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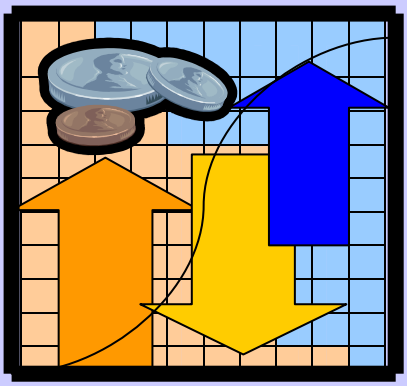

Coping with out-of-pocket Health Payments:

Applications of Engel Curves and Two-Part Models in Six African Countries

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Coping with the Out-of-Pocket Health payments:

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by

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SUMMARY

The costs of health services are often catastrophic in countries where people are not financially protected. Without sufficient safety nets, out-of-pocket payments for health care (OOP) make households vulnerable to future income shocks.

The objective of this paper is to examine how households modify their consumption of food, housing, education, and other goods in order to cope with OOP. The paper uses data from the 2003 World Health Survey in Burkina Faso, Chad, Kenya, Senegal, Zambia, and Zimbabwe. A system of Working-Leser Engel curves is estimated in the form of budget shares corresponding to proportions of total non-OOP expenditure. Two-part models (2PMs) are used to estimate absolute expenditure changes.

Households begin to cope at different levels of OOP spending across countries, but there are strong signs of coping when OOP spending is greater than 40 percent of non-subsistence expenditure. The expenditure share allocated to food increases with higher levels of OOP and falls for other goods. However, households at the highest OOP level are predicted to reduce expenditures on food, housing, and education. There is evidence of a negative gradient with rising OOP levels across goods and countries in the 2PMs.

Since prepayment for health care is minimal in these countries, prepayment mechanisms or other forms of social protection could protect household consumption. The analysis also points to the link between financial protection from OOP with a multi-sectoral approach to poverty alleviation.

INTRODUCTION

The costs of illness can be substantial in countries where people are not financially protected. Such costs include both direct expenses, such as out-of-pocket payments (OOP) for medical treatment, and indirect costs, such as the loss of income from an inability to work or travel to a hospital. These expenses often constitute a large share of a household's disposable income and drive many into poverty. People pursue a variety of coping strategies depending on the type and extent of costs incurred. For example, families may alter their labour allocation decisions; if a household head falls ill, some family members previously unemployed may begin working to substitute for lost income. If they are unable to finance the cost of medical care from current income, people may use savings or sell assets. Some may also borrow money from friends and family, take out a loan using collateral, or beg.

Another reaction to illness is to modify consumption. This may be very detrimental to households if the goods that are reduced are concomitant or even necessary to escaping poverty. As (Gertler, Levine & Moretti, 2002) point out, the degree to which consumption is reduced to pay for OOP depends on the severity of the illness. Severe illness significantly reduces household consumption. In a study of health shocks in rural Ethiopia

found if the household head becomes sick, weekly food expenditure is expected to decrease by 24 percent on average (Asfaw & Von Braun, 2004). Non-food expenditure is predicted to decrease by 28 percent(Carrin, Gray & Almeida, 1999). found similar results. In a review, Russell argued that education was the main area of investment under threat in the case of illness in several studies (Russell, 1996). In a study of the impact of HIV/AIDS mortality on households in Thailand, Pitayanon estimated that consumption on food and beverages decreased by 42 percent on average as a result of illness (Pitayanon, Kongsin & Janjareon, 1997). In some cases, children of the deceased were taken out of school to work. For those households with a non-HIV related death, the same percentage cut food expenditure, but by a smaller amount**.** Pryer concluded that in the Dhaka slums in Bangladesh, not many households changed labour allocation or reduced housing expenditure, but more households reduced expenditure on other goods(Pryer, 2003).

Other literature suggests consumption modification is a transitory or seldom used coping strategy. Wilkes found that in rural China, several households coping with severe illness modified consumption patterns by reducing expenditure on food and education, but this was not employed in the subsequent years of the study(Wilkes, Hao, Bloom & Xingyuan, 1997). In rural Bangladesh, Desmet found that health expenditure caused households to moderately reduce food items that were not necessities while protecting staple food items(Desmet, 2000). In addition, relocating to another residence due to health expenditure constituted only two percent of households who moved. Education expenditure was not reduced while clothing expenditure decreased in the lowest income quintile and for those with the highest health expenditure level. Desmet concluded that foregoing consumption of essential commodities could hardly be established. In a study of low-income countries, Townsend found that the percentage of the year an male adult is ill does not influence consumption, but as Gertler and Gruber mention, this may be due to measuring only small changes in health status(Townsend, 1995; Gertler & Gruber, 2002).

The literature demonstrates the existence of an integrated network of coping strategies used by households. Different strategies are employed in different settings and depend on the severity of illness. While the degree to which expenditure on essential commodities is reduced is not clear, the empirical evidence suggests that households modify consumption in the face of severe illness, at least in the short term.

This paper will examine short-term changes in consumption patterns due to OOP. It adds value to the current knowledge of coping strategies by empirically examining how households in African countries adjust their expenditure patterns on food, education, housing, and other goods with rising OOP levels. The use of a standardized survey questionnaire in each country improves the ability to systematically determine whether a similar pattern exists in the consumption modification strategies across these countries. Countries included in this study are Burkina Faso, Chad, Kenya, Senegal, Zambia, and Zimbabwe. The next section describes the available data and methodology. The results are then presented along with discussion and conclusions.

DATA AND VARIABLES

The data used in this analysis come from the 2003 World Health Survey (WHS) in Burkina Faso, Chad, Kenya, Senegal, Zambia, and Zimbabwe. The WHS is a clustered random sample designed to be representative of the entire population. Probability weights are used to correct for unit non-response and reconstruct population estimates. The sample sizes for the six countries are listed in Table 1. The questionnaire includes a number of expenditure and health-related modules as described below.

Expenditure items

Information is available on household expenditure within the last month for food, housing, education, OOP, health insurance premiums, and other goods and services. Values are reported in local currency, whether paid in cash or in kind. Food expenditure (FOOD) includes the value of any food produced and consumed by the household and excludes alcohol, tobacco, and restaurant meals. Education expenditure (EDUCATION) contains school fees and money spent on supplies. Housing expenditure (HOUSE) includes rent or payment for housing and costs for gas, electricity, water, telephone, and heating fuel. Health insurance premiums will be combined with the other goods and services category (OTHER). Total expenditure (TEXP) is defined as the sum of FOOD, EDUCATION, HOUSE, and OTHER. Total expenditure is defined without OOP in order to isolate the effects of OOP on expenditure share adjustments for different commodities.

The key variable of interest will be OOP as a proportion of a household's capacity to pay (CTP). Capacity to pay is defined as the household's non-subsistence expenditures and uses the methodology outlined in (Xu, Aguilar, Carrin & Evans, 2005), which calculates subsistence spending equal to the product of a relative, food based poverty line and the equivalence-scaled household size. The equivalent scaled household size is used to account for economies of scale in household consumption and is calculated by raising the household size to the power 0.56, which has been estimated from Xu et al 2003. The rationale for constructing this ratio is to reflect the notion that OOP does not necessarily have to be high in absolute terms to be considered catastrophic for a household. This ratio appears as categorical variable with the base category of OOP less than 10 percent of non-subsistence spending (CATA1) followed by OOP between 10 and 20 percent (CATA2), 20 and 40 percent (CATA3), and greater than 40 percent (CATA4).

Sources used to finance OOP

There is a series of questions regarding the financial sources used by the household to pay for OOP. These include current income (INC), savings (SAVE), reimbursement from an insurance plan (INS), the sale of assets (SELL), money borrowed (BORROW), and other (COPE-OTHER). These appear as dummy variables, with INC as the omitted variable, in order to control for the effects of these strategies on household consumption. The COPE-OTHER dummy variable could theoretically correspond to the case where some members

of the household previously not working begin to work in order to finance OOP. The literature suggests intra-household labour substitution is a commonly employed strategy to cope with both the direct and indirect costs of illness.

Socioeconomic and demographic controls

A household roster contains information on the age, education level, marital status, and insurance coverage of each person living in the household. It also identifies the person providing the main economic support of the household, known as the household head. Regressors for demographic variables include a dummy variable for urban location of the household (URBAN), equivalence-scaled household size (EQSIZE), and the proportion of household members between the ages of 5 and 18 (SAGE518). The education level, age, and insurance status (INS-HEAD) of the household head are used to measure socioeconomic status. Education level is measured using three dummy variables. EDU1 corresponds to less than primary school completed and is the base category. EDU2 corresponds to secondary school or high school completed and EDU3 university or higher. The age of the household head appears as a second-order polynomial (AGE and AGE2 = $AGE^2/100$) to account for non-linearity in the effect of age.

Labels, definitions, and averages for variables used in the analysis are found in Table 2.

The problem of zero expenditure

The expenditure items in each country have a non-ignorable proportion of zero values. For insurance premiums, OOP, and other goods and services, zero values may seem possible, especially for poorer households. However, it is unlikely that households spend nothing on food since the value of anything produced by the household is supposed to be included. The only case a zero would be a true value would be if the household received a government subsidy. For housing, it is possible that the household did not purchase a home or pay rent during the survey period, but less likely they spent nothing on the associated costs. Nevertheless, since many of the households surveyed may come from very poor areas, this may be possible. For education, households without any children are not likely to have any expenditure. For those with children, it is possible that the survey period did not cover the time when school fees were collected. This may be the case for many households if school tuition is charged just once a year, for example. Table 3 below