

A Guide to the Analysis of Risk, Vulnerability and Vulnerable Groups

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Abstract

The objectives of this paper are to provide a synthesis of current thinking and analytical approaches to risk and vulnerability analysis, social risk management and the analysis of vulnerable groups, as well as to outline options for analytical work to the analyst interested in incorporating vulnerability in poverty analysis. The paper discusses a large number of examples, and reviews some of the analytical challenges ahead as well as the issues involved to make these approaches more relevant for local level policy analysis.

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1. Introduction and Motivation

Poverty analysis typically focuses on the levels and distribution of welfare in a specific context and provides a profile of the characteristics of the poor. It is less disposed toward informing about the underlying processes that contributed to the observed levels of poverty or to clarify the reasons for poverty persistence. Many factors combine to explain the dynamics of wealth and poverty. Risk is one of these factors, and in high risk environments, characteristic of developing countries, introducing it in the analytical mix is necessary if the objective is to fully understand the dynamics by which households move in and out of poverty or remain chronically poor. In this context, risk and vulnerability work is a natural complement to traditional poverty analysis that can add value to the policy dialogue.

The analysis of risk and vulnerability, in the work at the World Bank and elsewhere, encapsulates two separate specific areas of attention. First, it focuses on the *role of risk in the dynamics of poverty* and the *strategies* households use to address the exposure to various sources of risks. Here, the focus is on the impact of risk on poverty, taking into account the informal and formal mechanisms of risk reduction, mitigation and coping available to households. In this paper we refer to this strand of work as *risk and vulnerability analysis*. Secondly, there is also a focus on *specific vulnerable groups* that are characterized by limited resilience to avoid poverty and few opportunities to escape chronic poverty.

Even though risk and its consequences are not necessarily of central importance when studying vulnerable groups, there is a considerable overlap in these two areas of attention, since their limited resilience and opportunities will make vulnerable groups especially liable to further impoverishment in risky environments. Furthermore, there is considerable overlap in the policy arena, whereby 'traditional' instruments for social protection, such as targeted transfers, can both be used as a *springboard*, that allows households to take advantage of opportunities for wealth creation while being protected against risk-induced hardship, as well as for the *protection of vulnerable groups* suffering chronic impoverishment.

This paper has three objectives. First, to provide a synthesis on thinking and analytical approaches to risk and vulnerability analysis, social risk management and the analysis of vulnerable groups. Secondly, to offer guidance to the analyst interested in incorporating vulnerability in poverty analysis and by presenting a typology of possible approaches. Thirdly, it lays the foundations for further work by critically examining the core issues and challenges involved in making these approaches more relevant for policy dialogue.

The paper is organized as follows. Section 2 revisits some of the core concepts involved in work on vulnerability, and its link to poverty. Section 3 outlines the key conceptual steps required to conduct risk and vulnerability analysis, and provides a review of potential approaches based on recent examples. Section 4 focuses on the analysis of specific and identifiable vulnerable groups. Section 5 focuses on the road ahead, introducing some outstanding issues and core challenges, and the way they may inform local level policy making.

2. Concepts and Definitions

The literature on risk, vulnerability and poverty is both broad and extensive. It is therefore natural that differences exist in how one defines a concept such as vulnerability or even poverty, and how one explores the relationship between risk and poverty. As such, this section defines these concepts as they are used in the paper. First, we will dwell on the linkages between poverty and risk. The terms ‘vulnerability’ or ‘vulnerable groups’ are commonly used, but often with different meanings by different practitioners, even within the World Bank. In particular, we will make a distinction between risk-related ‘vulnerability’ to poverty and ‘vulnerable’ groups whose chronic poverty requires specific attention. Secondly, we will revisit the policy agenda as it has been developed to deal with vulnerability, including social protection (SP) and social risk management (SRM) approaches.

2.1 Poverty, Risk Related Vulnerability and Vulnerable Groups

Poverty encompasses more than low income or consumption alone.¹ Deprivation is often related to income poverty, for instance when low income prevents people to achieve sufficient nutrition or to obtain remedies for treatable illnesses. But not always is poverty closely related to income. It may also come from a lack of access to public facilities and programs (such as health or education) or from the denial of political, civil and economic liberties.

Exposure to risk may be seen as one of the many dimensions of poverty. Poor households are typically more exposed to risk and least protected from it. This exposure has a direct bearing on well-being. Perhaps even more important is how risk exposure causes poverty or increases the depth of poverty. In an attempt to avoid risk exposure, households may take costly preventive measures, which in turn, contribute to poverty. The decision not to invest in a high risk but high return activity not only means foregone income but also a higher likelihood that a household is poor. If security concerns force parents to take children out of school, this disenfranchises the children from their right to basic education. And, if credit and insurance markets are poorly developed, exposure to risks may induce households to hold portfolios of assets that, while possibly well suited to buffering consumption, are not necessarily the most productive.

The direction of causation can also be reversed so that poverty causes exposure to risk. For instance, to avoid extreme income poverty or food insecurity a household may choose to cultivate in insecure areas (land infested with land mines, or areas where rebels are active) or to live in an unhealthy or unsafe environment (landslides, railroad track).

It is not only exposure to risks that may lead to unacceptable outcomes in well-being. The manifestation of risk (as a shock) also leads to undesirable welfare outcomes. Apart from the physical and psychological consequences for well-being from experiencing a shock, its consequences can be highly undesirable. A shock can push an already income poor household further into poverty, or drive a non-poor household below the income poverty

¹ Sen (1999), Narayan et al. (2000), and World Development Report (2000).

line. A shock can be the reason why children are taken out of school, affect people's health permanently or reduce life expectancy. Clearly, if households have the option to insure against the negative consequences of shocks, risk will have a limited impact on welfare. It is therefore exposure to *uninsured* risk that causes undesirable welfare outcomes such as income poverty, malnutrition, low education levels or low life expectancy.

These linkages between poverty and risk define the concept of vulnerability. In particular, whereas poverty reflects an unacceptable level of well-being, (risk-related) **vulnerability** is defined as:

“...the exposure to uninsured risk leading to a socially unacceptable level of well-being”.

In this paper, we use vulnerability (as in the term ‘risk and vulnerability analysis’), defined as above. Vulnerability is by no means identical to poverty. In the absence of risk (and hence vulnerability), poverty could persist: even a risk free environment has households with insufficient means to attain an acceptable standard of living. In the absence of poverty, on the other hand, vulnerability as risk exposure ceases to be an issue. Households may still be exposed to risk, but as long as the risk does not affect their well-being dramatically its consequences are not unacceptable.

The concept of welfare used here is broad, encompassing a number of dimensions, such as consumption or income poverty, or inadequate nutrition, lack of access to health and education, insecurity due to conflicts, or lack of political freedom, to name only few. In practice, to make the analysis manageable, the analyst will concentrate on one or few important welfare dimensions. Which welfare outcomes are unacceptable is context-specific. Risk and vulnerability analysis does not have to focus on incomes only; it can focus on different dimensions of poverty, in line with the requirements of the context-specific analysis.

Vulnerability is often used in a sense somewhat different from its definition here, namely that of ‘weakness’ or ‘defenselessness’, and typically used to describe groups that are weak and liable to serious hardship. These are groups that without substantial support may be in severe and chronic poverty, unable to take advantage of profitable opportunities if they emerge, while with limited defenses in case serious events or shocks occur. Examples are disabled people, orphans, HIV infected, elderly, ethnic minorities, certain casts, IDPs, households headed by widows or deserted women, or headed by children. These groups are described as ‘vulnerable’ in the common usage of the term, but (uninsured) risk is not a core characteristic of their problems, even if in some cases, shocks may have contributed to their destitution, and even if the precarious circumstances faced by these groups mean that any uninsured risk is especially difficult for them, since their options to manage risk are likely to be limited.

Box 1: Vulnerability

Defining vulnerability as ‘exposure to uninsured risk leading to socially unacceptable levels of well-being’ deserves some scrutiny:

The term “socially”. The use of the term “socially” refers to the society and the context-specific set of norms and values that it deems important. What some societies consider socially unacceptable levels of well-being may be acceptable in others.

Not all risk leads to “unacceptable” welfare outcomes. Exposure to risk leads is necessarily to unwanted. Given the costs of monitoring of labor, some job insecurity provides the flexibility and incentives needed for labor markets to offer high levels of employment. Quick financial liberalization may be in some circumstances substantially better for economic growth than a less crisis prone, steady pace of financial liberalization.² Exposure to risk may even be enjoyable and sought after, as is the case with gambling or, for some, the thrills of entrepreneurship.

Exposure to risk becomes unacceptable if it leads to socially unacceptable low levels of welfare. Unemployment that leads to destitution is likely to be deemed unacceptable, and society may choose to want to alleviate its consequences or reduce the risk of unemployment itself. A frequently occurring, relatively harmless risk such as diarrhea may be unacceptable if it mainly affects poor households with limited access to medical care or clean water and therefore results to increased early childhood mortality. But if diarrhea is mostly an inconvenience affecting wealthy families that eat frequently at restaurants, the risk may be acceptable and not a focus for vulnerability analysis.

Which welfare outcomes are unacceptable is context specific, though the Millennium Development Goals provides some guidance. It defines as unacceptable welfare outcomes falling below the poverty line, being malnourished, not completing primary education, experiencing unequal gender outcomes, high early-childhood and maternal mortality, and a high exposure to diseases such as HIV/AIDS, tuberculosis and malaria.

“Insured” versus “uninsured” risk. Once insured, risk ceases to be a concern since the manifestation of a shock will not affect welfare outcomes. Market based insurance and self-insurance both prevent negative welfare consequences from occurring. In practice, full insurance is not attained so that even in the presence of insurance mechanisms uninsured risk remains.

Analyzing the plight of vulnerable groups is part of standard poverty analysis, and much can be learned about them. In many instances though, a comprehensive analysis of vulnerable groups is not presented. Lack of data or other concerns are at the root of this. Vulnerability analysis intends to fill this gap by—in addition to dealing with risk exposure are cause for vulnerability, focusing on vulnerable groups. Combining both approaches has clear advantages since, for a full understanding of their circumstances and constraints, it is important to look at the wealth and poverty dynamics of these groups, identifying the circumstances and contexts in which they face poverty persistence, as well as the livelihood strategies they employ to try to survive and even move forward. Understanding their vulnerability to uninsured risk enriches our understanding of their plight. For example, these groups may be particularly exposed to risks because they have limited access to assets for self-insurance or are generally excluded from social networks. Studying these processes assists in a better design of policy responses.

² Rancièrè and Faba (2003).

2.2 Social Risk Management, Social Protection and other Policy Responses³

The typical policy response related to vulnerability (vulnerable groups in particular) has been a safety net using targeted transfers, as part of broader social protection system. The Social Risk Management (SRM) framework aims to broaden this policy perspective, especially with regards to risk-related vulnerability to poverty. Holzmann and Jorgensen (1999) use the term “social risk management” to refer to the social management of risks - how society manages risks (not how to manage social risks). The main idea behind social risk management is that all individuals, households and communities are exposed to multiple risks from different sources. Yet, the poor are more vulnerable since they are typically more exposed to risks and have access to fewer risk management instruments that can allow them to deal with these risks (Holzmann, 2003). This exposure to risks and lack of addressing it has two important consequences: (i) the poor are severely affected when shocks do occur, accentuating their poverty; and (ii) the poor become more risk averse and unwilling (or unable) to engage in risky but higher return activities. As such, social risk management aims at providing instruments that allow the poor but also the non-poor to minimize the impact of exposure to risk and change their behavior in a way that helps them exit poverty and lower their vulnerability.

A key contribution of the SRM framework is to highlight the importance of *ex-ante* strategies, constraints and processes, rather than *ex-post* welfare outcomes. SRM overlaps with social protection to the extent that it provides policy instruments that offer a means of overcoming exposure to risk. From an SRM perspective, social protection addresses the issue of how vulnerable households can be helped to better manage risks and become less susceptible to damaging welfare losses. Social risk management differs from it in that it does not analyze how to optimally manage transfers to assist those in need. Consequently sound macroeconomic policy, stable financial markets, enforcement of property rights, strengthening labor laws, agricultural insurance are important ingredients for SRM, but not necessarily for SP. Other areas of public policy such as income redistribution lay within the realm of social protection, but not necessarily in that of social risk management –unless distributional considerations affect the extent of exposure to risk.

Social risk management can take place at different moments - both before and after the risk occurs. The goal of *ex ante* measures is to avoid the risk from occurring (risk prevention), or, if this is not possible, to reduce its impact (risk mitigation). If risk prevention and mitigation do not work, or not completely it leaves households with the residual option of coping with the shock once it occurs (*ex-post*). Different kinds of arrangements to deal with exposure to risk have evolved. Social Risk Management distinguishes three main categories: (i) informal; (ii) market based; and (iii) public arrangements. In an ideal world with perfectly symmetrical information and complete and well-functioning markets, all risk management arrangements can be market based. In reality, the various risk management arrangements will all play their role.

³ This section draws from “Social Protection Sector Strategy: From Safety Net to Springboard”, World Bank 2001.

To explain further the principles behind social risk management, the remainder of this section discusses the formal and informal strategies that individuals and societies use to deal with risk, as well as the institutional arrangements that have developed to implement them. The focus here is on vulnerability as uninsured risk and not vulnerable groups.

Prevention strategies are strategies implemented before a risk event occurs. Reducing the probability of an adverse risk has intrinsic welfare benefits and increases people's expected income and reduces their income variance. Preventive interventions include measures designed to reduce risks in the labor market (the risk of unemployment for instance), preventive health care (such as vaccination, use of mosquito nets or information campaigns) or standards (such as building standards in areas prone to earthquakes). Prevention strategies implemented by households or individuals may be very costly and could even be a cause for (income) poverty, for instance when farmers grow low-return, but drought resistant crops or when people seek protection from violence by moving to IDP camps.

Mitigation strategies aim to address the risk before it occurs. Whereas preventive strategies reduce the probability of the risk occurring, mitigation strategies help individuals reduce the impact of a future risky event. For example, households may pool uncorrelated risks through informal or formal insurance mechanisms. Whereas formal insurance mechanisms are best placed to pool a large number of risks over many participants, information and enforcement constraints limit the coverage actually offered (both geographically and by type of risk). Many people therefore participate in informal insurance mechanisms that are less successful in pooling risk, but are more effective in sharing information and in enforcement. Mitigation strategies can also be implemented in isolation, for instance when a household or individuals save money as a precaution for a rainy day, or when food is stored in preparation for an adverse weather event.

Coping strategies are designed to relieve the impact of the risk once it has occurred. The main forms of coping consist of individual dissaving, borrowing or relying on public or private transfers. The government has an important role to play when individuals or households have not saved enough to handle repeated or catastrophic risks, when coping mechanisms turn ineffective, for instance when (asset) prices plummet (and food prices soar) because everybody is selling assets to get money to buy food following a covariate shock, or by providing health care to people struck by illness.

Informal arrangements have existed for a long time and still constitute the main source of risk management for the majority of the world's population. In the absence of (or with incomplete) market institutions and public support, individual households respond to risk by protecting themselves through informal and personal arrangements. Although they sidestep most of the information and coordination problems that cause market failure, they may not be very effective in helping the household weather adverse events. Nonetheless, the introduction of market or public arrangements may have negative consequences for the functioning of informal arrangements. For instance the introduction of a public arrangement like a food for work program, may lead to the withdrawal from an informal insurance arrangement of able bodied individuals, leaving less able bodied individuals (such as the elderly) uninsured.

Market based arrangements have great potential and, where available, households and individuals take advantage of the financial products offered by insurance companies and banks. In practice many of these financial instruments are not available due to market failures, so that their usage is restricted, until financial markets become more developed. Because formal market institutions have difficulty to lend to households (or to provide insurance) without secured earnings and improved access to information, micro-credit and insurance arrangements are potentially interesting instruments for social risk management.

Public arrangements take various forms. When informal or market-based risk management arrangements do not exist the government can provide or mandate (social) insurance programs for risks such as unemployment, old age, work injury, disability, widowhood and sickness. The mandatory participation in a risk pool can circumvent issues of adverse selection, in which individuals with low-risk profiles avoid participation in insurance pools while high-risk profiles join. Because these programs typically apply to those in formal employment, their coverage in developing countries is generally low. Additionally, governments have a whole array of instruments to help households cope after a shock hits, such as direct assistance, free medical care, subsidies on basic goods and services and public works programs. Through its legislative abilities, government is also able to introduce prevention strategies (such as building codes in disaster prone areas; protection of widows' rights to assets). Many sectoral government programs (health, education, infrastructure), finally, also play an important role in risk prevention.

3. Conducting Risk and Vulnerability Analysis

Having defined the main concepts related to analysis of poverty, risk and vulnerability, this section outlines the main steps in conducting risk and vulnerability analysis. First, the set-up of the analysis will be discussed, followed by a number of examples illustrating the possible types of analysis. The focus in this section is on risk-related vulnerability. Section 4 will discuss a framework and some examples for the analysis of 'vulnerable groups'.

3.1 Setting the objectives of the analysis

In defining the objectives of the analysis, a good place to start is by deciding which of the three conceptual elements below are important for the analysis: (i) major risks; (ii) the groups exposed to these risks; and (iii) appropriate risk management strategies.

3.1.1 Sources of Vulnerability: Main Risks

Identifying major risks will be in most cases the first step in conducting a risk and vulnerability analysis. Whether a risk should be considered major depends on the characteristics of the risk. Risks differ, depending whether they are natural (floods) or the result of human activity (conflict). Risks can affect individuals in an unrelated manner (idiosyncratic), they can be correlated among individuals (covariate), across time (repeated)

or with other risks (bunched). Risks differ by their frequency and welfare impact (for example catastrophic or non-catastrophic).

A difficulty in qualifying a risk as major is that one is required to compare its potential impact across various welfare dimensions. For example, comparing the intrinsic losses in welfare due to the exposure to a frequently occurring but less intrusive shock like malaria with the sense of insecurity due to social tensions is anything but easy. Even if one ignores these comparability issues and if the prioritization of risk occurs in terms of a common outcome measure (like income losses, expenses, contribution to income poverty, life expectancy or educational attainment), identifying major risks remains a challenging task. If, for instance, exposure to uninsured risk leads households or individuals to opt for relatively safe income generating activities, identification of the cost associated to this risk require knowledge of the counterfactual income in the absence of risk. While this can be done, it is by no means easy.⁴

3.1.2 The Vulnerable-to-Risk

Jointly with the prioritization of risks, the groups that are the focus of the analysis will have to be identified, since it is important to know both the existence of a particular risk and who is exposed to it. Different routes can be taken: one could choose a particular group of interest, and study which risks affect them most, or one could take particular risks and try to identify who is most affected in terms of its potential impact on future poverty. Groups chosen could be broadly defined, such as the rural poor, and attempts could be made to identify the major risks affecting them. Gender disparities may be reason to pay specific attention to intra-household and gender differences in risk management policies.⁵ Much standard risk and vulnerability work has taken this route. The focus could also be on the risks most relevant for very specific groups, such as orphans, IDP, certain socially excluded groups, ethnic minorities or children at risk of being pulled out of school for work in response to an income shock.

3.1.3 Appropriate Risk Management Strategies and Arrangements

With major risks and focal groups identified, one aim of risk and vulnerability analysis is to identify the most appropriate mix of risk management strategies (prevention, mitigation and coping) and arrangements (informal, market-based and publicly provided or mandated). Table 1 provides an illustrative example of such strategies and arrangements.

⁴ For example, Elbers and Gunning (2003).

⁵ Women often carry the main burden of coping with shocks within a family (such as illness or drought). Laws or norms may restrict their access to services that could help them cope better (for example curative health services). Restrictions on women's ownership of assets and the low quality of their property rights may decrease women's ability to mitigate risk.

Table 1: Examples of Social Risk Management Strategies and Arrangements

Arrangements/ Strategies	Informal	Market-based	Public
Risk Reduction			
	<ul style="list-style-type: none"> • Less risky production • Migration • Proper feeding and weaning practices • Engaging in hygiene and other disease preventing activities 	<ul style="list-style-type: none"> • In-service training • Financial market literacy • Company-based and market-driven labor standards 	<ul style="list-style-type: none"> • Labor standards • Pre-service training • Labor market policies • Child labor reduction interventions • Disability policies • Good macroeconomic policies • AIDS and other disease prevention
Risk Mitigation			
Portfolio	<ul style="list-style-type: none"> • Multiple jobs • Investment in human, physical and real assets • Investment in social capital (rituals, reciprocal gift-giving) 	<ul style="list-style-type: none"> • Investment in multiple financial assets • Microfinance 	<ul style="list-style-type: none"> • Multi-pillar pension systems • Asset transfers • Protection of poverty rights (especially for women) • Support for extending financial markets to the poor
Insurance	<ul style="list-style-type: none"> • Marriage/family • Community arrangements • Share tenancy • Tied Labor 	<ul style="list-style-type: none"> • Old-age annuities • Disability, accident and other personal insurance • Crop, fire and other damage insurance 	<ul style="list-style-type: none"> • Mandated/provided insurance for unemployment, old age, disability, survivorship, sickness, etc.
Risk Coping			
	<ul style="list-style-type: none"> • Selling of real assets • Borrowing from neighbors • Intra-community transfers/charity • Sending children to work • Dis-saving in human capital 	<ul style="list-style-type: none"> • Selling of financial assets • Borrowing from banks 	<ul style="list-style-type: none"> • Transfers/Social assistance • Subsidies • Public works

Source: Holzmann (2003)

Deciding on the “best” risk management strategies depends on the type of risk and on the costs and effectiveness of the available instruments. This requires accounting for the many different sources of risk management instruments (families, communities, nongovernmental organizations, market institutions and government agencies) and varying levels of demand from different groups (such as formal sector workers and people living in persistent poverty).

Proposed risk management strategies will be typically multi-sectoral, and need not be limited to social protection. For example, in Sub-Saharan Africa risks are numerous, severe and widespread, but little is spent on social protection. Management of risks here will focus mainly on non-social protection instruments such as health care, education, rural development or infrastructure development.

3.2 Approaches to Risk and Vulnerability Analysis: Examples

Given the available information on each of the three elements above, a number of different approaches in conducting risk and vulnerability analysis emerge. Which approach to take will be country specific and depend on the preliminary synthesis, the existing information and the dialogue with the various stakeholders. We distinguish among two broad approaches:⁶ constructing a *risk and vulnerability profile* and the *evaluation of risk-related strategies, arrangements and interventions*. The first approach is most useful as a first step in a situation where little is known about the basic risks and who is exposed to them. In particular, this approach uses primary and secondary information to catalogue various covariate and idiosyncratic risks affecting households, and identifies who is most vulnerable to these risks. The second approach focuses on a particular risk or set of risks, typically those with the largest negative welfare consequences or those of greatest interest to the policy maker. It fills the knowledge gap in understanding specific elements of the risk chain such as income diversification and the use and effectiveness of risk prevention, mitigation and coping strategies to address these risks.

Irrespective of the approach taken, the challenge is to identify areas where the analysis will contribute to the policy dialogue (see Box 13 for an example). Criteria to consider therefore include the contribution to risk prevention, mitigation or coping mechanisms, the expected impact on poverty and the targeting efficiency. Depending on the specificities of the project, the country specific circumstances and dialogue with various stakeholders, the analytical gaps, data availability, possibilities for additional data collection, timing and budget, the optimal format of the analytical piece will be a combination of the approaches and elements discussed below. In many cases the risk and vulnerability analysis will be a contribution to another piece of ESW (such as a poverty assessment), in which case only one element from these themes could be chosen. If a more comprehensive stand alone risk and vulnerability analysis is pursued, more than one element can be easily integrated in the analysis. The final drafting of the concept note should summarize the key social issues, identify the specific research questions that will be addressed, and propose the methodology that will be used for completing the risk and vulnerability analysis.

⁶ The field of study in risk and poverty is broad and includes the importance of a sound macro-economic framework for growth, economic stability and poverty alleviation, but also the analysis informal insurance mechanisms as risk mitigating devices. Such broad area of study cannot be covered in entirety here and we only discuss analytic work that deals with the micro economic aspects of exposure to risk. This still includes the analysis of the welfare consequences of macro-economic shocks but only from a micro economic angle. Since the unit of analysis and policy are households and individuals, we consequently concentrate on analyses that use qualitative and quantitative data sets on households or individuals.

3.2.1 *The Risk and Vulnerability Profile*

A number of different complementary methods and data can be used to elicit a risk and vulnerability profile, identifying the major risks faced and those most affected by them. Identifying the most important risks appears straightforward as there is a general assumption that major risks are known. Consultations with key informants, consideration of generally available documents (including Poverty Assessments, Country Assistance Strategies, Country Economic Memorandums and the EIU's country information) and more generally, a variety of secondary data sources, provides considerable information about important shocks (Table 2).

Table 2. Examples of Risks

Categories of risks	Examples of risks
Natural Risks	heavy rainfall, landslides, volcanic eruptions, earthquakes, floods, hurricanes, droughts, strong winds, etc.
Health Risks	illness, injury, accidents, disability, epidemics (e.g., malaria), famines, etc.
Life-cycle Risks	birth, maternity, old-age, family break-up, death, etc.
Social Risks	crime, domestic, violence, terrorism, gangs, war, social upheaval, etc.
Economic Risks	unemployment, harvest failure, business failure, resettlement, output collapse, balance of payments shock, financial crisis, currency crisis, technological or trade-induced terms of trade shocks, etc.
Political Risks	Discrimination, riots, political unrest, coup d'état, etc.
Environmental Risks	pollution, deforestation, land degradation, nuclear disaster, etc.

Source: adapted from Holzmann and Jørgensen, 2000.

Static welfare information, such as in a standard poverty profile, census reports or DHS survey reports can be supplemented with information from commonly available sources of information such as on climate, morbidity, child mortality, clean water access or crime to provide clues about the risks faced by the poor or other specific groups. A poverty map informs about the spatial distribution of poverty and, by overlaying this with commonly available information may provide the possibility to construct a spatial profile of risk and vulnerability.

Though relatively easy to obtain, first impressions and easily available information may be a bad guide to a prioritization of risks, especially those risks important for the poor. Key informants, policy documents and seemingly relevant secondary data have a tendency to focus on large, covariate shocks and to ignore smaller, but frequent risks. In the aggregate the latter may be more harmful however. Widespread idiosyncratic and seasonal morbidity, such as malaria or acute respiratory diseases could then mistakenly be ignored. In short, the analyst has to be very careful and take a broad perspective before deciding which are to be considered as major risks.

Even risks that are most easily identified such as droughts, earthquakes, floods, landslides or price shocks, still require a careful identification of those most affected. The results can be surprising. Sen (1981) in his seminal book on famines notes that in the aftermath of droughts, there is often a dramatic fall in demand for individuals providing services, such as barbers and tailors. These individuals tend to be more vulnerable to the consequences of drought, than the farmers whose harvests have been destroyed, as the latter tend to prepare for weather shocks through storage and income source diversification.

Examples of ‘surprising’ results are many. Telling is the story of the researcher who went to Northern Thailand to investigate the consequences of the Asian financial crisis, to discover that the respondents were almost completely unaware of the presence of such a crisis. Kruger, Mason and Vakis (2003) find that the coffee price shock in Nicaragua had a stronger adverse impact on small scale farmers rather than poor labor workers as earlier expected. Dercon (2002), reports for rural Ethiopia that, after drought, farmers consider policy reversals the major risk affecting their livelihoods. Datt and Hoogeveen (2003) report for the Philippines that the El Niño drought affected poor households more than the Asian financial crisis that occurred concurrently.

Box 2: The Coffee Crisis in Central America

A steep decline in the world coffee price has had a dramatic impact on the coffee-producing countries of Central America - Guatemala, Nicaragua, Honduras, El Salvador, and Costa Rica - and on households that depend on coffee-related income. Still, much of the initial emphasis and assessments were on large employment losses at large coffee estates with few insights about understanding the impact of the crisis on poverty. To fill the knowledge gap, a World Bank multi-country study was conducted during 2003 with its main objective to analyze the socio-economic impacts of the crisis on coffee farm and labor households, explore household risk management strategies and responses and identify effective government interventions to address the coffee crisis.

The findings suggest that the ability of households to adequately respond to the shock using a number of formal and informal risk management strategies were both diverse and complex. These strategies ranged from adjusting labor supply, diversifying income sources to changing consumption patterns. Interestingly, coffee households that used ex-ante (prior to the shock) risk mitigating and preventing strategies (such as exiting coffee or having a more diversified income portfolio in both agricultural and non-agricultural activities) seem to have done better compared to those households that used ex-post coping instruments to cope with the shock (taking children out of school, selling assets).

One surprising finding in at least one country in the region, Nicaragua, small coffee farmers appear to have been hit harder than coffee laborers (although laborers are the chronic poor). This appears linked, in part, to coffee being a perennial crop (so adjustments to short-term price shocks more difficult) and the fact that small coffee farmers were less income diversified. Such patterns imply that income mobility and adaptability are essential to risk management.

Given the above, a number of key insights emerge in designing policies to strengthen households’ ability to respond to the coffee and other economic shocks. **First**, there is a clear need for investments in long-run economic productivity and mobility including promoting improvements in infrastructure, exploring agricultural and non-agricultural linkages, deepening rural financial markets and enhancing human capital. **Second**, there is a need to develop effective insurance mechanisms and facilitate their access among small farmers and poor households. **Finally**, the development of appropriate, well-targeted safety net instruments is crucial. As the findings suggest, measures to protect investments in children’s education, health, and nutrition can be important in ensuring that shocks do not result in long-term losses in human capacity. As such, providing flexibility in social safety nets programs that address demand driven constraints (such as conditional cash programs) may be an appropriate modification to strengthen households’ capacity to endure shocks.

Source: Kruger D., A. Mason, R. Vakis 2003.

These illustrations suggest that there is good cause to study carefully which risks to prioritize – even when it seems clear at the offset which of them is the most important. One fruitful route could be to use specific data collection instruments to identify these risks. Similarly, when important risks to focus on have been identified (such as drought or a coffee

price shock) it will be worthwhile to identify who are most affected by these shocks, not just by assumption, but through careful analysis.

If one decides to delve deeper into the questions which risks should be classified as major, and who is most affected by them, various approaches may be followed. Data availability and the focus of the analyst will determine which one is feasible and useful.

Box 3. Understanding the Impact of Shocks in Guatemala

The vulnerability assessment conducted as a part of the Guatemala Poverty Assessment illustrates how creative use of a single cross-section survey, combined with a qualitative study, can provide a wealth of information on risks and coping mechanisms. This study combined quantitative data from the Living Standards Measurement Study and qualitative information from an in-depth qualitative study of poverty and exclusion conducted in 10 villages in Guatemala. Both data sources were designed to capture issues related to vulnerability, risks, and risk management.

The quantitative survey included a risks and shocks module, in which households were asked to report if they had experienced a shock during the previous 12 months, using precoded questions for 28 economic, natural, social/political, and life-cycle shocks. These shocks were classified ex ante into covariant and idiosyncratic shocks. Households also reported: (1) whether these shocks triggered a reduction or loss of their income or wealth; (2) the main strategy that they used to cope with their welfare loss; (3) if they had succeeded in reversing the reduction or loss in their welfare by the time of the survey, and (4) the estimated time that had elapsed until successful resolution of the situation. Information on covariant shocks was also collected from the community questionnaire at the survey cluster level.

The vulnerability assessment included several types of analysis of shocks and their impact, including (1) factor analysis to understand the correlation structure or “bunching” of shocks; (2) a multivariate logistic model to examine the association between a household’s characteristics and location and the probability that it reports a shock or incurs wealth and income losses due to the shock and the probability that it has recovered from the negative impact of the shock by the time of the interview; (3) nonparametric density estimation to estimate the counterfactual density of consumption or income; (4) multiple regression analysis to estimate the cost of shocks; (5) propensity score matching to estimate the cost of shocks; and (6) multiple regression analysis to estimate vulnerability to consumption poverty.

What are most main findings of the study? **First**, the study suggests that interventions, whether designed to address poverty or protect against shocks, should concentrate on building the assets of the poor. Social protection can play an important role in this context. **Second**, the data suggest that a strategic emphasis on children – particularly child-focused interventions to reduce malnutrition and promote early childhood development – is crucial to avoid inter-generational transmission of poverty and vulnerability. **Third**, since exposure to some natural disasters seems largely determined by geography, maps of regional vulnerability to natural disaster could be useful for risk management planning. Since natural disaster often damage or destroy community infrastructure, in addition to reducing income and wealth at household level, social funds could be the institutional channel for relief and infrastructure rehabilitation. **Finally**, the study noted that while poverty is more severe in rural part of the country, social protection policy should not neglect urban areas, where the ratio of vulnerable people to currently poor people was 2.2 times higher than in the rest of the country.

Source: Tesliuc and Lindert, 2004

Existing household surveys are a good source of information, although typically they only contain information on a limited number of risks⁷. This does not have to be a limitation but has to be realized (and made clear) at the outset. For instance, in their vulnerability assessment Christiaensen and Subbarao (2001) concentrate on malaria and weather shocks in their analysis of vulnerability in non-pastoral rural Kenya, primarily due to data availability at household/village level. The authors recognize from the outset that other risks may be equally important, such as trade or price shocks and that one of the most important vulnerable groups, the pastoralists, could not be analyzed because no household survey ever captured this vulnerable group. The studies reported previously by Dercon (2002), Datt and Hoozeveen (2003) and Kruger, Mason and Vakis (2003) also concentrate on a selected number of shocks.

In many instances, a cross-sectional survey is the only data available to conduct a risk and vulnerability analysis. While adequate for poverty assessment, a single cross-section is problematic since the absence of information on intertemporal variability means that a careful dynamic analysis is not possible. If risk and vulnerability is one of the objectives for implementing the survey, the analyst can introduce retrospective questions to capture, albeit imperfectly, information about past shocks and ex-ante coping mechanisms. An example from Guatemala is presented in Box 4. A similar module was piloted for the risk and vulnerability assessment in Afghanistan (Vakis 2004). In cases where such a module is included in a household survey, the benefits of collecting information about a large number of shocks has to be traded off against the possibility to ask in depth questions about a limited number of shocks. An African illustration of a shock module asking about a large number of shocks is the Northern Uganda Social Action Fund Questionnaire. A leaner version of this module, but with more detailed questions on shocks related to death and major illnesses is implemented as part of the Tanzania Vulnerability Survey 2003. These various modules can be found at http://wbwebapps5/wwextweb/sp/risk_management/, the SRM website.

Retrospective questions in a cross section can go a long way in generating information about the occurrence of shocks over time which can inform about the frequency of shocks, their characteristics etc. (Dercon and Krishnan 2000b, Datt and Hoozeveen 2003). In combination with retrospective information about e.g. assets levels, information about the severity of the shock can be derived as well. The use of retrospective questions has its disadvantages as memory lapse and observation bias may lead to an under- or over-reporting of shocks. Yet careful questionnaire design and attention to the collection of IV instruments to be used in regression analysis can go a long way in dealing with these issues.

Panel data can be a great help to study the relative importance of shocks, identifying groups that are most affected and the strategies used to manage risk. Nationally representative panel data sets with information about shocks are scarce, yet if the interest is in causal relations or, the consequences of shocks on welfare outcomes of certain groups, this may matter less. Hoddinott and Quisumbing (2003) report on work providing suggestive

⁷ An increasing number of national household surveys are currently introducing more general modules to elicit information on shocks, risk coping and their overall impact, although in practice, these modules remain relatively small.

evidence on the impact of specific shocks to income on consumption fluctuations in a number of countries, including Mali, Russia and Ethiopia. An illustration of the use of panel data to relate exposure to shocks to welfare outcomes in the long run is Alderman, Hoddinott and Kinsey (2002). These authors link exposure to the war preceding Zimbabwe's independence and drought to the health status of the children in their sample (as measured during the initial rounds of their panel, 1983-87) and to their health and educational attainments as adolescents (as measured in 2000)⁸.

Box 4: Using retrospective questions to assess the role of shocks in rural Ethiopia

A retrospective module on shocks that occurred during the previous 20 years was administered during the third round of the Ethiopian Rural Household Survey. The list of shocks in the questionnaire was based on qualitative pilots using open-ended questions. The questionnaire asked whether various events caused very serious hardship in the last 20 years and to nominate the years in which it occurred. Simple landmark dates were used to help dating during the interviews to survey respondents.

The largest percentage of households mentioned harvest failure due to environmental factors, with the mode year the 1984 famine. Illness and deaths, affecting labor in the household or shocks to livestock holdings were also commonly mentioned. Interestingly shocks due to the consequences of “policy” were frequently mentioned more often than war or banditry –despite years of civil war in this period. The identification of policy as a risk factor not only reflected the restrictiveness of rural policy during this period, but also its unpredictability. Measures such as villagisation or taxation –often in the form of forced deliveries of grain, affected people in unexpected and often arbitrary ways.

<i>Events causing hardship</i>	<i>Percentage of households reported to have been seriously affected in last 20 years</i>
Harvest failure (drought, flooding, frost, etc.)	78
Policy shock (taxation, forced labor, ban on migration...)	42
Labor problems (illness or deaths)	40
Oxen problems (diseases, deaths)	39
Other livestock (diseases, deaths)	35
Land problems (villagisation, land reform)	17
Asset losses (fire, loss)	16
War	7
Crime/banditry (theft, violence)	3

Source: Dercon and Krishnan 2000b

A number of caveats related to these different approaches to construct profiles of risk and vulnerability need to be mentioned. A first point is that the available instruments to collect information on risk largely have to rely on survey based self-reported shocks. The problem is that they may suffer from reporting bias: different groups may be more likely to report particular risks for reasons related to the characteristics of the group and not because of objective reasons, such as that they are more affected. For example, it is well established that the rich over report and the poor underreport illness episodes, so that in many surveys, the poor seem less likely to be ill. For further work on self reported shocks, the reader

⁸ In the absence of panel data, repeated cross sections can sometimes be used to study the ex-post impact of shocks. Hoogeveen and Ozler (2004), for instance, use two nationally representative household surveys to explain changes in poverty following a policy shock (the end of apartheid) in South Africa.

should consult Dercon and Krishnan (2000a, 2000b) and Tesliuc and Lindert (2004). Furthermore, certain risks may not easily be recognized as risks in surveys. For example, corruption or risk of waterborne diseases linked to lack of access to clean water are sometimes not recognized as inducing risks to income or health, or are not identified because they are too common. Finally, shocks are only one factor in changes in welfare outcomes, often not easily distinguished without careful analysis, from gradual processes, such as declining trends in soil fertility or periods of low commodity prices.

Box 5: Using perceptions to separate the impact of El Niño from the Asian crisis

The Philippines poverty assessment was prepared in the aftermath of the Asian financial crisis and, consequently, it dealt with the welfare consequences of this shock. However, the Asian crisis coincided with an El Niño related drought. Since the Asian crisis was arguably a one-time phenomenon, whereas the El Niño is recurrent, the study tried to understand the impact of both shocks as this would have implications for policy.

In an effort to separate the consequences of the two shocks the 1998 APIS survey was used. This survey collected information on household consumption and income, but also self-reported information about exposure to shocks. The available shock information was divided into three shock categories viz., labor market shocks, El-Niño related shocks and a combination of both shocks and use estimate a consumption model with controls for household characteristics, the three shocks and shock-household characteristics interaction terms. After calculating various counterfactuals and comparing these with the actual distribution of consumption, it was shown that consumption losses attributable to El Niño exceeded those attributable to the Asian crisis. Additionally, poorer rural households were relatively more exposed to the El Niño shock and were, hence, hit harder. For a given level of income, the poor were also shown to be less able to smooth their consumption i.e. they had less capacity to cope with the shocks.

These findings led to a policy dialogue with the Philippine government around the desirability of workfare programs.

Source: Datt and Hoogeveen, 2003

The latter could be addressed in studies directly focusing poverty and wealth dynamics. This approach which considers the rise and fall of living standards attributes changes in well being to any of the following three factors (i) changes in the amount of productive assets owned (ii) changes in the returns to these assets (iii) trends and (iv) shocks. This approach has several advantages.

For instance, aspects of risks that are difficult to deal with in a non-dynamic context become apparent when concentrating on wealth and poverty dynamics. These include the impact of repeated shocks on welfare dynamics and asymmetries and non-reversibilities in household's welfare trajectories. By broadening the perspective and time horizon, it becomes clear that shocks are amongst several factors affecting the economic dynamics of households and it becomes feasible to distinguish the cumulative impact of shocks from other determinants of household welfare such as asset accumulation and redistribution, initial conditions, entry barriers, (gradual) changes in the economic environment, accumulation of human capital etc.

The drawback is that such analysis tends to require panel data that track the unit of observation (individuals, households, villages) over relatively long periods of time. Scott (2000) for instance uses a panel sample of small farm households from eight rural communities in Chile interviewed in 1968 and 1986 and uses mobility analysis to show that

more households moved out of than into poverty. Of those households who became impoverished, around half may have suffered a transitory decline in income in 1986. The other half experienced pauperization as a result of investing in projects with negative rates of return, investing in the accumulation of human capital by their children, the presence of vulnerable individuals in the household such as those with physical or mental disabilities, or due to shocks such as a large rise in the household's dependency ratio or labour market shocks. Dercon (2004) looks at the long term impact of the Ethiopian famine shock of 1984-85 on welfare dynamics. He finds that controlling for other factors, such as exogenous asset changes and changing returns to assets, those seriously affected by the famine experienced significantly lower consumption growth a decade later than those less affected.

So far the focus has been on research methods that focus on household survey data. Yet much of the analyses discussed above, can be carried out using qualitative methods. Qualitative methods can be implemented as stand alone exercises, but can also be complementary to survey analysis. Combined qualitative and quantitative methods – sometimes referred to as Q-squared, have much potential (see Box 6), especially qualitative and quantitative exercises are implemented sequentially. Qualitative approaches fielded before a survey implementation can identify questions that should be asked in a survey; qualitative exercises carried after the analysis of survey results can explain hard to understand results. For example, a living standards measurement survey carried out in Pakistan (the Pakistan Integrated Household Survey, or PIHS) revealed that the majority of girl students in rural areas either fail to enroll in school or withdraw before attending secondary school. In fact, 68% of the girls sampled by the PIHS had never attended school. This finding was puzzling in light of the fact that their brothers tend to reach higher levels of educational attainment, that literacy for both boys and girls was described as desirable by virtually every informant, and that public primary education is officially offered on a non-fee basis. Responses to survey questions on this issue were too superficial and vague to provide a valid explanation of the early withdrawal of girls from the educational system. A follow-on qualitative study, however, uncovered a complex set of supply and demand factors, working interactively, that were responsible for the failure to secure basic education for girls. In addition to a number of hidden and unsuspected financial costs, the study revealed that household decision-makers were heavily influenced by socio-cultural concerns, such as the fear that the reputations and future marriagability of their daughters would be compromised through exposure to unrelated male students and teachers. These findings suggested a number of recommendations for future educational policy (Parker and Kozel, 2004).

Key qualitative tools, such as village mapping, life histories, problem identification at community level, gender analysis, and key informant interviews can all be adapted to inform about the relative importance of risks, the risk management strategies used and their overall impact on specific groups. In Tanzania these, and other tools were used to consider risk and poverty in a nation wide participatory vulnerability assessment, whereby shocks were identified as ‘impoverishing forces’. Like survey based results, some of findings are well known. Impoverishing forces such as ill health or adverse environmental conditions are unsurprising. Yet others are insightful such as cultural beliefs and customs that favor men over women and children and that lead to vulnerability amongst the latter, or the fact that theft is a oftentimes a major impoverishing force.

The analysis of wealth and poverty dynamics can also be carried out in qualitative research exercises. Wealth rankings are well placed to identify current as well as past wealth status of households. By identifying reasons for change, information about economic mobility can be elicited, including the relative importance of specific risks.

**Box 6: Q-Squared Assessments:
Social and Economic Determinants of Poverty in India's Poorest Regions -**

A study implemented as part of the Uttar Pradesh poverty assessment aimed at deepening the understanding of the key characteristics of the poor, and of recent changes in the conditions and characteristics of poverty. It explored the multiple dimensions (both economic and non-economic) of poverty and sought to better understand the barriers and opportunities that determine economic mobility.

The study used both qualitative and quantitative research methods in a phased, iterative approach. Derived from participatory rural analysis and rapid rural analysis, its qualitative techniques included focus group discussions, case history interviews, social mapping and wealth ranking exercises, a social capital inventory, and gender roles and issues exercise. These methods were complemented by a household and community sample survey.

Results indicate that poverty is a complex phenomenon based on a network of interlocking economic, social, cultural, political, and geographic and environmental dimensions. Three distinct groups of poor were identified—the destitute poor, who have usually experienced an idiosyncratic shock; the structural poor, whose poverty is linked to social identity; and the mobile poor, who have a strong potential for upward mobility.

The potential and likely path for upward mobility differs for each group; each faces different constraints and different opportunities, and each has different coping strategies. The presence or absence of social capital, particularly links outside the village, proved to be an important determinant of mobility. Social factors found to be associated with persistent poverty include very low caste status, dependency relationships, vulnerability, and risk adversity. Poor households in "attached labor" relationships gain a measure of security, but those that have opted for "casual labor" have better opportunities to negotiate higher wages or to migrate to employment centers. Diversification out of land-based agriculture was a common pattern; many poor households saw greater potential for economic betterment outside the traditional village economy.

Government services and antipoverty programs could potentially ease the transition from a traditional land-based system to one characterized by greater income diversification by reducing vulnerability and facilitating risk-taking. But most of the programs in operation were described by survey respondents as unsatisfactory because of poor management and misappropriation of resources. Among antipoverty programs, the Public Distribution System was cited most often as essential to the well being of the poor, while others were generally found to be nonfunctional in the villages surveyed. Among services, schools and water systems were deemed most valuable, and government health services most dysfunctional.

These findings informed the Bank's policy dialogue and helped shape the assistance program for India.

Source: Valerie Kozel, personal communication

Guide to further reading

Various studies consider the importance of shocks on (non-income) welfare outcomes. For example, Hoddinott and Kinsey (2001) examine the impact of the 1994/95 drought on the heights of pre-school children living in three resettlement areas in Zimbabwe. Studies examining the impact of shocks on education and health include Kruger, Mason and Vakis (2003), Alderman, Hoddinott and Kinsey (2002), Alderman, Behrman, Lavy and Menon (2001), Deolalikar (1996), Dercon and Krishnan (2000a), Foster (1995), Jacoby and Skoufias (1997). More references to papers on economic mobility can be found:

in Baulch and Hoddinott (2000) who present a review of the literature and evidence on poverty dynamics in developing countries. On the use of qualitative research methods in risk and vulnerability analysis and many illustrative examples of combines qualitative-quantitative research see Parker and Kozel (2004).

3.2.2 The Evaluation of Risk-related Strategies, Arrangements and Interventions

A second type of analysis does not focus on an overall ‘profile’ of risk and vulnerability, but rather on informal and formal strategies to handle risk and its consequences. Heitzman, Canagarajah and Siegel (2002) introduce the concept of a risk chain, whereby a distinction is made between actions taken before a risk materializes itself, consisting of both risk prevention and risk mitigation and actions taken ex post –after the shock took place, to reduce the welfare consequences for the household. The authors present the case of malaria to illustrate their concept. Examples of ex ante, risk prevention would be the removal of standing water, spraying campaigns, use of bed nets, mosquito coils. Examples of ex ante strategies that would mitigate the welfare losses of getting malaria are participation in a health insurance or an informal arrangement that ensures that the household’s fields are attended in the case of illness. Ex post risk coping strategies include purchase of anti-malaria medicines and possibly the sale of assets to maintain consumption levels. The analyst who has already decided that malaria is a major risk to focus on, could use the various element(s) of the risk chain to identify areas for further attention. Again country context and dialogue, analytical gaps, data availability and the presence of government programs –or the interest in introducing these may drive the decision.

Rather than focusing on a particular risk, analysts may also want to concentrate on activities that have risk preventing, mitigating or coping functions. These activities may be linked to a particular risk, but it is more likely that they are used whenever the household is facing a period of stress. For instance, buying and selling livestock is a coping strategy practiced by many rural households. During droughts many households sell cattle in exchange for grain (Fafchamps, Udry and Czukas 1998, Kinsey, Burger and Gunning 1998). The same coping mechanism is used to deal with idiosyncratic risks such as high medical bills or to pay for school fees. The analyst may want to focus on the effectiveness of these mechanisms under various conditions. During droughts for instance, livestock markets tend to collapse and livestock-related coping mechanisms largely fail. Even to deal with idiosyncratic shocks livestock appears to be less suited as coping aid as qualitative evidence suggest that distress sales typically yield very low prices. A better understanding of the reasons for livestock sales prices to collapse, would be a step towards a strategy that could enhance household coping strategies. Two examples, in Boxes 7 and 8, illustrate how risk and vulnerability analysis informed the policy dialogue in two drought-affected countries from sub-Saharan Africa, and helped shift the focus of donor and government support from coping with drought, to ex-ante risk-prevention and risk mitigation measures.

Box 7: Preventing Famine in Ethiopia

Widespread hunger is a recurring condition in Ethiopia. Every year, the country appeals on an emergency basis for food aid to meet the consumption needs of large numbers of food insecure households, and receives a substantial amount of food aid. However, in many instances the relief efforts miss the crises, are relatively costly, and induce dependency.

A recent Public Expenditure Review and a Risk and Vulnerability Assessment informed the country dialogue on the causes of hunger, and the options to prevent it. The RVA quantified the high vulnerability to poverty induced by droughts, and contrasted the recurrent nature of the shock with the main mechanism in place to cope with the crisis: food aid. The current dialogue between the Government and the Bank switched from post-shock assistance to options to prevent famine, through the design of a growth-enhancing safety net. The Government has established a Food Security Program with several components to find a long-term solution to this situation. A gradual shift away from a system dominated by emergency humanitarian aid to a productive and protective safety net system resourced via a multi-year framework is a crucial element of the planned reforms.

A safety net that promotes productive household behavior (through Conditional Cash Transfers), protects household assets, and creates public assets (through workfare) is an essential instrument for accelerating the country's growth and attainment of household food security. The transition to a hunger-prevention policy requires some key reforms to improve donor aid modalities and the effectiveness of public resources, and will be supported by a series of Poverty Reduction Support Credits (PRSCs) and a safety net operation.

Source: World Bank (2003)

The analyst could also focus on existing government interventions. Impact evaluations of ongoing programs can be informative about the effectiveness of the program to help to cope with risk. To conduct a convincing impact evaluation, the design of studies has to carefully consider the construction of 'control' and 'treated' groups presents fundamental challenges. A precise evaluation of the impact of an intervention on a group requires the identification of 'control' group that is in all observable and unobservable characteristics identical to the 'treated' group. While experimental designs (such as fully random allocations of support) may be possible in some contexts (as in the case of the PROGRESA – see Box 9), or at times 'natural' experiments are possible (whereby, without much effort from the part of the researcher, a fully appropriate control group is available), in many instances these would not be feasible. In those circumstances, data intensive studies, based on carefully designed samples using advanced statistical techniques may be necessary to conduct convincing impact evaluation (for a discussion, see Ravallion, 2001).

Obvious candidates for impact evaluations are programs with a safety net component (subsidies, public works, transfers etc.), yet risk related interventions go beyond social protection. They also include rural programs such as irrigation, crop improvement, nutritional interventions, land redistribution, or extension services, infrastructure investment like rural roads or are related to the government's rules and regulations such as labor and inheritance laws, building standards, or banking regulations. Activities in each of these areas could be evaluated for their impact on risk strategies and arrangements in a risk and vulnerability assessment.

Box 8: Strengthening Drought Management Practices among Pastoralist Communities in Kenya

The Kenya Arid Lands project concentrates on the livelihood of pastoralist communities practicing extensive livestock production. These ethnically diverse communities represent 7% of the Kenya's population and populate 70% of the most infertile lands. The objective of the project was to increase the ability of pastoralist communities to manage drought, through community-based natural resource management, drought monitoring and strengthening the local livestock markets. These ex-ante risk management measures were complemented by famine relief distribution during crises.

The project combined a number of innovative features, such as the introduction of Drought Monitoring Systems and Drought Management Plans, and the promotion of community-based natural resource management, where district level plans were used to implement micro-projects and drought mitigation interventions by local pastoralist associations.

By emphasizing mitigation instead of emergency responses the project generated a quick and targeted response to impending drought, through livestock off take, disease control and reliable water supply. The project encouraged market-oriented responses, through (i) trader subsidy to encourage off-take in potential drought areas; (ii) efforts for disease control to lower barriers for livestock trade; and by (iii) supporting national advocacy group for livestock trade. These social and economic investments generated substantial economic gains at community level.

Adapted from "Drought Management in Kenya", presentation by Christine Cornelius

The analyst may also want to focus on untested interventions, by developing a pilot or, identifying and evaluating ongoing pilot projects. When developing new approaches to dealing with risk, existing informal risk coping arrangements may be a good place to start. Dercon and De Weerd (2004) for instance, report how burial societies in Ethiopia and Tanzania are often highly formalized, and argue that they are potential vehicles for other types of insurance. In Zimbabwe unpaid bride wealth obligations help create large insurance pools that are less susceptible to covariate shocks and that help farmers to deal with asset (livestock) shocks. The mechanisms behind this arrangement have been used to develop a micro-insurance insurance mechanism whose viability still needs to be tested under field conditions (Hoogeveen 2001).

Other micro-insurance mechanisms are already beyond the conceptual phase and are being piloted. Morduch and Sharma (2002) describe several of these such as Uganda's "credit-life insurance" which, for a small fee, pays off a borrower's remaining debt should the client die with an outstanding balance, sparing neighbors and relatives from having to assume the burden. Programs like the Self-employed Women's Association (SEWA) in Ahmedabad, India, provide low-cost healthcare insurance to poor clients. Index based insurance schemes, such as rainfall insurance that pays out when rainfall is low, are currently being tested in Latin America and Africa with support from the World Bank and the International Food Policy Research Institute. Innovations do not have to be in the area of micro-insurance. Since there are so many areas where risk affects people's welfare, there are many areas of potential intervention, varying from improved methods of food storage to enhancing household saving mechanisms.

Box 9: SRM and Mexico's Conditional Cash Transfers

Recent empirical work has demonstrated the positive effects of conditional cash transfer (CCT) programs on various socioeconomic welfare outcomes such as poverty, education, and health. In the context of social risk management very little is known about the extent to which these programs help households prevent, mitigate, or cope against various shocks. One might expect that program transfers allow households to maintain their children in school in the event of a negative shock. Households may also seek to specialize their livelihood strategies, even though it increases their ex-ante exposure simply because of the additional ex-post coverage that these programs provide. If these hypotheses are correct, then adding flexibility to the design of CCT programs could be extremely valuable in addressing risk and vulnerable populations more effectively.

An ongoing World Bank study is looking at measuring the extent to which CCT programs help households insure against shocks using as a case study, the highly successful Mexican program PROGRESA. The information collected for the evaluation component of PROGRESA provides in many ways an ideal database for such an analysis. In addition to the randomized design of the experiment, which allows us to measure an unbiased impact of the program, these data constitute a large panel with detailed household information for 5 rounds over a period of 3 years. In particular, this study (i) measures whether or not PROGRESA reduced the impact of both covariate and idiosyncratic shocks on a child's school enrollment and work decisions; (ii) explores whether or not PROGRESA had a differential impact on schooling and work outcomes based on a household's ex-ante level of risk exposure; and (iii) investigates the extent to which program recipients adjusted their livelihood portfolios, and the consequential impact on consumption.

Source: Renos Vakis, personal communication.

Box 10: Strengthening Coping Capacity through Microfinance

In Bangladesh SafeSave builds on the strengths of ROSCAs to help clients to build up their savings. Each day, clients are visited by staff in their homes or places of work, during which clients decide how much to save –perhaps a few cents or the equivalent of a dollar or two, and over time, they can build up bank accounts with a ‘usefully large’ lump of money. If clients need to borrow (for whatever purpose –loans are not restricted to business needs), the program allows borrowing against savings. The existence of ROSCAs and the success of SafeSave challenges the notion that most poor households are simply too poor to save. Instead, the SafeSave experience suggests that, when safe, convenient ways to make savings deposits are established, the poor can and do save. The program appears to be valued highly by clients, a lesson also suggested by the experience of *susu* collectors in West Africa, who also go from household to household taking small deposits on a regular basis –and charge a substantial fee for doing so.

Can programs like SafeSave be replicated? There appear to be at least two constraints. First, SafeSave is able to cut costs dramatically by working in the densely populated slums of Dhaka. It is unclear how the program would perform in a less densely populated area, or what would happen if the frequency of collection would go down. The second constraint is regulatory: were SafeSave to expand it would face a number of accounting and management hurdles due to Bangladesh's banking laws.

Source: Morduch and Sharma, 2002.

Guide to further reading

Ravallion 2001 presents an introduction to impact evaluation. Morduch (1999b) provides a recent review evaluating micro-finance approaches. Morris and Wodon (2003) present an impact evaluation of disaster relief program after hurricane Mitch. Quisumbing (2003) presents an analysis of the consequences of food aid on child nutrition. Raymond, Sadoulet and de Janvry evaluate the impact of PROGRESA (a cash conditional transfers

program in Mexico) on vulnerable children's schooling outcomes. More information about safety nets can be found at:<http://wbwebapps5.worldbank.org/wwwextweb/sp/safetynets/>.

4. Vulnerable Groups

A different strand of work on vulnerability, takes, instead of risk, particular groups as object of analysis. Using this approach, the main objective will be to conduct in depth analysis related to the conditions and circumstances of a specific group, such the elderly, orphans, internally displaced populations, landless laborers, etc.

4.1. Conceptual Issues

In dealing with vulnerable groups, a number of levels of analysis can be distinguished. A first approach aims to prioritize amongst different groups and identify those most in need. A typical context would be a country or region-wide assessment, in order to prioritize safety nets or sector-specific interventions. Secondly, the analyst may want to concentrate on a particular group, consider their causes of chronic poverty and study the dynamic processes that keep them prone to poverty. One may also want to focus on the strategies these groups use to sustain their livelihoods, as well as the role and impact of specific interventions.

The basis of this work is rooted in standard poverty profiles, whereby specific characteristics of people are matched to poverty outcomes. These characteristics typically focus on easily observable characteristics, such as demographic characteristics, gender, disabilities or occupational categories. The poverty outcomes considered are multidimensional, including nutrition, income, education or voice.

The analysis does not have to remain static: in fact, much can be learned from focusing on the dynamic processes that perpetuate poverty. A focus on the strategies that individuals, households and communities use to prevent, mitigate and cope with these sources of deprivation is also helpful, not least in terms of broadening the policy options available. In particular, while standard transfer-based 'safety net' interventions may play an essential role in protecting these groups, the options available may include building on 'informal' or 'private' arrangements that have been developed to cope with these problems. In particular, developing dynamic approaches to study vulnerable groups in a policy context, for example drawing inspiration from the SRM lens, could be a promising direction.

4.2 Approaches to Studying Vulnerable Groups: examples

The life cycle approach is commonly used to identify different vulnerable groups and to prioritize amongst them. The approach takes the various stages of a person's life cycle as point of departure for the identification of periods or events during which they risk deprivation in one or more dimensions of poverty (see Box 11). The approach, developed by World Bank practitioners, is based on a static but multidimensional concept of vulnerability, covering both lack of capabilities and bad welfare outcomes in nutrition, consumption,

health or education. The tool is particularly useful in many situations when the analysts faces limited data and time constraints.

The life-cycle approach follows a three-step process. In the first step, the analyst classifies the population by age groups and identifies major risk indicators for each group, answering the question: what are the sources of vulnerability to chronic poverty? In the second step, information on government social protection policy is compiled, such as program expenditure and its incidence. In this step, it is important to identify what the government is doing to reach each group at risk, to catalogue all government social protection expenditures by type of program and major beneficiaries, and identify the gap in access to, or availability of, risk management instruments. This would also be the appropriate time to develop an understanding of the existing informal and private arrangements that are in place that focus on these vulnerable groups, and their interaction with government and other formal arrangements. The final step in the analysis is to rank problems or weaknesses in current social protection policy by urgency, and to provide policy guidance on how to address these problems.

Box 11: Using the life cycle approach to identify vulnerable groups and the main risks they face

The Argentina Poverty Assessment program included a social protection note that elaborated on the social protection (SP) aspects of poverty reduction. This work diagnosed key social risks and specific vulnerable groups, analyzed current SP program coverage, and discussed options and key issues to consider in improving the SP policy response. To identify vulnerable groups a life cycle approach was taken. Below a summary of the main categories is presented, along with indicators used to identify these categories and the risks faced.

Age group / Poverty rate	Main risks of deprivation	Leading indicator (value for lowest quintile)
0-5 years 12% very poor 43% poor	Stunted growth	Malnutrition Pre-school program coverage (22%)
6-14 years 13% very poor 45% poor	Poor education quality (low human capital development)	Later entry (8%) Grade repetition (27%)
15-25 years 7% very poor 31% poor	Low human capital development (education quality / attainment) Unemployment / low wages Inactivity (violence, substance abuse etc.)	Secondary school enrollment repetition (62%) Unemployment (33%)
25-64 years 5% very poor 23% poor	Low income	Unemployment (23%) Below poverty earnings (underemployment)
Over 65 years 1.4% very poor 13% poor	Low income	Pension coverage (55%)
General population 7% very poor 29% poor	Poor health care Poor housing / lack of basic infrastructure	Health insurance coverage (35%) Running water (66%) Sewerage (53%) In flood-prone area (28%)

Source: World Bank, 2000

It is possible to use the lifecycle approach in conjunction with a focus on risk and poverty as outlined in the previous section. In particular, for each group the impact of specific idiosyncratic and covariate risks may be explored, and the existing informal and formal strategies to reduce, mitigate or cope with risk.

An important issue to consider is the metric (income, consumption, expenditure, health, assets, nutrition or more broadly functionings and capabilities) in which the chronic poverty and vulnerability of a group is measured. It is possible that an obviously vulnerable group is not identified because of the metric chosen. For instance, Siaens, Subbarao and Wodon (2003) find that Rwandan orphans are less likely to live in poor households because foster families tend to be comparatively richer. Hence a profile based on household consumption poverty only would reject orphans as a vulnerable group. But such an indicator – either per capita or per adult equivalent consumption – is not well suited to capture welfare differences between orphans and own-children, as it is based on the hypothesis that consumption is equally distributed among household members. Individual-level indicators, such as education, nutrition or health outcomes, are better suited to assess the existence and extent of intra-household discrimination. Using such indicators, the authors find large differences between orphans and non-orphans in terms of school enrollment, child labor, and malnutrition rates, and built a strong case to consider orphans an important vulnerable group.

Once a (or a number of) metrics have been selected, the life cycle approach can be used to rank various groups, by degree of destitution, by their numbers or a combination of both. To obtain a complete overview of vulnerable groups, the life cycle approach should be complemented with an identification exercise to discover other vulnerable groups such as ethnic minorities, internally displaced people (IDPs), people with disabilities, socially excluded groups such as those infected with HIV/AIDS or sex workers, or those living in slums or in dangerous circumstances.

Because vulnerable people are identified by their common characteristics a poverty profile can be instrumental in identifying vulnerable groups, especially if the characteristics are readily observable such as age, health, gender or asset ownership (e.g. landlessness). Certain characteristics may be less easily observed such as being chronically poor, or remain unrecorded (e.g. being mentally ill or a refugee). Not identifying such vulnerable groups could mistakenly lead to omissions. For these reasons a data (survey or census) based approach is best preceded by a qualitative approach.

If a particular vulnerable group is identified at an early stage of the analysis (through qualitative work or otherwise), it is possible to include additional questions in a household questionnaire. For example, in Bosnia and Herzegovina, in 2001, the concern with the lingering impact of the war led to the expansion of the health module of the survey instrument to include 16 depression-related questions so as to be able to both measure the incidence of this mental health ailment and identify linkages to other aspects of welfare. A concern with the effect of AIDS related mortality on households led to significant changes in the Kagera (Tanzania) survey in 1991-94 that allowed one to identify those most affected by AIDS, how welfare outcomes changes as a result of AIDS and various types of support received (Scott, 2003).

Not only do survey based results benefit from qualitative exercises, qualitative results can be cross-checked with survey outcomes. In a recent study of HIV/AIDS among high-risk groups performed by Save the Children US in Malawi, for example, focus group discussions revealed a long list of misconceptions among informants about sexually transmitted infections and HIV/AIDS. Without a follow-up survey, the research team would not have realized that many of these beliefs were held by only a small percentage – 5-7% -- of the sample. The survey results enabled the team to identify and pull out the misconceptions that were held by a large percentage (30-50%) of informants, and that could therefore be said to constitute a significant impediment to the adoption of safer behavior (Parker and Kozel, 2004).

Vulnerable groups are often numerically small, and typical household surveys lack a sufficient number of observations to present reliable estimates of poverty amongst the vulnerable. This hinders prioritization amongst vulnerable groups and hampers the policy dialogue. In such instances, census data can be of use, as they can present certain welfare information for even the smallest vulnerable group. Census information has been underutilized but can often be accessed and used to elicit differences in educational attainment, housing conditions or access to clean water between the population at large and a particular vulnerable group. For countries for which poverty maps are available, estimates of poverty incidence –not obtainable from ordinary household surveys, can be derived for vulnerable groups as well (see Box 12).

Expanding the analysis of vulnerable groups at regional, instead of national, levels helps in focusing the attention of policy-makers on severe pockets of poverty that are marginal within the borders of a given country, but are substantial at regional level. This is the case of the Roma or "Gypsies" in Europe and Central Asia, whose severe levels of poverty and deprivation were documented in a number of regional studies, such as Ringold et al. (2003). The Roma live in nearly all of the countries in the region, and often do not rank as an important ethnic minority. Yet within Europe the Roma population is estimated at 7 to 9 million people, making the Roma the largest minority in Europa. Roma poverty is multifaceted. Poverty rates for Roma range between four and ten times that of non-Roma in Bulgaria, Hungary and Romania. They are often deprived of the resources necessary for adequate living conditions, but also lack access to education, the labor markets, social and health services, and channels for participation in society. It is not uncommon to find reports of unemployment rates of up to 100 percent in Roma settlements—due to their low skill levels and discrimination in the labor market, Roma are frequently among the first to be laid off. Education levels vary notably within countries, between urban and rural areas, and across different types of Roma communities. Bulgaria provides the most dramatic example where 89 percent of Roma had primary education or less, while only 10 percent had some secondary education. Health conditions among Roma are significantly worse than for the rest of the population in most countries. Roma life expectancy is, on average, 10 years less than that of the majority population in Central and Eastern Europe.

Box 12: Using census information to assess welfare outcomes for vulnerable groups

Uganda's household surveys do not contain sufficient detail to report welfare outcomes for disabled people. However, for urban areas, the 1991 population census identifies people with disabilities. This information was used to construct a profile of welfare outcomes of households with disabled heads.

Doing so not only confirmed the notion that households with a disabled head are worse off (in terms of housing conditions, educational attainment or access to clean water) it also showed that disabled household heads have less access to the formal labor market and tend to concentrate on entrepreneurial activities including farming. Additionally, it was shown that poverty associated to living in a household with a disabled head is transferred inter-generationally as children living in households with a disabled head are less well educated.

Using techniques used in poverty mapping poverty incidence amongst people with disabilities was also calculated. This was the first time that such information became available for disabled people in developing countries.

Census based welfare indicators by disability status of household head, 1991, urban households only

	<i>Head disabled</i>	<i>Head not disabled</i>
Age of head	37.6	34.7
Female headed	45%	32%
<i>Wall material</i>		
.. mud / unburnt brick	74%	58%
.. cement / burnt brick	23%	36%
.. other	3%	8%
<i>Floor material</i>		
.. mud	60%	48%
.. cement	38%	47%
.. other	2%	5%
Tap water	22%	33%
<i>Qualifications of head of household</i>		
.. none	81%	71%
.. school certificate	9%	13%
.. professional certificate	6%	8%
.. other	3%	5%
<i>Education deficit of children*</i>		
.. at age 12	1.1	0.9
.. at age 18	2.2	1.9
<i>Main source of livelihood of household</i>		
.. subsistence farming, petty trade, cottage industry	59%	28%
.. employee income, formal trade	25%	50%
.. other	20%	25%
Poverty incidence	42.1%	25.5%

(*) Education deficit is defined as (age-6) – number of years of education received.

Source: Hoogeveen 2004.

Focusing on particular vulnerable groups has the advantage of being able to analyze a situation more in depth. For instance, using a panel from Uganda, Deininger, Garcia and Subbarao (2003), report how, between 1992 and 1999 there has been a dramatic increase in the number of foster children. They argue that the receipt of a foster child in a household should be considered a shock, and show that the arrival of a foster child results in lower household level capital formation. Additionally they show how, thanks to a policy of free primary education, human capital formation of foster children is comparable to that of ‘own’ children. Yet in terms of health outcomes, foster children are disadvantaged.

A danger affecting studies on particular vulnerable groups is that much attention is paid to identifying the (welfare) consequences of belonging to a particular vulnerable group and insufficient attention is paid to identifying potentially successful interventions. A good example that avoids this is Kruger, Mason and Vakis (2003) who construct a number of “control” and “treated” groups to explore the impact of the coffee crisis on households linked to the coffee industry. In addition to the impact, they also explore the various risk management strategies undertaken by households and conclude that the ex-ante risk prevention and risk mitigating strategies may have been more effective than ex-post coping in protecting and insulating households from the coffee price shock.

Box 13: From identification of vulnerable groups to operationalization

In addition to identifying the consequences of being an orphan, Deininger, Garcia and Subbarao (2003) outline a number of areas in need of further research if one were to initiate a program that would deal with the Ugandan orphan crisis. In an ideal world these issues would have been taken up in the study itself. Yet by explicitly identifying the most pressing issues in their paper, the researchers facilitate follow-up work by analysts who’d like to contribute to operationalizing orphan support. Areas identified by Deininger, Garcia and Subbarao include:

Research to improve the targeting and effectiveness of government interventions by:

- Identifying situations in which orphans are particular at risk of being disadvantaged such as being fostered by a distant relative or a non-relative.
- Considering the welfare consequences of the receipt of a foster child. Households providing foster care reduce their savings and investment and may end in a permanent downward spiral. Identifying critical points when support could prevent such a downward spiral would be most effective in preventing asset loss and safeguard at least a minimum level of consumption for orphans and their hosts.

Research to evaluate the impact of existing interventions:

- Estimates suggest that the totality of efforts by NGOs, Government and donors, reaches no more than 5% of orphans. In doing so a wide variety of strategies and delivery mechanisms is used. The differences in program design and implementation could be very useful to learn about the impact of the various programs, their relative advantages and disadvantages and their potential to scale them up.
- Without some degree of community involvement, most interventions are likely to become infeasible. Yet there are many obstacles to community involvement such as ethnic cleavages or elite capture that might make exclusive reliance on community targeting undesirable. Further research on the pros and cons of community based approaches to targeting would be desirable.

Source: Deininger, Garcia and Subbarao 2003.

Guide to further reading

There is a considerable literature dealing with particular vulnerable groups. For work on orphans see Subbarao and Coury (2003, 2004), Case, Paxson and Ableidinger (2002), Ainsworth and Semali (2000) and Subbarao, Mattimore and Plangemann (2001); on the elderly and transfers see Case and Deaton (1998); on the AIDS crisis see Dayton and Ainsworth (2002), while Foster and Williamson (2000) provide a review of the literature on the impact of HIV/AIDS on children. Finally, a number of recent studies look at the impact of the coffee crisis in Central America on welfare indicators: Kruger, Mason and Vakis (2003), Maluccio (2003), Coady, Olinto and Caldes (2004), Trigueros and Avalos (2004). An excellent starting point for considering evaluating the impact of interventions on specific groups is Ravallion (2001). For more information about Roma see: http://lnweb18.worldbank.org/eca/ecshd.nsf/links_roma/roma+site?opendocument.

5. The Road Ahead: new directions and analytical challenges

There are various areas in which we need a deeper understanding of the relation between vulnerability, risk and poverty. Research in these areas is therefore encouraged. Below we focus on three key issues, with important implications for policy design and debate. The first is the link between risk and long-term poverty. There is a tendency in much policy work to consider the impact of risk on poverty largely an issue of welfare fluctuations or transient poverty. However, there is some evidence that the long-run cost of uninsured risk is much higher than the short run costs in terms of welfare fluctuations. If this is the case, then the social return to social risk management and social protection is much more substantial. Assessing these costs is then of central importance for policy analysis. The second issue is whether it is possible to design and implement a headline vulnerability indicator, expressing the extent to which an individual, group or society is exposed to a socially unacceptable level of well-being in the future. Finding an acceptable conceptual and empirical basis for such indicators may focus much more attention to the problems related to risk and vulnerability, and may also provide a basis of evaluating social risk management interventions. Thirdly, a more in depth assessment of risk and vulnerability requires adequate data. This includes considering how existing risk and shock modules can be improved, whether panel data can be collected more readily and how to better integrate qualitative and quantitative analyses.

The issues and recent progress in this respect is discussed below.

5.1. Risk and Long-term Poverty

5.1.1. Risk as Cause of Poverty

That exposure to risk can cause households to take sub-optimal investment and income generating decisions in that they not only consider the profitability of the investment option, but also its contribution to risk reduction is a well known phenomenon for which there is surprisingly little empirical evidence. To our knowledge, there are only a few examples in the literature, two of which are discussed below.

The first is from Rosenzweig and Binswanger (1993) who show for rural India that wealthier households allocate their productive assets to riskier activity portfolios than poorer households and find that increasing the coefficient of variation of rainfall timing by one standard deviation, would, for a household in the bottom wealth quartile, reduce farm profits by 35 per cent. For a household in the median quartile this would be 15 percent, while the increased riskiness would have a negligible effect on the profitability of the richer farmers. The second example is from Tanzania, where Dercon (1996) shows how poor households with few options to cope with risk, opt for low return but safe crops. By comparing crop portfolio of poor farmers with those of wealthier farmers he finds shows that households in the lowest wealth quintile allocate nine percent of their land to sweet potatoes (a low return yet safe crop) whereas household in the wealthiest quintile devote less than 2 percent of their land to sweet potatoes. In doing so, the poorer farmers forego – depending on the area planted with sweet potatoes, up to 20% of their income as insurance premium.

The lack of studies is caused—in part by a lack of information about the risk associated with different income activities. The scarcity of studies hinders building a case for increased focus on policies to strengthen risk prevention, mitigation and coping.

5.1.2. Temporary Shocks and Long-term Consequences

The degree to which temporary shocks have a permanent effect on household welfare also remains poorly understood (Baulch and Hoddinott 2000, Jalan and Ravallion 2001). Nonetheless the idea that short-lived negative shocks can propel some households onto permanently lower welfare trajectories remains persuasive. There is evidence from Zimbabwe that shows that particular children, aged between 1 and 2 years, when solid foods replace breastfeeding, suffered significantly from a drought period, which in turn reduced their height and their cognitive achievement at school in the long run, effectively never recovering fully from a temporary shock (Alderman et al. 2002). Evidence from Ethiopia showed that growth in household consumption in the 1990s was considerably lower for those households that had suffered substantially from the famine period in the 1984-85, compared to the others in the sample, suggesting persistent effects of serious but temporary shocks.

Whether such ‘poverty ratchets’ are important or whether most households can ‘save’ themselves out of a very low welfare situation is an under-researched area (Carter and Zimmerman, 2000 is the exception). Case studies and casual observation suggest that a sequence of positive (negative) shocks may propel some households onto a rising (falling) welfare trajectory that results in changes in their long-term position in the welfare distribution. A lucky few may experience a run of positive shocks which enable them to escape poverty, while an unlucky few suffer a run of negative shocks which forces them into destitution. The majority of households will, however, experience a mixture of positive and negative shocks that partially offset themselves over time.

Related to this is the extent to which poverty is transmitted inter-generationally. Although this issue is receiving increasing attention, with a few exceptions - such as the determinants of child health (Strauss and Thomas, 1995) and earnings (Lam and Schoeni, 1993) or education (Lwanga-Ntale 2003) it has not received attention in developing

countries. This is unfortunate. If it is the case that transitory shocks have permanent consequences, and that these consequences are transmitted inter-generationally, then the case for policies to mitigate or prevent such events is further strengthened. Overall, the evidence on the long-term consequences of shocks remains limited, and more research should be encouraged.

5.2 Indices of Vulnerability

5.2.1 *Summary Measures of Vulnerability*

There is a rich literature on the appropriate measure of poverty (Anand and Harris, 1994; Deaton, 1997; Ravallion, 1993; Sen, 1986) and on methods for creating a summary aggregate statistic (Atkinson (1987), Foster (1984), Lipton and Ravallion (1995) and Ravallion (1993) provide reviews of this literature). In the area of vulnerability there is an emerging literature that intends to present a summary measure of vulnerability. Various measures have been proposed, including: vulnerability as expected poverty (Chaudhuri et al. 2002; Christiaensen and Subbarao, 2001; Pritchett et al. 2002), vulnerability as low expected utility (Ligon and Schechter 2002, 2003) or vulnerability as uninsured exposure to risk (Tesliuc and Lindert 2002) –see Hoddinott and Quisumbing 2003 for a detailed discussion of these measures.

There are obvious advantages to having a headline figure for vulnerability. It would facilitate advocacy, allow monitoring of progress in vulnerability reduction and would make it possible to create a more systematic vulnerability profile, not unlike the commonly used poverty profiles.

Yet, to this date, satisfactory vulnerability indicators have not been developed. First, there are conceptual problems, using a measure based on the variability of consumption (or another outcome indicator), rather than an ex-ante measure that takes into account the cost of taking risk reducing measures. Gunning and Elbers (2003) deal with this aspect by constructing a stochastic, structural dynamic model of a household's inter-temporal consumption and saving's decisions. In doing so, they present yet another measure of vulnerability, that is theoretically well defined, but practically hard to implement. Secondly, there are large number of methodological and econometric issues (a discussion is in Hoddinott and Quisumbing 2003). Ligon and Schechter (2004) conduct Monte Carlo experiments designed to explore the performance of different vulnerability indicators proposed in the economic literature, under different assumptions about the underlying economic environment. They find that when the environment is stationary and consumption is measured without error, the best estimates are the ones proposed by Chaudhuri (2002). If the vulnerability measure is risk-sensitive, but consumption is measured with error, the estimated proposed by Ligon and Schechter (2003) generally performs best. However, when the distribution of consumption is non-stationary and there is measurement error, all estimators perform poorly. But since measurement error is a reality and to assess whether the distribution is non-stationary, relatively long time series are needed, this implies that methodologically sound *practical* applications may still be some time away, even though work in this field is rapidly expanding.

5.2.2 *Various vulnerability indicators*

Given the difficulty in finding a suitable summary measure of vulnerability, other avenues will need to be explored, possibly building on the type of profiles of risk and vulnerability discussed in section 3. A more focused approach that examines the welfare consequences of particular shocks, that tries to monitor the heterogeneity of the impact of shocks on households and groups, and that assesses the responses to specific SRM interventions may be at present be most fruitful to assess and monitor the evolution of vulnerability in local policy contexts. Such approaches have not been tested as yet, and indicators would have to be developed.

5.3 Data issues

5.3.1 *Improving survey instruments on data related to risk and vulnerable groups*

Few existing (cross-sectional) datasets, such as LSMS, have extensive information on issues related to risk, vulnerability and vulnerable groups. Even if such information is present, it is often limited and only accounts for a small fraction of the potential number of topics on risk or vulnerable groups that could have been incorporated. As such, strengthening the future design of survey instruments is key in moving the analytical agenda forward.

One approach is to develop specialized risk or vulnerable group specific modules that can be easily integrated in surveys, thus enabling a more in depth analysis of specific topics. The Afghanistan or Guatemala household surveys are examples of surveys that included modules aimed at better understanding the general role of risks on welfare and the existing coping mechanisms available to households.

Another direction would be to develop modules on specific topics, especially pertinent in situations where there is an already existing knowledge base of specific risks or vulnerable groups. For example, while it is useful to know that a drought has occurred, an exhaustive module that can also capture additional information on droughts can be of great value, such as data on the impact of the drought on household incomes, explore risk management mechanisms that exist and were adopted by households, the extent of provision of private or public interventions related to droughts or other intricacies related to how droughts influence behavior. While such an approach may require additional methodological work to explore the specific information needed to do a useful analysis for each of the specific topics, it could add much needed value to an analysis of specific risks or vulnerable groups.

5.3.2 *Overcoming the “panel syndrome”*

Another direction for future work is the development of approaches that overcome the limitations of cross sectional data. An alternative to panel data could be achieved by carefully designing modules in cross-sectional surveys with recall questions that can be used to construct a household’s history and its evolution along various welfare dimensions (e.g. the household’s stream of income for the last few years, a farmers history of weather expectation). Another approach would be to construct a “panel” dataset by revisiting

households who have already participated in a previous household survey. The knowledge on how constructive and methodological robust such methods are is limited and as such, expanding this agenda is potentially very useful.

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