index of physical functioning. The authors find no impact on health status and they give several potential causes that might explain these results.

First, there might be health status reporting bias in self-assessed indicators, given that "the majority of microentrepreneurs report themselves to be in good health and it is possible that respondents, regardless of whether living in the program or the comparison area, may have the idea that if they do not claim themselves to be healthy they may not obtain microcredit in the future" (Hamid et al. 2011, 408).

Second, given that the micro health insurance scheme provides mainly basic primary care and only limited access to secondary and tertiary care, it is likely that the impact on health status measures will show up later (the impact of preventive services, for example, may only become evident many years later).

Third, the evaluation assesses the impact on health status of the respondents only, and these may typically be younger and healthier individuals who have a good health status and do not use services that are likely to improve health status. The micro health insurance scheme, however, benefits all age categories. Therefore, the estimates might underestimate the impact of the scheme since the evaluation does not include other individuals who might be more in need of health services and more likely to benefit from the intervention.

Fourth, the micro health insurance scheme charges consultation fees (copayments) that are small but might nonetheless deter utilization of formal, quality health care (which, in turn, might improve health outcome indicators. These drawbacks may bias the results downward and explain the negligible impact. There are also design issues that may prevent significant impacts on health status to occur, such as not successfully tackling the demand-side financial barriers to access and limited benefits and access restricted mainly to basic care.

Likewise, Lei and Lin (2009) find no impact of China's New Cooperative Medical Scheme on self-reported health status and sickness or injury within the four weeks preceding the survey. The authors highlight several reasons that may explain this result. First, self-reported health status indicators may not be an adequate choice of health outcome measure for the impact of the scheme. As the authors put it, "we do not know whether the NCMS provides health benefits that are overlooked when we solely investigate self-reporting of health and of illness or injury in the last four weeks. In future work, we hope to move beyond these relatively crude, self-reported measures of health to investigate the effects of the NCMS on other, more detailed indicators of objective or physician-assessed health status" (Lei and Lin 2009, 40). The second reason may be related to NCMS's design and its effects on the supply side. The authors argue that the reimbursement mechanism implemented by the program (fee for service and reimbursement) may lead hospitals and physicians to use more costly procedures or equipment for NCMS participants, which may prevent out-of-pocket expenditures from dropping, which in turn might explain the limited effect of the scheme on utilization and, therefore, on health status.

Similarly, King et al. (2009) find no effect of Mexico's Seguro Popular on nine separate health self-assessment indicators. However, as mentioned, and as the authors themselves indicate, the short implementation period (10 months) allows for the possibility that the impacts on health status may be observed later on.

There is another group of studies that may not be conclusive because the chosen outcome variables, such as mortality, cannot be easily related to the program design. The two studies on Costa Rica's social insurance scheme (Dow, Gonzalez, and Rosero-Bixby 2003; Dow and Schmeer 2003) find only a small effect of social health insurance on child and infant mortality. These studies conclude that health insurance might not lead to large improvements in infant and child mortality. Along the same lines, Chen and Jin (2010) study the impact of the China's NCMS on children and pregnancy mortality and find a zero average treatment effect. The authors first highlight this result as consistent with previous work by other authors (Lei and Lin [2009], cited above), and argue that this result may be explained by low reimbursement rates in the scheme that may make it ineffective for promoting access and financial protection. If access and use are not promoted, then there is no reason health status improves, since the latter depends critically on the former. The authors acknowledge, however, that "the lack of a significant average effect may be explained by the fact that mortality is an extreme event" (Chen and Jin 2010, 29–30), suggesting that mortality might hardly be affected by the intervention.[105]

The former analysis illustrates that several studies are inconclusive, for methodological reasons: (a) limited data on health status variables and on its multiple confounders; (b) overreliance on self-reporting and self-assessment of health status variables, which may introduce bias in the estimates, and sometimes its link to the intervention might not be clear; and (c) evaluations with short assessment periods trying to identify impact on health status measures that may only take place in the long term.

Concluding remarks on the impact of UHC on health status. The evidence reviewed shows that a few UHC schemes have had a positive impact on a population's health status. Those schemes share similar characteristics with other schemes where such evidence is not available, suggesting that other schemes may, at least potentially, have positive effects on people's health. However, the majority of inconclusive studies suggest that it is hard to achieve and show such impacts.

What is needed then to have an impact on health status and what is required to be able to show such impact? To actually have an impact, the only consistent hint of the evidence reviewed points to interventions specifically designed for that purpose (several of the studies that find a positive impact evaluate interventions with specific health goals); although it may not be a necessary—nor sufficient—condition,[106] the evidence does suggest that schemes that explicitly define health outcome priorities and set and monitor targets on them can usually have an impact (the examples in this review come primarily from interventions to improve maternal and newborn health). So, it seems reasonable to think that a scheme with specific health targets would implement

[105] Note that the authors use large sample size cross-sectional census data.

[106] The results for PhilHealth show that a scheme can have an impact on health status outcomes not explicitly prioritized or targeted.

mechanisms likely to improve those outcomes, and it would probably lead to better health outcomes (and probably more easily than in a scheme that only extends coverage without any specific effort to improve health, which is the case of the majority of the schemes in this review).

Now, assuming a UHC scheme has an impact on health status, what is required to be able to show it? This is, to a large extent, a matter of methodological issues that have been extensively discussed earlier in this document, but it is worth highlighting those that, according to the evidence, seems to be particularly relevant for health status. Among the inconclusive studies, the problems were frequently regarding the outcome indicators used, the assessment period, and the data source. Hence, to be able to detect an impact on health status it seems essential to (a) identify health outcome variables that are affected by the intervention and/or related access indicators, (b) allow for a sufficient time lag between the intervention and the evaluation so that health impacts on selected outcomes can actually be produced, and (c) have available reasonably good data. Note that those are issues related to the design of the evaluation that may be considerably improved by involving the evaluators from the start, that is, during the design phases of the interventions.

Finally, the literature reviewed also seems to corroborate the previously described impacts on access and utilization and financial protection, showing that the causal effect on health status also varies across groups. Note, however, that the evidence is even scarcer given the limited number of studies that have explored this topic. For example, Wang et al. (2009) find that "the effects of RMHC [Rural Mutual Health Care] vary by age and illness, but not by income and gender. The oldest group experienced significant improvements in mobility, usual activity, pain/discomfort, and anxiety/depression, while the ill experienced greater improvements than the healthy in their ability to carry out daily activities, pain/discomfort, and anxiety/depression. However, the results of our analysis show that the RMHC impacts do not differ across income groups, either overall or for sub-dimensions." Similarly, other authors find variation across similar and other variables (Cuevas and Parker 2011; Dow et al. 2003; Wagstaff and Pradhan 2005).

Table 6.3 The Impact of UHC on Health Status

	Author / Title	Health status variables	Impact on HS	Health status conclusions
Argentina	Gertler et al. (2011) "Impact Evaluation of Maternal Child Provincial Health Investment Project in Argentina – Plan Nacer"	* Birth weight. * Probability of low and very low birth weight. * Newborn Apgar score—a summary assessment of the health of newborn immediately after delivery. * Newborn early mortality rate—deaths during the first seven days.	+	Plan Nacer increased birth weight by 2% (69.5gr), reduced the probability of very low birth weight by 26%, and brought significant, albeit modest, improvements in newborn Apgar scores. Plan Nacer also reduced the newborn early mortality rate by 1.9 percentage points.

	Author / Title	Health status variables	Impact on HS	Health status conclusions
Bangladesh	Abdullah H. Baqui et al. (2008) "Effect of Community-based Newborn-care Intervention Package Implemented through Two Service-delivery Strategies in Sylhet District, Bangladesh: A Cluster-randomized Controlled Trial"	* Neonatal mortality.	+	The authors find statistically significant improvements in neonatal mortality for the home-care intervention, but not for the community-care intervention. "Among all live births, neonatal mortality in the home-care arm was 34% lower during the last 6 months and 30% lower during the last year of the intervention than in the comparison arm. A pronounced reduction in neonatal mortality was noted for singleton births, 46% in the last 6 months, and 37% in the last year. No neonatal mortality reduction was noted in the community-care arm" (Abdullah H. Baqui et al. 2008, 1942).
Bangladesh	Hamid et al. (2011) "Evaluating the Health Effects of Micro Health Insurance Placement: Evidence from Bangladesh"	* Self-assessed general health (SAH)—how good a person's current health is compared to people their own age, with responses on a five-point scale: excellent, good, fair, poor, and very poor. * An index of physical functioning—ability to carry a heavy load for 20 meters, sweep the floor or yard, walk for 5 kilometers, and take water from a tube-well or a pond, bend, kneel, or stoop. Can do it easily (score 3), can do it with difficulty (score 2), and unable to do it (score 1).	—	Although there is an increase in awareness and the probability of seeking care attributable to micro health insurance in Bangladesh, its contribution "to improvement in health status is yet to be evidenced." According to the authors, the lack of impact on health status measures might be explained by (a) self-assessment bias, (b) impact may take more time, (c) limited access to secondary and tertiary care, (d) assessment of only one person (female) that may be young and healthy, among others.
Brazil	Nyman and Barleen (2005) "The Effect of Supplemental Private Health Insurance on Health Care Purchases, Health, and Welfare in Brazil"	Self-perceived health status among persons who reported acute health problems and a chronic condition.	+	The results show that health insurance increases the probability of reporting a better health status, as hypothesized.
China	Wagstaff and Yu (2007) "Do Health Sector Reforms have their Intended Impacts? The World Bank's Health VIII Project in Gansu Province, China"	* Self-assessed health. * Number of sickness days. * Chronic illness. * Infant mortality rate.	+/-	The study finds fairly robust evidence showing that Health VIII may have reduced the number of days of sickness, at least among the poor (and among the third quintile). The results also suggest that the project reduced chronic sickness, though this is not always significant (it is only so for the poorest quintile). The results on self-assessed health are not robust across the various methods. No significant impact is found on IMR.

	Author / Title	Health status variables	Impact on HS	Health status conclusions
China	Wang et al. (2009) "The Impact of Rural Mutual Health Care on Health Status: Evaluation of a Social Experiment in Rural China"	* Self-perceived health status. * EQ-5D instrument by problem in self-care, usual activities, pain and discomfort, anxiety, and depression.	+	The results show that RMHC had a positive effect on the health status of its participants. Among EQ-5D five dimensions, RMHC significantly reduced pain/discomfort and anxiety/depression for the general population. Differences in the effect of RMHC on overall health outcomes stratified by income, gender, age, and illness status at baseline are found; lowest income groups experienced the greatest health improvement. Those who were "ill" in the baseline experienced a greater reduction in reporting any problem in EQ-5D. Those above 55 years benefited most in terms of improved mobility and usual activities.
China	Lei and Lin (2009) "The New Cooperative Medical Scheme in Rural China: Does More Coverage Mean More Service and Better Health?"	* Self-reported health status. * Sickness/injury within the four weeks preceding the CHNS survey.	—	After applying several techniques (individual FE, IVs estimation, and propensity score matching with difference-in-differences estimation), no effect was found on health status measures, despite an increase in preventive health care utilization.
China	Chen and Jin (2010) "Does Health Insurance Coverage Lead to Better Health and Educational Outcomes? Evidence from Rural China"	* Mortality rate of young children. * Mortality rate of pregnant women.	—	Using a large census database, authors find no effect of the New Cooperative Medical Scheme (NCMS) on health status outcomes (mortality). Although enrollees have on average better outcomes than nonenrollees, such a difference is explained by endogenous introduction and take-up of the program. After controlling for such effects, no impact is found. According to the authors, the lack of impact might be explained by the low reimbursement rate of the scheme and the fact that mortality is an extreme event that is difficult to affect.
Colombia	Giedion, Díaz, et al. (2007) "The Impact of Subsidized Health Insurance on Access, Utilization and Health Status"	* Health status perception. * Complications after delivery. * Extremely low and low birth weight reported and recorded on health card.	—	No conclusive evidence is found. The study suggests the need to develop health status variables that are able to capture the more subtle kind of changes underlying quality of life that may result as a consequence of improved access to health services from health insurance.
Costa Rica	Dow and Schmeer (2003) "Health Insurance and Child Mortality in Costa Rica"	* Infant and child mortality.	+	Insurance coverage increases are strongly related to mortality decreases at the county level before controlling for other time-varying factors. However, after controlling for changes in other correlated maternal, household, and community characteristics, fixed effects models indicate that the insurance expansion has had a significant but only small impact on child mortality rates.
Costa Rica	Dow et al. (2003) "Aggregation and Insurance-mortality Estimation"	* Child mortality.	+	Although insurance does have a statistically significant effect on child mortality, this effect is quite small.

	Author / Title	Health status variables	Impact on HS	Health status conclusions
Indonesia	Cuevas and Parker (2011) "The Impact of Health Insurance on Use, Spending, and Health in Indonesia"	* Body mass index. * Overweight. * Obesity. * Hemoglobin. * Low hemoglobin. * High blood pressure. * Hypertension stage 1 and 2. * Difficulty/unable to carry heavy load, to walk 5 kilometers, to kneel.	+/-	Many health status indicators show little relationship with insurance status in Indonesia. However, there seem to be improvements in a few indicators: (a) a reduction of problems in daily activities for adults, (b) a potential impact in reducing high blood pressure in adults for lower-income groups, and (c) a reduction in child obesity in some groups but an increase in others.
Mexico	King et al. (2009) "Public Policy for the Poor? A Randomized Assessment of the Mexican Universal Health Insurance Program"	* Self-assessed health status.	—	Although a positive effect seems to have initially occurred, further examination of the baseline data using difference-in-differences analysis demonstrates that such positive effect was mostly a placebo effect that appeared even in the baseline, and correcting for this reveals a small and close-to-zero effect.
Multicountry	Carrin, Zeramdini, Musgrove, Poullier, Valentine, and Xu (2004) "Impact of Risk Sharing on the Attainment of Health System Goals"	* Disability-adjusted life expectancy (DALE), an index developed by the WHO (2000). * Index of equality of child survival (IECS), an index developed by the WHO (2000).	-/+	"The degree of risk sharing in health-financing organizations matters for health system attainment." (p. 411)
Multicountry	Wagstaff and Moreno-Serra (2009) "Europe and Central Asia's Great Post-communist Social Health Insurance Experiment: Aggregate Impacts on Health Sector Outcomes"	* Life expectancy by sex. * Mortality rate (under five, infant, neonatal, postneonatal, maternal). * Standardized death rate (all causes, infections, tuberculosis, diarrhea, ARI, hearth disease, liver disease, diabetes, circulatory diseases, cerebrovascular disease, neoplasms, female breast cancer, bronchitis, digestive diseases, alcohol causes, smoking causes). * Incidence rate (tuberculosis, hepatitis, hepatitis B, measles, mumps, syphilis, congenital syphilis, pertussis, diphtheria, tetanus, cancer).	—	"SHI adoption does not appear to have had any perceptible impact on health outcomes. This is despite the fact that we are not controlling for health spending in our regressions and the fact that we have over 40 different health outcome variables, including detailed cause-specific data on both mortality and disease incidence. In only two outcomes (infant mortality and postneonatal mortality) is there any evidence of a significant impact of SHI in our preferred difference-in-differences model, and here the evidence is not altogether compelling: interpreted literally, SHI increased (though not significantly) neonatal and perinatal mortality, significantly reduced postneonatal mortality, and significantly increased infant mortality, but only for one of our three infant mortality variables. It would seem unwise to read too much into these results, however. Overall, our estimates suggest that SHI adoption resulted in neither health improvements nor adverse effects on population health status." (p.333)

	Author / Title	Health status variables	Impact on HS	Health status conclusions
Peru	Díaz and Jaramillo (2009) "Evaluating Interventions to Reduce Maternal Mortality: Evidence from Peru's PARSalud Program"	* Postpartum hemorrhage	+	The authors evaluated PARSalud, in a phase in which the program focused on reducing maternal mortality. The program aimed to increase demand and implement supply-side interventions to improve the quality of services (including personnel training and infrastructure investment primarily aimed at universalizing the use of oxytocin to prevent postpartum hemorrhage). The authors evaluate the impact of the supply-side component of the program and find a statistically significant reduction in the likelihood of postpartum hemorrhage of 8.5 percentage points, which is the main cause of maternal mortality.
Philippines	Quimbo et al. (2010) "Evidence of a Causal Link between Health Outcomes, Insurance Coverage, and a Policy to Expand Access: Experimental Data from Children in the Philippines"	* Wasting (a ratio lower than 0.90 of the actual weight of a child to his/her ideal weight for actual height). * CRP-positive (indicates the presence of an acute infection or other types of inflammation).	+	The intervention decreases the likelihood of a child being CRP-positive or wasted by 4 and 9 percentage points, respectively, for post-discharge outcomes. However, the intervention shows no immediate impact on upon-discharge outcomes.
Vietnam	Wagstaff and Pradhan (2005) "Health Insurance Impacts on Health and Nonmedical Consumption in a Developing Country"	* Height-for-age and weight-for-age by age group. * Adult Body Mass Index.	+	Vietnam's health insurance (VHI) program favorably impacted the height-for-age and weight-for-age of young school children, and body mass index of adults. VHI had a significant impact on the BMI of adults. The impact rises monotonically with per capita household consumption, and as with weight-for-age among young children, there is no evidence of any beneficial effect of VHI on nutritional status among the poorest quintile.

Note: a. Studies are first ordered alphabetically by country and then by year of publication. b. + indicates a positive and statistically significant impact; +/- indicates a positive impact for some services, variables, or population groups and not for others; and — indicates that no statistically significant impact was found.
ARI = Acute Respiratory Infection. CHNS = China Health and Nutrition Survey. CRP = C-reactive protein. EQ-5D = European Quality of Life-5 Dimensions. It is a well-known standardized instrument to measure health outcomes
FE = Fixed effects. SHI = Social Health Insurance.

6.4 The evidence and the UHC debate

This section focuses on what the top evidence (top two groups of 41 papers) summarized above indicates about the relation between impact and design features of the UHC schemes. Establishing this kind of link is all the more important given that UHC is a vague concept and countries implement many different forms of UHC schemes.

The evidence on the marginal impact of individual design features and the usefulness of impact evaluation evidence to date for policy guidance. There are only a few papers that shed light (quantitatively) on the marginal contribution of the impact of individual design features of the UHC scheme. Ekman (2007b); Pradhan et al. (2007); Wagstaff et al. (2009); and Yip et al. (2008), are the most interesting papers in this sense. Most of the studies, however, provide no

quantitative analysis on the impact of different design features. Some authors even explicitly declare that their evaluation assesses only the scheme *as a whole*, and, given the importance of such a question for policy making, they regret not being able to look at the causal effects between outcomes and specific design features (King et al. 2009, 1454; Wagstaff et al. 2009, 17).

Given the lack of quantitative evidence, we also explored the potential links between UHC design and UHC results by extracting and summarizing the discussions provided by the authors themselves on how design features may explain results. This information is presented in Table 6.5 at the end of the section, where the discussion of the link between results and design features is discussed for each of the papers belonging to the top two evidence groups.[107]

Also, to assess how much the impact literature contributes to the understanding of how different UHC design features identified by existing conceptual frameworks as being important[108] contribute to the achievement of UHC goals, we classified each paper according to whether it (a) attempted to measure the impact (quantitative-causal effect) of the individual design features; (b) did not measure the impact but, at least, *discusses* how the design features might explain the results according to the author's knowledge of the context; and (c) provides any insight on the link between the design feature and the outcomes of interest. The summary of results of this classification is presented in Table 6.4.

Table 6.4 The Evidence Base and the Analytical Frameworks

	Design Feature	Papers with Quantitative Evidence	Papers Discussing the Feature	Does Not Discuss
Mathauer and Carrin (2010)	Taxation rules	0	5	36
	Resource allocation rules	1	9	31
	Insurance enrolment rules	1	7	33
	Insurance collection rules	0	4	37
	Copayment/user fee rules	1	7	33
	Pooling rules	1	5	35
	Risk equalization rules	0	0	41
	Purchasing and provision rules	1	7	33
	Provider payment rules	0	5	36
	Rules relating to the benefits package (BP)	2	2	37
	Rules relating to benefits package consumption	2	2	37
	Rules relating to fund management	0	2	39
UNICO	Managing tradeoffs between the scope and cost of services covered in the benefits package	2	5	34
	Identifying the poor and financing services for them	2	12	27
	Scope for using public funds to pay for outputs rather than inputs	0	1	40
	Institutional capacities for delivering services	0	5	36

[107] Although we focus primarily on the papers in the top two groups, there are a few papers beyond these groups that still provide interesting insights on the issue and hence are included in the discussion.

[108] In order to have a comprehensive set of design features that may be important in the UHC debate, we used two analytical frameworks. The first one is proposed by one of the champions of the international movement promoting UC—the WHO (2000, 2010) and its most recent version described in Mathauer and Carrin (2011). The second one is being developed by the World Bank's Universal Coverage Challenge Program (UNICO).

	Monitoring and analyzing spending/outputs to achieve better results and impact	0	1	40
	Political commitment to universal coverage	0	0	41
Total number of papers that analyze at least one of the design features		4	23	14

This classification shows that *none* of the papers in our evidence base comprehensively analyzes how the individual design features determine the results. This is hardly surprising since the number of design features and, even more, the possible array of combinations, would be impossible to tackle in any meaningful way. Furthermore, only a few papers (4 of 41) provide any quantitative-causal[109] evidence on the link between at least one design feature and the outcomes. The feature most frequently analyzed in the UNICO framework (12 of 41 papers) is identifying the poor and financing services for them, and the least commonly explored features (and maybe potentially the most important ones but also ones difficult to measure) are those related to the stewardship and political commitment and those dealing with the efforts to monitor health results.

The scarcity of quantitative evidence on these links constitutes a challenge when trying to provide policy advice on the design of UHC schemes based on the robust evidence available. This is a real limitation in the context of the current movement promoting UHC across the globe, since countries are often more interested in learning *how* to implement UHC schemes than knowing *whether* they should follow this path. Further research is needed to provide better guidance to countries and policy makers.

In the remaining part of this section, we highlight several UHC design issues that are important in the context of the UHC debate and that are, at least marginally, discussed in our evidence base.

Is targeting opposed to UC? At first glance, there seems to be a contradiction between the UHC movement and how countries are actually pursuing it; UHC, of course, advocates for coverage for all, but as discussed, the majority of countries use some form of targeting in their UHC strategy. Not surprisingly, those targeted by UHC schemes—mainly the poor or vulnerable, the unemployed, the informal sector, and rural population—are precisely those typically excluded from other forms of health coverage and therefore there is no contradiction between targeting and UHC; rather, targeting seems to be a strategy for effectively achieving 100 percent population coverage.

But what does the evidence from impact evaluations say about whether countries should use targeting in their UHC strategies? Although the literature usually does not address this question explicitly, a few of the results discussed previously may shed some light on the issue. Indeed, the literature frequently shows that the worse-off benefit the most from UHC schemes, a result that may have several possible explanations[110] and that suggests that targeting the worse-off may be a sensible policy; by targeting the worse-off, policy makers may increase the gains from the money

[109] And all of those who did it highlight methodological limitations in this regard, hence, the results are never fully robust.

[110] For example, the worse-off may be precisely those with greater health needs and those without much health coverage, and due to diminishing marginal returns, they may reap greater benefits.

invested and reap "early victories." Thus, in principle, the evidence seems to support targeting as a sensible strategy to achieve UC.

However, the flipside of these results is that the impact diminishes as the socioeconomic status of the population increases, and sometimes the impact becomes negligible. We think that fact raises further questions for policy makers: what is the optimal strategy for the nonpoor then? The evidence does not say much on this question. More research is needed in this respect to evaluate the different hypotheses that may be underlying this result as a first step toward the provision of more concrete policy advice. For example, it is possible that the better-off already have other forms of health coverage and adequate levels of access and financial protection.[111] However, there may be other explanations that would imply totally different policy responses. For example, it may be the case that the usual strategies target mainly the affordability dimension of access, which may be a major concern for the poor but may sometimes be relatively less important for the better-off. Therefore, the policy should tackle those other problems to have any impact on the better-off. These issues seem to be particularly relevant for countries that have already achieved—or are close to achieving—100 percent population coverage, in which the priority may not be expanding coverage or targeting one group or another, but improving health outcomes of those already covered.

In summary, targeting the worse-off (or other population groups) and focusing on designing effective policies for them seems to be a sensible approach, particularly for those countries in the first and middle phases in the path toward UHC, but all countries at some point also must thoroughly think about the best strategies for those not initially targeted.

Depth and height of coverage matters for results, but the evidence does not fully clarify the debate. "The depth means service coverage such as outpatient, inpatient, and other high-cost services, and the height is the level of financial protection such as co-payment" (Tangcharoensathien et al. 2011, 2). As discussed in the conceptual framework, the tensions between these dimensions are common to UHC schemes. Therefore, policy makers face difficult decisions on designing the depth and height of coverage they will provide within their budget constraints. Policy makers often face debates such as: should we go for a first-dollar or a last-dollar coverage policy (see, for example, Morgan and Willison 2004); should the UHC scheme cover mainly primary care or tertiary care; how much of the direct costs should be covered; and should direct payments be completely eliminated or any copayments remain (see WHO 2010 for a discussion of many of these decisions).

Overall, although the evidence base provides several interesting examples that may stimulate the discussion, we think that it does not clarify the debates about the depth and height of coverage. In what follows we summarize the most interesting studies that shed any light on this issue.

In China's "NCMS laboratory," Yip et al. (2008) find a significant impact on outpatient utilization for one scheme (Rural Mutual Health Care [RMHC]) and a much weaker effect for another (New Cooperative Medical Scheme [NCMS]). They hypothesize that the difference

[111] Note that "the impact is greater among the worse-off" means that they experience greater improvement than the better-off, but it does not imply that the absolute levels of access and financial protection are equal, better, or worse.

might be the result of differences in the level of protection provided by the two schemes for outpatient care; the first one provides first-dollar coverage for outpatient visits while the second one, based on individual savings accounts for outpatient care, provides financial protection for just a fraction of the costs of outpatient care, given that the individual savings account collects only 8 yuan per year while the cost of one visit to the village's doctor is about 15 to 20 yuan.[112]

In a related study analyzing the impact on financial protection (impoverishment), Yip and Hsiao (2009) find that the RHMC model is much more effective in improving financial protection (reducing impoverishment) than the NCMS individual saving accounts/hospitalization insurance model. The authors explain that the result might be related to benefits design; 40 percent of the households have members with chronic conditions and who make frequent visits and routinely have to pay for medications. These expenses do not qualify, however, for reimbursement under the second model, and the proportion of costs that can be covered using the savings accounts is small. Hence, the NCMS provides little protection for the specific needs of the population, while the RMHC, with first-dollar coverage, seems more appropriate to mitigate the impact of this type of disease and expenditure profile.

Yip et al. (2008) look at differential impacts across modalities of NCMS given the considerable heterogeneity in benefits package design, coinsurance rates, deductibles, and ceilings across counties and coverage schemes. By doing so they find that *one modality* of NCMS that combines an individual savings account for outpatient care with coverage for catastrophic care, along with high deductibles and ceilings, has little impact on access and utilization. Another modality that provides first-dollar coverage with no deductibles but with ceilings does have an important impact on access and utilization. The authors explain that this result is not surprising because the modality that shows no impact collects too little money in the savings account relative to the costs of outpatient care,[113] and the hospitalization insurance involves fairly high deductibles. Therefore, the cost coverage this modality provides is limited for both outpatient and inpatient care, and it is hardly surprising that it does not have significant effects on people's health-seeking behavior. Interestingly, the modality that shows positive impacts has a similar premium, but the *structure* of its benefits[114] provides greater coverage and thereby a more significant reduction in the costs borne by patients. Thus, design is critical. If a scheme does not significantly change the costs of using health services, it is likely that its effects will be negligible.

Furthermore, as mentioned, Ekman (2007b) evaluates the impact of various types of health insurance schemes in Jordan and finds that the effect varies by type of insurance and socioeconomic status. Although the author does not discuss in detail the differences across schemes that may explain the heterogeneity of impact, he argues that "one obvious factor that drives the results is the heterogeneity of the Jordanian health financing system and, in particular, the compartmentalization of the various financing schemes" and "obtaining a more unified

[112] Although this is one of the few papers that sheds light on the role of the design features by comparing two schemes, the authors explain that the groups, "strictly speaking," are not directly comparable, which shows that even the evidence in those few papers providing quantitative support for the question of this chapter is rather limited.
[113] 8 yuan per year, while just one visit to the village doctor costs about 15 to 20 yuan.
[114] And also the supply-side interventions to tackle what might have been perverse incentives.

system will most likely contribute to reducing these varying effects across socioeconomic groups and insurance types" (Ekman 2007b, 14).

Similarly, Lei and Lin (2009) and Chen and Jin (2010) find both limited impacts of China's NCMS on access and utilization, financial protection, and health status, which is consistent with the studies by Wagstaff et al. (2009), Yip and Hsiao (2009), and Yip et al. (2008) that do not find significant impacts of NCMS (Yip and colleagues only find positive impacts of RMHC, but not of the NCMS that is comparable to the interventions evaluated by Lei and Chen). Both authors argue that the result may be related to the high copayments and low reimbursement rates that seem to prevail among most of the variations of the NCMS being implemented, as shown by Yi et al. (2009).

Similarly, Parmar et al. (2011) highlight the decisive role of a comprehensive benefits package, with only a few exclusions and no copayments in a community-based health insurance scheme in Burkina Faso. They argue that similar schemes with less generous benefits packages and higher copayments had been evaluated and had found almost no impact, leading them to the conclusion that the key design difference may be related to the scope of the benefits package.

Bauhoff et al. (2010) argue that one of the reasons that may be limiting the impact of the UHC scheme in Georgia on financial protection may be related to the fact that medicines are not covered by the benefits package even though they account for the largest share of out-of-pocket expenditures in the country, and particularly for the target population (the poor).

Overall, the literature provides several examples that clearly show that depth and height of coverage matter for results, but the evidence is neither large nor consistent enough to fully clarify the debates. Furthermore, the discussion of results is frequently useful for understanding how the differences in design may explain the differences in results. In this respect, however, there is considerable variability in how detailed the discussion is across the studies; several papers thoroughly identify influential design features explaining the results and provide an in-depth discussion of how those features may be important for the impact, while other studies identify influential design features but do not discuss its role in such detail. Nonetheless, the evidence shows that the depth and height of coverage play an important role for the impact and that those decisions interact with other features such as the health needs of the population or how the services are purchased, and the interaction of all those features is critical for results.

Combination of supply- and demand-side interventions. A point commonly raised by the authors of the studies is the combination of supply- and demand-side interventions[115] as a

[115] Specific interventions of UHC schemes may be diverse; therefore, when we use the terms demand- and supply-side interventions we do not mean a specific intervention but an array of possible interventions. By demand-side interventions we refer to those that aim to modify people's conditions for obtaining health care (primarily interventions aimed to reduce direct payments at the place of delivery and/or promote the enrolment into health schemes, but it may also include further interventions, such as those to cover health-seeking-related costs like transportation, or interventions to modify acceptability, such as information and education campaigns). By supply-side interventions we refer to those that aim to change providers' conditions for delivering health care, including an increase in resources allocated to health facilities, changes in purchasing and provider payment mechanisms such as pay-for-performance initiatives, and interventions to improve the quality of care or efficiency in the production of health services.

determinant of success. Some of them argue that the combination of interventions was critical to achieve the results. For example, Wang et al. (2009) indicate that "The RMHC scheme that we introduced not only included a demand-side financial risk pooling intervention, which reduced the financial barriers to health care services, but also included supply-side efficiency and quality improvements, which increased the cost effectiveness of the delivery system. This integrated intervention approach provided benefits to the enrollees in terms of both financial access and health improvement" (Wang et al. 2009, 76).

Along the same lines, others point out that the lack of results might be explained by unresolved issues on the supply side. For example, Thornton et al. (2010) argue that health insurance for informal sector workers in Nicaragua may not have had the intended impacts, at least partly because it did not tackle quality issues in the delivery of care. Similarly, Wagstaff et al. (2009) find evidence suggesting that out-of-pocket expenditures may have *increased* for those enrolled in the NCMS in China, and argue that this result might be at least partly explained by the fact that providers were "paid by fee-for-service and face a fee schedule that strongly encourages demand shifting to drugs and high-tech care on which the margins are higher," thereby inducing demand and payments (Wagstaff et al. 2009, 17). The authors also suggest that unresolved issues on the supply side (provider payment mechanisms) may be an important determinant of results in the context of China's NCMS.

The Pradhan et al. (2007) evaluation of the effect of a health card program implemented in Indonesia during the economic crisis of the late 1990s, attempts to disentangle the effect of the demand-side intervention (the free health care cards targeted to the poor) from the supply-side intervention (increased resource allocation to providers[116] meant to cover the additional costs of the increased demand), and find that both interventions were effective in increasing health service utilization. However, the impacts differ in magnitude and across different socioeconomic groups; the demand-side intervention increased utilization especially among the poor, but the supply-side intervention increased utilization primarily for the better-off. Furthermore, the supply-side intervention had a stronger impact (accounting for more than 80 percent of the total effect). The authors argue that the program would have had a much stronger impact if a stronger link between resource allocation and an increase in utilization had been implemented. Indeed, the increased resources were allocated to providers based on ex-ante estimations of the increased demand and regardless of the actual utilization experienced. Furthermore, the authors argue that providers used the additional resources according to their own criteria and not only to cover the costs of the increased demand.

The authors also find that the additional resources supplied by the scheme improved utilization and caused a switch from private to public sector providers. However, the increase in utilization was observed mainly among the poor, while the nonpoor experienced no overall increase in utilization but only a substitution from private to public providers. This finding may be indicating greater needs among the poor that are successfully tackled by the demand-side targeting mechanism. Interestingly, the authors also find that the effect attributable to the supply-side intervention is greater in magnitude compared to the demand-side intervention. They also find

[116] But, as explained later, there was no strong link between the demand for health care from the card holders and the increase in resources.

that the supply-side intervention does not seem to be propoor in its impact. According to the authors, the relatively small effect of the health cards (compared to the increase in budget), might be explained by a weak link between reimbursements for public service providers and utilization of the health card,[117] which suggests that the health cards have no effect beyond the demand-side inducement. The authors then suggest that "a stronger link between provision of services and budget would likely have improved the targeting to the poor" (Pradhan et al. 2007, 24).

Based on this discussion, there seems to be some indication that a combination of supply-side and demand-side strategies may be important when trying to reap the benefits of UHC schemes. This conclusion seems to be consistent with the multidimensional nature of access problems; access/utilization, financial protection and health status all depend critically on much more than just affordability (and a reduction in user fees). The combination of supply- and demand-side interventions may mirror the fact that multiple interventions can simultaneously tackle several distinct dimensions of the problem. This is an issue that clearly should be explored further; however, it seems clear that only improving affordability (what most demand-side interventions do) may not be enough to achieve an impact.

Purchaser/provider split. Regarding the purchaser-provider split, no clear evidence emerges from our evidence base. In some cases, the evidence does seem to suggest that the improvement of purchasing decisions might explain some of the results. For example, Yip et al. (2008) argue that the positive results of NMCS on outpatient utilization "are due to a combination of both the demand- and supply-side interventions. […] On the supply side, de-linking village doctors' income from revenues generated from selling drugs, tying village doctors' income to quality of services, introducing bulk purchasing for drugs and the use of essential drug list, and frequent audit of drug prescriptions from the RMHC fund office, have resulted in improved quality, reductions in drug prices and use of inappropriate drugs" (Yip et al. 2008, 21). Similarly, Gertler et al. (2011) find positive effects of Argentina's Plan Nacer on utilization and health status outcomes for pregnant women and newborn children, and on quality-of-care indicators (for prenatal care), and the introduction of innovative pay-for-performance mechanisms have played an important role in increasing utilization indicators. The former are examples of supply-side interventions that improved the purchasing function, which in turn might have been important for the positive impact of the schemes. Not much can be said, however, on a more general level, and more research is needed to better understand how UHC scheme variations regarding the management of the purchasing function may be influencing the results.

Furthermore, as shown in the previous section, it is not always clear whether a scheme operates with a purchaser-provider split. There are schemes that theoretically aim to split the purchaser and the providers, but in reality the operation resembles a no-split arrangement; similarly, there are other schemes that have a purchaser/provider split, but the purchasing function does not seem to improve as a result. The examples above might raise the same issue; although Yip et al. (2008) and Gertler et al. (2011) describe supply-side interventions that improved purchasing decisions

[117] "Service providers were reimbursed using a lump sum transfer based on the number of health cards distributed to their area of influence. As a result, serving a health card owner did not result in a direct financial reward to the service provider" (Pradhan et al. 2007, 23).

and might have improved the results, whether those schemes rely on a purchaser/provider split[118] is not clear.

Covering costs and ex-post moral hazard. The common characteristic among the schemes in this review is some form of coverage of the direct costs of using health care that ultimately translates into a reduction of the price of health care for the user. Economists have long argued that such a price reduction may sometimes lead to an overuse of health services—the so-called ex-post moral hazard effect[119]—which may be inefficient and a loss of welfare for the society (Arrow 1963; Feldstein 1973; Pauly 1968; Zweifel and Manning 2000). Note, however, that not every increase in utilization can be classified as a moral hazard problem nor is it necessarily welfare decreasing. There are three reasons: first, the price reduction produces a wealth effect that may increase utilization, even though there is no moral hazard at all (de Meza 1983); second, under some circumstances the optimal level of moral hazard may be positive (Zweifel and Manning 2000); and third, there is a welfare gain when the price reduction increases the utilization of health services that otherwise would have been unaffordable (Nyman 1999). Thus, an increase in utilization is not necessarily a welfare-decreasing moral hazard effect, but neither is it always an improvement in access leading to a welfare gain.

Given that the evidence reviewed here indicates that the UHC schemes usually increase the use of health care, it is worth questioning whether such an increase is a welfare-improving or a welfare-decreasing moral hazard effect. What does the evidence say about this question? We screened the literature to identify those studies that provide insight on this question. The overwhelming majority do not even discuss the issue, only a few address the question in the empirical strategy, and several others discuss the issue but do not provide quantitative evidence.

Nyman and Barleen (2005) find that supplemental health insurance in Brazil is welfare increasing because the gains from health insurance outweigh the inefficient moral hazard spending. Van Dalen (2006) says that his results do not support the hypothesis of large moral hazard effects of health insurance in China. Several studies seem "to equate moral hazard to the effect of insurance on medical care utilization" (Wagstaff and Pradhan 2005, 1), and when they find an increase in utilization, they tend to say that there is evidence of moral hazard. However, most of them in the discussion argue that although moral hazard usually has a negative connotation, in their case that result may be desirable given the context of the evaluation (see, for example, Jowett, Deolalikar, and Martinsson [2004]).

Although hard evidence on this issue is scarce, the discussion in the literature reviewed here points to the same answer as the question above; most of the studies either explicitly state—or at least imply—that the increase in utilization is welfare improving, mostly "given [the] high levels of unmet health needs in low-income countries, increased consumption is a desirable policy goal" (Jowett, Deolalikar, and Martinsson 2004, 2). Other authors have elaborated even further on why

[118] For example, Plan Nacer in Argentina is a publicly funded and operated scheme that provides additional resources to the provincial health budgets; the additional resources are allocated as 60 percent on a capitation basis and 40 percent by means of the pay-for-performance model. Provinces allocate budgets and operate the providers, and although the pay-for-performance model implies some constraints in provider financing, the split between purchaser and provider is not completely clear.

[119] There is also an ex-ante moral effect, which is a reduction in the use of preventive services.

the increases in utilization in developing countries should not be necessarily viewed as undesirable moral hazard:

> *"Standard economic analyses of health insurance (and concerns about ex post moral hazard) may require modification in developing country settings for at least three reasons, however. First, in the presence of significant credit constraints, medical care use absent insurance may be inefficiently low (Pitt and Khandker 1998, Morduch 1999). Second, the alignment between patient and provider incentives in developing countries is notoriously poor (estimates of absenteeism rates among health care professionals in South Asia range from 25% to 75%, for example) (Chaudhury and Hammer 2004, Duflo, Banerjee, and Deaton 2004). Third, in environments with highly prevalent infectious diseases, there may be large positive externalities associated with the use of some services – in particular, preventive services. Under use and misuse are therefore sources of considerable inefficiency as well (WHO Commission on Macroeconomics and Health 2001, Black, Morris, and Bryce 2003)"* (Miller, Pinto, and Vera-Hernández 2009, 1).

The discussion above is certainly relevant for the UHC movement; UHC aims to improve access to health care, and one of the key strategies to achieve that goal is to reduce or eliminate direct payments, but simultaneously it also creates the risk of moral hazard, an inefficient overuse of health care, and a loss of welfare. Paradoxically, the typical "solutions to counteract moral hazard behavior are based on maintaining some level of co-payments" (Carrin and James 2004, 26). Consequently, this point should certainly be a puzzling issue for policy makers: how much and for what services to reduce direct payments to improve access without promoting an inefficient overuse of health care?

Although in our literature review there is no hard evidence on this issue, most authors seem to agree that in low- and middle-income countries the risk of moral hazard is of less importance than the concerns about access to health care. Accordingly, the increases in utilization as a result of the reduction in the price of health care are typically perceived as welfare improving.

Value for money. Most of the issues discussed in this section are related to a major concern for policy makers: how to maximize the gains of the money invested in UHC and how to better spend the country's money for health. We have screened the literature to identify the studies providing explicit advice in this respect. Unfortunately, studies do not often address this issue in depth. From our point of view, only four studies discuss the issue thoroughly.[120] This is hardly surprising given that the majority of studies only evaluate the impact of a UHC scheme *as a whole* and, therefore, do not have the appropriate information to thoroughly analyze the value for the money invested in the scheme and how to make it greater. Nevertheless, some issues mentioned by our evidence base are highlighted in what follows.

[120] Probably the most useful studies to discuss the value for money of the UHC schemes are those from China (NCMS versus RMHC), although in explaining the reasons for success or failure of each of the schemes, different authors highlight different design features. The studies by Hidayat et al. (2004) or Ekman (2007b) are worth reading on this issue.

The problems that have to be tackled to improve outcomes such as access, financial protection, and health status are multidimensional. Therefore, the UHC policy interventions must follow suit and tackle the different problems simultaneously. Although reducing direct payments is probably a necessary condition, it is certainly not a sufficient condition to improve outcomes; it is equally important to decide what is being purchased (benefit design, or what is being covered), how costs are covered,[121] how health care is paid for,[122] and how these features interplay with the population's needs. Investing the money in only one of the problems (say, covering costs to improve affordability) and ignoring other problems (for example, not tackling perceived poor quality) almost certainly will not maximize value for money. This is what may have happened to health insurance for the informal sector in Nicaragua[123] or to the NCMS in China.[124]

Another relevant point in discussing value for money of UHC schemes is targeting. As has been shown, the worse-off reap greater benefits in the majority of the schemes evaluated by the literature in this review. Furthermore, the impact frequently diminishes as the socioeconomic status of the beneficiaries improves. This suggests that targeting the worse-off may be a useful strategy to improve value for money, as long as the costs of targeting the poor do not exceed the greater marginal benefits.

[121] Zero or a positive level of direct payments, copayments, deductibles, coverage up to a cap.
[122] Provider payment mechanisms and the context and incentives for quality and efficiency.
[123] "Ultimately, while the INSS [the Nicaraguan Social Security Institute] program aimed at providing greater accessibility to informal sector workers by bringing the enrolment and payments processes closer to the physical location of these workers (via MFIs [microfinance institutions]) results from this study indicate that the Nicaraguan government did not succeed in creating a sustainable health insurance program, largely because convenience and quality of care were not adequately addressed" (Thornton et al. 2010, 201).
[124] Although differing in what they emphasize, Wagstaff et al. (2009), Yip et al. (2008), and Yip and Hsiao (2009) argue that the unsatisfactory results of the NCMS may be at least partly explained by the provider payment mechanisms ("*fee-for-service … that strongly encourages demand shifting to drugs and high-tech care on which the margins are higher*" [Wagstaff et al. 2009, 17]) and the inadequacy of the coverage for the disease profile and health expenditure pattern of the population.

Table 6.5 Discussion of Results Summary

	Author / Title	Discussion of Results
Argentina	Gertler et al. (2011) "Impact Evaluation of Maternal Child Provincial Health Investment Project in Argentina – Plan Nacer"	The authors do not discuss, in detail, the design features that might have been helpful in achieving the results found in their study. However, in describing the program, the authors highlight the definition of a list of prioritized interventions for a target population groups, covered with public funds and the financing model that includes resources distributed according to the affiliation of the eligible population and a fraction given according by the performance on selected indicators. Regarding the impacts on health status, the authors hypothesize that the improvements might have been achieved by means of (a) increased utilization and improved quality of prenatal care, and (b) improvements in the quality of care at time of delivery. The authors note, however, that the results indicate that the channel is probably the former and not the latter.
Bangladesh	Abdullah H. Baqui et al. (2008) "Effect of Community-based Newborn-care Intervention Package Implemented through Two Service-delivery Strategies in Sylhet District, Bangladesh: A Cluster-randomized Controlled Trial"	The authors analyzed the impact of two different interventions (household and community) aimed at improving newborn health status by improving care-seeking behavior (for prenatal and delivery care). Those interventions were concurrent with efforts to improve the quality of services and the availability of essential medications for treatment of neonatal infections at government hospitals. Although both household and community interventions show improvements in outputs (such as a clean cord-cutting instrument used, first bath delayed until at least the third day, and breastfeeding initiated within one hour of birth), only the household intervention actually improved the outcome of interest: neonatal mortality. The authors argue that "An intensive implementation might be needed for areas with high poverty, poor availability and access to health services, and a general resistance in taking newborns and postpartum mothers outside of the home for treatment" (Baqui et al. 2008, 1943), suggesting that for such adverse conditions, the traditional interventions (reducing or eliminating direct payments) and even community interventions might not be enough to improve health status indicators.
Bangladesh	Nguyen et al. (2012) "Encouraging Maternal Health Service Utilization: An Evaluation of the Bangladesh Voucher Program"	"This evaluation tests the net impact of a multifaceted program. The free voucher-covered services, the cash incentives and gift box which effectively act as conditional cash transfers to the women, the financial incentives to the providers, the encouragement and information on safe delivery provided by voucher distributors, the approval from the women's families, and the high visibility of the program among different stakeholders may have all contributed to the program's early success. As such, it is not possible to conclude that removing the financial barriers to services alone would increase utilization as observed here" (Nguyen et al. 2012, 995). In the same manner, but acknowledging an external validity limitation of the study, the authors argue that the relatively high density of EOC facilities may have been important for the positive impacts and, therefore, the program's effects may not be as large in other areas. Finally, regarding the limited influence of the program on the C-section rate, the authors argue that it "may reflect the close monitoring of the C-section rate to avoid unnecessary surgical delivery."

	Author / Title	Discussion of Results
Burkina Faso	Parmar et al. (2011) "Does Community-Based Health Insurance Protect Household Assets? Evidence from Rural Africa"	Based on the study's results, the authors hypothesize that greater financial protection effects of CBHI in Burkina Faso may be observed when facing economic or health difficulties. The authors find a significant protective effect of CBHI on household assets, and highlight the role of a comprehensive benefits package with minimum exclusions and no copayments in achieving such impacts. The authors suggest that the lack of impact found in similar schemes might have been the result of less generous benefits (particularly higher copayments). The authors also emphasize the importance of the highly subsidized insurance premium that "was set not to cover the cost of providing CBHI but was fixed at what was considered to be affordable in the community." Finally, the authors underline external funding as an enabling factor that made the premium subsidization (a feature common to African contexts) possible.
China	Wagstaff and Yu (2007) "Do Health Sector Reforms have their Intended Impacts? The World Bank's Health VIII Project in Gansu Province, China"	According to the authors, the reduction in out-of-pocket payments, catastrophic expenditures, and impoverishment were not only the result of downward pressure on spending through supply-side interventions (treatment protocols, essential drug lists, two-way referrals), but also on demand-side interventions (the Medical Financial Assistance [MFA] that was targeted to the poor and included a basic package of maternal and child health interventions, coverage for 70% of the costs of services and drugs delivered at village level, 65% of outpatient and inpatient costs at the township level, and 60% of costs at the county level and catastrophic inpatient expenses exceeding a certain amount per inpatient episode). From the authors' perspective, it is the combination of interventions that were critical for achieving the observed impacts, and although they explicitly assert that the MFA cannot be credited for all the effect, they remark on the significant reductions in out-of-pocket payments that were found even "without a move away from fee-for-service, and without a change in the price schedule that allows providers to make profits on drugs and high-tech care (but not on 'basic' care) and hence encourages them to try to shift demand to these more lucrative services" (Wagstaff and Yu 2007, 531).
China	Yip et al. (2008) "The Impact of Rural Mutual Health Care (RMHC) on Access to Care: Evaluation of a Social Experiment in Rural China"	The authors argue that the increase in outpatient utilization was achieved by the combination of demand- and supply-side interventions in the RMHC. On the demand-side, mainly a reduction in cost due to a partial reimbursement seems to have increased outpatient utilization. On the supply side, "de-linking village doctors' income from revenues generated from selling drugs, tying village doctors' income to quality of services, introducing bulk purchasing for drugs and the use of an essential drug list, and frequent audit of drug prescriptions from the RMHC fund office, have resulted in improved quality, reductions in drug prices and use of inappropriate drugs" (p. 21). According to the authors, such supply-side interventions are probably responsible for the benefits received by nonenrollees (spillover effects). The authors argue that the little impact found on another scheme (NCMS) is not surprising because it involves only a limited reduction in the economic barriers to access of care. For outpatient care, the savings in the individual account are rather small relative to the cost of outpatient care, and high deductibles for inpatient care imply that just a few hospitalizations qualify for reimbursement.

	Author / Title	Discussion of Results
China	Wagstaff and Lindelow (2008) "Can Insurance Increase Financial Risk? The Curious Case of Health Insurance in China"	The authors present evidence that suggests that the increase in out-of-pocket expenditures and financial risk might be explained by two mechanisms of insurance: (a) increased utilization by making people "more inclined to seek care when they fall sick," and (b) "people more likely to move up the provider 'ladder': preferring township health centers (THCs) to village clinics, and hospitals to THCs" (p. 1003). The first effect might come as a result of reduced financial barriers brought by insurance, and the second effect may be related to the supply-side structure and regulation in China. Besides weak systems for monitoring and enforcing quality standards (which allows providers to "exploit their informational advantage and take the opportunity of insurance coverage to deliver expensive medical care that the individual would not have chosen had he been fully aware of the magnitude of the additional health benefits and additional out-of-pocket expenses" [p. 1003]), "the government-set schedules for fees and medicines provide physicians with a strong incentive to favor high-tech care over basic care. For basic interventions, the government has set the price below cost so as to make them affordable even to fairly poor patients, while more sophisticated interventions are priced above cost to enable providers to make profits on them in the hope that providers will use these profits to cross-subsidize the delivery of basic interventions. In practice, and contrary to the outcome hoped for by the government, the price structure encourages providers to supply sophisticated care wherever possible, by shifting demand from low-margin basic services to high-margin high-tech care and drugs. Unsurprisingly, even low-level facilities have acquired sophisticated medical equipment, and there is evidence the care the system delivers is more costly and more sophisticated than is medically necessary" (Wagstaff and Lindelow 2008, 991).
China	Wagstaff et al. (2009) "Extending Health Insurance to the Rural Population: An Impact Evaluation of China's NCMS (New Cooperative Medical Scheme)"	According to the authors, out-of-pocket spending was not reduced, partly because of the increase in utilization. Although they find variation across counties, the explanation "does not appear to be the size of the NCMS budget or the types of services that are reimbursed by the scheme" (p. 16). The authors argue that the adverse results found on financial protection might lie on the supply-side, given that the providers are "paid by fee-for-service and face a fee schedule that strongly encourages demand shifting to drugs and high-tech care on which the margins are higher" (p.17). Finally, the authors argue that in spite of being of considerable policy interest, the study can provide only limited information on how the impact varies with design and implementation features, and also point out some external validity problems.
China	Wang et al. (2009) "The Impact of Rural Mutual Health Care on Health Status: Evaluation of a Social Experiment in rural China"	The authors highlight that the intervention includes a demand-side risk-pooling intervention, but also supply-side efficiency and quality improvements. Whereas the demand-side intervention reduced the financial barriers to health care, the supply-side intervention increased the cost-effectiveness of the delivery system. The authors underline the importance of supply-side interventions to maximize health outcomes with limited resources, suggesting that demand-side interventions alone might not be enough. The authors also suggest that the incentives to utilize health care at the onset of the illness (first-dollar coverage policy) could have helped prevent catastrophic illnesses, and argue that other schemes that cover only hospital expenses might have less effects because few people can benefit (only those hospitalized, about 3 to 6% of the population). Finally, the authors note as a limitation of their study that they could not compare the scheme against alternative schemes, so they cannot know if this scheme's recipe is the optimal one or if there are others that perform better with the same resources.

	Author / Title	Discussion of Results
China	Yip and Hsiao (2009) "Non-evidence-based policy: How Effective is China's New Cooperative Medical Scheme in Reducing Medical Impoverishment?"	The authors find that the NCMS modality—named Rural Mutual Health Care (RMHC)—is more effective in preventing impoverishment than the prevailing NCMS model that combines medical savings accounts for outpatient care with high-deductible catastrophic hospital insurance (MSA/Catastrophic). The two models have similar premiums and the key difference between the RMHC and the MSA/Catastrophic model lies in the benefits design; the prevailing model covers inpatient hospital expenses above a deductible and outpatient care with the resources put into the MSA. The RMHC covers primary care, hospital services, and drugs with no deductible but up to a ceiling. Deductibles in the prevailing model are typically high and the resources put into the MSA relatively small. The RMHC has no deductibles, but the ceilings are considerably lower. The authors argue that the epidemiological profile of the population and the differences in the schemes' design (benefits) might explain the result; 40% of the households in their study have members with chronic conditions who make frequent visits and routinely have to pay for medications. Such expenses do not qualify for reimbursement under the MSA/Catastrophic model, and the proportion of costs that can be covered using the MSA is small, and therefore the greater part of the costs must be borne by the households, which frequently leads to impoverishment. The RHMC covers most of those costs and provides better financial protection in this particular context. In this regard, it is remarkable that the "RMHC was designed based on the community's epidemiological profile and villagers' preferences regarding benefit packages" (Yip andHsiao 2009, 203).
Colombia	Trujillo (2003) "Medical Care Use and Selection in a Social Health Insurance with an Equalization Fund: Evidence from Colombia"	The author highlights the time of implementation of the reform might have been influential in the results. Furthermore, quality of care and differences in quality across regions and providers might also influence the results; however, the author was not able to further explore this point due to data limitations.
Colombia	Trujillo et al. (2005) "The Impact of Subsidized Health Insurance for the Poor: Evaluating the Colombian Experience"	The authors focus the discussion mainly on the demand-side government subsidy and the targeting of the poor through a proxy means test, arguing that the targeting mechanism is successful in reaching the poor, and the government subsidies allow those targeted to join a scheme.
Colombia	Giedion, Díaz et al. (2007) "The Impact of Subsidized Health Insurance on Access, Utilization and Health Status: The Case of Colombia"	The authors suggest that subsidized health insurance in Colombia benefits the enrollees through mechanisms that go beyond the reduction of financial barriers. The authors find positive impacts on immunization "despite the fact that immunization is provided for free in public establishments irrespective of individuals' insurance status" (p. 103). Furthermore, the authors argue that the positive impacts on access indicators may be further improved by emphasizing supply-side interventions to improve quality of care. Regarding inconclusive results found on health status, the authors argue that in most of the outcome variables available to them, the expected impact of health insurance was minor, because the impact on those outcomes (mostly from women of fertile age and small children) are related to the access to health services that are provided by the health system for free to anyone irrespective of insurance status. The authors also highlight the need to generate more and better data to overcome two important limitations faced in their study: (a) the bidirectional causality between health insurance and health status, and (b) the appropriate selection of outcomes, to analyze those that can reasonably be affected by health insurance.
Costa Rica	Dow and Schmeer (2003) "Health insurance and child mortality in Costa Rica"	"It is striking to find a lack of apparent insurance effects even in a setting such as Costa Rica, where government commitment helped to funnel the insurance-induced health care demand into clinic visits rather than arguably less cost-effective inpatient care" (p. 985).

	Author / Title	Discussion of Results
Georgia	Bauhoff et al. (2010) "The Impact of Medical Insurance for the Poor in Georgia: A Regression Discontinuity Approach"	According to the authors, a key obstacle to further reducing out-of-pocket expenditures is the exclusion of medicines from the benefits package, an issue that might be particularly important because medicine expense accounts for the largest share of out-of-pocket expenditure in the country. Obstacles in the program implementation process might explain the negligible impact found in utilization outcomes. Obstacles include eligible people may not be aware of the program, others did not receive the vouchers to affiliate to the insurance company, others did not receive the contract, and many had limited knowledge of the benefits. The authors also stressed that although financial barriers might have been reduced, there is evidence that under-the-table payments remain common, and hence the scheme does not tackle other major financial barrier that limit its effects. The short implementation period is stressed as a possible cause for moderate impacts, taking into account that it may take time for beneficiaries to learn of their benefits, and particularly to understand that long-standing payments at point of service are no longer commonplace. The perceived quality of care or access restrictions imposed by insurance companies are also discussed as possible causes for moderate impacts of the scheme.
Mexico	King et al. (2009) "Public Policy for the Poor? A Randomized Assessment of the Mexican Universal Health Insurance Program"	The authors point out that "although Seguro Popular is unprecedented in scope, we could only test the effects of the program as a whole rather than each component" (p. 1454). Nevertheless, in the discussion the authors highlight the stewardship model and the immediate reduction of price as success factors in reducing out-of-pocket and catastrophic expenditures, especially in the poorest individuals. Regarding the negligible impacts found on utilization outcomes and on out-of-pocket expenses for medications, the authors explain that it might be the result of the short evaluation period and not necessarily that the scheme does not have impact at all. Furthermore, the authors indicate some implementation issues that might be influential in the results found, such as the complex administrative actions required (for example, open bid to purchase medications, the hiring and training of medical staff, and the accreditation of health facilities), or the lack of awareness of the benefits (and the enrolment itself) among those participating in the Oportunidades antipoverty program who were affiliated automatically. The authors also point out external validity issues due to the experimental nature of the study.
Mexico	Galarraga et al. (2010) "Health Insurance for the Poor: Impact on Catastrophic and Out-of-pocket Health Expenditures in Mexico"	The authors assert that the length of exposure to the program and the quality of services might influence the results. They do not, however, have the data to explore the role of time of exposure or possible heterogeneous effects related with such variable.
Nicaragua	Thornton et al. (2010) "Social Security Health Insurance for the Informal Sector in Nicaragua: A Randomized Evaluation"	The authors suggest that the implementation of the program might have prevented greater impacts. Although the program was designed to reduce financial barriers to access and increase quality services, the qualitative information indicates that both factors were still important to the impact. The authors also highlight that there are low-cost alternatives to access health care (public facilities and also some private), which might also explain why the program does not show an overall impact on out-of-pocket expenditures or utilization.

	Author / Title	Discussion of Results
Peru	Díaz and Jaramillo (2009) "Evaluating Interventions to Reduce Maternal Mortality: Evidence from Peru's PARSalud Program"	According to the authors, the favorable results of the scheme on the reduction in postpartum hemorrhage are linked to the increased use of oxytocin brought by the program, since the clinical studies have shown that this treatment is more effective than the alternative drug that was used (metergin), which also controls bleeding but has a much slower effect. The increase in the number of deliveries for which oxytocin was used must be related to the training component of the intervention, given that the effect of infrastructure investment is negligible or even negative. Furthermore, the authors find that different type of training leads to different effects (training in perinatal technology yields positive effects, but in obstetric emergencies it yields negative effects; training medical doctors and obstetricians has positive effects, but training technicians has negative effects). No clear explanations are available for these differences.
Philippines	Quimbo et al. (2010) "Evidence of a Causal Link between Health Outcomes, Insurance Coverage, and a Policy to Expand Access: Experimental Data from Children in the Philippines"	The authors suggest that the observed impacts of the study are driven by improvements in the demand-side financial protection resulting from the scheme. The authors found no immediate impacts on at-discharge health status indicators, but found a significant impact on post-discharge health status indicators. Hence, there does not seem to be a supply-side difference (for example, "clinicians will not and do not differentially—prematurely—discharge uninsured patients" [p. 626], and "discharge decision is based on a physician's clinical assessment" [p. 626] and "on the observation that a patient has attained the same minimum level of health status" [p.626]). The better trajectory to health recovery among people in the intervention sites is interpreted by the authors as a result of better financial protection that prevents borrowing, which in turn implies an ability to protect outpatient medical care, increases the likelihood of treatment completion, and improves parental support and more food consumption. The study relies on a site-randomization design, in which the "intervention" involved an increase in enrolment and expanded benefits. The authors argue that it would be important to decompose the impacts between enrolment and benefits, but due to data limitations this was not possible. Nevertheless, the authors note that anecdotal evidence seems to suggest that the enrolment effect should be larger than the increased benefits effect.
Vietnam	Wagstaff (2010) "Estimating Health Insurance Impacts under Unobserved Heterogeneity: The Case of Vietnam's Health Care Fund for the Poor"	Regarding the negligible impact on utilization, the authors argue that "The limited impact on use of services may reflect the fact that those covered by the program face multiple non-price constraints—the inaccessibility of facilities likely being the most pronounced one—which insurance does not remove" (p.206), and also that "it may require a period of time during which the public establishes that the program does indeed lower out-of-pocket spending before people begin to alter their care-seeking behavior" (p. 206). Concerning the sizable reduction in out-of-pocket spending, the authors highlight the role that the targeting of the program may have played, which is described by the authors as "impressive," given that it is highly progressive (concentration index of -0.5).

Note: Studies are first ordered alphabetically by country and then by year of publication.

7. Conclusions and recommendations

This review indicates that universal health coverage (UHC) interventions in low- and middle-income countries improve access to health care. It also shows, though less convincingly, that UHC often has a positive effect on financial protection, and that, in some cases it seems to have a positive impact on health status.

The review also shows, however, that the effect of UHC schemes on access, financial protection, and health status varies across contexts, UHC scheme design, and UHC scheme implementation processes. Unfortunately, in a majority of cases, evidence continues to be scarce and is not conclusive on the impact of specific UHC design features on their intended outcomes. A closer look at UHC schemes and available evidence does highlight some implications for both policy and future UHC research.

Regarding UHC design features, this review shows that there are several common features across the countries and regions such as the coexistence of the schemes, the heterogeneity in design and organization, a widespread effort to include the poor in UHC schemes—at least one scheme in most countries—and the prevalence of mixed financing sources (contributions plus taxes).

Our findings are somewhat similar to what other recent reviews have found. Spaan et al. (2012) have published a systematic literature review on the impact of health insurance in Africa and Asia and they find that "There is, however, strong evidence that CBHI and SHI provide financial protection for their members in terms of reducing their out-of-pocket expenditures, and that they improve utilization of inpatient and outpatient services" (Spaan et al. 2012, 687). This coincides with what we found, although we are a bit more skeptical about the positive impact on financial protection because, as both Spaan et al. (2012) and we found, the evidence available shows a favorable impact only on out-of-pocket expenditures, and, as discussed in section 6.2, out-of-pocket expenditures and related measures are a partial and imperfect measure of financial protection.

Moreno-Serra and Smith (2012) review the most robust evidence on the subject to try to answer the following question: Does progress toward universal health coverage improve population health? The authors find that expansions in coverage improve access to necessary care and "normally lead to better population outcomes" (Moreno-Serra and Smith 2012, 920), however, the authors highlight that there are major data and methodological limitations that need to be tackled by future research to better understand the link between coverage and health outcomes and the specific factors driving the effectiveness (or the lack of it) of universal health coverage efforts.

7.1 Policy implications

7.1.1 Affordability is important but may not be enough

Improving the affordability of health services has an effect on access and on financial protection. A large number of studies reviewed evaluate interventions aimed at improving access to health services primarily by improving their affordability. Although improving the affordability of services was often achieved by UHC schemes, improvement in affordability did not always translate into commensurate improvements to access. Evidence suggests that for greater effects of

UHC schemes on improved access, a more holistic approach to the dimensions of access needs to be understood and incorporated in the intervention's design. In designing UHC policies to improve access, interventions to improve affordability are probably necessary, but policy makers should also carefully assess the role of other dimensions of access and design complementary interventions accordingly.

Many of the studies reviewed here also evaluate interventions aimed at improving financial protection by way of increased health service affordability. In some cases, improved affordability reduced out-of-pocket expenditures. In other cases, however, expenditures on health care have been seen to increase because of increased utilization of services that are due to lower health care costs. In addition, sometimes improving affordability by eliminating user fees is not enough because other major sources of financial hardship may remain unchanged, such as transportation costs. In understanding the effects of UHC schemes on financial protection by way of increased affordability, it is important to understand the different causal pathways that give rise to results.

Overall, the evidence base suggests that interventions aimed at improving affordability are probably necessary for UHC schemes, but may not be sufficient to achieve the intended goals.

7.1.2 Target the poor, but keep an eye on the nonpoor

Most studies find that the impact of UHC schemes on access and financial protection is greater among the worse-off. UHC schemes are, hence, most likely a tool to improve welfare, given that the poor typically experience greater unsatisfied health care needs, and increases in utilization are more likely to be due to excess demand. This suggests a greater value for money of UHC schemes when targeting the worse-off.

However, evidence shows that it is important not to overlook the fact that the common UHC scheme designs are less effective for the nonpoor (the impacts are usually diminishing and sometimes even negligible). Hence, in extending coverage to the nonpoor, other dimensions of access may gain relative importance, and therefore different strategies may be needed. Also, in extending coverage to the nonpoor, it seems important to look at how moral hazard effects may change across income groups.

7.1.3 Benefits should be closely linked to population's needs

Much variation in what and how much is covered by UHC schemes makes it difficult to draw conclusions on how those factors affect desired outcomes. Nevertheless, the evidence suggests difficulties in achieving UHC-scheme-specific goals of improvements in financial protection and health status when careful attention it not paid to how benefits match the target population's needs. Currently, available evidence does not point to whether a "first-dollar" coverage policy is better than a "last-dollar" one, or if it is better to cover primary care than tertiary care.

The evidence does suggest that such policy recommendations that disregard a clear understanding of the population's needs may not always be sensible. Policy makers with a finite budget have to manage the tradeoffs between what and how much is covered and, in doing so, they should carefully examine the target population's needs by looking at indicators such as the population's epidemiological profile, major barriers to access, unsatisfied demand, major sources of financial hardship, and so forth.

7.1.4 Highly focused interventions can be a useful initial step toward UHC

A few studies that evaluate highly focused interventions, with clearly defined targets, usually find positive effects on access, financial protection, and even on health status outcomes. Although the evidence does not suggest steps for a transition from these targeted programs to broader population coverage, such interventions can be regarded as effective to tackle a country's priorities, and may be a useful initial step toward UHC or toward complementing a larger and established UHC policy. In light of this evidence, policy makers in each country could evaluate their health needs and priorities and assess the role that targeted interventions can play in their path toward UHC.

7.2 Implications for future evidence on UHC

7.2.1 Jointly designing and evaluating UHC

In the majority of the studies reviewed—with notable exceptions—a failure to involve evaluators from the start has led to weak evaluation designs needed to assess the impact of UHC schemes. Because of this, most evaluations are retrospective and do not use monitoring data. In addition, many studies do not clearly describe the theory of change behind the program, and the outcome selection seems to be driven by data availability rather than by the program's theory of change. Sometimes, the lack of an analysis based on the theory of change is the evaluator's fault, but in other cases, it is also the result of a lack of a theory of change and clearly defined targets at program design. This is especially evident (and particularly problematic) in evaluations assessing the impact of UHC schemes on health status, where many programs do not define specific health targets. Policy makers working toward UHC should involve evaluators early in the programs' design phase, not only to have a good evaluation, but also to encourage discussion that can help set clear and achievable UHC scheme objectives and targets.

7.2.2 Evidence needed, particularly beyond affordability-improving schemes

The best available evidence on UHC schemes is based on the experience of only a few countries (18), and the majority of the studies evaluate schemes whose main intervention aims to increase the purchasing power for health care. Although this high concentration on a few countries and scheme types may to some extent reflect the limitations of the search protocol used in this review, it also reveals at least partially, a scarcity of evidence on the impact of those other interventions and a scarcity of evidence from several countries working toward UHC. This scarcity of evidence might be related to difficulties in evaluating certain interventions, such as those expanding coverage or increasing resources for long-standing schemes. However, given that evaluation is the best way to learn whether interventions had the desired effects, efforts should be made to assess the impact on outcomes that are rarely homogeneous and, hence, likely to change with the expansion of existing policies.

7.2.3 A better understanding of the effects of UHC schemes on financial protection is needed

A better understanding of the effects of UHC on financial protection is needed to address several drawbacks of the current available evidence.

First, the reduction in out-of-pocket expenditures may sometimes be outweighed by the increase in expenditures due to increased utilization (income effect of the price reduction), which suggests that the lack of impact on typically used financial protection indicators does not necessarily imply a failure of the program being evaluated, given that this result might be explained—at least partly—by a desirable effect (increased utilization). Consequently, the impact on financial protection should be analyzed jointly with data on the changes in utilization (which several studies in the review do not do), and both researchers and policy makers should be very careful in reaching conclusions on the impact of a program on financial protection, particularly when the effect seems to be negative.

Second, studies usually use out-of-pocket expenditures or indicators based on these to evaluate the impact of UHC schemes on financial protection. However, the concept of out-of-pocket expenditures, as typically operationalized by such studies, only includes direct payments at the point of service. Only a few studies try to go beyond the use of direct payments, illustrating that the conclusions may change considerably when including other health-seeking related costs such as transportation. This suggests that the financial protection indicators that are typically used do not appropriately capture the affordability dimension of access, and other costs such as transportation are usually not tackled by the UHC interventions. The combination of inappropriate indicators and incomplete interventions may sometimes be the cause of the limited or even negligible impact of some UHC schemes on desired outcomes. It is important for policy makers and researchers to analyze the impact of UHC schemes on health-seeking related costs beyond those of direct payments. Research and policy should examine the relative importance of direct payments, transportation costs, treatment-related food consumption, costs associated with the allocation of time, and other economic effects of illness such as productivity and employment.

Third, only a couple of studies in the review go beyond the traditional financial protection indicators (based on expenditures) and try to look at other economic variables of the household (consumption, assets). This is an almost unexplored field in the impact evaluation of UHC schemes literature. It is also a particularly relevant topic given that those outcomes may provide a better understanding of how households financially cope with health events.

7.2.4 More and better evidence on the impact of health status

A few studies show that UHC schemes have the potential to improve health status, but evidencing such impact is particularly challenging. Besides the usual challenges for any impact evaluation, a few elements that are particularly relevant for identifying the impact on health status include (a) the identification of health outcome variables that are clearly affected by the intervention and/or related access indicators, (b) the allowance of a sufficient time lag between the intervention and the evaluation so that health impacts on selected outcomes can actually be produced, and (c) the adoption of an appropriate analytical strategy that carefully considers the program theory of change.

A scheme with specific health targets is not a requisite for the evaluation of the impact of UHC schemes on health outcomes. At least one study in the review found positive effects on health status outcomes when such targets were not defined by the program. However, it would certainly make it easier to evaluate health outcomes, and achieve them, if these were specified by the

program at onset. Programs that specify health outcomes are more likely to include specific interventions to improve such outcomes, hence making it easier to define causality. Furthermore, explicitly defining health outcomes and designing interventions that aim to achieve them are more likely to observe desired changes than those that do not.

7.2.5 Placebos often do not exist and the pervasiveness of spillover effects

There is virtually no country in the world where the lack of access to a UHC scheme is equivalent to a total lack of health services coverage. Different schemes within a UHC policy are often supplementary and sometimes overlapping. This raises serious challenges for evaluating the impact of UHC schemes. Despite the ambitious title of this review, the evidence available typically evaluates the impact of a subscheme within a broader UHC policy, using another subscheme to recreate the counterfactual. This is problematic because the impact of UHC policies goes beyond the impact of its subschemes, and therefore the evidence available does not really reveal the impact of a UHC policy. Furthermore, UHC usually involves large-scale interventions that may affect every component of the system and lead to a pervasiveness of spillover effects. These two factors would tend to underestimate the impact, raising several important questions. For example, How should the impact (causal effect) of a whole UHC policy be evaluated? How should the counterfactual be recreated when universal health coverage has been achieved? Will it ever be possible to evaluate the impact of UHC policies? These unanswered questions should be considered and debated by policy makers and evaluators in order to know what the effects of policy and evaluation efforts are in promoting, designing, implementing, and investing resources in UHC schemes.

7.2.6 Critical points needed to produce sound and useful evidence

Impact evaluations are useful to identify how the interventions are linked to results, establishing their causal relationship. However, most of the time impact evaluations do not say much about how the results are being achieved, and the evidence coming from such evaluations generally says what works but not why or how. Such is the case of this review, which shows that UHC generally improves access and, to some extent, financial protection, but leaves major gaps in knowledge on the specific design features and contextual variables that made such results possible. Therefore, impact evaluations should probably be vigorously pursued, not as isolated efforts but as part of a larger evaluation strategy that involves strong monitoring components and in-depth studies to better understand the process that leads to the impact. Based on the review, we conclude that the following factors are critical to producing sound and useful evidence:

- A deep knowledge and understanding of the intervention (goals, inputs, processes, outputs, outcomes)
- Isolating the causal relationship of interventions and downplaying the relevance of correlational studies claiming to evaluate the impact of policies
- Closely linking research design with the intervention (timing, outcome variables chosen according to the theory of change), ideally designing the evaluation concurrently with the design of the intervention
- Designing evaluations thought to answer useful questions for policy makers
- Recognizing and analyzing relevant heterogeneity of impact (due to context-specific variables or to relevant design features)
- Recognizing and tackling potential spillover effects

- Using reasonable data to estimate the impact
- Combining methods (qualitative methods, observational studies) and sources of information (monitoring data, case studies) in order to better understand why and how the impacts happen
- Thoroughly discussing evaluation results with other researchers and policy makers.

Annex 1 Advantages and Disadvantages of Impact Evaluation Methods

Nº	Method	Impact Evaluation of HI	Advantages	Disadvantages	Required Data	Score
1	Uncondi-tional means	Compares insured and uninsured individuals.	Simple.	Does not address the key issue of endogeneity.	Cross-sectional data.	2
2	Standard Regression Technique	Evaluating the size and significance of the health insurance coefficient.	Simple.	Imposes arbitrary functional form assumptions concerning the treatment effects and control variables. Regression methods commonly use the full sample, making individuals less comparable. Looks for predictors of outcomes instead of covariates of participation.	Cross-sectional data.	3
3	Propensity Score Matching	Compares insured individuals with matched/similar nonaffiliated individuals.	Eliminates the selection bias related to observable characteristics. Allows estimation of mean impacts without arbitrary assumptions about functional forms and error distributions.	Does not control for unobservable selection bias. A problem of a limited area of common support may exist.	Cross-sectional data.	7
4	Difference-in-differences	Based on comparison of changes in outcome variables between those with and those without HI.	Eliminates selection bias due to unobservable characteristics. Avoids the use of potentially misleading functional forms in constructing counterfactuals.	Assumes time-invariant selection bias. Does not control for time-variant unobservables.	Repeated cross-sectional or panel data.	10
5	Matched double difference	Based on matching insured individuals with similar uninsured individuals and observe changes in outcome variables over time.	Controls for observed and unobserved selection bias. Avoids the use of potentially misleading functional forms.	Assumes time-invariant selection bias. Does not control for time-variant unobservable characteristics.	Repeated cross-sectional or panel data.	13
6	RDA	Based on comparison of individuals across a cut-off point that determines treatment (HI) but is unrelated to outcomes. For example, proxy means test scores determining eligibility to health insurance.	Treatment (HI) depends on a known eligibility criteria (such as SISBEN) that follows a known rule.	Demanding data requirements. Provides only information on impact of participants close to the cut-off points (marginal impact). Does not control for unobservable characteristics determining program placement.	Cross-sectional data.	14
7	IV or two-stage model	Based on finding a source of variation of health insurance status that is not related to outcome variables and comparison of outcomes along this exogenous source of variation.	Corrects for endogeneity problems.	It is often hard to find an instrumental variable that substantially affects participation and is convincingly unrelated to outcome. Calculates the marginal effect of treatment.	Cross-sectional data.	14

Source: Giedion et al. 2007.
Note: HI = health insurance.

Annex 2 Complete List of Papers Reviewed

Country	Year	Author	Title
Afghanistan	2009	Rao et al. (2009)	"An Experiment with Community Health Funds in Afghanistan"
Argentina	2011	Gertler et al. (2011)	"Impact Evaluation of Maternal Child Provincial Health Investment Project in Argentina – Plan Nacer"
Bangladesh	2008	Baqui et al. (2008)	"Effect of Community-based Newborn-care Intervention Package Implemented through Two Service-delivery Strategies in Sylhet District, Bangladesh: A Cluster-randomised Controlled Trial"
Bangladesh	2009	Rahman, Rob, and Kibria (2009)	"Implementation of the Maternal Health Financial Scheme in Rural Bangladesh"
Bangladesh	2011	Ahmed and Khan (2011)	"Is Demand-side Financing Equity Enhancing? Lessons from a Maternal Health Voucher Scheme in Bangladesh"
Bangladesh	2011	Hamid et al. (2011)	"Evaluating the Health Effects of Micro Health Insurance Placement: Evidence from Bangladesh"
Bangladesh	2012	Nguyen et al. (2012)	"Encouraging Maternal Health Service Utilization: An Evaluation of the Bangladesh Voucher Program"
Brazil	2005	Nyman and Barleen (2005)	"The Effect of Supplemental Private Health Insurance on Health Care Purchases, Health, and Welfare in Brazil"
Bulgaria	2007	Short, Hadjiev, and Toneva (2007)	"On the Inequitable Impact of Universal Health Insurance: The Experience of Bulgaria in Transition"
Burkina Faso	2009	Gnawali et al. (2009)	"The Effect of Community-based Health Insurance on the Utilization of Modern Health Care Services: Evidence from Burkina Faso"
Burkina Faso	2011	Parmar et al. (2011)	"Does Community-Based Health Insurance Protect Household Assets? Evidence from Rural Africa"
Burkina Faso	2011	Robyn et al. (2011)	"Econometric Analysis to Evaluate the Effect of Community-based Health Insurance on Reducing Informal Self-care in Burkina Faso"
Cambodia	2010	Ir et al. (2010)	"Using Targeted Vouchers and Health Equity Funds to Improve Access to Skilled Birth Attendants for Poor Women: A Case Study in Three Rural Health Districts in Cambodia"
China	2003	Dong (2003)	"Health Financing Policies: Patient Care-seeking Behavior in Rural China"
China	2003	Y. Liu, Rao, and Hsiao (2003)	"Medical Expenditure and Rural Impoverishment in China"
China	2005	Wang, Yip, Zhang, Wang, and Hsiao (2005)	"Community-based Health Insurance in Poor Rural China: The Distribution of Net Benefits"
China	2006	G. G. Liu and Zhao (2006)	"Urban Employee Health Insurance Reform and the Impact on Out-of-pocket Payment in China"
China	2006	Van Dalen (2006)	"When Health Care Insurance Does Not Make a Difference – the Case of Health Care 'Made in China'"
China	2007	Wagstaff and Yu (2007)	"Do Health Sector Reforms have their Intended Impacts? The World Bank's Health VIII Project in Gansu Province, China"
China	2008	Wagstaff and Lindelow (2008)	"Can Insurance Increase Financial Risk? The Curious Case of Health Insurance in China"
China	2008	Yip et al. (2008)	"The Impact of Rural Mutual Health Care on Access to Care: Evaluation of a Social Experiment in Rural China"
China	2009	Lei and Lin (2009)	"The New Cooperative Medical Scheme in Rural China: Does More Coverage Mean More Service and Better health?"
China	2009	Wagstaff et al. (2009)	"Extending Health Insurance to the Rural Population: An Impact Evaluation of China's New Cooperative Medical Scheme"
China	2009	Wang et al. (2009)	"The Impact of Rural Mutual Health Care on Health Status: Evaluation of a Social Experiment in Rural China"
China	2009	Yip and Hsiao (2009)	"Non-evidence-based Policy: How Effective is China's New Cooperative Medical Scheme in Reducing Medical Impoverishment?"
China	2010	Chen and Jin (2010)	"Does Health Insurance Coverage Lead to Better Health and Educational Outcomes? Evidence from Rural China"
China	2012	Lu et al. (2012)	"Does China's Rural Cooperative Medical System Achieve its Goals? Evidence from the China Health Surveillance Baseline Survey in 2001"
Colombia	2001	Panopoulou (2001)	"Affiliation and the Demand for Health Care by the Poor in Colombia"

Country	Year	Author	Title
Colombia	2003	Trujillo (2003)	"Medical Care Use and Selection in a Social Health Insurance with an Equalization Fund: Evidence from Colombia"
Colombia	2005	Trujillo et al. (2005)	"The Impact of Subsidized Health Insurance for the Poor: Evaluating the Colombian Experience Using Propensity Score Matching"
Colombia	2007	Giedion, Díaz, et al. (2007)	"The Impact of Subsidized Health Insurance on Access, Utilization and Health Status: The Case of Colombia"
Colombia	2007	Giedion, Alfonso, et al. (2007)	"Measuring the Impact of Mandatory Health Insurance on Access and Utilization: The case of the Colombian Contributory Regime"
Colombia	2007	Ruiz, Amaya, and Venegas (2007)	"Progressive Segmented Health Insurance: Colombian Health Reform and Access to Health Services"
Colombia	2009	Flórez et al. (2009)	"Financial Protection of Health Insurance"
Colombia	2009	Miller et al. (2009)	"High-Powered Incentives in Developing Country Health Insurance: Evidence from Colombia's Régimen Subsidiado"
Costa Rica	2003	Dow and Schmeer (2003)	"Health Insurance and Child Mortality in Costa Rica"
Costa Rica	2003	Dow et al. (2003)	"Aggregation and Insurance Mortality Estimation"
Costa Rica	2011	Cercone, Pinder, Pacheco Jimenez, and Briceno (2011)	"Impact of Health Insurance on Access, Use, and Health Status in Costa Rica"
Ecuador	1999	Waters (1999)	"Measuring the Impact of Health Insurance with a Correction for Selection Bias—a Case Study of Ecuador"
Egypt	2001	Yip and Berman (2001)	"Targeted Health Insurance in a Low-income Country and its Impact on Access and Equity in Access: Egypt's School Health Insurance"
Ethiopia	2009	Admassie et al. (2009)	"Impact Evaluation of the Ethiopian Health Services Extension Program"
Georgia	2005	Gotsadze, Zoidze, and Vasadze (2005)	"Reform Strategies in Georgia and their Impact on Health Care Provision in Rural Areas: Evidence from a Household Survey"
Georgia	2008	Hou and Chao (2008)	"An Evaluation of the Initial Impact of the Medical Assistance Program for the Poor in Georgia"
Georgia	2010	Bauhoff et al. (2010)	"The Impact of Medical Insurance for the Poor in Georgia: A Regression Discontinuity Approach"
Ghana	2011	Chankova, Atim, and Hatt (2011)	"Ghana's National Health Insurance Scheme"
Ghana	2011	Nguyen, Rajkotia, and Wang (2011)	"The Financial Protection Effect of Ghana National Health Insurance Scheme: Evidence from a Study in Two Rural Districts"
India	2004	Gumber (2004)	"The Potential Role of Community Financing in India"
India	2004	Jakab et al. (2004)	"Analysis of Community Financing Using Household Surveys"
India	2004	M. Kent Ranson (2004)	"The SEWA Medical Insurance Fund in India"
India	2007	Sinha, Ranson, and Mills (2007)	"Protecting the Poor? The Distributional Impact of a Bundled Insurance Scheme"
India	2008	Baqui et al. (2008)	"NGO Facilitation of a Government Community-based Maternal and Neonatal Health Programme in Rural India: Improvements in Equity"
India	2010	Devadasan et al. (2010)	"Community Health Insurance in Gudalur, India, Increases Access to Hospital Care"
India	2010	Durairaj et al. (2010)	"Lessons Learned from a Community-based Medisave Experiment among Rural Women in the Indian State of Karnataka"
India	2010	Lim et al. (2010)	"India's Janani Suraksha Yojana, a Conditional Cash Transfer Programme to Increase Births in Health Facilities: An Impact Evaluation"
Indonesia	2001	Saadah, Pradhan, and Sparrow (2001)	"The Effectiveness of the Health Card as an Instrument to Ensure Access to Medical Care for the Poor during the Crisis"
Indonesia	2004	Hidayat et al. (2004)	"The Effects of Mandatory Health Insurance on Equity in Access to Outpatient Care in Indonesia"
Indonesia	2007	Pradhan et al. (2007)	"Did the Health Card Program Ensure Access to Medical Care for the Poor during Indonesia's Economic Crisis?"
Indonesia	2009	Johar (2009)	"The Impact of the Indonesian Health Card Program: A Matching Estimator Approach"

Country	Year	Author	Title
Indonesia	2010	Quayyum, Nadjib, Ensor, and Kurnia Sucahya (2010)	"Expenditure on Obstetric Care and the Protective Effect of Insurance on the Poor: Lessons from Two Indonesian Districts"
Indonesia	2011	Cuevas and Parker (2011)	"The Impact of Health Insurance on Use, Spending, and Health in Indonesia"
Jordan	2007	Ekman (2007b)	"The Impact of Health Insurance on Outpatient Utilization and Expenditure: Evidence from One Middle-income Country using National Household Survey Data"
Mali	2008	Franco et al. (2008)	"Effects of Mutual Health Organizations on use of Priority Health-care Services in Urban and Rrural Mali: A Case-control Study"
Mexico	2006	Pagán, Ross, Yau, and Polsky (2006)	"Self-medication and Health Insurance Coverage in Mexico"
Mexico	2007	Bleich, Cutler, Adams, Lozano, and Murray (2007)	"Impact of Insurance and Supply of Health Professionals on Coverage of Treatment for Hypertension in Mexico: Population-based Study"
Mexico	2007	Pagán, Puig, and Soldo (2007)	"Health Insurance Coverage and the Use of Preventive Services by Mexican Adults"
Mexico	2008	Maurer (2008)	"Assessing Horizontal Equity in Medication Treatment among Elderly Mexicans: which Socioeconomic Determinants Matter Most?"
Mexico	2009	Harris and Sosa-Rubi (2009)	"Impact of 'Seguro Popular' on Prenatal Visits in Mexico, 2002–2005: Latent Class Model of Count Data with a Discrete Endogenous Variable"
Mexico	2009	King et al. (2009)	"Public Policy for the Poor? A Randomised Assessment of the Mexican Universal Health Insurance Programme"
Mexico	2009	Sosa-Rubi et al. (2009)	"Heterogeneous Impact of the 'Seguro Popular' Program on the Uutilization of Obstetrical Services in Mexico, 2001–2006: A Multinomial Probit Model with a Discrete Endogenous Variable"
Mexico	2010	Galarraga et al. (2010)	"Health Insurance for the Poor: Impact on Catastrophic and Out-of-pocket Health Expenditures in Mexico"
Mexico	2010	van-Gameren (2010)	"Health Insurance and Use of Alternative Medicine in Mexico"
Mexico	2010	Zhang et al. (2010)	"Access to Health Care and Undiagnosed Diabetes along the United States-Mexico Border"
Mexico	2011	Barros (2011)	"Wealthier but not Much Healthier: Effects of a Health Insurance Program for the Poor in Mexico"
Mexico	2011	Garcia-Diaz and Sosa-Rub (2011)	"Analysis of the Distributional Impact of Out-of-pocket Health Payments: Evidence from a Public Health Insurance Program for the poor in Mexico"
Multicountry	2004	Carrin et al. (2004)	"Impact of Risk Sharing on the Attainment of Health System Goals"
Multicountry	2009	Wagstaff and Moreno-Serra (2009)	"Europe and Central Asia's Great Post-communist Social Health Insurance Experiment: Aggregate Impacts on Health Sector Outcomes"
Multicountry	2008	Chankova, Sulzbach, and Diop (2008)	"Impact of Mutual Health Organizations: Evidence from West Africa"
Multicountry	2008	Smith and Sulzbach (2008)	"Community-based Health Insurance and Access to Maternal Health Services: Evidence from Three West African Countries"
Namibia	2011	Gustafsson-Wright, Janssens, and Gaag (2011)	"The Inequitable Impact of Health Shocks on the Uninsured in Namibia"
Nicaragua	2006	Meuwissen, Gorter, and Knottnerus (2006)	"Impact of Accessible Sexual and Reproductive Health Care on Poor and Underserved Adolescents in Managua, Nicaragua: A Quasi-experimental Intervention Study"
Nicaragua	2010	Thornton et al. (2010)	"Social Security Health Insurance for the Informal Sector in Nicaragua: A Randomized Evaluation"
Nigeria	2008	Ibiwoye and A Adeleke (2008)	"Does National Health Insurance Promote Access to Quality Health Care? Evidence from Nigeria"
Pakistan	2011	Agha (2011)	"Impact of a Maternal Health Voucher Scheme on Institutional Delivery among Low-income Women in Pakistan"
Peru	2009	Díaz and Jaramillo (2009)	"Evaluating Interventions to Reduce Maternal Mortality: Evidence from Peru's PARSalud Programme"
Peru	2011	Bitrán, Muñóz, and Prieto (2011)	"Health Insurance and Access to Health Services, Health Services Use, and Health Status in Peru"

Country	Year	Author	Title
Philippines	2005	Dror et al. (2005)	"Field-based Evidence of Enhanced Healthcare Utilization among Persons Insured by Micro Health Insurance Units in Philippines"
Philippines	2009	Kraft et al. (2009)	"The Health and Cost Impact of Care Delay and the Experimental Impact of Insurance on Reducing Delays"
Philippines	2010	Quimbo et al. (2010)	"Evidence of a Causal Link between Health Outcomes, Insurance Coverage, and a Policy to Expand Access: Experimental Data from Children in the Philippines"
Rwanda	2004	Schneider and Diop (2004)	"Community-Based Health Insurance in Rwanda"
Rwanda	2010	Saksena, Fernandes Antunes, Xu, Musango, and Carrin (2010)	"Impact of Mutual Health Insurance on Access to Health Care and Financial Risk Protection in Rwanda: World Health Report (2010) Background Paper, No. 6"
Rwanda	2012	Dhillon et al. (2012)	"The Impact of Reducing Financial Barriers on Utilisation of a Primary Health Care Facility in Rwanda"
Senegal	2004	Jütting (2004)	"Financial Protection and Access to Health Care in Rural Areas of Senegal"
Thailand	2004	Supakankunti (2004)	"Impact of the Thailand Health Card"
Thailand	2007	Coronini-Cronberg, Laohasiriwong, and Gericke (2007)	"Health Care Utilisation under the 30-Baht Scheme among the Urban Poor in Mitrapap Slum, Khon Kaen, Thailand: A Cross-sectional Study"
Thailand	2007	Limwattananon, Tangcharoensathien, and Prakongsai (2007)	"Catastrophic and Poverty Impacts of Health Payments: Results from National Household Surveys in Thailand"
Thailand	2011	Panpiemras et al. (2011)	"Impact of Universal Health Care Coverage on Patient Demand for Health Care Services in Thailand"
Uganda	2010	Reinikka and Svensson (2010)	"Working for God? Evidence from a Change in Financing of Nonprofit Health Care Providers in Uganda"
Vietnam	2004	Jowett et al. (2004)	"Health Insurance and Treatment-seeking Behaviour: Evidence from a Low-income Country"
Vietnam	2005	Wagstaff and Pradhan (2005)	"Health Insurance Impacts on Health and Nonmedical Consumption in a Developing Country"
Vietnam	2006	Sepehri, Simpson, and Sarma (2006)	"The Influence of Health Insurance on Hospital Admission and Length of Stay—The Case of Vietnam"
Vietnam	2007	Axelson, Bales, Minh, Ekman, and Gerdtham (2009)	"Health Financing for the Poor Produces Promising Short-term Effects on Utilization and Out-of-pocket Expenditure: Evidence from Vietnam"
Vietnam	2007	Wagstaff (2007)	"Health Insurance for the Poor : Initial Impacts of Vietnam's Health Care Fund for the Poor"
Vietnam	2010	Wagstaff (2010)	"Estimating Health Insurance Impacts under Unobserved Heterogeneity: The Case of Vietnam's Health Care Fund for the Poor"
Vietnam	2012	Viet Cuong (2012)	"The Impact of Health Insurance for Children: Evidence from Vietnam"
Zambia	2007	Ekman (2007a)	"Catastrophic Health Payments and Health Insurance: Some Counterintuitive Evidence from one Low-income Country"

Source: Authors based on the results of the search strategy.
Note: Studies are first ordered alphabetically by country and then by year of publication, author and title.

Annex 3 UHC Schemes

	Background	S.	Target Population	Costs Covered	Services Covered	Collecting and Pooling	Purchasing	Delivering
Bangladesh	In Bangladesh, most supply-side health interventions failed to reach the poor. This led the government and researchers to look into the demand side of the problem. Nowadays, Not-for-profit nongovernmental development organizations (NGOs) are one of the major players in the field of health service provision in Bangladesh. These NGOs provide health services through micro health insurance (MHI) and on a fee-for-service basis. Even though many such programs are labeled "insurance," typically they do not embody a great deal of risk shifting. Bangladesh's health system consists of tax-financed government funding interventions, private health insurance (both mandatory and voluntary insurance), and OPP. In addition, there are NGOs and international development partners that work in rural areas offering primary health care services and health education. •NGO's Micro-finance health insurance (MHI).	MHI	Ultra-poor and other disadvantaged groups such as women or micro credit members. Membership is most of them is voluntary.	Most programs have a copayment of around 50% or more for services such as drugs, pathology, ultrasound tests, and surgeries.	Preventive, curative, rehabilitative, and promotional health services, where a greater emphasis is placed on improving maternal, neonatal, and child health, and on fighting communicable diseases and common health problems. Some organizations focus on other important public health issues such as HIV/AIDS, malaria, tuberculosis, vision care, and sanitation. MHI covers basic and preventive health services including immunization, family planning, consultation, and normal deliveries. Discounts are provided on medicine and pathology tests, where available. Benefits are explicitly defined.	External support from international organizations, member contributions, nonstate subsidies, donations, and cross subsidization from other development programs. Donors Funds. Resources are pooled at the micro insurance agency (typically focused on a geographic region).	Micro insurance company and provider are vertically integrated; hence, a formal contractual arrangement between the insurance company and the health care provider does not necessarily exist.	All the programs are examples of "provider" models of delivery, where the service provider and the insurer are one and the same entity.
Brazil	Brazil's health insurance system has been described as a "mix between a nominally comprehensive public system and a large and active private system." The Unified Health System (SUS) was established by the constitution on 1988 in order to support free universal health care in Brazil. The primary purpose of the SUS was to decentralize health policy down to the level of the state and municipality, with municipalities responsible for managing and providing primary health care services. The majority of public hospitals run by municipalities tend to be small facilities; larger hospitals are operated by the states and the largest teaching hospitals by the federal government. •Unified Health System (SUS) •Supplementary Health System (SHS)	SUS	All Brazilian habitants. However, the poor are explicitly prioritized for some efforts within the SUS, like the family health strategy.	No copayment required.	Inpatient care and a substantial portion of outpatient care. The package is explicitly defined in a list of primary care services and health procedures, according to health conditions and target population group.	The National Health Foundation transfers resources in five difference directions: to both the State Health Funds (SHF) and the Municipal Health Funds (MHF), which are responsible for consolidating resources from the different sources. Also, the NHF transfers resources to public and private hospitals, public and private health care providers, and to special health programs. The transfers to the municipalities rely on mechanisms to pay for production, while others pay for coverage on a per capita basis.	The SUS reimburses hospitals on a diagnosis basis for inpatient care, and clinics on an ex-post per capita basis for ambulatory care.	Contracted with a number of public, private, and philanthropic providers, including hospitals and clinics.
		SHS	Voluntary enrolment based on ability to pay	Inpatient care and catastrophic care. In general, however, the private insurers provide only limited coverage.	There are copayments, affiliation fees, and periodic payment for enrolment.	Insurance policies vary on financial reliability and quality: some insurers were profitable and offered "world class" care, and others offered care of dubious quality and were barely able to remain solvent.	Supplementary health insurance schemes pay providers, primarily on a fee-for-service basis according to contracted rates, as well as other payment mechanisms such as DRGs.	Services are delivered mainly in private facilities.

	Background	S.	Target Population	Costs Covered	Services Covered	Collecting and Pooling	Purchasing	Delivering
Cambodia	Since 2005, the Ministry of Health and the Belgian Technical Cooperation have implemented several health financing schemes, including the Health Equity Fund (HEF), vouchers, and performance-based contracting (PBC) to improve access to basic health services for the population, especially the poor. The management of the HEF scheme was entrusted to two NGOs, acting as a third-party purchaser. The Ministry of Health and the Belgian Technical operation initiated a voucher scheme in 2007 to complement the existing Health Equity Fund (HEF) scheme for improving access to safe delivery for poor women, alongside other strategies such as performance-based contracting and delivery incentive schemes. Both vouchers and HEFs constitute a demand-side financing mechanism that promotes access to priority public health services for the poor. At the end of 2007, the government introduced a delivery incentive scheme nationwide to boost deliveries in public health facilities. Through this scheme, midwives and other health personnel receive a government incentive of US$12.5 for each live birth attended in a referral. • Health equity found (HEF) Voucher scheme complementary to HEF (HEFC)	HEF	Poor and very poor population	Hospital user fees, payment for the cost of transportation to the health center or hospital, food allowance during the hospitalization, and funeral cost in the event of death.	According to the eligibility category (poor or very poor), patients receive a full or partial benefits package.			Public health centers
		HEFC	Poor pregnant women	Five detachable coupons that entitle the woman to free services at the health center (for three prenatal care visits, delivery, and one postnatal care visit) and transportation costs for five round trips between her home and the health center, and for referrals from the health center to the referral hospital in case of complications. User fees and other related costs at referral hospitals are paid for by the HEF. Voucher recipients are encouraged to use all.	Free for the woman needing to use the voucher.		At the end of each month, the VMA pays the contracted health centers on the basis of the number of coupons and the price of user fees (about US$7.5 for a normal delivery and US$0.25 for each prenatal and postnatal care visit).	Public health centers
China	Between 1949 and 1978, China had a state-commanded system organized around the workplace and had achieved nearly universal coverage that provided access to health care with minimal out-of-pocket payments. Since 1978, along with the economic liberalization, the system was reformed toward market mechanisms with unintended consequences: insurance coverage plummeted, especially in rural areas; and there was reduced access to health care; increased out-of-pocket payments; increased inequity; and rising costs. To cope with such problems, in the 1990s counterreforms were implemented with	UEBMI	Formal sector workers in urban areas, on a mandatory basis.	Outpatient care without copayments as long as the medical savings accounts (MSA) has funds. Deductibles, coinsurance provisions, and reimbursement caps apply for inpatient expenses, and vary across localities (although reimbursement rates—66% on average—are higher than those of the URBMI).	Outpatient and emergency services and drug expenses using MSA resources, and inpatient services and expensive services using the resources pooled at the municipality level (on a reimbursement basis).	Payroll taxes paid by employers (6% to 8%) and employees (2%). Resources are pooled usually at the municipal level, and also feed the individual MSAs for outpatient expenses. MSA receives 2% from the employee and 2% from the employer, so the pooled resources at the central level are 1:1 to the ones devoted to MSA.	Local medical insurance bureau in the administrative region defines lists of designated providers. People seeking care should attend those facilities to be eligible for reimbursement. Hence, fee-for-service is the most common method of payment. In the case of public facilities, the local authority negotiates a fixed annual payment. In that case, some incentives apply, but to a large extent public hospitals operate on budgets with no major strategic purchasing (sometimes deficits lead to an increase in budgets for the next year).	Health care must be sought in designated health care facilities. Services in urban areas are provided to a large extent by state or local government health facilities. There are indeed private providers, but proportionally few (provides only 5% of hospital beds). Reforms aim to shift the delivering emphasis from hospitals to community health centers for less expensive delivery of essential care.

	Background	S.	Target Population	Costs Covered	Services Covered	Collecting and Pooling	Purchasing	Delivering
	local efforts and a larger initiative to create the Basic Medical Insurance (BMI) for formal sector workers. A new wave of reforms started in 2002, with the aim of achieving universal health insurance coverage. Reforms are still underway. In 2009, a new reform plan was launched, including a national essential drugs system, increased funding for the rural system, the goal of using family doctors and nurses as gatekeeper, among others. • Urban Employee Basic Medical Insurance (UEBMI) • Urban Resident Basic Medical Insurance scheme (URBMI)—2007 • New Rural Cooperative Medical Scheme (NRCMS)—2003. The actual design of the scheme can vary significantly across counties	URBMI	Children, the elderly, the disabled, and other nonworking urban residents. Target population varies by city. Voluntary enrolment at the household level (willing to enroll and contribute).	Reimbursement rate for inpatient services is on average 49% (ranges between 30% and 85%). There are deductibles (between 100 and 900 yuan) and ceilings (usually above 30,000 yuan) that range according the health facility, the disease, the type of service, and the characteristics of the individual.	Covers mainly inpatient services, and critical outpatient care but limited to chronic or fatal diseases on a reimbursement basis.	Government premium subsidies. Household contributions. Nearly 50% each. Resources are pooled typically at municipality level, but there are no MSA.	Local medical insurance bureau in the administrative region defines lists of designated providers. People seeking care should attend those facilities to be eligible for reimbursement. Hence, fee-for-service is the most common method of payment. In the case of public facilities, the local authority negotiates a fixed annual payment. In such relation some incentives apply, but to a large extent public hospitals operate on budgets with no major strategic purchasing (sometimes deficits lead to an increase in budgets for the next year).	Health care must be sought in designated health care facilities. Services in urban areas are provided to a large extent by state or local government health facilities. There are indeed private providers, but proportionally a few (provides only 5% of hospital beds). Reforms aim to shift the delivering emphasis from hospitals to community health centers for less expensive delivery of essential care.
		NRCMS	All rural residents. Voluntary enrolment (willing to enroll and contribute).	Full out-of-pocket below the deductibles that usually are close to one month's rural average per capita income. Above the deductible, reimbursement applies, although reimbursement rates are usually less than 25%. For the services covered with the savings account, there is full coverage until depleted. These data seem to show a low proportion of the costs covered; however, this is usually the result of underfunding, which is being substantially improved.	Benefits vary by region. Three types dominate: (a) reimbursement for outpatient and inpatient expenses subject to deductibles that increase with the level of the hospital; (b) reimbursement for inpatient, and for outpatient but limited to selected chronic diseases; and (c) medical savings accounts used to pay for outpatient visits.	Enrollees' contributions. Central and local government subsidies (local governments' contributions usually match those of the central government). Enrollees' contributions started as half of the central government contributions, but the latter have and will be increased. Resources are pooled at the county level to cover inpatient hospital expenses that exceeded a deductible. A fraction of the contribution is held in individual savings accounts that can be used to pay for outpatient care. There are also copayments at time of use.	In most regions there do not seem to be an active third-party purchaser. People usually attend health facilities based on availability for basic services and based on referrals for higher-complexity services. Some schemes have experimented with single purchasing bodies, but until now it has not been extended throughout the country. Hence, most services are paid on a fee-for-service basis, although some localities have moved to more prospective payment methods.	Primary care facilities in the rural sector are usually privately run, even though they are sometimes owned by the village collective. There are also some public facilities, and the reforms aim to increase the supply of public primary-care facilities in rural areas.
Colombia	Colombia traditionally has had a fragmented health care system with formal private sector and public employees having social security health insurance. The wealthy might pay private insurance and the rest of the population has access through a national health system (publicly financed and operated providers that directly deliver services). Such arrangement was regarded as inefficient, inequitable, and ineffective, which led to a thorough reform of the health system in 1993 that shifted subsides from supply to demand, and introduced changes in financing, purchasing, and delivery. Since then,	CR	Private and public sector employees working in the formal sector of the economy, and the self-employed with ability to pay.	Two types: First, utilization fees (a flat rate related to income) on basic non-life-saving services. Second, for other services (mostly for inpatient care, excluding catastrophic diseases, promotion and preventive care, maternity, regular prescriptions, services within disease management programs, and others). There are copayments that range between 11% and 23% of the price of the event, although limited per service and per year.	Explicitly defined benefits package covering all levels of care (primary to tertiary, as well as inpatient, outpatient, maternity leave, and sick leave cash payments) as well as services for promotion, prevention, treatment and rehabilitation.	Payroll taxes (12.5%, distributed 4% for the employee and 8.5% for the employer). Resources are pooled in a central fund (1.5% are transferred to the SR as a solidarity contribution) and are used to pay risk-adjusted capitations to insurance companies. Copayments.	National central fund pays public/private/mixed insurance companies a risk-adjusted capita per enrollee. Insurance companies, in turn, contract services with either public, private, or own health facilities. Services are usually contracted on a capitation basis (usually primary care), as well as fee for service and other forms of payment.	Delivering health care is done by a mix of public/private providers, that can even be owned and operated by the insurance company (although there is a restriction to the amount insurer can contract with their own network).

	Background	S.	Target Population	Costs Covered	Services Covered	Collecting and Pooling	Purchasing	Delivering
	health insurance is the core of the system and today two major insurance schemes coexist with a subsidized public (direct delivery) network for the uninsured. The system is meant to achieve universal coverage of health insurance by means of those two schemes, and meanwhile, uninsured people can still access to the public network of providers. • Contributory health insurance regime (CR) – 1993 • Subsidized health insurance regime (SR) – 1993 • Public network of providers (PN)	SR	Poor people identified by a proxy means test. Eligibility is based on cutoffs of the proxy means test score, and may vary by municipality.	No utilization fees apply. There are copayments for the less vulnerable within the SR (with a rate of about 10% of the service price) and a limit per service and per year applies.	Explicitly defined benefits package covering all low-complexity care and catastrophic illnesses, but no full coverage of secondary care (which should be sought in the public network).	SR is financed by a mix of central government general revenue, local authority contributions, and solidarity contributions from the CR. Resources are pooled at the municipality level.	Municipalities pay public/private/mixed insurance companies a risk-adjusted capita per enrollee. Insurance companies, in turn, contract services with either public, private, or own health facilities. Services are usually contracted on a capitation basis (usually primary care), as well as fee for service and other forms of payment.	Delivering health care is done by a mix of public/private providers that can even be owned and operated by the insurance company (although there is a restriction on the amount insurer can contract with their own network).
		PN	Poor people not enrolled in health insurance (CR or SR), although everyone is eligible, in principle.	Rates vary among hospitals, municipalities, and departments. Vulnerable groups are frequently excepted as are several services deemed as important.	Inexplicitly defined benefits, covering all levels of care (from primary to tertiary, and inpatient, outpatient, maternity) as well as services for promotion, prevention, treatment, and rehabilitation. Entitlements, however, are not explicit and depend on the supply conditions.	Earmarked taxes and department and municipality own resources. Municipalities and departments receive transfers from the central government defined in the Constitution and the law.	Health authority in the department and municipality is in charge of purchasing services with its network of providers. Providers are paid on a mix of mainly budgets and capitation, but sometimes also fee for service or other methods are used.	Direct delivery in publicly owned and operated facilities. Providers are owned and funded either at municipality or department level.
Georgia	An Economic crisis among all the Former Soviet Union (FSU) countries brought public expenditures for health to a level of less than US$1 per capita, and left the system relying mostly on private and out-of-pocket expenditure (accounts for 70% to 80% of total health expenditure). In response, Georgia's government launched an ambitious health sector reform program, which included a reform of the health financing model accompanied with supply-side interventions. The transition particularly affected the rural sector. Public underfunding of health care and low economic status of the rural population affected the health sector by nurses and doctors migrating to urban areas and health care facilities shut down and proven unable to deliver health care. The Rural Health Program (RHP) was implemented in 2001 to cope with such challenges. In spite of reforms, the system keeps having a high reliance on out-of-pocket expenditures (75%), which also created barriers of access, which led to the creation of the Medical Assistance Program, later called the Medical Insurance Program for the Poor. • Universal or Basic Benefit Package (UBP) • Rural Health Program (RHP) – 2001 • Medical Assistance Program (MAP). Medical Insurance Program for the Poor (MIP) – 2006	UBP	General population (noninsured). No enrolment required.	A complex structure of copayments that ranges from 25% to 50% according to the service (some services have no copayments) and the sociodemographic characteristics of the population (for example, children and the elderly). There is also evidence of informal payments.	Essential package (primary, preventive and emergency care, and treatment for selected diseases). No coverage of planned inpatient care, 6 days of urgent inpatient care.	Copayments that range from 25% (for emergency care) to 50%. Central government and local budgets (previously also mandatory health insurance contributions) pooled in the Social Insurance State United Fund.	Central fund reimburses providers mostly on a fee-for-service basis.	Provision of services was organized through a public/private mix of providers, with key facilities remaining under public ownership to ensure access in remote areas and to specialized services.
		RHP	The rural health program was universal in rural areas. No enrolment required.	No copayments for included services.	Essential package (primary, preventive, and emergency care, as well as treatment for selected diseases).	Central fund pools mandatory insurance contributions and central government budget. Local municipalities remain responsible for reimbursing the maintenance costs of primary health facilities.	Central fund contracts providers on a capitation basis.	Primary health care public providers in rural areas (throughout the countries except big cities).
		MIP	Poor people identified by a proxy means test. The eligibility is defined using the score of the proxy means test and a cutoff that varies by region. People should apply in order to be proxy means tested, and eligible should choose an insurance company and formally enroll.	No copayments for included services. Drugs, however, should be paid out-of-pocket at full price.	More comprehensive benefits package (compared to the universal or basic benefits package); however, it does not include pharmaceuticals, which account for the largest share of out-of-pocket expenditure.	General tax revenue from the central government.	During first two years of implementation, it was administered by a single public purchaser (HeSPA) that reimbursed providers mostly on a fee-for-service basis (this is the MAP), then the purchasing function shifted to private insurance companies (the MIP) that are paid on a capitation basis by HeSPA and contracts providers on the basis of capitation for outpatient care, and fee-for-service and case-mix methods for inpatient services.	Mixed public/private providers. However, since 2007, a gradual privatization of health facilities has been underway, mostly in urban areas, with the aim of improving access through the involvement of private investment.

	Background	S.	Target Population	Costs Covered	Services Covered	Collecting and Pooling	Purchasing	Delivering
Ghana	In 2004, Ghana started implementation of a National Health Insurance Scheme (NHIS) to replace out-of-pocket fees at point of service. The solution was a "hub-satellite" model of a national fund and authority (the hub) that regulates and subsidizes a national network of community-based health insurance schemes (the satellites). The NHIS fuses elements from a Social Health Insurance with elements of community-based health insurance (CBHI) being able to cover formal and informal workers. By combining a network of CBHI schemes with a centralized authority and source of funds (the SHI component), Ghana's government looks to ensure nationwide coverage and guarantee the financial sustainability of the schemes. • The National Health Insurance Schemes (NHIS)	NHIS	Voluntary enrolment. Formal workers, indigents, (unemployed population with no visible source of income, homeless and with no identifiable support from another person), and other exempt groups including pensioners, the elderly, and children.	Premiums and registration fees are required for those not exempt and vary according to ability to pay. The exempt groups are the Social Security and National Insurance Trust Fund contributors, pensioners, people aged 70 and older, children under age 18, indigents, and pregnant woman.	Inpatient and outpatient care. While some exceptions exist, the benefits package is said to cover 95% of all health problems reported in Ghanaian health facilities. There is a particular emphasis on maternal and child health, with benefits including prenatal and postnatal care.	The NHIS is funded primarily through general tax revenues, and also payroll contributions and direct premium contributions from members. Exempt groups are free of charge and other population groups pay premiums determined by income level.	Health care providers send claims for scheme member service used.	All public health facilities are accredited and private health facilities apply for accreditation
India	After the National Health Policy in 1983, India faced several developments in Health Policy. The most important in terms of health systems schemes are the introduction of the Universal Health Insurance Scheme (UHIS), launched by the Ministry of Finance in 2003; the Sanjeevani Scheme, launched by the Punjab government in 2005: and the Chief Minister's health insurance scheme launched by the Assam government in 2004. However, most of these schemes have been dissolved. Learning from the experiences of other major government and nongovernment health insurance schemes in India, progress is being made to roll out new health insurance schemes at both the national and state level. In 2007, the state of Andhra Pradesh launched the Aarogyasri health insurance scheme for poor populations. Similar programs are now being adopted in neighboring states based on the Aarogyasri model. One year later at the national level, the Ministry of Labor and Employment launched the Rashtriya Swasthya Bima Yojana program to provide health insurance benefits to poor populations. It is being implemented by state governments in 23 different states, with plans to cover the entire BPL population in India (approx. 300 million people) by 2012–13.	ESIS	Covers workers in the organized sector and their dependents.	No copayment. Full coverage.	The health insurance scheme provides full medical facilities to insured persons and their dependents, as well as cash benefits to compensate for any loss of wages or earning capacity in times of physical distress due to sickness, maternity, or death and disablement due to an employment injury or occupational disease.	The ESI Scheme is mainly financed by contributions raised from employees covered under the scheme and their employers, as a fixed percentage of wages. The contribution rate for employees is 1.75% of the wage and for the employers, 4.75%. But employees earning up to Rp100 a day are exempted from paying their part of the contribution. The state governments bear one-eighth share of expenditure on the medical benefit within the per capita ceiling of Rp1,200 per year and any additional expenditure beyond the ceiling.	The scheme is administered by the Employees State Insurance Corporation (ESIC). It comprises members representing central and state governments, employers, employees, parliament, and the medical profession.	Medical facilities are provided through a network of 1,388 ESI Dispensaries, over 1,678 Panel Clinics, besides 148 ESI hospitals and 42 hospital annexes with other 27,739 beds. For providing super-specialty medical care, the corporation has tie-in arrangements with advanced medical Institutions in the country in both the public and private sector.
		CGHS	Covers central government employees and their family members, members and ex-members of parliament, judges of the supreme court and high court (sitting and retired), freedom fighters, central government pensioners, employees of semi-autonomous bodies/ semi-government organizations, accredited journalist and ex-governors and ex-vice presidents of India.	No copayment. Full coverage but permission should be obtained to use some of the services. Medical reimbursement claims can be made.	The CGHS offers health services through allopathic and homeopathic systems and through traditional Indian forms of medicines such ayurveda, unani, yoga, and Sidda. Covers dispensary services including domiciliary care, specialists consultation facilities at dispensary, polyclinic, and hospital level including X-ray, ECG and laboratory examinations, hospitalization, and so forth.	General tax revenues.		Dispensaries and policlinics.

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	The most important health insurance programs to date are the Employees State Insurance Scheme (ESIS), The Central Government Health Scheme (CGHS), Vajpayee Aarogyasri, The Chief Minister Kalaingnar's Scheme for Life Saving Treatments, and the Yeshaswini Co-operative Farmer's Scheme. • Employees State Insurance Scheme (ESIS) • The Central Government Health Scheme (CGHS) • Aarogyasri Health insurance scheme (Aarogyasri) • Rashtriya Swasthya Bima Yojana (RSBY)	Aarogyasri	Population below the poverty line.	The scheme does not require copayments at point-of-service. Requires no member contribution.	Both schemes cover primarily inpatient benefits and have a defined list of covered procedures. Emphasis on preventing catastrophic health expenditures, by covering many of the most expensive and complex procedures.	The schemes financed through government revenues at the state level with no central government support.	Uses commercial insurers for administrative functions, including enrolment, collections (where necessary), provider management, and claims processing and reimbursement. The insured are paid a defined premium from the government per beneficiary, and carry the actuarial risk of the program beyond that point.	Includes public and private sector hospitals, where the majority of hospitals are private. The Aarogyasri program uses Aarogya Mithras, health workers who serve as patient advocates and first points of contact for beneficiaries seeking care. There is one Aarogya Mithras located in each primary health center to help guide beneficiaries through the process of seeking care and to inform them about the available benefits.
		RSBY	Population below the poverty line.	The scheme does not require copayments at point-of-service. The scheme charges a small registration fee in order to increase the perceived value of the scheme, and to increase utilization.		The schemes financed through a mix of central and state government revenues.	Similar to Aarogyasri, but in addition also involves local NGOs in the process of building awareness, and identifying and enrolling targeted beneficiaries. For instance, uses "enrolment camps," or defined periods for enrolment into the scheme, at a district level.	Includes public and private sector hospitals, where the majority of hospitals are private.
Jordan	The main health providers in Jordan constitute themselves as health insurers; this is the case of the Ministry of Health (MOH) insurance program (Civil Insurance Program [CIP]), the Royal Military Services (RMS), and Jordan University Hospital (JUH). There is also the provision made by the private sector and the United Nations Relief and Works Agency for Palestine Refugees (UNRWA). • Civil Insurance program (CIP) • Jordan University Hospital Insurance (JUHI) program • The Royal Medical Services (RMS) insurance program • UNRWA	CIP	Public servants and their dependents, government retirees and their families, beneficiaries of the national aid found, blood donors, the poor and the handicapped, and others able to pay the premiums.	Free of copayment for the insured population. Any individual can come to MOH facilities and pay highly subsidized charges (15 to 20 percent of the costs) for the entire range of MOH services.	Provides preventive and curative services and treatment for a list of diseases and health conditions, including cancer, dialysis, anemia, and other blood-related diseases.	Over 76 percent of MOH expenditures are financed through the government budget, some 11 percent from insurance premiums from Civil Health Insurance enrollees, and the remainder from user charges and donors.	There is no split purchaser-provider.	The MOH owns and operates 29 hospitals in 11 governorates, all of them public.
		JUHI	MOH referees, university employees and their families, employees of other universities, and staff of certain large companies according to specific agreements with the JUH.		The most specialized and high-tech medical services are provided in this center.			Public.
		RMS	Current and retired staff of the united armed forces, members of the royal court, telecom company staff and family members, and a variety of members of other organizations and entities in the society.		Mainly provides secondary and tertiary care services.	The RMS, like all other public providers, receives most of its annual budget (JD 96 million in 2003) from the Ministry of Finance (MOF), almost 61 percent. The remaining source of funds comes from other government entities including the MOH, households, and private firms.	It has 10 hospitals (7 general and 3 specialist). All public.	
		UNRWA	Palestinian refugees.		Maternal and child health care. Preventive, general medicine, and specialist care services. Although UNRWA mainly focuses on primary health care, it also helps refugees access secondary and tertiary care services.			The agency runs 24 primary health care centers.

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Indonesia	Since 1968, there is a social insurance scheme for civil servants (currently known as Askes) and also exists a social insurance scheme for the employees of the private sector (Jamsostek). Indonesia has struggled for at least three decades to provide health coverage for those not enrolled in any of those programs who traditionally have relied on private voluntary insurance and community based health insurance. Also, Indonesia implemented a health card program for the poor in response to the economic crisis that hit Indonesia in 1997. In 2004 was created a national health insurance program for the poor known as Askeskin, later modified and renamed to Jamkesmas. There are still community based insurance, private health insurance and local schemes for the poor operating independently (Jamkesda). • Government-financed health coverage program for the poor and near-poor (Jamkesmas) • Social health insurance program for formal sector workers (Jamsostek) • Social insurance for civil servants (Askes)	Jamkesmas	The poor and near-poor (near 76.4 million beneficiaries). This scheme, however, is complemented and sometimes substituted by other local-government-financed health insurance schemes (Jamkesda) that operate independently at the local level.	"There is no co-payment, co-insurance, and/or extra-billing/balance-billing allowed under the program."	Comprehensive and explicitly defined benefits package, with some exclusions (cosmetic treatments, some dental care, fertility treatment, among others). Drugs are also covered but limited to a list and the generic versions of the medications. The benefits package is said to be more generous than that of the other schemes in the country (Jamsostek, Askes).	Central government revenues fully finance the scheme based on an estimated rate per person enrolled. Resources are first pooled at the national level at the Ministry of Health, which receives funding from the Ministry of finance. Subnational governments provide partial funding for health facilities in their jurisdiction.	The Ministry of Health is the single purchaser and reimburses hospitals directly using DRGs. For primary care, the Ministry of Health transfers a budget to District Health Offices (DHO), based on a capitation rate, and DHOs pay the primary care facilities (puskesmas) on a fee-for-service basis.	Providers are mostly public, particularly in rural areas, but private providers are rising. Primary health care is delivered through a network of public primary care health facilities known as puskesmas.
		Jamsostek	Formal sector workers. The scheme is mandatory; however, private companies can opt out of this scheme by providing health benefits to their employees.	No copayments (100% of costs covered).	Comprehensive and explicitly defined benefits package. However, it is limited in its coverage of high-cost treatments (compared to Jamkesmas), excluding, for example, renal dialysis.	Employers contribute 3% of their basic salary and 6% of the salary for those with dependents (up to a maximum contribution). Resources are pooled at the national level.	Jamsostek agency (state-owned) is the single purchaser for the scheme. Primary care is paid using a capitation scheme, and secondary care is paid using capitation and fee-for-service for certain services.	The majority of the contracted network are private providers.
		Askes	Civil servants.	No copayments (100% of costs covered). Users, however, can pay out-of-pocket for upgraded services (e.g., brand name drugs).	Similar to Jamkesmas's benefits package. Explicitly defined with explicit exclusions.	Ministry of Finance and civil servants each contributes 2% of the basic salary. Resources are pooled at the national level.	Askes agency (state-owned) is the single purchaser for the scheme. Primary care is paid using a capitation scheme and secondary care using fee-for-service.	Access is limited to public providers that must be registered with the scheme.
Mexico	The Mexican health system was traditionally fragmented: (a) the formal-sector employees (IMSS), (b) civil servants (ISSSTE), (c) special regimes (oil company, military), and (d) the rest of the population (mainly unemployed and informal sector workers) that may seek care in public hospitals funded and supervised by the Ministry of Health (MoH) managed at the state level (let us call it the public scheme). Although the first 3 segments usually have a good health protection, limited supply and low perceived quality in the public scheme often discouraged health care utilization and/or led people to seek care in the private sector, usually causing them to incur large out-	IMSS	Employees working in the formal sector of the economy. There is family coverage for contributors.	By law, no demand-side cost sharing is required to access health care (0%).	Includes preventive and curative care in primary, secondary, and some tertiary complexity levels. No exclusions for preexisting conditions or waiting periods. Cash benefits for off-work periods due to disease or maternity.	Payroll taxes (both employer and employee with variables rates). Federal government contributions (14.5% of minimum wage).	IMSS purchases the services with their own health facilities.	Vertical integration (self-operated health facilities by the insurance scheme).
		ISSSTE	Civil servants (federal and some state employees). There is family coverage for contributors.	By law, no demand-side cost sharing is required to access health care (0%).	Includes preventive and curative care in primary, secondary, and some tertiary complexity levels. No exclusions for preexisting conditions or waiting periods. Cash benefits for off-work periods due to disease or maternity.	Payroll taxes, both employer (6.75%) and employee (2.75%).	ISSSTE purchases the services with their own health facilities.	Vertical integration (self-operated health facilities by the insurance scheme).

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	of-pocket expenditures. Control of the public scheme was at the state level, and federal MoH was mandated to transfer funding to the states, which pooled their own health budgets to operate a public health network that was usually paid inefficiently. Through the 1990s, Mexico reformed its health system, mainly to improve health care for those in the public scheme. It led to changes in financial flows, demand-side incentives, benefits packages, and the creation of Seguro Popular (in 2001, as a pilot). • Mexican Social Insurance System (IMSS) – 1943 • Government Workers' Social Security and Services Institute (de Seguridad y Servicios Sociales de los Trabajadores del Estado, ISSSTE) – 1960 • Seguro Popular. 2001–2003 as a pilot program, 2004 implemented (gradual rollout) after the legal reform • Ministry of Health Financed Facilities (MOHFF) – 1943	Seguro Popular	Families lacking other insurance. Mainly unemployed and, self-employed usually working in the informal sector of the economy, willing to affiliate (and purchase insurance if belong to upper deciles). Poor families in antipoverty program are enrolled instantly.	The current implementation of the scheme requires no demand-side cost sharing (0%); however, the law and regulatory framework allows for it, so it might be implemented in the future.	Three explicit packages: (a) community services; (b) essential services including primary and secondary interventions for prevention, promotion, treatment, and rehabilitation (250 ailments and associated drugs) as well as maternity; and (c) high-cost tertiary care. Although they seem comprehensive, the benefits are significantly less extensive than the inexplicit benefits of IMSS and ISSSTE.	General revenue of federal (75%) and state (24%) governments plus household flat-rate contributions (0.6%) predefined according to income deciles (first 4 groups belong to the noncontributory regime). Primary- and secondary-level interventions are fully decentralized (state-level pooling) while high-cost tertiary care is regionally or nationally pooled.	Primary- and secondary-level interventions are fully decentralized and purchased by states with its network of providers (based on historical budgets and on needs assessments). Medicines are purchased through open bids. Tertiary care is purchased at the federal level and is usually paid as fee-for-service (although just the marginal cost since facilities have covered fixed costs by budgets).	Medical interventions delivered mainly through the public health network, certified for providing a minimum quality of care. Although private providers may be contacted, the scheme operates overwhelmingly with public providers.
		MOHFF	General population enrolled in none of the insurance schemes available in the country (however, those in IMSS and ISSSTE may also access care in this scheme).	Indicative rates defined by the MoH and related to household's income. Actual rates can vary among states and hospitals.	Inexplicit benefits package that includes primary, secondary, and simple tertiary care; preventive, and curative services.	General revenue of federal government (transfers to states). States own budget. Patient's out-of-pocket payments. Federal government is mandated to transfer funds to the states, which pool resources and operate the system.	States operate the system through their own network of providers that are usually paid based on historical budgets.	Services delivered by the state's public network of health facilities. Although private providers may be contacted, the scheme operates overwhelmingly with public providers.
Nigeria	The 1989 Nigerian constitution includes as a right, free and adequate health care for all Nigerians younger than 18 and older than 65 and the handicapped. In 1999, the institutional arrangement were established for the health system known as National Health Insurance Scheme (NHIS), which had been in modest existence since but which was eventually transformed into a government agency. In 2005, it was formally removed from the Formal Sector Program. To ensure coverage of the different socioeconomic groups in Nigeria, the NHIS has developed three major programs for this: the formal sector program, the informal sector program, and vulnerable group program. • Formal Sector Program (FSP) • Informal sector program (ISP) • Vulnerable Groups Program (VGP)	FSP	Covers government employees (federal, state, LGAs, armed forces, and other uniformed services), employees in the private sector, students in tertiary institutions, and is open to individuals who wish to contribute voluntarily to this pool.	A monthly capitation fee is paid to the primary health provider for services.	Preventive, promotion, and curative care from health facilities accredited by NHIS and specialized care by referral to secondary and tertiary facilities. Inpatient and outpatient care, as well as specialized care, eye care, dental care, and all prescribed medications and consumables.	Funded primarily by contributions from members based on income. Contributions are premiums that make up 15% of an individual's basic salary, with the employer contributing 10% while the employee pays 5% for coverage of themselves, their spouse, and up to 4 children. An employer may negotiate with an HMO for coverage of additional supplementary benefits and pay the extra contributions required.	The Health Maintenance Organizations (HMOs) play a major role in the purchasing of health services for NHIS enrollees, carrying out quality assurance of the health care providers and registering the enrollees. HMOs licensed by the NHIS facilitate the interface between the governmental organizations, the delivery system, and eligible contributors. HMOs work with providers under the supervision of the central government to determine provider payment.	The NHIS accredits both service providers and the HMOs that interface between providers, the NHIS, and its beneficiaries. The service delivery system is mixed between private and public providers. To receive accreditation, health facilities must meet a number of requirements for the physical facility and personnel. Tertiary facilities are operated by the central government, secondary facilities are managed by state governments and provide some specialized health services, and primary facilities are run by local governments and provide the most basic entry point to the health care system at health centers, clinics, and dispensaries.
		ISP	Self-employed and rural community dwellers. Voluntary enrolment.	Participants in the informal sector program make a monthly contribution actuarially determined based on the benefits package of their choice as well as other factors.	Varies according to the package selected by the person.	Financed by general government revenues, private organizations, development partners, and contributions from members.		
		VGP	Pregnant women, children under 5, the unemployed, orphans, prison inmates, and the permanently disabled.	Contributions are not required but are eligible for health benefits. The poor, elderly, veterans, and disabled are exempted from paying membership premiums.	Varies according to the contributions made by the insured person.			

	Background	S.	Target Population	Costs Covered	Services Covered	Collecting and Pooling	Purchasing	Delivering
Philippines	Prior to the 1991 reforms, the Philippine health care system operated as a public supply managed by the national Department of Health (DOH). The 1991 reform decentralized the system, transferring responsibilities of health facilities to local governments units (LGU) under guidance from the DOH. Decentralization also took place depending on the type of facility (provinces in charge of secondary care; municipalities in charge of primary care). Decentralization contributed to fragmentation, and in 1995 a new reform was passed creating the Philippine Health Insurance Corporation (PhilHealth), followed by reforms in 2000, 2005 and 2010, with the aims of achieving universal coverage by expanding government contributions for the enrolment of the poor in health insurance, the creation of local health service delivery/planning units to reduce fragmentation, and a stronger DOH role in regulation. The 2010 reform was focused on increasing the number of poor families enrolled in PhilHealth, and by April 2011 it had achieved 4.4 million new poor families in the scheme. • Social Health Insurance Program - PhilHealth • DOH- and LGU-operated public health facilities	PhilHealth	Formal sector employees (mandatory enrolment). Self-employed and informal sector workers (and other groups not classified as poor) in the so-called individually-paying program (IPP). Pensioners and retirees in the nonpaying program (NPP). Poor households in the sponsored program (SP) in which LGUs identify poor or indigent households and voluntarily enroll and subsidize their premiums (there is no standardized targeting tool, so it is done according to LGU's will; hence, it has been argued that identification is rather political).	Services are covered on a reimbursement basis up to a ceiling. Out-of-pocket expenses for health care charges that exceed the ceiling of coverage. Ceilings vary by type of service, hospital level, public/private, and type of case (ordinary, intensive, catastrophic, super catastrophic). The actual level of protection is around 90% in public hospitals, but drops to 40% on average for private health facilities, and can even be as low as 19%.	Inpatient and outpatient services, although outpatient care coverage is rather limited. There is also a special benefits package including specific outpatient services and illnesses. The special package, however, is currently only available for households in the sponsored program.	Formally employed pay 2.5% of the salary base as payroll taxes (there is a monthly salary cap, however). Subsidies from the national and local governments (collected by PhilHealth as premiums anyway). Monthly premium contributions for those in the IPP. All resources are pooled centrally by PhilHealth and managed as a single fund, and enrollees are entitled to the same benefits (except the ones in the Sponsored Program, which has extended outpatient coverage).	PhilHealth reimburses health care providers, but in order to be eligible for insurance reimbursement, providers must be accredited by PhilHealth. Fee-for-service reimbursement is the most common contracting method; however, primary care providers are reimbursed on a capitation basis.	Providers can be either public or private, provided they are accredited by PhilHealth.
		DOH and LGU	No target population.	In LGU-operated facilities there is a sort of subsidization of the user charges (charges below cost); however, in both retained and decentralized health care facilities patients must for the medical expenses out-of-pocket; hence, only a very small proportion of costs are covered.	There is no explicit benefits package. The supply of public facilities ranges from essential care facilities (mostly operated by LGUs) to tertiary care facilities (mostly retained facilities operated by the DOH).	General tax revenues collected by the national government are used to allocate budget for retained hospitals and to transfer to the LGUs (defined by law). LGU revenue and budgets are also used to finance public health care facilities.	Retained hospitals operated by the DOH receive budget appropriations historically determined and collect fees at time of use (which can exceed the actual cost of the service up to 30%). Decentralized public health facilities run by the LGU also receive historically determined budgets and also charge user fees; however, in decentralized health facilities, user charges are usually below cost.	Direct delivery in publicly owned and operated facilities. Providers are owned and funded either at the national level (DOH) or the subnational level (LGU).
Rwanda	After the 1990 internal war, Rwanda's government began to rebuild its health system by building infrastructure, decentralizing management, and strengthening communities' role in managing and cofinancing health care. From 1994 to 1996, use of health care was free. However, this system quickly failed due to lack of an accountability mechanism and to not creating enough incentives to the reach poor and rural populations. During 1998, the government reinstalled user fees, which was followed by a decrease in utilization and probably health	MMI	Members of the Rwanda Defence Force and their dependents.	Both schemes have a copayment fee for services and pharmaceuticals of 15% of the total cost. There is no copayment for assisted birth delivery and surgery.	Preventive and curative care.	There is a contribution rate of 15% of the basic salary, of which 7.5% is paid by the employer and 7.5% by the employee.	Formal contracts are established between social health insurance schemes and accredited public and private health care providers.	Health facilities affiliated with their insurance scheme.
		RHIS	Public servants and individuals working in the formal sector and their dependents.		Curative care and pre- to postnatal care including birth delivery. Outpatient, inpatient care, essential drugs, medical imagery, and laboratory tests.	The contribution rate is 22.5% of the gross salary, of which 17.5% is paid by the government and 5% is paid by each military staff.		Primary health facilities such as health posts, dispensaries, health centers, and other primary clinics. Secondary and tertiary health facilities include district and national hospitals and accredited private providers.

	Background	S.	Target Population	Costs Covered	Services Covered	Collecting and Pooling	Purchasing	Delivering
	outcomes performance. In 1999, the government initiated 54 CBHI pilot programs in 3 districts, and their performance was evaluated during 2000. During 2003, the newly elected government started expanding the CBHI schemes to make it a national system. The national system now comprises three schemes: Mutuelles de Santé, Military Medical Insurance, and the Rwanda Health Insurance Scheme. Mutuelles are highly decentralized and rely on existing community-based health structures (such as rural cooperatives) at the district and local level to provide a majority of management and administration of services, with only top-level policy and administration coordinated by the central government. • Mutuelles de Santé (MS) • Military Medical Insurance (MMI) • Rwanda Health Insurance Scheme (RHIS)	MS	All Rwanda's population. Voluntary enrolment (willing to enroll and contribute). The membership of families classified as poor is subsidized.	Each family member pays an annual premium of 1,000 Rwandan francs (approximately US$1.80) and a 10% copayment fee for any health service received. Those classified as very poor and those infected with HIV/AIDs have their fees subsidized by districts and the nationally organized Mutuelle solidarity funds financed primarily by the risk-pooling of fees, funding from the central government, and external aid partners.	The benefits package varies across Mutuelles branches. All insured Rwandans receive comprehensive, subsidized preventive care through the Minimum Package of Activities (MPA), which covers all services and drugs provided at local health centers. A Comprehensive Package of Activities covers a limited number of services at the district hospitals and select services in national hospitals that require referrals from local health centers.	The financing includes, along with the annual member premiums organized on a per household basis, risk pooling, cross subsidies, and substantial support from donors, NGOs, and tax-generated funding from the formal sector. When a citizen cannot pay the premium up-front, community banks (Banques Popularizes) provide individual loans at 15% interest.	The health system comprises three levels: the central level, the district level, and the sector level. At the sector level, Mutuelles are owned and privately managed by their members. Each Mutuelle determines its benefits package, annual premium, and periodicity of subscription, and establishes conventions on care and health services, service providers, and reimbursement. At the district level, the Mutuelle Fund manages member premium subsidies and disburses funds to the appropriate district and sector-level facilities based on need and service utilization. Districts guide and facilitate the administrative, logistical, technical, and political supervision, training, and management of the sector level Mutuelles. The district level is also responsible for contractual relations with the district hospital, hospital reimbursement, and quality-of-care supervision at the district hospital level. The central government is managed by the MOH and is responsible for the stewardship of the Mutuelles program, focusing on policy development, capacity building, monitoring and evaluation of operational programs, and resource mobilization.	Mutuelle members are able to access curative (primary-, secondary-, and tertiary-level) care benefits at all public and private nonprofit health centers, which excludes only 10% of the country's health care facilities.
Thailand	Thailand has tried different schemes to provide health coverage and reduce catastrophic health spending by households. There are a couple of employment-based schemes: the Civil Servant Medical Benefit Scheme (CSMBS), established in 1978 for current and retired civil servants and their families, and the Social Security Scheme (SSS), launched in 1990 as a mandatory scheme for the employees in the formal private sector. Those schemes, however, do not cover the poor, the informal sector, and other population groups and, hence, there was a considerable fraction of the population without health coverage. To address that problem, in 1975 the Medical Welfare Scheme (MWS) was introduced to provide free care for the poor. In 1983, a subsidized program was started, called the Voluntary Health Card Scheme (VHCS). Those programs had many problems, including targeting problems, and	CSMBS	Civil servants and their families.	At the beginning of the program there were no copayments, but later (1998), to cope with an increasing trend of health expenditures, copayments were introduced according to expenditure per encounter and days of hospitalization.	Comprehensive health benefits comprising outpatient and inpatient care and medical and surgical services, emergency services, and drug expenses. The benefits package has several explicit exclusions, such as cosmetic surgery.	The scheme is tax financed and resources are centrally pooled (originally managed by the Ministry of Finance) at the national level.	There is an individual CSMBS purchasing agency that uses mainly fee-for-service reimbursement to providers. During the first years, it was a full reimbursement scheme (whatever the providers claimed was reimbursed). Now, however, although it is still a fee-for-service scheme, greater control is exercised (predefined rates, restriction on reimbursable drug expenses, no off-office-hour reimbursement, among others).	Delivery is only in public facilities, reimbursed on a fee-for-service basis. People can attend any public hospital.
		SSS	Employees of the private sector (mandatory for those formally employed).	Copayments for maternity care and emergencies, if the expenditure is beyond a predefined ceiling.	Comprehensive health benefits comprising outpatient and inpatient care in public and private facilities registered with the scheme.	This scheme collects contributions from employees and employers, each of whom pays the equivalent to 1.5% of the employees' wage and the government contributes another 1.5%. Resources are pooled at the national level.	The Social Security Office (SSO) is the individual purchaser for this scheme and uses mainly capitation to pay for the services. Although the majority of the scheme is capitated, the SSO has introduced fee-for-service for emergency care outside the capitated network, and a few additional payments for high-cost medical care.	Public and private facilities, but people can only attend those registered in the capitation scheme.

	Background	S.	Target Population	Costs Covered	Services Covered	Collecting and Pooling	Purchasing	Delivering
	hence did not provide coverage for the entire population. By 2001, one-third of the population still had no health coverage. The Universal Coverage Scheme (UCS) was launched in 2001 to address these problems. Every uninsured Thai is eligible for the UCS, and during the first years (2001–06) of the UCS, there was only a 30-baht copayment per ambulatory visit or hospital admission, applicable to the nonpoor. The full fee exception was later rolled out to the entire population enrolled in the UCS. • Civil Servant Medical Benefit Scheme (CSMBS), since 1980 • Social Security Scheme (SSS), since 1990 • Universal Coverage Scheme (UCS)	UCS	Population not covered by CSMBS or SSS.	Until 2006, there was a fixed copayment of 30 baht (approx. US$0.70) for the nonpoor. Since 2006, everyone is exempted from copayments.	It is a rather comprehensive explicitly defined benefits package including inpatient and outpatient care for promotion, prevention, treatment, and rehabilitation. The benefits package is defined in a positive list of specific health conditions or procedures covered and in a negative list of those excluded. The benefits package is based on the SSS package.	General tax revenues is the main source of financing, and resources are centrally pooled a the national level by the National Health Security Office (NHSO). The NHSO's budget must be approved by the parliament and is defined on the basis of operating costs of the agency and a capitation rate for each person covered.	The NHSO is the central purchasing agency that contracts using mainly capitation for primary care and DRGs for inpatient services. A few services are also paid using predefined fee schedules. Enrollees usually have to register at health centers or public hospitals, and the NHSO uses a capitation scheme for primary care contracted units (CUPs) that act as gatekeepers to higher-level hospitals.	The NHSO contracts mainly with public providers, but also with private providers (which happens in the cities). The majority of providers are public (mainly because there are no private providers in rural areas), and although they are contracted by the NHSO (and other purchasing agencies), they still receive some funding from the Ministry of Health.
Vietnam	In 1990, the government introduced fee waivers that had targeting problems and did not cover drugs, providing only limited financial protection as a result. In 1992, an insurance program for formal sector employees was introduced, but the poor and informal sectors remained without health coverage. Free Health Care Cards for the Poor (FHCCP) were introduced in the late 1990s and early 2000 covering a considerable fraction of the poor, but the program faced major challenges due to limited funding at the province level, shortage of providers, and targeting and administrative difficulties. In 2003, the Health Care Fund for the Poor (HFCP) was created, with strong financial support from the central government and improved targeting mechanisms and an enhanced network of providers. In 2009, the insurance schemes were integrated in the Compulsory Health Insurance (CHI) scheme; those eligible for the HFCP on a noncontributory basis and the formally employed in a contributory scheme. • Compulsory health insurance (CHI)	CHI	The formally employed, pensioners and full-time students on a contributory basis. The poor (individually identified or living in disadvantaged communes), children under age 6 and other groups such as ethnic minorities for those in the noncontributory scheme.	Copayments close to 20% of the cost of the service, and a list of high-technology treatments are covered up to a certain limit. The poor, children under age 6, and pensioners are exempted from copayments.	Has an explicitly defined benefits package expressed as a positive list of interventions including outpatient and inpatient care, with some exclusions such as cosmetic surgery, dental procedures, and treatment of self-inflicted injuries and drug addiction.	The scheme is financed mainly through general government revenues, but subnational governments still cofinance a fraction of the costs for those noncontributory enrollees in their areas. Those formally employed pay 4.53% of the salary, and 1.6% is paid by the employee and 3% by the employer. Resources are pooled at the national level.	The Vietnamese Health Insurance Agency (VSS) is the individual purchaser of this scheme and uses primarily fee-for-service as the payment mechanism for providers (at fixed rates that have not been regularly updated). The VSS has started to experiment with further payment mechanisms such as capitation and DRG. Indeed, capitation is being used to pay for primary care, and fee-for-services is still used to pay for secondary and tertiary care.	Enrollees can seek care at any public provider, and recently a few private providers have been included as registered (and contracted) providers in the scheme. However, they still deliver only a small fraction of the health care in this scheme.

Sources: Information compiled by the authors from many different sources, including the web pages of the Universal Health Coverage Forward Initiative (http://uhcforward.org) and the Joint Learning Network for Universal Health Coverage (http://jointlearningnetwork.org/); and the country pages from the WHO (http://www.who.int/countries/en/). The studies included in the literature review were also a source of information for this table (see Annex 2 for the full list of papers), information from which was extracted from these sources for this table.

(Chongsuvivatwong et al., 2011); (Koehlmoos, Gazi, Hossain, and Zaman 2009); (Wagstaf, Yip, Lindelow, and Hsiao 2009); (Hu, et al. 2008); (Eggleston, Ling, Qingyue, Lindelow, and Wagstaff 2008); (Wang, Yip, Zhang, and Hsiao 2009); (Ma and Sood 2008); (Yip and Hsiao, The Chinese Health System At A Crossroads, 2008); (Herd, Hu, and Koen 2010); (Lin, Liu, and Chen 2009); (Yip and Hsiao, China's health care reform: A tentative assessment, 2009); (Li, Yu, Butler, Yiengprugsawan, and Yu 2011); (Ramesh and Xun 2009); (Liu 2002); (Drechsler and Jütting 2005); (Emanuel and Fuchs 2005); (World Bank 2009); (Bonilla-Chacin, Murrugarra, and Temourov 2005); (WHO 2009); (Chanturidze, Ugulava, Durán, Ensor, and Richardson 2009); (Damrongplasit and Melnick 2009); (Johns and Torres 2005); (Teerawattananon, et al. 2009); (Radermacher, Ashok, Zabel, and Dror 2009); (Organisation for Economic Co-Operation and Development (OECD) 2005); (Frenk, González-Pier, Gómez-Dantés, Lezana, and Knaul 2006); (Laurell 2007); (Knaul and Frenk 2005); (Giedion, Panopoulou, and Gómez-Fraga 2009); (Bhutta, Darmstadt, Hasan, and Haws 2005); (Romualdez Jr, et al. 2011); (The Philippine Health Information Network 2007); (Limwattananon, Tangcharoensathien, and Prakongsai, Equity in financing health care:impact of universal access to health care in Thailand, 2005); (NaRanong and NaRanong 2006); (Limwattananon, Tangcharoensathien, and Prakongsai, Catastrophic and poverty impacts of health payments:results from national household surveys in Thailand, 2007); (Hughes and Leethongdee 2007); (Tangcharoensathien, Prakongsai, Limwattananon, Patcharanarumol, and Jongudomsuk 2007); (Somkotra and Lagrada, Payments for health care and its effect on catastrophe and impoverishment: Experience from the transition to Universal Coverage in Thailand, 2008); (Somkotra and Lagrada, Which Households Are At Risk Of Catastrophic Health Spending: Experience.

In Thailand After Universal Coverage, 2009); (Tangcharoensathien, et al. 2010); (Yiengprugsawan, Carmichael, Lim, Seubsman, and Sleigh 2010); (Panpiemras, Puttitanun, Samphantharak, and Thampanishvong 2011); (Rojanawiwat, et al. 2011); (Tangcharoensathien, Tantivess, Teerawattananon, Auamkul, and Jongudoumsuk 2002); (Ahoobim, Altman, Garrett, Hausman, and Huang 2012).
Note: SR = Subsidized Regime.

Annex 4 How Much Endogeneity is There?

Reference	Instrumental Variable	Outcome Variable Tested for Endogeneity	
		Overall	Outcome Variable for which Endogeneity was Found
Parmar et al. (2011)	Eligibility for community-based health insurance (CBHI). Since the CBHI was randomly offered to the villages in the study area, the authors exploit the randomization of offer of insurance as an instrument.	Per capita household assets.	Per capita household assets. Endogeneity was not tested formally but could be argued to have played an important role on the OLS estimates compared with the 2SLS because of the difference of more than 20 percentage points in the estimated coefficient.
Yip et al. (2008)	The existence of a health center in the community, the existence of government-sponsored grassroots organizations in the community, Municipal Living Standards Index for 1993, voter turnout in 1994 municipal elections, and percentage of the population at the departmental level affiliated to the subsidized health insurance scheme.	* Preventive care used in the 12 months prior to the interview by area (rural and urban). * Outpatient care use in the 30 days prior to the interview by area (rural and urban). * Hospitalized in the 12 months prior to the interview by area (rural and urban).	* Preventive, outpatient and hospital medical health care.
Thornton et al. (2010)	Treatment indicators of the affiliation procedure were selected as instrumental variables: blank ticket/no-incentive control, INSS [Nicaraguan Social Security Institute] brochure/information only; subsidy for enrolment at INSS office and subsidy for enrolment at MFI [microfinance institutions] office.	* Whether was visited and number of visits to pharmacy, private doctor, laboratory, private clinic or hospital, public health center, public hospital. * Expenditure attached to those visits.	Endogeneity was not tested at all. The IV estimates are used as the selected model but it was not provided any information about the presence or absence of endogeneity in the affiliation status variable. The OLS estimates are not reported either.
Wagstaff et al. (2009)	Baseline insurance rate in 1973.	Infant and child mortality.	Endogeneity was not found to be a problem. Consequently a fixed effects model was chosen as the preferred estimator.
Galarraga et al. (2010)	Geographical and temporal variation across states and localities was used as instruments; in particular, dummy variables with the year of incorporation of the program by state (from 2001 to 2005) and the level of penetration of the program at the locality level.	Catastrophic health expenditures and out-of-pocket health spending in outpatient care, hospitalization, and medicines.	Endogeneity was found for all four outcome variables.
Thoresen and Fielding (2011)	Unemployment rates, number of sickness funds by state, total assets per sickness funds and by state, and quality expenditures per sickness fund by state.[a]	* Physician visits for preventive care. * Hospital use. * Outpatient medical care use.	* Outpatient and preventive medical care in social health insurance and private health insurance.
Wagstaff and Moreno-Serra (2009)	The first lag of the Social Health Insurance dummy (SHIi,t-1) and an indicator for whether the country in question had an SHI system prior to the communist takeover in the mid-to-late 1940s	* Immunization rate. * Admissions and length of stay. * National health spending public and private. * Life expectancy by sex. * Mortality rate (under five, infant, neonatal, postneonatal, maternal). * Standardized death rate (all causes, infections, tuberculosis, diarrhea, ARI, heart disease, liver disease, diabetes, circulatory diseases, cerebrovascular disease, neoplasms, female breast cancer, bronchitis, digestive diseases, alcohol causes, smoking causes). * Incidence rate (tuberculosis, hepatitis, hepatitis B, measles, mumps, syphilis, congenital syphilis, pertussis, diphtheria, tetanus, cancer).	Measles immunization rate and length of stay in acute care hospitals.

Reference	Instrumental Variable	Outcome Variable Tested for Endogeneity	
		Overall	Outcome Variable for which Endogeneity was Found
Dhillon et al. (2012)	* Employment status of the household head (whether government or private employee). * Relationship to household head (whether spouse). * Whether individual involved in community meeting activity. * Whether individual involved in water organization activity.	* Outpatient care use by insurance type, public or private facilities and county * Concentration index in public/ private outpatient care use	Endogeneity was not found for any of the outcome variables.
Sosa-Rubi et al. (2009)	Year of incorporation dummies (2002, 2003, and 2004)	Obstetric Care Utilization	Obstetric Care Utilization
Jowett et al. (2004)	Independent workers: size of the company for which he/she works on a contract basis. Dependent workers: (a) size of the company where he/she works; (b) dummy, which indicates whether he/she has written contract.	* Catastrophic expenditure (10%, 20%, 30%, 40% ability to pay) among dependent, independent, and self-employed workers/ * Impoverishing expenditure with different poverty lines (endogenous, national, extreme poverty) among dependent, independent, and self-employed workers.	* Independent workers: Catastrophic expenditure with a 10% and 20% threshold. * Dependent workers: Impoverishment expenditure with indigence national line.
Meyer, Bellows, Campbell, and Potts (2011)	The existence of at least one family member with a chronic health condition.	* Utilization of hospitalization, medical consultations, and medicines by area (urban/rural). * Expenditure in hospitalization, medical consultations, and medicines by area (urban and rural).	* Urban hospitalization. * Rural medical consultations.
Annear, Bigdeli, and Jacobs (2011)	Relationship of the individual to the household head (spouse, child, grandchild, other), and the mean affiliation rate by community to the health insurance program for formal sector workers in Ecuador. For each individual, the mean affiliation rate was calculated for all people in the community excluding the individual in question, so the mean rate is determined statistically independently of the individual's observed affiliation.	Preventive/curative care utilization by eligible individuals with/without illness by insurance type.	*Use of preventive care by individuals eligible and without illness. * Use of curative care by eligible individuals reporting illness.
Saksena, Fernandes Antunes, et al. (2010)	Dependent workers: Fraction of lifetime that the head of household reports having lived within the same municipality and the company size. Independent workers: One variable indicating whether an employed individual holds (a) a written contract and other that indicates whether or not the individual holds (b) a fixed or indefinite term contract, both variables related to the degree of formality of employment.	* Preventive health care utilization (physician and/or dentist visit at least once per year) by type of worker (independent or dependent). * Formal / informal health care services utilization by type of worker (independent or dependent). * Self-medication when having a health problem by type of worker (independent or dependent). * No health care utilization when having a health problem by type of worker (independent or dependent). * Barrier of access supply side, demand side, and financial barrier by type of worker (independent or dependent). * Access to medications (patients given all or any of the prescribed medicines) by type of worker (independent or dependent). * Timeliness of service for general physician and dentist/ specialist's visit by type of worker (independent or dependent).	Independent workers: * Use of preventive health services and barriers to access. Dependent workers: * Physician, dentist, or both at least once a year; physician and dentist at least once a year; formal health care services utilization. * Informal health care services utilization; supply-side barrier of access; demand-side barrier of access; financial barrier of access; timeliness of service on physician and dentist attention; timeliness of service of specialist attention.

Reference	Instrumental Variable	Outcome Variable Tested for Endogeneity	
		Overall	Outcome Variable for which Endogeneity was Found
Miller et al. (2009)	Simulated eligibility. The authors calculate SISBEN scores in household surveys not used for actual eligibility determinations.	* Risk protection (individual inpatient/outpatient medical spending; variability of individual inpatient/outpatient medical spending; individual inpatient medical spending ≥ 600,000/≥ 900,000/≥ 1,200,000, respectively). * Consumption smoothing, and portfolio choice (individual/household education spending; total expended on food; total monthly expenditure; has car; has radio). * Use of preventive care (preventive physician visit; number of growth development checks last year). * Health status for children (child days lost to illness; cough, fever or diarrhea; any health problem; birth weight). * Use of curative medical care (curative use not conditional on health status; curative use among children not conditional on health status; medical visit for chronic diseases; hospital stay).	Endogeneity was not tested directly in the model.
Dow et al. (2003)	Year-specific community dummies	Child mortality.	Survival of children of married women from 18 to 25 with live births.

Notes: a. Sickness funds' expenditures on personnel, medical, publicity, and marketing per affiliate.
SISBEN = Sistema de identificación y clasificación de potenciales beneficiarios para programas sociales (Colombia).

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The World Bank supports the efforts of countries to share prosperity by transitioning toward universal health coverage (UHC) with the objectives of improving health outcomes, reducing the financial risks associated with ill health, and increasing equity. The Bank recognizes that there are many paths toward UHC and does not endorse a particular path or set of organizational or financial arrangements to reach it. Regardless of the path chosen, the quality of the instruments and institutions countries establish to implement UHC are essential to its success. Countries will face a variety of challenges during the implementation phase as they strive to expand health coverage. With that in mind, the World Bank launched the Universal Health Coverage Studies Series (UNICO Studies Series) to develop knowledge and operational tools designed to help countries tackle these implementation challenges in ways that are fiscally sustainable and that enhance equity and efficiency. The UNICO Studies Series consists of technical papers and country case studies that analyze different issues related to the challenges of UHC policy implementation.

The case studies in the series are based on the use of a standardized protocol to analyze the nuts and bolts of 27 programs in 25 countries that have expanded coverage from the bottom up, starting with the poor and vulnerable. The protocol consists of 300 questions designed to elicit a detailed understanding of how countries are implementing five sets of policies to accomplish the following:

- Manage the benefits package
- Manage processes to include the poor and vulnerable
- Nudge efficiency reforms to the provision of care
- Address new challenges in primary care
- Tweak financing mechanisms to align the incentives of different stakeholders in the health sector

The UNICO Studies Series aims to provide UHC implementers with an expanded toolbox. The protocol, case studies and technical papers are being published as part of the Series. A comparative analysis of the case studies will be available in 2013.

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