Poverty Maps in Sri Lanka
Policy Impacts and Lessons

TARA VISHWANATH AND NOBUO YOSHIDA

ACRONYMS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>DCS</th>
<th>Department of Census and Statistics</th>
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</thead>
<tbody>
<tr>
<td>DS</td>
<td>Divisional Secretariat</td>
</tr>
<tr>
<td>HIES</td>
<td>Household Income and Expenditure Survey</td>
</tr>
</tbody>
</table>

Poverty in Sri Lanka is marked by spatial heterogeneity. The poverty headcount ratio in Colombo District in 2002 (6 percent) was less than a sixth of the ratios in Badulla and Monaragala Districts (37 percent). The regional disparities in the pace of poverty reduction is even more striking. The poverty headcount ratio in Colombo District declined by 10 percentage points between 1990–91 and 2002, while the ratio in Puttalam District rose by almost 10 percentage points during the same period. Further disaggregation would be needed to uncover fully the spatial heterogeneity of poverty in Sri Lanka; there is a widespread perception that many pockets of severe poverty remain or are emerging even in Colombo District.

The growing regional inequality and slow poverty reduction are not the results of inaction by the government of Sri Lanka. Indeed, the government has a long history of social welfare programs. The most significant one now is the Samurdhi (prosperity) transfer program. In 2005, the expenditures of the Ministry of Samurdhi amounted to 0.6 percent of the country’s gross domestic product; about 90 percent of this was spent on the transfer program. The issue is therefore not inaction, but rather the identification of ways to improve the targeting of social welfare programs through
Building a Poverty Map, Technical Considerations

The DCS agreed to use a standard poverty mapping methodology, the small area estimation method developed by Elbers, Lanjouw, and Lanjouw (2003). The Census of Population and Housing conducted in 2001 and the Household Income and Expenditure Survey (HIES) conducted in 2002 were chosen for the analysis. The poverty mapping exercise followed a standard procedure depicted in the World Bank guidelines. The following issues turned out to be a major challenge in Sri Lanka.

First, there are some mismatches in the location codes used in the 2001 census and the 2002 HIES. The location codes were changed in the 2001 census, and the HIES 2002 was supposed to implement the same codes. However, the team found codes at the DS unit level and many at the Grama Niladhari level in HIES 2002 that are different from the codes in the 2001 census. For the small area estimation method, such mismatches are critical and need to be resolved before initiating the analysis. To solve this problem, census and HIES sampling frame specialists were called in
and asked to match the location codes manually. After this time-consuming matching work had been completed, it was possible to use the same location codes with the HIES and census data.

Second, the HIES 2002 focuses on consumption and income among households, but does not include much information on education, health, or housing conditions. Since the 2001 census contains detailed information on housing conditions, if the HIES 2002 had covered housing conditions more thoroughly, the predictive power of the consumption models used for the poverty mapping exercise would have improved substantially. On the other hand, the HIES has a large sample size relative to the population of Sri Lanka: the HIES sample was 20,100 households, while Sri Lanka’s population in the 17 districts where the HIES was fielded has been estimated at around 18 million people. The large sample size allows consumption models to follow consumption patterns more closely.

Third, the data entry process was slow. When the work was initiated in September 2003, the full sample of the 2001 census was not yet available; instead, only 5 percent of the sample was available for the analysis. The team needed to use the 5 percent sample to develop programs and train the DCS staff. When the full sample data finally became available in April 2005, DCS staff were able to estimate poverty headcount ratios at the DS level.

Results of the Poverty Mapping Exercise

Before we present the results of the poverty mapping exercise in Sri Lanka, it is worth noting certain limitations on the use of the maps. Poverty mapping is a powerful statistical tool for identifying pockets of poverty that may not be observable through aggregated or national poverty statistics. The results may be used to improve targeting in poverty reduction programs and help identify the causes of severe deprivation. However, we must be careful in using the results, particularly in the actual design of poverty programs. In many cases, poverty maps are only indicative of problems. To discern clear policy implications, additional well-designed surveys or analyses are often needed.

Figure 12.1, a map of poverty headcount ratios at the DS level, illustrates some interesting geographical characteristics of poverty incidence. First, as expected, poverty headcount ratios are substantially lower in Colombo District and neighboring areas. Second, high rates of poverty are much more common in areas in the deep south (Sabaragamuwa, Southern, and Uva Provinces) than in areas more to the center and north of the country (North Central and North Western Provinces). (Note that the darkest areas of the map denote projected poverty headcount rates of 36 percent and above, compared to the country’s average of 22 percent.) Third, the map highlights the pockets of extreme poverty in almost all parts of Sri Lanka, including districts with low aggregate poverty rates. For example, some DSs in the southern part of Western Province (Kalutara District) suffer from severe deprivation, and similar pockets of extreme poverty exist in North Central and North Western Provinces (for example, in parts of Anuradhapura, Kurunegala, and...
Puttalam Districts). Fourth, extreme poverty seems to be concentrated in Sabaragamuwa Province and, especially, Uva Province.

However, high headcount ratios do not always indicate that there is a large population of poor people in a DS since the poverty headcount ratio in an area depends on the area’s total population, as well as the number of poor people. Figure 12.2 illustrates this clearly. Thus, for example, even though the headcount ratio in Colombo District is only 6 percent, the population of poor people in the district is high, especially in Colombo city areas, because of the large population. Furthermore, the coastal areas from southern Gampaha District to the western part of Hambantota District record high numbers of poor people despite the relatively low headcount ratios. On the other hand, many of the DSs in Monaragala District record the highest headcount ratios in the nation, but there are lower numbers of poor people because of the low population density. This illustrates the danger of relying only on poverty headcount ratios in designing poverty reduction programs. In Sri Lanka’s case, targeting all antipoverty programs on poor districts in the deep south, for instance, would run the risk of missing large numbers of the poor in districts that are more well off on average, including the capital city of Colombo.

Colombo District witnessed a significant reduction in poverty incidence between 1990 and 2002, as table 12.1 shows. But figure 12.3 suggests that, even in Colombo District, there are
## Table 12.1 Estimates of Poverty Headcount Ratio by District, Sri Lanka

<table>
<thead>
<tr>
<th>Province</th>
<th>District</th>
<th>1990–91 (%)</th>
<th>1995–96 (%)</th>
<th>2002 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>Colombo</td>
<td>16</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Gampaha</td>
<td>15</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Kalutara</td>
<td>32</td>
<td>29</td>
<td>20</td>
</tr>
<tr>
<td>Central</td>
<td>Kandy</td>
<td>36</td>
<td>37</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Matale</td>
<td>29</td>
<td>42</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Nuwara Eliya</td>
<td>20</td>
<td>32</td>
<td>23</td>
</tr>
<tr>
<td>Southern</td>
<td>Galle</td>
<td>30</td>
<td>32</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Matara</td>
<td>29</td>
<td>35</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Hambantota</td>
<td>32</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>North Western</td>
<td>Kurunegala</td>
<td>27</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Puttalam</td>
<td>22</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>North Central</td>
<td>Anuradhapura</td>
<td>24</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Polonnaruwa</td>
<td>24</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>Uva</td>
<td>Badulla</td>
<td>31</td>
<td>41</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Monaragala</td>
<td>34</td>
<td>56</td>
<td>37</td>
</tr>
<tr>
<td>Sabaragamuwa</td>
<td>Ratnapura</td>
<td>31</td>
<td>46</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Kegalle</td>
<td>31</td>
<td>36</td>
<td>32</td>
</tr>
</tbody>
</table>

*Source: Data from the HIES 1990–91, 1995–96, and 2002 (DCS).*

## Figure 12.3 Poverty Headcount Ratio at the Grama Niladhari Level in Colombo District, Sri Lanka

some pockets of poverty that are concentrated in the eastern part of the district and Colombo city (the northwest of the district). Figure 12.4 shows that there is a concentration of poor people in the population in Colombo city, while the poor population is more sparse in the eastern part of Colombo District.

**Further Analysis Using the Poverty Maps**

**Accessibility and poverty**

Geographical isolation as measured by the distance to the nearest market or city seems to be highly correlated with poverty incidence. To illustrate this relationship in detail, figure 12.5 shows an accessibility index for each DS. The accessibility index is calculated for every point as the sum of the population of surrounding cities and towns, inversely weighted by the travel time on the road network to each town. It requires data on the populations of major cities and towns and a detailed road map, which are both available from a recent assessment of the investment climate in Sri Lanka (World Bank and ADB 2005).

Figure 12.5 shows that the areas surrounding Colombo District in Western Province (the blue areas on the lower left side of the map) are well connected to cities and markets,

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**Figure 12.4 Estimated Distribution of the Poor in Colombo District, Sri Lanka**

- Each dot represents 50 poor people

while, for example, most of Uva Province (the yellow and light green area near the lower right corner of the map) is geographically isolated. Apparently, as one travels away from the area surrounding Colombo, the accessibility index becomes lower.

A comparison of figures 12.1 and 12.5 clearly indicates a negative correlation between the poverty headcount ratio and the accessibility index. For example, the coastal areas surrounding Colombo District record a high accessibility index and a low poverty headcount ratio, while many DSs in Monaragala District (in Uva Province) are poor and geographically isolated. A simple regression verifies the observation that there is a significant negative correlation between the two indexes. More research will be needed to identify the extent to which lack of accessibility explains poverty incidence in remote areas.

**Drought and poverty incidence**

It is well known that the agricultural sector remains one of the major sources of livelihoods in all provinces except Western Province and that agricultural wage employees are vulnerable. Thus, a natural disaster such as flooding or drought may have serious consequences on livelihoods and result in sharp rises in poverty incidence.

Figure 12.6 shows rainfall anomalies in 2001. These are defined as the percentage deviation of rainfall in 2001 from the average annual rainfall over the previous 30 years. The figure shows that some areas were severely

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**Figure 12.5 Accessibility Index, Sri Lanka**

Note: The map shows the mean of the access values for all points that fall into a given DS unit. (See the text for more details.) This accessibility index is a measure of potential market integration. It reflects the quality and density of local transportation infrastructure. Included in the analysis are 185 cities and towns.

**Figure 12.6 Rainfall Anomalies, Sri Lanka 2001**

Note: The figure shows the rainfall in 2001, less the average rainfall over the previous 30 years. The red areas were drier in 2001. The blue areas were wetter in 2001. The figure has been computed using only stations for which there are data for the 30-year period and for 2001.
affected by drought in 2001, especially most of Hambantota District and the southern part of Matara District (both in Southern Province; the areas in question are shown in bright red in the figure). Drought does not necessarily raise poverty incidence; the impact also depends on other factors—such as the availability of good irrigation systems, the crops cultivated, and the diversity or the lack of diversity in occupations—that affect the vulnerability of the people to rainfall anomalies. For this reason, it is difficult to hypothesize about the links between rainfall anomalies and poverty incidence, especially in the absence of information about the other factors and panel data allowing the measurement of the impact of drought.3

Nonetheless, we may find a rough correlation between poverty incidence and drought-affected areas if we compare the poverty map (figure 12.1) and the drought map (figure 12.6). For example, Hambantota District (Southern Province; red and orange areas at the bottom in figure 12.6) and the southern parts of Kalutara District (Western Province; orange and yellow areas at the lower left in figure 12.6) were affected by severe drought and recorded high poverty incidence according to poverty headcount ratios. Although these visual links suggest that specific areas of the country are likely to be vulnerable to such events, more careful analysis needs to be performed to measure the impact of this vulnerability on poverty.4

Assessing the impact of the tsunami on poverty

Poor people are more vulnerable to natural disasters. They are less capable of coping with such disasters and also of recovering from them. There is a real concern that the tsunami catastrophe that struck the Indian Ocean in late December 2004 may irreparably worsen the situation of the poor and generate higher poverty rates in Sri Lanka. Special care thus needs to be taken to ensure a smooth recovery process among the poorest and most vulnerable people.

It has been widely presumed that the killer waves struck some of the poorest areas of the nation, but there is no clear information linking poverty and tsunami damage specific to the affected areas. Detailed poverty profiles and information on disaster damage will be critical in designing and targeting medium- and long-term reconstruction efforts for the benefit of the poor in these areas.

Figure 12.7 illustrates poverty headcount ratios for affected areas in Galle, Hambantota, and Matara Districts (Southern Province). The related data have been produced through an ongoing project involving the DCS through which an extensive geo-referenced database on the effects of the tsunami disaster will be constructed. Note that the figure shows poverty headcount ratios only for DSs that include tsunami-affected Grama Niladhari divisions. Data on poverty incidence in entire DSs would be misleading since most areas in the DSs were not affected by the tsunami; on the other hand, most of the Grama Niladhari divisions have populations that are too small to yield statistically reliable estimates. Grouping several Grama Niladhari divisions within each DS therefore enables the estimation of poverty headcount ratios with a reasonable amount of precision.
It is possible to see from the figure that, before the tsunami struck Sri Lanka, most of the affected areas in Hambantota were poor, and some of those in Galle were also poor. However, most of the affected areas in Matara were not particularly poor relative to average national and district poverty headcount ratios. These results suggest that there is substantial variation in poverty incidence among affected areas in Southern Province, which should be taken into account in designing or prioritizing long-term tsunami reconstruction projects.

Building Capacity to Sustain the Poverty Mapping Exercise

One of the most important objectives of the mapping exercise has been to incorporate poverty mapping into the regular poverty monitoring framework of the DCS. Our goal is to help ensure that the DCS not only produces poverty maps, but is also able to repeat the exercise in the next round of the census.

However, it is not easy to ensure the sustainability of the poverty mapping exercise. For example, if technical assistance is not provided to the DCS, poverty mapping might easily become a one-time effort by outsiders because the data and technical requirements are substantial. Moreover, without large-scale dissemination of the results, it will be difficult to gain political support to sustain the effort over decades and foster the expansion of a community of poverty map users and stakeholders.
Capacity building within the poverty mapping exercise in Sri Lanka has been comprehensive. The capacity-building process supported by the World Bank has covered a wide range of activities, including improving data entry facilities, establishing a geographic information system (GIS) laboratory, providing training on a range of estimation and simulation methods and mapping techniques, selecting affordable, but effective software, and creating user-friendly methods to apply the software to the task. A series of dissemination workshops has also been planned in Colombo and other districts.

The poverty mapping exercise has been the outcome of an ongoing technical assistance program on poverty monitoring with the DCS. The program has also included assistance in reaching a consensus on an official poverty line for Sri Lanka, the organization of workshops to disseminate the poverty line and the poverty maps, and support for a potential expansion of the HIES to cover other indicators for monitoring social sector outcomes. In July 2005, the DCS and the World Bank held a workshop in Colombo to present the official poverty line and the results of the poverty mapping exercise. The Bank will continue to support the DCS in the broad dissemination of the poverty maps.

Needs assessment for poverty mapping in Sri Lanka

At the start of this project, we conducted a thorough needs assessment. We identified the following areas for an intensive effort at capacity building and technical assistance:

- Updating the data entry facilities for the 2001 population census was necessary. The population census is one of the most important components of the poverty mapping exercise, but the entry and processing of population data were slow because of the limited space and facilities at the DCS. Without significant upgrades in the DCS facilities, the poverty maps would have had to be based only on the 5 percent census sample that was available at the time.
- A well-organized GIS was not ready. The existence of such a GIS would not only help maximize the range of applications for the poverty maps, but also improve the accuracy of the maps. However, in Sri Lanka, geographical information was spread out across various government agencies and research organizations. This made the timely preparation of geographical information for the poverty mapping exercise and for the dissemination of the results difficult.
- No official poverty line had been generally accepted in Sri Lanka. At the time the poverty mapping exercise was initiated, several poverty lines had been created by various institutions, but there was no consensus on trends in poverty and the geographical profile of poverty. Without a single, widely accepted, and official poverty line, the uses for the poverty maps might be limited.
- DCS staff had not been exposed to relevant issues and techniques in econometrics or to the general-purpose statistical software (such as SAS or Stata) that the small area estimation method calls for. This meant that the latest statistical software packages
had to be purchased, and the staff had to undergo substantial training in econometrics and statistical software application.

**How these issues have been addressed**

*Updating the data entry facilities and creating the GIS laboratory*

The DCS and the World Bank team prepared two proposals for an economic reform technical assistance project: one to upgrade the data entry facilities at the DCS (submitted in October 2003) and another to set up a GIS laboratory (submitted in April 2004). The submission of the second proposal was delayed in part because we were waiting for the needs assessment by our GIS expert in December 2003. All the equipment for the data entry and data processing upgrades was provided in November 2004, and all the equipment for the GIS laboratory was provided only in May 2005. The delays were understandable given the interruptions caused by the general election in April 2004 and the tsunami in December 2004, but there were misunderstandings involved in the delays as well.5

At the new facilities, the entry and cleaning of the 2001 census data were completed in March 2005. This was sooner than expected given the nearly six-month delay in the work on the facilities.

*Establishing an official poverty line*

In May 2004, work on a new poverty line was finalized through a collaborative effort of DCS staff and the World Bank team. Previously, many poverty lines had been used in studies conducted by various organizations. To resolve all the issues in determining the official poverty line for Sri Lanka, a consultative approach was adopted to engage stakeholders in the country and in the donor community, including Central Bank staff, university professors, and international poverty specialists at the World Bank.

A workshop was convened in March 2004 to examine relevant poverty estimation methodologies and to discuss issues with an expert on international best practice. Based on recommendations emerging from the workshop, a detailed analysis was undertaken by a poverty study group at the DCS in which two international consultants supported by the World Bank team participated. The group explored the HIES data collected in 1990–91, 1995–96, and 2002 and identified an appropriate methodology for consistent measurement of poverty trends across time and space.

The new official poverty line has helped resolve some of the confusion in poverty profiles and trends, and it has enhanced the usefulness of the poverty maps. Another notable outcome of the process is the ready ability of DCS staff to update the official poverty line, which has motivated them to take up the far more difficult analytical tasks required by the poverty mapping exercise. The results, along with detailed explanations, are available on the DCS external Web site (http://www.statistics.gov.lk/). The fact that, in their analyses, academic researchers, government departments, and the Central
Bank use the official poverty line and the poverty estimates produced by the DCS is proof these have been widely accepted.

**Training**

Intensive training on the small area estimation methodology was provided by experts in poverty mapping. Poverty mapping requires careful work in creating common and cluster-specific variables; selecting optimal models of household consumption and the distributions of cluster- and household-specific errors; and mapping poverty and other geographically referenced information. Training needs to cover all these areas.

The DCS chose a group of statisticians to take part in the training. The World Bank team provided three separate two-week periods of training to the group between 2003 and 2005. For the rather lengthy data analyses, the World Bank team developed a set of Stata programs to automate many of the steps involved in the small area estimation method. These programs eased the training significantly because the number of adjustments in the data by the DCS statisticians was dramatically reduced. The DCS staff succeeded in producing poverty estimates for DSs using the 5 percent sample of 2001 census data in December 2004 and the full sample of census data in 2005.

However, only a few staff members actually acquired a strong command of the programs. It would be worthwhile to introduce the DCS staff to the World Bank’s new poverty mapping software, PovMap, which would reduce the length of the process dramatically. Because most of the staff understand the concepts behind the small area estimation methodology, it should be easy for them to implement the analysis using the new software. The new software would be especially helpful now that the DCS has expanded the HIES questionnaire, given that this expansion might prevent DCS staff from simply and incorrectly applying the existing programs to update the poverty maps during the next round of the census.

GIS software is essential for overlaying poverty statistics on DS or Grama Niladari boundary maps. The software may be used to conduct simulations to estimate average distances and times to reach main roads (see elsewhere above). Basic training in GIS software was provided by the vendor. Around 20 staff members attended the course. Currently, the DCS is actively producing GIS databases, as well as various kinds of maps, such as food vulnerability maps, poverty maps, accessibility maps, and drought maps.

**Dissemination of poverty maps and other results**

A dissemination workshop was held in Colombo in July 2005 shortly after the completion of the poverty mapping exercise. The workshop was organized jointly by the DCS and the World Bank to display the detailed maps and illustrate the proper application of the maps in planning and policy making. The audience consisted of staff from the Central Bank and various nongovernmental organizations, as well as local researchers. The experts of the DCS and the World Bank discussed the context, the technical issues, and the uses and limitations of poverty maps. The response was positive and improved the visibility of and trust in the work of the DCS.
The DCS took the lead in the dissemination process. For example, the director of the DCS presented the poverty maps to many government officials. He also presented the poverty maps at a conference organized by a research institute at which many people from nongovernmental organizations and the local academic community participated.

A series of dissemination workshops in other districts are being planned to present the poverty maps and promote the creation of a network of long-term users. Because of their visual and intuitive appeal, poverty maps may be easily misapplied. Stressing the limitations of poverty maps is therefore important. Poverty maps should be used only as an indicative first step in planning poverty programs. They are not substitutes for actual targeting mechanisms, particularly at the household level.

Besides the workshops, the DCS has prepared a user-friendly Web site containing poverty maps and a brief description of the methodology. The DCS and the World Bank have also drafted a policy note on the technical aspects of the exercise, the interpretation of the results, and the limitations of the maps and distribute the note at conferences.

The Impact of the Poverty Maps on Policy

The poverty maps have not only enhanced public awareness of the significant regional inequalities in Sri Lanka, but also encouraged policy makers to take appropriate steps to address the severe deprivation that still prevails in rural and remote areas. The poverty maps are now widely accepted within government, nongovernmental organizations, and the local academic community and among donors in Sri Lanka. The maps are having an effect on policies, lending strategies, and research. In particular, the poverty maps and the map illustrating the accessibility index (see figure 12.5) are influencing World Bank projects, such as road projects. The poverty maps have also helped revive the government’s initiative to improve targeting in the Samurdhi transfer program and have been used to identify the poorest 113 DSs so that the government might raise benefits there. This has been a result of the careful dissemination of poverty maps by the DCS, with World Bank support, and the World Bank’s long-term technical assistance for Samurdhi reform.

The Samurdhi welfare program and reform process

Social welfare programs have a long tradition in Sri Lanka. Among the current programs, the Samurdhi transfer program has the highest budget share in welfare spending among poor families. However, a number of studies point to large-scale mis-targeting and the exclusion of poor households in the Samurdhi program. The program apparently misses more than 35 percent of the households in the poorest 20 percent of the population, while reaching 12 percent of the richest 20 percent of the population. Given that Sri Lanka’s poverty headcount ratio is around 23 percent, this indicates that the program suffers from substantial undercoverage of the poor, as well as large leakage to the rich. Such large errors in targeting dilute the positive impact of the program on the poor and are evidence of serious distortions in the welfare budget.
In response to a request by the government, the World Bank has been providing nonlending technical assistance for Samurdhi welfare reform since 2003. This World Bank technical assistance has consisted of two major components: (1) a reorientation in the selection of program beneficiaries from subjective eligibility criteria to a formula-based system that allows for greater objectivity and (2) the creation of the institutional capacity to support the changes in the selection process.

A change in government in March 2004 altered the pace and sequence of the steps in implementation. Since December 2004, the revamped targeting system is being implemented in northern, conflict-affected areas where the Samurdhi program had not previously been active.

**Samurdhi reform in the south**

The reform in the south was stalled until recently because it involves the transformation of an existing system. The poverty maps contributed to reviving this implementation process. The director general of the DCS presented to government officials a comparison between the poverty maps and an allocation map for Samurdhi transfers. This clearly illustrated the large-scale mistargeting in the south. The government announced the Samurdhi reform in the south in early 2006.

In late 2005, the minister of Samurdhi had taken the important step of publicly acknowledging the need to target the Samurdhi program only on the poor. Steps were initiated to encourage nonpoor beneficiaries to give up their beneficiary status voluntarily. In early 2006, the government announced a considerable increase in the allocations for Samurdhi transfers. The increase in payments amounted to 50 percent (beginning in January 2006) for all current beneficiaries in the 113 DSs selected according to the information in the poverty maps; moreover, 100 DSs were to be added soon. The increase in the transfers was sensible, given the widely held view that the transfers had been too small to improve living conditions adequately among poor households. The higher payments made improvements in the targeting in the program all the more important. Reform efforts continue to improve the coverage of the poor by the Samurdhi transfer program.

**Concluding Remarks**

This chapter helps clarify the extent of regional disparity in poverty incidence in Sri Lanka, particularly by locating pockets of deprivation, even in districts that are better off on average. The analysis in the chapter provides a nuanced interpretation of headcount ratios in urban and rural areas showing that urban areas may have significant populations of poor people, but relatively low headcount ratios, while remote rural areas may have high headcount ratios that do not necessarily translate into high numbers of poor people.

Although these results should be useful for designing poverty reduction programs, it is equally important to stress the limitations. First, poverty headcounts are derived from simulations, and these are associated with imputation errors. While the method is useful
for broad ranking across geographical areas and communities, it is not a good substitute for other methods to identify poor households for more precise benefit targeting. Second, poverty headcounts are typically based only on data on household consumption, and these do not adequately capture other attributes of poverty. Third, poverty headcount estimates do not explain the causes of poverty. Well-designed surveys and careful analyses are needed to obtain proper diagnoses of the attributes and causes of poverty; such information is essential in designing appropriate interventions.

The poverty mapping exercise in Sri Lanka offers lessons for other countries in the region on the technical feasibility and the potential uses of poverty maps. Perhaps the most important lesson from the experience in Sri Lanka is that the process matters. Given the relevant technical resources available through the World Bank, the production of a poverty map is not difficult or time consuming. However, it is still difficult to ensure the wide acceptance of poverty maps among governments, the private sector, and donors.

In Sri Lanka, poverty maps are increasingly being recognized by policy makers and government officials as useful tools for poverty measurement. This is largely the result of the initiative of the DCS in spreading awareness and convincing potential users. Poverty maps are often politically sensitive because they may alter and otherwise affect design and targeting in ongoing social welfare programs. Since DCS staff are alert to the technical and political issues, the leadership of the DCS at the dissemination stage has been effective in avoiding unnecessary debates and any political backlash.

To continue this process, additional capacity building at the DCS is essential. The comprehensive assistance of the World Bank in supplying software, hardware, and hands-on training has successfully fostered this capacity-building process. In Sri Lanka, the partnership between the World Bank and the DCS has clearly been fundamental to the successes of the poverty mapping exercise so far.

Notes

1. Sri Lanka has 17 districts on which poverty estimates are already available through the Household Income and Expenditure Survey (HIES). Each district covers a relatively large area, which implies that poverty estimates at a lower level—such as the Divisional Secretariats (DSs) or below—will be necessary to capture fully the extent of heterogeneity. But there is a practical problem in achieving this: neither the HIES nor the Census of Population and Housing is appropriate for producing statistically reliable poverty estimates for geographical areas smaller than districts. For example, the 2002 HIES covered a sample of 20,100 households, a number that was designed to be representative at the district level. However, the number is not sufficient to produce reliable poverty estimates at lower levels. In contrast, the census of 2001 may be disaggregated to a lower level, but it does not include information on household consumption and income.

2. The R² for a regression of the poverty rate of DSs on the accessibility index is 0.21, which is high considering that this regression with a single variable is being used to explain variations in poverty rates at the DS level.

3. Rainfall is generally concentrated in southeastern Sri Lanka. High mountains cover the south-central part of the country. Note that there does not seem to be an obvious association between poverty incidence, land elevation, and typical rainfall.

4. To clarify the direction of causality in the case of rainfall, for example, it would be useful to compare poverty maps with rainfall anomalies in other years.
5. We submitted two proposals: one to upgrade the data entry facilities and the other to set up a GIS laboratory at the DCS. Officials with the economic reform technical assistance project thought the two were a single proposal and neglected to process the latter proposal, which delayed the launch of the laboratory. After inquiries from the DCS and the World Bank, the officials understood what had happened and started processing the proposal for the laboratory.


References


