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Research Brief

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Overview

The first Millennium Development Goal aims to halve the number of people in the world living in extreme poverty. In this research brief, emanating from the UNU-WIDER project on "Fragility and Development", the premise is that we should also be concerned about households which are vulnerable to poverty. This includes those who have little likelihood of escaping from poverty and those who are at risk of falling into poverty in the future. Household vulnerability to poverty is affected by, and affects, vulnerability in other dimensions and levels, such as the vulnerability of a country or region to natural hazards and macro-economic shocks. To address household vulnerability in developing countries requires an understanding of the concept and nature of vulnerability, its measurement and its application. Therefore, this research brief asks what is vulnerability? How can vulnerability be measured? How should households, governments and development agencies respond to vulnerability?

Written by Wim Naudé, Amelia U. Santos-Paulino and Mark McGillivray

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Vulnerability in Developing Countries

In all the major challenges currently facing the world, whether it is climate change, terrorism and conflict or urbanization and demographic shifts, no progress is possible without the alleviation of poverty. To reduce poverty sustainably, however, reducing household vulnerability and increasing household resilience are also necessary. This aspect is often overlooked by policy-makers. For instance, most of the traditional measures of poverty, including those used to define some of the Millennium Development Goals (MDGs), only weigh the current poverty of a household, with no regard for the probability that a household might fall into poverty in the future. This *ex post* measure of development needs to be replaced by indicators that recognize that anti-poverty policies need to be forward-looking and incorporate the hazards affecting whether individuals or households are in poverty or are likely to fall into poverty – i.e. their vulnerability.

To facilitate the introduction and use of such forward-looking measures of poverty, the UNU-WIDER project on "Fragility and Development" investigated a number of dimensions of vulnerability and the consequences for development policy. What is vulnerability? How can it be measured? How should households, governments and development agencies respond to vulnerability?

This research brief summarizes some of the core findings from the project. The key research papers emanating from the project are listed in the box "Project Papers on Vulnerability in Developing Countries". These papers deal with the concept and measurement of vulnerability, and apply and extend the concept of vulnerability in the context of developing countries. The remainder of this research brief consists of a guide to these papers.

The Concept and Measurement of Vulnerability

Different scientific disciplines have varying definitions of vulnerability because they focus on different components of risk. In economics the concern has mainly been with vulnerability to poverty, which is commonly defined as the risk of households falling into or remaining in poverty. Elsewhere, research has been concerned with vulnerability to natural hazards and macro-level shocks. Generally, vulnerability can be seen as the risk that a "system" would undergo a negative change due to a "perturbation".

In economics the "system" traditionally studied is the household. In this project a number of extensions were made to the understanding of household-level vulnerability to poverty. Zhang Yuan and Guanghua Wan (**RP2008-82**) discuss different ways in which household vulnerability has been measured, noting that there is still no preferred measure for vulnerability to poverty in the literature. The authors clarify the literature by exploring the sensitivities of the various measurements of vulnerability to vulnerability lines, poverty lines and techniques for estimating permanent income. For this they use household survey data for 1989, 1991 and 1993 from the China Health and Nutrition Survey. They estimate household vulnerability using 1989 and 1991 data, and from this predict vulnerability to poverty, comparing their predictions to the actual situation in 1993. Their premise is that "the closer the predicted vulnerability is to actual poverty, the better the measurement technique is". They find that it is better to set the vulnerability line at 50 per cent, to use past average income as an estimate of permanent income and to use a higher poverty line (US$2 rather than US$1) in order to improve the measurement of household vulnerability to poverty.

Vulnerability to poverty and other hazards is not only applicable at the household level, but also at regional and country levels. This project explored ways in which vulnerability can be measured on these levels. Patrick Guillaumont (**RP2008-99**) and Wim Naudé, Mark McGillivray and Stephanie Rossouw (**RP2008-54**) respectively analyse the vulnerability of countries and subnational regions within a county.

Guillaumont points out that there has been a renewed interest in macro vulnerability in recent years, and one important reason for this is that household-level vulnerability to poverty results "to a large extent from macro vulnerability". Naudé, McGillivray and Rossouw argue that geographical pockets of chronic poverty in a country cannot be comprehended without understanding how vulnerability is influenced by the geographical and environmental features of the location of the household.

Recent events such as sharp worldwide increases in fuel and food prices, as well as global financial instability, have made concerns about macro vulnerability highly relevant. According to Guillaumont, the "economic vulnerability of a country can be defined as the risk for countries to see their development hampered by the shocks they face". This indicates that there are two main sources of vulnerability faced by countries: environmental or natural shocks such as natural hazards, and external shocks related to trade and international prices. How vulnerable a country is to these would depend on the size and frequency of the shocks, the degree of exposure and the capacity of the country to react. He suggests that one should distinguish between structural economic vulnerability (which is exogenous) and state fragility (which is vulnerability due to inappropriate policies and institutions, and weak governance). An important branch of this project studies "state fragility", and this is reported in an accompanying UNU research brief on "Fragile States" (see UNU Research Brief No. 3, 2008).

At the household level, economists have traditionally explored not only households' weakness in vulnerability, but also their strength in adapting and overcoming vulnerability, which is known as resilience or coping. Thus economists have distinguished between *ex ante* and *ex post* coping strategies.

About the Authors

Wim Naudé is a Senior Research Fellow at UNU-WIDER. Previously he has been a Research Director at North-West University, South Africa, and a Research Officer at the Centre for the Study of African Economies, University of Oxford, UK. He specializes in regional and urban development, entrepreneurship and African development.

Amelia U. Santos-Paulino is a Research Fellow at UNU-WIDER. Previously she was a Research Fellow at the Institute of Development Studies, University of Sussex, UK. She specializes in trade, macroeconomics and development issues.

Mark McGillivray is Chief Economist of the Australian Agency for International Development. He was previously Deputy Director of UNU-WIDER. He is also an honorary Professor of Development Economics at the University of Glasgow, UK, an External Fellow of the Centre for Economic Development and International Trade at the University of Nottingham, UK, and an Inaugural Fellow of the Human Development and Capability Association.

Ex ante households often attempt to diversify their sources of income, and *ex post* often rely on various forms of insurance to reduce the negative impact of the event. Resilience and coping are also relevant on country and subnational levels. For this project, Lino Briguglio, Gordon Cordina, Nadia Farrugia and Stephanie Vella (RP2008-55) define and measure "economic resilience". They define economic vulnerability as the "exposure of an economy to exogenous shocks, arising out of economic openness". Therefore, economic resilience is the "policy-induced ability of an economy to withstand or recover from the effects of such shocks". Based on the discussions in the aforementioned papers on the concept and measurement of vulnerability in developing countries, the integrated nature of vulnerability, resilience and fragility can be summarized with the help of the figure in the accompanying box.

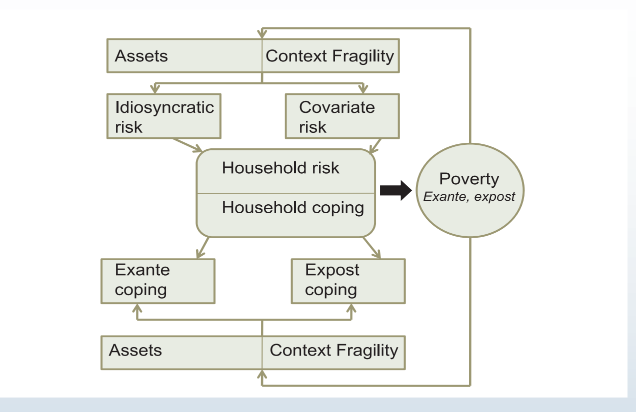
Applying and Extending the Concept of Vulnerability

China and India are two of the world's largest economies, and a reduction in vulnerability in these countries would make a significant contribution towards lowering aggregate global vulnerability. Calum Turvey and Rong Kong (RP2008-52) argue that hundreds of millions of people in rural China face poverty and vulnerability due to a lack of access to finance and credit. Elsewhere in the world, most notably Bangladesh, Indonesia and Latin America, micro-credit has played an important role in reducing vulnerability. According to Turvey and Kong, suitable micro-finance institutions (MFIs) are still largely lacking (micro-finance has only recently become available in China, introduced by the People's Bank of China in 2005). The study provides a formal theoretical framework for micro-credit, noting that the gap in the literature in this regard may be constraining thinking on the relationship between credit and development. This theoretical model shows that a non-collateral-based micro-credit market, built on trust, can exist, separate and distinct from commercial lending.

Raghav Gaiha and Katsushi Imai (RP2008-40) construct vulnerability measures for households in rural India. They combine *ex ante* with *ex post* measures of vulnerability. These measures are then decomposed, showing that in India idiosyncratic risk (37 per cent) contributed the most to vulnerability followed by poverty (35 per cent) and covariate (or aggregate) risk (22 per cent).

Identifying the extent of vulnerability may not be enough. Oleksiy Ivaschenko and Cem Mete (RP2008-26) show that vulnerability,

Vulnerability, Resilience and Fragility: A Conceptual Framework



Here household vulnerability, as expected poverty, is depicted centrally as being determined by household risk and household resilience. The extent to which vulnerability interacts with idiosyncratic and covariate hazards/shocks (including natural hazards and macro-economic shocks) determines the outcome in terms of current or expected states of poverty, whether poverty is defined in income, consumption or broader well-being terms. Both the extent and sensitivity to hazards, and the coping strategies adopted, are functions of a household's endowments or assets, and the fragility of the external context, be it the local, regional, national or global contexts. The type of hazard shock also influences a household's coping strategy, with covariate shocks being more difficult for individual households to manage or insure against, calling for national or international support. Often, the fragility of the context will determine the extent of household assets or endowments. For instance in fragile states public infrastructure provision is often lacking. However, as the arrows in the figure imply, household assets and endowments can also influence the extent of fragility on the regional or national level, through for instance non-tangible assets such as trust, social networks and cohesion.

as poverty, is a dynamic concept and the factors which make households move out of poverty are different from the factors which make them fall back into poverty. The study uses panel data analysis for Tajikistan and shows that, in such a transitory economy, the mobility of households from and into poverty is quite high. This clearly indicates how the uncertainty accompanying economic and social transitions implies high vulnerability for households.

Most of the studies cited above deal with vulnerability to poverty. But poverty in itself can be a source of vulnerability. This is perhaps most clearly illustrated in the vulnerability of a region or country to natural hazards. Terry Cannon (RP2008-34) points out that poor people are often more subject to the adverse effects of natural hazards. In fact he stresses that a natural hazard need not result in a natural disaster: the latter will occur when a community is overwhelmed and does not have the basic income and assets to protect itself. Cannon indicates that "People's livelihoods are their first line of defense against disasters … [and are] also the basis for the capacity to protect themselves or not." Often, however, individual or household livelihoods are insufficient to reduce their vulnerability – for instance where large-scale coordination or investment is needed to mitigate the impacts of natural hazards either *ex ante* or *ex post*.

Small island states have been recognized to be particularly vulnerable to natural hazards. Martin Heger, Alex Julca and Oliver Paddison (RP2008-25) focus on the Caribbean region, which has been described as one of the most hazard-prone places in the world. The resilience of the islands is hampered by their small physical and economic sizes and economic specialization, so that repeated setbacks from natural disasters perpetuate poverty, which in turn further increase vulnerability in a vicious circle of underdevelopment. Marlene Attzs (RP2008-61) discusses further how the economic, social and environmental conditions facing many Caribbean islands exacerbate the impact of natural hazards, and often cause them to result in natural disasters. As indicated by the study, poverty leads to adverse coping. In the Caribbean this includes hillside farming and slash-and-burn agriculture, which lead to flooding and mudslides during heavy rains.

> The economic vulnerability of a country is the risk for countries to see their development hampered by shocks

Finally, Anis Chowdhury (RP2008-47) focuses on the vulnerability of small island economies to macro-economic shocks. He notes that small island economies, such as in the Caribbean, are vulnerable to global markets due to their openness and their narrow export base. Because poor households have less human capital to adapt to adverse labour market developments and less assets and access to credit to smooth consumption, negative macro-economic shocks could lead to irreversible losses in nutritional and educational status: even if GDP recovers, the level and incidence of poverty may persist.

What Can Be Done About Vulnerability?

Vulnerability can never be eliminated. However, a number of suggestions for dealing with vulnerability, in a manner that will contribute towards a reduction in household poverty, can be drawn from this UNU-WIDER project. Before outlining the most appropriate responses to vulnerability, three basic requirements need to be met. First, households cannot be left alone to deal with the hazards they are facing, even though they are remarkably inventive and resilient. Their efforts at insuring themselves against risk need to be complemented by community, government and international actions. Second, policy-makers and development institutions need to acknowledge that poverty is a dynamic concept. Third, vulnerability and resilience need to be measured, and measurements continually improved. As shown here, this applies to various levels and outcomes of vulnerability.

The appropriate responses to vulnerability need to include risk reduction, risk mitigation and risk coping (resilience). As far as risk reduction is concerned, two major sources of risk to be addressed are idiosyncratic risk and covariate risk. Idiosyncratic risks are due to characteristics of the individual household, while covariate/aggregate risks are external to the household. The former include health, education status, residential location, etc., while the latter will include macro-economic shocks, natural hazards, etc. The roll-out of education and health facilities across developing countries is therefore an important risk reduction strategy addressing idiosyncratic risk. But covariate risk remains high in developing countries, particularly in small states. Here the requirement for risk reduction would necessitate appropriate policies and institutions to help these countries cope with the effects of what is called "inherent" vulnerability (which is similar in concept to Guillaumont's notion of "structural vulnerability"). In essence, such countries must put policies and institutions in place that strengthen their economic resilience. In the case of many developing economies, increasing economic diversification has been recommended as a strategy to reduce the risks of adverse external shocks. Furthermore, as Chowdhury argues, in these countries macro-economic policies should not only aim at price stability, but also at output and employment stabilization. The preconditions are that countries build and strengthen appropriate labour markets and financial and governance institutions.

Households cannot be left alone to deal with the hazards they are facing, even though they are remarkably inventive and resilient

Risk mitigation is required when households suffer from an adverse shock that casts them into poverty or keeps them in poverty. Traditional anti-poverty responses include income grants and the provision of basic services. Naudé, McGillivray and Rossouw show, however, that higher incomes do not necessarily translate into less vulnerability, and regional features may indicate environmental or geographical aspects that need to be addressed directly. Also, traditional anti-poverty responses may be too slow when a household is confronted by a sudden adverse shock. In such cases either explicit or implicit insurance is needed, and very often internationally coordinated assistance is called for. A related case studied in this project is the growing concern globally with food crises, which are a covariate risk for millions of people in a large and growing number of countries. Margarita Flores and Colin Andrews (RP2008-42) call for international emergency responses to food crises to be scaled up. As they point out, such responses are often hampered by the difficulty to distinguish "the symptoms of chronic destitution from those of a critically unstable situation". Understanding and measuring household-, regional- and country-level vulnerability are needed to reduce this difficulty.

Concerning the third element of an appropriate response to vulnerability, namely risk coping (resilience), high and persistent levels of vulnerability suggest that household coping strategies need to be understood if they are to be supported as a way of dealing with vulnerability. However, it needs to be noted that not all coping strategies actually reduce vulnerability. Kate Bird and Martin Prowse (RP2008-41) present evidence from Zimbabwe to show how adverse forms of coping can exacerbate household poverty and vulnerability and push households into chronic poverty. In the Zimbabwean case adverse coping included children dropping out of school, soil degradation as a result of desperate but unsustainable farming methods, cutting down on healthcare and engaging in criminal activities. Valentine Gandhi, Cynthia Bantilan and Devanathan Parthasarathy (RP2008-49) show adverse coping in India, where a favoured strategy in the face of drought is migration, which exposes migrants to a higher risk of contracting HIV. This is worsened by the fact that migrants are most often not reached by government programmes to combat HIV, due to their migratory behaviour.

Finally, in assisting households to cope it is important to follow a "gendered" approach to vulnerability reductions, as argued by Attzs. Women often comprise a disproportionate share of the poor, and their traditional role as caregivers and their extensive social networks make them important in the identification and mitigation of risks, and in post-disaster assistance.

The Case of Small Island Developing States

There is long-standing recognition in research and policy circles that small island developing states (SIDS) face distinctive development challenges. The UN list of 37 SIDS is diverse in many respects, but is dominated by countries that face unstable export earnings, unstable agricultural production, high export concentrations and low shares of manufacturing and modern services in GDP. Some receive by far the world's highest levels of international aid relative to GDP. Overall, these states are seen as economically vulnerable, with poor economic performance and low levels of achieved well-being by most criteria. Moreover, 10 of the 37 countries may be described as being fragile states.

One of the first initiatives of UNU-WIDER's project on "Fragility and Development" was to hold a workshop in Lautaka, Fiji, in December 2006 to focus on state fragility and household vulnerability in the SIDS. The proceedings from this workshop were published in special editions of the *Pacific Economic Bulletin* 23(2), 2008, and the *Journal of International Development* 20(4), 2008.

Project Papers on Vulnerability in Developing Countries

Author(s)	Title	Research Paper No.
Papers dealing with the concept and measurement of vulnerability		
Patrick Guillaumont	How to Design an Economic Vulnerability Index and Use It for International Development Policy	RP2008-99
Lino Briguglio, Gordon Cordina, Nadia Farrugia and Stephanie Vella	Conceptualizing and Measuring Economic Vulnerability and Resilience	RP2008-55
Wim Naudé, Mark McGillivray and Stephanie Rossouw	Measuring the Vulnerability of Subnational Regions	RP2008-54
Zhang Yuan and Guanghua Wan	Can We Predict Vulnerability to Poverty?	RP2008-82
Papers applying and extending the concept of vulnerability		
Raghav Gaiha and Katsushi Imai	Measuring Vulnerability and Poverty: Estimates for Rural India	RP2008-40
Calum G. Turvey and Rong Kong	Vulnerability, Trust and Micro-credit: The Case of China's Rural Poor	RP2008-52
Oleksiy Ivaschenko and Cem Mete	Assets and Poverty Dynamics in Rural Tajikistan	RP2008-26
Kate Bird and Martin Prowse	Vulnerability, Poverty and Coping in Zimbabwe	RP2008-41
M. Valentine Joseph Gandhi, B. Cynthia Serquiña Bantilan and Devanathan Parthasarathy	Vulnerability to HIV Risk in the Semi-arid Tropics of Rural Andhra Pradesh	RP2008-49
Margarita Flores and Colin Andrews	Vulnerability to Hunger: Responding to Food Crises in Fragile States	RP2008-42
Terry Cannon	Reducing People's Vulnerability to Natural Hazards: Communities and Resilience	RP2008-34
Martin Heger, Alex Julca and Oliver Paddison	Vulnerability to Natural Hazards in Small Island Economies: The Case of the Caribbean	RP2008-25
Marlene Attzs	Natural Disasters and Remittances: Exploring the Linkages between Poverty, Gender and Disaster Vulnerability in Caribbean Small Island Developing States	RP2008-61
Anis Chowdhury	Macroeconomic Vulnerability, External Shocks and Growth-Oriented Policies for Small Island Economies: Lessons from Singapore	RP2008-47

All papers available on the WIDER website, www.wider.unu.edu.

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World Institute for Development Economics Research

World Institute for Development Economics Research of the United Nations University
Katajanokanlaituri 6 B
FIN-00160 Helsinki
Finland
Tel. +358-9-6159911
wider@wider.unu.edu
www.wider.unu.edu