



# Economic poverty factsheet: background and methodology

## Economic constraints as a central dimension of poverty

Development Initiatives (DI) understands poverty as a multidimensional phenomenon that cuts across different areas of our lives and is experienced in different ways for different people. However, a multidimensional approach also recognises the centrality of economic constraints and deprivations. When poverty is discussed as a social problem, the concept has a well-established link with money and financial resources, and this has formed the basis of a common international narrative about poverty.<sup>1</sup>

The extreme poverty line – the headline indicator for the first Sustainable Development Goal (SDG 1: “End poverty in all its forms everywhere”), which is commonly used as the go-to measure for poverty – is on the surface a purely monetary threshold determining whether someone can be categorised as living in poverty or not. Extreme poverty is calculated as the proportion of people with an income or consumption level of less than \$2.15 per person per day (2017 PPP).<sup>2</sup>

The World Bank’s extreme poverty line was calculated by taking the median poverty line of 23 low-income countries (LICs) converted into 2017 PPPs. Many of these countries established their poverty lines based on efforts to estimate how much money would be required to meet people’s basic needs. The World Bank also reports data for two additional poverty lines, which reflect the median poverty lines for lower middle-income countries (LMICs; \$3.65 per person per day in 2017 PPP) and upper middle-income countries (UMICs; \$6.85 per person per day in 2017 PPP).

DI’s [economic poverty factsheet](#) describes and highlights economic poverty levels and trends according to the most widely cited sources while also suggesting key areas for improvement in those data sources.

The most comprehensive standardised data on global economic poverty comes from the [World Bank’s Poverty and Inequality Platform \(PIP\)](#). This platform builds on and replaces the World Bank’s former international poverty dataset, PovcalNet. The World Bank has been identified as the custodian agency for extreme poverty data by the UN’s SDGs. The World Bank updates the PIP every spring and typically makes some more minor revisions

every autumn. Using the PIP API, we downloaded the latest data points for this factsheet on 22 September 2022.

The data in the PIP generally comes from household surveys. With the notable exception of India,<sup>3</sup> these surveys are carried out by national statistical offices or other government agencies. In many countries, these surveys should be conducted every three years or more frequently. They should be nationally representative. Translating survey questions into accurate measurements of monetary welfare can be very complex and expensive, requiring detailed questionnaires that frequently take hours per household surveyed. Many of the surveys estimate consumption while others estimate income. There is debate about whether measuring income or consumption is better for understanding poverty and inequality, but both measures provide insights. In practice, despite some important differences,<sup>4</sup> they are used interchangeably for calculating poverty estimates.

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### **Box 1: India's poverty estimates**

The World Bank took the extraordinary decision to publish private data as part of their global and regional estimates, filling a major gap in the data for India. The most recent official data in India came from the government-run [Consumer Expenditure Survey](#) in 2011/12. This survey was carried out again in 2017/18. However, the Indian government announced that they had concerns about the quality of the 2017/18 survey data and would not publish the results.<sup>5</sup> Consequently, the World Bank was missing recent data from a very populous country with (based on previous surveys) a significant share of its population likely living in poverty.

In a World Bank working paper, Sinha Roy and Van der Weide (2022)<sup>6</sup> examined the data from a survey known as the Consumer Pyramid Household Survey. This survey is conducted by a private company, the Center for Monitoring Indian Economy. The survey uses panel data that has been collected three times a year since 2014 from 114,000 households. It collects data on asset ownership, consumption patterns and demographics, among other subjects. After reweighting the demographics and imputing some values for consumption, Sinha Roy and Van der Weide argue that this survey produced similar results to other household surveys carried out by the Indian government. They used the resulting data to estimate national levels of extreme poverty and distributions. In autumn 2022, the World Bank determined that this data was better than missing data or other forms of imputation and began including it in the PIP and in their regional and global aggregates for estimating poverty.

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## DI's methodological approach

### Filling in data gaps.

When a country releases a new survey from which consumption or income could be estimated, a World Bank panel reviews the survey data and methodology before determining whether or not to incorporate the data into the PIP.

We used the World Bank's data on distributions of income or consumption for each country (adjusted for PPP), which presents data in internationally comparable dollars for the year during which the survey was carried out. For countries where there is no data available for any given year, different methods are used to fill in the gaps.

### Using aggregate GDP growth rates for countries with historical distribution data.

For countries without surveys for the relevant year, but which have good survey data available for a reasonably recent previous year, we assume that everyone in the income distribution has experienced household income growth in line with the adjusted GDP per-capita growth rates for that country since the last survey was conducted. This approach assumes that growth was evenly distributed and every person within a country saw their income increase by the same percentage. This assumption has an impact. Lakner et al. (2019) found that decreasing the Gini coefficient by one percent could lift an additional 100 million people out of extreme poverty by 2030. They also found that most countries in their dataset experienced changes between negative and positive two Gini coefficient points per year, but bigger changes were also seen.<sup>7</sup> A discussion about how poverty estimates would change based on various assumptions of growth and wealth distributions can be found in a 2018 [paper](#) by Development Initiatives.

A 2021 World Bank working paper by Mahler et al. finds that about 70% of the increase in GDP per capita "passes through" to increase household consumption, and that, on average, 100% of GDP per-capita growth translates into increased household income. Therefore, when using GDP per-capita growth to estimate consumption, we multiply the growth rates by 0.7, consistent with the World Bank's methodology.<sup>8</sup>

We use the IMF's [World Economic Outlook](#) (WEO) reports, published annually in April and October, for our growth estimates because they provide comprehensive country-level estimates of GDP per capita in constant international dollars.

### Applying the regional average for countries with no data

The PIP does not include data for all countries. A few years ago, the World Bank increased its coverage by adding high-income countries to the dataset. However, there still are many countries where the World Bank does not report data because of a lack of validated data. Some of these countries, such as Eritrea, Libya, Afghanistan and the Democratic People's Republic of Korea (DPRK), likely have significant populations living

in extreme or moderate poverty. Rather than dropping these populations from the global and regional aggregates, the World Bank assumes they will have the same poverty headcount ratio as the rest of the region in which they are located. Consequently, the global and regional aggregates include an assumption that only 4% of the DPRK's population were living in extreme poverty in 2022. In 2020, the UN estimated that more than 10 million people (about 40% of the DPRK's estimated population) were in need of humanitarian assistance.<sup>9</sup> Therefore, the estimate that 4% of the population live in extreme poverty probably underestimates the number of people living in extreme poverty in the DPRK by several million. However, with such limited data coming from the country, most imputation methods require strong assumptions.

For global and regional poverty estimates, we have followed the World Bank's approach of assuming the regional poverty headcount ratio for countries with missing data. We use the PIP region group classifications rather than the UN or WEO groupings.

### **Nowcasting and forecasting**

The World Bank's latest aggregate data in the PIP is typically several years old when the data is published because there is a considerable lag between when household surveys are conducted and the publication of final analyses of the surveys. In 2022, the most recent PIP 'lined-up' year, which has sufficient surveys for regional and global estimates, is 2019. However, it is possible to access data in the PIP for about 20 countries where surveys were conducted in 2020 and 2021.

In autumn 2022, the World Bank published a paper by Mahler et al.<sup>10</sup> with "nowcasted" – or estimated values for the present – data showing the World Bank's estimates of the impact of Covid-19 on extreme poverty in 2020. To estimate Covid-19's impact on the global economy, they used phone-based surveys, reports from national statistical offices, and customised country reports – going well beyond their usual reliance on older household surveys combined with recent GDP growth rates. Rather than try to replicate their process, we have input the extreme poverty headcounts reported for the countries referred to in Table B3B of their report. We have inferred a growth rate based on the change in extreme poverty headcounts in that table and applied it throughout the income distribution.

We have used the inferred growth rates from that paper for 2019 and 2020, and then used GDP growth rate forecasts for 2021–2027 from the WEO. To forecast to 2030, we have taken the average growth rates for the latest five years as the expected growth rate for the years 2027–2030.

To estimate the population in poverty, we used PIP data when available. For forecasts and nowcasts, we used the September 2022 median variant total population estimates from the United Nations' Department of Economic and Social Affairs (UNDESA) Population Division, World Population Prospects.

## Reporting results: National, regional and global estimates for poverty headcounts

In our economic poverty factsheet, we have published some summary data. More completed data can be found in [GitHub](#). We have published regional aggregates to generally replicate and explain the World Bank methods. We have done this because the World Bank is identified as the custodian agency for most monetary poverty indicators under the UN SDGs. We also have used the World Bank’s definition of national-level data, which uses the definition of “economies”; this is not a recognition of the independence of any entity. The World Bank database does not include subnational data, with the exception of a few countries where rural and urban poverty rates are reported. We have excluded those from our analysis for simplicity.

There is a range of uncertainty with each number that is reported. Survey bias, currency conversion, population estimates, and GDP measurement are among the many changes that can produce different results. The World Bank does not report confidence intervals, despite some calls for them to do so. In fact, one study<sup>11</sup> estimates that it is likely that the global poverty rate may have reduced only by 5.9% between 1990 and 2015 with 95% confidence intervals, compared to the 73% drop reported by the World Bank. As a simplifying assumption, we seek to replicate and explain the World Bank data.

### Checking the validity of results

We can compare our global aggregate extreme poverty headcount estimates against those of Mahler et al. (2022). Table 1 suggests that our estimates provide a very close replication of Mahler et al.’s nowcasts and forecasts as the differences are less than a tenth of a percentage point of the global population.

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**Table 1: Comparison of Mahler et al. and DI’s global aggregate extreme poverty headcount estimates.**

| Year | DI 2023 factsheet | Mahler et al. 2022 |
|------|-------------------|--------------------|
| 2020 | 9.3%              | 9.3%               |
| 2021 | 8.9%              | 8.8%               |
| 2022 | 8.5%              | 8.4%               |
| 2030 | 6.7%              | 6.8%               |

Note: Calculations were performed in R, drawing primarily on the PIP API. The full R code for these estimates can be found in [Github](#).

## Limitations

The underlying data in the PIP is taken from household surveys that may miss both the most marginalised people in a place (such as those not living in households<sup>12</sup>), as well as the richest (who are less likely to spend a couple of hours responding to an enumerator's questions).<sup>13</sup> These surveys are costly to undertake and it can take two years (or longer) before the data is fully processed and published. Among other factors, survey results may be highly sensitive to seasonal fluctuations in income and may be affected by the period of time that respondents are expected to recall their income or consumption during. There are efforts to address these problems and increased investment in household surveys could improve their quality and frequency, but they are still limited in many ways.

Income and consumption are treated as interchangeable despite there being significant differences because generally there is not national-level data for both income and consumption. The biggest international global datasets typically use the two interchangeably. For example, in 2017, the World Bank's estimate of the share of Haiti's population living in extreme poverty dropped by 29% as it switched from using consumption-based estimates to income-based estimates.

Another complexity centres around the consumption of those in high-income countries. Our estimates suggest that about 0.5% of the US population was living in extreme poverty until 2003. Since 2003, extreme poverty rates in the US have stayed fairly constant at 1% and are forecasted to remain at a similar level until 2030. Due to population increases, this means that the population living in extreme poverty in the US has grown by about 2.1 million between 1990 and 2022. People's experiences of extreme poverty in high-income countries is likely very different from that of people living in middle- and low-income countries. For this reason, the World Bank assumed that high-income countries had no inhabitants living in extreme poverty until an independent commission headed by the economist Anthony Atkinson<sup>14</sup> recommended that these countries were included in poverty analyses.

The World Bank's approach is also highly sensitive to price comparison estimates, including PPP estimates, as we discuss in [our blog on the 2022 update to the extreme poverty line](#). PPP updates have significantly changed the profile of poverty in the past. The level of this problem was significant enough that the [global commission on poverty measurement advised the World Bank not to update to new rounds of PPP data for poverty measurement until 2030](#). Nevertheless in 2022, the World Bank announced that the latest round of PPP updates (2017) would be used, moving the international poverty line from \$1.90 in 2011 PPP to \$2.15 in 2017 PPP. After undertaking a number of robustness checks, the World Bank made the case that this latest round of updates would have minor implications for the poverty profiles of almost all countries and that the update would not constitute "moving the goalposts" for SDG 1: "end poverty in all its forms everywhere".

# Notes

<sup>1</sup> Office of the United Nations High Commissioner for Human Rights. Human Rights and Poverty Reduction: A Conceptual Framework, 2003. Available at:

<https://www.ohchr.org/sites/default/files/Documents/Publications/PovertyReductionen.pdf>

<sup>2</sup> While it may appear that this numerical increase in the poverty line represents a higher standard for leaving poverty, this update was, in fact, primarily an attempt to adjust for the changing values of PPP between 2017 and 2011, and has generally had a limited impact on estimates of the number of people in poverty in most countries. <https://www.worldbank.org/en/news/factsheet/2022/05/02/fact-sheet-an-adjustment-to-global-poverty-lines#:~:text=The%20new%20global%20poverty%20line,in%20this%20situation%20in%202017.>

<sup>3</sup> The last published survey on poverty and inequality in India is based on a survey (the Consumer Pyramid Household Survey) conducted by a private Indian firm. The World Bank used this data because of a lack of suitable validated surveys since 2011. The justification for this study is available at:

<https://openknowledge.worldbank.org/handle/10986/37273>.

<sup>4</sup> For example, in 2017, the World Bank's estimate of the share of Haiti's population living in extreme poverty dropped by 29% as the World Bank switched from using consumption-based estimates to income-based estimates.

<sup>5</sup> Press Information Bureau, Government of India, Ministry of Statistics & Programme Implementation, Household Consumer Expenditure Survey, Press Release, 5 November 2019. Available at:

<https://pib.gov.in/Pressreleaseshare.aspx?PRID=1591792>

<sup>6</sup> Sinha Roy, S. & Van der Weide, R. 'Poverty in India has declined over the last decade but not as much as previously thought, Policy Research Working Paper; 9994, World Bank, Washington, DC. © World Bank, 2022. Available at: <https://openknowledge.worldbank.org/handle/10986/37273>

<sup>7</sup> Lakner, C., et al. 'How Much Does Reducing Inequality Matter for Global Poverty?' Policy Research Working Paper, No. 8869, World Bank, Washington, DC. © World Bank, 2019. Available at:

<https://openknowledge.worldbank.org/handle/10986/31796>

<sup>8</sup> Mahler, D., et al. 'Nowcasting Global Poverty', Policy Research Working Paper, No. 9860, World Bank, Washington, DC. © World Bank, 2021. Available at: <https://openknowledge.worldbank.org/handle/10986/36636>

<sup>9</sup> United Nations Office for the Coordination of Humanitarian Assistance (OCHA), DPR Korea Needs and Priorities 2020. Available at: [https://dprkorea.un.org/sites/default/files/2020-04/2020\\_DPRK\\_Needs\\_and\\_Priorities\\_Plan.pdf](https://dprkorea.un.org/sites/default/files/2020-04/2020_DPRK_Needs_and_Priorities_Plan.pdf)

<sup>10</sup> Table B3B from Mahler, D. et al. 'The Impact of COVID-19 on Global Inequality and Poverty', Policy Research Working Papers, No. 10198. World Bank, Washington, DC, © World Bank, 2022. Available at: <https://openknowledge.worldbank.org/handle/10986/38114>

<sup>11</sup> Moatsos, M., & Lazopoulos, A. 'Global poverty: A first estimation of its uncertainty', World Development Perspectives, 22, 2021.

<sup>12</sup> Carr Hill, R. 'Missing Millions and Measuring Development Progress', World Development, 2013, 46, pages 30–44.

<sup>13</sup> Ravallion, M. 'Missing Top Income Recipients,' NBER Working Paper 28890, 2021. Available at:

<https://www.nber.org/papers/w28890>

<sup>14</sup> World Bank, 2017. FAQs: Global poverty monitoring and recommendations of the Atkinson Commission on Global Poverty. Available at: <https://www.worldbank.org/en/topic/poverty/brief/global-poverty-monitoring-recommendations-of-the-atkinson-commission-on-global-poverty-faqs>