

April 2022 Update to the Poverty and Inequality Platform (PIP)

What's New

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Abstract

The April 2022 update to the newly launched Poverty and Inequality Platform (PIP) involves several changes to the data underlying the global poverty estimates. Some welfare aggregates have been changed for improved harmonization, and the CPI, national accounts, and population input data have been updated. This document explains these changes in detail and the reasoning behind them. Moreover, a large number of new country-years have been added, bringing the total number of surveys to more than 2,000. These include new harmonized surveys for countries in West Africa, new imputed poverty estimates for Nigeria, and recent 2020 household survey data for several countries. Global poverty estimates are now reported up to 2018 and earlier years have been revised.

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1 Introduction

The April 2022 global poverty update from the World Bank presents new global poverty estimates for the reference year 2018. It revises the previously published global estimates for the period between 1981 to 2017, as well as the regional estimates from 1981 to 2019. The update includes new surveys that have been received and processed, as well as several changes to the existing data. Some changes reflect improvements in the welfare aggregate based on new harmonization efforts and more available information. This document outlines the changes made to the underlying data by country and explains the reasons why the changes have been made.

Table 1 shows revisions to the 2017 regional and global poverty estimates.¹ The global poverty headcount at the US\$1.90 poverty line in 2017 is revised from 9.3 to 9.1 percent, resulting in a revision in the number of poor from 696 to 685 million. This is mostly driven by downward revisions to the Sub-Saharan Africa estimate, which has been revised from 41.2 percent to 40.0 percent. This change is largely explained by changes to the Western and Central Africa poverty estimate, decreasing from 36.7 to 33.2 percent. This revision is driven by changes to the line-up estimates due to newly available surveys for ten countries in West Africa (see section 3 below), as well as to changes to the poverty trend for Nigeria (see section 4 below).

Table 1. Poverty estimates for reference year 2017, changes between June 2021 and April 2022 vintage at different poverty lines

Region	Survey Coverage (%)	\$1.90				\$3.20				\$5.50			
		Headcount ratio (%)		Number of poor (mil)		Headcount ratio (%)		Number of poor (mil)		Headcount ratio (%)		Number of poor (mil)	
		Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22
East Asia and Pacific	97.6	1.4	1.5	29	30	8.4	9.0	174	186	27.6	29.3	571	608
Europe & Central Asia	89.5	1.3	1.3	6	6	4.6	4.7	23	23	12.6	12.6	62	62
Latin America & Caribbean	90.2	3.8	4.1	24	26	9.3	10.1	59	63	23.0	24.1	145	152
Middle East & North Africa	58.2	6.3	6.4	24	24	18.3	18.4	70	70	43.1	43.0	164	164
Rest of the World	82.4	0.7	0.7	7	8	0.9	0.9	10	10	1.3	1.3	14	14
South Asia	21.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sub-Saharan Africa	87.4	41.2	40.0	433	420	67.3	66.4	707	697	86.2	85.7	906	900
East & Southern Africa	80.6	44.2	44.6	277	279	68.8	69.4	431	435	86.4	86.8	541	544
Western & Central Africa	97.4	36.7	33.2	156	141	65.1	61.9	276	262	85.9	84.1	364	356
World Total	72.7	9.3	9.1	696	685	24.3	24.2	1821	1823	43.5	44.0	3269	3308

Note: Regional poverty estimates are reported if survey coverage is above 50% within a three-years window of the reference year. The global estimate is reported if survey coverage is above 50% and coverage for low- and lower-middle-income countries is above 50%. Sub-Saharan Africa is further divided into East and West Africa, following the World Bank's regional definition. The number of poor for Sub-Saharan Africa is equal to the sum of the number of poor for East and West Africa.

¹ The data available at the time of the June 2021 and the April 2022 updates do not offer sufficient population coverage in 2017 for South Asia, so we are unable to publish regional poverty estimates for this region. Survey coverage is assessed within a three-year window either side of 2017, i.e., including surveys that were conducted between 2014 and 2020 (also see Castaneda et al., 2020). The estimate for South Asia is not displayed since this region has a survey coverage less than 50%.

This update also revises previously published estimates for 2018 and 2019 (see Table 2 and Table 3). Moreover, improvements in data coverage, due to newly available surveys included with this update, allow us to add new global poverty estimates for 2018. This is due to an improvement in data coverage for low- and lower-middle- income economies. For 2018, the survey coverage for this group of countries is 50.7 percent, while it was only 48.2 percent in June 2021 – below the 50 percent threshold required to report global poverty numbers (Arayavechkit et al., 2021).

In 2018, the global poverty headcount rate at the US\$1.90 poverty line is 8.6 percent. This marks a decrease of 0.5 percent relative to 2017, corresponding to 28 million fewer poor people. This confirms a continued reduction in extreme poverty at the global level, although at a slower pace in more recent years. In fact, global poverty fell by 2.8 percentage points between 2012 and 2015 (from 12.8 percent to 10.0 percent), and by 1.5 percentage points between 2015 and 2018, confirming the findings published in World Bank (2020).

Revisions to the 2018 poverty estimates show a slight increase in the poverty headcount ratio in Latin America and the Caribbean. This is driven by several changes to the household welfare measures used for global poverty measurement (as documented in section 5), and more specifically to revisions in Mexico’s welfare aggregate (see section 5.8). These revisions also affect the regional estimate for 2019, showing an increase in the poverty headcount rates at all values of the poverty line (see Table 3).

At higher values of the poverty line, we also observe an upward revision to the estimates for East Asia and the Pacific. In 2018, the poverty headcount rate at the \$5.50 poverty line has been revised from 24.7 to 26.4 percent, equivalent to 38 more million poor. The same estimate for 2019 also shows an upward revision but smaller and of about 1 percentage point. This is due to changes to the line-up poverty estimates in China, for which new surveys have been added with this update (see section 12.2).

In contrast, estimates for Sub-Saharan Africa show a downward revision in 2018, confirming the pattern in 2017 described above. The poverty rate is 38.9 percent in 2018 (down from 40.4 percent in the June 2021 vintage), decreasing further to 38.3 percent in 2019. At the same time, the number of poor in the region has increased from 420 to 424 between 2018 and 2019, since population growth is outpacing poverty reduction. While improvements in data coverage for countries in Western and Central Africa allows us to report a poverty estimate for Sub-Saharan Africa in 2019, data coverage is insufficient to report the estimate for East and Southern Africa in the same year.

Compared to 2017, poverty estimates in 2018 show a decrease in poverty in all regions except for the Middle East and North Africa. The lined-up poverty estimate for the region shows a further increase to 7.1 in 2018. This is largely driven by our estimates for conflict-affected economies. It

should be noted that for these countries, survey data is not available in recent years, giving rise to considerable uncertainty. This speaks to a broader issue of data availability in the region which limits our understanding of poverty in 2019.

To conclude, the regional or global poverty estimates included in this update stop before the start of the COVID-19 pandemic. However, several country-level estimates for 2020 are available (see Table 19Table 12). Many of these are for countries in Latin America and the Caribbean, but some surveys conducted in 2020 are also available for countries in East Asia and Pacific, e.g., Indonesia, and for several European countries (see Table 19). These surveys show that the pandemic has not only had an impact on poverty, but also on data collection methods and on the methodology used to construct the household welfare aggregate needed for poverty measurement. This document discusses in detail how these changes affect 2020 poverty estimates (see section 2) and their comparability with those from previous surveys (see section 11).

Table 2 Poverty estimates for reference year 2018, changes between June 2021 and April 2022 vintage for selected regions and different poverty lines

Region	Survey Coverage (%)	\$1.90				\$3.20				\$5.50			
		Headcount ratio (%)		Number of poor (mil)		Headcount ratio (%)		Number of poor (mil)		Headcount ratio (%)		Number of poor (mil)	
		Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22
East Asia and Pacific	97.5	1.2	1.2	25	25	7.1	7.4	148	154	24.7	26.4	514	552
Europe and Central Asia	89.4	1.1	1.0	5	5	4.2	4.0	20	20	11.9	11.7	58	58
Latin America & Caribbean	86.7	3.7	4.0	23	25	9.2	9.9	58	63	22.5	23.7	143	151
Middle East and North Africa	50.9	7.0	7.1	27	27	19.9	19.7	77	76	44.4	44.0	172	170
Rest of the World	82.4	0.6	0.6	7	7	0.8	0.8	9	9	1.3	1.3	14	14
South Asia	21.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sub-Saharan Africa	72.6	40.4	38.9	436	420	66.7	65.4	719	705	86.1	85.3	928	920
East & Southern Africa	60.4	43.7	44.0	281	283	68.2	68.8	439	442	86.4	86.7	556	558
Western & Central Africa	90.6	35.5	31.4	155	137	64.3	60.4	280	263	85.5	83.1	372	362
World Total	69.9	n/a	8.6	n/a	656	n/a	23.2	n/a	1760	n/a	42.9	n/a	3259

Note: Survey coverage for low- and lower-middle-income countries for 2018 is: 50.7%.

Table 3 Poverty estimates for reference year 2019, changes between June 2021 and April 2022 vintage for selected regions and different poverty lines

Region	Survey Coverage (%)	\$1.90				\$3.20				\$5.50			
		Headcount ratio (%)		Number of poor (mil)		Headcount ratio (%)		Number of poor (mil)		Headcount ratio (%)		Number of poor (mil)	
		Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22	Jun 21	Apr 22
East Asia and Pacific	95.9	1.0	0.9	20	18	6.3	5.9	131	125	22.6	23.7	473	499
Europe and Central Asia	87.4	1.0	1.1	5	5	4.0	4.1	20	20	11.6	11.5	58	57
Latin America & Caribbean	86.8	3.7	4.1	24	26	9.2	9.9	59	64	22.5	23.6	145	151
Middle East and North Africa	47.9	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0
Rest of the World	82.5	0.6	0.6	7	7	0.8	0.7	9	8	1.3	1.2	14	13
South Asia	21.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sub-Saharan Africa	55.4	n/a	38.3	n/a	424	n/a	64.7	n/a	716	n/a	85.0	n/a	941
East & Southern Africa	32.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Western & Central Africa	90.0	34.5	30.5	154	136	63.6	59.4	284	266	85.2	82.4	381	368
World Total	66.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Note: Survey coverage for low- and lower-middle-income countries for 2019 is: 41.0%.

2 2020 surveys for countries in Latin America and the Caribbean

The COVID-19 pandemic affected both the data collection methodology and, in some cases, the survey questionnaire for the countries in Latin America and the Caribbean with data in 2020. This section summarizes the main methodological changes to the construction of the welfare aggregates. Figure 1 summarizes the main changes and the remainder of this section discusses changes to the welfare aggregate specific to each country.

Figure 1 Methodological changes to household surveys in Latin America and the Caribbean, 2019/2020

	Data Collection Dates	Data Collection Mode	Changes in Questionnaire (β)	Geographic Coverage (γ)
Argentina		F2F (2019) To Telephone or Mixed-mode data collection (2020)		
Bolivia				
Brazil				
Chile				
Colombia			Questionnaire was shorter AND/OR included COVID questions	
Costa Rica				
Dominican Republic				
Ecuador				It is only representative at the national, urban/rural levels
El Salvador	Data collection was suspended during April-July			
Guatemala			No Household Survey for 2019 -2020	
Haiti		No Household Survey for 2019 -2020		
Honduras				
Mexico				
Nicaragua		No Household Survey for 2019 -2020		
Panama		F2F (2019) To Telephone or Mixed-mode data collection (2020)	Questionnaire was shorter AND/OR included COVID questions	
Paraguay				
Peru				
Uruguay				

Note: F2F refers to “face-to-face” data collection.

2.1 Argentina

An evaluation of the comparability of data gathered during 2020 by the Argentinian National Statistics Institute (INDEC) is ongoing. After completing their evaluation, INDEC will issue further recommendations on the comparability with previous estimates.

In the second quarter of 2020, the survey was collected through phone interviews. The survey is designed as a rotating panel; 25% of the sample constitutes “new” households that interviewed for the first time each quarter. There was no previous contact for those households, so INDEC did not have their phone numbers, which was an obstacle to interviewing most of them. INDEC solved this problem of non-response using a propensity score model to reweight the sample, based on the probability of non-response according to household characteristics (for details, see p. 11 in INDEC, 2020).

2.2 Bolivia

Users of the poverty and inequality estimates for Bolivia 2020 should be mindful of the period in which the surveys were collected, especially when analyzing the impacts of the COVID-19 pandemic. In the case of Bolivia, the survey was collected at the end of the year.

The modules of the survey questionnaire were reduced. In particular, the dwelling module was shorter, and did not contain the homeownership status or housing rent amount. These are the variables that are used by the Socioeconomic Database for Latin America and the Caribbean (SEDLAC) for imputing the rent of owner-occupiers.² To make 2020 comparable with the historical series, the team developed and tested an imputation model that imputes the structure of the property and the distribution of implicit rent of the own housing of 2019 into the 2020 survey. This methodology is already being used for imputing expected rent throughout the income distribution in the Brazil PNADC 2012-2015 (for more details, see Atamanov et al., 2020).

2.3 Brazil

The PNADC data is the main source of information for poverty monitoring in Brazil. The latest annual release included the 2020 data, published by the National Statistics Office (IBGE) in November 2021 and included in this update.

The PNADC 2020 was collected throughout 2020, closely following the data collection methodology adopted in previous years. However, due to the health restrictions caused by the COVID-19 pandemic, IBGE had to adapt its data collection strategy from face-to-face to phone interviews. While the questionnaire itself was not changed, changes in the data gathering methodology affected non-response rates.

The PNADC follows a rotating panel design. There are five groups of households in the sample, each of which is interviewed five times and using a different questionnaire each time. Interviews are conducted throughout the year. Since 2012, the World Bank has used the first interview. However, for 2020, the fifth interview is used instead because the IBGE has published the social indicators and microdata for the fifth interview only. For more details, see Annex 1 of Lara Ibarra and Vale (2022).

Both the first and fifth interviews are conducted throughout the year. The main difference between the first and fifth interviews is that the latter does not include the dwelling module; thus, it does not contain the homeownership status or housing rent amount (variables needed for imputing the rent of owner-occupiers for the SEDLAC datasets). To make 2020 comparable with the historical series, housing ownership and implicit rent is imputed using the 2019 distribution. This is analogous to the approach used in Brazil during 2012-2015 and Bolivia in 2020 (see description on 2020 Bolivia data).

² SEDLAC is a project by CEDLAS (Universidad de La Plata) and The World Bank, that harmonizes household surveys from that region in an effort to improve comparability.

In 2020, there is also evidence of significant under-coverage of the Auxilio Emergencial (AE) program in the survey. AE is a cash-transfer program which was introduced in 2020. According to administrative data, there were over 68 million AE recipients. In the survey, only about 20 million are observed. AE provided monthly transfers that could add up to a maximum of R\$4,200 during 2020. For a household in the bottom quintile in 2019, this is equivalent to a 50% increase in their income per capita. Given the magnitude of this program (Lara Ibarra and Vale, 2022) and to better capture the evolution of income and poverty in Brazil, the team has imputed AE beneficiary status in the data. This allowed to complement the observed AE status as reported in the survey.³ Incorporating eligibility criteria from the AE (demographic, employment, and income), the method reached a combined AE population of 42.2 million individuals – leading to a number of program recipients more in line with the administrative records. The imputed AE status is used to construct the household annual income aggregate that underlies the poverty and inequality estimates for Brazil 2020 included in this update. Additional details on the imputation exercise and on the comparability of these estimates with previous rounds of the PNADC are discussed in Lara Ibarra and Vale (2022).

2.4 Chile

Changes in the data collection methodology limits comparability between CASEN 2020 (using phone interviews) and previous survey rounds (using face-to-face). Compared to face-to-face interviews, phone surveys present additional challenges that could bias the estimates. While the Ministerio de Desarrollo Social y Familia de Chile (MDSF) adopted several strategies to minimize such bias, it is unlikely that the income and poverty measures are fully comparable between 2020 and the historical series. Therefore, caution must be taken when comparing with previous years.

2.5 Colombia

In 2020, the data collection was split in two parts (both parts are included in the 2020 data used in PIP). The first part was collected through phone interviews from March until July. The questionnaire was reduced due to the COVID-19 pandemic. Consequently, the Colombian National Statistics Institute (DANE) imputed social programs using administrative data to identify program recipients and allocate transfers. Between August and December, the second part of the survey was collected using phone surveys and face-to-face visits in rural areas. In terms of household income, the first part of the survey only collected wages and net earnings (65% of aggregate household income). The second part of the survey covered income from the secondary activity, in-kind income, interest, dividends, pensions, retirements, and others.

2.6 Costa Rica

Due to COVID-19, data collection changed from face-to-face to phone: 45.17% of households in the sample were visited in person, while 54.83% were contacted by telephone. The survey weights

³ It should be noted that the survey did not explicitly ask for the receipt of AE. The survey only contains a generic question about other transfers. AE recipient status can be inferred from the amounts reported.

were calibrated using logistic regressions to minimize bias and ensure that the results for 2020 are comparable with those of 2019 (for details, see p. 27 in INEC, 2020).

2.7 Ecuador

This survey was collected in December through face-to-face interviews, and is nationally, urban, and rural representative. Before 2020, the survey was representative at the regional level.

2.8 Mexico

The main effects of the pandemic on poverty and inequality were experienced during the second quarter of 2020, when the lockdown measures led to a significant amount of job losses. The ENIGH collects information between August and November. Therefore, the previously used harmonization approach (see section 5.8 below), which constructed the welfare aggregate by using information about the income received in the last month, may not correctly capture the pandemic's effect on welfare. The new methodology constructs the welfare aggregate by using the average of the income from the last six months, which includes data from the second and third quarters of 2020 and, to some extent, reflect more accurately what happened to poverty and inequality in Mexico during 2020. Earlier years were also revised (see section 5.7 below).

2.9 Peru

From mid-March to end-September 2020, the ENAHO was collected through phone interviews and using a reduced questionnaire. In 2020, Peru had extensive cash transfers programs, covering a large part of the population due to the COVID-19 shock. However, there is evidence of significant under-coverage of the recipients of these transfers in the survey. The National Statistical Office (INEI) carried out an imputation exercise using administrative records. In the data used here, a portion of the second wave of one of the cash transfers (Bono Universal), which was erroneously excluded, is imputed in addition.

2.10 Uruguay

Due to the COVID-19 restrictions, the 2020 ECH data used new methodologies for data collection and sampling (for more details, see INE, 2020). The data collection was a mix of face-to-face and remote (e.g., phone) interviews. For the remote interviews, a shorter questionnaire and a revised sampling method was used. Instead of the standard cross-sectional sample, a panel-type sampling was used. The results are therefore not strictly comparable with previous versions of the survey.

3 New surveys for countries in West Africa

This update includes the first round of household surveys supported by the Harmonized Surveys on Household Living Conditions (PEHCVM) program. This program was launched in 2016 by the World Bank and the WAEMU Commission with the goal of improving the welfare measurement in countries in the West African Economic and Monetary Union (WAEMU). The program

provided extensive technical assistance and support to National Statistical Agencies of member countries to implement new household survey instruments and methods to improve poverty measurement, following current international best practices and improving comparability among these countries. The first round of data was collected in 2018/19 (see Table 4).

The main feature of the new surveys is that the welfare aggregate is estimated consistently for all WAEMU countries. Some of the main changes to the design of the consumption questionnaire are as follows:

- 7-day recall period for food consumption questionnaire: this harmonizes different practices in previous surveys, ranging from diary to 7-days, 30-days or 12-months recall periods.
- Imputed rent included in welfare aggregates. This was not the case for any of the previous surveys for these countries.
- Expenses in Education and Health recorded at individual levels. Previous surveys collected this information at the household level.

While these changes represent improvements in the measurement of household welfare and improve comparability *across* countries, they also make the new estimates incomparable to previous surveys available for these countries. The new surveys also in many cases produce notably lower poverty rates compared to previous estimates. For example, with the new survey, the poverty rate in Senegal in 2018 is estimated at 7.6% (Table 4). This compares with 38.5% in the previous 2011 survey, which when extrapolated had produced a poverty estimate of 28.8% in 2018. Further details on the comparability issues can be found in the country notes which are forthcoming in the Global Poverty Monitoring Technical Notes series.

Table 4 New WAEMU surveys poverty and inequality estimates

Economy	Year	Poverty headcount rate \$1.90 (%)	Poverty headcount rate \$3.20 (%)
Benin	2018	19.16	51.26
Burkina Faso	2018	33.66	61.81
Cote d'Ivoire	2018	9.18	34.87
Guinea	2018	23.18	60.39
Guinea Bissau	2018	24.67	59.50
Mali	2018	16.33	49.50
Niger	2018	41.35	75.20
Senegal	2018	7.60	34.03
Chad	2018	33.19	66.44
Togo	2018	24.08	51.83

4 Revision to the recent poverty trend in Nigeria

This update includes imputed data from three new surveys for Nigeria for 2010/11, 2012/13, and 2015/16. These poverty estimates are the result of survey-to-survey imputations using data from the Generalized Household Survey (GHS) and the 2018/19 Nigerian Living Standards Survey (NLSS) (Lain et al., 2022). The analysis uses consumption data from the 2018/19 NLSS and a set of comparable household characteristics available in both the 2018/19 NLSS and the GHS to impute consumption into three years for which GHS data are available, namely 2010/11, 2012/13, and 2015/16.⁴

The imputed household consumption data are prepared in three steps; first a set of comparable non-monetary indicators that are available in both the NLSS and GHS are selected. One advantage of using the NLSS and GHS is that many questions on household characteristics and key non-monetary indicators are the same and are asked using the same recall periods. Moreover, the comparability of the indicators can be verified using 2018/19 NLSS and 2018/19 GHS, for which the data collection schedules overlapped.

Second, a consumption model using the selected variables and consumption data from 2018/19 NLSS is developed. Variables used in the consumption model include regional dummies, demographics of the household (dependency ratio), household head characteristics (gender, sector of employment category), living conditions (main source of cooking fuel, toilet availability), consumption frequency dummies (food and non-food items), asset ownership (air conditioning, washing machine, cars and other vehicles, generator, microwave, TV set, computer). The model therefore includes variables that capture short-run variation – such as employment and a set of dummy variables for whether certain food and non-food items were being consumed – as well as more stable household characteristics – such as location, demographics, housing amenities, and ownership of assets.⁵ This model relies on the assumption that these indicators are highly correlated with poverty and that this relationship remains constant across the GHS waves.

⁴ While household consumption data from the GHS survey are available, they do not meet the quality requirements needed for poverty measurement purposes. First, the GHS data were collected during two relatively short periods to align with the agricultural cycle, in the post-planting and post-harvesting seasons. In contrast, the NLSS consumption data were collected over a period of twelve months. This could also affect the imputed consumption estimate, although the indicators used in the consumption model are less subject to seasonality than household consumption and expenditure. Second, early rounds of the GHS imposed standard units (grams and kilograms) when recording consumption levels when non-standard units may have been more appropriate, potentially biasing direct estimates of the consumption aggregate. The NLSS, by contrast, allowed consumption to be recorded using non-standard units. Third, GHS consumption data are not representative at the state level and the GHS is not used by the Nigeria's National Bureau of Statistics for official poverty measurement. See Lain et al. (2022) for further details.

⁵ The analysis adopts a “SWIFT Plus” (Survey of Wellbeing via Instant and Frequent Tracking) approach to conduct the survey-to-survey imputation (Yoshida et al. 2015, 2020). This approach was developed to overcome possible limitations arising in case a large shock or crisis, such as the 2015/16 oil price plunge in Nigeria, occurred between the baseline and target surveys. It consists of including variables that reflect households' current welfare status, such as employment, in the consumption model used in the imputations.

Specifically, the following regression is estimated:

$$y_{h,t} = \alpha X_{i,h,t} + \beta HH_{h,t} + \gamma Zone_t + \varepsilon_{h,t}$$

where $y_{h,t}$ is the natural logarithm of annual spatially adjusted household consumption expressed in local currency units for household h in time t . $X_{i,h,t}$ is a vector of household head's characteristics, $Zone_t$ are geographical zone-areas dummy variables. The error term is drawn from a normal distribution.

Third, using the parameters estimated from this consumption model, consumption is imputed into the GHS and the corresponding poverty rates are calculated. The imputed consumption vector is estimated using 100 imputations. The imputed consumption vector is then converted to US\$ 2011 PPP to calculate poverty rates at different international poverty lines. The same exercise is conducted for the GHSs from 2010/11, 2012/13, and 2015/16.

The basic results from applying this approach are shown in Table 5.

Table 5 Poverty and inequality estimates using survey-to-survey imputations.

	Poverty rate US\$1.90 (%)	Poverty rate US\$3.20 (%)	Gini index
2010/11 GHS	43.54	72.88	35.65
2012/13 GHS	42.49	72.12	35.51
2015/16 GHS	40.75	70.44	35.88

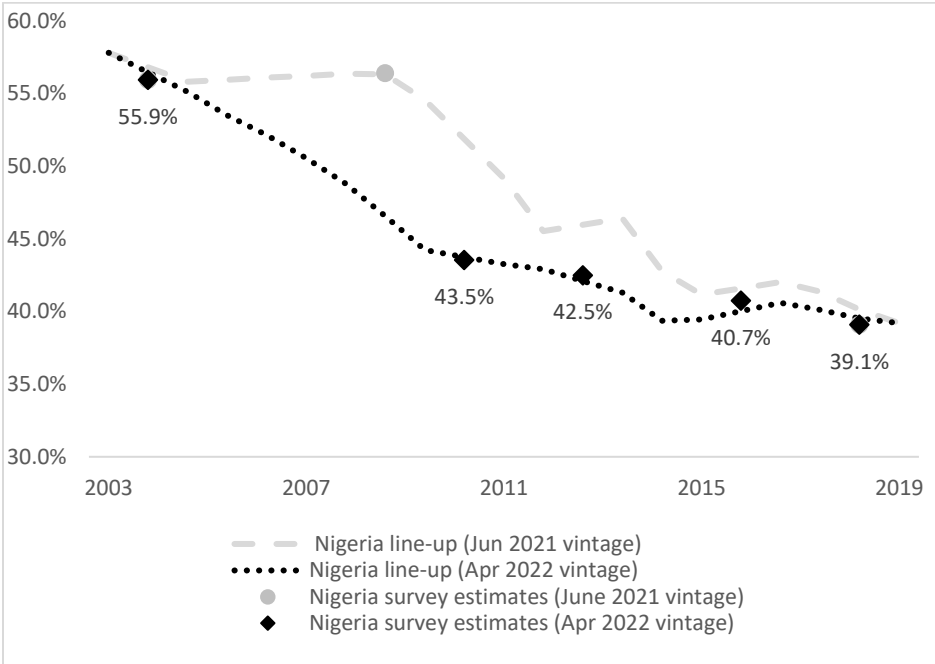
Source: Lain et al. 2022. Note: the table shows the results of the survey-to-survey imputation in each round of the GHS. We develop a consumption model using data on 23 non-monetary indicators available in the 2018/19 NLSS. Using the estimated parameters, we then impute consumption in each round of the GHS. The imputed consumption vector is then converted to 2011 PPPs and poverty estimates are reported at the US\$1.90 and US\$3.20 poverty lines. Gini coefficients are calculated as the average of 100 estimates resulting from each imputation.

The results of the survey-to-survey imputations are validated in three main ways. First, using the same model to impute into the 2018/19 GHS produces a poverty headcount rate that is very close to the direct, official poverty estimate from the 2018/19 NLSS (the difference is less than 3 percentage points). Second, the imputation results are similar to the results of a “backcasting” exercise, which maps macro-data on sectoral GDP growth to micro-data on consumption in the 2018/19 NLSS – through the household head’s employment sector – to estimate consumption in previous years (see Lain et al. 2022 for further details). Despite the two methods having a totally different set of underlying assumptions, they both suggest that poverty reduction in Nigeria stagnated in the 2010s. Third, many non-monetary welfare indicators, including on education and basic infrastructure, from Nigeria’s Demographic and Health Survey (DHS) also showed little improvement in the 2010s.

The fact that both survey-to-survey imputations and backcasts suggest that poverty reduction stalled in the 2010s adds further credence to concerns over the quality of the household consumption data from the 2009/10 Harmonised Nigeria Living Standards Survey (HNLSS), which has been removed with this update (see section 12.1.1 below).

The interpolated trend in PIP reflects this change and includes the new imputed data from 2010/11, 2012/13, and 2015/16 alongside the poverty estimates from the 2003/04 NLSS and the 2018/19 NLSS (see Figure 2). This results in a substantive revision of the interpolated poverty trend for Nigeria: showing a stagnation in poverty reduction between 2009 and 2019 instead of a 17-percentage points decline implied by the interpolated series previously used for global poverty measurement purposes. It should be noted, however, that the new imputed data from 2010/11, 2012/13, and 2015/16 are not technically comparable with the 2003/04 NLSS nor the latest 2018/19 NLSS estimate available in PIP (see Section 11 on the comparability database for further information).

Figure 2 Revisions to recent poverty trend for Nigeria, 2003-2019



Source: PIP, World Bank

5 Changes to welfare aggregates

5.1 Albania 2015-2016

The consumption aggregate for Albania has been corrected. Some consumption categories that are reported weekly were incorrectly assumed to be monthly. Some errors were also due to confusion between expenditures being recorded in old or new Albanian lek, or in monthly or annual terms.⁶ Finally, only 75% of education expenditures were previously included (since the school year is for 9 months), while the entire education spending is now included.

These changes result in higher consumption levels and thus lower poverty than previously estimated and reported (see Table 6).

Table 6 Changes to poverty and inequality estimates, Albania HBS 2015-2017

Country	Year	Poverty headcount \$1.90		Poverty headcount \$3.20		Poverty headcount \$5.50		Gini Index	
		Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
Albania	2015	1.13	0.25	8.20	4.69	34.3	24.46	32.91	32.75
Albania	2016	0.86	0.41	9.42	5.46	34.2	23.90	33.71	33.74
Albania	2017	1.27	0.43	8.19	4.28	33.76	23.83	33.17	33.06

5.2 Argentina 2017-2019

The temporal deflator used within each survey round was revised for these years. As the survey is semi-annual, it is necessary to deflate the income received by individuals interviewed in different quarters of the year. In 2017-2019 s2 (second semester) data, this deflation had erroneously used the s1 (first semester) deflator.

Table 7 Changes to poverty and inequality estimates, Argentina 2017-2019

Country	Year	Poverty headcount \$1.90		Poverty headcount \$3.20		Poverty headcount \$5.50		Gini Index	
		Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
Argentina	2017	0.93	0.92	3.18	3.10	9.88	9.82	41.15	41.13
Argentina	2018	1.35	1.37	4.00	4.02	12.34	12.38	41.33	41.34
Argentina	2019	1.46	1.30	4.88	4.77	14.40	14.49	42.90	42.91

5.3 Bolivia 2019

A slight revision comes from changes to the temporal deflator used within the survey. It now uses greater precision (a larger number of decimal points). Changes to the poverty and inequality estimates are only detectable at the fourth decimal.

⁶ The conversion from old to new lek is 10:1.

Table 8 Changes to poverty and inequality estimates, Bolivia 2019

Country	Year	Poverty headcount \$1.90		Poverty headcount \$3.20		Poverty headcount \$5.50		Gini Index	
		Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
Bolivia	2019	3.24	3.24	7.82	7.82	19.90	19.90	41.65	41.65

5.4 Brazil 2012-2019

IBGE has updated the sample weights of the PNADC 2012-2019 to reflect better the gender and age group composition of the population. This update was done using the 2010 Census data. See IBGE's technical note 4 (2021).

Table 9 Changes to poverty and inequality estimates, Brazil 2012-2019

Country	Year	Poverty headcount \$1.90		Poverty headcount \$3.20		Poverty headcount \$5.50		Gini Index	
		Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
Brazil	2012	3.73	3.89	8.97	9.29	21.08	21.74	53.55	53.44
Brazil	2013	3.08	3.22	7.87	8.11	19.28	19.94	52.75	52.69
Brazil	2014	2.73	2.88	6.99	7.34	17.60	18.36	52.11	52.03
Brazil	2015	3.15	3.37	7.72	8.06	18.63	19.50	51.94	51.93
Brazil	2016	3.87	4.11	8.78	9.26	19.99	21.07	53.28	53.34
Brazil	2017	4.42	4.66	9.07	9.50	20.23	21.16	53.27	53.33
Brazil	2018	4.42	4.66	9.13	9.56	19.82	20.78	53.87	53.87
Brazil	2019	4.61	4.86	9.12	9.55	19.62	20.59	53.43	53.49

5.5 Chile 2006, 2017

Changes have been made to the variable that captures the years of completed education. This change impacts the indicator which flags “coherent” income observations (SEDLAC variable coh=1).⁷ Only coherent observations are included in the sample.

Table 10 Changes to poverty and inequality estimates, Chile 2006, 2017

Country	Year	Poverty headcount \$1.90		Poverty headcount \$3.20		Poverty headcount \$5.50		Gini Index	
		Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
Chile	2006	1.45	1.45	5.36	5.36	19.19	19.19	47.30	47.29
Chile	2017	0.29	0.29	0.68	0.68	3.57	3.57	44.44	44.44

⁷ In the SEDLAC harmonization, some observations are identified as incoherent. For example, this applies to individual observations that are identified as employed, but record no income in the main occupation. Households are identified as incoherent if the household head or the household member with the highest income or the household member with the highest level of education (if the head does not work) is identified as an incoherent observation.

5.6 Costa Rica 1989, 2004-2008, 2010-2019

Several modifications and corrections affected household income:

- **1989:** Underlying microdata for this year was replaced with the latest version.
- **2004-2008, 2014-2019:** Changes have been made to imputed rent. The implicit rent imputation model (which imputes the rental value of owner-occupied housing, dwellings received as a gift, usufruct or ceded dwellings) uses the variable “water source”, which was modified throughout the series to improve comparability between years. This impacts imputed rent and, therefore, overall household income.
- **2010-2013:** INEC released 2010-2013 datasets with an update of the weights. This update is being adopted in the harmonized data and will be used from now on.

Table 11 Changes to poverty and inequality estimates, Costa Rica

Country	Year	Poverty headcount \$1.90		Poverty headcount \$3.20		Poverty headcount \$5.50		Gini Index	
		Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
Costa Rica	1989	12.33	10.43	22.46	20.44	43.41	41.61	46.69	45.57
Costa Rica	2004	4.42	4.39	9.34	9.36	23.14	23.20	48.35	48.42
Costa Rica	2005	3.22	3.20	7.98	8.02	20.99	20.96	47.47	47.51
Costa Rica	2006	3.19	3.18	7.82	7.89	20.53	20.54	49.44	49.29
Costa Rica	2007	1.76	1.76	5.38	5.37	16.33	16.32	49.29	49.31
Costa Rica	2008	2.26	2.34	5.35	5.39	15.90	15.90	48.64	48.65
Costa Rica	2010	1.58	1.47	4.20	3.87	13.24	12.59	48.16	48.05
Costa Rica	2011	1.74	1.65	4.41	4.29	13.70	13.35	48.72	48.76
Costa Rica	2012	1.69	1.63	4.27	4.08	12.66	12.19	48.62	48.42
Costa Rica	2013	1.62	1.59	4.17	4.03	12.76	12.41	49.27	49.15
Costa Rica	2014	1.49	1.49	4.00	4.00	12.34	12.34	48.63	48.63
Costa Rica	2015	1.54	1.54	4.07	4.07	11.96	11.95	48.38	48.38
Costa Rica	2016	1.27	1.27	3.78	3.78	10.78	10.78	48.71	48.71
Costa Rica	2017	1.06	1.06	2.81	2.81	9.91	9.91	48.35	48.35
Costa Rica	2018	1.46	1.46	3.66	3.66	11.17	11.17	47.97	47.97
Costa Rica	2019	1.01	1.01	3.24	3.25	10.62	10.62	48.19	48.19

seasonality in household income. For information on the comparability of the poverty estimates for Mexico see the comparability dataset discussed in section 11.

Table 13 Changes to poverty and inequality estimates, Mexico 2016 and 2018

Country	Year	Poverty headcount \$1.90		Poverty headcount \$3.20		Poverty headcount \$5.50		Gini Index	
		Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
Mexico	2016	2.16	3.23	7.77	10.54	25.44	29.36	46.28	47.68
Mexico	2018	1.73	2.65	6.48	9.24	22.70	26.59	45.38	46.71

5.9 Pakistan 2001-2018

The welfare aggregate for Pakistan has been revised due to the introduction of both a spatial and within-survey temporal deflator.

The fieldwork to collect household surveys for Pakistan is typically from August to July (in line to the Pakistan fiscal year cycle). The national poverty measurement methodology (updated in 2015) measures welfare as per adult equivalent expenditure, deflated spatially and temporally within the survey. For the international poverty estimates, per capita expenditure has been used without a spatial deflator and without adjusting for inflation over the survey period. For example, for the survey conducted from August 2018 to June 2019, the average annual CPI of 2018 and 2019 was used to convert the nominal local currency units (LCU) to 2011 PPP values.⁸ Pakistan experienced high inflation during the second half of 2019 after the fieldwork was completed. This is reflected in the 2018-2019 CPI average, even though it lies outside the period of data collection and should therefore not affect the estimates.

With this update, the Pakistan data used for international poverty estimates includes a temporal deflation within the survey period, as well as a spatial deflation. Specifically, and closely following the recommendations by Deaton and Zaidi (2002), the methodology can be described as follows:

1. A Paasche index is used to adjust the nominal consumption aggregate for cost-of-living differences faced by different households in different parts of the country. This approach is also used in the NSO's aggregate.
2. Unit values obtained from the survey are used as the source of price data. We use median prices by PSU. The PSU contains households in close spatial proximity and interviewed less than a month apart.
3. The Paasche index is computed per PSU, using democratic weights, which give equal importance to every individual within each PSU, independent of household expenditure. This means that the weight of each item is derived as a population-weighted average of the household budget share.

⁸ This followed the method of using the weighted annual CPI, as described in Lakner et al. (2018).

4. The base period is set to January median prices for HIES 2004/05 to 2018/19 (and June for PIHS 2001), which corresponds to the middle of the survey period. Hence, in the case of the 2018/19 survey, the Paasche index transforms the nominal expenditures to real January 2019 prices. The monthly CPI is then used to transform to 2011 PPPs.

The approximate Paasche price index at the PSU level can be written as:

$$\ln P_p^{psu} \approx \sum_{i=1}^k w_i^{psu} \ln \left(\frac{p_i^{psu}}{p_i^0} \right)$$

where p_i^{psu} is the PSU's price for item i (median of the unit value by PSU); w_i^{psu} is PSU's budget devoted to item i ; p_i^0 is the base price (mean of unit values of the PSUs mostly interviewed in January). Missing unit values are replaced using a hierarchical mechanism: if the unit value is missing for all households in the PSU (because the item was not purchased by any of the households in the PSU), the PSU is assigned the median value in the same quarter and stratum. If it is missing in the same quarter-stratum, it takes the median value in the same quarter and province/region. If missing in the same quarter-region, it takes the national median value in the same quarter. If the latter is unavailable, it takes the overall median value.

The trend for the international poverty number remains broadly unchanged, but the level changes slightly. The largest change is observed in the 2018/19 poverty rate.

Table 14 Changes to poverty and inequality estimates for Pakistan, 2001-2018

	Poverty headcount \$1.90 (%)		Poverty headcount \$3.20 (%)		Poverty headcount \$5.50 (%)		Gini index	
	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
2001	31.0	28.2	74.0	73.5	93.7	93.9	30.4	28.7
2004	19.9	16.7	62.3	60.6	88.4	88.3	32.5	30.9
2005	18.7	16.6	61.5	60.7	88.5	88.8	32.7	31.3
2007	15.0	11.9	57.3	55.3	86.8	87.0	31.6	29.7
2010	8.3	7.4	48.0	47.1	85.1	85.1	29.8	28.8
2011	8.0	7.2	46.6	46.5	83.6	83.9	30.9	29.7
2013	6.2	5.7	40.0	39.5	79.6	80.4	30.7	29.5
2015	4.0	3.8	35.5	35.5	75.9	76.4	32.6	31.3
2018	4.4	3.6	35.7	34.4	76.2	77.6	31.6	29.6

5.10 Paraguay 2010-2011

2010: Changes have been made to households with secondary household members: There was a small error in the definition of secondary household members, and this was corrected. This change affects the household size and hence per capita household income.

2011: Changes have been made to imputed rent: The rent imputation model uses the variables “Number of bedrooms in the household” and “dwelling’s construction materials”, modified throughout the series to improve comparability between years.

Table 15 Changes to poverty and inequality estimates, Paraguay 2010-11

Country	Year	Poverty headcount \$1.90		Poverty headcount \$3.20		Poverty headcount \$5.50		Gini Index	
		Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
Paraguay	2010	5.19	5.19	12.67	12.67	28.75	28.75	50.96	50.98
Paraguay	2011	4.63	4.63	12.29	12.30	27.06	27.06	52.31	52.31

5.11 Peru 2001-2019

Two changes in the data affected household income:

- Correction in the coding of the variable that captures non-labor income: Income from people who report it on an annual frequency is now included. This income was mistakenly not added to the non-labor income variable, thus affecting total household income. This has now been corrected.
- Changes in the deflator used in the non-labor income variable: The data now uses the temporally and spatially deflated non-labor income as published by the Peruvian National Statistics Institute (INEI). Previously, the deflator for another type of income was used.

Table 16 Changes to poverty and inequality estimates, Peru 2001-2019

Country	Year	Poverty headcount \$1.90		Poverty headcount \$3.20		Poverty headcount \$5.50		Gini Index	
		Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
Peru	2001	17.38	17.35	33.13	33.06	55.31	55.30	51.32	51.31
Peru	2002	15.16	15.08	29.68	29.67	50.71	50.64	53.59	53.57
Peru	2003	11.99	11.95	28.04	28.01	50.08	50.07	53.08	53.08
Peru	2004	13.60	13.55	28.63	28.58	50.00	49.97	49.89	49.88
Peru	2005	15.45	15.44	30.93	30.93	52.46	52.43	50.45	50.45
Peru	2006	13.46	13.45	26.98	26.94	46.64	46.62	50.33	50.33
Peru	2007	11.12	11.11	23.19	23.18	41.31	41.30	50.02	50.02
Peru	2008	9.09	9.07	19.57	19.55	37.59	37.58	47.47	47.49
Peru	2009	7.07	7.05	17.33	17.30	35.56	35.54	47.01	47.01
Peru	2010	5.54	5.50	14.92	14.90	31.52	31.51	45.55	45.54
Peru	2011	5.23	5.21	13.35	13.34	29.48	29.46	44.67	44.66
Peru	2012	4.81	4.80	12.34	12.33	26.90	26.90	44.45	44.44
Peru	2013	4.36	4.35	11.49	11.48	26.26	26.24	43.89	43.88
Peru	2014	3.73	3.72	10.71	10.70	25.34	25.29	43.15	43.14
Peru	2015	3.64	3.63	10.44	10.43	24.41	24.40	43.36	43.36
Peru	2016	3.53	3.52	10.12	10.09	24.57	24.53	43.65	43.64
Peru	2017	3.42	3.41	9.86	9.85	24.18	24.14	43.30	43.29
Peru	2018	2.69	2.69	8.43	8.45	22.31	22.33	42.37	42.39
Peru	2019	2.19	2.25	7.50	7.52	20.57	20.59	41.51	41.56

5.12 Sao Tome and Principe 2017

Data for Sao Tome and Principe are based on the Inquérito ao Orçamento Familiar (IOF). A 2021 quality assessment of the IOF 2017 and the welfare aggregate revealed high and uneven survey non-response rates (25 percent on average, higher in clusters with higher welfare) and unexpected patterns in consumption, attributable to high item non-response in consumption from own production.⁹

These issues motivated the use of a new methodology to calculate the consumption aggregate. Three changes were made. First, households that did not report any food or non-food consumption were dropped and treated as missing under the assumption that their information was too incomplete to recover. Second, survey weights were adjusted to correct for biased survey non-response rates using the methodology of Korinek and Ravallion (2005) to consider non-random missingness across sampling clusters. Third, a new welfare aggregate was constructed using the variable “total consumption” as the benchmark to estimate household consumption. In the initial estimates published in 2017, the declared purchase value was used as the basis for estimating welfare based on household expenditures. This was complemented with information on own-consumption and gifts, where available. This approach created problems due to high rates of item non-response for goods produced for own-consumption. As a result, the welfare aggregate based on expenditures was lower than the welfare suggested by the total consumption reported earlier in the survey. The new welfare aggregate also includes the periodization of large purchases (i.e. large purchases are spread out over time).

These changes led to an increase in consumption for households that had underreported their consumption and consequently to a decrease in poverty and inequality estimates (see Table 17).

Table 17 Changes in poverty and inequality estimates for Sao Tome and Principe

Year	Poverty headcount \$1.90 (%)		Poverty headcount \$3.20 (%)		Poverty headcount \$5.50 (%)		Gini index	
	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
2017	35.64	25.56	65.36	56.97	86.36	82.85	56.32	40.75

5.13 Vanuatu 2010

An error with the sampling weight used in the previous version of the data has been corrected. For a comparison of the poverty headcount rates and Gini index, see the following table.

⁹ Specifically, food consumption as a share of consumption did not increase in welfare quintile, consumption from own production was a higher share in higher welfare quintiles, and consumption outside of the home was higher for the lowest quintiles. These anomalous patterns do not coincide with other country-specific information (such as the 2010 survey for Sao Tome and Principe) nor results in comparable countries.

Table 18 Changes in poverty and inequality estimates for Vanuatu 2010

Year	Poverty headcount \$1.90 (%)		Poverty headcount \$3.20 (%)		Poverty headcount \$5.50 (%)		Gini index	
	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022	Jun 2021	Apr 2022
2010	13.14	13.14	39.45	39.39	72.37	72.43	37.63	37.35

5.14 EU-SILC

All historical EU-SILC data have been updated to data released in December 2021. The updates for each country-year are documented on the Eurostat website [CIRCABC → Eurostat → EU-SILC → Library → data_dissemination → udb_user_database]. Further information on EU-SILC data can be found at: <https://ec.europa.eu/eurostat/documents/203647/771732/Datasets-availability-table.pdf> and <https://ec.europa.eu/eurostat/documents/203647/203704/EU+SILC+DOI+2021rel2.pdf>

5.15 LIS

We continue to use the Luxembourg Income Study (LIS) for the following eight economies.¹⁰ Australia, Canada, Germany, Israel, Japan, South Korea, United States, and Taiwan, China. For the countries that use EU-SILC in recent years (typically from the early 2000s), we continue to use LIS data in the earlier years, and the break in comparability (when we switch from LIS to EU-SILC) is indicated in the comparability database.

The following country-years have been added with this release (details explained on the LIS website):

- Austria: 2016, 2018
- Germany: 1992, 1993, 1996, 1997, 1999, 2017, 2018
- Israel: 2002, 2003, 2004, 2006, 2008, 2009, 2011, 2013, 2015, 2017, 2018
- United Kingdom: 1996, 1997, 1998
- United States: 2019

All LIS data have been downloaded on December 15th, 2022. As before, we use disposable income per capita from the LIS data in the form of 400 bins (see Chen et al., 2018 for more details).

¹⁰ The term *country*, used interchangeably with *economy*, does not imply political independence but refers to any territory for which authorities report separate social or economic statistics.

6 Changes to survey years

For the following countries, the survey year was corrected as follows:

- Republic of the Congo 2011 corrected to 2011.67
- Iran surveys for 2005, 2006, 2009, 2013, 2014, 2015, 2016, 2017 corrected to 2005.23, 2006.23, 2009.23, 2013.23, 2014.23, 2015.23, 2016.23, 2017.23.
- Madagascar 2012 corrected to 2012.73
- Mali 2006 corrected to 2006.25
- Mauritania 2000, 2004, 2008 corrected to 2005.5, 2004.55, 2008.2
- Senegal 2001 corrected to 2001.31
- Solomon Islands 2005 corrected to 2005.5

7 Changes to data coverage type

- Uruguay 1999-2005

The coverage for Uruguay 1999-2005 was corrected from national to urban.

- Bolivia 1992

The coverage for Bolivia 1992 was corrected from national to urban.

8 Changes to CPI data

The baseline source of CPI data has been updated to the IMF's International Financial Statistics (IFS) as of 1 November 2021. Lakner et al. (2018) provide an overview of the various CPI series that are used in PovcalNet. Table A.1 in the Appendix to this note gives the up-to-date source of the deflator for all countries included in PIP as of the current update.

8.1 China 2017-2019

From 2010-2016, the inflation for rural China was based on the increase in the nominal value of the rural poverty line (Lakner et al., 2018). This practice was adopted in an attempt to reflect the price changes faced by the poor, at a time when food prices were growing significantly faster than non-food prices. With a rural poverty rate of 3.1% in 2017 and 1.7% in 2018 (according to the Chinese national poverty definition using the 2010 poverty standard), the increase in the rural poverty line might only reflect the prices faced by the very bottom tail of the distribution. Hence, we will start using the published rural inflation series from Table 5-1 of the China Statistical Yearbook. This is in line with the practice for urban China, as well as with the preferred approach for the rest of the world where we also default to official CPI series.

9 Changes to National Accounts Data

The primary source of national accounts data in this update is the January 2022 version of the World Development Indicators (WDI). When WDI data are missing, data from the IMF's World Economic Outlook (WEO), October 2021 version are used. Supplementary data from the Maddison Project Database (MPD), 2020 version are further used to fill missing observations. For a more complete series, national accounts data are chained on backward or forward using growth rates in WEO data, or MPD data, when WDI data are missing.

In addition, the following special economy series are used:

- India 2011-2015, after 2015: As before, the reference year estimates for India from 2012 to 2015 are based on a method which adjusts HFCE growth by incorporating findings of a survey-to-survey imputation for 2014.5. Growth rates in national accounts are adjusted to match the poverty estimates from the imputation exercise. The method is described in greater detail in Chen et al (2018) and Newhouse and Vyas (2018). After 2015, growth rates in national accounts are adjusted with a pass-through rate of 67%, as described in Castaneda et al. (2020).
- Syrian Arab Republic: WDI data are chained with growth rates from a special national accounts series after 2010 using the following sources: Gobat and Kostial (2016) (2011- 2015) and Devadas et al. (2019) (2016-2019).

The national accounts data from WDI are mostly reported for calendar years, but in a few exceptional cases for fiscal years. See Appendix 2 (Table A2.1) for the list of the exceptional countries and the end-dates of their fiscal years. In this update, for the first time, we adjust the national accounts series of these exceptional countries and convert them from fiscal-year data to calendar-year data. Depending on the end-date of the fiscal year, we estimate the calendar-year data as a weighted average of the data from the two relevant fiscal years.

Setting $\alpha = ((m - 1) + d/D)/12$, where the fiscal year ends on the d th day of the m th month and D is the number of days in the m th month (e.g. if the fiscal year ends on 30th June, $d = 30$, $m = 6$, $D = 30$), there are two cases of the adjustment.

Case 1 ($\alpha < 0.5$): If the fiscal year ends before the first half of the calendar year (e.g. 31st March for India), the calendar-year data are given as:

$$CY_t = \alpha Y_{t-1} + (1 - \alpha) Y_t$$

Case 2 ($\alpha \geq 0.5$): If the fiscal year ends at the end of, or after, the first half of the calendar year (e.g. 30th June for Australia, 30th September for Haiti), the calendar-year data are given as:

$$CY_t = \alpha Y_t + (1 - \alpha) Y_{t+1}$$

where:

Y_t is GDP/HFCE per capita reported in WDI for year t

CY_t is the GDP/HFCE per capita for calendar year t

As an example, the 2019 fiscal year in India starts from 1st April 2018 to 31st March 2019. Since a larger share of the 2019 fiscal year is in 2018, WDI reports the 2019 fiscal year data as 2018 data. Thus, our 2019 calendar year estimate for India is estimated as 25% of the data WDI reports for 2018 and 75% of the data WDI reports for 2019. When the fiscal year ends at the end of the first half of the year, the adjustment is more straightforward: for Australia, the 2019 calendar year estimate is given as 50% of the data WDI reports for 2019 and 50% of the data WDI reports for 2020.

10 Changes to Population Data

Nearly all population data comes from WDI, which have been updated to the December 2021. Previously, there were only three exceptions to this due to missing population data in WDI; West Bank and Gaza before 1990, for Kuwait 1992-94, and Sint Maarten (Dutch part) before 1998 (Arayavechkit et al., 2021). WDI now has data for Sint Maarten (Dutch part) before 1998 so we exclusively rely on WDI for the population data for this economy. For the other exceptions (West Bank and Gaza; Kuwait), we continue to use the United Nations Population Division's (UNPD) World Population Prospects 2019 Revision.

11 Comparability database

Since September 2019, we provide metadata on comparability of poverty estimates within countries over time. The assessment of comparability is country-dependent and relies on the accumulation of knowledge from past and current Bank staff in the countries, as well as close dialogue with national data producers with knowledge of survey design and methodology (see Atamanov et al. 2019, for more information on reasons that break comparability). With this data update, we have also updated the database to include the new datapoints and made some revisions for previously published datapoints (reflecting new information on comparability). As explained above, COVID-19 affected data collection, so many of the new surveys in 2020 are not comparable to the 2019 data.

The updated comparability database can be accessed here:

<https://datacatalog.worldbank.org/dataset/comparability-over-time-country-level-international-poverty-measures>. More information on how to use the database is available in Atamanov et al. (2019), [this blog](#) and [this replication code](#). The PIP website also now indicates comparability in its main output.

12 Economy-years added/removed

12.1 Economy-years removed

12.1.1 Nigeria 2009/10 HNLSS

The 2009/10 Harmonised Nigeria Living Standards Survey (HNLSS) has been removed with this update. At the same time, three new survey years (2010/11, 2012/13, and 2015/16) have been included, based on imputed data (see above). No changes were made to the survey in 2003/04 and earlier.

A thorough analysis of the 2009/10 HNLSS consumption data reveals clear anomalies that affect the use of this dataset for poverty calculations (full details can be found in Appendix A of World Bank (2016)).¹¹ These concerns motivated an extensive effort to improve data quality in the following decade, and strongly influenced the changes and improvements adopted in preparation for the 2018/19 NLSS. There are two anomalies that merit particular attention.

First, the 2009/10 HNLSS data shows a systematic relationship between measured consumption levels and the month of data collection. Consumption levels in the data collected during the first four months of interviews were systematically above consumption levels in the data collected in the following months, even after controlling for seasonality. This does not match the pattern in consumption observed in the 2003/04 Nigeria Living Standards Survey (NLSS). Much of the sharp decline following the fourth month of data collection comes from *purchased* food and non-food items, which should be less susceptible to seasonality than own-produced food (see Figure A.1. in World Bank, 2016).

Second, comparing the consumption shares in the 2009/10 HNLSS with those in the 2003/04 NLSS contradicts the Engel relationship. Engel's law states that the food share declines with total consumption. While GDP per capita increased and poverty apparently declined between 2003/04 and 2009/10, the share of consumption devoted to food, especially own-produced food, increased (see Table A.1. in World Bank, 2016). The opposite is typically true. What is more, the share of consumption devoted to food rose more in those regions (zones) where poverty fell more, suggesting the Engel relationship broke down across both time and location.

These issues with the 2009/10 HNLSS data are corroborated by new estimates for the poverty trend for Nigeria between 2009 and 2019. Lain, Schoch, and Vishwanath (2022) estimate, using two very different methodologies, a poverty headcount ratio at the US\$1.90 poverty line of 46.3 percent in 2009 and of 43.5 percent in 2010/11. This is in stark contrast with the poverty headcount ratio of 56.4 percent obtained using the 2009/10 HNLSS that was previously available in PovcalNet. This difference is consistent with the above discussion on data quality concerns

showing that consumption levels are underestimated in the 2009/10 HNLSS, resulting in a higher poverty headcount rate than the level estimated with alternative methodologies. In light of these issues, the 2009/10 HNLSS is removed with this update.

12.1.2 South Africa 1996

After extensive review of available microdata and discussions with the country team, the decision was made to remove the datapoint corresponding to South Africa 1996. This decision was made given the inability to replicate and back up historical estimates with the available microdata.

12.2 Economy-years added

The table below gives the list of new economy-years added to the PIP database. A total of 114 new economy-years were added.

Table 19 Economies-years added in April 2022 PIP update

Economy	Reporting Year ¹²	Survey Name
Albania	2016	SILC-C
Albania	2017	SILC-C
Albania	2018	SILC-C
Albania	2018	HBS
Albania	2019	HBS
Argentina	2020	EPHC-S2
Armenia	2020	ILCS
Australia	2016	SIH-LIS
Australia	2018	SIH-LIS
Austria	2019	EU-SILC
Belarus	2020	HHS
Belgium	2019	EU-SILC
Benin	2019	EHCVM
Bolivia	2020	EH
Brazil	2020	PNADC-E5
Bulgaria	2019	EU-SILC
Burkina Faso	2019	EHCVM
Chad	2019	EHCVM
Chile	2020	CASEN
China	2017	CNIHS
China	2018	CNIHS
China	2019	CNIHS
Colombia	2020	GEIH
Costa Rica	2020	ENAHO

¹² This is the year for which welfare is reported. This is equal to the *year* variable in PIP.

Cote d'Ivoire	2019	EHCVM
Croatia	2019	EU-SILC
Cyprus	2019	EU-SILC
Czech Republic	2019	EU-SILC
Denmark	2019	EU-SILC
Dominican Republic	2020	ECNFT-Q03
Ecuador	2020	ENEMDU
Estonia	2019	EU-SILC
Fiji	2019	HIES
Finland	2019	EU-SILC
Georgia	2020	HIS
Germany	1992	GSOEP-LIS
Germany	1993	GSOEP-LIS
Germany	1996	GSOEP-LIS
Germany	1997	GSOEP-LIS
Germany	1999	GSOEP-LIS
Germany	2017	GSOEP-LIS
Germany	2018	GSOEP-LIS
Greece	2019	EU-SILC
Guinea	2019	EHCVM
Guinea-Bissau	2018	EHCVM
Hungary	2019	EU-SILC
Indonesia	2020	SUSENAS
Indonesia	2021	SUSENAS
Iran, Islamic Rep.	2019	HEIS
Ireland	2018	EU-SILC
Israel	2002	HES-LIS
Israel	2003	HES-LIS
Israel	2004	HES-LIS
Israel	2006	HES-LIS
Israel	2008	HES-LIS
Israel	2009	HES-LIS
Israel	2011	HES-LIS
Israel	2013	HES-LIS
Israel	2015	HES-LIS
Israel	2017	HES-LIS
Israel	2018	HES-LIS
Italy	2018	EU-SILC
Kiribati	2019	HIES
Kyrgyz Republic	2020	KIHS
Latvia	2019	EU-SILC
Lithuania	2019	EU-SILC
Luxembourg	2019	EU-SILC

Malawi	2019	IHS-V
Maldives	2020	HIES
Mali	2019	EHCVM
Malta	2019	EU-SILC
Marshall Islands	2020	HIES
Mexico	2020	ENIGHNS
Moldova	2019	HBS
Montenegro	2017	SILC-C
Montenegro	2018	SILC-C
Netherlands	2019	EU-SILC
Niger	2019	EHCVM
Nigeria	2010	Imputed GHSP-W1
Nigeria	2012	Imputed GHSP-W2
Nigeria	2015	Imputed GHSP-W3
Norway	2019	EU-SILC
Paraguay	2020	EPH
Peru	2020	ENAH0
Portugal	2019	EU-SILC
Romania	2018	HBS
Romania	2019	EU-SILC
Russian Federation	2014	VNDN
Russian Federation	2015	VNDN
Russian Federation	2016	VNDN
Russian Federation	2017	VNDN
Russian Federation	2018	VNDN
Russian Federation	2019	HBS
Russian Federation	2020	HBS
Senegal	2019	EHCVM
Serbia	2018	EU-SILC
Serbia	2019	EU-SILC
Serbia	2019	HBS
Slovak Republic	2017	EU-SILC
Slovak Republic	2019	EU-SILC
Slovenia	2019	EU-SILC
Spain	2019	EU-SILC
Sweden	2019	EU-SILC
Tanzania	2018	HBS
Thailand	2020	SES
Togo	2018	EHCVM
Uganda	2020	UNHS
Ukraine	2020	HLCS
United Kingdom	1996	FES-LIS
United Kingdom	1997	FES-LIS

United Kingdom	1998	FES-LIS
United States	2019	CPS-ASEC-LIS
Uruguay	2020	ECH
Vanuatu	2019	NSDP

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14 Appendix 1 – CPI Data sources

Table A1.1 lists the source of CPI used for each economy-year reported in PIP. The columns in the table are defined as follows:

- **Code:** The 3-letter economy code used by the World Bank: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-countryand-lending-groups>
- **Economy name:** Name of economy
- **Year(s):** Welfare reporting year, i.e., the year for which the welfare has been reported. If the survey collects income for the previous year, it is the year prior to the survey.
- **CPI period:** Common time period to which the welfare aggregates in the survey have been deflated. The letter Y denotes that the CPI period is identical to the year column. When the welfare aggregate has been deflated to a particular month within the welfare reporting year, the month is indicated by a number between 1 and 12, preceded by an M, and similarly with a Q for quarters. The letter W indicates that a weighted CPI is used, as described in equation 1 in Lakner et al. (2018).
- **CPI source:** Source of the deflator used. The source is given by the abbreviation, the frequency of the CPI, and the vintage; e.g. IFS-M-202111 denotes the monthly IFS database version November 2021. For economy-specific deflators, the description is given in the text or further details are available upon request.

Table A1.1. Source of temporal deflators used in PIP April 2022 update

Code	Economy	Survey	Reporting Year(s) ¹³	CPI period	Source
AGO	Angola	HBS	2000	W	IFS-M-202111
		IBEP-MICS	2008	W	IFS-M-202111
		IDREA	2018	W	IFS-M-202111
ALB	Albania	EWS	1996	Y	IFS-M-202111
		LSMS	2002-2012	Y	IFS-M-202111
		HBS	2014-2019	Y	IFS-M-202111
		SILC-C	2017-2019	(prev. year)Y	IFS-M-202111
ARE	United Arab Emirates	HIES	2014	W	IFS-M-202111
		HIES	2019	Y	IFS-M-202111
ARG	Argentina	EPH	1980-1987	Y	NSO
		EPH	1991-2002	M9	NSO
		EPHC-S2	2003-2020	M7-M12	NSO
		EPHC-S2	2007-2014	M7-M12	Private estimates
ARM	Armenia	ILCS	1996-2020	Y	IFS-M-202111
AUS	Australia	HIS-LIS	1981	Y	IFS-A-202111
		IDS-LIS	1985	Y	IFS-A-202111
		SIH-LIS	1989-2018	Y	IFS-A-202111
		SIH-HES-LIS	2004-2010	Y	IFS-A-202111
AUT	Austria	MC-LIS	1987-1995	Y	IFS-M-202111
		ECHP-LIS	1994-2000	Y	IFS-M-202111
		EU-SILC	2004-2020	(prev. year)Y	IFS-M-202111
AZE	Azerbaijan	SLC	1995	Y	IFS-M-202111
		HBS	2001-2005	Y	IFS-M-202111
BDI	Burundi	EDCM	1992	Y	IFS-M-202111
		EP	1998	W	IFS-M-202111
		QUIBB	2006	Y	IFS-M-202111
		ECVMB	2013	W	IFS-M-202111
BEL	Belgium	SEP-LIS	1985-1997	Y	IFS-M-202111
		PSBH-ECHP-LIS	1995-2000	Y	IFS-M-202111
		EU-SILC	2004-2020	(prev. year)Y	IFS-M-202111
BEN	Benin	QUIBB	2003	Y	IFS-M-202111
		EMICOV	2011	W	IFS-M-202111
		EMICOV	2015	Y	IFS-M-202111
		EHCVM	2018	W	IFS-M-202111
BFA	Burkina Faso	EP-I	1994	W	IFS-M-202111
		EP-II	1998	Y	IFS-M-202111
		ECVM	2003-2009	Y	IFS-M-202111
		EMC	2014	Y	IFS-M-202111

¹³ This is the year for which welfare is reported. This is equal to the *year* variable in PIP.

		EHCVM	2018	W	IFS-M-202111
BGD	Bangladesh	HHES	1983-1985	W	WEO-A-202110
		HHES	1988-1991	W	IFS-A-202111
		HHES	1995	W	Survey
		HIES	2000-2016	Y	Survey
BGR	Bulgaria	HBS	1989	Y	IFS-A-202111
		HBS	1992-1994	Y	IFS-M-202111
		IHS	1995-2001	Y	IFS-M-202111
		MTHS	2003-2007	Y	IFS-M-202111
		EU-SILC	2007-2020	(prev. year)Y	IFS-M-202111
BIH	Bosnia and Herzegovina	LSMS	2001-2004	Y	WEO-A-202110
		HBS	2007-2011	Y	IFS-M-202111
BLR	Belarus	FBS	1993-1995	Y	IFS-M-202111
		HHS	1998-2020	Y	IFS-M-202111
		LFS	1993-1999	Y	WEO-A-202110
		HBS	1995	Y	WEO-A-202110
		SLC	1996	Y	WEO-A-202110
BOL	Bolivia	EPF	1990	W	IFS-M-202111
		EIH	1992	M11	IFS-M-202111
		ENE	1997	M11	IFS-M-202111
		ECH	1999	M10	IFS-M-202111
		ECH	2000	M11	IFS-M-202111
		EH	2001-2005	M11	IFS-M-202111
		ECH	2004	M10	IFS-M-202111
		EH	2006-2016	M10	IFS-M-202111
EH	2017-2020	M11	IFS-M-202111		
BRA	Brazil	PNAD	1981-2011	M9	IFS-M-202111
		PNADC-E1	2012-2019	Y	IFS-M-202111
		PNADC-E5	2020	Y	IFS-M-202111
BTN	Bhutan	BLSS	2003-2017	Y	Previous WDI/IFS
BWA	Botswana	HIES	1985-2002	W	IFS-M-202111
		CWIS	2009	W	IFS-M-202111
		BMTHS	2015	W	IFS-M-202111
CAF	Central African Republic	EPCM	1992	W	IFS-M-202111
		ECASEB	2008	Y	IFS-M-202111
CAN	Canada	SCF-LIS	1971-1997	Y	IFS-M-202111
		SLID-LIS	1998-2010	Y	IFS-M-202111
		CIS-LIS	2012-2017	Y	IFS-M-202111
CHE	Switzerland	SIWS-LIS	1982	Y	IFS-M-202111

		NPS-LIS	1992	Y	IFS-M-202111
		IES-LIS	2000-2002	Y	IFS-M-202111
		EU-SILC	2007-2019	(prev. year)Y	IFS-M-202111
CHL	Chile	CASEN	1987	Y	IFS-M-202111
		CASEN	1990-2020	M11	IFS-M-202111
CHN	China	CRHS-CUHS	1981-2011	Y	Special
		CNIHS	2012-2019	Y	Special
CIV	Côte d'Ivoire	EPAM	1985-1988	W	IFS-M-202111
		EP	1992	W	IFS-M-202111
		ENV	1995-2015	Y	IFS-M-202111
		EHCVM	2018	W	IFS-M-202111
CMR	Cameroon	ECAM-I	1996	Y	IFS-M-202111
		ECAM-II	2001	Y	IFS-M-202111
		ECAM-III	2007	Y	IFS-M-202111
		ECAM-IV	2014	Y	IFS-M-202111
COD	Congo, Dem. Rep.	E123	2004-2012	W	IFS-M-202111
COG	Congo, Rep.	ECOM	2005	Y	IFS-M-202111
		ECOM	2011	W	IFS-M-202111
COL	Colombia	ENH	1980-1988	Y	IFS-M-202111
		ENH	1989-1991	M11	IFS-M-202111
		ENH	1992-2000	M11	IFS-M-202111
		ECH	2001-2005	M11	IFS-M-202111
		GEIH	2008-2020	M11	IFS-M-202111
COM	Comoros	EIM	2004	Y	IFS-M-202111
		EESIC	2013	Y	IFS-M-202111
CPV	Cabo Verde	IDRF	2001	W	IFS-M-202111
		QUIBB	2007	W	IFS-M-202111
		IDRF	2015	Y	IFS-M-202111
CRI	Costa Rica	ENH	1981-1986	Y	IFS-M-202111
		EHPM	1989	Y	IFS-M-202111
		EHPM	1990-2009	M7	IFS-M-202111
		ENAHO	2010-2020	M7	IFS-M-202111
CYP	Cyprus	EU-SILC	2005-2020	(prev. year)Y	IFS-M-202111
CZE	Czech Republic	MC-LIS	1992-2002	Y	IFS-M-202111
		CM	1993	Y	IFS-M-202111
		EU-SILC	2005-2020	(prev. year)Y	IFS-M-202111
DEU	Germany	GSOEP-LIS	1991-2018	Y	IFS-M-202111
DJI	Djibouti	EDAM	2002-2013	Y	IFS-M-202111
		EDAM	2017	M5	IFS-M-202111
DNK	Denmark	LM-LIS	1987-2000	Y	IFS-M-202111
		EU-SILC	2004-2020	(prev. year)Y	IFS-M-202111
DOM		ENGLSF	1986-1989	Y	IFS-M-202111

		ICS	1992	M6	IFS-M-202111
	Dominican Republic	ENFT	1996	M2	IFS-M-202111
		ENFT	1997	M4	IFS-M-202111
		ENFT	2000-2016	M9	IFS-M-202111
		ECNFT-Q03	2017-2020	Y	IFS-M-202111
DZA	Algeria	EDCM	1988	Y	IFS-M-202111
		ENMNV	1995	Y	IFS-M-202111
		ENCNVM	2011	W	IFS-M-202111
ECU	Ecuador	EPED	1987	Y	IFS-M-202111
		ECV	1994	M6-M10	IFS-M-202111
		EPED	1995	M11	IFS-M-202111
		EPED	1998	M6	IFS-M-202111
		ECV	1999	(prev. year)M10-M9	IFS-M-202111
		EPED	2000	M11	IFS-M-202111
		ENEMDU	2003-2020	M11	IFS-M-202111
EGY	Egypt, Arab Rep.	HIECS	1990-2012	W	IFS-M-202111
		HIECS	2015	Y	IFS-M-202111
		HIECS	2017	W	IFS-M-202111
ESP	Spain	HBS-LIS	1980-1990	Y	IFS-M-202111
		ECHP-LIS	1995-2000	Y	IFS-M-202111
		EU-SILC	2004-2020	(prev. year)Y	IFS-M-202111
EST	Estonia	HIES	1993-1998	Y	IFS-M-202111
		HBS	2000-2004	Y	IFS-M-202111
		EU-SILC	2004-2020	(prev. year)Y	IFS-M-202111
ETH	Ethiopia	HICES	1981	W	IFS-M-202111
		HICES	1995-2010	W	IFS-M-202111
		HICES	2015	M12	IFS-M-202111
FIN	Finland	IDS-LIS	1987-2000	Y	IFS-M-202111
		EU-SILC	2004-2020	(prev. year)Y	IFS-M-202111
FJI	Fiji	HIES	2002-2019	W	IFS-M-202111
FRA	France	HBS-LIS	1978-2000	Y	IFS-M-202111
		EU-SILC	2004-2019	(prev. year)Y	IFS-M-202111
FSM	Micronesia, Fed. Sts.	CPH	2000	Y	IFS-A-202111
		HIES	2005-2013	Y	IFS-A-202111
GAB	Gabon	EGEP	2005-2017	Y	IFS-M-202111
GBR	United Kingdom	FES-LIS	1969-1998	Y	IFS-M-202111
		FRS-LIS	1994-2003	Y	IFS-M-202111
		EU-SILC	2005-2018	(prev. year)Y	IFS-M-202111
GEO	Georgia	HIS	1996-2020	Y	IFS-M-202111
GHA	Ghana	GLSS-I	1987	W	IFS-M-202111
		GLSS-II	1988	W	IFS-M-202111
		GLSS-III	1991	W	IFS-M-202111

		GLSS-IV	1998	W	IFS-M-202111
		GLSS-V	2005	W	Survey
		GLSS-VI	2012	W	Survey
		GLSS-VII	2016	W	Survey
GIN	Guinea	ESIP	1991	Y	WEO-A-202110
		EIBC	1994	W	WEO-A-202110
		EIBEP	2002	W	WEO-A-202110
		ELEP	2007-2012	Y	IFS-M-202111
		EHCVM	2018	W	IFS-M-202111
GMB	Gambia, The	HPS	1998	Y	IFS-M-202111
		HIS	2003	W	IFS-M-202111
		IHS	2010-2015	W	IFS-M-202111
GNB	Guinea-Bissau	ILJF	1991	Y	IFS-M-202111
		ICOF	1993	Y	IFS-M-202111
		ILAP-I	2002	Y	IFS-M-202111
		ILAP-II	2010	Y	IFS-M-202111
		EHCVM	2018	W	IFS-M-202111
GRC	Greece	ECHP-LIS	1995-2000	Y	IFS-M-202111
		EU-SILC	2004-2020	(prev. year)Y	IFS-M-202111
GTM	Guatemala	ENSD	1986	W	IFS-M-202111
		ENSD	1989	Y	IFS-M-202111
		ENIGF	1998	M8	IFS-M-202111
		ENCOVI	2000	M6-M11	IFS-M-202111
		ENCOVI	2006-2014	M7	IFS-M-202111
GUY	Guyana	GLSMS	1992	W	WEO-A-202110
		GLSMS	1998	Y	IFS-M-202111
HND	Honduras	ECSFT	1986	Y	IFS-M-202111
		EPHPM	1989	Y	IFS-M-202111
		EPHPM	1990-1993	M5	IFS-M-202111
		EPHPM	1994	M9	IFS-M-202111
		EPHPM	1995-2019	M5	IFS-M-202111
HRV	Croatia	HBS	1988-2010	Y	IFS-M-202111
		EU-SILC	2010-2020	(prev. year)Y	IFS-M-202111
HTI	Haiti	ECVH	2001	M5	IFS-M-202111
		ECVMAS	2012	M10	IFS-M-202111
HUN	Hungary	HBS	1987-2007	Y	IFS-M-202111
		HHP-LIS	1991-1994	Y	IFS-M-202111
		THMS-LIS	1999	Y	IFS-M-202111
		EU-SILC	2005-2020	(prev. year)Y	IFS-M-202111
IDN	Indonesia	SUSENAS	1984-1999	Y	IFS-M-202111
		SUSENAS	2000-2007	M2	IFS-M-202111
		SUSENAS	2008-2021	M3	IFS-M-202111
IND	India	NSS	1977	W	Special

		NSS	1983	Y	Special
		NSS-SCH1	1987-2011	W	Special
IRL	Ireland	SIDPUSS-LIS	1987	Y	IFS-M-202111
		LIS-ECHP-LIS	1994-2000	Y	IFS-M-202111
		SILC-LIS	2002	Y	IFS-M-202111
		EU-SILC	2004-2019	(prev. year)Y	IFS-M-202111
IRN	Iran, Islamic Rep.	SECH	1986	Y	IFS-A-202111
		SECH	1990-1998	Y	IFS-M-202111
		HEIS	2005-2019	W	IFS-M-202111
IRQ	Iraq	IHSES	2006	M11-(next year)M12	COSIT
		IHSES	2012	Y	COSIT
ISL	Iceland	EU-SILC	2004-2018	(prev. year)Y	IFS-M-202111
ISR	Israel	HES-LIS	1979-2018	Y	IFS-M-202111
ITA	Italy	SHIW-LIS	1986-2000	Y	IFS-M-202111
		EU-SILC	2004-2019	(prev. year)Y	IFS-M-202111
JAM	Jamaica	SLC	1988	M9	IFS-M-202111
		SLC	1990-1993	M11-(next year)M3	IFS-M-202111
		SLC	1996	M5-M8	IFS-M-202111
		SLC	1999	M6-M8	IFS-M-202111
		SLC	2002-2004	M6	IFS-M-202111
JOR	Jordan	HEIS	1986	W	IFS-M-202111
		HEIS	1992-1997	Y	IFS-M-202111
		HEIS	2002-2010	W	IFS-M-202111
JPN	Japan	JHPS-LIS	2008-2013	Y	IFS-M-202111
KAZ	Kazakhstan	HBS	1993-2018	Y	IFS-M-202111
		LSMS	1996	Y	IFS-M-202111
KEN	Kenya	WMS-I	1992	Y	NSO
		WMS-II	1994	Y	NSO
		WMS-III	1997	Y	NSO
		IHBS	2005-2015	W	NSO
KGZ	Kyrgyz Republic	KPMS	1998	Y	IFS-M-202111
		HBS	2000-2003	Y	IFS-M-202111
		KIHS	2004-2020	Y	IFS-M-202111
KIR	Kiribati	HIES	2006	Y	IFS-M-202111
		HIES	2019	W	IFS-M-202111
KOR	Korea, Rep.	HIES-FHES-LIS	2006-2016	Y	IFS-M-202111
LAO	Lao PDR	LECS	1992	W	IFS-A-202111
		LECS	1997	W	IFS-M-202111
		LECS	2002-2007	W	Survey
		LECS	2012-2018	W	IFS-M-202111
LBN	Lebanon	HBS	2011	(next year)M5	IFS-M-202111

LBR	Liberia	CWIQ	2007	Y	IFS-M-202111
		HIES	2014-2016	Y	IFS-M-202111
LCA	St. Lucia	LSMS	1995	Y	IFS-M-202111
		SLC-HBS	2016	M1	IFS-M-202111
LKA	Sri Lanka	LFSS	1985	Y	IFS-M-202111
		HIES	1990	W	IFS-M-202111
		SES	1995	W	IFS-M-202111
		HIES	2002	Y	IFS-M-202111
		HIES	2006-2012	W	IFS-M-202111
		HIES	2016	Y	IFS-M-202111
LSO	Lesotho	HBS	1986	W	WEO-A-202110
		NHECS	1994	W	WEO-A-202110
		HBS	2002	W	IFS-M-202111
		CMSHBS	2017	M8	IFS-M-202111
LTU	Lithuania	HBS	1993-2008	Y	IFS-M-202111
		EU-SILC	2005-2020	(prev. year)Y	IFS-M-202111
LUX	Luxembourg	PSELL-LIS	1985-1991	Y	IFS-M-202111
		PSELL-ECHP-LIS	1994-2000	Y	IFS-M-202111
		EU-SILC	2004-2020	(prev. year)Y	IFS-M-202111
LVA	Latvia	HBS	1993-2009	Y	IFS-M-202111
		EU-SILC	2005-2020	(prev. year)Y	IFS-M-202111
MAR	Morocco	ECDM	1984	W	IFS-M-202111
		ENNVN	1990-2006	W	IFS-M-202111
		ENCDM	2000-2013	W	IFS-M-202111
MDA	Moldova	HBS	1997-2019	Y	IFS-M-202111
MDG	Madagascar	EB	1980	Y	IFS-M-202111
		EPM	1993	W	IFS-M-202111
		EPM	1997-2010	Y	IFS-M-202111
		ENSOMD	2012	W	IFS-M-202111
MDV	Maldives	HIES	2002-2009	W	IFS-M-202111
		HIES	2016	Y	IFS-M-202111
		HIES	2019	M11	IFS-M-202111
MEX	Mexico	ENIGH	1984-2014	M8	IFS-M-202111
		ENIGHNS	2016-2020	M8	IFS-M-202111
MHL	Marshall Islands	HIES	2019	W	WEO-A-202110
MKD	North Macedonia	HBS	1998-2008	Y	IFS-M-202111
		SILC-C	2010-2019	(prev. year)Y	IFS-M-202111
MLI	Mali	EMCES	1994	Y	IFS-A-202111
		EMEP	2001	W	IFS-M-202111
		ELIM	2006-2009	W	IFS-M-202111
		EHCVM	2018	W	IFS-M-202111

MLT	Malta	EU-SILC	2007-2020	(prev. year)Y	IFS-M-202111
MMR	Myanmar	MPLCS	2015	M1	IFS-M-202111
		MLCS	2017	Q1	IFS-M-202111
MNE	Montenegro	HBS	2005-2014	Y	IFS-M-202111
		SILC-C	2013-2019	(prev. year)Y	IFS-M-202111
MNG	Mongolia	LSMS	1995-1998	Y	IFS-M-202111
		HIES-LSMS	2002	W	IFS-M-202111
		HSES	2007	W	IFS-M-202111
		HSES	2010-2018	Y	IFS-M-202111
MOZ	Mozambique	NHS	1996	W	WEO-A-202110
		IAF	2002	W	WEO-A-202110
		IOF	2008-2014	W	IFS-M-202111
MRT	Mauritania	EPCV	1987	Y	IFS-M-202111
		EP	1993	Y	IFS-M-202111
		EPCV	1995-2008	W	IFS-M-202111
		EPCV	2014	Y	IFS-M-202111
MUS	Mauritius	HBS	2006	W	IFS-M-202111
		HBS	2012-2017	Y	IFS-M-202111
MWI	Malawi	IHS-I	1997	W	IFS-M-202111
		IHS-II	2004	W	Survey
		IHS-III	2010	W	Survey
		IHS-IV	2016	M4	Survey
		IHS-V	2019	M4	Survey
MYS	Malaysia	HIS	1984-1997	Y	IFS-M-202111
		HIS	2004	(prev. year)M7- (prev. year)M12	IFS-M-202111
		HIS	2007	(prev. year)M7- (prev. year)M10	IFS-M-202111
		HIS	2009	W	IFS-M-202111
		HIS	2012-2016	Y	IFS-M-202111
NAM	Namibia	NHIES	1993	W	WEO-A-202110
		NHIES	2003-2015	W	IFS-M-202111
NER	Niger	ENBCM	1992-2007	W	IFS-M-202111
		EPCES	1994	W	IFS-M-202111
		ENCVM	2005	Y	IFS-M-202111
		ECVMA	2011-2014	Y	IFS-M-202111
		EHCVM	2018	W	IFS-M-202111
NGA	Nigeria	NCS	1985	W	IFS-M-202111
		NCS	1992-1996	Y	IFS-M-202111
		LSS	2003	W	IFS-M-202111
		GHSP-W1	2010	2019 M3-M4	IFS-M-202111
		GHSP-W2	2012	2019 M3-M4	IFS-M-202111
		GHSP-W3	2015	2019 M3-M4	IFS-M-202111

		LSS	2018	(next year)M3- (next year)M4	IFS-M-202111
NIC	Nicaragua	EMNV	1993	M2	NSO
		EMNV	1998	M6	NSO
		EMNV	2001	M6	IFS-M-202111
		EMNV	2005-2009	M8	IFS-M-202111
		EMNV	2014	M8-M10	IFS-M-202111
NLD	Netherlands	AVO-LIS	1983-1990	Y	IFS-M-202111
		SEP-LIS	1993-1999	Y	IFS-M-202111
		EU-SILC	2005-2020	(prev. year)Y	IFS-M-202111
NOR	Norway	IDS-LIS	1979-2000	Y	IFS-M-202111
		EU-SILC	2004-2020	(prev. year)Y	IFS-M-202111
NPL	Nepal	MHBS	1984	W	IFS-M-202111
		LSS-I	1995	W	IFS-M-202111
		LSS-II	2003	W	IFS-M-202111
		LSS-III	2010	W	IFS-M-202111
NRU	Nauru	HIES	2012	W	WEO-A-202110
PAK	Pakistan	HIES	1987	Y	IFS-M-202111
		HIES	1990-1998	W	IFS-M-202111
		IHS	1996	W	IFS-M-202111
		PIHS	2001	M6	IFS-M-202111
		HIES	2004-2018	(next year)M1	IFS-M-202111
PAN	Panama	EMO	1979-1989	Y	IFS-M-202111
		EMO	1991	M7	IFS-M-202111
		EH	1995-2019	M7	IFS-M-202111
PER	Peru	ENNIV	1985	W	IFS-M-202111
		ENNIV	1994	Y	IFS-M-202111
		ENAHO	1997-2002	Q4	IFS-M-202111
		ENAHO	2003	M5-M12	IFS-M-202111
		ENAHO	2004-2020	Y	IFS-M-202111
PHL	Philippines	FIES	1985-2018	Y	IFS-M-202111
PNG	Papua New Guinea	HIES	1996	Y	IFS-A-202111
		HIES	2009	W	IFS-A-202111
POL	Poland	HBS	1985-1987	Y	IFS-A-202111
		HBS-LIS	1986	Y	IFS-A-202111
		HBS	1989-2019	Y	IFS-M-202111
		HBS-LIS	1992-1999	Y	IFS-M-202111
		EU-SILC	2005-2019	(prev. year)Y	IFS-M-202111
PRT	Portugal	EU-SILC	2004-2020	(prev. year)Y	IFS-M-202111
PRY	Paraguay	EH	1990	M7	IFS-M-202111
		EH	1995	M8-M11	IFS-M-202111
		EIH	1997	(next year)M2	IFS-M-202111
		EPH	1999	M9	IFS-M-202111

		EIH	2001	M3	IFS-M-202111
		EPH	2002	M11	IFS-M-202111
		EPH	2003	M9	IFS-M-202111
		EPH	2004	M10	IFS-M-202111
		EPH	2005	M11	IFS-M-202111
		EPH	2006	M12	IFS-M-202111
		EPH	2007-2008	M10	IFS-M-202111
		EPH	2009	M11	IFS-M-202111
		EPH	2010-2020	M10	IFS-M-202111
PSE	West Bank and Gaza	PECS	2004-2011	Y	IFS-M-202111
		PECS	2016	W	IFS-M-202111
ROU	Romania	HBS	1989	Y	Milanovic (2001)
		MC	1992	Y	IFS-M-202111
		HIS	1994-1999	Y	IFS-M-202111
		IHS-LIS	1995-1997	Y	IFS-M-202111
		IHS	1998-2000	Y	IFS-M-202111
		HBS	2001-2018	Y	IFS-M-202111
		EU-SILC	2007-2020	(prev. year)Y	IFS-M-202111
RUS	Russian Federation	HBS	1993-2020	Y	IFS-M-202111
		VNDN	2015-2019	(prev. year)Y	IFS-M-202111
RWA	Rwanda	ENBCM	1984	W	IFS-M-202111
		EICV-I	2000	W	IFS-M-202111
		EICV-II	2005	W	IFS-M-202111
		EICV-III	2010	(next year)M1	IFS-M-202111
		EICV-IV	2013	(next year)M1	IFS-M-202111
		EICV-V	2016	(next year)M1	IFS-M-202111
SDN	Sudan	NBHS	2009	Y	IFS-M-202111
		NBHS	2014	M11	IFS-M-202111
SEN	Senegal	EP	1991	W	IFS-M-202111
		ESAM	1994	W	IFS-M-202111
		ESAM-II	2001	W	IFS-M-202111
		ESPS-I	2005	W	IFS-M-202111
		ESPS-II	2011	W	IFS-M-202111
		EHCVM	2018	W	IFS-M-202111
SLB	Solomon Islands	HIES	2005-2012	W	IFS-M-202111
SLE	Sierra Leone	HEEAS	1989	W	WEO-A-202110
		SLIHS	2003	W	WEO-A-202110
		SLIHS	2011-2018	Y	IFS-M-202111
SLV	El Salvador	EHPM	1989	Y	IFS-M-202111
		EHPM	1991	M10-(next year)M4	IFS-M-202111
		EHPM	1995-1999	Y	IFS-M-202111

		EHPM	2000-2007	M12	IFS-M-202111
		EHPM	2008-2019	M11	IFS-M-202111
SOM	Somalia	SHFS-W2	2017	Y	Special
		LSMS	2002	Y	IFS-M-202111
SRB	Serbia	HBS	2003-2019	Y	IFS-M-202111
		EU-SILC	2013-2020	(prev. year)Y	IFS-M-202111
		NBHS	2009	Y	IFS-M-202111
SSD	South Sudan	HFS-W3	2016	(prev. year)M7	IFS-M-202111
		IOF	2000	W	IFS-M-202111
STP	São Tomé and Príncipe	IOF	2010-2017	Y	IFS-M-202111
SUR	Suriname	EHS	1999	Y	IFS-M-202111
		MC-LIS	1992-1996	Y	IFS-M-202111
SVK	Slovak Republic	HBS	2004-2009	Y	IFS-M-202111
		EU-SILC	2005-2020	(prev. year)Y	IFS-M-202111
		IES	1987-1993	Y	IFS-M-202111
		HBS-LIS	1997-1999	Y	IFS-M-202111
SVN	Slovenia	HBS	1998-2003	Y	IFS-M-202111
		EU-SILC	2005-2020	(prev. year)Y	IFS-M-202111
		LLS-RD-LIS	1967	Y	IFS-M-202111
SWE	Sweden	HIS-LIS	1975-2000	Y	IFS-M-202111
		EU-SILC	2004-2020	(prev. year)Y	IFS-M-202111
SWZ	Eswatini	HIES	1994-2016	W	IFS-M-202111
		HES	1999	W	IFS-M-202111
		HBS	2006	W	IFS-M-202111
SYC	Seychelles	HBS	2013	Y	IFS-M-202111
		HBS	2018	W	IFS-M-202111
SYR	Syrian Arab Republic	HIES	1996-2003	W	IFS-M-202111
		ECOSIT-II	2003	Y	IFS-M-202111
TCD	Chad	ECOSIT-III	2011	Y	IFS-M-202111
		EHCVM	2018	W	IFS-M-202111
		QUIBB	2006-2015	Y	IFS-M-202111
TGO	Togo	EHCVM	2018	W	IFS-M-202111
THA	Thailand	SES	1981-2020	Y	IFS-M-202111
		TLSS	1999	Y	WEO-A-202110
		TLSS	2003-2007	Y	Survey
TJK	Tajikistan	HBS	2004	Y	Survey
		TLSS	2009	Y	IFS-M-202111
		HSITAFIEN	2015	Y	IFS-M-202111
TKM	Turkmenistan	LSMS	1998	Y	WEO-A-202110
		TLSS	2001	Y	WEO-A-202110
TLS	Timor-Leste	TLCLS	2007-2014	Y	IFS-M-202111
TON	Tonga	HIES	2000	W	IFS-M-202111

		HIES	2009-2015	Y	IFS-M-202111
TTO	Trinidad and Tobago	SLC	1988	Y	IFS-M-202111
		PHC	1992	Y	IFS-M-202111
TUN	Tunisia	HBCS	1985	Y	IFS-A-202111
		HBCS	1990	Y	IFS-M-202111
		LSS	1995-2000	Y	IFS-M-202111
		NSHBCSL	2005-2015	W	IFS-M-202111
TUR	Turkey	HICES	1987-2019	Y	IFS-M-202111
TUV	Tuvalu	HIES	2010	Y	IFS-A-202111
TWN	Taiwan, China	FIDES-LIS	1981-2016	Y	WEO-A-202110
TZA	Tanzania	HBS	1991	W	IFS-A-202111
		HBS	2000	W	IFS-M-202111
		HBS	2007	Y	IFS-M-202111
		HBS	2011-2018	W	IFS-M-202111
UGA	Uganda	HBS	1989	Y	WEO-A-202110
		NIHS	1992	W	WEO-A-202110
		NIHS	1996-1999	W	IFS-M-202111
		UNHS	2002-2019	W	IFS-M-202111
UKR	Ukraine	HS	1992-1993	Y	IFS-M-202111
		HIES	1995-1996	Y	IFS-M-202111
		HLCS	1999-2020	Y	IFS-M-202111
URY	Uruguay	ENH	1981-1989	Y	IFS-M-202111
		ECH	1992-2005	(prev. year)M12	IFS-M-202111
		ECH	2006-2020	(prev. year)M12	IFS-M-202111
USA	United States	CPS-LIS	1974-2001	Y	IFS-M-202111
		CPS-ASEC-LIS	2002-2019	Y	IFS-M-202111
UZB	Uzbekistan	HBS	1998-2003	Y	WEO-A-202110
VEN	Venezuela, RB	EHM	1981-1989	Y	NSO
		EHM	1992-2006	M12	NSO
VNM	Vietnam	VLSS	1992	W	WEO-A-202110
		VLSS	1997	W	IFS-M-202111
		VHLSS	2002-2018	M1	IFS-M-202111
VUT	Vanuatu	HIES	2010	Y	IFS-A-202111
		NSDP	2019	W	IFS-A-202111
WSM	Samoa	HIES	2002-2008	Y	IFS-M-202111
		HIES	2013	W	IFS-M-202111
		HIES	2018	Y	IFS-M-202111
XKX	Kosovo	HBS	2003-2017	Y	IFS-M-202111
YEM	Yemen, Rep.	HBS	1998	Y	IFS-M-202111
		HBS	2005	W	IFS-M-202111
		HBS	2014	Y	IFS-M-202111

		KIDS	1993	Y	IFS-M-202111
		HIES	2000	W	IFS-M-202111
ZAF	South Africa	IES	2005-2010	(next year)M6	IFS-M-202111
		LCS	2008	W	IFS-M-202111
		LCS	2014	(next year)M6	IFS-M-202111
		HBS	1991-1993	Y	IFS-M-202111
		LCMS-I	1996	Y	IFS-M-202111
		LCMS-II	1998	Y	IFS-M-202111
ZMB	Zambia	LCMS-III	2002	W	IFS-M-202111
		LCMS-IV	2004	W	IFS-M-202111
		LCMS-V	2006	W	IFS-M-202111
		LCMS-VI	2010	Y	IFS-M-202111
		LCMS-VII	2015	Y	IFS-M-202111
ZWE	Zimbabwe	ICES	2011	Y	IFS-M-202111
		PICES	2017-2019	Y	Survey

15 Appendix 2 – National Accounts Data Sources

This appendix provides details of national accounts data used in aligning estimates to reference years (see Prydz et al, 2019 for methodological details).

A complete overview of the sources used is available upon request and will soon be available on the PIP website.

Table A2.1. Countries whose national accounts data are reported in fiscal years

Code	Country	Day of month fiscal year ends	Month fiscal year ends
AUS	Australia	30	June
BGD	Bangladesh	30	June
EGY	Egypt	30	June
ETH	Ethiopia	7	July
HTI	Haiti	30	September
IND	India	31	March
IRN	Iran	20	March
MHL	Marshall Islands	30	September
FSM	Micronesia	30	September
MMR	Myanmar	30	September
NRU	Nauru	30	June
NPL	Nepal	14	July
PAK	Pakistan	30	June
WSM	Samoa	30	June
SSD	South Sudan	30	June
TON	Tonga	30	June
UGA	Uganda	30	June

Source: [WDI](#) metadata on GDP per capita series (NY.GDP.PCAP.KD) and HFCE per capita series (NE.CON.PRVT.PC.KD)

Note: As an example, the 2020 fiscal year in Australia runs from 1st July 2019 to 30th June 2020.