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Household shocks and coping mechanism: evidence from Sub-Saharan Africa

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CHAPTER 14

Coping with Shocks: The Realities of African Life

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Overview

Common wisdom: *Drought is the dominant shock that households face in Sub-Saharan Africa, and effective coping strategies remain wanting.*

Findings:

The shocks:

- *More than 60 percent of households report sudden losses in income and assets.*
- *Weather shocks are very common, but price risk is just as prevalent. Death and illness were also frequently reported.*
- *Health and weather shocks are often repeatedly experienced by the same household. Price risk is by far the most commonly reported covariate shock, much more so than weather shocks.*
- *Risk is higher in rural areas, particularly risks to income. Rural households are more susceptible to income shocks because agriculture is a risky business.*
- *Female-headed households are less susceptible to agricultural price risk, but more susceptible to food price risk.*

The coping mechanisms:

- *Many households have no means to cope with shocks.*
- *Savings are the most widely used coping mechanism, but have a more limited role for poor and rural households, which as a result rely more on their assets.*
- *Increasing work (sometimes involving migration) is a common coping strategy in rural areas.*
- *Government assistance is limited. Social assistance is most often informal and is the most prevalent coping mechanism among households headed by women.*

Policy messages:

- *Reducing the risk associated with agricultural livelihoods is an important part of reducing volatility for households in Africa. This can be done by increasing access to irrigation and drought-tolerant crops and by improving the integration of domestic crop markets.*
- *Strengthening financial markets to provide financial products as buffers in periods of distress should be part of the development strategy, especially for rural areas.*
- *Improving and strengthening national social protection systems as well as formalizing social transfers would also help the most vulnerable in smoothing the impact of risk.*

The Issue: Is Drought the Only or Main Risk?

Everyday life in Sub-Saharan Africa carries considerable risk, which often is linked to extreme weather, such as drought. *World Development Report 2014: Risk and Opportunity* documented that more people have died in Sub-Saharan Africa from drought than any other natural hazard (World Bank 2014). But households also face price shocks—increases in food prices or input prices, or falls in output prices. Illness or death in the household is also frequently reported by rich and poor households alike. And Africa is changing. Climatic conditions are changing, and so too are markets, asset holdings, and livelihoods.

In dealing with shocks, households commonly rely on informal transfers, reductions in household expenditures, and even asset sales. These mechanisms can be ineffective, especially in dealing with shocks that affect many in the community (asset prices may collapse, and neighbors may no longer be able to help out), and costly. Asset sales, for example, can lead to lower human capital accumulation and curtail the household's ability to generate adequate income for a long time after the shock. Other coping mechanisms include drawing on savings, increasing family labor supply, and accessing formal safety nets. This chapter addresses the question: is drought indeed still the dominant risk faced by households, and how do households cope with shocks today?

The Analysis: What Do People Say?

The Data

The study draws on the World Bank's Living Standards Measurement Study–Integrated Surveys on Agriculture, which have been fielded in six Sub-Saharan African countries: Uganda, Ethiopia, Nigeria, Niger, Malawi, and Tanzania. These are standard household surveys that include modules on the shocks experienced, negative consequences of the shocks (loss of assets, income, food production, and food stocks), as well as the coping mechanisms that households adopt in the wake of an income shock. Most of the surveys are available for one year (one wave or round) only. For some countries (Uganda and Nigeria), the study was able to utilize pooled data across years.

Although the surveys are meant to be comparable across countries, there are some notable differences in how data on shocks are collected, and these need to be

recognized in the analysis. First, *the differences in recall period* have a bearing on the number of shocks reported by the surveyed households. In four of the surveyed countries, where the recall period is 12 months (Uganda, Niger, Malawi, and Ethiopia), the number of shocks experienced by the affected households ranges from two to eight. In Tanzania and Nigeria, where the recall period is five years, the number of shocks goes up to 14 and 15 (respectively).

Second, *the way the shock question is asked* has a bearing on how the affected households respond. In Ethiopia, Malawi, Niger, and Tanzania (where the survey asked households whether they have been negatively affected by a shock), there is a greater similarity in the prevalence of crop diseases, output price falls, input price rises, livestock diseases, and illnesses, compared with Nigeria and Uganda, where the survey only asked whether the household experienced a shock episode. Clearly, survey design makes a difference. Unlike the data on shocks, there is much greater uniformity in reported coping mechanisms across countries.

The Approach

The study grouped shocks and coping mechanisms into a few broadly comparable categories.

The Shocks Households Face

- Weather risks: drought, floods, landslides, heavy rains, and severe water shortage
- Crop disease and damage
- Price shocks: falls in output prices and increases in input and food prices
- Livestock disease
- Business and employment shocks
- Theft
- Death or illness: of an income earner or another member of the household
- Conflict and other shocks

The Ways Households Cope with Shocks

- Dissaving and borrowing
- Working more (including migration of selected household members)
- Receiving assistance from friends and family
- Receiving assistance from the government and nongovernmental organizations (NGOs)
- Selling productive assets
- Reducing overall consumption
- Utilizing other coping mechanisms
- Doing nothing

In analyzing these events, the study describes them and uses regression analysis to identify the factors associated with them, other factors held constant (box 14.1). All the data that are used are self-reported; therefore, the data carry the biases associated with such self-reporting. In the case of self-reports of

Box 14.1 Gaining Insights from Regression Analysis

The study uses multivariate regression to investigate several issues.

Identifying Factors Associated with the Occurrence of a Shock and the Related Coping Strategy

The study takes two approaches to identify systematic patterns in the incidence of shocks. First, it simply examines the frequency of reported shocks, opting to focus on *relative frequencies*, in which the occurrence of one type of shock is expressed in relation to another. This helps control for differences in recall period. Second, the study explores the conditional correlation between shocks and household types, using regression techniques (after Heltberg, Oviedo, and Talukdar 2013). It uses ordinary least squares to explore the relationship between a dummy that captures the occurrence of a particular shock experienced by the households and a battery of household and household-head characteristics (the consumption quintile of the household, the rural/urban divide of households, households that are headed by women, and households whose head is employed in agriculture). Regressions are run on the entire sample of survey respondents in each country and, where applicable, on pooled data across years (Uganda and Nigeria). The same two approaches are used to assess the frequency and conditional correlation of coping strategies.

Identifying Whether Shocks Recur

The literature on the impact of shocks on welfare suggests that crises are more crippling when they follow in quick succession. To test whether shocks are likely to be repeated for the same household, the study uses regression techniques with dummy variables to represent the occurrence of a shock. The analysis regresses the shock dummies on their lagged terms (for Uganda and Nigeria, where panel data are available).

Identifying How Widespread Shocks Are in a Given Community

The literature also suggests that shocks can be more challenging to manage the more covariate they are. When a shock hits all households in a community, it is often not possible to rely on family and friends to help, as all have been equally hit. The analysis regresses the occurrence of a shock on a set of dummy variables capturing the survey clusters. The R^2 of the regression provides a measure of how covariate the shock is, that is, how widely it is experienced by the households in each cluster.

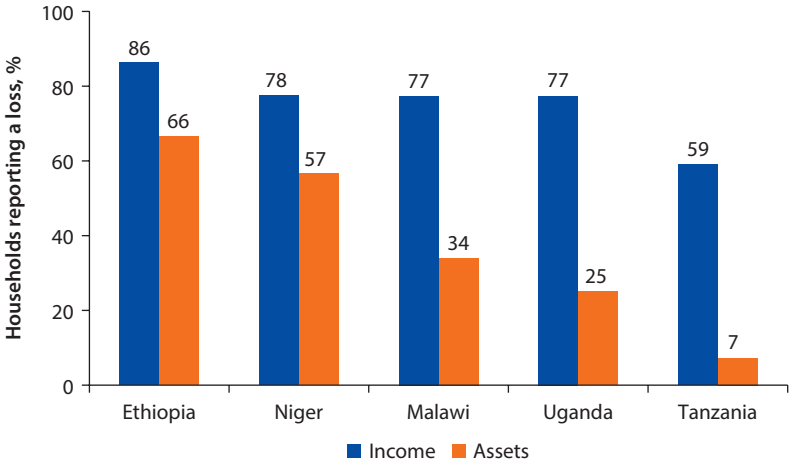
ill-health, the literature has shown that these biases can be quite large, with poor households significantly underreporting ill health when longer recall periods are used (Das, Hammer, and Sánchez-Paramo 2012).

The Results: Shocks Are Many and Come in Many Ways

The Risks Households Face

Sudden losses in income and assets were reported by the majority of the households surveyed. Over 60 percent of the households in all the countries reported a drop

Figure 14.1 Most Households Report Sudden Losses in Income and Assets



Source: Computations based on LSMS-ISA data.

in income as the result of a shock (figure 14.1). Reported asset losses were less common (although important in Ethiopia and Niger).

Weather shocks are very common, but price risk is just as damaging. For example, increases in food prices are more prevalent than weather shocks in Ethiopia (1.2 times), Niger (1.3 times), and Tanzania (1.02 times). In Nigeria, sudden falls in the prices of the crops were also much more frequent than weather shocks (1.6 times), although sudden increases in the price of food were much less prevalent (also in Malawi).

Death and illness were also frequently reported. In most countries, serious illnesses affected just under 30 percent of the households affected by weather shocks (although as high as 67 percent in Ethiopia). Death affected one-tenth to one-third of the number of families affected by weather shocks. Death was particularly frequently reported in Tanzania and, to some extent, Nigeria, both of which use a five-year recall period in the questionnaire. The data do not capture the magnitude of the impact of the shock, but other work highlights the catastrophic impact of severe ill-health. In a study of rural Kenya and Madagascar, Barrett et al. (2006) find, for example, that every poor household that was interviewed could ultimately trace its poverty to ill health or an unexpected loss of assets.

Other shocks occur, but less often. The relative frequency of business and employment shocks is very low across countries, except in Nigeria. Thefts and other loss-of-asset shocks tend to follow the same pattern, and seem to be particularly prevalent in the Nigerian sample. Finally, conflict shocks are the least prevalent (relative to weather shocks). However, the countries in the sample are not conflict-affected states.

Multiple shocks are reported more often than single shocks. Every shock module in each of the countries in the sample contains questions on the number of shocks experienced by the surveyed households. In most countries, the households are more likely to report experiencing multiple shocks rather than a single shock.

This in part reflects the multifaceted nature of shocks. For example, a weather shock can cause producer prices to rise, resulting in a food price shock, and a weather shock can cause ill health as a result of lack of clean water or reduced food consumption.

Health and weather shocks are often repeatedly experienced by the same household. In Uganda, households affected by disease (human, livestock, or crop) in one year are much more likely to experience poor health in the following year, suggesting this is a shock that lasts for more than one year. Weather shocks are also more likely in a subsequent year for those already affected by a weather shock, suggesting that households that experience drought may do so not because the weather is particularly bad one year, but because they live in marginal agroclimatic zones and are likely to experience water shortages in many years. It is evident that very different policy responses are required. Similar findings emerge for Nigeria.

Price shocks hit all households in a community at once, much more so than weather shocks do. The study regresses the occurrence of a shock on a set of dummy variables capturing the survey clusters. The R^2 of the regression (a measure of how widely the shock is experienced) is highest for input price rises, output price falls, and food price rises, showing that these are the shocks that are most covariate. The R^2 is also fairly large for weather shocks and crop disease (the latter is particularly high in the cases of Uganda and Tanzania). Conflict seems to be mostly covariate in nature in Ethiopia (compared with the other countries). Illness, theft, death, and business or employment shocks are mostly idiosyncratic in nature, with very little of the variation explained by cluster dummies, as expected.

Shocks are more frequently reported in rural areas. Figure 14.2 compares the shocks reported by urban and rural households. The bars represent the share of

Figure 14.2 Shocks Are More Frequent in Rural Areas

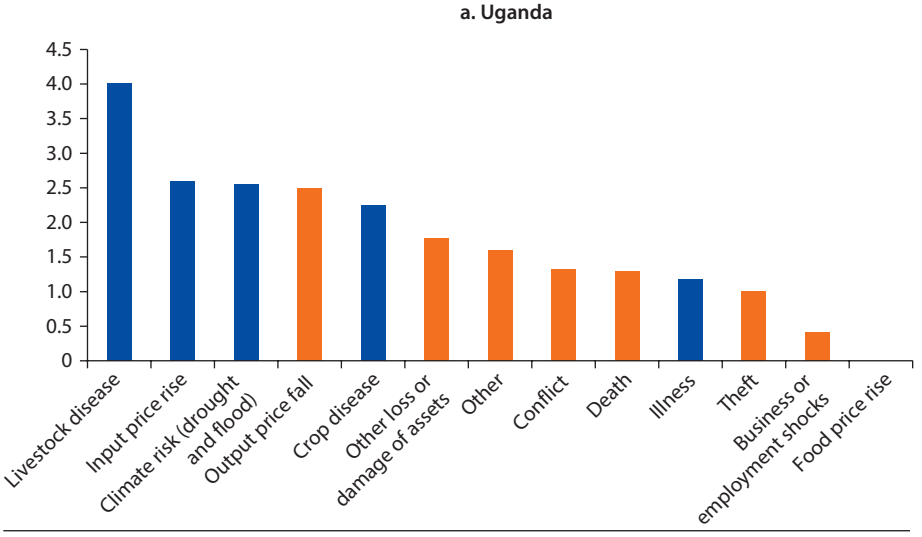


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Figure 14.2 Shocks Are More Frequent in Rural Areas *(continued)*

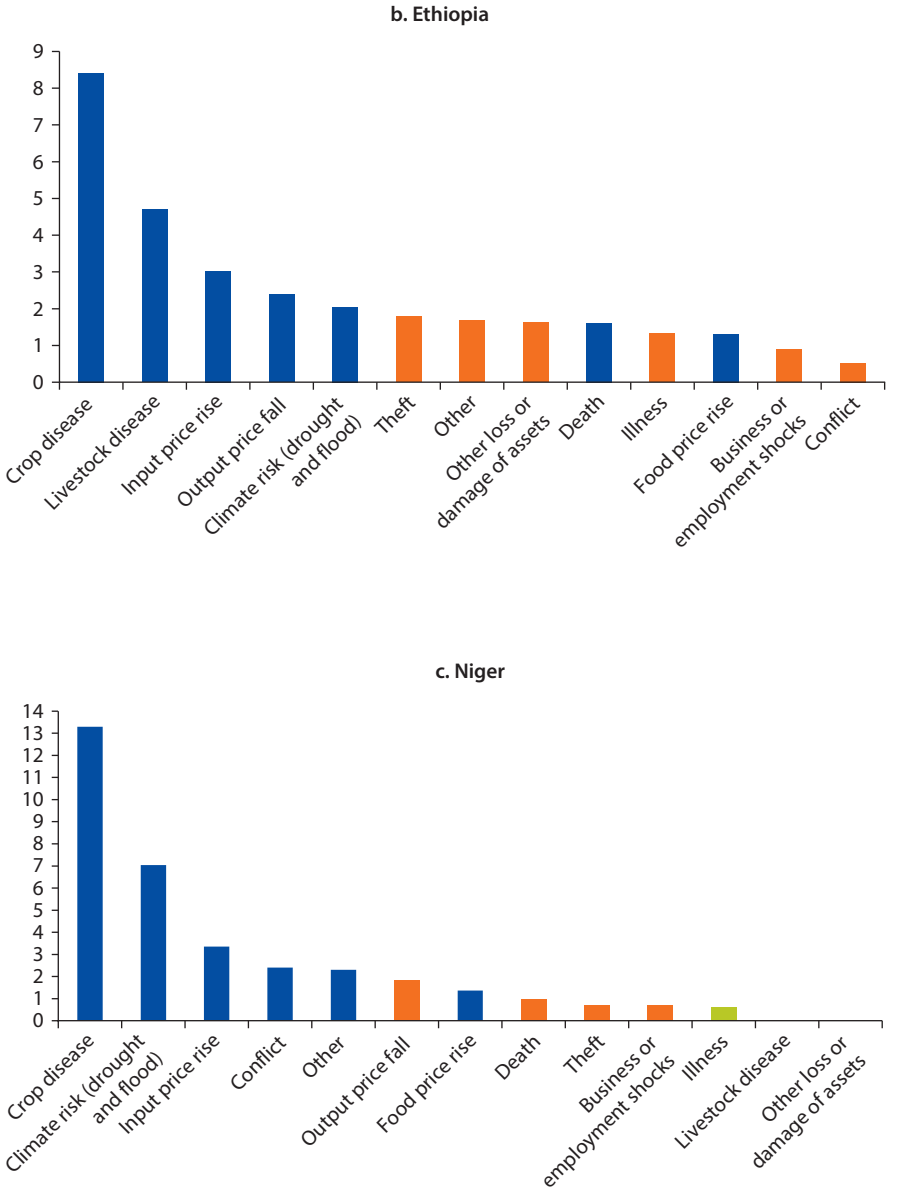

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Figure 14.2 Shocks Are More Frequent in Rural Areas *(continued)*

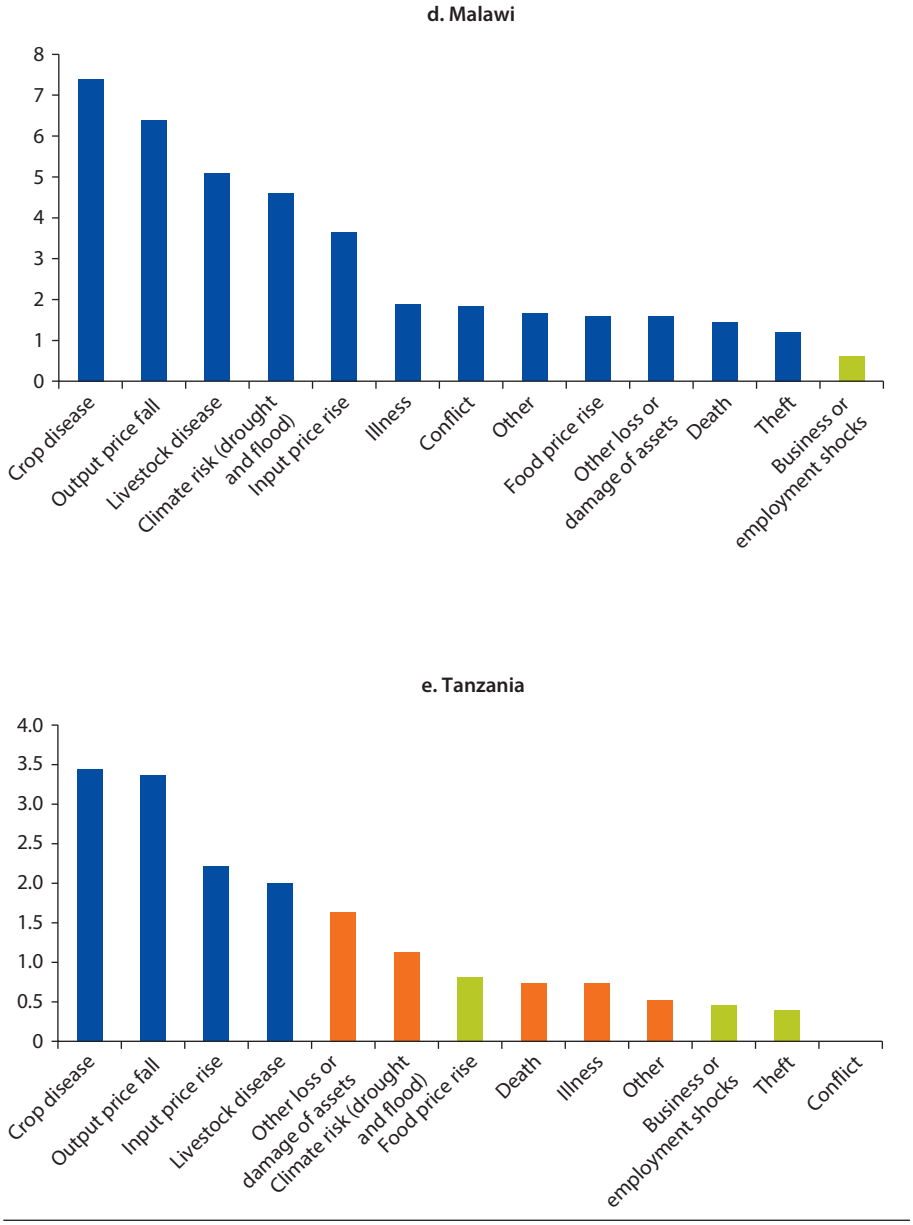

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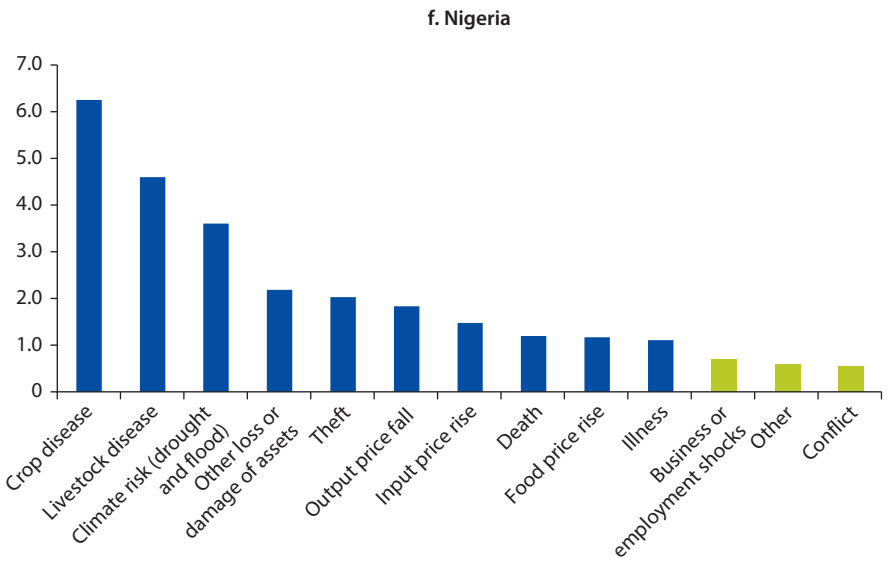
Figure 14.2 Shocks Are More Frequent in Rural Areas *(continued)*



Source: Computations based on LSMS-ISA data.
Note: The graphs depict the ratio of the percentage of rural households that have experienced shocks to the percentage of urban households that have experienced shocks. Blue bars denote that the ratio is significantly higher than 1; green bars denote that the ratio is significantly lower than 1; orange bars denote no significant difference between rural and urban areas.

rural households experiencing the shock relative to urban households. Blue bars indicate that rural households report the shock significantly more often than urban households do. Green bars indicate that rural households report the shock significantly less often than urban households do. For almost all the countries and shock categories, the prevalence of shocks is higher among rural households, even when controlling for other factors through multiple regression. This analysis does not capture the impact of these shocks, so it does not provide information on whether shocks experienced by rural households have a larger or smaller effect on welfare than shocks experienced by urban households.

Rural households are more susceptible to income shocks, because agriculture is a risky business. Reliance on agricultural income in rural areas results in high levels of risk to rural incomes. This vulnerability comes not only from weather risk but also from price risk. Reducing the volatility of crop income is essential. This can, for example, be achieved through increased irrigation, the use of drought-resistant varieties, and addressing price risk through better-functioning markets. But for many households, it may be the case that increasing income stability will entail a move out of agriculture.

Business- and employment-related shocks are more prevalent among urban households. Across all the countries in the sample, the prevalence of business and employment shocks is higher among urban than rural households.

Theft is as often a feature of the rural landscape as the urban landscape. Theft is often thought to be an urban problem, associated with the weaker social ties that are present in urban communities. However, this is not the case. In three countries,

theft is more frequent in rural areas; in the other three, it is more frequent in urban areas. But, in all cases, the differences are small and disappear when other variables are included in the regression analysis.[1]

Wealth reduces and changes the nature of income risk. Although shocks are in general less prevalent among rich households, death and illness affect all households equally. Rich households suffer more from theft and employment and business shocks. This is also true when controlling (in regression analysis) for other characteristics of the household.

Death is more prevalent among households headed by women. This finding highlights the fact that female-headship is often synonymous with widowhood and the loss of a male head. Death is 1.5 to 2 times more prevalent among female-headed households compared with male-headed households across all the countries. Regression analysis shows this to be a significant difference for all countries.

Female-headed households report fewer output price falls but more food price increases as shocks. This finding may indicate that female-headed households farm less commercially than male-headed households do, and thus female-headed households experience fewer input and output price shocks.

How Households Cope with the Shocks They Experience

Many households do not cope with shocks. Half of all the households in Malawi report doing nothing in the face of a shock, as do a quarter of the households in Niger and Nigeria. In Ethiopia, it is just 14 percent. It is not clear whether households do nothing because their welfare was unaffected by the event or they were unable to cope.

Savings are the most widely used coping mechanism, but have a more limited role for poor and rural households. For those households that are able to undertake strategies to cope with a shock, relying on own savings and access to credit or borrowing are the most commonly reported coping strategies undertaken. Almost a quarter of the households resorted to using this type of coping mechanism (the percentage is low only in Nigeria). The vast majority of these households rely on savings, not credit or borrowing. Households in the top 60 percent can use financial markets to manage risk, and risk has less of an impact on income and assets for these households. Financial markets are less effective for rural households regardless of poverty status, resulting in many rural households using assets to manage risk.

Increasing work (sometimes with migration) is a common coping strategy for poor households in rural areas. In Niger, for instance, poor households were three times more likely to migrate for work as a coping strategy, compared with non-poor households. In Malawi and Uganda, poor households are also more likely to report working more to cope with a shock. This finding broadly holds when controlling for different types of shock.

Social assistance is most often informal, with very limited government assistance reported across the continent. The help that is provided to households that have experienced a shock is nearly always in the form of informal transfers from family and friends, rather than from governments or NGOs. The only country in which assistance from the government was more common than assistance from

family and friends is Ethiopia. Ethiopia is also the one country in the sample that has instituted a large safety net program that can increase the support provided to households that have experienced shocks. In every country except Nigeria, households in the bottom 40 percent were more likely to receive informal assistance than households in the top 60 percent.

Informal assistance is the most prevalent coping mechanism among households headed by women. Assistance from friends and family is almost two times more prevalent among households headed by women in Uganda and Ethiopia, and over two times more prevalent among female-headed households in Malawi. In Nigeria and Niger, relying on assistance from friends and family is 1.6 times more prevalent among households headed by women. This is also true when controlling for other household characteristics.

Government assistance is poorly targeted to poor households. When it is in place, government assistance is just as likely to target households in the top 60 percent as in the bottom 40 percent. There is no significant difference in Malawi, Niger, and Nigeria. In Ethiopia, households in the top 60 percent are more likely to receive support; in Uganda, households in the bottom 40 percent are more likely to receive support.

The Implications

This empirical review confirms the common perception that households face considerable risk in Africa. However, contrary to the common perception, it has been price shocks—sudden food price increases and sudden crop price reductions—not weather shocks, that have been the most frequent in recent years.

The study also finds that private savings and additional work are the most common means that households use to cope with shocks. Poor households are less able to use savings than richer households. Yet, government support is limited, despite growing attention to social safety nets (Honorati, Gentilini, and Yemtsov 2015) and poorly targeted to poor households.

Overall, better risk management has to be part and parcel of any development strategy to help households manage these shocks. The study findings suggest the following:

- Reducing the risks associated with agricultural income and helping households transition into less risky livelihoods are essential for establishing more stable income for households in Africa.
- Reducing risk in agriculture requires addressing market risk in addition to climate risk and crop disease.
- Strengthening the financial markets in many Sub-Saharan African settings could go a long way, by improving the use of financial products as buffers in periods of economic distress. This is especially important for poor households and in rural areas, where relying on the sales of assets represents the main coping mechanism.

- Improving and strengthening the national social protection systems as well as formalizing social transfers could also help the most vulnerable in smoothing the impact of risks.
- More could be done to improve data for further policy research—such as adopting uniform recall periods and categories of shocks and coping mechanisms.

Note

1. The exception is that in Tanzania theft is significantly more prevalent in urban areas; in Malawi, theft is reported significantly more often in rural areas.

Additional Reading

This chapter draws on:

Nikoloski, Zlatko, Luc Christiaensen, and Ruth Hill. 2015. "Household Shocks and Coping Mechanism: Evidence from Sub-Saharan Africa." Mimeographed. World Bank, Washington, DC.

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Das, Jishnu, Jeffrey Hammer, and Carolina Sánchez-Paramo. 2012. "The Impact of Recall Periods on Reported Morbidity and Health Seeking Behavior." *Journal of Development Economics* 98: 76–88.

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Honorati, Maddalena, Ugo Gentilini, and Ruslan Yemtsov. 2015. *The State of Social Safety Nets*. Washington, DC: World Bank.

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