

Catastrophic health care, poverty, and impoverishment in the Philippines

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The paper attempts to describe catastrophic health spending and its impact on poverty in the Philippine setting. It focuses on the role of out-of-pocket payments for health care as a springboard for measuring the magnitude and analysing the extent of damage of catastrophic health expenditures. It also explores the scope and trends of health spending in terms of different socioeconomic indicators. More important, it delves into trends over time and among different income groups. It also employs several quantifiable measures and tools in determining the extent and intensity of "catastrophic" incidence to determine its effects on poverty. Lastly it looks into the state of impoverishment after incurring these payments. The results indicate that, in general, households that belong to higher-income groups are more vulnerable to catastrophic health spending, while households from lower-income groups are more prone to impoverishment.

JEL classification: I1, I3

Keywords: catastrophic health payments, health care, poverty, impoverishment

1. Introduction

It's the world's poor who die earlier.

This statement, taken from a World Bank review of the Millennium Development Goals (MDG) for Health, should not be taken with a grain of salt. Mortality and malnutrition rates tend to be much higher among the world's poor. The poor, in general, suffer from far higher levels of ill health, mortality, and malnutrition than the better-off, and their poor health is one of the factors that

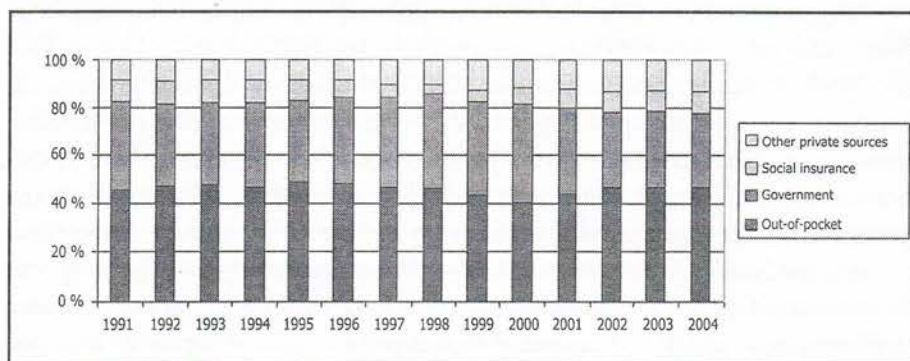
keep them poor or have caused their poverty in the first place. In the local scene, several MDG indicators—e.g., reduced prevalence of underweight children, lower death rates from certain diseases such as tuberculosis, and improved water and sanitation facilities—are still far from targeted levels.

In addressing this problem, there should be an involvement of public and private money and resources. Looking at national figures, health expenditures in the Philippines, unfortunately, constituted only 3.2 percent of gross domestic product (GDP) as of 2003, which was way below the average world percentage level and the standard percentage level for developing countries set by the World Health Organization (WHO): 10.2 percent and 5 percent of GDP, respectively. According to the World Bank, on per capita basis the country's spending on health is only US\$ 3.8, much lower compared to world standards of US\$ 588.

Accounting for this measly level of expenditures is a mixture of different sources: (a) local and national government through general taxation; (b) social health insurance such as the Philippine Health Insurance Corporation (PhilHealth), Government Service Insurance System (GSIS), Social Security System (SSS), Overseas Workers and Welfare Administration (OWWA), and Employees Compensation Commission (ECC); (c) voluntary or private health insurance from health maintenance organizations (HMOs), employer-based plans, and from private schools; and (d) out-of-pocket payments, which are payments made by households at the point they receive health services. Typically these payments include doctor's consultation fees, purchases of medication, and hospital bills.

Figure 1 presents the distribution of health expenditures by fund source. During the period 1991-2004, out-of-pocket expenditures account for almost half of the total fund. For these years, on average, private households shelled out Php 46 for every Php 100 health expenditure, while social health insurance spent only Php 8. The rest came from the government (Php 35) and other private health insurance sources (Php 11). This means that for every peso spending on health care, almost half is shouldered by individual families.

However, as Solon et al. [1999] pointed out, the household is the least effective and most inefficient health insurance institution since family income and size limit the resources that can be pooled. Thus, it is imperative that out-of-pocket health expenditures be examined in detail for policy implications. The reliance on out-of-pocket expenditures by households, especially the poor households, presents a problem in instances of catastrophic health payments, which may push them further below the poverty line and to a state of impoverishment.

Figure 1. Distribution of health expenditures by source of funds, 1991-2004

Source: NSO 2006.

The paper attempts to discuss catastrophic health care and its effects on impoverishment and poverty. The second section discusses the scope of catastrophic health care, its causes and consequences. The third and fourth sections describe the data and present the methodologies used in analysing the effect of catastrophic health care on out-of-pocket health expenditures. The last two sections present the results and conclude with the study's main points.

2. Catastrophic health spending

A WHO report [2005] demonstrates that every year, more than 150 million individuals in 44 million households face financial catastrophe as a direct result of having to pay for health care. This "financial catastrophe" is due to households paying health-care fees in which the amount is extremely high in relation to income. These high expenditures may mean eliminating comfort and convenience that may otherwise be gained from spending on leisure and other nonbasic items, cutting down on necessities such as food or clothing, or being unable to pay for child education. The need to pay out-of-pocket may also mean that households will not seek care even when they need it.

Catastrophic health expenditure is not always synonymous with high health-care costs. A WHO report [2005] stated that the effects of catastrophic health-care costs depend on the availability of health services requiring out-of-pocket payments, the household's capacity to pay, and the availability of prepayment mechanisms for risk pooling. With high out-of-pocket payments, absence of

risk-pooling mechanisms in health-care financing systems and high poverty levels can result in catastrophic health-care expenditure.

Wagstaff and van Doorslaer [2001] outlined the analysis of catastrophic health-care payments using two methods. The first is based on egalitarian notions of equity or fairness. Fairness in financial contribution and protection against financial risk in health spending is based on the notion that every household should pay a fair share. Gillon [1986] argued that it is the egalitarian notion that health care ought to be distributed according to need which commands the greatest support among health professions and the public at large. Even WHO argued that health-system payments should be organized in such a way that the burden of payments is equalized across households. However, according to Murray et al. [2003], deviations from this perfect fairness are likely, with two distinct effects: vertical and horizontal. Vertical effect refers to the situation where households with different incomes contribute different proportions of their incomes. Horizontal effect, meanwhile, refers to the situation in which households facing similar conditions pay different proportions of their incomes. Extreme horizontal inequality occurs when households face catastrophically high health expenditures, which can be 40 percent or more of their ability to pay. Kawabata, Xu, and Carrin [2002] also stated that WHO proposes that health expenditure be called catastrophic whenever it is greater than or equal to 40 percent of the pay capacity.

The second focuses on minimum standard approach requiring that payments should not exceed a prespecified share of prepayment income and should not drive households into poverty as mentioned by Wagstaff and van Doorslaer [2001]. This share should not exceed or fall short of the threshold. In this approach, there are two identifiable strands of literature regarding the threshold. The first sets the threshold in terms of proportionality of income. This threshold should be considered as a benchmark to ensure that households do not spend more than some prespecified fraction of their income on health care; spending beyond this threshold is labeled catastrophic. The second sets the minimum in terms of the absolute level of income. This threshold should be a benchmark for ensuring that spending on health care does not push households into poverty.

At this point, it is necessary to define clearly the terms "ability to pay" and "prepayment income". Ability to pay can be a good indicator of a household's long-term "normal" living standards. Derived from a utility function commonly used in poverty literature, Murray et al. [2003] defined ability to pay as household consumption less subsistence expenditure, or household nonsubsistence spending. More precisely, Wagstaff and van Doorslaer [2001] defined ability

to pay as total household consumption minus food expenditures (as a proxy for nondiscretionary expenditure) minus (or plus) any income windfalls (or shortfalls). Meanwhile, prepayment income is measured by total household consumption expenditures, including out-of-pocket payments for health services. Representing y as ability to pay and x as prepayment income, we can represent the relationship of the two variables as:

$$y = x - D(x) \tag{1}$$

Given the definitions, it can easily be deduced that $D(x)$ represents the total actual food expenditures. However, the variable $D(x)$ can be actual food spending or a food allowance indicating the cost of reaching a target level of nutrient intake. This may arise if some households report food expenditures lower than subsistence spending. This indicates that the household's food expenditure is less than the estimated poverty standard for that country. As pointed out by Cavagnero et al. [2006], this may occur since reported food expenditures in surveys do not consider food subsidies, coupons, self-production, and other noncash means of food consumption.

No one should spend more than a given fraction of their income on health care. Given out-of-pocket health spending, this fraction would depend on whether income will be in terms of either x or y , as defined earlier. It is vital to express out-of-pocket health payments as a share of prepayment income and ability to pay. This can be expressed as

$$T/x = \text{out-of-pocket payments/prepayment income}$$

$$T/y = \text{out-of-pocket payments/ability to pay}$$

Using ratios T/x and T/y where T represents out-of-pocket health payments, a given fraction (z_{cat}) can be arbitrarily set. This fraction (z_{cat}) is the threshold in determining the extent of catastrophic health expenditures. As mentioned earlier in the paper, based on WHO standards, this fraction is set at 40 percent using the T/y ratio.

To determine the effect of catastrophic health expenditures on poverty, Wagstaff and van Doorslaer [2001] outlined these poverty measures of incidence and intensity of catastrophic health-care costs as catastrophic payment headcount (which measures poverty incidence) and overall mean catastrophic gap (which measures poverty intensity). Catastrophic payment headcount is the percentage of the sample whose out-of-pocket expenditures exceed the arbitrary threshold, z_{cat} . This measure is represented as a fraction, H_{cat} , of the sample whose expenditures as a proportion of income exceed the threshold, z_{cat} . If a variable O_i represents the catastrophic "overshoot" equal to $T_i/X_i -$

z_{cat} if $T_i/X_i > z_{cat}$ and zero otherwise (alternatively, $T_i/Y_i - z_{cat}$ if $T_i/Y_i > z_{cat}$ and zero otherwise), and a variable $E_i = 1$ if $O_i > 0$, the catastrophic payment headcount is equal to

$$H_{cat} = \frac{1}{N} \sum_{i=1}^N E_i = \mu_E \quad (2)$$

where N is the sample size and μ_E is the mean of E_i . He pointed out, however, that there is a disadvantage in using only the catastrophic payment headcount. This measure fails to capture the height by which individuals exceeding the threshold actually exceed it. Considering the poverty literature, the measure analogous to poverty gap is called catastrophic payment gap. This measure captures the height by which out-of-pocket payments exceed the said threshold, z_{cat} . The intensity or severity in defining the average gap of catastrophic payments is represented as

$$G_{cat} = \frac{1}{N} \sum_{i=1}^N O_i = \mu_O \quad (3)$$

where μ_O is the mean of O_i . The mean positive gap can also be derived from the ratio of these identities represented by

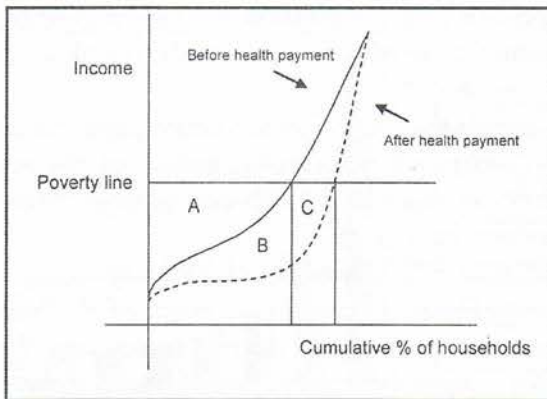
$$MPG_{cat} = \frac{\sum_{i=1}^N O_i}{\sum_{i=1}^N E_i} = \mu_O / \mu_E \quad (4)$$

To determine who among the different sectors would suffer from these health expenditures, some measures of health inequalities are available and useful in the study. However, as Wagstaff, Paci, and van Doorslaer [1991] pointed out, one of these measures, the concentration index, is most likely to present an accurate picture of socioeconomic equalities in health. Using this measure to analyse health spending, people are ranked not in terms of their health but in terms of their socioeconomic status, beginning with the most disadvantaged. Its graphical representation, the concentration curve, plots the cumulative proportions of the population (beginning with the most disadvantaged and ending with the least disadvantaged) against the cumulative proportions of health expenditures. The ideal case is if health spending is equally distributed across socioeconomic groups, the concentration curve will coincide with the diagonal line.

The impact of catastrophic health-care spending through these measures can be analysed further by determining the extent of damage of catastrophic payments, or the state of impoverishment caused by these payments. Estimated basic subsistence needs serve as the poverty line for analysing the poverty impact of out-of-pocket health payments. To Murray et al. [2003], a household is impoverished when it crosses the poverty line after paying for health services, shifting from nonpoor to poor. Instead of food expenditures, the subsistence expenditures are used to capture the effects of household subsistence spending. This spending is the minimum requirement to maintain basic life in a society. Some households may report food expenditure that is lower than subsistence spending. This indicates that the household's food expenditure is less than the estimated poverty standard for that country. Thus a household is impoverished if the total consumption expenditure less out-of-pocket health payment is less than subsistence expenditure.

Figure 2 depicts the poverty impact by using a hypothetical distribution of income, where the horizontal axis measures cumulative income and the vertical axis shows the cumulative percentage of the total households. Using the poverty line, the poverty gap before the health payments is area A, which equals total income required to push these households above the poverty line. After health payments, the poverty gap has increased, covering areas A, B, and C.

Figure 2. Distribution of income and poverty line before and after health payment



3. Methodology and data

The data on household expenditures came from the Family Income and Expenditure Survey (FIES). FIES is a household survey conducted by the

National Statistics Office (NSO) every three years. It collects data on income and expenditures from the sampled families. The most recent FIES collected data for 2003 in two rounds—the first in July 2003 for the first semester, and the second in January 2004 for the second semester. Although the data from the previous survey year (2000) were used also for comparison, the 2003 FIES shall be the main dataset to be used in the analysis.

Using these data, the paper does not limit its analysis of the extent of catastrophic health expenditures based on the 40 percent threshold set by WHO. It explores different levels of thresholds and measurements, specifically the proportions used for out-of-pocket health payments. It uses two proportions, out-of-pocket health payments as a share of prepayment income and as a share of ability to pay. In reference to the survey used, prepayment income is the level of total household consumption expenditures, while ability to pay is computed as total household consumption expenditures less food expenditures or equivalently, total household nonfood expenditures.¹

4. Descriptive data analysis

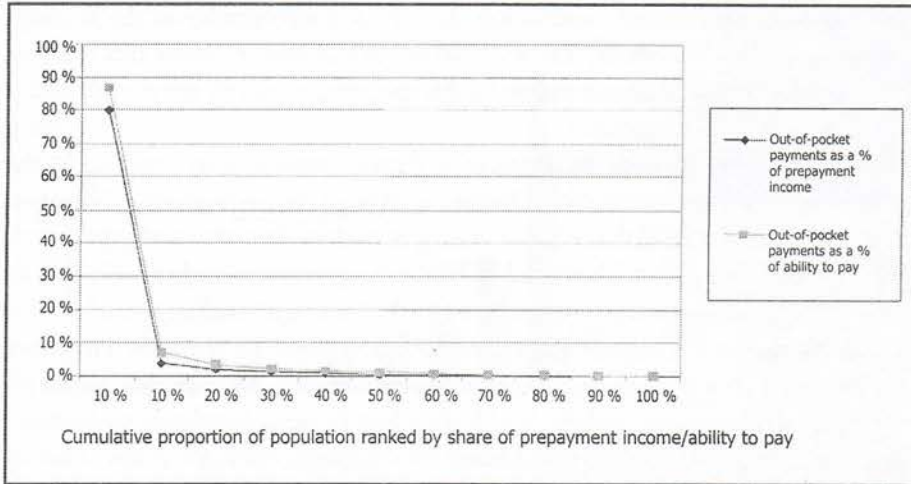
The horizontal axis in Figure 3 shows the cumulative share of the 2003 sample ordered by the proportion by ratios T/x and T/y . About 10 percent of the total household sample spend as much as 80 percent of their total expenditures (both measured as prepayment income or ability to pay) in out-of-pocket health spending. A vertical line representing the WHO standards of 40 percent threshold can be superimposed on this graph, and it can be seen that less than 10 percent of the population face catastrophic health spending. Therefore, it is deemed more relevant in this study to look at other thresholds as well.

Figure 3 also reveals that out-of-pocket health payments as a proportion of either measures tapers off in increasing sample of the population since households allot different amounts of health-care spending, given their spending preferences and income constraints.

To understand more fully the impact of health spending on households of different incomes, Figure 4 presents the effect of the burden of health expenditures across income deciles in the said survey data. With an average of Php 2,578 across sample, the trend of out-of-pocket payments expectedly increases toward the highest-income group and shoots up in the tenth income decile. Both proportions of out-of-pocket health payments to prepayment income and to household's ability to pay increase gradually across deciles and are within range of 1-3 percent. This can be explained because in lower-

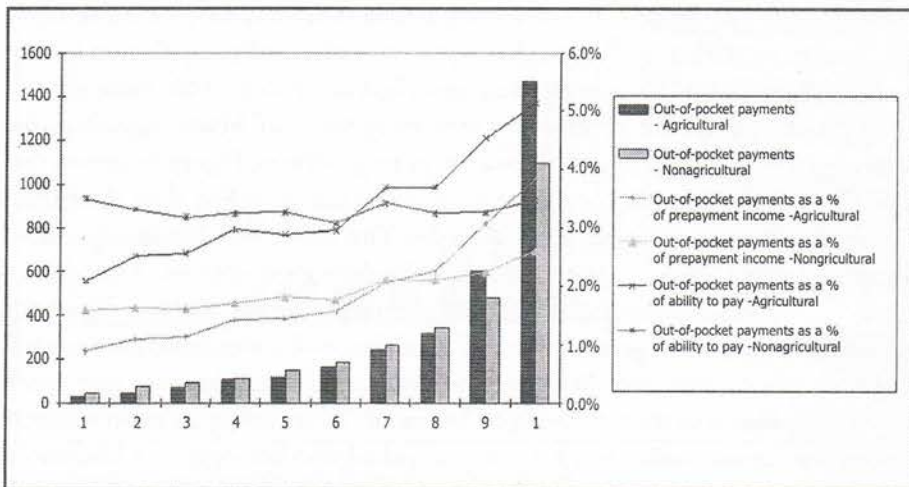
¹ Food expenditures do not include consumption of alcoholic beverages, tobacco, and food outside home (such as meals consumed at school, at work, or at hotels, restaurants, etc.).

Figure 3. Out-of-pocket payments as share of prepayment income and ability to pay by cumulative percentage of population, 2003



Source: Family Income and Expenditure Survey 2003.

Figure 4. Out-of-pocket payments by income decile, 2003



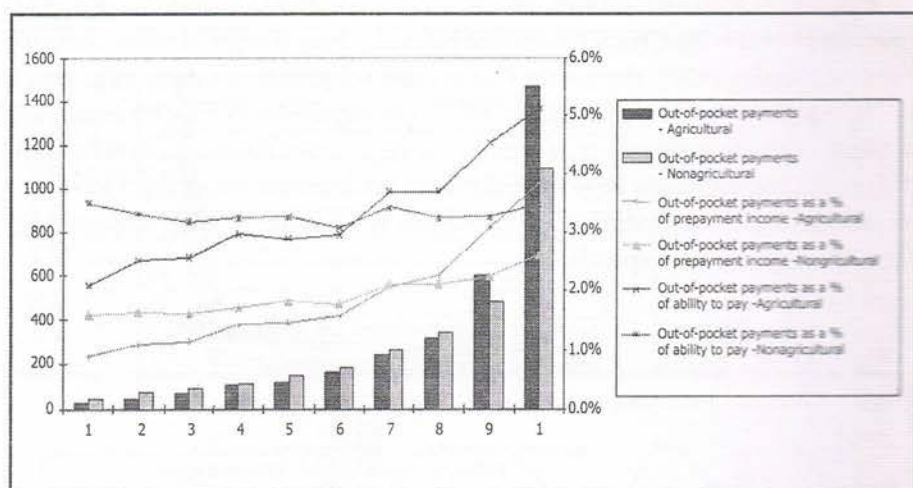
Source: Family Income and Expenditure Survey 2003.

income deciles, almost all their available resources are used for basic needs, especially food expenses, unlike in higher-income deciles where they can give up the nonsubsistence purchases and reduce these expenditures to adjust for any possible catastrophic health-care cost. This is also similar to the findings of the study of Kawabata, Xu, and Carrin [2002] who pointed out that the highest proportion of catastrophic health spending does not necessarily occur in the lowest-income group.

The trend in income differences is further explored by looking at the distribution by different socioeconomic indicators. Socioeconomic indicators play an important role in the decision making in budget allocation and expenditure patterns of households. Illustrated in Figure 5, agricultural indicators show an interesting trend across income groups. For the first eight deciles, out-of-pocket health payments are slightly greater in nonagricultural households. However, for the two highest income groups, out-of-pocket health payments escalated for agricultural households, and the health spending of nonagricultural households pales in comparison to their agricultural counterparts. Similarly, if the share of out-of-pocket payments in prepayment income or ability to pay is considered, it can be observed that this share for nonagricultural households is almost the same in different income groups, while this share for agricultural households soars for the two highest income groups. As explained by Hotchkiss et al. [2004], rural individuals seeking health care through hospitals and clinics, which are located solely in municipalities, may feel more vulnerable and, as a response, are more likely to pay more out-of-pocket payments than are urban clients of the same income groups. Furthermore, health providers may be more likely to demand payments from rural clients, perhaps as a result of provider bias or because rural clients are perceived as being less likely to provide more gifts.

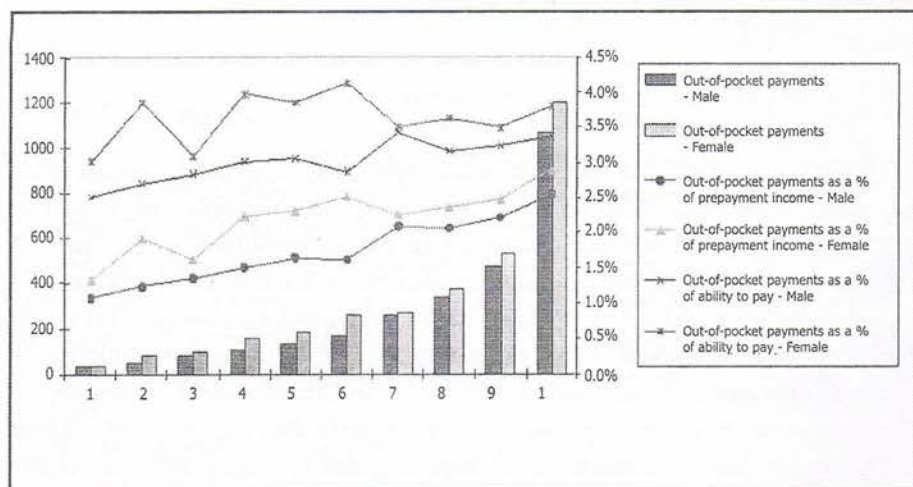
Although there are kinks in the increasing trend of health spending, the household headship across different income groups in Figure 6 shows that female household heads contribute more to health spending than their male counterparts across different income deciles. This means that female household heads are more likely to face catastrophic health expenditures. This can be attributed to women's control over total expenditures, which makes a difference in health outcomes. In general, in many countries, women exercise little control over household resources. Women who assume this headship role give much more importance to the well-being of her family by spending more on health if necessary. Similar studies show that an individual who belonged to a household headed by a female had a significantly positive association with the magnitude of health expenditure.

Figure 5. Out-of-pocket payments by agricultural indicator and income decile, 2003



Source: Family Income and Expenditure Survey 2003.

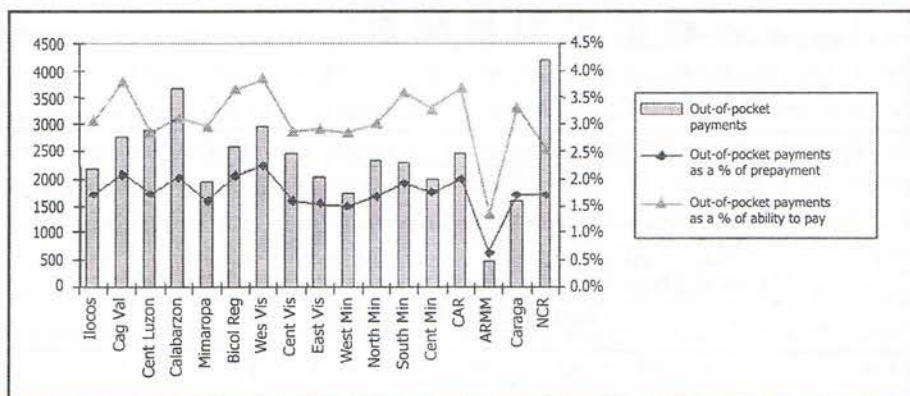
Figure 6. Out-of-pocket payments by household headship and income decile, 2003



Source: Family Income and Expenditure Survey 2003.

Among different regions it is observed that households located in the National Capital Region (NCR) and the Autonomous Region in Muslim Mindanano (ARMM) are, on average, the biggest and most modest out-of-pocket spender in health care, respectively (see Figure 7). Surprisingly, despite being the biggest spender, NCR is not the region most vulnerable to catastrophic health spending. Having the highest share of health payments to either prepayment income or ability to pay, the most vulnerable regions are Western Visayas and the Cordillera Autonomous Region (CAR). This validates the result that high levels of out-of-pocket payments do not necessarily translate to high susceptibility to catastrophic health spending.

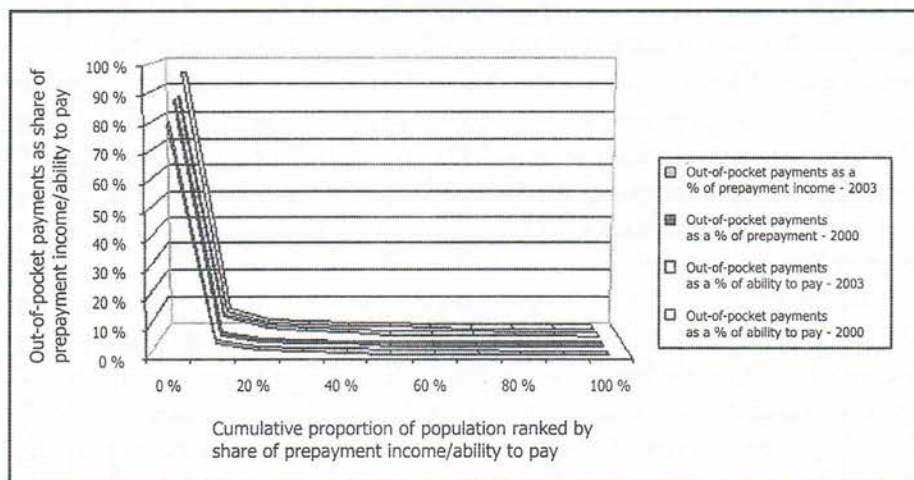
Figure 7. Out-of-pocket payments by region, 2003



Source: Family Income and Expenditure Survey 2003.

More important, the trend in health spending is observed across time. Figure 8 shows the 2000 and 2003 trend of out-of-pocket payments as share of prepayment income and ability to pay by cumulative percentage of population. If the data are examined more closely, for the first 10 percent of the household population ranked by share of prepayment income/ability to pay (starting with the highest share), the probability of facing catastrophic health expenditures among households is greater in 2000 than in 2003. However, for the remaining 90 percent, the households in 2003 data face a higher chance than those in 2000 in incurring catastrophic health spending. This means that the number of households that incur the most in health spending relative to their total expenditures or total nonfood expenditures is greater in 2000 data, and the number of households that generally do not incur as much in health spending relative to total expenditures or total nonfood expenditures is greater in 2003 data.

Figure 8. Out-of-pocket payments as share of prepayment income/ability to pay by cumulative percentage of population, 2000 and 2003.



Source: Family Income and Expenditure Survey 2000 and 2003.

To refine the analysis and determine the extent of damage brought about by health spending to poverty, the next section presents useful measures in this study.

5. Poverty and impoverishment

Different thresholds of out-of-pocket payments, as a fraction of total expenditures and as a fraction of ability to pay, are illustrated using different poverty measures. This is done since as pointed out by Wagstaff and van Doorslaer [2001], this threshold level is inevitably arbitrary and it would clearly depend on whether income was defined in terms simply of total consumption expenditures or in terms of a measure of ability to pay. As mentioned earlier, based on WHO standards of 40 percent threshold alone, the survey data used would not clearly determine the incidence and intensity of catastrophic health spending.

Table 1 presents these poverty measures. At different set thresholds (z_{cat})—at 1 percent, 2.5 percent, 5 percent, and 10 percent specifically, headcount measures and gap measures are illustrated for both shares (share of prepayment income and ability to pay). It shows that for both the 2000 and 2003 survey data, as the threshold levels increase from 1 percent to 10 percent, the catastrophic payment headcount, H_{cat} , expectedly decrease as the number of households

whose out-of-pocket expenditures (as a proportion of either total expenditures or total ability to pay) exceed the assigned threshold decrease. In 2003, as much as 7.7 percent of the sample recorded out-of-pocket payments in excess of 5.0 percent of their consumption expenditures; 8.3 percent of the sample spend more than 5.0 percent of their nonfood consumption on out-of-pocket health expenditures. It can also be deduced from this table that doubling the threshold level, z_{cat} , reduces the catastrophic payment headcount by half. Under shares of prepayment income and ability to pay, mean positive gap, MPG_{cat} , rises for different increasing thresholds. It is therefore clear that the decline in the overall mean catastrophic gap is due to the decline in the catastrophic payment headcount.

In 2003 there are more people subjected to catastrophic payment when the share of prepayment income as a measure is used, but there are less people subjected to this same burden when the share of ability to pay as a measure is used. Using the same comparison with 2000, overall mean catastrophic gap in 2003 is greater for share of prepayment income and less for ability to pay. This illustrates that these two share definitions give different trends through time. In general, therefore, when compared with 2000 data, the catastrophic character of out-of-pocket payments in 2003 became larger when the share in prepayment income is used, and became smaller when share of ability to pay is used.

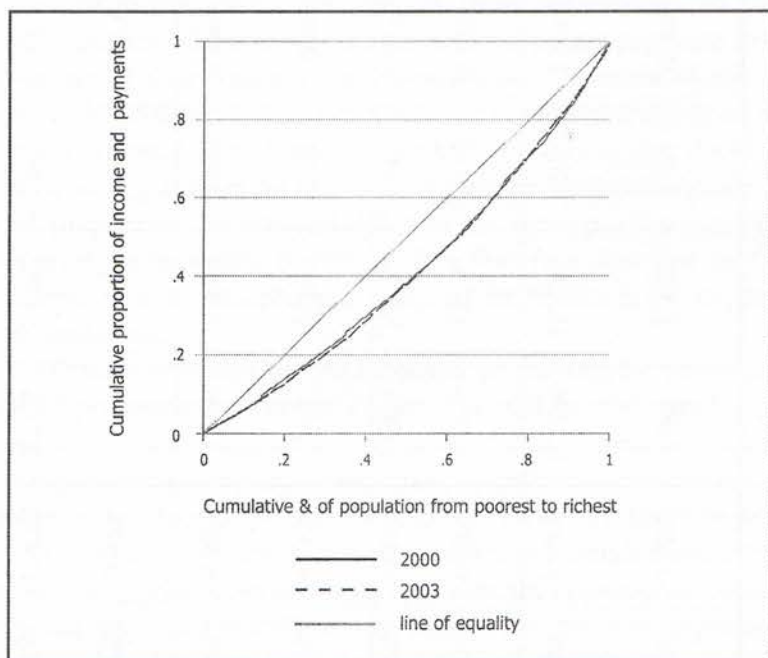
As Wagstaff and van Doorslaer [2001] noted, it is still more important to use measures that reflect that catastrophic costs matter more for the poor. It seems likely that most societies in general will care more if it is an individual in the lowest-income group whose health spending (as a share of its prepayment income or ability to pay) exceeds the threshold than if it is among the highest-income group. To see how proportions of those exceeding the threshold vary across the income distribution, concentration curves displayed was derived using the two survey data (see Figure 9). Both concentration curves lie below the diagonal line. These graphical tools mean that there is a greater tendency for the better-off to exceed the payment threshold. Thus those among the higher-income groups are more likely to face catastrophic health expenditures. This finding is consistent with the earlier results.

How much can these catastrophic payments cause further suffering that would lead to impoverishment has yet to be answered. Figure 10 shows the distribution of impoverished households brought about by out-of-pocket health payments. More than 80 percent of those in the lowest-income group are most susceptible to being impoverished. This is expected since official subsistence threshold expenditures are used in determining the extent of impoverishment in each income group instead of actual food expenditures, and households

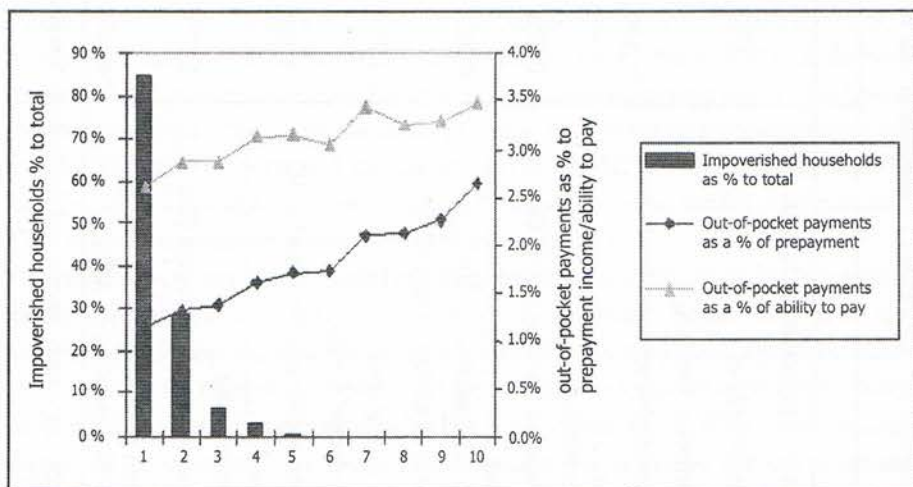
Table 1. Incidence and intensity of catastrophic health expenditures, 2000 and 2003

	2000					2003						
	Share of prepayment income (T/x)	1.0%	2.5%	5.0%	10.0%	1.0%	2.5%	5.0%	10.0%	1.0%	2.5%	5.0%
<i>Threshold level</i>												
Headcount measure												
Catastrophic payment headcount, H_{cat}	27.30%	13.40%	7.10%	3.20%	32.50%	15.10%	7.70%	3.50%				
Gap measure												
Overall mean catastrophic Gap, G_{cat}	1.09%	0.81%	0.57%	0.33%	1.20%	0.87%	0.61%	0.35%				
Mean positive gap of catastrophic health expenditures, MPG_{cat}	4.00%	6.05%	8.03%	10.19%	3.69%	5.79%	7.84%	9.81%				
Share of ability to pay (T/y)												
<i>Threshold level</i>												
Headcount measure												
Catastrophic payment headcount, H_{cat}	43.50%	23.20%	12.80%	6.60%	34.10%	16.00%	8.30%	3.80%				
Gap measure												
Overall mean catastrophic Gap, G_{cat}	2.17%	1.70%	1.27%	0.82%	1.28%	0.93%	0.65%	0.37%				
Mean positive gap of catastrophic health expenditures, MPG_{cat}	4.98%	7.30%	9.94%	12.47%	3.75%	5.85%	7.86%	9.86%				

Source: Family Income and Expenditure Survey 2000 and 2003.

Figure 9. Concentration curves on health spending, 2000 and 2003

Source: Family Income and Expenditure Survey 2000 and 2003.

Figure 10. Impoverishment and out-of-pocket payments by income decile, 2003

Source: Family Income and Expenditure Survey 2003.

do report food expenditures less than subsistence expenditures. Although the probability of facing catastrophic health expenditures is rising in increasing income groups, the risk of being poorer is still rooted in the lowest income group. Due to catastrophic health expenditures, across sample, about 14 percent of total households fell into the condition of impoverishment.

6. Conclusion

Because ill health can be unpredictable and uncertain, the impact of health-care costs, especially on poorer members of society, can be adverse. The share of out-of-pocket health spending exposes near-poor households to the risk of impoverishment. Also, the household choice between the need to survive (through its subsistence spending) or the need to immediately address illness or poor health (through out-of-pocket health spending) is regarded as important, thus the removal of any financial barriers to addressing both needs is desirable. Protection against financial hardship owing to catastrophic illnesses is definitely advantageous.

Since the out-of-pocket share of health spending in GDP may not in practice be directly related to the country's per capita income, the government has a clear role and needs to intervene. Although the higher-income groups are more vulnerable to catastrophic health spending, the government must not end up paying the medical expenses of people who can easily afford to spend their own resources. Instead, it needs to concentrate on financing essential public goods and other areas where private spending is inefficient and target its limited resources to the poor or near-poor or to households belonging to a specific socioeconomic profile (such as geographical location, ratio of health workers to population, etc.). It should use its capacity and resources to control private spending at lower levels of care to avoid catastrophic risks. Besides the provisions on health insurance, it may still be necessary to provide subsidies for low-income groups for whom out-of-pocket expenses would take up too large a proportion of their income.

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