India Progress out of Poverty Index® (PPI®): Scorecard

Indicator	Value	Points	Score
1. How many household members are 17-years-old or younger?	A. Four or more	0	
	B. Three	7	
	C. Two	11	
	D. One	17	
	E. Zero	26	
2. What is the general education level of the male head/spouse?	A. No male head/spouse	0	
	B. Not literate, no formal school, or primary or below	0	
	C. Middle	3	
	D. Secondary or higher secondary	5	
	E. Diploma/certificate course, graduate, or postgraduate and above	7	
3. What is the household type?	A. Labour (agricultural, casual, or other)	0	
	B. Self-employed (agriculture or non-agriculture), regular wage/salary-earning, or others	5	
4. What is the primary source of energy for cooking?	A. Firewood and chips, dung cake, kerosene, charcoal, coke or coal, gobar gas, or others	0	
	B. LPG or electricity	3	
	C. No cooking arrangement	9	
5. Does the household possess any casseroles, thermos, or thermoware?	A. No	0	
	B. Yes	5	
6. Does the household possess a television and a VCR/VCD/DVD player?	A. No, neither one	0	
	B. Yes, only one	4	
	C. Yes, both	9	
7. Does the household possess a mobile handset and a telephone instrument (landline)?	A. No, neither one	0	
	B. Yes, only a mobile	9	
	A. Yes, a landline, regardless of mobile	15	
8. Does the household possess a sewing machine?	A. No	0	
	B. Yes	1	
9. Does the household possess an almirah/dressing table?	A. No	0	
	B. Yes	5	
10. Does the household possess a bicycle, motorcycle/scooter, or motor car/jeep?	A. No, none	0	
	B. Yes, bicycle only, no motorcycle/scooter, or car	1	
	C. Motorcycle/scooter, but no car (regardless of bicycle)	13	
	D. Motor car/jeep (regardless of others)	18	

By Mark Schreiner of Microfinance Risk Management L.L.C., developer of the PPI

Total Score:

India PPI®: Lookup Tables

Use the following look-up tables to convert PPI scores to the poverty likelihoods below each of the poverty lines. The following poverty lines use the Mixed Reference Period (MRP) expenditure definition.

| PPI Score | Legacy R59 | | | Legacy R62 | | | | | | | R66 |
| | National Saxena | Intl. 1993 PPP | | National Saxena | Intl. 1993 PPP | | | | | | National Tendulkar |
		$1.08	$2.16		$1.08	$0.81	$1.35	$1.62	$2.16		
0–4	66.2	83.9	99.9	61.5	77.4	40.4	96.3	99.2	99.9		86.8
5–9	58.8	75.5	99.9	53.2	68.8	31.5	87.0	97.5	99.8		75.7
10–14	41.4	66.4	99.0	37.5	56.2	21.7	83.1	93.5	98.6		65.2
15–19	31.5	56.5	98.5	28.1	46.6	14.3	73.6	89.5	98.0		55.5
20–24	22.9	41.6	97.3	20.6	32.9	8.2	62.4	81.4	95.6		42.1
25–29	15.8	32.5	94.1	13.3	24.9	6.8	50.6	72.1	91.4		30.7
30–34	11.8	25.0	87.1	10.1	17.7	4.1	42.2	62.1	83.6		23.5
35–39	6.9	15.7	81.0	7.1	10.3	2.1	29.0	50.3	76.5		14.5
40–44	4.6	9.3	71.9	4.3	6.4	0.9	18.7	36.7	65.4		9.5
45–49	2.8	5.7	63.7	2.9	3.3	0.5	13.3	28.5	57.4		5.5
50–54	2.0	3.2	54.3	2.1	1.9	0.2	8.3	20.7	47.0		3.5
55–59	1.4	1.9	44.1	1.4	0.9	0.2	5.2	14.2	36.6		2.4
60–64	0.8	1.2	34.3	0.8	0.5	0.1	3.0	8.3	26.9		1.5
65–69	0.4	0.3	24.9	0.4	0.1	0.0	0.9	4.8	18.5		0.6
70–74	0.2	0.1	17.9	0.2	0.0	0.0	0.7	2.6	12.6		0.3
75–79	0.1	0.0	10.5	0.1	0.0	0.0	0.4	1.5	6.6		0.2
80–84	0.1	0.0	6.3	0.1	0.0	0.0	0.2	0.7	4.7		0.1
85–89	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	2.1		0.0
90–94	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.3		0.0
95–100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0

Source: Progress out of Poverty Index®: A Simple Poverty Scorecard for India.

Use the following look-up tables to convert PPI scores to the poverty likelihoods below each of the poverty lines. The following poverty lines use the Modified Mixed Reference Period (MMRP) expenditure definition.

PPI Score	R66						
	National Tendulkar			USAID 'extreme'	Intl. 2005 PPP		
	100%	150%	200%		$1.25	$1.88	$2.50
0–4	73.7	99.0	99.9	47.6	91.9	99.7	100.0
5–9	63.5	94.8	99.6	36.1	83.6	98.8	100.0
10–14	53.5	91.5	98.1	28.1	76.7	96.8	99.8
15–19	38.0	83.5	96.0	18.9	62.0	93.4	99.1
20–24	25.9	75.9	93.0	11.1	49.7	89.5	98.1
25–29	21.9	68.4	90.2	8.2	41.8	84.7	96.3
30–34	14.6	55.1	81.7	5.9	30.5	74.7	91.7
35–39	9.4	46.4	73.7	3.4	21.8	65.5	86.3
40–44	6.5	37.7	66.9	2.0	15.9	57.3	80.7
45–49	3.6	27.7	57.7	1.0	10.8	47.6	73.6
50–54	2.0	19.8	45.5	0.5	6.4	34.6	64.2
55–59	1.1	13.2	36.7	0.2	3.7	27.3	55.2
60–64	0.5	10.8	31.0	0.1	2.6	23.0	47.2
65–69	0.2	6.7	23.5	0.0	1.6	15.3	40.2
70–74	0.2	3.9	16.1	0.0	0.7	10.6	31.0
75–79	0.0	1.5	11.0	0.0	0.4	7.0	23.0
80–84	0.0	1.5	6.7	0.0	0.4	4.4	15.5
85–89	0.0	0.4	2.6	0.0	0.0	1.9	8.4
90–94	0.0	0.1	1.1	0.0	0.0	0.7	2.3
95–100	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Progress out of Poverty Index®: A Simple Poverty Scorecard for India.

Definitions of Poverty Lines and Expenditure

The following definitions are taken from Progress out of Poverty Index®: A Simple Poverty Scorecard for India by Mark Schreiner of Microfinance Risk Management, L.L.C.

The poverty status of a household (poor or non-poor) derives from a definition of a poverty line and a definition of expenditure. This appendix documents the definitions used for India's R66 poverty scorecard. This is useful because:

- There are no other published poverty lines for use with R66
- India has added definitions of national poverty lines over time
- India has added definitions of expenditure over time
- There are some errors in the implementation of the definitions of the poverty lines calibrated with the earlier R59 and R62 poverty scorecards
- When measuring changes in poverty rates for a group, the same definitions of poverty lines and expenditure—and thus the same definition of poverty status—must be used at both baseline and follow-up

The following rounds of data from the Consumption Expenditure Module of the NSSO's Socio-Economic Survey are used for constructing scorecards and poverty lines:

- R59 (January to December 2003) is used to construct India's original poverty scorecard (Schreiner, 2006a)
- R62 (July 2005 to June 2006) is used to construct the first update to India's poverty scorecard (Schreiner, 2008a)
- R66 (July 2009 to June 2010) is used in this paper, India's second scorecard update

Price indexes are also used for the periods that the following rounds were in the field:

- R55 (July 1999 to June 2000)
- R61 (July 2004 to June 2005)

Definitions of expenditure

Since 1999, the NSSO has measured expenditure using three definitions:

- URP: Uniform Reference Period
- MRP: Mixed Reference Period
- MMRP: Modified Mixed Reference Period

The reference period is the time frame over which a household is asked to report consumption expenditure. Reference periods are defined for four broad groups of items:

- Frequently purchased staple foods (edible oil, eggs, fish, meat, vegetables, fruit, beverages, pan, tobacco, and intoxicants)
- Infrequently purchased staple foods (cereals, pulses, milk and dairy, sugar, and salt)
- Non-food consumables, fuel, toiletries, services, transport, and rent
- Durable goods, clothing, education, and health care

URP defines the reference period for all four categories as 30 days. None of the poverty lines here use the URP definition of expenditure.

Under MRP, the reference period for durable goods, clothing, education, and health care is changed to 365 days, and the reference period for the other three categories is left at 30 days. The switch from URP to MRP led to non-comparable estimates of expenditure between R50 (July 1993 to June 1994) and R55 and thus bedeviled estimates of changes in poverty rates for that period (Deaton and Kozel, 2005). The MRP definition is used in R59, R62, and for half the sample in R66.

The MMRP definition changes MRP so that the reference period for frequently purchased staple foods is 7 days (Government of India, 2011a). This is in line with international practice for expenditure surveys, and MMRP is endorsed by the Tendulkar Committee (2009). MMRP is used for half the sample in R66. Still, MMRP is considered experimental, and Himanshu (2011) says that an official, final decision on whether to adopt MMRP is not expected until after the results of R68 are available.

The NSSO split the R66 sample between MRP and MMRP to enable measurement of changes in poverty rates between R66 and the past (when MRP was used) and between R66 and the future (when MMRP will probably be used, although an official, final decision has yet to be made).

Calibration to legacy definitions to enable measuring change with estimates from both old and new scorecards

The new R66 scorecard here is calibrated to poverty lines associated with MRP expenditure (for "legacy" lines originally used with the R59 and R62 scorecards) and MMRP expenditure (for all other lines used with the new R66 scorecard).

The R66 scorecard is calibrated to "legacy" MRP lines to let existing users measure changes in poverty rates. Such measures of change are valid, apples-to-apples comparisons as long as both the baseline and follow-up use the same poverty line[1] and the same definition of expenditure. This works even if baseline uses the R59 or R62 scorecard and follow-up uses the R66 scorecard; comparability of estimates depends on using a single definition of poverty status, not on using a single scorecard. Therefore, users of the R59 or R62 scorecard can switch to the new R66 scorecard without having to start from scratch when measuring change over time.

For a given definition of poverty status (that is, a definition of a poverty line and a definition of expenditure), estimates of poverty rates with any scorecard following the approach in this paper are unbiased.[2] This means that the difference between estimates (the estimate of change) is also unbiased. The precision (standard error) of multi-scorecard estimates of change can be measured, but it is not done here.

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[1] In constant real terms, that is, adjusted for changes in cost-of-living over time.
[2] Unbiased means that the average estimate in repeated samples equals the true value.

The new R66 scorecard is constructed with a single definition of poverty status: the National (Tendulkar) poverty line with MMRP expenditure. Nevertheless, scores from the new R66 scorecard are calibrated to multiple poverty lines (including R59 and R62 legacy lines with MRP expenditure). This is possible because the scorecard serves only to rank households by score. This ranking is separate from the calibration that relates scores to poverty likelihoods for a given definition of poverty status.

The rest of this appendix documents the definitions of three classes of poverty lines:

- Legacy lines associated with the R59 scorecard and MRP expenditure
- Legacy lines associated with the R62 scorecard and MRP expenditure
- New lines associated with the new R66 scorecard and MMRP expenditure

All legacy lines from R59 and R62 in Schreiner (2008a and 2006a) are calibrated to the R66 scorecard. Thus, change can be measured from a baseline using R59 or R62 scorecards to a follow-up using the R66 scorecard. The legacy lines from R59 and R62, however, are not comparable with each other, so change cannot be measured from a baseline using the R59 scorecard and a follow-up using the R62 scorecard.

MRP legacy poverty lines for the R59 scorecard

The poverty scorecard that uses data from R59 (Schreiner, 2006a) is calibrated to two poverty lines. The R62 legacy lines with MRP expenditure in the R66 data are calibrated to the new R66 scorecard to allow existing R59 scorecard users to measure change over time with the new scorecard without having to start from scratch.

National (Saxena R59) poverty line
India's poverty lines are defined at the level of states and by urban/rural areas within states. For the national line with the R59 scorecard, smaller states and union territories are grouped with larger neighboring states as follows (Deaton, 2003):

- Andaman and Nicobar Islands and Pondicherry are grouped with Tamil Nadu
- Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura are grouped with Assam
- Chandigarh is grouped with Punjab
- Chhattisgarh is grouped with Madhya Pradesh
- Dadra and Nagar Haveli, Daman and Diu, and Gao are grouped with Maharashtra
- Rural Delhi is grouped with rural Haryana
- Jammu and Kashmir is grouped with Himachal Pradesh
- Jharkhand is grouped with Bihar
- Lakshadweep is grouped with Kerala
- Uttaranchal/Uttarakhand is grouped with Uttar Pradesh

Saxena (2001) gives the national poverty lines for R55. They are adjusted for changes in cost-of-living between R55 and R59 using the Consumer Price Index for industrial workers (urban areas) and the CPI for rural labourers (rural areas).[3] The national (Saxena R59) poverty line is the R55 state- and region-specific line multiplied by the R59 regional (urban or rural) CPI and divided by the R55 regional CPI.

Expenditure data provided by the NSSO is not adjusted for changes in cost-of-living over the twelve months of survey fieldwork. This means that the cost-of-living deflator for a given round is the average monthly CPI (urban or rural) while the survey is in the field.

R55 ran from July 1999 to June 2000, so the price index for R55 should be the average monthly CPI from July 1999 to June 2000 (433.33 urban and 309.75 rural). The R59 scorecard, however, incorrectly uses the average CPI from January to December 2000. These indexes—rounded to the nearest integer—are 441 (urban) and 307 (rural).

For R59, the scorecard used rounded price indexes of 496 (urban) and 328 (rural). The rural index mistakenly comes from the CPI for agricultural laborers (not rural labourers), so better, non-rounded indexes are 495.50 (urban) and 330.50 (rural).

This means that the factor for converting urban R55 Saxena lines to urban R59 Saxena lines is 496 ÷ 441 = 1.124717 instead of 495.50 ÷ 433.33 = 1.142316. Thus, the R59 urban lines are too low by 1.54 percent. In the same way, the R59 rural lines are too high by 0.132 percent.

Still, the lines are not too far off, and the effects of the mistakes may not be material. The correct line and the one used here can be compared in the tables following this appendix. The national Saxena line under "Legacy R59" has mistakes, but the national Saxena line under "Legacy R62" does not. For example, for R59 in urban areas, the mistaken line is Rs17.11, while the correct line is Rs16.96. This leads to the estimated poverty rate (at the household level) being 16.9 percent instead of the correct 16.3 percent. For R62 and R66 in urban areas, the poverty rates differ by 0.1 percentage points. Differences in rural areas are larger, about 2 percentage points.

To ensure comparability when measuring change across scorecards, the errors have been replicated when updating the national (Saxena R59) line to R66.

In any case, the national (Saxena R59) line is not calibrated to the R59 scorecard, and Schreiner (2006a) does not report poverty likelihoods for this line. Thus, no one has used the India poverty scorecard to estimate poverty rates based on this line. It is discussed here because it is used in the derivation of the next two lines.

$1.08/day 1993 PPP R59 poverty line

The R59 scorecard documentation presents what it labels a "$1.00/day" poverty line, but in fact—and in line with its international definition—the line is based on $1.08/day (Sillers, 2006). For clarity, it is called here "$1.08/day".

The all-India $1.08/day 1993 purchasing-power parity (PPP) R59 poverty line is derived from:

- 1993 PPP exchange rate of Rs7.02 per $1.00 (Sillers, 2006)
- Average monthly CPI in 1993 of 252 for both urban and rural
- Average monthly CPI for R59 of 496 for both urban and rural

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[3] http://labourbureau.nic.in/indtab.html, retrieved 10 September 2011.

Given this, the all-India $1.08/day 1993 PPP R59 line is (Sillers, 2006):

$$(2005 \text{ PPP exchange rate}) \cdot \$1.08 \cdot \left(\frac{\text{CPI}_{\text{Ave R59}}}{\text{CPI}_{\text{Ave. 1993}}} \right), \text{ or}$$

$$\left(\frac{\text{Rs}7.02}{\$1.00} \right) \cdot \$1.08 \cdot \left(\frac{496}{252} \right) = \text{Rs}14.9225.$$

Unfortunately, this derivation has errors because it:

- Applies the urban CPI to all of India, rather than a population-weighted average of the urban and rural CPIs
- Uses a rounded CPI for 1993 (252) instead of 252.08
- Uses a rounded CPI for R59 (496) instead of 495.50
- Uses a rounded 1993 PPP factor of 7.02 instead of 7.0162

Of the four errors, the first (using only the urban CPI) has the largest effect.

All-rural and all-urban $1.08/day 1993 PPP R59 lines are derived in three steps. The first step assumes that the ratio between the all-urban and all-rural $1.08/day lines is the same as the ratio between the all-urban and all-rural lines in Deaton (2003, Table 5, column "Recalculated Using New Prices", PL$_{55}$). These lines adjust for weaknesses that Deaton documents in the national (Saxena) lines for R55, so they are the best indexes of relative prices across states and by urban/rural in India. The all-urban and all-rural Deaton lines for R55 are 11.641972 and 10.169424. This implies:

$$\frac{\text{All - urban } \$1.08/\text{day } 1993 \text{ PPP}}{\text{All - rural } \$1.08/\text{day } 1993 \text{ PPP}} = \frac{\text{Deaton All - urban line}}{\text{Deaton All - rural line}} = \frac{11.641972}{10.169424} = 1.144802.$$

The second step asserts that the population-weighted average of the all-urban $1.08/day line and the all-rural $1.08/day line should give the all-India $1.08/line. Given that 25.18 percent of people in R59 live in urban areas, this implies:

$$0.2518 \cong \text{All-urban } \$1.08/\text{day} + (1-0.2518) \cong \text{All-rural } \$1.08/\text{day} = 14.9225.$$

The third step is to solve these two equations, giving (in average rupees in 2003):

- All-rural $1.08/day 1993 PPP R59 of Rs14.40
- All-urban $1.08/day 1993 PPP R59 of Rs16.48

The ratio between the all-urban $1.08/day line for R59 and the all-urban Deaton line for R55 is 16.48 ÷ 11.641972 = 1.416. Likewise, the ratio for the all-rural lines is 14.40 ÷ 10.169424 = 1.416. Thus, multiplying

Deaton's R55 lines by 1.416 gives $1.08/day 1993 PPP lines for R59 that adjust for regional differences in the prices and that produce the appropriate all-urban, all-rural, and all-India lines.

Like the national (Saxena R59) line, the errors in the calculation of the $1.08/day R59 line have been replicated when updating the line to R66 for comparability when measuring change over time.

In 2003 in urban areas, 19.4 percent of people (and 14.4 percent of households) had per-capita expenditure below $1.08/day 1993 PPP (tables after this appendix). The rural figures are 43.2 and 37.7 percent.

$2.16/day 1993 PPP poverty line

For an urban or rural area in a given state, the $2.16/day 1993 PPP line for R59 is twice the $1.08/day 1993 PPP line. In Schreiner (2006a), this is labeled "$2.00/day", but it is really $2.16/day.

MRP legacy poverty lines for the R62 scorecard

The R62 poverty scorecard (Schreiner, 2008a) is calibrated to six poverty lines. As for the R59 legacy lines, the R62 legacy lines are calibrated to MRP expenditure in the R66 data to allow existing users of the R62 scorecard to measure change over time in tandem with the new R66 scorecard without having to start from scratch.

As noted above, the R59 and R62 poverty lines are not comparable. That is, the national (Saxena R59) line has a different definition (thanks to errors) than the national (Saxena R62) line, and the $1.08/day 1993 PPP line (and its multiples) for R59 has a different definition (thanks to errors) than the $1.08/day 1993 PPP line (and its multiples) for R62. Thus, estimated changes in poverty rates cannot be measured at baseline with the R59 scorecard and at follow-up with the R62 scorecard. The R62 scorecard could be calibrated to R59 lines, but it has not been done here.

National (Saxena R62) poverty line

The national (Saxena R62) poverty line is based on the R61 lines in Government of India (2007). These R61 lines are the lines in Saxena (2001), updated by the government using the CPI series cited earlier. Smaller states and union territories are grouped as before, except that Chhattisgarh, Dadra and Nagar Haveli, rural Delhi, Goa, Jammu and Kashmir, Jharkhand, and Uttaranchal/Uttarakhand are no longer grouped with a larger neighboring state.

Here, the R61 poverty lines are converted to real, constant units as of R59, R61, and R66 using:

Round	Price index	
	Urban	Rural
59	495.50	330.50
61	524.58	344.08
62	550.77	360.25
66	777.47	529.58

For example, the R62 lines are the R61 lines, multiplied by the relevant R62 index and divided by the relevant R61 index. The resulting poverty lines and poverty rates are reported in the tables following this appendix. These differ slightly from Schreiner (2008a); the figures here correctly use the full sample, but the R62 documentation uses the construction sample after splitting up heavily-weighted cases. The urban poverty rate for R62 by this line is 20.5 percent for people and 15.4 percent for households, while the corresponding rural figures are 20.4 and 17.5 percent.
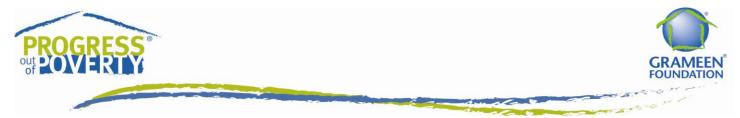
$1.08/day 1993 PPP R62 poverty line

Like the R59 scorecard documentation, the R62 scorecard documentation presents a "$1.00/day" poverty line when the line is actually $1.08/day. The correspondence between the old and new (more accurate) names of the 1993 PPP poverty lines calibrated to the R62 poverty scorecard are:

Old name	New name
$1.00	$1.08 (= 1.00 x 1.08)
$0.75	$0.81 (= 0.75 x 1.08)
$1.25	$1.35 (= 1.25 x 1.08)
$1.50	$1.62 (= 1.50 x 1.08)
$2.00	$2.16 (= 2.00 x 1.08)

The all-India $1.08/day 1993 PPP poverty for R62 is the population-weighted average of the all-urban and all-rural lines. The derivation uses:

- 1993 PPP exchange rate of Rs7.0162 per $1.00 (Sillers, 2005)
- Average monthly urban CPI in 1993 of 252.08
- Average monthly rural CPI in 1993 of 184.75
- Average monthly urban CPI for R62 of 550.77
- Average monthly rural CPI for R62 of 360.25

Applying the formula in Sillers (2006) separately to urban and rural gives an all-urban $1.08/day line of Rs16.56 and an all-rural line of Rs14.78. With an urban population share of 23.6495 percent, the all-India $1.08/day 1993 PPP R62 poverty line is Rs15.20/day.

To adjust for state-level differences in cost-of-living (with smaller states and union territories grouped with larger neighboring states as in Table 4a in Deaton, 2003), the all-region line (urban or rural) is multiplied by the Törnqvist index for the state from Deaton (2003, Table 4a) and divided by the average Törnqvist index for the region. The population-weighted regional averages of the Törnqvist indexes are:

Round	Törnqvist index	
	Urban	Rural
59	101.2744	102.1038
62	102.0348	101.0028
66	102.0532	101.4538

In R62, the urban poverty rates by the $1.08/day line are 13.6 percent for people and 10.0 percent for households. The rural figures are 34.8 and 30.8 percent.

An error in this is that the Törnqvist index for Chhattisgarh is taken from Punjab (97.3 urban, 104.3 rural) instead of Madhya Pradesh (92.7 urban, 95.2 rural).

A larger error is that the process above takes the starting point of the all-urban and all-rural lines as being the same in 1993, rather than recognizing that the all-urban line should be higher. The correct formula for the all-India $1.08/day 1993 PPP R62 line multiplies $1.08 by the PPP factor (7.0162) and by the population-weighted average ratios of the urban and rural CPI from 1993 to R62:

$$\$1.08 \cdot 7.0162 \cdot \left[(1 - 0.7635) \cdot \left(\frac{550.77}{252.08} \right) + 0.7635 \cdot \left(\frac{360.25}{184.75} \right) \right] = \text{Rs}15.20$$

This gives the same all-India line as above, but now the all-urban and all-rural lines are (as in R59) the solution to two equations. The first equates the ratio of the regional $1.08/day lines to the ratio of Deaton's all-urban and all-rural lines after bringing them to R62:
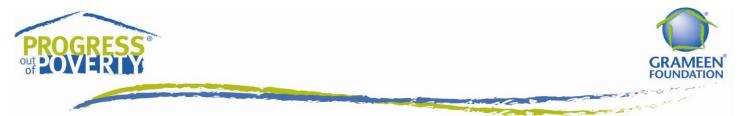
$$\frac{\$1.08/\text{day} \quad \text{all - urban}}{\$1.08/\text{day} \quad \text{all - rural}} = \frac{\text{Deaton}_{R55} \text{ all - urban} \cdot \left(\frac{\text{Urban CPI}_{R62}}{\text{Urban CPI}_{R55}} \right)}{\text{Deaton}_{R55} \text{ all - rural} \cdot \left(\frac{\text{Rural CPI}_{R62}}{\text{Rural CPI}_{R55}} \right)} = \frac{11.64 \cdot \left(\frac{550.77}{433.33} \right)}{10.18 \cdot \left(\frac{360.25}{309.75} \right)} = 1.250283.$$

The second equation relates the population-weighted average of the regional lines to the all-India line:

$$(1–0.7635) \cong \$1.08/\text{day all-urban} + 0.7635 \cong \$1.08/\text{day all-rural} = \text{Rs}15.20.$$

Solving these two equations gives the correct regional lines:

- All-urban $1.08/day 1993 PPP = Rs17.94
- All-rural $1.08/day 1993 PPP = Rs14.35

These correct urban/rural figures should then be adjusted for state-wise cost-of-living by multiplying by the region- and state-specific Deaton line for R62 and dividing by the population-weighted average regional (all-urban or all-rural) Deaton line for R62, rather than the Törnqvist procedure outlined above.

Compared with the incorrect figures actually used, the correct ones for R62 are higher for urban and lower for rural. Nevertheless, the errors are deliberately repeated when updating to R66 to allow measuring change over time. The R62 documentation (Schreiner, 2008a) matches the figures here on p. 10 and in Figure A38, but it is slightly different in Figures A2 to A37, as those tables incorrectly use the construction sub-sample after splitting heavily weighted cases.

$0.81/day 1993 PPP R62 poverty line
For an urban or rural area in a given state, the $0.81/day 1993 PPP line for R62 is the $1.08/day 1993 PPP line for R62, multiplied by 0.75.

$1.35/day 1993 PPP R62 poverty line
The $1.35/day 1993 PPP line for R62 is the $1.08/day 1993 PPP line for R62, multiplied by 1.25.

$1.62/day 1993 PPP R62 poverty line
The $1.62/day 1993 PPP line for R62 is the $1.08/day 1993 PPP line for R62, multiplied by 1.50.

$2.16/day 1993 PPP R62 poverty line
The $2.16/day 1993 PPP line for R62 is the $1.08/day 1993 PPP line for R62, multiplied by 2.00.

National (Tendulkar MRP) poverty line
Tendulkar Committee (2009) recommends a new national poverty line for India and provides estimates of person-level poverty rates for R50 and R61 based on the MRP definition of expenditure. The Tendulkar lines address the concern that rural poverty rates by the Saxena lines seem too low as well as other critiques in Deaton (2008 and 2003) and Deaton and Tarozzi (2000).

Each state and union territory has its own Tendulkar line, except:

- Andaman and Nicobar Islands is grouped with Tamil Nadu
- Chandigarh is grouped with Punjab
- Dadra and Nagar Haveli and Daman and Diu are grouped with Maharashtra
- Lakshadweep is grouped with Kerala

This line is not reported for the R62 scorecard in Schreiner (2008a) because it did not exist then, and no organizations in India have used it with a poverty scorecard. It is included here as a benchmark and to allow the application of the new R66 scorecard and the Tendulkar lines with MRP expenditure, should that be desired.

The R61 lines are adjusted to R59, R62, and R66 using the urban and rural CPIs documented above for the national (Saxena R62) poverty line.

MMRP lines for the R66 scorecard

In R66, expenditure by the MRP definition was collected for half the sample, and expenditure by the MMRP definition was collected for the other half. This is prescient, because it permits calibrating the R59 and R62 legacy lines to the new R66 scorecard as well as calibrating the new scorecard to the lines likely to be relevant from now on.

Poverty status based on MMRP exists only for R66, as MMRP expenditure was not collected in earlier rounds. MMRP is closer than MRP to international practice, and Tendulkar Committee (2009, p. 31) suggests that MMRP should be the standard for future NSSO expenditure surveys. "For the present", the Tendulkar lines are accepted as official (Government of India, 2011b, p. 5).

MMRP expenditure is higher (Rs65.24 per person per day on average in R66 for urban, Rs34.64 for rural) than MRP expenditure (Rs61.02 urban, Rs31.33 rural). Thus, MMRP poverty rates are lower than MRP poverty rates. For example, the rural MMRP rate for the Tendulkar line in R66 is 25.5 percent, while the rural MRP rate for the same line is 35.5 percent.

National (Tendulkar MMRP) poverty line

The proper way to adjust the R61 Tendulkar lines to R66 is a complex procedure described at a high level in Tendulkar Committee (2009). A developer of this procedure (Himanshu, 2011) said that the R66 adjustments are "in process, but it will be a while before they are officially accepted." In the meantime, "an easier way would be to simply extend the R61 poverty lines to R66 by using the relevant CPIs in rural and urban areas. While they may not be accurate, they will not be off the mark. The final poverty line is expected to be close to the one arrived at using this simplification."

Thus, the Tendulkar lines for R66 are derived from the R61 lines by multiplying them by (777.47 ÷ 524.58) for urban and by (529.58 ÷ 344.08) for rural. This gives a national poverty line for urban India in R66 of Rs28.40 per person per day (Rs22.86 rural). The corresponding urban poverty rates are 16.0 percent for people and 11.6 percent for households, while the rural figures are 25.5 and 21.3 percent.

In some tables, the national (Tendulkar MMRP) line is referred to as "100% of the national (Tendulkar MMRP) line".

150% of the national (Tendulkar MMRP) poverty line

150% of the national (Tendulkar MMRP) line is the national (Tendulkar MMRP) line, multiplied by 1.50.

200% of the national (Tendulkar MMRP) poverty line

200% of the national (Tendulkar MMRP) line is the national (Tendulkar MMRP) line, multiplied by 2.00.

USAID "extreme" poverty line

For a given state and by urban/rural, the USAID "extreme" line is defined as the median MMRP expenditure of people (not households) below the national (Tendulkar MMRP) poverty line (U.S. Congress, 2004).

This means that the person-level poverty rate by the USAID "extreme" line for urban areas in R66 (7.9 percent) is half the corresponding rate by the national (Tendulkar MMRP) line (16.0 percent). Likewise, the

USAID "extreme" rural poverty rate for people is 12.7 percent, half the 25.5-percent rural rate by the national line.

Schreiner (2008a and 2006a) presents USAID "extreme" lines for the R59 and R62 scorecards. In R59, this line is based on the $1.08/day 1993 PPP line, and in R62, it is based on the national (Saxena R62) line. These "legacy" lines are not calibrated to scores from the new R66 scorecard here because the real value of the USAID "extreme" line changes over time, so it cannot be used to measure changes in poverty rates. This is because the line depends on the number of people below the national poverty line and the distribution of their expenditure, two things that change over time. Apples-to-apples comparisons over time are not possible with the USAID "extreme" line.

$1.25/day 2005 PPP poverty line
The all-India $1.25/day 2005 PPP poverty line for R66 is the population-weighted average of the all-urban and all-rural lines. It is applied with MMRP expenditure. The derivation of the poverty line uses:

- 2005 PPP exchange rate for "individual consumption expenditure by households" (World Bank, 2008) of Rs15.60 per $1.00
- Average monthly urban CPI for R61 of 524.58
- Average monthly urban CPI for R66 of 777.47
- Average monthly urban CPI in 2005 of 536.00
- Average monthly rural CPI for R61 of 344.08
- Average monthly rural CPI for R66 of 529.58
- Average monthly rural CPI in 2005 of 348.33
- Rural population share in R66 of 0.7290
- Average all-urban national (Tendulkar) line for R66 of Rs28.40
- Average all-rural national (Tendulkar) line for R66 of Rs22.86

The all-India $1.25/day 2005 PPP line is:

$$\$1.25 \cdot 15.60 \cdot \left[(1 - 0.7290) \cdot \left(\frac{777.47}{536.00} \right) + 0.7290 \cdot \left(\frac{529.58}{348.33} \right) \right] = \text{Rs}29.29.$$

Given this all-India line. As usual, the all-urban and all-rural lines are the solution to two equations. The first equates the ratio of the urban and rural $1.25/day lines to the ratio of the Tendulkar all-urban and all-rural lines in R66 terms:

$$\frac{\$1.08/\text{day all - urban}}{\$1.08/\text{day all - rural}} = \frac{\text{Tendulkar}_{R61} \text{ all - urban } \cdot \left(\frac{\text{Urban CPI}_{R66}}{\text{Urban CPI}_{R61}} \right)}{\text{Tendulkar}_{R61} \text{ all - rural } \cdot \left(\frac{\text{Rural CPI}_{R66}}{\text{Rural CPI}_{R61}} \right)} = \frac{20.04 \cdot \left(\frac{777.47}{524.58} \right)}{15.56 \cdot \left(\frac{529.58}{344.08} \right)} = 1.240189.$$

The second equation relates the population-weighted average of the regional lines to the all-India line:

$$(1 - 0.7290)\cong\$1.25/\text{day all-urban} + 0.7290\cong\$1.25/\text{day all-rural} = \text{Rs29.29.}$$

Solving these two equations gives the regional lines:

- All-urban $1.25/day 2005 PPP = Rs34.09
- All-rural $1.25/day 2005 PPP = Rs27.50

These urban/rural figures are adjusted for state-wise cost-of-living by multiplying by the region-and-state-specific Tendulkar line for R61 (updated to R66) and dividing by the population-weighted average regional (all-urban or all-rural) Tendulkar line for R66. The results are urban poverty rates of 25.9 percent for people and 19.6 percent for households, and rural figures of 43.0 and 36.9 percent.

$1.88/day 2005 PPP poverty line
The $1.88/day 2005 PPP line is the $1.25/day 2005 PPP line, multiplied by 1.504.

$2.50/day 2005 PPP poverty line
The $2.50/day 2005 PPP line is the $1.25/day 2005 PPP line, multiplied by 2.50.