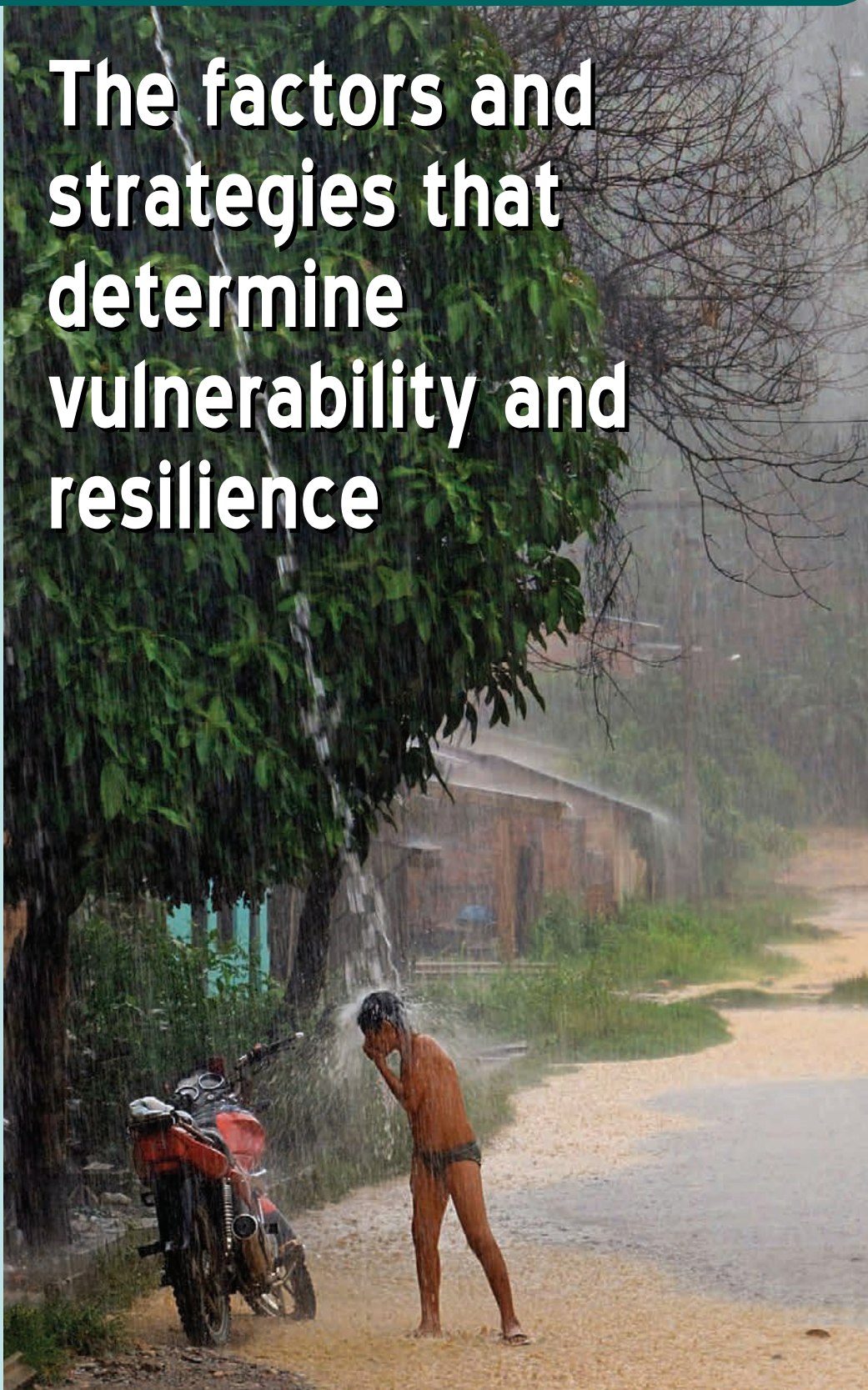




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# The factors and strategies that determine vulnerability and resilience



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## We live in a dangerous world

Even the most affluent and powerful people in the World are exposed to the risk of adverse shocks and stresses: Christopher Reeve (Superman) became a quadriplegic after a riding accident; Nelson Mandela was imprisoned for 27 years; Mel Gibson had to pay more than \$400 million in his divorce settlement; Steve Jobs got fired from his own company; and Donald Trump has declared bankruptcy four times.

We are all at risk of adversity or even calamity, and the list of threats is endless: Natural disasters, illness, accidents, unemployment, price fluctuations, conflict, vandalism, fire, robbery, pest attacks, technological

change, pollution, climate change, etc. Most of these threats are almost entirely outside our control and it is vital that we build up resilience against them so that we will be able to overcome the challenges.

**Shocks:** Sudden events that accentuate the vulnerability of individuals, households, communities. There are many different types of shocks from natural hazards, conflict or theft of assets, infirmities, unemployment, death of a family member, inflation etc. which are related to economic and social volatility.

**Stresses:** Long-term trends that undermine the potential of a system or process and increase the vulnerability of actors within it. These include natural resource degradation, climate change, urbanisation, globalisation, structural underemployment, demographic change, political instability and economic decline.

## Livelihood diversification as a risk coping strategy

Buying insurance is a common way of protecting against some of these threats in rich countries. However, not all shocks can be insured against, and insurance also comes at a substantial cost. The population in OECD countries spends on average more than USD 3,000 per person per year on insurance, which corresponds to almost 10% of GDP (Andersen & Cardona, 2013).

An alternative strategy for managing risk is livelihood diversification. Livelihood diversification contributes to a household's resilience because adverse shocks typically attack only one livelihood source at a time, leaving households with many different and unrelated livelihood sources better able to keep functioning while managing the effects of an adverse shock (Andersen & Cardona, 2013).

Uninsured or undiversified households may have to sell as-



Resilience is the capacity to anticipate, cope with, resist, and recover from the impacts of shocks or stresses.

Nobel Peace Prize after spending 27 years in prison; Christopher Reeve claimed that the accident helped him appreciate life more and considered himself a very lucky man less paralyzed than many able-bodied men; and Donald Trump evidently rebuilt his fortune between bankruptcies.

The poorest (in both economic and social terms) are generally hit hardest because they have less household resources to call upon when disaster strikes and weaker support systems (familial, community, market-based and state-provided assistance) to deal with risk.

sets or reduce consumption to buffer the effects of an adverse shock. Both of these coping strategies can have permanent negative effects.

## A typology of vulnerability and resilience

Some people and households are more resilient than others. They bounce back even after severe adversity. Nelson Mandela, for example, became one of the most famous and respected presidents in the World and was awarded the

While resilience is an integral part of the human psychology (after all, what choice do we have but try to bounce back?), it would be useful if we could measure and compare resilience in a more general way.

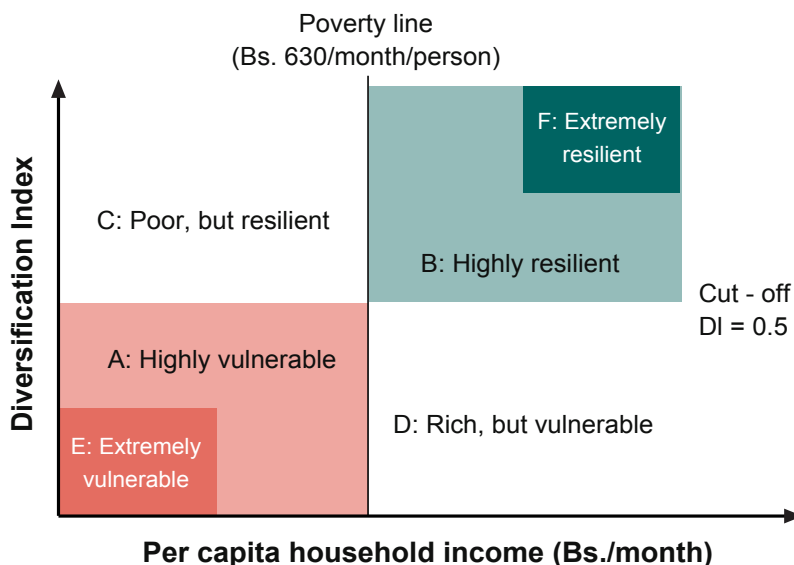
Andersen & Cardona (2013) proposes a simple two-dimensional measure of vulnerability/resilience. On the horizontal axis we have per-capita income (because people with low income have greater sensitivity to a decline in incomes) and on the

vertical axis we have an Index of Diversification (because more diversified households are less sensitive to a shock). The most vulnerable households would be the ones that have very low incomes coming mainly from one single source. In contrast, the most resilient households would be the ones with high incomes coming from several different and uncorrelated sources.

## Measuring diversification

Since income diversification is the opposite of income concentration, we can develop a simple Diversification Index which is calculated as 1 minus the widely used Herfindahl-Hirschman Index of Concentration. Using standard household survey data, we identify all the different sources of reasonably independent incomes (both monetary and non-monetary) for each household and calculate how much each source contributes to total household income.

Figure 1: The six vulnerability types used Andersen & Cardona (2013)

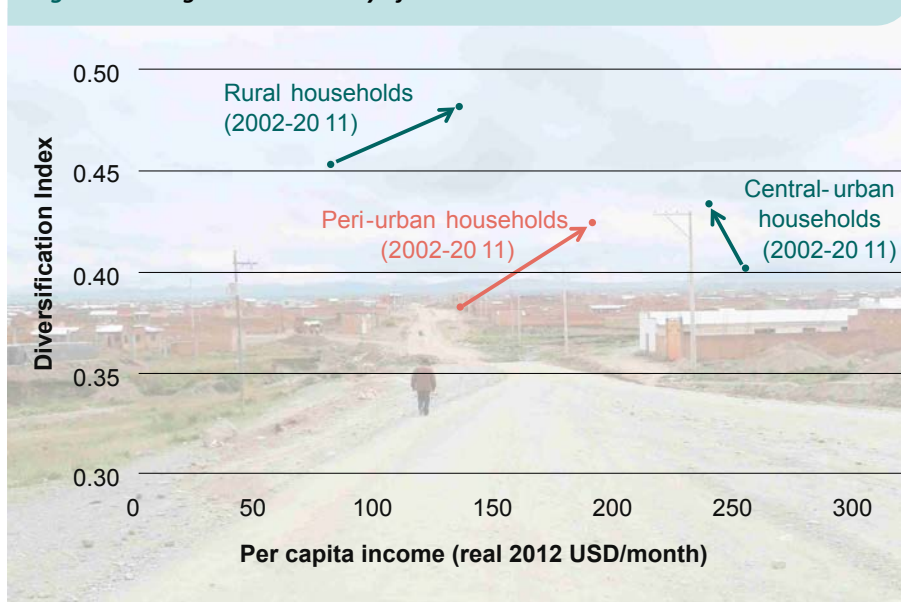


There is often a trade-off between the advantages of diversification and specialization. Therefore, it is important to measure resilience both by the level of income and the degree of diversification.

## Bolivian households have become less vulnerable over the last decade

Between 2002 and 2011, Bolivian households have, in general, become both richer and more diversified. Importantly, the groups that were most disadvantaged in 2002 (rural and peri-urban households), have made much better progress towards resilience than central-

**Figure 2: Changes in vulnerability of Bolivian households between 2002 and 2011**



urban households, suggesting a decrease in vulnerability inequality (see Figure 2).

## Factors associated with high vulnerability

Classifying all Bolivian households into the vulnerability types illustrated in Figure 1, Andersen & Cardona (2013) use regression analysis to identify the factors and strategies associated with vulnerability and resilience.

By far the most important strategy for households to develop resilience is to have an income earning spouse in the household. This both increases total incomes and diversifies the incomes within the family.

The second most important factor is the age of the head of household. Young families are much more likely to be vulnerable than older house-

Definition of peri-urban households used in this document:

Households that are part of an urban agglomeration of at least 2000 persons, but which do not yet have all of the following basic services:

- electricity,
- piped water in the house,
- sewerage connection.

holds, because they have not had time to build up human, social, financial and physical assets that can form the base for a range of supplementary incomes.

The literature often assumes that female headed households are more vulnerable than male headed households. However, this is contested by the analysis in Andersen & Cardona (2013).

Static measures of income or consumption levels fail to capture the fact that vulnerability is dynamic. Recent regional research from Birdsall, Lustig and Meyer (2013) suggests that there is a new poor, the so-called “strugglers,” constituting 40% of the population who earn between \$1.25 and \$10 and who remain vulnerable to falling back into poverty.





level analysis of Andersen & Cardona does not capture.

The literature also usually assumes that rural households are more vulnerable. However, Andersen & Cardona (2013) find that it is urban households that are more likely to be vulnerable or extremely vulnerable. However, urban households are also more likely to be extremely resilient. As such, it is worth taking a look at some of the differences between urban households and divide them into central-urban and peri-urban in order to demonstrate some of the differences in their household characteristics.

## A focus on peri-urban vulnerability

Despite a common perception and policy-orientation that suggests that poverty is a predominantly rural phenomenon, there is another substantial group of “strugglers” on the urban periphery. These are known as the peri-urban poor.

As Table 1 shows, survey data suggests that peri-urban households are significantly more vulnerable than central urban households and are in many respects more vulnerable even than rural households. They have substantially lower incomes than their central-urban counterparts, and they have much less income diversity than their rural counterparts. They are also younger, have more household members, are less likely to receive remittances, and more likely to have recently migrated, than both central-

Female headed households have slightly higher levels of per capita income and significantly higher levels of diversification, making them less likely to be vulnerable and more likely to be resilient than male headed households. However, control-

ling for other factors, the gender of the head of household has no significant impact on being either vulnerable or resilient. There may nevertheless exist intra-household differences in vulnerability (see box on this page), which the household

Risk and resilience are also affected by both gender and generational factors within the household. For example, there are multiple gender-specific vulnerabilities related to differing familial and community obligations and life-cycle events (e.g. childbirth, childcare, lower social status, lower access to and control over assets and mobility constraints) and these shape the opportunities for men, women, and their children to build resilience and constrain the coping strategies they employ to manage risk (Holmes and Jones, 2013).

**Table 1: In terms of vulnerability, peri-urban households are more like rural households than central urban ones**

	Central Urban	Peri-urban	Rural
Average # years education head of household	11.1	8.5	5.2
Average # of people in the household	3.7	4.1	3.8
Average age of household head	46.4	43.2	47.5
Percentage of population who have recently migrated to the place from other part of Bolivia	7.7	9.9	9.6
Percentage of homes in which the woman is household head	25.9	22.6	18.5
Percentage of indigenous households	25.2	32.8	63.5
Percentage of homes that receive remittances	5.9	5.6	6.0
Diversification index	0.428	0.421	0.476
Per capita income (Bs. per month)	1658	1281	888
Probability of belonging to the highly vulnerable group (%)	13.1	17.1	19.7

urban and rural households. All of this works to make them particularly vulnerable.

While 19.7% of rural households are highly vulnerable according to the classification in Figure 1, among peri-urban households with at least one child headed by a non-indigenous male of 26 years or younger that has migrated within the last 5 years, this probability is more than twice as high (43.8%). This is a very vulnerable group that is almost completely ignored by traditional poverty reduction efforts, as it is not rural, not female headed, and not indigenous. Yet, the probability of being poor for this group is more than twice as high as for female headed households (12.4%), indigenous households (19.1%), and rural households (19.7%).

Notwithstanding, this highly vulnerable group has seen tremendous improvements over

the last decade, as in 2002 the probability of being highly vulnerable for this group was a whopping 70.2%.

This impressive improvement, however, may not be sustainable, as it appears to be mainly due to the recent tremendous increase in demand for non-skilled labor caused by the high prices of Bolivia's natural resource exports. Once export prices return to their long term averages, the boom in the construction and service sectors will abruptly end, and the unskilled, peri-urban households will once again become extremely vulnerable as they have few natural, human, financial and social assets to fall back on.

## Conclusions and policy recommendation

Measuring poverty and vulnerability, based on consumption or

income alone only tell us part of the story. Vulnerability is the probability of falling into, or back into, a state of deprivation. So, even households with relatively high incomes but low levels of livelihood diversification may be vulnerable.

Given that peri-urban households tend to have both low levels of income and low levels of diversification, if their primary income source fails, then they are especially vulnerable. They are even more vulnerable because public policies have largely avoided investment to provide basic services in these areas, leaving the population to largely fend for themselves. On the contrary, while rural households tend to be more income-poor, their high livelihood diversification and indeed the orientation of public policy mean that they have other resources to call upon to buffer income shocks.

As the improvements for this vulnerable group is largely associated with ephemeral growth in poor quality employment, the government should consider generating incentives for growth in more sustainable and higher quality labour-intensive sectors such as manufacturing in textiles or industrial production (both public and private).

Low tax recovery and the uneven distribution of the direct hydrocarbons tax (IDH) between departments means that various municipal and sub-municipal governments are strapped for cash to provide basic services such as water, sanitation and electricity. The central government should therefore take ad-



vantage of 2012 census data to increase service provision in peri-urban areas with particularly low coverage.

The findings also have implications for social assistance programmes. Recent studies have shown that government cash transfers benefit the poor only slightly more than the rich. As peri-urban households are generally more dependent on monetary incomes and have a higher proportion of young nuclear households, they are less likely

to benefit from the largest cash transfer, Renta Dignidad. However, they may have a greater need of social safety nets (food subsidies or cash transfers). The forthcoming "Poverty Census" provides a good opportunity to reevaluate who should benefit from these programmes and what these benefit levels should be.

## References

Andersen, L. E. & M. Cardona (2013) "Building Resilience against Adverse Shocks: What are the determinants of vulnerability and resilience?" Development Research Working Paper Series No. 02/2013, Institute for Advanced Development Studies, La Paz, Bolivia, June.





Andersen, L. E. & M. Cardona (2014) "Construyendo resiliencia ante shocks adversos: Factores y estrategias asociadas a la vulnerabilidad y la resiliencia." Development Research Working Paper Series No. 01/2014, Institute for Advanced

Development Studies, La Paz, Bolivia, January.

Birdsall, N., N. Lustig & C. Meyer (2013) The New Poor in Latin America: Challenges and Risks, Inter-American Development Bank Workshop "Looking into Latin

America's Future: Key Development Challenges" Washington DC June 14, 2013.

Holmes, R. & N. Jones (2013) Gender and Social Protection in the Developing World: Beyond Mothers and Safety Nets. New York, Zed Books Ltd.

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