

World Bank Research Digest

VOLUME 8 ★ NUMBER 3/4 ★ SPRING/SUMMER 2014

Tackling Malaria among Schoolchildren in Kenya

Can intermittent screening and treatment for malaria improve the health and education of children?

In many countries where malaria is endemic, successful control programs have led to a decline in transmission. This has prompted a renewed emphasis on eliminating malaria, leading to a shift in focus from case management of clinical malaria and interventions targeting traditionally high-risk groups (children under five and pregnant women) to a more inclusive approach aimed at interrupting community-wide transmission by also identifying and treating asymptomatic malaria parasitemia.

This shift has highlighted additional vulnerable groups such as school-age children, who have some of the highest age-specific parasite rates and thus are important contributors to transmission. In addition, success in lowering transmission levels will result in children acquiring immunity later in life than in the past, and the incidence of malaria can be expected to increase in school-age children. Yet school-age children have persistently had the lowest coverage by interventions to prevent malaria, and until recently there was limited evidence about the best approach to controlling malaria in this group.

School health programs provide a logical and affordable platform for tackling the malaria burden among school-age children. Studies in West and East Africa have shown that intermittent preventive treatment (IPT) for malaria (periodic mass administration of a therapeutic antimalarial regardless

of infection status), delivered through schools, can improve the health and cognitive function of schoolchildren in intense and seasonal transmission settings. But the recent withdrawal of the primary drugs for IPT, sulphadoxine-pyrimethamine (SP) and amodiaquine (AQ), in many East African countries precluded further investigation of IPT using SP+AQ.

In Kenya the most recent National Malaria Strategy (2009–17) identified testing and treating children with malaria parasitemia as a potential alternative strategy. Researchers from the London School of Hygiene & Tropical Medicine, Kenya Medical Research Institute, Harvard University, and the Ministries of Health and Education in Kenya evaluated this policy through a study in a low- to moderate-transmission setting on the south coast of Kenya in 2010–12.

A recent paper by Halliday and co-authors presents the findings of the study, a cluster randomized trial evaluating the impact of intermittent screening and treatment (IST) for malaria on the health and education of schoolchildren. The school-based intervention consisted of screening children for malaria parasitemia using rapid diagnostic tests (RDTs) once a term, and treating those found to be RDT-positive, with or without symptoms, with a full regimen of artemether-lumefantrine (AL). The 24-month study enrolled 5,233 children between ages 5 and 20, from 101 government primary schools. Half the schools were randomly selected to receive the IST intervention; this was

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Are Small Farmers More Productive in Rwanda?

Labor market imperfections seem to be a key reason for the inverse relationship between farm size and productivity in Rwanda

While an inverse relationship between a farm's size and its productivity is a recurrent empirical finding, different explanations are proposed in the literature. One is that small farmers apply more than the optimum amount of inputs, possibly because of factor market imperfections. Another is a failure to adequately measure key factors, especially land area or quality. Empirical evidence from Africa remains particularly ambiguous.

But as countries seek to modernize agriculture and transition from a subsistence-based economy, the answer matters: If small farms are efficient, policy should focus on attracting upstream investment (such as in agroprocessing) and link smallholders to markets. If they are not, a strategy aimed at leapfrogging to large-scale farming may be more desirable, along with a regulatory environment that discourages further subdivision and promotes land consolidation.

In Rwanda, Africa's most densely populated country, fragmentation and small farm sizes are considered key policy issues. Average farm size is only 0.72 hectares in four parcels, not enough to satisfy even subsistence

needs with traditional technology. This prompted the government to put in place a national land policy promoting land use planning, consolidation of land into "economic" plot sizes, and prohibitions on subdivision.

Such measures are not uncontroversial and have proved to be difficult to implement in other settings. In a recent paper Ali and Deininger undertake an empirical investigation of the underlying assumptions using nationally representative plot-level data that allow them to control for household-specific heterogeneity.

Descriptive statistics by tercile of the farm size distribution reveal three regularities. First, plot (and farm) size is inversely related to land quality; that is, smaller farms and plots have higher land quality and are less likely to be affected by crop shocks. Second, differences in output per hectare and input use intensity across farm size classes are pronounced (figure 1): output value per hectare for farms in the bottom tercile (\$860) is almost three times that of those in the top tercile (\$298), with differences even more pronounced at the plot level (from \$1,296 to \$317). But third, for profit per hectare based on actual input costs and labor valued at market wages, the inverse relationship between size and productivity essentially disappears (figure 2).

Empirical results suggest that technology is characterized by constant returns to scale; that even after

controlling for land quality, yields, labor intensity, and shadow profits per hectare are all much higher on small farms; and that profit per hectare (with labor valued at market rates) is virtually identical across holding and plot sizes. Results thus point to labor market imperfections as a major reason for the inverse relationship between farm size and productivity, but suggest that with existing market imperfections, small farms are able to gainfully absorb large amounts of labor.

As long as farmers' labor use responds to price signals, land market interventions such as restrictions on subdivision or involuntary consolidation programs may thus yield few benefits and could even be counterproductive. Efforts to reduce labor market imperfections, and nonagricultural growth that leads to higher wages and nonagricultural employment opportunities pulling labor out of agriculture, may be more effective tools to improve rural welfare.

Daniel Ali and Klaus Deininger. 2014. "Is There a Farm-Size Productivity Relationship in African Agriculture? Evidence from Rwanda." Policy Research Working Paper 6770, World Bank, Washington, DC.

Figure 1. Yield Per Hectare at the Plot and Holding Level

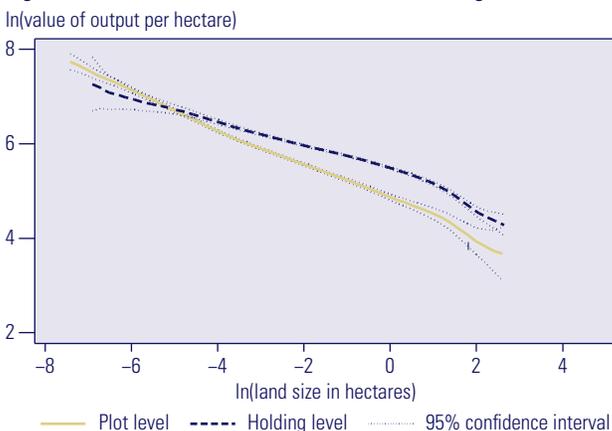
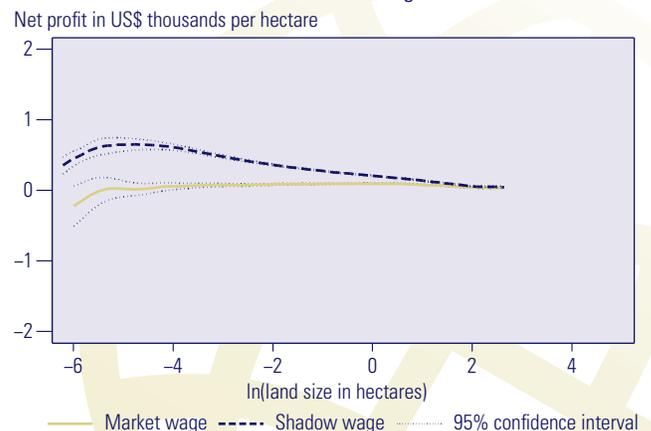


Figure 2. Net Profit Per Hectare at the Holding Level, with Family Labor Valued at Market and Shadow Wages



Postharvest Loss in Africa—What Do Farmers Say?

Global estimates of postharvest food losses are alarmingly high. But what do farmers say about their own losses?

The Food and Agriculture Organization (FAO) estimates that 32 percent of global food production is lost after harvest—and up to 37 percent in Sub-Saharan Africa. Why have farmers “tolerated” such losses, and why has the international community not acted more forcefully to reduce them? One answer holds that postharvest loss may not be that high. More than 30 years ago, in the aftermath of the early 1970s world food crisis, Michael Lipton already questioned the premise of high postharvest loss and put on-farm grain losses among smallholders in developing countries in the 5–8 percent range.

Estimating postharvest loss is complex. The overall FAO estimates cover all crops (including more perishable roots, tubers, and fruits and vegetables) and comprise losses during all steps of the food supply chain (harvesting, on-farm handling and storage, processing, marketing, consumption). When confined to cereals and postharvest handling and storage loss only, the FAO estimate for Sub-Saharan Africa is 8 percent. This estimate is definitionally more equivalent and quantitatively closer to Lipton’s numbers.

Nonetheless, the estimates are necessarily based on many assumptions. In a new paper Kaminski and Christiaensen complement the efforts to quantify postharvest loss using

farmer-reported estimates. They obtain these from recent nationally representative household surveys in three African countries—Malawi, Tanzania (two years), and Uganda. They focus on the reported share of harvested maize lost. They also identify the key agroclimatic and socioeconomic drivers of postharvest loss to better understand the factors affecting adoption of improved storage and postharvest handling techniques. Success stories in promoting improved on-farm storage technologies have been rare in Africa, with interventions too often poorly aligned with farmers’ economic incentives.

The authors’ approach in estimating postharvest loss differs from the FAO estimates as well as those from the African Postharvest Losses Information System (APHLIS). The first are based on national food balances and loss fractions defined by experts, the second on national extrapolations from purposively sampled (and often older) in-depth case studies. The authors’ approach has some advantages. First, the use of nationally representative samples avoids overestimation from sample selection bias. Second, harmonization in the survey methodology facilitates comparison across countries. Third, while subjective, and thus prone to measurement error, self-reported loss estimates are also more likely to reveal the losses that matter—and more likely to be incentive compatible. Finally, the survey design was exploited to obtain annualized loss estimates.

Among maize farmers, only between 7 percent (Malawi) and 22 percent (Uganda) report on-farm postharvest loss, averaging 21–27 percent of their harvest. This adds up to 1.4–5.9 percent of the national maize harvest being lost on-farm (figure 1). This is still quite a bit lower than the FAO postharvest

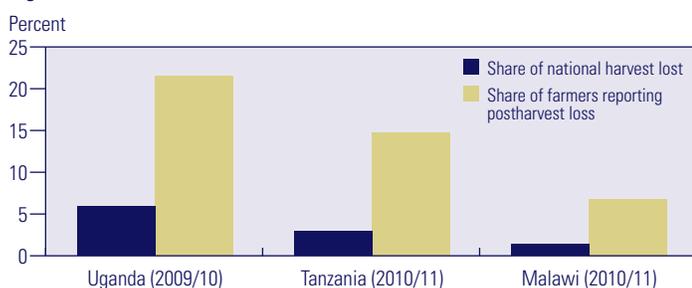
handling and storage loss estimate for cereals in Sub-Saharan Africa of 8 percent and much lower than the APHLIS estimates of 14–18 percent for maize (all postharvest loss before marketing but without processing).

Multivariate analysis of the 2008 Tanzanian experience further shows that economic incentives, especially the seasonal price gap (and access to the market), substantially reduce postharvest loss. Climatic factors (particularly the combination of heat and humidity) substantially increase it. Households’ wealth or poverty status does not appear to be associated with postharvest loss, and loss tends to be lower among female-headed households and those whose heads have postprimary education. Some of these factors probably work through the adoption of improved storage technologies, which remains limited. Between 0.6 percent (Uganda) and 11.5 percent (Tanzania) of maize farmers use improved storage technologies. The prevalent postharvest treatment method remains smoking or spraying.

The authors conclude that there must be proper contextualization of the widely cited high and aggregate estimates of postharvest loss, with farmer-reported estimates arguably more relevant indicators of demand for better storage and postharvest handling techniques. They argue that interventions should be incentive compatible and carefully targeted, not “one size fits all.” And they call for wider use of nationally representative surveys in studying postharvest loss. Nationally representative estimates help elucidate the granularity in postharvest loss and storage behavior; they can also be used to fine-tune the algorithms underpinning postharvest loss information systems such as APHLIS and to help update their annual estimates.

Jonathan Kaminski and Luc Christiaensen. 2014. “Post-Harvest Loss in Sub-Saharan Africa—What Do Farmers Say?” Policy Research Working Paper 6831, World Bank, Washington, DC.

Figure 1. Estimated Postharvest Loss for Maize in Three African Countries



Explaining Gender Gaps in Farm Productivity in Nigeria

In northern Nigeria women's farm productivity is lower than men's. In southern Nigeria it isn't. What accounts for the difference?

There is a general perception that across Sub-Saharan Africa female farmers have lower yields than male farmers. But the reality is more nuanced. While some studies find lower average productivity among female farmers than among male farmers, others find no significant differences between the two groups. And in many instances “back of the envelope” calculations show that if women had equal access to land and productive inputs, the gender gap would almost always disappear.

This suggests that women are not less capable farmers but instead that they face constraints that limit their productivity. In Sub-Saharan Africa, where smallholders' agricultural productivity is low, reducing the gender gap by increasing female farmers' productivity could increase overall productivity, leading to higher incomes, lower poverty, and better food security and nutritional outcomes.

In a new paper Oseni, Corral, Goldstein, and Winters use a nationally representative data set for Nigeria to investigate whether there is a gender gap in agricultural productivity—and, if so, which factors in the production process appear to be driving it. Using decomposition methods, the authors

are able to decompose the gender gap into the part explained by differences in the level of inputs (for example, how much differences in hours of labor contribute to the gap) and the part explained by differences in returns to the same inputs (for example, whether an hour of labor produces more or less on a woman's farm than on a man's). The analysis is conducted separately for the north and south because of the socioeconomic diversity in the country.

In northern Nigeria analysis controlling for input levels shows that female farmers produce 27 percent less than their male counterparts (figure 1). This gender gap in productivity is driven primarily by the fact that women have lower levels of labor and fertilizer and that they get lower returns to being older farmers and having more people in their household. Improving access to fertilizer and hired labor and promoting cash crops for women in the north would probably boost overall agricultural growth, though it might not close the gender gap. Even if female farmers in the north were given the same level of inputs as their male counterparts, some differences in productivity might still persist because of the differences in returns.

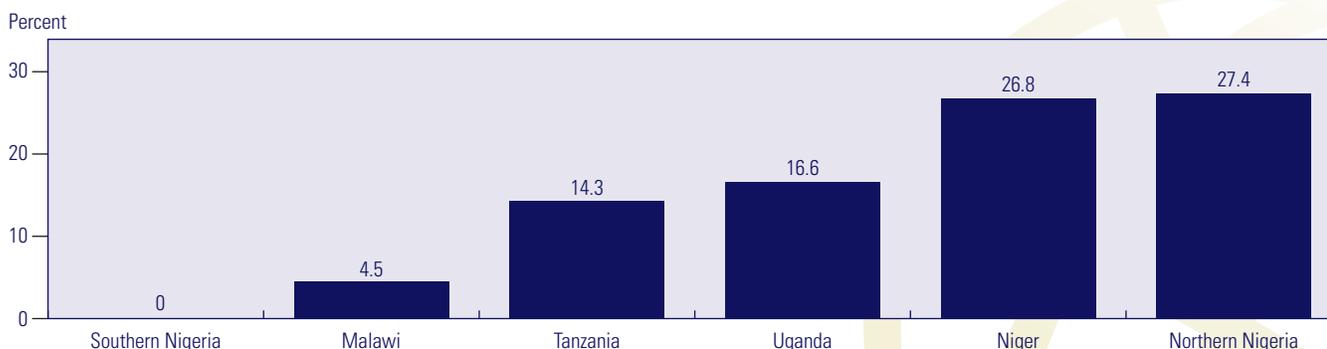
In the south, however, analysis controlling for key characteristics and factors of production (including inputs) finds no gender gap in productivity. Male and female farmers in the region appear to obtain similar returns to factors of production—and if they

were given similar levels of inputs, the gender gap would diminish. Thus providing additional inputs to female farmers would both benefit the women and increase overall productivity in the region.

The findings suggest that when it comes to gender gaps in agricultural productivity, northern Nigeria looks a lot like other countries in Sub-Saharan Africa while southern Nigeria is an exception. This stark difference between the two regions suggests that policies need to take into account differences in norms, markets, and institutions more broadly in order to increase the productivity of Nigeria's female farmers.

Gbemisola Oseni, Paul Corral, Markus Goldstein, and Paul Winters. 2014. “Explaining Gender Differentials in Agricultural Production in Nigeria.” Policy Research Working Paper 6809, World Bank, Washington, DC.

Figure 1. Difference between Male and Female Farmers' Productivity in Selected Areas of Sub-Saharan Africa, 2009–12



Source: For Nigeria, Gbemisola Oseni and others, “Explaining Gender Differentials in Agricultural Production in Nigeria” (Policy Research Working Paper 6809, World Bank, Washington, DC, 2014); for other countries, World Bank and ONE Campaign, *Levelling the Field: Improving Opportunities for Women Farmers in Africa* (Washington, DC: World Bank Group, 2014).

Note: Data are for the latest year available during the period shown.

The Challenge of Measuring Hunger

Estimates of the number of hungry people in the world will remain unreliable until the design of household surveys is improved

There is much interest in counting the number of hungry people in the world and monitoring trends in hunger. Many observers follow global numbers on hunger prevalence, not least because halving the proportion of hungry people between 1990 and 2015 is among the prominent Millennium Development Goals (and one on which achievements appear to be slight).

But measuring the number of hungry people is not easy. Current global counts rely on combining statistics on each country's food availability from national food balance sheets (FBS) with information on consumption patterns from household consumption expenditure surveys (HCES). Recent research has advocated estimating hunger directly from these household surveys. In both the standard approach (the FBS method) and the approach relying solely on household surveys (the HCES method), the use of household survey data is fundamental. The FBS method uses the variance in calorie consumption estimated across households through the survey, while the HCES method measures hunger directly, as a function of the observed total household food consumption in relation to estimated household caloric need. So the quality and consistency of household surveys matter in both approaches.

One challenge to these approaches, however, is that the design of household consumption surveys varies widely around the world in a number of dimensions, including these:

- The *method* of data capture—which is typically either diary or a recall questionnaire.
- The *reference period* over which consumption is measured—which can vary from one day to one week to one month.
- The *degree of detail* in

commodities—which can range from a handful of aggregate commodities to more than 400 relatively detailed commodities.

A recent paper by De Weerd, Beegle, Friedman, and Gibson studies the implications of survey design for the measurement of hunger. One key finding is that estimates of hunger are even more sensitive to survey design than are estimates of overall consumption (and therefore of poverty) because most of the design differences in global practice are due to differences in the measurement of food consumption. One review of household surveys from more than 100 countries found great variation in the survey mode (diary or recall), in the length of the food item list, and in the recall period used. The measurement of nonfood consumption varies much less around the world.

Using a survey experiment in Tanzania, the paper explores the net effect of reporting error arising from seven different and very common consumption survey designs, including one taken as a proxy for the “gold standard”—an intensively supervised personal diary with detailed cross-checks across household members. The study is a randomized within-village experiment with good covariate balance that extends over an entire calendar year, so the results should not be subject to seasonal or community-level confounders. The only differences in the numbers of hungry people should be due to the particular survey design administered. And these differences are large, both statistically and economically.

The estimated daily per capita kilocalorie intake ranges from 1,793 to 2,677, depending on the survey module. As a consequence, estimates of the prevalence of hunger range from 19 to 68 percent. This wide range translates into a difference of more than 23 million people in Tanzania, a country with a population of 45 million.

And survey design influences not only prevalence estimates but also the targeting of the hungry. The hunger profiles suggested by each module

differ as the hunger indicator interacts with household size, wealth, education, and other measures. For example, relative to the “gold standard,” recall surveys underestimate hunger as a household grows richer but overestimate hunger as the household increases in size.

The global hunger estimates derived from the FBS method are also subject to the vagaries of cross-country survey design. In this method the variance of calorie consumption is measured through HCES while the mean is taken from the national FBS. There are many reasons to question the accuracy of the balance sheets, including the degree to which they capture national postharvest stores and losses as well as the accuracy of their root crop yields. While the paper does not address these issues, it is clear that variation in survey design greatly affects the estimates of hunger from the FBS method: estimates of the prevalence of hunger range from 17 to 28 percent.

The study shows that changing the design of the survey questionnaire (that is, how questions are asked) greatly affects the estimate of hunger prevalence—in Tanzania, by millions of people—regardless of which of the two approaches is used. As a consequence, comparable and valid estimates of the number of hungry people in the world will remain out of reach until improvements are made in the design of household surveys, especially the consistency of questionnaires.

Moving Up a Gear: Structural Change in Ethiopia

What is driving Ethiopia's strong growth? Mostly labor productivity within sectors, but structural change is accelerating

It is a historical inevitability. All successful developing countries have undergone a fundamental and potent process of structural change. This transformation entails a reallocation of labor from low-productivity sectors to more dynamic economic activities—typically from subsistence agriculture to industry and modern services. Through its impact on labor productivity, structural change plays an instrumental role in sustaining economic growth, generating productive employment, and raising living standards.

In many African economies, however, shifts in the structure of output have rarely been followed by commensurate changes in sectoral employment. This undermines the impact and sustainability of the growth process. What has been the recent experience in Ethiopia, where growth has averaged about 10 percent a year since 2003?

A recent paper by Martins investigates the key drivers of this remarkable performance. It examines how the composition of output and employment has changed through time and assesses trends in sectoral labor productivity. More importantly, it estimates the relative contributions of labor productivity, employment rates,

and demographic change to growth in output per capita. Labor productivity is measured as output per worker, and its impact is further decomposed into within-sector and intersectoral contributions, with the latter representing structural change.

Results show that the composition of Ethiopia's output has changed significantly over the past 20 years. Agriculture remains a very large production sector, but its share in total output has steadily declined, from 66 percent in 1991 to 45 percent in 2011. Services have expanded considerably, especially trade and real estate. Yet changes in the sectoral distribution of employment have lagged behind. The share of agriculture in total employment has declined in recent years, but remains very high at about 78 percent. Trade currently accounts for 9 percent of total employment—and “other services” (which includes public administration, education, financial intermediation, and real estate) for 8 percent.

Labor productivity growth has been strong across most sectors—though with substantial variations—as total output per worker doubled in the past decade. But large productivity gaps remain. The output per worker in mining and quarrying, electricity and water, and transport and communications is more than 10 times that in agriculture.

The decomposition analysis shows that labor productivity has been the main contributor to output per capita growth: it accounted for about 90 percent during 1996–2011, mainly as a

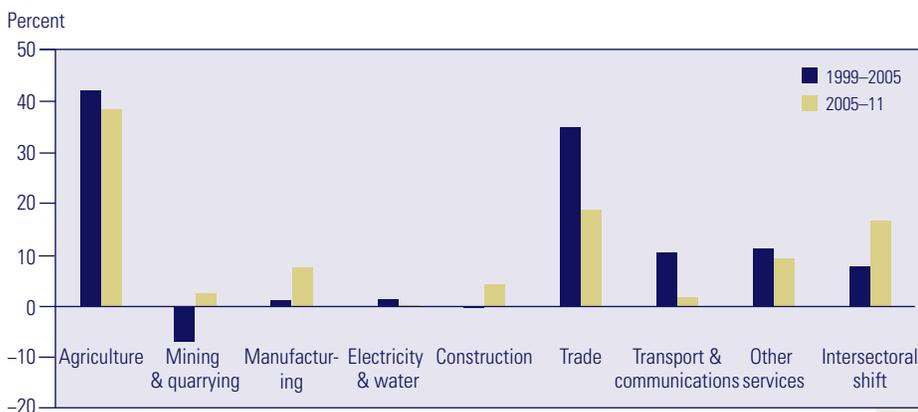
result of within-sector improvements. Changes in employment accounted for about 10 percent of the growth, while the contribution of demographic change was negligible.

Nonetheless, recent trends are promising. The relative contribution of intersectoral shifts has been growing in recent years and thus playing an increasingly important role in boosting output per capita. As workers move out of agriculture, the sector with the lowest productivity, this creates a positive momentum for growth-enhancing structural change. While productivity growth in agriculture and trade has provided a considerable boost to total labor productivity, structural change is becoming another key source of economic dynamism (figure 1).

The recent decline in the employment rate has adversely affected output per capita growth. But it is due in part to younger people staying longer in school—which can be seen as a positive development in the long run as students acquire skills that can support future growth. There is also evidence that Ethiopia is starting to benefit from a demographic dividend, which accounted for 10 percent of output per capita growth in the 2005–11 period. The country's dependency ratio has been declining, which provides a boost to economic activity.

The analysis thus finds emerging signs that meaningful structural change is taking place in Ethiopia. While these changes have not reached the levels of transformation experienced by many East Asian countries, they are certainly motivating. The key challenge for policy makers is to devise and implement policies that can further encourage the modernization and transformation of the Ethiopian economy.

Figure 1. Sector Contribution to Labor Productivity Growth in Ethiopia, 1999–2011



Pedro Martins. 2014. “Structural Change in Ethiopia: An Employment Perspective.” Policy Research Working Paper 6749, World Bank, Washington, DC.

Transactional Sex as Risk-Coping Behavior

Transactional sex rises after shocks, suggesting that access to insurance or savings may have public health implications

How poor people in low-income countries respond to the myriad risks they face is a crucial question. Their risk-coping behaviors can have long-term adverse consequences for both human and health capital, which has implications for the persistence of poverty. Transactional sex, the exchange of money or gifts for sexual relations, is believed to be one means that women use to cope with risk; it also leads to greater exposure to sexually transmitted infections (STIs), including HIV. While prostitution and sugar daddy relationships (relationships between younger women and wealthier older men) are most commonly associated with transactional sex, these types of relationships have also been documented among a broader population, including older married women.

Two questions have arisen from the literature: What are the health implications of transactional sex? And what conditions lead women to enter the market for transactional sex? Because transactional sex is believed to be a leading contributor to the HIV/AIDS epidemic in Sub-Saharan Africa, answers to these questions are of both scientific and policy interest.

Documenting transactional sex is difficult. It involves accurate measures of both sexual behavior and transfers made from partners. Many of the leading studies focus on commercial sex workers, who are more comfortable discussing their sexual behavior; other women may be less forthcoming. In addition, while transfers between clients and sex workers are typically made at the time of the sexual act, for women who are not sex workers the timing of transfers may not correspond with the act. For example, women may have a sexual occurrence with a friend, but receive a transfer from this partner days or weeks later.

A recent paper by de Walque, Dow, and Gong uses a unique set of data that measure sexual behavior, STIs, and transfers in a sample of women who are not sex workers and are representative of women in rural Tanzania. The analysis is based on a panel of women in rural Tanzania involved in a conditional cash transfer study aimed at the prevention of HIV and STIs. Four rounds of data, spaced four months apart, were collected. At each round individuals were tested for four curable STIs (chlamydia, gonorrhea, trichomoniasis, and *Mycoplasma genitalium*), which are used as the main outcome of interest. Compared with self-reported sexual behaviors, these biomarkers have the advantage of not being subject to self-reporting bias.

The authors estimate a relationship between household-level negative shocks and sexual behavior incorporating individual and time fixed effects. They find that women experiencing a negative shock are 5 percentage points more likely to be infected with an STI. The magnitude of this increase is both significant and large, corresponding to a 36 percent increase in STI risk over a four-month period. In addition, they find suggestive evidence that this effect is stronger among unmarried women and those with the lowest socioeconomic status.

The relationship established between shocks and STIs does not necessarily mean that women are responding to shocks by engaging in transactional sex. For example, women experiencing shocks may be unable to afford medical treatment for STIs. They may also have compromised immune systems that make them more susceptible to STIs. In both cases it is possible that a woman's likelihood of having an STI could increase even if her sexual activity remains unchanged.

The authors therefore present corroborating evidence using data on self-reported sexual behaviors. They find that women experiencing shocks are 12 percent more likely to have unprotected sex. In addition, for unmarried women, for whom the relationship between

shocks and STIs is strongest, they find that shocks lead to an almost threefold increase in paid sex (sex in exchange for cash or gifts). Finally, using reported income data, the authors estimate that as income goes down the risk of STIs goes up. For unmarried women, they also find that as income goes down paid sex goes up.

This work contributes to the large body of literature documenting the effects of negative shocks on health outcomes and the relationships between income and disease. The study also provides additional evidence that transactional sex is not limited to sex workers but may be seen as a common risk-coping mechanism for a much larger population. Understanding the circumstances in which transactional sex occurs and the scope of this behavior has important policy implications. If transactional sex is being used as a risk-coping mechanism, then providing women with access to formal insurance or savings may have important public health implications.

Damien de Walque, William H. Dow, and Erick Gong. 2014. "Coping with Risk: The Effects of Shocks on Reproductive Health and Transactional Sex in Rural Tanzania." Policy Research Working Paper 6751, World Bank, Washington, DC.

(continued from page 1)

delivered to randomly selected children from grades 1 and 5. Anemia, malaria parasitemia, classroom attention, and educational achievement were measured at baseline and at two follow-up visits.

On average 17.5 percent of the children in the intervention schools were RDT-positive over the five screening rounds. The prevalences of anemia and malaria parasitemia were similar in the intervention and control groups at the 12- and 24-month follow-ups, and there was no difference between the two groups in classroom attention scores at the 9- and 24-month follow-ups. The IST intervention also had no effect on educational achievement in the older class but, surprisingly, had an apparent negative effect on spelling and arithmetic scores in the younger class.

These findings indicate that in this low- to moderate-transmission setting, IST as implemented in the study provided no health or education benefits to schoolchildren. The reason may be that in this setting most of the children screened did not require treatment and those who did lived in focal, high-transmission regions where reinfection occurred between screening rounds. Moreover, although children found to be infected were treated, a substantial share of the school population and wider community were untested and untreated, contributing to reinfection. The limited post-treatment protection period of AL and variable performance of the RDTs in detecting low-intensity

infections may also have contributed to the lack of impact.

The results suggest that school-based IST for malaria should not be introduced in low- to moderate-transmission settings and that more research is needed to identify interventions that can be included in school health programs in different transmission settings. Encouragingly, however, the results highlight a potential role for periodic screening of schoolchildren to identify pockets of high transmission that can be targeted with focal control measures.

Katherine E. Halliday, George Okello, Elizabeth L. Turner, Kiambo Njagi, Carlos Mcharo, Juddy Kengo, Elizabeth Allen, Margaret M. Dubeck, Matthew C. H. Jukes, and Simon J. Brooker. 2014. "Impact of Intermittent Screening and Treatment for Malaria among School Children in Kenya: A Cluster Randomized Trial." *Policy Research Working Paper 6791*, World Bank, Washington, DC. Also published in *PLoS Medicine* 11 (1).

The work was supported by grants from the Malaria Impact Evaluation Program under the World Bank's Development Impact Evaluation Unit and the World Bank-administered Spanish Impact Evaluation Fund and Bank-Netherlands Partnership Program; the International Initiative for Impact Evaluation; and the Partnership for Child Development.

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