Coping with out-of-pocket health payments: empirical evidence from 15 African countries

Adam Leive[a] & Ke Xu[b]

Objective To explore factors associated with household coping behaviours in the face of health expenditures in 15 African countries and provide evidence for policy-makers in designing financial health protection mechanisms.

Methods A series of logit regressions were performed to explore factors correlating with a greater likelihood of selling assets, borrowing or both to finance health care. The average partial effects for different levels of spending on inpatient care were derived by computing the partial effects for each observation and taking the average across the sample. Data used in the analysis were from the 2002–2003 World Health Survey, which asked how households had financed out-of-pocket payments over the previous year. Households selling assets or borrowing money were compared to those that financed health care from income or savings. Those that used insurance were excluded. For the analysis, a value of 1 was assigned to selling assets or borrowing money and a value of 0 to other coping mechanisms.

Findings Coping through borrowing and selling assets ranged from 23% of households in Zambia to 68% in Burkina Faso. In general, the highest income groups were less likely to borrow and sell assets, but coping mechanisms did not differ strongly among lower income quintiles. Households with higher inpatient expenses were significantly more likely to borrow and deplete assets compared to those financing outpatient care or routine medical expenses, except in Burkina Faso, Namibia and Swaziland. In eight countries, the coefficient on the highest quintile of inpatient spending had a *P*-value below 0.01.

Conclusion In most African countries, the health financing system is too weak to protect households from health shocks. Borrowing and selling assets to finance health care are common. Formal prepayment schemes could benefit many households, and an overall social protection network could help to mitigate the long-term effects of ill health on household well-being and support poverty reduction.

Bulletin of the World Health Organization 2008;86:849–856.

Une traduction en français de ce résumé figure à la fin de l'article. *Al final del artículo se facilita una traducción al español.* الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

Introduction

The economic consequences of illness in developing countries have been the focus of increasing attention in recent years.[1–3] Health shocks, defined as unpredictable illnesses that diminish health status, are among the most important factors associated with poverty in this context. Households facing health shocks are often affected by both the payments for medical treatment and the income loss from an inability to work. In the absence of panel data, recent research has focused on the financial burden of health payments across countries.[4–7] When measuring financial protection from such payments, coping mechanisms provide important information on how households respond to health shocks and how payment may affect their future welfare; simply looking at the ratio of health spending to household expenditure can overstate the threat to consumption and the catastrophic consequences of health payments.[8]

Research from several studies suggests that households employ different strategies to cope with health shocks.[9–11] In the short run, when medical bills exceed a household's income, households may use savings, sell assets, borrow money from friends and family, or take out a loan using collateral. Families may also alter their labour allocation decisions; if a household head falls ill, family members previously not working may begin to do so to substitute for lost income and repay loans. Formal health insurance in developing countries is rare and many households also lack access to formal credit and savings arrangements.[12] Correspondingly, much of the borrowing and saving by households is informal in nature and reliant on the social capital of communities.

Most studies to date have focused on the coping strategies employed in one particular country.[13,14] While there is reason to believe that households in different contexts cope with health shocks differently,[15,16] determining the existence of patterns across countries is conceivably of great interest.

The purpose of this paper is to explore how households in Africa cope with out-of-pocket health payments and how strategies differ between financing inpatient services and financing outpatient and routine care. Out-of-pocket payments for outpatient services or drugs, particularly among people with chronic conditions, could amount to a great deal of money and may be even more detrimental to households

[a] International Monetary Fund, 700 19th Street NW, Washington, DC 20431, United States of America.
[b] World Health Organization, Geneva, Switzerland.
Correspondence to Adam Leive (e-mail: aleive@imf.org).
doi:10.2471/BLT.07.049403
(*Submitted: 25 March 2008 – Revised version received: 1 August 2008 – Accepted: 5 August 2008*)

over the long-term; however, they differ from out-of-pocket payments for inpatient care, which can involve large sums of money in a short period of time. Inpatient expenses may also correspond to more unpredictable forms of illness that households may be poorly equipped to deal with. Our focus is on the short-term strategies used to cope with the cost of medical care. Since our dataset is cross-sectional and lacks exogenous measures of a health shock, such as a reduction in activities of daily living, we are unable to examine the full economic costs of illness. This would also include lost income from lower productivity and the resulting change in household consumption.

The Setting

Limited by data availability at the time the study was conducted, we included the following 15 African countries: Burkina Faso, Chad, the Congo, Cote d'Ivoire, Ethiopia, Ghana, Kenya, Malawi, Mali, Mauritania, Namibia, Senegal, Swaziland, Zambia and Zimbabwe. These countries vary in their levels of income, government and total health expenditure, extent of out-of-pocket payments for health financing and average life expectancy (Table 1). All are classified as low-income countries by The World Bank, with the exception of the Congo, Namibia and Swaziland, which are lower-middle income countries. Average life expectancy ranges from a low of 37 years in Zimbabwe to a high of 58 in Ghana. These 15 countries are geographically spread throughout the western, central, eastern and southern parts of sub-Saharan Africa.

However, the health systems of these countries are generally characterized by low government revenues, low government and total health spending and few risk-pooling mechanisms. In 2002, total health expenditure was less than 30 US dollars (US$) per capita except in Namibia (US$ 97), Swaziland (US$ 63) and Zimbabwe (US$ 151) according to *World health statistics 2007*.[17] As a share of total health expenditure, out-of-pocket payments ranged from less than 6% in Namibia to over 60% in Cote d'Ivoire and Chad, with an average of about 40% for all 15 countries. Some, such as Burkina Faso, Ghana and Senegal, have a history of community health insurance. Such microinsurance schemes for health care are part of a larger umbrella of microfinance initiatives, including savings and credit instruments, that have a large degree of community involvement.[18] Social health insurance exists in few African countries, such as Ghana, Kenya and the United Republic of Tanzania and only on a very small scale.

Methods

Data

The data were obtained from the World Health Survey conducted in 2002–2003, which was launched by WHO to provide valid, reliable and comparable information across countries regarding health status and health systems.[1] The World Health Survey is cross-sectional and is based on a multi-stage clustered random sample of households designed to be nationally representative. The questionnaire is standardized across countries to facilitate international comparisons. Sample sizes ranged from 2754 in the Congo to 5276 in Malawi.

The survey collects a wide range of information on health status, health service utilization, health expenditures and household socioeconomic indicators. The household questionnaire is administered to the household member most knowledgeable about the health, employment and expenditures of the household. Household out-of-pocket payments for outpatient and routine expenses in local currency units were collected for a 4-week recall period. Household out-of-pocket payments for inpatient services were collected for both a 4-week and a one-year recall period.

With regard to coping strategies, the survey included questions on the means the household had employed to finance any out-of-pocket payments over the previous year. Such means included the following: (i) income; (ii) savings; (iii) reimbursement from an insurance plan; (iv) sale of assets; (v) borrowing from friends or family outside the household; (vi) borrowing from others; and (vii) other. However, information on the fraction of the out-of-pocket payments that was financed by each household by borrowing money or selling assets was unavailable.

Variables

The dependent variable was a binary variable representing the coping strategy used to finance out-of-pocket payments. We compared households selling assets and/or borrowing money to those that financed health care entirely from current income or savings. In our analysis, the dependent variable measuring coping behaviour was equal to 1 if a household sold assets, borrowed money, or did both to finance out-of-pocket payments during the year; it was equal to 0 if income or savings were used. The few households that used insurance were excluded from the analysis. To allow for comparisons across countries with different currencies, for each country we examined quintiles of total household spending on inpatient care among households where a hospitalization had occurred over the previous year. The lowest quintile of inpatient spending corresponds to level 1 and the highest corresponds to level 5. These households may also have incurred outpatient out-of-pocket spending during this period, but this information is unavailable in the survey and so is not included. We compared the coping strategies of these households to that of those whose health payments did not include hospitalization.

Control variables included socioeconomic indicators for the household and the household head. Since the survey did not contain detailed consumption or expenditure modules, including the amount of food purchased, home-produced, or received as a gift, household durables, etc., a household asset index was used as indicative of a household's permanent income. Such an index had already been calculated in the survey data for each socioeconomic quintile using a variant of the hierarchical ordered probit (HOPIT) model.[19] The index was divided into quintiles, which appear as explanatory variables. We included household size as defined by the survey – number of people living in the household – and a dummy variable for urban households. Three characteristics of the household head

[1] See http://www.who.int/healthinfo/survey/en/ for a detailed description of the survey.

were included, specifically age (above or below 60 years), sex and schooling. Schooling was measured using three dummy variables representing the following: no primary education; completion of primary school; completion of secondary school or higher. Descriptive statistics are presented in Table 2 (available at: http://www.who.int/bulletin/volumes/86/11/07-049403/en/index.html).

Regression model

We estimated a simple logit model to explore the factors correlated with a greater likelihood of financing health care by selling assets, borrowing, or both rather than by using income, savings, or other sources. The model was run separately for each country using the same set of independent variables available from the survey. The analysis unit was the household. Only households that reported having spent on health in the previous year were included in the regression model. The reference categories are the poorest income quintile for income, no primary education for schooling of the household head and households with out-of-pocket spending that did not include a hospitalization for health expenditure. We report regression results of the likelihood of selling assets and borrowing money to finance health payments and the average partial effects for different levels of spending on inpatient care. The average partial effects were calculated by computing the partial effects for each observation and then taking the average across the sample. This corresponds to the relative probability of selling assets and borrowing money between households with a particular level of inpatient out-of-pocket expenditure and those whose out-of-pocket payments did not include a hospitalization.

Results

Descriptive results

In most countries, around 30% of all households financed out-of-pocket health expenditure by borrowing and selling assets (Table 2). About 50% of the households with a hospitalization in the previous year did so across countries, while the figure was less than 40% among those whose health services did not include hospitalization. Fig. 1 illustrates the percentage of households borrowing and selling assets by income quintile. In nearly all countries, fewer households in the richest quintile sold assets or borrowed money to cope with medical bills compared to lower quintiles. However, no clear differences were noted at intermediate income levels.

The utilization rate of inpatient services of any household member within the previous year was between 10% and 20% in most countries. This was lowest in Ethiopia at about 6% and highest in Mauritania at nearly 24% (Table 2). Monthly out-of-pocket payments on outpatient and inpatient services varied widely by country; however, out-of-pocket payments for inpatient care were greater than for outpatient or routine services in all but Zimbabwe and more than twice as large in seven countries (Fig. 2).

Table 1. **Gross domestic product per capita, total health spending per capita, household out-of-pocket health expenditure and average life expectancy in 15 Africa countries, 2002–2003**[17]

Country	GDP in US$, 2002	Health spending in US$, 2002	Out-of-pocket health expenditure in %,[a] 2002	Life expectancy in years, 2003
Burkina Faso	269	14	53.5	45
Chad	224	12	62.2	46
Congo	838	20	47.4	54
Côte d'Ivoire	674	26	61.1	45
Ethiopia	84	5	35.0	50
Ghana	298	19	48.4	58
Kenya	404	19	44.8	50
Malawi	160	16	11.9	42
Mali	259	16	59.6	45
Mauritania	403	13	26.7	51
Namibia	1597	97	6.0	51
Senegal	457	24	57.2	56
Swaziland	1145	63	18.7	35
Zambia	331	21	29.1	39
Zimbabwe	2427	151	34.3	37

GDP, gross domestic product.
[a] Percent of total health expenditure.

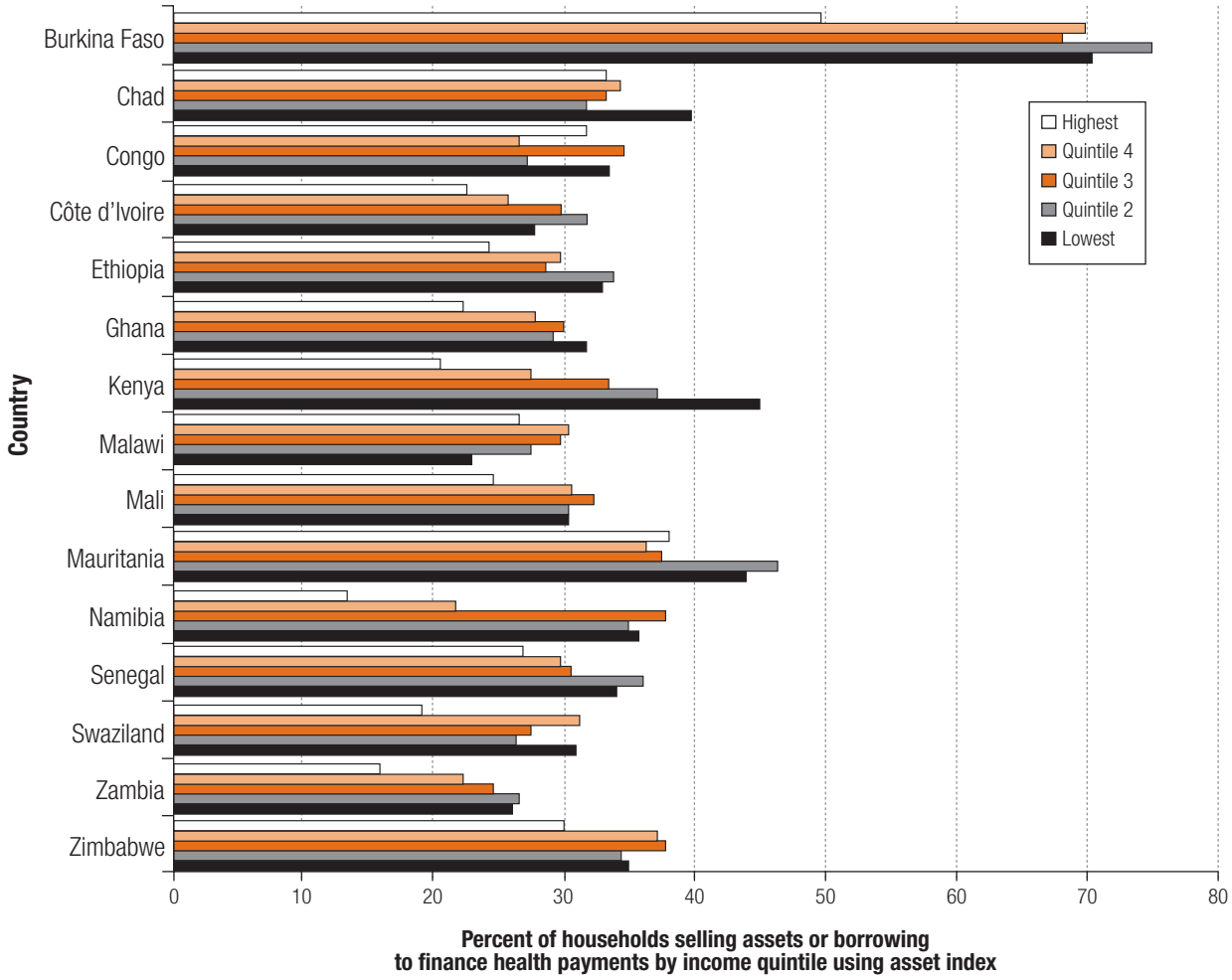
Regression results

Table 3 (available at: http://www.who.int/bulletin/volumes/86/11/07-049403/en/index.html) displays the results of the logit regressions. In general, higher inpatient spending was associated with a greater likelihood of borrowing and selling assets at the 5% significance level, except in Burkina Faso, Namibia and Swaziland. The probability was greater the higher the level of inpatient spending, as indicated by the average partial effects (Table 4). In 11 countries, households with the highest level of inpatient spending were at least 10% more likely to borrow and sell assets than those that made no out-of-pocket payments for inpatient care. The effect was greatest in the Congo, Ethiopia and Ghana, where households in the highest category of inpatient spending were 38%, 39% and 40% more likely to cope by selling assets and borrowing, respectively. The effect of lower levels of inpatient spending was not as strong.

Across household income quintiles, the results are consistent with the descriptive analysis. The richest households were almost always less likely to sell assets and borrow to finance health spending than the poorest households, after controlling for location, characteristics of the household head and type of household health spending. The results obtained were statistically significant at the 5% significance level in 9 of the 15 countries. However, there was no significant difference in household coping behaviours among the lowest three household income quintiles. There was also no significant difference between the rich and the poor in several countries (Cote d'Ivoire, Mauritania, Senegal), and income was positively correlated with borrowing and selling assets in Malawi.

In addition, in half the countries urban households were significantly

Fig. 1. **Coping with health care expenditure through selling assets and borrowing, by household income level, in 15 African countries**



less likely than rural ones to cope by borrowing and selling assets. Male-headed households were also less likely to borrow and sell assets in 11 countries, although the opposite was noted in households headed by someone over the age of 60.

Discussion

In interpreting the results and making international comparisons, it is important to recognize the limitations of this study. First, information on the amount each household borrowed or the value and type of assets sold would have allowed for more insightful analysis of the coping mechanisms used by households to finance out-of-pocket payments for health care.[20] In the absence of such data, the study is largely limited to qualitative conclusions. Again, the analysis only captures the response to medical payment and not the full economic costs of an exogenous health shock. Moreover, a hospitalization may have occurred in combination with other idiosyncratic or common shocks, such as fluctuations in the weather and in commodity prices, that could have affected the coping strategies households used to finance medical care. Finally, households that were too poor to seek health care were not captured in the analysis.

Nevertheless, the study provides cross-country evidence that African households often turn to borrowing and selling assets to cope with medical bills. Households that incur spending for inpatient care, which is often unpredictable and sizeable, are more likely to do so than those whose health spending did not include hospitalization. The size and significance of this effect were generally more pronounced at higher levels of expenditure for inpatient care.

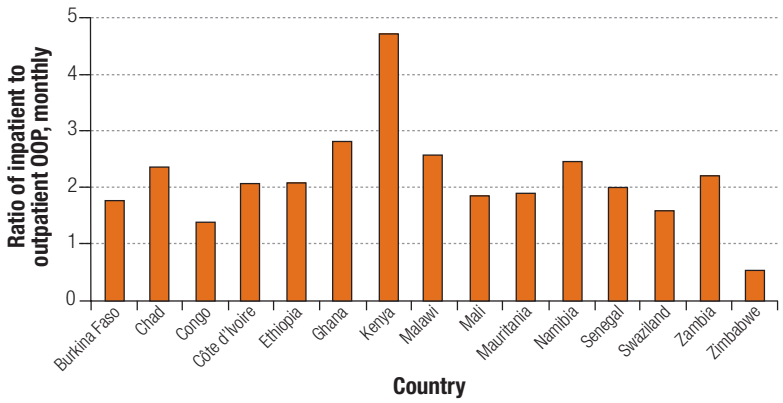
The likelihood of using credit and of selling assets may be less strongly correlated with household income if the major source of health financing in the country is out-of-pocket payments. This appears to be the case in Burkina Faso, the Congo, Cote d'Ivoire and Senegal, where out-of-pocket payments comprise over 50% of total health expenditure. Additionally, the poor in many of these countries often lack savings; however, this is not the case in Cote d'Ivoire, for example, where, perhaps surprisingly, nearly 80% of those living on less than US$ 1 a day have a savings account.[21] This may help explain why differences in income were not associated with differences in coping behaviour in this country.

The use of the coping strategies described herein also depends on the ability of households to borrow and the availability of assets that can be sold. The former is linked not only to the financial capacity to repay a loan but also to the availability of social capital. Differences in the amount and types of social capital may be large between the richest and poorest in society but

smaller between households in the middle- and lower-income strata.[22] This may be one of the reasons we did not find a significant difference in the use of these coping strategies between lower income quintiles in nine countries. Moreover, while we have searched for patterns in behaviour among countries, it is also reasonable to believe that the precise mechanisms underlying coping strategies are likely to be context-specific both within and across countries. Although focusing on income shocks from drought and not illness, Fafchamps et al. (1998) and Kazianga and Udry (2006) found that in Burkina Faso livestock sales make up a small share of financing such shocks.[23,24] This may explain why in our study the type and level of health spending in Burkina Faso showed no significant correlation with borrowing money and selling assets, although their research did find changes in grain stocks played an important role.

While this research has described the prevalence of different coping behaviours across countries, how well these mechanisms smooth consumption and to what extent they increase future vulnerability to shocks are key questions. Informal credit networks and microcredit schemes may help households maintain consumption levels in the face of idiosyncratic shocks. It may be possible to accumulate assets during good times and sell them if needed when illness strikes. Without formal insurance markets, such risk-coping strategies may help households smooth consumption, though perhaps not fully.[25–27] However, the evidence from analysing health shocks using panel data finds that such coping strategies do not fully protect consumption.[28–31] Several other studies have found that spending on food and education is sacrificed after illness.[32–34]

Fig. 2. **Ratio of inpatient to outpatient household out-of-pocket (OOP) health payments (monthly) in 15 African countries**



Introducing formal prepayment and risk-pooling to protect households, at least for large health shocks, is likely to be beneficial. Recently, Gertler et al. (2008) found that consumption is not protected from unexpected illness, but access to microfinance and lending programmes helps households self-insure consumption.[35] Our results indicate that households with outpatient spending or relatively inexpensive hospitalizations finance the cost of treatment from current income and savings more often than households with hospital episodes requiring higher payments. Coverage for catastrophic inpatient expenses could offer sizeable gains. However, it would be important to investigate the degree to which this might crowd out informal risk-coping arrangements on a context-specific basis.

Even so, there could likely still be gains from some form of formal prepayment scheme if informal coping strategies increase household vulnerability to future shocks.[36] Borrowing can be at high rates of interest; assets may be lumpy, in the sense that they must be accumulated in large, discrete amounts rather than small increments, and depleting them may sacrifice future income; and withdrawing children from school can reduce their human capital. It is therefore important to examine both the type of coping strategy used and the change in consumption, since smooth consumption might still reflect a costly situation for households.[37]

While formal prepayment including a comprehensive benefit package

Table 4. **Average partial effects[a] of out-of-pocket household expenditure for inpatient care,[b] as indicated by coefficients for five levels of expenditure, in 15 African countries**

Country	Expenditure level[c]				
	1	2	3	4	5
Burkina Faso	0.077*	0.011	0.036	0.029	0.063
Chad	0.054	0.130***	0.175***	0.252***	0.155***
Congo	0.279***	0.203**	0.232***	0.332***	0.377***
Côte d'Ivoire	0.082	0.114**	0.003	0.110**	0.150***
Ethiopia	−0.046	0.215***	0.236***	0.266***	0.386***
Ghana	0.150***	0.205***	0.244***	0.286***	0.395***
Kenya	0.019	0.232***	0.163*	0.161*	0.264***
Malawi	0.105**	0.037	0.114**	0.040	0.121**
Mali	0.037	0.115**	0.143**	0.240***	0.103**
Mauritania	0.081	0.160***	0.218***	0.221***	0.303***
Namibia	−0.064	−0.010	0.035	0.027	0.016
Senegal	0.122*	0.183***	0.178***	−0.012	0.248***
Swaziland	0.024	0.118	0.121	0.010	0.021
Zambia	0.273***	0.037	0.029	0.129***	0.148*
Zimbabwe	−0.043	0.001	−0.080	−0.111*	−0.019

* $P < 0.10$; ** $P < 0.05$; *** $P < 0.01$.

[a] The average partial effects were calculated by computing the partial effects for each observation and then taking the average across the sample.

[b] Regression models with interactions between income quintiles and expenditure levels for inpatient care were also estimated but produced similar results.

[c] Expenditure level 1 is the lowest category of inpatient spending and level 5 is the highest.

for health care might remain limited in these African countries for some time, coverage for catastrophic inpatient expenses may offer financial protection for many households. However, achieving this key policy objective is probably far from enough to prevent poverty caused by ill health. Income lost from an inability to work may be larger than the payment for health services with longer-lasting consequences. An overall social protection network could be beneficial to support poverty reduction in African countries. ■

Acknowledgements
We thank David Evans and Guy Carrin for their valuable comments and suggestions in the earlier stage of the study and are grateful to two anonymous referees for helpful comments. At the time of this research, Adam Leive was working at WHO. The views expressed here are those of the authors and do not necessarily represent those of the WHO, the International Monetary Fund or its Board of Executive Directors, or of the countries they represent.

Competing interests: None declared.

Résumé

Comment les ménages font-ils face aux dépenses de santé à leur charge : données empiriques provenant de 15 pays d'Afrique

Objectif Etudier les facteurs associés au comportement des ménages face aux dépenses de santé dans 15 pays d'Afrique et fournir des éléments aux décideurs politiques pour concevoir des mécanismes de protection financière dans le domaine de la santé.

Méthodes Une série de régressions logit ont été pratiquées pour étudier les facteurs corrélés à une plus grande probabilité de vente de biens, d'emprunt ou de réalisation de ces deux opérations pour financer des soins de santé. Les effets partiels moyens pour différents niveaux de dépenses de soins hospitaliers ont été obtenus en déterminant les effets partiels pour chaque observation et en calculant la moyenne sur l'échantillon. Les données utilisées pour l'analyse étaient tirées de l'Enquête sur la santé dans le monde 2002-2003, qui avait recueilli des informations auprès des ménages sur la façon dont ils avaient financé les dépenses de santé à leur charge pendant l'année précédente. Les ménages ayant vendu des biens ou emprunté de l'argent ont été comparés à ceux ayant financé leurs dépenses de santé à partir de leurs revenus ou de leurs économies. Ceux ayant fait appel à une assurance ont été exclus. Aux fins de l'analyse, une valeur de 1 a été affectée à la vente de biens ou à un emprunt financier et une valeur de 0 au recours à d'autres mécanismes pour faire face aux dépenses.

Résultats La proportion des ménages ayant réglé leurs dépenses de santé par un emprunt ou la vente de biens allait de 23 % en Zambie à 68 % au Burkina Faso. En général, les groupes disposant des plus hauts revenus avaient une probabilité moindre d'emprunter ou de vendre des biens. En revanche, les mécanismes de réponse aux dépenses de santé variaient peu entre les quintiles de revenus inférieurs. Les ménages confrontés à des dépenses hospitalières importantes avaient une probabilité nettement plus forte d'emprunter ou d'appauvrir leurs actifs que ceux finançant des soins ambulatoires ou médicaux de routine, sauf au Burkina Faso, en Namibie et au Swaziland. Dans huit pays, pour le coefficient associé au quintile de dépenses hospitalières le plus élevé, on avait $p < 0,01$.

Conclusion Dans la plupart des pays africains, le système de financement des dépenses de santé est trop faible pour protéger les ménages des dépenses catastrophiques. Le recours à l'emprunt ou à la vente de biens pour financer les soins de santé est une pratique courante. Des systèmes de prépaiement formels seraient utiles à de nombreux ménages et un réseau de protection sociale global pourrait contribuer à atténuer les effets à long terme de la mauvaise santé sur le bien-être des foyers et à réduire la pauvreté.

Resumen

Afrontar los pagos directos en salud: datos empírica de 15 países africanos

Objetivo Estudiar los factores asociados a los comportamientos adoptados por los hogares para afrontar los gastos sanitarios en 15 países africanos, y aportar a las instancias normativas datos probatorios que les permitan formular mecanismos de protección financiera de la salud.

Métodos Se realizaron regresiones logit para estudiar los factores correlacionados con una mayor probabilidad de vender bienes, pedir préstamos o ambas cosas para financiar la atención de salud. Los efectos parciales medios para diferentes niveles de gasto en atención hospitalaria se determinaron calculando los efectos parciales para cada observación y considerando la media de la muestra. Los datos usados en el análisis proceden de la Encuesta Mundial de Salud 2002-2003, en la que se preguntaba cómo habían financiado los hogares los pagos directos durante el último año. Los hogares que vendieron bienes o adquirieron préstamos se compararon con los que pudieron financiar la atención de salud con sus ingresos o ahorros. No se incluyó en el estudio a los que estaban asegurados. A efectos de este análisis, se asignó un valor de 1 a los que vendieron bienes o se endeudaron, y un valor de cero a los que afrontaron la situación mediante otros mecanismos.

Resultados Entre un 23% (Zambia) y un 68% (Burkina Faso) de los hogares vendieron bienes o pidieron dinero prestado. En general, los grupos con mayores ingresos fueron los que menos recurrieron a esas opciones, pero los mecanismos de afrontamiento no diferían de forma marcada entre los quintiles de ingresos inferiores. Entre los hogares con mayores gastos hospitalarios se observó una tendencia significativamente mayor a pedir préstamos y vender bienes en comparación con quienes tuvieron que financiar atención ambulatoria o gastos médicos corrientes, exceptuando los casos de Burkina Faso, Namibia y Swazilandia. En ocho países, el coeficiente para el quintil superior de los gastos en atención hospitalaria presentaba un valor de p inferior a 0,01.

Conclusión En la mayoría de los países africanos, el sistema de financiación sanitaria es demasiado débil para proteger a los hogares de los problemas críticos de salud. La petición de préstamos y la venta de bienes para financiar la atención de salud son reacciones frecuentes en esos casos. Unos sistemas formales de prepago podrían beneficiar a muchos hogares, y una red general de protección social podría ayudar a atenuar los efectos que la mala salud tiene a largo plazo en el bienestar doméstico, así como a reducir la pobreza.

ملخص

التأقلم مع ما يدفعه المواطنون من جيوبهم من أجل الصحة: بيِّنات تجريبية من 15 بلداً أفريقياً

الغرض: التعرف على العوامل التي تصاحب سلوكيات الأسر للتأقلم مع ما يواجهونه من نفقات صحية في 15 بلداً أفريقياً، مع تقديم البيِّنات لراسمي السياسات لتصميم آليات الحماية المالية الصحية.

الطريقة: أجرى الباحثون سلسلة من التحوفات اللوجستية لاستكشاف العوامل المرتبطة بقدر أكبر من احتمال بيع ممتلكاتهم أو الاقتراض أو كليهما معاً لتمويل الرعاية الصحية. وقد استنبط الباحثون متوسط التأثيرات الجزئية لمختلف مستويات الإنفاق على الرعاية داخل المستشفى من خلال حساب التأثيرات الجزئية لكل ملاحظة وأخذ المتوسط من كامل العينة. وقد استمدت البيانات المستخدمة في هذا التحليل من المسح الصحي العالمي 2002-2003، والذي تساءل عن كيفية تمويل الأسر للرعاية الصحية من جيوبهم، على مدى السنة المنصرمة. وقد قارن الباحثون بين الأسر التي باعت ممتلكات أو اقترضت أموالاً لتمويل الرعاية الصحية، وبين الأسر التي مولت الرعاية الصحية من دخلها أو مدخراتها. واستبعد الباحثون من يستفيد من التأمين الصحي. وفيما يتعلق بشؤون التحليل فقد خصص الباحثون القيمة 1 لبيع الممتلكات أو اقتراض المال، والقيمة 0 لآليات التأقلم الأخرى.

الموجودات: يتراوح التأقلم عن طريق الاقتراض وبيع الممتلكات بين 23% من السكان في زامبيا و68% في بوركينا فاسو. وبشكل عام كانت المجموعات ذات الدخل الأعلى هي الأقل احتمالاً للتعرض للاقتراض ولبيع الممتلكات إلا أن آليات التأقلم لم تختلف اختلافاً كبيراً بين الشريحة الخمسية الأقل دخلاً. وكان السكان الذين تحملوا نفقات أعلى بسبب دخول المستشفيات أكثر احتمالاً للاقتراض وبيع الممتلكات واستنفاد المدخرات بمن يمولون الرعاية خارج المستشفى أو يدفعون النفقات الطبية المعتادة، وذلك باستثناء ما يحدث في بوركينا فاسو وناميبيا وسوازيلاند. وفي ثمانية بلدان كان لمعامل الشريحة الخمسية الأعلى من حيث الإنفاق على المرضى داخل المستشفيات قيمة قوة الاحتمال دون 0.01.

الاستنتاج: إن معظم البلدان الأفريقية يكون فيها نظام التمويل الصحي بالغ الضعف بدرجة تحول دون حماية "الصحة من الصدمات". ويشيع الاقتراض وبيع الممتلكات لتمويل الرعاية الصحية. وقد تفيد خطة الدفع المسبق الرسمية الكثير من الأسر، كما قد تساعد شبكة الحماية الاجتماعية العامة في تخفيف وطأة التأثيرات الطويلة الأمد لاعتلال الصحة على السكان ومعافاتهم وفي تخفيف وطأة الفقر عليهم.

References

1. Foster A. Poverty and illness in low-income rural areas. *Am Econ Rev* 1994; 84:216-20.
2. Strauss J, Thomas D. Health, nutrition, and economic development. *J Econ Lit* 1998;36:766-817.
3. Gertler P, Gruber J. Insuring consumption against illness. *Am Econ Rev* 2002; 92:51-70.
4. Wagstaff A, Van Doorslaer E. Catastrophe and impoverishment in paying for health care: with applications to Vietnam 1993-1998. *Health Econ* 2003; 12:921-34. PMID:14601155 doi:10.1002/hec.776
5. Xu K, Evans D, Carrin G, Aguilar-Rivera AM, Musgrove P, Evans T. Protecting households from catastrophic health spending. *Health Aff* 2007;26:972-83. doi:10.1377/hlthaff.26.4.972
6. O'Donnell O, van Doorslaer E, Rannan-Eliya R, Somanathan A, Adihkari S, Akkazieva B, et al. (25 authors). Who pays for health care in Asia? *J Health Econ* 2008;27:460-75. PMID:18179832
7. Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJ. Household catastrophic health expenditure: a multicountry analysis. *Lancet* 2003;362:111-7. PMID:12867110 doi:10.1016/S0140-6736(03)13861-5
8. Flores G, Krishnakumar J, O'Donnell O, Van Doorslaer E. Coping with health care costs: implications for the measurement of catastrophic expenditures and poverty. *Health Econ* 2008; (forthcoming). PMID:18246595
9. Russell S. Ability to pay for health care: concepts and evidence. *Health Policy Plan* 1996;11:219-37. PMID:10160370 doi:10.1093/heapol/11.3.219
10. McIntyre D, Thiede M, Dahlgren G, Whitehead M. What are the economic consequences for households of illness and of paying for health care in low- and middle-income country contexts? *Soc Sci Med* 2006;62:858-65. PMID:16099574 doi:10.1016/j.socscimed.2005.07.001
11. Peters D, Yazbeck A, Sharmaand R, Ramana G, Pritchett L, Wagstaff A. *better health systems for India's poor*. Washington, DC: The World Bank; 2001.
12. Banerjee A, Duflo E. The economic lives of the poor. *J Econ Perspect* 2007; 21:141-67. doi:10.1257/jep.21.1.141
13. Sauerborn R, Adams A, Hien M. Household strategies to cope with the economic costs of illness. *Soc Sci Med* 1996;43:291-301. PMID:8844932 doi:10.1016/0277-9536(95)00375-4
14. Kabir M, Rahman A, Salway M, Pryer J. Sickness among the urban poor: A barrier to livelihood security. *J Int Dev* 2000;12:707-22. doi:10.1002/1099-1328(200007)12:5<707::AID-JID703>3.0.CO;2-G
15. Townsend R. Consumption insurance: an evaluation of risk-bearing systems in low-income economies. *J Econ Perspect* 1995;9:83-102.
16. Giles J, Yoo K. Precautionary behavior, migrant networks and household consumption decisions: an empirical analysis using household panel data from rural China. *Rev Econ Stat* 2007;89:534-51. doi:10.1162/rest.89.3.534
17. *World health statistics 2007*. Geneva: WHO Press; 2008. ISBN 978 92 4 156340 6.
18. Preker AS, Carrin G, Dror D, Jakab M, Hsiao W, Arhin-Tenkorang D. Effectiveness of community health financing in meeting the cost of illness. *Bull World Health Organ* 2002;80:143-50. PMID:11953793
19. Ferguson BD, Tandon A, Gakidou E, Murray CJL. *Estimating permanent income using indicator variables* [Evidence and Information Policy Cluster Discussion Paper]. Geneva: World Health Organization; 2003.
20. Lundberg M, Over M, Mujinja P. Sources of financial assistance for households suffering an adult death in Kagera, Tanzania. *S Afr J Econ* 2000; 68:420-36. doi:10.1111/j.1813-6982.2000.tb01287.x
21. Banerjee A, Duflo E. The economic lives of the poor. *J Econ Perspect* 2007; 21:141-67. doi:10.1257/jep.21.1.141
22. Woolcock M, Narayan D. Social capital: implications for development theory, research, and policy. *World Bank Res Obs* 2000;15:225-49.
23. Fafchamps M, Udry C, Czukas K. Drought and saving in West Africa: are livestock a buffer stock? *J Dev Econ* 1998;55:273-305. doi:10.1016/S0304-3878(98)00037-6

24. Kazianga H, Udry C. Consumption smoothing? Livestock, insurance and drought in rural Burkina Faso *J Dev Econ* 2006;79:413-446. doi:10.1016/j.jdeveco.2006.01.011
25. Townsend R. Consumption insurance: an evaluation of risk-bearing systems in low-income economies. *J Econ Perspect* 1995;9:83-102.
26. Morduch J. Income smoothing and consumption smoothing. *J Econ Perspect* 1995;9:103-14.
27. Morduch J. Between the state and the market: can informal insurance patch the safety net? *World Bank Res Obs* 1999;14:187-207.
28. Dercon S, Krishnan P. In sickness and in health: risk sharing within households in rural Ethiopia. *J Polit Econ* 2000;108:688-727. doi:10.1086/316098
29. Gertler P, Gruber J. Insuring consumption against illness. *Am Econ Rev* 2002;92:51-70.
30. Wagstaff A. The economic consequences of health shocks: evidence from Vietnam 1993-1998. *J Health Econ* 2007;26:82-100. PMID:16905205 doi:10.1016/j.jhealeco.2006.07.001
31. De Weerdt J, Dercon S. Risk-sharing networks and insurance against illness. *J Dev Econ* 2006;81:337-56. doi:10.1016/j.jdeveco.2005.06.009
32. Asfaw A, von Braun J. "Is consumption insured against illness?" Evidence on vulnerability to health shocks in rural Ethiopia. *Econ Dev Cult Change* 2004;53:115-29. doi:10.1086/423255
33. Carrin G, Gray E, Almeida J. Coping with ill health in a rickshaw puller's household in Chittagong, Bangladesh. *Southeast Asian J Trop Med Public Health* 1999;30:136-48. PMID:10695802
34. Pitayanon S, Kongsin S, Janjareon W. The economic impact of HIV/AIDS mortality on households in Thailand. In: Bloom D, Godwin P, eds. *The economics of HIV and AIDS: the case of south and south east Asia* Delhi: Oxford University Press; 1997.
35. Gertler P, Levine D, Moretti E. Do microfinance programs help families insure consumption against illness?. *Health Econ* 2008; forthcoming DOI: 10.1002/hec.1372
36. Dercon S. Income risk, coping strategies, and safety nets. *World Bank Res Obs* 2002;17:141-66. doi:10.1093/wbro/17.2.141
37. Chetty R, Looney A. Consumption smoothing and the welfare consequences of social insurance in developing economies. *J Public Econ* 2006;90:2351-6. doi:10.1016/j.jpubeco.2006.07.002

Table 2. **Mean and standard deviation of variables included in the study of household coping strategies (selling assets, borrowing or both) in the face of health shock in 15 African countries**

Variable	Burkina Faso *n* = 4814		Chad *n* = 4535		Congo *n* = 2754		Cote d'Ivoire *n* = 2980		Ethiopia *n* = 4184		Ghana *n* = 3886		Kenya *n* = 4520		Malawi *n* = 5276		Mali *n* = 3969		Mauritania *n* = 3277		Namibia *n* = 4015		Senegal *n* = 2819		Swaziland *n* = 2670		Zambia *n* = 4092		Zimbabwe *n* = 4021	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Households selling assets, borrowing, or both	0.69	0.46	0.34	0.47	0.31	0.46	0.27	0.45	0.30	0.46	0.28	0.45	0.31	0.46	0.27	0.44	0.29	0.45	0.40	0.49	0.30	0.46	0.32	0.47	0.27	0.44	0.23	0.42	0.35	0.48
Household characteristics																														
Urban	0.16	0.36	0.22	0.41	0.91	0.29	0.67	0.47	0.13	0.34	0.45	0.50	0.41	0.49	0.15	0.36	0.32	0.47	0.54	0.50	0.33	0.47	0.47	0.50	0.29	0.45	0.34	0.47	0.34	0.47
Size[a]	5.81	3.21	5.11	2.90	5.40	2.99	5.29	3.35	5.52	2.38	5.10	2.88	3.99	2.36	4.26	2.16	9.03	3.57	5.82	2.84	5.03	2.96	8.18	3.43	5.55	3.20	5.37	2.51	4.87	2.31
Household head characteristics																														
No primary school	0.83	0.37	0.66	0.47	0.13	0.34	0.38	0.49	0.42	0.49	0.37	0.48	0.10	0.30	0.22	0.42	0.76	0.43	0.61	0.49	0.30	0.46	0.64	0.48	0.25	0.43	0.15	0.36	0.11	0.31
Primary school	0.12	0.33	0.26	0.44	0.38	0.48	0.31	0.46	0.21	0.41	0.47	0.50	0.49	0.50	0.69	0.46	0.18	0.38	0.19	0.39	0.49	0.50	0.21	0.41	0.43	0.50	0.68	0.47	0.55	0.50
Secondary school or higher	0.04	0.20	0.08	0.27	0.49	0.50	0.31	0.46	0.37	0.48	0.16	0.37	0.42	0.49	0.08	0.28	0.07	0.25	0.20	0.40	0.22	0.41	0.15	0.36	0.32	0.47	0.17	0.38	0.34	0.47
Age > 60 years	0.22	0.42	0.19	0.39	0.19	0.40	0.21	0.40	0.22	0.41	0.29	0.45	0.14	0.35	0.17	0.38	0.52	0.50	0.30	0.46	0.30	0.46	0.43	0.49	0.30	0.46	0.18	0.39	0.26	0.44
Male	0.90	0.29	0.78	0.41	0.78	0.41	0.81	0.39	0.84	0.37	0.70	0.46	0.68	0.47	0.75	0.43	0.97	0.16	0.69	0.46	0.55	0.50	0.82	0.39	0.74	0.44	0.78	0.42	0.67	0.47
Hospitalization in previous year	0.13	0.34	0.12	0.32	0.15	0.36	0.13	0.34	0.05	0.21	0.20	0.40	0.14	0.35	0.19	0.39	0.08	0.27	0.23	0.42	0.16	0.37	0.14	0.35	0.09	0.29	0.18	0.38	0.11	0.31

SD, standard deviation.

[a] Number of people living in the household.

Table 3. **Likelihood of borrowing and/or selling assets for each income quintile, type of household, characteristics of household head and level of expenditure for inpatient care, as determined by logit regression, using data from 15 African countries**

	Burkina Faso	Chad	Congo	Cote d'Ivoire	Ethiopia	Ghana	Kenya	Malawi	Mali	Mauritania	Namibia	Senegal	Swaziland	Zambia	Zimbabwe
Income quintile[a]															
2	0.30**	−0.28**	−0.41	0.20	−0.03	−0.08	−0.41**	0.19	−0.10	−0.00	−0.16	0.13	−0.33*	0.09	−0.02
(SE)	(0.14)	(0.13)	(0.25)	(0.14)	(0.13)	(0.12)	(0.20)	(0.13)	(0.13)	(0.14)	(0.14)	(0.20)	(0.20)	(0.14)	(0.19)
3	−0.04	−0.34***	−0.20	0.11	−0.39***	−0.09	−0.37*	0.30**	−0.18	−0.16	−0.20	−0.16	−0.17	−0.04	0.07
(SE)	(0.14)	(0.13)	(0.27)	(0.15)	(0.13)	(0.13)	(0.22)	(0.13)	(0.13)	(0.14)	(0.14)	(0.19)	(0.23)	(0.16)	(0.21)
4	0.12	−0.47***	−0.51*	−0.16	−0.34**	−0.20	−0.67***	0.36**	−0.35**	−0.08	−0.97***	−0.12	0.00	−0.21	−0.00
(SE)	(0.15)	(0.14)	(0.28)	(0.16)	(0.14)	(0.14)	(0.23)	(0.14)	(0.14)	(0.16)	(0.16)	(0.21)	(0.26)	(0.19)	(0.20)
5	−0.18	−0.67***	−0.26	−0.28	−0.66***	−0.40**	−1.19***	0.33**	−0.46***	−0.01	−1.63***	−0.17	−0.65***	−0.73***	−0.76***
(SE)	(0.17)	(0.15)	(0.30)	(0.18)	(0.17)	(0.16)	(0.27)	(0.16)	(0.15)	(0.18)	(0.19)	(0.22)	(0.23)	(0.25)	(0.20)
Household characteristics															
Urban	−1.06***	−0.35***	−0.15	−0.05	0.09	0.02	−0.54***	−0.42***	−0.63***	−0.65***	0.00	−0.11	−0.53***	0.13	−0.62***
(SE)	(0.09)	(0.10)	(0.22)	(0.10)	(0.15)	(0.10)	(0.17)	(0.14)	(0.11)	(0.12)	(0.10)	(0.13)	(0.17)	(0.15)	(0.13)
Size	0.04***	0.01	0.07**	0.04***	0.11***	−0.01	0.04	−0.00	0.05***	0.03*	0.07***	0.01	−0.01	0.01	0.06**
(SE)	(0.02)	(0.01)	(0.03)	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)
Household head characteristics															
Schooling[b]															
Primary	−0.11	0.06	0.13	−0.06	0.13	0.01	−0.28	0.39***	−0.11	−0.13	−0.02	−0.05	−0.01	−0.24*	0.11
(SE)	(0.12)	(0.10)	(0.30)	(0.11)	(0.11)	(0.10)	(0.18)	(0.12)	(0.11)	(0.12)	(0.12)	(0.18)	(0.22)	(0.14)	(0.20)
Secondary or higher	−1.05***	−0.18	−0.01	−0.23	0.01	−0.27*	−0.45**	0.12	−0.67***	−0.26*	−0.09	−0.40**	−0.22	−0.36	−0.48**
(SE)	(0.17)	(0.15)	(0.31)	(0.14)	(0.11)	(0.16)	(0.22)	(0.20)	(0.24)	(0.13)	(0.17)	(0.18)	(0.26)	(0.24)	(0.23)
Age > 60 years	0.20*	0.17*	0.38*	0.15	0.12	0.60***	0.67***	0.50***	0.20**	0.37***	0.35***	0.35**	0.28	0.52***	0.56***
(SE)	(0.11)	(0.10)	(0.22)	(0.11)	(0.10)	(0.09)	(0.16)	(0.11)	(0.08)	(0.10)	(0.12)	(0.13)	(0.19)	(0.12)	(0.16)
Male	−0.50***	−0.36***	−0.31*	−0.50***	0.06	−0.70***	−0.34**	−0.41***	0.13	−0.49***	−0.40***	−0.49***	0.01	−0.51***	−0.22
(SE)	(0.15)	(0.10)	(0.19)	(0.11)	(0.12)	(0.09)	(0.15)	(0.10)	(0.27)	(0.10)	(0.09)	(0.16)	(0.18)	(0.13)	(0.13)

(Table 3, cont.)

	Burkina Faso	Chad	Congo	Cote d'Ivoire	Ethiopia	Ghana	Kenya	Malawi	Mali	Mauritania	Namibia	Senegal	Swaziland	Zambia	Zimbabwe
Level of expenditure for inpatient care[c]															
1	0.42*	0.23	1.25***	0.37	−0.24	0.72***	0.09	0.46**	0.16	0.36	−0.31	0.53*	0.62	1.21***	−0.20
(SE)	(0.24)	(0.20)	(0.40)	(0.24)	(0.35)	(0.19)	(0.27)	(0.21)	(0.27)	(0.22)	(0.24)	(0.29)	(0.40)	(0.35)	(0.35)
2	0.06	0.56***	0.91**	0.51**	0.94***	0.97***	1.09***	0.17	0.49**	0.72***	−0.05	0.79***	0.50	0.18	0.01
(SE)	(0.24)	(0.18)	(0.40)	(0.23)	(0.29)	(0.17)	(0.30)	(0.25)	(0.23)	(0.23)	(0.23)	(0.29)	(0.31)	(0.20)	(0.28)
3	0.19	0.76***	1.03***	0.01	1.03***	1.15***	0.76*	0.50**	0.62**	1.01***	0.17	0.77***	0.51	0.14	−0.38
(SE)	(0.27)	(0.20)	(0.38)	(0.24)	(0.39)	(0.17)	(0.43)	(0.22)	(0.26)	(0.20)	(0.22)	(0.27)	(0.32)	(0.26)	(0.25)
4	0.16	1.14***	1.49***	0.49**	1.16***	1.33***	0.75*	0.18	1.02***	1.03***	0.13	−0.06	0.04	0.60***	−0.52*
(SE)	(0.24)	(0.21)	(0.42)	(0.23)	(0.32)	(0.18)	(0.39)	(0.22)	(0.24)	(0.25)	(0.23)	(0.36)	(0.37)	(0.23)	(0.28)
5	0.35	0.67***	1.81***	0.66***	1.68***	1.83***	1.29***	0.53**	0.44**	1.50***	0.08	1.06***	0.09	0.45*	−0.09
(SE)	(0.29)	(0.19)	(0.36)	(0.23)	(0.35)	(0.18)	(0.38)	(0.22)	(0.22)	(0.24)	(0.25)	(0.28)	(0.36)	(0.24)	(0.31)
Constant[d]	1.41***	0.53***	−0.67**	−0.58***	−1.35***	−0.60***	0.38	−1.02***	−0.74***	0.32**	−0.05	−0.32	−0.10	−0.34**	0.78***
(SE)	(0.17)	(0.13)	(0.33)	(0.15)	(0.15)	(0.13)	(0.23)	(0.14)	(0.29)	(0.14)	(0.16)	(0.24)	(0.25)	(0.17)	(0.25)
N	4 480	3 027	2 313	2 598	4 099	3 528	3 836	4 336	2 995	2 583	2 849	2 388	1 779	3 094	2 381
RESET test: (Probability > χ^2)	0.905	0.230	0.551	0.017	0.015	0.760	0.310	0.073	0.037	0.000	0.085	0.854	0.213	0.205	0.003

*$P<0.10$, **$P<0.05$, ***$P<0.01$. SE, standard error.

[a] Quintile 1 is the lowest income category and quintile 5 is the highest. Reference category: quintile 1.

[b] Reference category: less than primary schooling.

[c] Reference category: households with out-of-pocket payments for outpatient care.

[d] The constant corresponds to the value of the regression function when each explanatory variable equals zero.