

Estimating Filipinos' vulnerability to poverty

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The Philippines ranked fifth among the countries most affected by extreme weather events from 1996 to 2015 (Kreft et al. 2016). Natural disasters, together with other shocks, were believed to have largely contributed to the vulnerability of Filipino households to poverty. However, not only poor households are vulnerable to shocks as the nonpoor can also fall into poverty.

The government needs sufficient information to formulate appropriate interventions for these vulnerable households. Unfortunately, the country's official poverty statistics have not paid much attention to measuring the Filipinos' vulnerability to poverty.

This *Policy Note* aims to provide an estimate of Filipinos' vulnerability to poverty. It also offers a profile of vulnerable Filipino households and some policy implications.

Estimating vulnerability to poverty
Starting early 2000s, vulnerability to poverty has gained ground as a forward-looking

concept defined as the probability of being poor in the future. While various studies have adopted different approaches in estimating vulnerability to poverty, the most widely applied is that of Chaudhuri et al. (2002).

Unfortunately, only a handful of studies have utilized the Philippine data. To date, only Albert et al. (2008) have developed a model to estimate household vulnerability to income poverty. They applied the said methodology to the *1997 Family Income and Expenditure Survey (FIES)* and found that vulnerability rate was roughly twice of the poverty rate. While 28 percent of Filipino households were income poor in 1997, around 54 percent (84.7% of the poor and 42.1% of the nonpoor) were predicted to remain or fall into poverty the following year.

For this study, researchers extended the methodology of Chaudhuri et al. (2002) by estimating a three-level linear random

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coefficient model¹ using the household-level panel data generated from the 2003, 2006, and 2009 FIES and by taking into account observable shocks in the prediction of household's welfare (income).

This study estimated that 4 out of 10 (37.7%) sample panel households in 2009 were predicted to remain or fall into poverty at least once in the next three years—i.e., 2010–2012. Almost half (47.6%) of these vulnerable² households were nonpoor in 2009 while 27 percent were neither poor in any of the periods covered (2003–2009). This group, in fact, accounted for 23.2 percent of the total nonpoor households.

Consistent with the findings of other studies, the findings of this study tell us that even those who have not yet experienced

poverty may still fall into it in the future. Interestingly, roughly a third of these nonpoor but vulnerable households had per capita income not far from the poverty line (within the 30-percent band), while more than half were within the 50-percent band, in 2009.

On the other hand, only 8 in every 10 (77.4%) poor households were classified as vulnerable. However, majority of these poor but not vulnerable households (64.7%) had been moving in and out of poverty from 2003 to 2009. More so, one in every four poor but not vulnerable households had per capita income not far from the vulnerability threshold (within the 20-percent band). This implies that they may still slip into poverty in case a shock with direct impact on their incomes occurs, as their predicted incomes were not far from the poverty line.

Disaggregating the poor into chronic and transient based on the number of times a household becomes poor during the periods covered,³ the study found that the chronic poor dominated the highly vulnerable group (Figure 1). On the other hand, the transient poor outnumbered the chronic poor in the relatively vulnerable group.

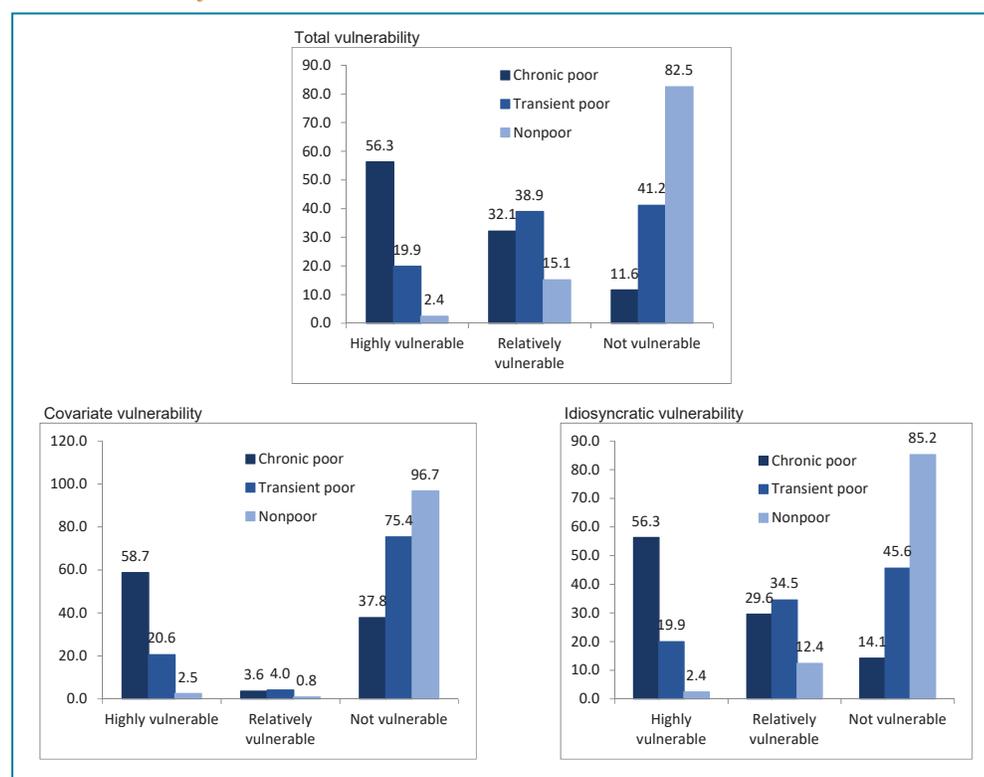
The study also disaggregated the vulnerability measure into idiosyncratic and covariate (aggregate) components. Idiosyncratic shocks are those that specifically impact individuals or households (e.g., birth, injury or accident, serious illness, death, and job loss of a household head or member) while covariate

¹ This is based on the formulation of a multilevel model for change by Singer and Willett (2003). A multilevel modeling is an appropriate approach in analyzing data that contain variables measured at different levels (e.g., time, household, village) to address the bias due to nesting of lower-level units within higher-level ones. For a more detailed description of the multilevel modeling framework as well as the specification of the said model, results of the estimation, and other details, refer to Mina and Imai (2016).

² The vulnerability status is identified based on the estimated vulnerability to poverty of a household, interpreted as the household's probability of remaining or falling into poverty at least once in the next three years. A household is considered vulnerable (not vulnerable) if its estimated vulnerability to poverty is below (above) the vulnerability threshold. The major vulnerability groups of households (highly vulnerable, relatively vulnerable, and not vulnerable) are defined based on the number of times a household is classified as vulnerable.

³ The chronic poor are households that are persistently poor from 2003 to 2009. The transient poor are households that became poor once or twice during the period 2003–2009. The deflated log of per capita income (using 2003 as base year) is used in generating the poverty status of households.

Figure 1. Poverty and vulnerability status of panel households, by degree and by source



Source: Authors' estimates using the 2003, 2006, and 2009 FIES panel data (PSA various years)

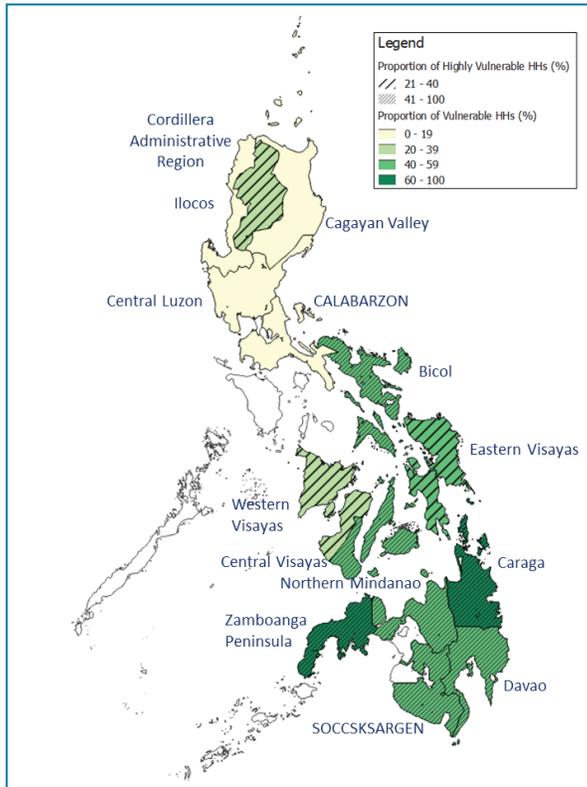
shocks (e.g., natural disasters like typhoon, flood, drought, earthquake, volcanic eruption; human or animal epidemics; economic crises manifested by inflation, high unemployment rate, currency devaluation, stock market collapse; increased incidence of crime or political violence; among others) are those that can affect the entire community or a larger geographical unit (Günther and Harttgen 2009).

This study found that vulnerable households, regardless of whether poor or not, were more susceptible to unobservable idiosyncratic than covariate shocks. Meanwhile, the majority of the nonpoor but vulnerable households were predicted to be poor only in at most two periods

from 2010 to 2012, thus tagged as relatively vulnerable, and were more susceptible to idiosyncratic shocks. The chronic poor comprised most of the households who were susceptible to covariate shocks while the transient poor were mostly vulnerable to idiosyncratic shocks.

Many of the households were more vulnerable to idiosyncratic shocks probably because of the latter's direct and more specific impacts. Covariate shocks have indirect and varied impacts across households. This could point to the imperfect risk sharing among households, poor functioning of the insurance mechanism within communities, and the difficulty of anticipating idiosyncratic shocks.

Figure 2. Vulnerability map



Source: Authors' estimates using the 2003, 2006, and 2009 FIES panel data (PSA various years)

Profiling the vulnerable

In terms of location, Caraga and Zamboanga Peninsula had the highest proportion of vulnerable households, specifically the highly vulnerable ones. Caraga had the highest share of highly vulnerable households while Zamboanga Peninsula had the highest share

⁴ This particular finding, together with other findings discussed in this paragraph, was based on the results of the Multiple Correspondence Analysis, which examined the multiway association among the different groups of households and their basic characteristics.

⁵ using the concept proposed in Günther and Harttgen (2009) for vulnerability assessment

⁶ Initial conditions of the household were used as covariates to avoid the issue of endogeneity. In addition, the heteroskedasticity-consistent standard errors were estimated to address the possible bias brought by heteroskedasticity.

of relatively vulnerable households (Figure 2). Not surprisingly, the never-poor households were concentrated in the neighboring regions of the National Capital Region, Central Luzon, and CALABARZON (Cavite, Laguna, Batangas, Rizal, and Quezon).

More so, vulnerable households, particularly the poor, most likely had less-educated heads and were rural dwellers.⁴ The never-poor but highly vulnerable households tend to have heads who did not even finish primary schooling. Meanwhile, the never-poor but relatively vulnerable ones tend to live in rural areas. The transient poor but not vulnerable households were more likely characterized by smaller households with lower proportion of dependents, female headed, and either young or older heads. Lastly, the never-poor and not vulnerable households were most likely urban dwellers with more-educated heads.

The study also identified the determinants of vulnerability to poverty by estimating a (robust) probit model with probability of the household remaining or falling into poverty in the next three years (i.e., future vulnerability; in 2009)⁵ as the dependent variable and initial conditions of the household (i.e., covariates at household and province levels in 2003) as covariates.⁶

Determinants of the following categories of poverty were also identified using a similar model: *chronic poor*, *moved up* (from poverty in 2003 to nonpoverty in 2006 and/or 2009), *slipped down* (from nonpoverty in 2003 to poverty in 2006 and/or 2009), and *never poor*.

The estimated models suggest that the determinants of vulnerability to poverty and chronic poverty are broadly similar. This proves that the chronic poor in the past are likely to be also vulnerable to poverty in the future.

Vulnerable and chronic poor households tend to have younger and less-educated heads, have higher dependency ratio, located in rural areas, and lack access to irrigation. Vulnerable but not chronic poor households, however, lack access to major transport infrastructure and lack employment security. Thus, even if households were initially nonpoor, they tended to slip down into poverty if they did not have access to transport infrastructure and/or irrigation facilities, or had more members in vulnerable employment (e.g., self-employed; who are usually less educated and can easily accept casual wage jobs).

Finally, and not surprisingly, better education, smaller household size, lower dependency ratio, living in urban areas, and/or having access to better infrastructure are main determinants of being never poor.

Policy implications

The following are some of the policy implications that can be drawn from the study, notwithstanding the limitations in the methodology.

Increase investment in education

The government should continue implementing policies and programs, such as the *Pantawid Pamilyang Pilipino* Program

(4Ps), to develop the human capital.

Systematic monitoring and regular evaluation of the 4Ps are essential to ensure that the program is effective in helping children-beneficiaries finish high school and that program leakages are minimized. Given that college education is not meant for everyone, implementation of the K to 12 law is critical to prepare Filipino learners for employment or entrepreneurship by equipping them with 21st century skills, such as learning and innovation, information, media and technology, effective communication, and life and career (SEAMEO and INNOTECH 2012).

The government should also consider a stronger implementation of the grants-in-aid program of the Unified Student Financial Assistance System for Tertiary Education law (Republic Act No. 10687) as an alternative to the Free Higher Education for All bill (Senate Bill or SB No. 1304). This program provides full financing of higher-level education requirements (i.e., tuition, living allowance, instructional materials, etc.) of poor but college-ready target beneficiaries unlike the Free Higher Education for All, which only covers tuition fee (comprising one-third of the total cost). It is also applicable in both public and private institutions and covers both college and technical and vocational education and training (Orbeta and Paqueo 2017).

The proposed One Family, One Graduate bill (SB No. 133) is also a promising tool to provide comprehensive educational assistance to poor students.

Moreover, the government should implement an effective monitoring mechanism, particularly on academic performance of beneficiaries and spending of benefits on legitimate purposes, to ensure the success of these programs. It should also increase infrastructure investments, particularly in infrastructure-poor areas.

Target agriculture and rural development

Increasing demand for workers, especially those with low education, can be a valid short- to medium-term strategy. Improving the agricultural sector by developing agri-based industries is recommended to absorb more workers. Wages received by less-educated workers, particularly those in agriculture-related industries, are generally low (Reyes and Mina 2013). As such, increasing agricultural productivity can lead to improved competitiveness and increased labor demand and/or higher wages.

One way to enhance the sector's competitiveness is by promoting agricultural diversification and market consolidation. The government should remove bias toward traditional food crops (rice and corn) and increase support to more profitable high-value commodities. At the same time, small farmers, especially those who opt to shift to high-value crops, "must be assured of a market" (Briones and Galang 2013, p. 3) to protect them against market risks (e.g., lower demand, lower prices), especially during calamities.

Given that the Philippine agriculture is predominantly rural, the government should

formulate policies and programs aimed at rural development. It should also intensify investments in and conduct of thorough evaluation of infrastructure projects, such as irrigation and farm-to-market roads, especially in major agricultural areas (David and Inocencio 2014).

Enhancing small farmers' access to formal credit is also essential. This can be done by deepening their access to microfinance and encouraging private banks to relax their lending requirement. Geron et al. (2016) also underscored the importance of strengthening farmers' organizations and provision of support infrastructure, among others.

The government should also refine the design and implementation of its agricultural insurance program by deepening its assistance to beneficiaries (through increased insurance cover), fine-tuning its targeting system, and expanding its coverage (through strengthened partnership with local government units and/or increased capitalization). (See Reyes et al. 2015 and 2017.)

Increase employment opportunities and quality

Increasing the productivity of nonagriculture industries is necessary to improve labor absorption and provide more and better jobs. After all, these industries (e.g., manufacturing) participate in regional production networks and offer relatively higher wages.

The government should also establish an effective sorting mechanism for its Sustainable Livelihood Program. This is important to properly identify potential beneficiaries with entrepreneurial skills, who can be provided with livelihood assistance and can be transformational entrepreneurs, and those who can be assisted to gain employment (which include subsistence entrepreneurs who can easily shift to wage employment).

Stronger implementation of laws promoting entrepreneurship (e.g., *Go Negosyo Act*) and provision of technical and financial assistance to budding entrepreneurs are also worthwhile strategies.

Manage population

The government should also take concerted efforts in having better population management. For instance, a comprehensive sexuality education should be institutionalized within schools to minimize unintended and/or early pregnancy (UNESCO 2014).

Strengthen risk mitigation tools

The government should examine the Social Security System (SSS) pension system to improve its provision of pension for its retirees, similar to the Government Service Insurance System (GSIS). In addition, emergency assistance programs, such as loans during calamities provided by GSIS and SSS, can serve as buffer during times of emergency.

Moreover, Filipino households should understand the concept and value of financial

management. The government can then integrate financial education in school curricula (Llanto 2015) and, with the help of local government units, strengthen implementation of information, education, and communication activities related to financial literacy and inclusion within communities.

Address vulnerabilities

Building the Filipinos' resiliency in coping with shocks and enhancing social protection and access to basic services are necessary to address structural vulnerability and horizontal inequality (or inequality among groups), respectively. Toward this end, the government can devise comprehensive strategies related to disaster risk prevention, mitigation and management, including strengthening of early warning and forecasting systems.

Ensuring universal access to health insurance is recommended to address life-cycle vulnerabilities.

Finally, access to basic social services for everyone and providing social protection to poor and marginalized groups are key strategies. These will level the playing field for all (regardless of ethnicity, gender, or social status) and deepen social cohesion, which can reduce incidences of conflicts (UNDP 2014). 📄

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