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Social Protection and Demand for Health Care Among Children in the Philippines

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ABSTRACT

The Philippines has recently introduced two distinct but related large-scale social protection programs that, first, provide conditional cash transfers (CCT) to poor households, and, second, automatically enroll them into the government's social health insurance program. This has resulted in dramatic increase in health insurance coverage, especially among the poor. This paper assesses the joint impact of the two programs on the healthcare demand for children. Overall, the study finds encouraging impacts on the demand for healthcare services. While no direct impact on morbidity was found, results suggest that the social health insurance and the CCT program jointly induced greater hospital visits for both preventive and curative care, and lowered out-of-pocket expenditures. However, the study also documents possible implementation failures in the government's programs, as well as potential indication of healthcare service differentiation based on quality. Both these concerns may undermine the expected outcomes of the country's social protection programs.

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INTRODUCTION

Access to health care remains an important global concern. In a recent report, the World Health Organization and the World Bank estimated that about 400 million people worldwide have no access to essential health-care services (WHO 2015). They also reported that 6 percent of the total population in developing countries are pushed (further) into poverty because of catastrophic health spending. Policy responses to improve access to health-care services vary around the world, but generally range from the more traditional supply-side interventions, such as direct provision of health-care services, to more recent innovations to induce healthcare demand, including the expansion of social health insurance and the introduction of conditional cash transfer (CCT) programs (Cotlear et al. 2015; Tangcharoensathien et al. 2015). Among the demand-side interventions, social health insurance (SHI) appears to be the most common (cf. Cotlear et. al. 2015), with many of the important reforms introduced in recent years (Wagstaff 2010a; Lagomarsino et al. 2012).

While it is widely accepted that health insurance coverage promotes better access to health care and greater financial security against catastrophic spending (e.g., Hsiao and Shaw 2007; WHO 2010), empirical assessment of the actual impact of social health insurance, especially in developing country contexts, remains limited. In the Philippines, for instance, social health insurance has been found to be positively associated with greater utilization of healthcare services (e.g., Kozhimannil et al. 2009; Gouda et al. 2016) and substantial reduction in out-of-pocket (OOP) expenses (Capuno et al. 2009), but utilization remains at suboptimal levels (Quimbo et al. 2008). There are also documented second-round impacts on health outcomes (Kraft et. al. 2009), and even on child school attendance (Capuno et al. 2009), but the evidences are weak. These earlier results in the Philippines are consistent with the general findings in other countries. For example, Acharya et al. (2013) systematically reviewed 64 papers on the effect of health insurance in low- and middle-income countries and presented a summary of the results from 19 studies that took into account selection into insurance. Overall, they found little evidence on the impact of health insurance on health status, some evidence on utilization, weak evidence on OOP health expenditures, and unclear effects on the poorest.

This dearth in evidence may be attributed, in part, to the difficulty in establishing the causal impact of health insurance on different important outcomes. In typical settings, those with health insurance differ from those without insurance along a number of characteristics that may or may not be observed by the researcher. Indeed, much of the empirical work in establishing the causal impact of insurance is on unraveling nonrandom selection into insurance coverage from the causal impact itself (cf. Wagstaff 2010b).

It is rarely that insurance coverage is assigned randomly. The few exceptions include the RAND Health Insurance Study (Newhouse 1993) in the United States, and the Quality Improvement Development Study (Shimkhada et al. 2008) in the Philippines. But studies that address confounding from unobserved heterogeneity, by design, have, to a large extent, implicitly disregard the contribution of unobserved idiosyncratic returns, which may play important roles in shaping the outcomes. For instance, difficulties complying with documentary requirements to file claims or lack of awareness of insurance benefits, both of which may not be readily observable to the researcher, may have profound impact on the utilization of social health insurance (Quimbo et al. 2008).

We depart from the literature in this regard. Rather than implicitly assuming away the contribution of unobserved confounding, we instead use it to our advantage. More specifically, we employ a large-scale, yet imperfect natural experiment to limit the direction of the potential bias

from unobserved heterogeneity, which, at the same time, allows estimation of the joint impact of two related but distinct social protection programs.[2]

This paper reports the impact of social health insurance coverage on children using a large-scale social protection intervention in the Philippines, i.e., the *Pantawid Pamilyang Pilipino* Program (4Ps), a CCT program that targets poor households, as instrument. As part of the intervention, 4Ps beneficiary-households, along with all other poor households identified in the government's national targeting system, are automatically enrolled in the country's social health insurance program. As beneficiaries of the CCT program, households need to comply with various conditions, including school attendance of children, pre- and post-natal checkup of mothers, and preventive checkups of children aged 0 to 5 years old.[3] A key difference between 4Ps and other cash transfer programs is the requirement for beneficiaries to attend regular workshops, called family development sessions (FDS), that cover topics on self-development, health, and civic empowerment, among others (c.f. Kandpal et al. 2016). Health and nutrition are discussed prominently in the FDS, with separate modules dedicated for health and nutrition, and environmental health. Other health-related topics, such as the importance of breastfeeding, response to health emergency, and home remedies for common ailments are included in other FDS modules.

The country's SHI and CCT programs have a combined budget of about USD 3.5 billion in 2017, or about 1 percent of the country's gross domestic product for that year. During the same year, the CCT program has 4.4 million active household beneficiaries. The country's SHI program, on the other hand, covers 93 percent of the total Philippine population. Among those included in the SHI program, about 40 percent are covered under the sponsored programs.

On the one hand, using enrollment in the CCT program as instrument for SHI coverage poses an estimation challenge since, at worst, we cannot fully isolate the impact of SHI coverage on health outcomes. On the other hand, it also provides a rare opportunity to unravel how unobserved heterogeneity may be important in designing social protection programs. While selection into the CCT program may be external to households, program interventions are expected to directly influence demand for healthcare services through an income effect from direct cash transfers, and information spillovers from the different program interventions. Combined with the price effect from health insurance coverage, the opportunity for gains from having both programs simultaneously may be large. We attempt to recover the distinct impact of SHI by way of calibration using results from earlier impact evaluation studies on the 4Ps. We show that the separate contributions of either programs are nontrivial.

Overall, the study finds encouraging impacts of social protection on the demand for health care. While we find no direct impact on morbidity, results suggest that SHI and the CCT program jointly induced greater hospital visits for both preventive and curative care and lowered OOP expenditures. However, we also document possible implementation failures in the government's programs, as well as potential indication of healthcare service differentiation based on quality. Both these concerns may undermine the expected outcomes of the country's social protection programs.

[2] Social protection refers to policies and programs that are designed to minimize vulnerability to risks and to raise standards of living above a set minimum threshold. It typically includes contributory social insurance and pension systems, noncontributory social assistance and safety nets programs, and labor market programs.

[3] Monitored children in elementary school and high school receive PHP 300 and PHP 500 per month, respectively, as education grant for attending school. Up to three children may be enrolled as beneficiaries under 4Ps. Prior to 2014, only children up to 14 years of age may be enrolled as part of the CCT program. This age limit has since been extended up to age 18. Health grants worth PHP 500 per month are provided to households with pregnant mothers or with infants in exchange for regular health checkups and for attending FDS. More recently, 4Ps beneficiaries are also provided a rice subsidy equivalent to PHP 7,200 per year.

The Philippine case is interesting because of its relatively long history of SHI reforms compared to other developing countries. The Philippines's national health insurance program (NHIP) was created in 1969, reorganized 26 years after, and, in the past 10 years, made great strides in closing the gap in universal health coverage, at least in terms of health insurance enrolment, through the various reforms it has introduced. Some of the more recent reforms include a shift from a fee-for-service to a case rate payment system and the greater reliance on taxes, specifically on alcohol and tobacco products, to finance the health insurance coverage of the poor. These innovations are in many ways shared with other SHI systems around the world, but in some respects also unique.[4]

This study is also particularly appealing in regard to the optimal design of CCT programs around the world. To a large extent, SHI systems and CCT programs have evolved independently of each other, although there are pieces of evidence that CCT-receipt is associated with greater propensity for health insurance enrollment (e.g., Biosca and Brown 2015). Several meta-analyses have shown that CCT programs are associated with greater health facility use (Lagarde et al. 2009; Malqvist et al. 2013) and better child nutrition (Manley et al. 2012), which may be a direct consequence of the program conditionalities rather than the accompanying financial incentives (Bassani et al. 2013). In many parts of the world, CCT programs are often designed together with other complementary programs, such as supply-side interventions, in addition to the demand-side conditionalities (Ranganathan and Lagarde 2012; Glassman et. al. 2013). However, these different interventions are often studied separately, and in some instances without regard to the potential spillovers among these complementary programs. For instance, Colombia's household targeting system is used to identify eligibility in subsidized health insurance, but also in CCT and other social protection programs (e.g., Miller et al. 2013). Being able to identify which complementary programs jointly provide the greatest impact is imperative in designing social protection programs especially when resources are constrained.

SOCIAL HEALTH INSURANCE IN THE PHILIPPINES

The Philippine SHI system has existed for almost half a century. In 1969, health insurance funds were established under the country's autonomous pension systems for public and private sector workers. A separate medical care program was instituted for the rest of the population not covered by the national pension systems. These together formed the country's Medical Care Plan (Medicare). With the reorganization of the country's SHI system in 1995, the separate health insurance funds of the two pension systems were combined to become part of the core of what is now the Philippine Health Insurance Corporation (PHIC). PHIC is mandated to build on and expand the programs of the original Medicare to eventually have a universal health insurance program covering the whole population.

The PHIC maintains generally three types of membership, although its naming convention has changed through the years. There are the self-contributing members, from both the formal and informal sectors, who pay premium contributions either through their employers or remitted directly by them to PHIC. There are lifetime members who have reached retirement age, had paid a minimum of 120 monthly premium contributions, and are no longer required to pay premium contributions to remain insured by the system. Finally, there are sponsored members whose premium contributions are paid by other parties, such as the national government or the local government units. Dependents of principal members share the benefits of the SHI system but need not pay premium contributions.

[4] See, for instance, Lagomarsino et al. (2012) and Vidcu et al. (2016) for cross-country comparison of social health insurance systems, including that of the Philippines.

The insurance coverage by PHIC pays for both inpatient and outpatient healthcare services, although outpatient coverage is provided only for sponsored members and their dependents.[5] Until 2011, PHIC operates on a first-peso fee-for-service system wherein purchased medical goods and services by patients are reimbursed up to a fixed ceiling. This system has since been abandoned with the adoption of the first-peso case rate payment system wherein PHIC pays a fixed rate covering both professional and other fees for every patient's medical or surgical case. Any fees in excess of the case rates provided by PHIC are borne by the patient or by the health facility depending on the individual's membership type. In either system, physicians need to be accredited by PHIC to be able to participate in the country's NHIP.

The Philippines' NHIP is a hybrid SHI system where insurance payments are paid for by contributions of paying members and through taxes paid by the general population that covers the premium contribution of sponsored members. In the earlier years of PHIC, the tax-based premium contributions cover only a very small portion of its premium collections, but has increased dramatically in recent years (Pantig 2013). In 1998, tax-based premium contributions comprise only two percent of all premium collections by PHIC. This has ballooned to about 30 percent by 2012, and to almost half by 2014. In 2016, the PHIC's reported premium contributions totaled USD 2 billion, but 98 percent of this has been used for expenses on benefit claims.

Official estimates by PHIC point to about 93 percent of the population being covered by SHI in 2017, up from only 73 percent in 2007. However, independent estimates show wide variation in coverage rates across different regions in the country (e.g., Silfverberg 2013). Overall, PHIC remains a small portion of healthcare funding in the country, covering only 16 percent of all personal health care expenditures in 2014 (PSA 2016), although there is a general increasing trend since its creation.

With the reorganization of the Philippine's NHIP in 1995, a special membership category for indigents was created.[6] Unlike other types of members who directly pay PHIC, the payment of premium contributions of indigent members are paid by the government. In the early years of the program, the contributions of indigent members are shared by the PHIC, the national government, and the local government units.

In 2008, primary members in the sponsored program for indigents totaled 3.3 million, or about a fifth of all primary members of PHIC. Various programs initiated thereafter resulted in significant increase in the PHIC-sponsored program membership.

Starting in 2010, the PHIC adopted the means test protocol of the National Household Targeting System for Poverty Reduction (NHTS-PR), more commonly known as *Listahanan*, by the Department of Social Welfare and Development (DSWD) to identify poor families eligible for the PHIC's sponsored program. Households identified as poor in the NHTS-PR, which includes CCT program recipients, are automatically enrolled under PHIC.[7]

In 2011, PHIC introduced the "no-balance billing" (NBB) policy for sponsored members and their dependents who are admitted in government hospitals. The NBB policy requires cooperating health facilities to cover the costs of health services provided to sponsored program beneficiaries beyond what is paid for under the PHIC case rates.

Beginning in 2012, PHIC has been receiving a greater portion of excise taxes on alcohol and

[5] See Pantig (2013) for an excellent discussion of PHIC coverage rates and benefit programs.

[6] Under the National Health Insurance Act of 2013 or Republic Act (RA) 10606, an indigent refers to a person who has no visible means of income or whose income is insufficient for family subsistence.

[7] Starting in 2010, the government adopted the NHTS-PR as a mechanism to identify poor households that may be recipients of its various social protection program. However, it is not until in 2013, with the adoption of RA 10606, when all poor households identified in the NHTS-PR are automatically included as part of PHIC's sponsored program.

tobacco products[8] collected by the national government to support the NHIP. By 2013, PHIC has enrolled close to 10 million indigent primary members in its sponsored program, or about a third of all its primary members. With the latest amendments in the Philippines' National Health Insurance Act taking effect in 2014, the national government started fully subsidizing the premium contributions of poor households.

DATA

The 2013 National Demographic and Health Survey (NDHS) (PSA 2013) was used to investigate the potential impacts of insurance coverage on morbidity, household health facility utilization and OOP expenditures, physician behavior, and consumer satisfaction. The 2013 NDHS is the tenth in a series of demographic and health surveys conducted every five years since 1968 by the PSA (previously the National Statistics Office). The NDHS is a nationally representative survey of reproductive-aged women with the primary objective of providing information on women's fertility, family planning practices, and health. In 2013, the NDHS includes modules on insurance coverage and on health facility utilization by every member in surveyed households also utilized in the analysis of this study.

This study focused on the impact of insurance coverage on children living with their mother at the time of the survey. All children living with surveyed mothers were included regardless of the child's age. The sample contained information on 25,534 individuals in total, but regression models were based on a more limited sub-sample of individuals depending on the availability of information on control variables or on restrictions imposed by the behavioral outcomes measured.

Table 1 presents descriptive statistics for various child and household characteristics that we use in our analysis. Separate estimates were provided by insurance type for the full sample of children, and for children in the first and second poorest household quintiles in the sample. Overall, the demographic characteristics of children and parents appeared similar across insurance coverage status. But insured children have lower propensity to pay OOP for hospitalization. The share of OOP expense for hospitalization was also substantially lower among insured children.

At the time of the survey, the 4Ps had an annual budget of about USD 0.9 billion, and covered almost four million beneficiary households that were spread over 1,627 cities and municipalities in 97 provinces. This is about a fifth of the total number of households in the country of around 20 to 23 million between 2010 and 2015. When the program was introduced in 2008, the 4Ps only covered 160 cities and municipalities in provinces with the highest headcount poverty incidence rates (World Bank 2014; DSWD 2014). In contrast, the share of CCT household beneficiaries in our sample was slightly higher, comprising about 27 percent of the 9,656 households in our 2013 NDHS sample. This difference potentially reflects the specific population covered by the NDHS, i.e., reproductive-aged women.

As mentioned in the previous section, CCT program beneficiaries are automatically enrolled in the sponsored program of PHIC. This does not mean that all children living in CCT-beneficiary households are insured however. For instance, children who are 21 years old and over may not be claimed as dependents of PHIC primary members. Also, it is possible that not all members of multi-family, multi-generation households are included as beneficiaries of the CCT program. In any case, having a CCT beneficiary in the household raises the propensity of a child in the same household being covered by health insurance. In our sample, 79 percent of children living

[8] Between 1995 and 2013, 25 percent of the incremental tax revenue collected from tobacco products was earmarked for the Philippine's NHIP. Beginning in 2014, the share was raised to 80 percent, and for the incremental tax collections on both alcohol and tobacco products.

Table 1. Descriptive statistics for various child and household characteristics used in the analysis

	All Households				Poor Households			
	Insured		Not Insured		Insured		Not Insured	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Child characteristics								
Age	9.48	6.03	9.94	7.59	9.08	5.61	9.27	7.40
Female	0.48	0.50	0.46	0.50	0.48	0.50	0.46	0.50
Education, highest grade completed								
Primary	0.38	0.49	0.31	0.46	0.43	0.49	0.34	0.47
Secondary	0.18	0.38	0.19	0.39	0.15	0.36	0.15	0.36
Higher	0.06	0.24	0.07	0.25	0.02	0.13	0.03	0.16
Sick in past 30 days	0.26	0.44	0.27	0.44	0.28	0.45	0.28	0.45
Visited health facility in past 30 days	0.14	0.34	0.15	0.36	0.16	0.36	0.15	0.35
Confined in hospital in past 30 days	0.06	0.23	0.05	0.22	0.05	0.22	0.05	0.22
Paid out-of-pocket for services outside of hospital	0.97	0.17	0.97	0.17	0.97	0.17	0.97	0.18
Paid out-of-pocket for hospitalization	0.77	0.42	0.98	0.13	0.83	0.38	0.98	0.13
Out-of-pocket expense (share of total bill)	0.45	0.39	0.97	0.15	0.37	0.40	0.97	0.15
Household characteristics								
CCT Household	0.47	0.50	0.18	0.38	0.76	0.43	0.26	0.44
Wealth index (studentized)	0.18	1.06	0.30	0.94	-1.05	0.56	-1.01	0.59
Father's age	40.34	8.50	39.34	10.13	40.29	8.54	38.52	10.08
Father's education, highest grade completed								
Primary	0.27	0.45	0.31	0.46	0.44	0.50	0.43	0.49
Secondary	0.43	0.49	0.48	0.50	0.44	0.50	0.42	0.49
Higher	0.28	0.45	0.16	0.37	0.08	0.28	0.07	0.26
Mother's age	37.03	7.09	35.72	8.70	36.72	7.10	35.03	8.67
Mother's education, highest grade completed								
Primary	0.34	0.47	0.37	0.48	0.55	0.50	0.51	0.50
Secondary	0.36	0.48	0.42	0.49	0.33	0.47	0.34	0.48
Tertiary or higher	0.27	0.44	0.17	0.37	0.07	0.26	0.07	0.26
Parents are living together	0.93	0.26	0.94	0.24	0.96	0.19	0.95	0.21

SD = standard deviation; CCT = conditional cash transfer

Note: Authors' calculations based on 2013 Philippine National Demographic Health Survey (PSA and ICF International 2014)

in CCT households have health insurance coverage, compared to only 53 percent of children in non-CCT households.

ESTIMATION

Health insurance coverage status in our data are not randomly assigned. To the extent that selection into health insurance coverage are influenced only by observable characteristics, e.g., educational attainment, sex, or age, then adjusting for these characteristics, say through an ordinary least squares (OLS) model, will provide an unbiased estimate of the impact of insurance coverage on outcomes of interest.

Reality, however, is much more complex. For example, one can think of enrolment in health insurance packages as being related to individual preferences for risk-taking, which, in turn, also influences health-seeking behaviors (e.g. Arrow 1963). Failing to account for individual appetite for risks – or any other unobserved factors that are related to both health-seeking behavior and insurance coverage, for that matter – will generally lead to biased impact estimates. One can also imagine cases where the demands for health inputs, including insurance coverage, and health may be simultaneously determined (e.g., Grossman 1972; Zweifel and Manning 2000), which would, again, introduce bias in the impact estimates of insurance coverage on health-seeking behavior.

To correct for the bias introduced by the endogeneity of health insurance coverage, we employ a large-scale natural experiment to estimate the impact of health insurance on various behavioral outcomes. Identification strategy was based on an instrumental variable (IV) model, where we compare the change in behavioral outcomes to the change in insurance coverage status induced by an exogenous instrument. The IV-estimator, τ_{IV}, is given by

$$\tau_{IV} = \frac{E[Y|X = x, Z = 1] - E[Y|X = x, Z = 0]}{E[D|X = x, Z = 1] - E[D|X = x, Z = 0]},$$

where Y is the outcome of interest, D is insurance coverage status, Z is our binary instrument, X is a vector of controls, and $E[f(.)|g(.)]$ is the conditional expectation operator with arguments $f(.)$ and $g(.)$. We estimate τ_{IV} using two-stage least squares (IV/2SLS) with household membership in the national CCT program as instrument.

Our identification strategy relied on two key assumptions.[9] First, the instrument must be relevant such that it influences insurance coverage status. This may be directly tested by showing that

$$E[D|X = x, Z = 1] - E[D|X = x, Z = 0] \neq 0.$$

In the case where the instrument does not affect coverage status, i.e. when the above difference equals zero, nothing is gained from instrumenting: the IV-estimator is inconsistent and biased the same as the OLS-estimator. When the explanatory power of the instrument is "weak", then conventional asymptotics fail thereby affecting hypothesis testing (e.g., Bound et al. 1995; Staiger and Stock 1997). We are not concerned of such pathologies in our case. Among poor households in our sample, children living in CCT households are 47.2 percentage points (S.E. = 0.007) more likely to be covered by health insurance, either as primary members or as dependents.

[9] These assumptions are based on the structural econometrics literature. See the seminal work by Angrist et al. 1996 for a discussion on the assumptions when framed in Rubin's potential outcomes framework.

Second, our identification strategy assumes that conditional on the vector of controls X the instrument Z and the outcome of interest Y are uncorrelated. This exogeneity assumption ensures that the IV-estimator captures only the impact of insurance coverage, and nothing else. In the case that this assumption is violated, for instance, when the instrument also directly influences the outcome of interest while also affecting insurance coverage status, the IV-estimator is biased towards the direction of the impact of Z on Y. That is, the IV-estimator captures the joint impact of SHI coverage and CCT membership.

It is important to emphasize that unlike the first assumption, the exogeneity of the instrument cannot be tested. But we can rule out some sources of bias based on the design of the CCT program. More specifically, we believe that the contribution of the CCT program on the impact estimates, if any, is a direct result of the CCT program interventions, rather than selection into the CCT program.

Membership into the CCT program is determined by a proxy means test that predicts household per capita income based on observable characteristics, including parents' education and household asset holdings, gathered through the NHTS-PR. To the extent that our additional controls are able to substitute for the contribution of proxy means test explanatory variables, then assignment into the CCT program in our sample households is exogenous. The additional control variables will be able to net out the potential bias from selection into the CCT program that may also affect our selected outcomes of interest.

While one may be able to control for observable characteristics that determine selection into the CCT program, a household may potentially game the system by misreporting or, alternatively, targeting household characteristics that will give them a higher propensity of being enrolled into the CCT program. But this may be of limited concern in this study. First, households do not have access to the weights used in NHTS-PR to predict household per capita income. This makes it generally difficult for households to target being a beneficiary of the CCT program. Second, a household at the time of the survey could only potentially gain as much as about USD 300 per year when the household has three eligible children. This translates roughly to only USD 0.15 per person per day for a five-member household, thus the potential gain for a nonpoor to game the system may be limited. Finally, the CCT program has a built-in mechanism wherein households are vetted by their community before they are admitted into the program.

A more serious concern relating to the consistency and unbiasedness of the effect estimates is the potential impact of the CCT program itself on the health-seeking behavior of households. This may be in the form of an income effect from the windfall cash transfers of the CCT program, which allows households to consume more healthcare apart from that provided by SHI. In addition, the CCT program interventions may alter the information set available to beneficiaries. An integral component of the CCT program is the regular attendance of parent-beneficiaries to FDS, where various development topics, including health and nutrition, are discussed. Separate FDS modules are dedicated for health and nutrition (Module 7) and for environmental health (Module 9), although other health-related topics, including breastfeeding, emergency care response, and home remedies are also included in other FDS modules. Also, pregnant mothers and children below five years old are required to have regular health checkup, which may expose them to better health practices. If the CCT program is able to positively influence the health-seeking behavior of households, then impact estimates will be biased upward since this includes the impacts of both insurance coverage and of the CCT program.

Indeed, a recent evaluation documented that the CCT program induced greater access to essential health services among households (DSWD 2014). However, the same evaluation showed that the program has not increased utilization of PHIC benefits, which the evaluators attributed to

the CCT beneficiaries' lack of knowledge about SHI benefits. This is supported by Bredenkamp et al. (2017), presenting evidence that the DSWD, in general, and the CCT program, in particular, only play secondary roles in providing information about PHIC insurance coverage benefits. Among sampled CCT households in 2015, less than a tenth responded that they have learned about PHIC benefits from DSWD and the CCT program. The most important sources of information on health insurance benefits among CCT program beneficiaries are social networks (73%) and the PHIC itself (27%).

RESULTS AND DISCUSSION

Morbidity

The impact of health insurance coverage on morbidity is presented in Table 2. Morbidity is measured as an indicator variable that takes on a value of one when the child ever got sick in the past month prior to the survey, and zero if otherwise. Control variables were incrementally added to determine the severity of omitted variable bias, if any. In the base model, household wealth quintile were controlled. In the second model, controls for the child's characteristics and region of residence were added, while in the last model, controls for parents' characteristics were added. Separate estimates for the full sample of children, and for children living in households in the poorest two quintiles were provided. OLS estimates are provided to show the relative bias against the IV/2SLS models.

As mentioned in the previous section, the analysis included all children living with their mothers at the time of the survey regardless whether the child is actually an adult. This allowed the use of an additional instrument based on age. Child-dependents of PHIC primary members are limited to their children below 21 years old. In addition to an indicator variable measuring whether the household is enrolled in the CCT program (=1) or not (=0), an interaction variable was included as instrument indicating whether the child may be claimed as a child-dependent in a CCT household.

Analysis was limited to estimates where the Hansen's J-statistic are low, i.e., close to zero, which indicates that our overidentifying restrictions are valid. The Cragg-Donald F- and the Kleibergen-Paap $\chi 2$-statistics provide test measures of the degree of association between our instruments and the endogenous variable. These test statistics are both above the conventional critical values in all specified models, indicating that weak- or under-identification is not an issue in any of our models.

Overall, no evidence was found to support that health insurance coverage impacts morbidity. But this is not unexpected, and should not be taken as evidence against the effectiveness of health insurance coverage. In its classical formulation, insurance is designed to allow consumption smoothing by pooling the risks over a population, and defraying the costs when the risks are realized. This does not preclude, however, any second-round effects of insurance coverage on health outcomes, for instance, due to the reallocation of resources within the household (e.g., Quimbo et al. 2011), to delays in access to health-care services (e.g., Kraft et al. 2009) or to the impact of recent innovations in the health insurance market, such as wellness incentives (e.g., Short 2003).

Health-care utilization

The impact of health insurance coverage on two health facility utilization indicators are reported in Tables 3 and 4. More specifically, this study looked at the impact of health insurance coverage on the propensity of a child to (1) visit a health facility for consultation and treatment and (2) be confined in a hospital or clinic in the past month prior to the survey.

Table 2. Health insurance coverage and morbidity

	All Households						Poor Households					
	OLS			IV/2SLS			OLS			IV/2SLS		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Estimate	0.020	0.013	0.009	-0.036	-0.026	-0.025	0.004	0.005	0.001	-0.025	-0.017	-0.020
S.E.	0.007	0.007	0.007	0.018	0.020	0.020	0.010	0.010	0.010	0.019	0.020	0.021
p-value	0.005	0.050	0.209	0.052	0.189	0.228	0.701	0.599	0.906	0.192	0.415	0.339
Observations	25,534	25,514	23,781	25,534	25,514	23,781	13,355	13,343	12,675	13,355	13,343	12,675
RMSE	0.442	0.409	0.410	0.443	0.410	0.410	0.448	0.412	0.411	0.448	0.412	0.411
Kleibergen-Paap Wald χ-sq.				1,098	902	835				961	752	661
Cragg-Donald F				865	628	579				803	568	501
Hansen's J-statistic				122.138	0.403	0.604				91.616	0.012	0.344
Household wealth quintile	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cubic function of child's age		Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes
Child is female		Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes
Child's education		Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes
Region		Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes
Parents' age			Yes			Yes			Yes			Yes
Parents' occupation			Yes			Yes			Yes			Yes
Parents are living together			Yes			Yes			Yes			Yes

OLS = ordinary least squares; IV/2SLS = ; RMSE = Root mean square error

Note: Authors' calculations based on 2013 Philippine National Demographic Health Survey (PSA and ICF International 2014). The Kleibergen-Paap Wald χ2 and the Cragg-Donald F statistics test the hypotheses that the system of equations is under- and weakly identified, respectively. The Hansen's J statistic, on the other hand, tests the hypothesis that the overidentifying restrictions used in the IV/2SLS model is valid.

Isurance coverage induces more health-care facility visits among children as shown in Table 3. Insured children were more likely to visit a health-care facility by 8.7- to 12.8-percentage points, on average, compared to noninsured children (Panel A). Relative to the unconditional propensity to visit a health facility of around 15 percent only (Table 1), these estimates were quite substantial.

In Panels B and C, separate estimates for health-care facility visits by morbidity status of children were provided, which were used as proxy for a need of curative healthcare. Results show that sick children who are insured by PHIC were 18- to 30-percentage points more likely to visit a health facility (Table 3, Panel B). Nonsick children, on the other hand, were more likely to visit a healthcare facility by 5.9- to 8.3-percentage points when they are insured (Panel C). We take these as indications of positive impact of insurance coverage on both curative and preventive healthcare.

The limited impact on the demand for preventive health-care was not surprising. Compared to inpatient care, PHIC's benefit packages for primary care checkups targeted towards sponsored members were neither as extensive, as generous, nor as well-established in 2013, when data were collected. Also, beyond the targeted primary care benefits, PHIC has limited coverage for outpatient care (Bredenkamp and Buisman 2015).

An important concern with health insurance provision is whether it induces overprovision of health-care services (Pauly 1974). In a first-peso system, for instance, individuals may elect medical procedures that they do not need but are covered by the health insurance. Health service providers, on their part, may prescribe more medical procedures than necessary to gain more from a fee-for-service health insurance system. However, greater health-care utilization even among nonsick children does not necessarily signify overprovision. This may be an indication of previously unmet health-care demand that households are now able to fulfill with SHI.

Results in Table 4 show that insured children were statistically no more likely to be advised by their physician for confinement (Panel A) or to be actually confined in a hospital or clinic (Panel B) compared to noninsured children. This can be taken as an indication that overprovision of health-care services from physician-induced demand and from adverse selection of patients may be of limited concern to SHI in the Philippines.

It must be emphasized though that this study focused on the impact induced by the government's CCT program, which automatically enrolls beneficiaries to the sponsored program by PHIC. As mentioned in the previous section, PHIC's "no balance billing" policy applies to insured individuals in the sponsored program. Thus, the costs of overprovided health services are borne by health facilities, which may explain the results. What we see may very well be cost-containment measures of health-care providers who will otherwise assume the health-care costs in excess of what is covered by PHIC. The case may be different for other types of PHIC membership.

Health expenditures

PHIC's covered population has been increasing through the years, but the financial protection it provides against health-care costs had remained small resulting in high OOP payments (Kwon and Dodd 2011). The reforms initiated since 2010 aimed to address this shortcoming by increasing the number of poor families enrolled in PHIC, including more comprehensive benefits packages to members, and reducing copayments by patients.

Table 5 shows the impact of health insurance coverage on hospital expenditures of children confined in the last year prior to the survey. In all of the specifications, the place, reason, and duration of hospital confinement were controlled. Despite PHIC's "no balance billing" policy, the study found that poor patients still paid OOP for hospitalization.

Table 3. Insurance coverage and health facility visit

	All Households						Poor Households					
	OLS			IV/2SLS			OLS			IV/2SLS		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
All children												
Estimate	0.020	0.033	0.030	0.087	0.130	0.128	0.013	0.027	0.021	0.078	0.112	0.107
S.E.	0.005	0.005	0.006	0.015	0.017	0.017	0.008	0.008	0.008	0.015	0.016	0.017
p-value	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.100	0.000	0.008	< 0.001	< 0.001	< 0.001
Observations	25,534	25,514	23,781	25,534	25,514	23,781	13,355	13,343	12,675	13,355	13,343	12,675
RMSE	0.356	0.333	0.333	0.357	0.335	0.336				0.362	0.339	0.339
Kleibergen-Paap Wald χ-sq.				1,098	902	835				961	752	661
Cragg-Donald F				865	628	579				803	568	501
Hansen's J-statistic				80.099	0.429	0.010				60.328	0.001	0.002
Sick children												
Est.	0.029	0.065	0.060	0.230	0.297	0.295	0.019	0.055	0.042	0.180	0.244	0.249
S.E.	0.015	0.015	0.016	0.045	0.048	0.050	0.021	0.021	0.022	0.045	0.049	0.053
p-value	0.061	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.350	0.008	0.056	< 0.001	< 0.001	< 0.001
Obs.	6,842	6,839	6,434	6,842	6,839	6,434	3,709	3,709	3,551	3,709	3,709	3,551
RMSE	0.498	0.482	0.480	0.507	0.493	0.490				0.504	0.491	0.488
Kleibergen-Paap Wald χ-sq.				472	394	352				421	330	270
Cragg-Donald F				318	263	233				287	231	194
Hansen's J-statistic				2.232	0.009	0.308				0.920	0.141	0.611

Table 3. Continuation

	All Households						Poor Households					
	OLS			IV/2SLS			OLS			IV/2SLS		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Not sick children												
Estimate	0.005	0.013	0.013	0.062	0.083	0.082	0.008	0.014	0.013	0.059	0.074	0.071
S.E.	0.003	0.003	0.003	0.009	0.010	0.010	0.005	0.005	0.005	0.009	0.010	0.010
p-value	0.138	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.079	0.004	0.008	< 0.001	< 0.001	< 0.001
Observations	18,692	18,675	17,347	18,692	18,675	17,347	9,646	9,634	9,124	9,646	9,634	9,124
RMSE	0.179	0.173	0.173	0.181	0.176	0.175				0.190	0.184	0.183
Kleibergen-Paap Wald χ-sq.				935	750	705				817	624	566
Cragg-Donald F				751	529	494				704.712	485.471	437.291
Hansen's J-statistic				2.329	1.765	0.8				5.208	0.571	0.063

OLS = ordinary least squares; IV/2SLS = Instrumental Variable/Two-stage Least Squares; SE = Standard error; RMSE = Root mean square error

Note: Authors' calculations based on 2013 Philippine National Demographic Health Survey (PSA and ICF International 2014). See Table 2 for the list of variables included in each model. The Kleibergen-Paap Wald $\chi 2$ and the Cragg-Donald F statistics test the hypotheses that the system of equations is under- and weakly identified, respectively. The Hansen's J statistic, on the other hand, tests the hypothesis that the overidentifying restrictions used in the IV/2SLS model is valid.

Table 4. Health insurance coverage and hospital confinement

	All Households						Poor Households					
	OLS			IV/2SLS			OLS			IV/2SLS		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Advised for hospital confinement by physician during visit												
Estimate	-0.004	-0.004	-0.010	-0.006	0.003	-0.015	-0.005	-0.003	-0.006	-0.020	-0.019	-0.033
S.E.	0.009	0.009	0.010	0.028	0.030	0.032	0.012	0.012	0.013	0.029	0.031	0.033
p-value	0.678	0.629	0.297	0.839	0.928	0.628	0.664	0.815	0.618	0.491	0.547	0.323
Observations	3,794	3,791	3,563	3,794	3,791	3,563	2,049	2,049	1,961	2,049	2,049	1,961
RMSE	0.236	0.234	0.232	0.236	0.234	0.232	0.226	0.224	0.222	0.227	0.224	0.222
Kleibergen-Paap Wald χ-sq.				262	229	205				206	184	160
Cragg-Donald F				155	132	116				125	111	94
Hansen's J-statistic				1.995	0.995	0.984				1.174	0.304	0.026
Confined in hospital in past 30 days												
Est.	0.000	0.006	0.005	0.004	0.024	0.024	0.006	0.012	0.011	0.013	0.028	0.024
S.E.	0.008	0.008	0.008	0.020	0.024	0.026	0.010	0.010	0.011	0.023	0.026	0.029
p-value	0.979	0.446	0.524	0.853	0.319	0.356	0.544	0.258	0.311	0.557	0.279	0.403
Obs.	3,761	3,758	3,531	3,761	3,758	3,531	2,020	2,020	1,933	2,020	2,020	1,933
RMSE	0.207	0.205	0.202	0.207	0.205	0.203	0.192	0.191	0.187	0.192	0.191	0.187
Kleibergen-Paap Wald χ-sq.				284	232	208				217	182	157
Cragg-Donald F				182	141	123				141	117	96
Hansen's J-statistic				0.958	0.303	0.365				0.189	0.116	0.001

OLS = ordinary least squares; IV/2SLS = Instrumental Variable/Two-stage Least Squares; SE = Standard error; RMSE = Root mean square error

Note: Authors' calculations based on 2013 Philippine National Demographic Health Survey (PSA and ICF International 2014). See Table 2 for the list of variables included in each model. The Kleibergen-Paap Wald χ2 and the Cragg-Donald F statistics test the hypotheses that the system of equations is under- and weakly identified, respectively. The Hansen's J statistic, on the other hand, tests the hypothesis that the overidentifying restrictions used in the IV/2SLS model is valid.

Table 5. Insurance coverage and out-of-pocket payments

	All Households						Poor Households					
	OLS			IV/2SLS			OLS			IV/2SLS		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Bought ought-of-pocket medicine/service apart from hospital												
Estimate	-0.001	-0.004	-0.001	0.029	0.050	0.077	-0.009	-0.010	-0.009	0.024	0.054	0.082
S.E.	0.015	0.015	0.016	0.044	0.046	0.037	0.023	0.019	0.021	0.062	0.067	0.059
p-value	0.960	0.793	0.947	0.508	0.278	0.037	0.702	0.613	0.646	0.701	0.427	0.161
Observations	760	760	710	760	760	710	372	372	352	372	372	352
RMSE	0.164	0.159	0.153	0.165	0.161	0.156	0.167	0.158	0.148	0.168	0.160	0.151
Kleibergen-Paap Wald χ-sq.				71	51	58				47	28	25
Cragg-Donald F				48	31	31				30	15	12
Hansen's J-statistic				4.660	0.010	1.388				2.597	0.406	0.027
Paid out-of-pocket for confinement												
Est.	-0.240	-0.217	-0.204	-0.386	-0.317	-0.217	-0.328	-0.290	-0.270	-0.284	-0.094	-0.092
S.E.	0.022	0.023	0.024	0.107	0.136	0.117	0.034	0.037	0.040	0.115	0.162	0.150
p-value	< 0.001	< 0.001	< 0.001	< 0.001	0.020	0.064	< 0.001	< 0.001	< 0.001	0.013	0.561	0.540
Obs.	989	989	925	989	989	925	432	432	411	432	432	411
RMSE	0.345	0.332	0.320	0.350	0.334	0.320	0.389	0.361	0.338	0.390	0.369	0.344
Kleibergen-Paap Wald χ-sq.				68	47	57				48	28	29
Cragg-Donald F				42	26	30				29	14	13
Hansen's J-statistic				1.266	1.311	0.235				0.375	0.474	1.519

Table 5. continuation

	All Households						Poor Households					
	OLS			IV/2SLS			OLS			IV/2SLS		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Total paid out-of-pocket for confinement, log												
Estimate	-0.436	-0.388	-0.479	-0.751	-0.747	-0.628	-0.413	-0.322	-0.347	-1.036	-0.994	-1.007
S.E.	0.100	0.104	0.108	0.311	0.370	0.329	0.139	0.143	0.148	0.355	0.446	0.412
p-value	< 0.001	< 0.001	< 0.001	0.016	0.044	0.057	0.003	0.025	0.019	0.004	0.026	0.014
Observations	818	818	767	818	818	767	320	320	306	320	320	306
RMSE	1.245	1.208	1.178	1.252	1.217	1.179	1.184	1.104	0.976	1.219	1.137	1.007
Kleibergen-Paap Wald χ-sq.				61	49	61				46	33	37
Cragg-Donald F				39	29	36				27	18	18
Hansen's J-statistic				0.231	0.753	0.678				0.242	1.055	0.959
Total paid for confinement, log												
Est.	0.402	0.461	0.406	0.189	0.351	0.341	0.450	0.529	0.463	0.335	0.399	0.269
S.E.	0.082	0.086	0.091	0.254	0.320	0.289	0.110	0.113	0.115	0.279	0.385	0.383
p-value	< 0.001	< 0.001	< 0.001	0.457	0.272	0.238	< 0.001	< 0.001	< 0.001	0.229	0.301	0.483
Obs.	977	977	913	977	977	913	424	424	403	424	424	403
RMSE	0.921	0.899	0.876	0.925	0.900	0.876	0.868	0.828	0.770	0.869	0.830	0.773
Kleibergen-Paap Wald χ-sq.				66	46	55				46	26	27
Cragg-Donald F				41	25	29				27	13	12
Hansen's J-statistic				0.367	3.230	2.802				0.263	1.850	1.379

OLS = ordinary least squares; IV/2SLS = Instrumental Variable/Two-stage Least Squares; SE = Standard error; RMSE = Root mean square error

Note: Authors' calculations based on 2013 Philippine National Demographic Health Survey (PSA and ICF International 2014). See Table 2 for the list of variables included in each model. The Kleibergen-Paap Wald χ2 and the Cragg-Donald F statistics test the hypotheses that the system of equations is under- and weakly identified, respectively. The Hansen's J statistic, on the other hand, tests the hypothesis that the overidentifying restrictions used in the IV/2SLS model is valid.

Panel A shows that insured and noninsured children were statistically as likely to pay for medicines and health services that are not available in the hospital where they are confined. This constitutes about 97 percent of all hospitalized children in our sample (Table 1). Insured childrenwere less likely to pay OOP by 9.2- to 38.6-percentage points compared to noninsured children, depending on specification (Panel B). With a base rate of 98.2 percent of noninsured children paying OOP for hospitalization (Table 1), this still leaves about 60 to 90 percent of poor households in our sample exposed to paying for hospitalization partly or wholly on their own after controlling for various confounders in our models.

Health insurance coverage, by design, could reduce the OOP spending by individuals. However, as pointed out above, health insurance coverage may also induce greater demand for healthcare, which, ultimately, increases OOP spending. Whether the overall impact is positive or negative is an empirical question.

Among households that are not fully insured, OOP payments by those insured under PHIC were between 46.6 and 64.5 percent less[10] than by those who are not insured (Panel C). Combined with estimates from Panel B, this indicates an average insurance support value of around 50 to 80 percent of total hospitalization costs. Estimates are comparable to the figures reported in earlier studies on the proportion of healthcare costs covered by SHI in the Philippines based on other data sources (Caballes et al. 2012; Pantig 2013; Tobe et al. 2013).

The impact of health insurance coverage on total healthcare demand is presented in Panel D. Health-care services availed by insured and noninsured children as measured by total hospitalization costs, i.e., combined payment by the health insurance and from OOP, do not differ statistically. Although the point estimates showed that insured children spent between 20 and 50 percent more than noninsured children, there is no sufficient evidence to claim that the differences are statistically different from zero.

This differs from the earlier results by Gertler and Solon (2002) who found evidence of price differentiation in health services among Philippines hospitals based on the health insurance coverage of patients. In their study, Gertler and Solon (2002) found that healthcare providers charge insured patients more for the same type of health-care service provided. It must be emphasized though that unlike in their study, specific health-care inputs provided during hospital confinement were not controlled in this study.

Based on estimates of the impact of health insurance coverage on OOP payments and on total hospitalization expenditure, the own-price elasticity of demand for healthcare in the Philippines may be estimated as a ratio of the two estimates. The price elasticity of demand for health care captures how sensitive the demand for health care is to changes in prices paid by households. A price elasticity of demand of −1.0, for instance, indicates that a one-percentage drop in healthcare prices is related to a matching one-percentage increase in health-care demand. In the study sample, own-price elasticity of demand for health care ranges between −0.39 and −0.87 depending on the specification, which are on the upper end of the −0.2 to −2.1 range cited by Gertler and van der Gaag (1990).

The above estimates of price elasticities suggest that the demand for health care among children is price inelastic. That is, the demand for health care is not very responsive to price changes, such as the effective drop in prices faced by those covered by SHI, which implies that greater resources may be needed to induce higher healthcare demand among households relative to when health-care demand is more price elastic. This may be a direct consequence of the reasons for hospital confinement stated by the respondents: sickness or injury (92.0%) and child birth (7.6%), which both may require urgent care (c.f., Duarte 2012). It is important to note though that the estimated

[10] Calculated as exp $(\widehat{\tau_{IV}})$-1

price elasticities of demand represent averages for the whole population. As shown, for instance, in Gertler and van der Gaag (1990), the elasticities may differ across subpopulations. In their estimates, poor households are more price-sensitive, i.e., with greater absolute price elasticity of demand, than richer households.

Patient satisfaction

While there is no sufficient evidence showing that the impact of SHI coverage on the total hospitalization bill between insured and noninsured children are statistically different, the study found that those who are insured have lower propensity to indicate that they were satisfied with the service that they received during confinement. Table 6 shows that, on average, insured children were 8.2- to 22.9-percentage points less likely to indicate that they were satisfied with the service that they received, although it is only marginally statistically significant for the full model (Columns 6 and 12).

The study provided some possible explanations, which are not necessarily mutually exclusive. First, health facilities cannot legally price discriminate based on insurance coverage on certain segments of the market because of PHIC's "no balance billing" policy. But they may still discriminate based on the quality of service that they provide. If such is the case, then our results may be treated as an indication of such product differentiation. Second, it is also possible that our estimates actually reflect the impact of the CCT program on empowering the poor. And, related to this, third, health insurance coverage may have raised the expectations of households about the acceptable quality of healthcare that they should receive. Unfortunately, this study cannot disentangle these related explanations in the current analysis.

Figure 1 shows the differences in the propensities of each factor to be cited as reason why the patients were dissatisfied. The sample was limited to children from poor households, while controlling for the place, reason, and duration of hospital confinement, and child, parent and household characteristics (Model 3). Overall, the largest percentage point differences in reasons cited were on how patients are treated by health-care professionals during their confinement. Insured children were more likely to cite uncaring or rude staff (11.5-percentage point difference) or unfair treatment (10.7-percentage point difference) as reasons compared to noninsured children. The availability of other health inputs, or the lack thereof, were only secondary but remains as important source of differences in patient satisfaction: insufficient medicines (10.6-percentage point difference), insufficient equipment (8.6-percentage point difference), and insufficient staff (7.9-percentage point difference).

CCT-effect

The estimates that have so far been presented rest on the assumptions that were emphasized in the previous section, but are worth revisiting. It was shown that children living in CCT-beneficiary households were more likely to be covered by SHI but one cannot directly test whether the CCT program has any direct effect on the various outcomes that were presented. The estimates presented reflect the impact of health insurance coverage to the extent that the control variables that were included in the models were able to net out the effect of potentially unobserved confounders that are both related to selection into the CCT program and insurance coverage. In addition to selection into the CCT program, however, if the CCT program also influences the health-seeking behavior of its beneficiaries directly, then estimates in effect reflect the joint impact of these two programs.

To the extent that the control variables included captured the bias from unobserved confounding, OLS provides unbiased estimates of the impact of SHI coverage, and are thus preferred to the IV/2SLS estimates. Assuming that the contributions of SHI coverage and of the CCT program are additively

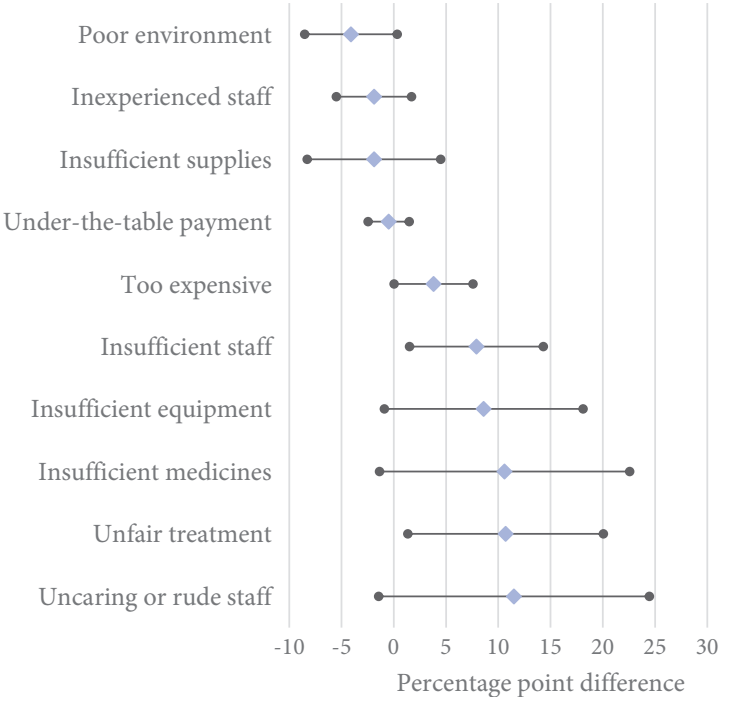
Table 6. Insurance coverage and patient satisfaction

	All Households						Poor Households					
	OLS			IV/2SLS			OLS			IV/2SLS		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Estimate	0.006	0.010	0.008	-0.123	-0.135	-0.189	0.007	0.009	-0.029	-0.082	-0.135	-0.229
S.E.	0.024	0.024	0.025	0.080	0.095	0.095	0.033	0.031	0.029	0.081	0.092	0.114
p-value	0.811	0.695	0.750	0.126	0.158	0.045	0.843	0.777	0.305	0.311	0.141	0.045
Observations	1,083	1,083	1,015	1,083	1,083	1,015	491	491	467	491	491	467
Log-likelihood	-224.215	-203.836	-164.468	-242.011	-224.650	-199.352	-60.497	-41.540	-8.152	-65.223	-52.537	-27.761
RMSE	0.298	0.292	0.285	0.303	0.298	0.294	0.274	0.263	0.246	0.276	0.269	0.257
Kleibergen-Paap Wald χ-sq.				78	53	63				56	32	34
Cragg-Donald F				49	31	35				34	18	17
Hansen's J-statistic				0.055	0.020	0.129				0.581	0.020	0.002

OLS = ordinary least squares; IV/2SLS = Instrumental Variable/Two-stage Least Squares; SE = Standard error; RMSE = Root mean square error

Note: Authors' calculations based on 2013 Philippine National Demographic Health Survey (PSA and ICF International 2014). See Table 2 for the list of variables included in each model. The Kleibergen-Paap Wald χ2 and the Cragg-Donald F statistics test the hypotheses that the system of equations is under- and weakly identified, respectively. The Hansen's J statistic, on the other hand, tests the hypothesis that the overidentifying restrictions used in the IV/2SLS model is valid.

Figure 1. Reason for disatisfaction: Poor households



Note: Authors' calculations based on 2013 Philippine National Demographic Health Survey (PSA and ICF International 2014)

separable, subtracting the OLS estimate from the IV/2SLS estimate isolates the impact of the CCT program. With unobserved confounding, however, the direction of the OLS bias is generally unknown. In this case, while the IV/2SLS estimates are still biased, it might be more informative than OLS if we can calibrate the bias of the IV/2SLS estimates.

An attempt to calibrate the estimates was made based on an earlier study assessing the impact of the Philippines' CCT program on health facility utilization among children. More specifically, results from the first-wave of impact evaluation of the CCT program (WB 2013) were utilized, which is based on a randomized control trial of CCT beneficiaries in 2008 and 2009. Intervention in priority areas was rolled out in phases, allowing the evaluators to use the areas receiving CCT in later phases as control areas. In the evaluation, the CCT program was estimated to increase health facility visits among children aged 0 to 5 years old who are sick with fever and cough by 13.2 percentage points (S.E. = 0.035). The subsequent second-wave impact evaluation is based on a regression discontinuity design. To estimate the impact of CCT, the design exploits the nontrivial jump in the propensity of CCT receipt around the household income threshold that is used to identify program eligibility. Estimates from the second-wave evaluation provided a slightly lower estimate at 8.8-percentage points (S.E. = 0.102), and the estimate was not statistically significant (DSWD 2014).

Estimates were compared with IV/2SLS estimates using the study sample of children aged 0 to 5 years old who reported having cough or fever (Table 7). Assuming that that the contribution of SHI coverage and the CCT program are additively separable, estimates point to SHI increasing health facility utilization in this specific sample of children by as much as 20.2-percentage points (S.E. = 0.079), or about two-thirds of the IV/2SLS estimate. This points to a still size-able impact of SHI coverage even after netting out the contribution of the impact of the CCT program.

Separate IV/2SLS estimates were provided for children aged 6 to 10 years old. As discussed in the earlier section, children aged 5 years old and below in CCT households are required to have regular health facility visits as one of the conditions to remain in the program. Comparing the estimates for those aged 0 to 5 with those aged 6 to 10 may, therefore, provide a ballpark estimate of the impact of the CCT program on health facility utilization. Interestingly, the estimate based on most elaborate models (Columns 3 and 6) point to a CCT-effect of 12-percentage points, or about the same size as that reported in the first-wave evaluation, although the difference is not statistically significant

Table 7. Insurance coverage and health facility visit among children reported with cough or fever

	Age 0-5			Age 6-10		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Estimate	0.279	0.306	0.334	0.290	0.241	0.210
S.E.	0.061	0.063	0.071	0.084	0.079	0.079
p-value	< 0.001	< 0.001	< 0.001	0.001	0.002	0.008
Observations	2,020	2,020	1,950	735	735	704
Log-likelihood	-1508	-1453	-1389	-520	-496	-457
RMSE	0.510	0.497	0.493	0.491	0.475	0.463
Kleibergen-Paap Wald χ-sq.	254	223	178	119	128	117
Cragg-Donald F	330	296	228	185	211	205

S.E. = standard error; RMSE = Root mean square error

Note: Authors' calculations based on 2013 Philippine National Demographic Health Survey (PSA and ICF International 2014). See Table 2 for the list of variables included in each model. The Kleibergen-Paap Wald χ2 and the Cragg-Donald F statistics test the hypotheses that the system of equations is under- and weakly identified, respectively. The Hansen's J statistic, on the other hand, tests the hypothesis that the overidentifying restrictions used in the IV/2SLS model is valid.

CONCLUSIONS

It is a widely held belief that health insurance coverage promotes better access to health care, and greater financial security against catastrophic spending–i.e., the twin goals of health insurance (e.g., Hsiao and Shaw 2007; WHO 2010). However, empirical evaluation of the actual impacts of insurance coverage, especially in developing countries, are limited, mainly since the availability of natural or field experiments that allow controlling for selection are equally scant. Recent innovations in SHI programs in many parts of the developing world have resulted in dramatic improvements in coverage, making thorough empirical assessments of the impacts needed to guide policy more crucial than ever.

In this paper, a nationally representative survey in the Philippines was used to study the impact of SHI coverage on the demand for health care among children. The study exploited a large-scale, yet imperfect, natural experiment, i.e., the Philippines' CCT program, which automatically enrolls beneficiaries into the government's SHI program. While selection into the CCT program may be external to households, the large-scale experiment may directly impact the health-seeking behavior of individuals, thereby confounding impact estimates. On the other hand, this allowed

direct evaluation of the combined contribution of two different social protection programs. More specifically, the study estimated the joint effect of insurance coverage and of a CCT program on morbidity, household health facility utilization and OOP expenditures, physician behavior, and consumer satisfaction.

Strong positive impacts of social protection coverage were seen on both demands for curative and preventive health care, which we proxied by health facility visits of sick and nonsick children. The effect on preventive care, however, is less pronounced. This is not surprising given that insurance benefits for outpatient care, specifically primary health care, in the Philippines were not as well-developed as inpatient care benefits during the study period. Overprovision of health care induced by health insurance coverage may be of limited concern, at least in the study sample. Significant reduction was also found in OOP spending. A nontrivial portion of the estimated impacts may be attributed to the CCT program.

While no evidence was found of health-care service differentiation based on price, the study documented a large negative effect of social protection on patient satisfaction. Further, potential implementation failure of the PHIC's no-balance billing policy was evident, wherein poor households who are supposed to be fully covered by SHI were charged OOP for health care. Both these concerns may undermine the expected outcomes not just of the SHI program, but also of the country's poverty reduction programs.

Based on these evidences, this study highlights two important observations. First, insurance coverage alone may not be enough to promote better access to health care. This is in-line with the findings by Accad (2015), who showed that the joint impact of the CCT program and insurance coverage on the utilization of outpatient care is greater than the separate impacts of the CCT program and of insurance coverage. The confluence of the income effect (in this case, from direct cash transfer of the CCT program), the price effect (in this case, from the social insurance coverage), and the information effect (in this case, from various CCT program interventions) may be necessary components in designing effective SHI programs. Second, health-care differentiation, either using price or quality, based on health insurance coverage may undermine the intended impacts of the program. Following Gertler and Solon (2002), product differentiation may allow health-care providers to extract for themselves much of the economic surplus from health insurance, which are otherwise originally intended for patients.

Analysis in this study is limited in a number of ways. First, it only looked into the impact of insurance coverage among children in poor households. But their health insurance benefits are starkly different from the rest of the population. Whether results extend to outside the sample is, at least for now, only speculative. Second, the health outcomes that were included in the analysis are limited. Furthermore, in many instances, possible explanations were proposed with regard to the results based on theory, but these explanations were not empirically substantiated. Finally, the impact of SHI coverage on the demand for healthcare were analyzed without taking into account supply-side considerations. While insurance coverage may induce greater demand for health care, access may be hampered when the supply of healthcare services is limited or, even, non-existent. To a large extent, these limitations are a function of the data available to assess the impact of insurance coverage. In any case, these limitations highlight important research questions, which could be topics for future investigation.

This study opens new avenues for future research. While it was shown that the SHI and the CCT programs jointly increases health-care demand among poor children, it may also be interesting, for example, to measure the vicarious effect from having both programs together, in addition to each program's separate effects. To what extent are CCT and SHI programs complementary or

substitutable? Further, under what conditions is CCT, SHI or both programs together more effective in raising health-care demand? Finally, what other complementary initiatives to CCT or SHI programs are needed to induce greater health-care demand and improve health outcomes?

Overall, the evidences presented here suggest that the social protection programs in the Philippines have contributed to better access to health-care services, and to greater financial security against catastrophic health-care spending. Although the study highlights that improvements in health per se are not directly affected by these social protection programs, it is not unconceivable that increased access to health care will ultimately lead to improved health outcomes in the longer term through different secondary channels.

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