



2005 International Comparison Program in Asia and the Pacific

Research Study on

POVERTY PURCHASING POWER PARITIES

for Selected Countries in Asia and the Pacific

HIGHLIGHTS



Asian Development Bank



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CONTENTS

Introduction	1
Measurements of Poverty	3
The Need for Poverty-Specific PPPs	4
Estimating Poverty PPPs.....	5
Data and Procedures for Compiling Poverty PPPs	7
Major Findings of the Study	9
Directions for Future Work	14

INTRODUCTION

Poverty reduction in the Asia and Pacific region is the overarching goal of the Asian Development Bank (ADB). ADB is actively involved in monitoring the incidence and severity of poverty in the region and assessing its performance against the Millennium Development Goal (MDG) of halving absolute poverty by 2015. As part of its commitment to improve the methodological framework that would serve as a tool for improved measurement of poverty in the region, ADB coordinated the 2005 International Comparison Program in Asia and the Pacific (ICP Asia Pacific), which is a major statistical exercise to estimate 2005 purchasing power parities (PPPs) that would serve as inputs to poverty PPP calculations. The 2005 ICP Asia Pacific represents a significant achievement in the statistical world as it brought together two of the world's most populous and fastest growing economies, the People's Republic of China and India.¹

Cognizant that the Asia and Pacific region is home to more than half of the world's poor, ADB made poverty measurement using PPPs an integral part of the ICP Asia Pacific through the *Research Study on Poverty-Specific Purchasing Power Parities for Selected Countries in Asia and the Pacific*. Sixteen ADB member countries participated in the poverty study, which is the first such study in the region. It sought to deepen the understanding of the concept of international poverty lines (IPL) and focused on compiling PPPs that are particularly suitable for measuring poverty in the region.

The poverty PPP study is a methodological research initiated by the 2005 ICP Asia Pacific that was designed to compute poverty PPPs using different sources of prices and weights. Results are seen to provide inputs in the development of methodologies and future work on poverty PPP compilation. Poverty PPPs are primarily used for converting the IPL into local currency units for counting the poor. The study had two objectives.

¹ ADB released the final report of the 2005 ICP in Asia and the Pacific entitled *Purchasing Power Parities and Real Expenditures* in December 2007.

- Compile a set of PPPs for the 16 participating countries based on the methodology endorsed by the Poverty Advisory Group (PAG) established by the ICP Global Office at the World Bank.
- Conduct a major investigation into the sensitivity of the estimated PPPs to prices collected from poverty-specific price surveys and prices from the 2005 ICP Asia Pacific.

In the process, the study also examined how sensitive the derived PPPs are to different sets of weights and aggregation methodologies.

The outcomes from these objectives, as well as the comprehensive account of the activities undertaken, are presented in the main report, *Research Study on Poverty-Specific Purchasing Power Parities for Selected Countries in Asia and the Pacific*. These Highlights provide a summary of the major points.



The poverty PPP study had two objectives: compile a set of PPPs based on the Poverty Advisory Group methodology, and investigate the sensitivity of the estimated PPPs to prices collected from poverty-specific price surveys and price surveys in the 2005 ICP Asia Pacific.

MEASUREMENTS OF POVERTY

Monitoring the incidence and severity of poverty at the national, regional, and global levels is an important step in developing and implementing policies for reducing poverty in the world. Accurate measurement and compilation of internationally comparable estimates of the incidence of poverty are essential for monitoring the performance of countries against the first MDG of halving absolute poverty in the world by 2015. Two of the main measures of poverty are discussed below.

National Poverty Lines

Measuring poverty incidence with the use of nationally established poverty lines is a common practice in many countries. An examination of the methods and practices in different countries highlights common elements as well as diversity in practices. For example, across countries, poverty lines are generally based on food and nonfood expenditure components, with the food component primarily determined on the basis of a specific energy requirement. However, there are subtle differences in the translation of caloric needs into monetary values. Much of the divergence in practices observed across countries lies in determining the nonfood poverty line. Differences have also been observed in determining and/or translating national poverty lines for subregions of a given country.

International Poverty Lines

Given the differences in national practices, it is difficult to properly assess the performance of different countries in achieving the first MDG. An obvious strategy in such circumstances is to use a single poverty line for all countries, the international poverty line. The World Bank initiated the use of the IPL in compiling national, regional, and global poverty estimates. It has developed and popularized the use of the \$1/day and \$2/day IPLs for the purpose. This approach simply counts the number of people whose expenditure is below \$1/day or \$2/day. These estimates are deemed to be comparable across countries as they all refer to a single poverty line.

The IPLs conveyed a powerful message that there is a sizeable global population living in poverty. They served the dual purpose of providing a single yardstick for measuring poverty incidence in different countries, and creating awareness among developed nations on the plight of the poor.

THE NEED FOR POVERTY-SPECIFIC PPPs

Poverty-specific PPPs are sought principally to convert a given IPL into a local currency unit. The local currency equivalents of \$1/day and \$2/day poverty lines are used in conjunction with information on income distribution to arrive at regional and global estimates of poverty incidence. Market exchange rates are not used to convert the IPL, instead, conversion factors based on the real purchasing power of currencies are used. In order to obtain meaningful poverty lines in local currency units it is important that the PPPs used for conversion incorporate the prices paid by the poor, and the relative importance of different goods and services they consume, as reflected by the expenditure share weights of the poor households.



Goods and services consumed by the poor and prices paid by them are fundamental elements in computing poverty PPPs.

ESTIMATING POVERTY PPPs

If PPPs are to be used to convert the IPL into local currency units, an important question that arises is which of the available PPPs should be used. The study used three approaches.

The Current World Bank Approach²

To derive national, regional, and global poverty estimates, the current practice of the World Bank is to convert the \$1/day and \$2/day IPL into local currency units using PPPs from the ICP for the consumption aggregate of the national accounts. Although simple, this approach has received considerable criticism. Given that the primary purpose of the ICP is to establish cross-country comparability of GDP and its aggregates, consumption PPPs from the ICP are perceived to be more reflective of the consumption behavior of the country as a whole, and may not resemble the purchasing power of currencies as experienced by the poor, neither their expenditure pattern.

The PAG Methodology

The PAG was established primarily to address the limitations of the current World Bank approach. The PAG recommended the use of price relatives for consumption items collected in the ICP. However, instead of using the consumption weights from national accounts to compile PPPs, expenditure weights of the poor have been recommended. The price relatives from the ICP were combined with the expenditure weights of the

² This current practice will be superseded by the PAG methodology.



The PAG methodology, which uses the expenditure weights of the poor drawn from the household expenditure survey, is an improvement over the current World Bank approach that uses national accounts weights.

poor households³ to arrive at poverty PPPs for converting the IPL to local currency equivalents. The data to construct the expenditure weights of the poor households were drawn from household expenditure surveys (HES).

The ICP Asia Pacific Poverty-Specific Price Surveys

A significant extension of the PAG methodology undertaken in the 2005 ICP Asia Pacific was to conduct poverty-specific price surveys specifically designed to collect prices of goods and services typically consumed by the poor and from outlets patronized by the poor. This is in addition to using expenditure weights of the poor from HES. This approach is a step forward from the methodology recommended by the PAG for estimating poverty PPPs to convert the IPL into local currency units.

³ Poor households are those whose expenditure is around the poverty line. Details are in chapter 5 of the main report.



An innovation from the PAG recommendation is the conduct of poverty-specific price surveys that reflect items and prices relevant to the poor.

DATA AND PROCEDURES FOR COMPILING POVERTY PPPs

The data used and procedures adopted to compile the different sets of poverty PPPs are described below.

Sources of Price Data

Three major sources of price data are identified in the study. The first set is comprised of average national prices for household consumption items priced per country in the 2005 ICP Asia Pacific. The second set is comprised of prices generated by the poverty-specific price surveys.⁴ The third set contains unit values from HES, which are conducted regularly in the participating countries. In this poverty PPP study, only the first two sources of data are explored in the computation of PPPs at the basic heading level.

Aggregation Methods

The country-product-dummy is the recommended method for computing PPPs at the basic heading level. For purposes of aggregating basic heading PPPs to yield poverty PPPs, the three most commonly used methods are the Eltetö-Köves-Szulc, weighted country-product-dummy, and Geary-Khamis methods.⁵

Compilation of Expenditure Share Weights

The steps⁶ involved in compiling the expenditure share weights for the poor are as follows:

- Step 1. **Select a poverty line to identify appropriate households to use in compiling expenditure share weights.** The two poverty lines considered in the study are: \$1/day used in 1993 updated to 2005 using the consumer price index of the United States; and the Indonesian poverty line expressed in rupiah.

⁴ Details of the poverty-specific price surveys are in chapter 6 of the main report.

⁵ The different aggregation methods are described in chapter 5 of the main report.

⁶ Various considerations for each step are detailed in chapter 5 of the main report.

- Step 2. **Select the PPPs for converting the identified poverty line into local currency units.** This is the starting point for the iterative process. PPPs selected at this stage are used in identifying the poor households and their expenditure patterns.
- Step 3. **Convert the selected poverty line into local currency units using PPPs selected in Step 2.**
- Step 4. **Identify the poor households for the compilation of expenditure weights.** For this purpose, households below the poverty line; households with expenditures near the poverty lines (those within half the bandwidth on either side of the poverty line); and households within double the bandwidth (those within one bandwidth on either side of the poverty line)⁷ were considered.
- Step 5. **Compute the average expenditure share weights for the poor for each set of households identified in Step 4 using the democratic or plutocratic weighting scheme.** Democratic weights are simple averages of the expenditure shares of all households belonging to the income interval defined around the poverty line, while plutocratic weights represent the whole set of households as a group.
- Step 6. **Compute a new set of PPPs using the expenditure share weights of the poor.** At this stage, basic heading PPPs are combined or aggregated with expenditure share patterns of the poor using a selected aggregation method to yield a set of poverty PPPs.

The new PPPs from Step 6 will replace the initial set of PPPs used in Step 2. The iterative scheme from Steps 3 to 6 are repeated using the newly derived set of PPPs at each stage and is terminated only when the PPPs converge.

⁷ Estimates and considerations on bandwidth are explained in chapters 5 and 7 of the main report.

MAJOR FINDINGS OF THE STUDY

This section provides major findings in terms of the sensitivity of the PPPs to the choice of prices and weights; the resulting IPLs from the use of different sets of PPPs; and implications of the IPLs on the estimates of poverty incidence.

Sensitivity of PPPs to the Choice of Prices and Weights

A comparison of columns (1), (2), and (3) in Table 1 provides an indication of the likely effects of changing the expenditure weights and source of price data from the ICP. The percentage differences between column (2) or PAG methodology based on ICP price data and weights of the poor, and column (3) or poverty-specific price surveys and weights of the poor, are shown in column (6). It can be seen that the differences are large and significant, but the direction is not uniform. The poverty-specific price survey PPPs in column (3) are significantly lower than PPPs based on the PAG methodology (column 2) for Indonesia (20.38%), Viet Nam (15.8%), Bangladesh (14.94%), India (13.44%), and Sri Lanka (11.10%); and significantly higher in Philippines (12.23%), Maldives (10.00%), and Mongolia (5.61%). The conclusion to be drawn is that the use of poverty-specific price survey data has significant effects on PPPs for converting poverty lines, albeit the effects vary from country to country.

Columns (4) and (5) show that the PPPs based on the poverty-specific price surveys deviated from ICP consumption PPPs by a larger margin, compared to the divergence between the PAG methodology-based PPPs with ICP consumption PPPs. These results suggest that the use of poverty-specific price survey data in combination with expenditure weights of the poor exert a stronger effect than the effect induced by just a shift from the use of national accounts weights (used in ICP PPPs) to expenditure weights of the poor, which is used in the PAG methodology. The use of poverty-specific price survey data resulted in a significant decline in poverty PPPs for Indonesia, Viet Nam, Bangladesh, Sri Lanka, India, and Thailand, respectively. This could partly be attributed to the fact that the poverty-specific price survey data more accurately reflect the prices paid by the poor through the inclusion of items like subsidized rice and wheat. There are some exceptions like the Fiji Islands and the Maldives where the use of the PAG methodology captured a greater effect than the use of poverty-specific prices. This implies that the ICP prices paid by the general population and poverty-specific price survey data (representing the prices paid by the poor) in these two countries are very similar.

Table 1. Poverty PPPs: 2005 ICP Asia Pacific, PAG Methodology, and Poverty-Specific Price Survey Data, 2005
(local currency units per Malaysian ringgit)

Country	Poverty PPPs			Percent Difference		
	ICP Consumption	\$1/day Poverty Line		Poverty PPPs		PAG vs. Poverty Survey
		PAG	Poverty Survey	ICP vs. PAG	ICP vs Poverty Survey	\$1/day Poverty Line
(1)	(2)	(3)	(4)	(5)	(6)	
Malaysia	1.000	1.000	1.000	(1) and (2)	(1) and (3)	(2) and (3)
Bangladesh	12.06	11.95	10.17	(0.88)	(15.69)	(14.94)
Bhutan	8.73	8.641	8.244	(1.05)	(5.60)	(4.59)
Cambodia	764	795.6	807.9	4.14	5.74	1.54
Fiji Islands	0.732	0.658	0.671	(10.14)	(8.32)	2.03
India	7.379	7.440	6.440	0.82	(12.73)	(13.44)
Indonesia	1,983	2,002	1,594	0.94	(19.63)	(20.38)
Lao People's Democratic Republic	1,770	1,874	1,906	5.90	7.69	1.69
Maldives	4.606	4.200	4.619	(8.82)	0.30	10.00
Mongolia	247.1	241.2	254.7	(2.40)	3.07	5.61
Nepal	12.52	12.22	11.81	(2.39)	(5.68)	(3.38)
Pakistan	9.796	9.679	9.033	(1.20)	(7.80)	(6.68)
Philippines	11.44	11.14	12.50	(2.61)	9.31	12.23
Sri Lanka	18.94	17.96	15.97	(5.16)	(15.69)	(11.10)
Thailand	8.261	7.775	7.176	(5.88)	(13.13)	(7.71)
Viet Nam	2,800	2,794	2,352	(0.22)	(15.99)	(15.80)

PPP = purchasing power parity; ICP = International Comparison Program; PAG = Poverty Advisory Group.

In summary, the results show that the use of price data from poverty-specific price surveys resulted in a bigger change than just the replacement of weights with expenditure weights of the poor in computing the poverty PPPs following the PAG recommendation. Further, the results provide some indication that the ICP prices may not be a good proxy for the goods and services consumed by the poor. The effect could be significant. In the case of low-income countries where the differences in type and quality of goods and services consumed by the poor and the general population are likely to be less pronounced, the use of poverty prices is likely to make only a marginal difference compared with the difference generated by the use of weights representing the expenditure patterns of the poor.

International Poverty Lines Based on Alternative Sets of PPPs

There is absolutely no restriction on the use of a currency unit for the specification of the IPL. Although the established practice is to use the US dollar as the anchor for the IPL, any currency can be used. For this poverty PPP study, the Malaysian ringgit was used as the reference currency in all the PPP calculations and is used to convert the national poverty lines of the 16 participating countries. National poverty lines were, therefore, converted into a common currency unit using an appropriate set of PPPs. (The main report has also expounded on the use of the Indonesian poverty line in chapters 5 and 7.)

Three sets of poverty PPPs based on \$1/day are relevant to examine the sensitivity of the IPL to different methodologies. These include the use of poverty PPPs computed using ICP PPPs for consumption and \$1/day poverty line; PPPs from the PAG methodology and \$1/day poverty line; and PPPs based on the poverty-specific price surveys and \$1/day poverty line.



International poverty lines based on \$1/day tend to be higher when the PPPs derived from both the PAG methodology and the poverty-specific price survey data are used, compared to the IPL computed using ICP PPPs for consumption.

Table 2 indicates that the use of PPPs derived from both the PAG methodology and the poverty-specific price survey data tend to increase the IPL compared to the IPL estimated using PPPs based on ICP PPPs for consumption. The difference in IPLs between the PAG and the ICP PPPs is small—moving from \$1.296 to \$1.317—while in the poverty-specific price survey data, the IPL increased from \$1.296 to \$1.379.

Nevertheless, even with an IPL of \$1.379, the term \$1/day may still be used as an IPL for the Asia and Pacific region. The robustness of the IPL to different approaches generates some confidence in the use of such poverty lines for assessing regional poverty.

Table 2. IPLs Based on Alternative Sets of PPPs

Type of Poverty PPPs Used	IPL in Malaysian Ringgit	IPL in US\$
PPPs based on ICP PPPs for consumption and \$1/day (1993) poverty line	2.735	1.296
PPPs based on PAG methodology and \$1/day (1993) poverty line	2.778	1.317
PPPs based on poverty specific price survey prices and \$1/day (1993) poverty line	2.909	1.379

PPP = purchasing power parity; IPL = international poverty line.

Likely Effects of Different Sets of IPLs on Estimates of Poverty

Columns (1) and (2) of Table 3 indicate that the use of PPPs from the PAG methodology and PPPs based on poverty-specific price survey data can have varying effects on the estimates of poverty incidence for each country. The IPLs for all these PPPs, as mentioned in the preceding section, are all close to each other. Therefore, the significant differences between columns (1) and (2) can be attributed to the effect of using price data collected from the poverty-specific price surveys. These results point toward the need for further research specially designed to collect price data of goods and services consumed by the poor, in order to accurately represent the purchases made by them.

Table 3. Percent Difference of Estimates of Poverty Incidence in the Asia and Pacific Region: 2005 ICP Consumption PPPs, Poverty PPPs Based on PAG Methodology, and Poverty-Specific Price Survey Data

Country	Percent Difference		
	ICP vs. Poverty PPP		PAG vs. Poverty Survey
	ICP vs. PAG	ICP vs. Poverty Survey	\$1/day Poverty Line
	(1)	(2)	(3)
Bangladesh	0.84	(15.97)	(16.67)
Bhutan	0.31	0.22	(0.08)
Cambodia	8.42	16.93	7.85
Fiji Islands	(11.46)	(3.21)	9.33
India	2.93	(9.25)	(11.83)
Indonesia	6.58	(37.33)	(41.20)
Lao People's Democratic Republic	9.78	19.13	8.52
Malaysia	11.52	34.01	20.16
Maldives	(24.92)	23.00	63.83
Mongolia	(1.48)	18.87	20.66
Nepal	(0.96)	0.38	1.36
Pakistan	0.76	(4.54)	(5.26)
Philippines	(1.95)	29.62	32.20
Sri Lanka	(11.75)	(30.71)	(21.48)
Thailand	(22.14)	(36.42)	(18.34)
Viet Nam	3.29	(25.68)	(28.05)

ICP = International Comparison Program; PAG = Poverty Advisory Group; PPP = purchasing power parity; IPL = international poverty line.

DIRECTIONS FOR FUTURE WORK

The poverty study and its results could provide insights in the future for poverty measurement. The differences in PPPs arising out of the use of price data collected using poverty-specific price surveys reinforce the need to expand the scope and size of poverty-specific price surveys. There are several directions in which this important work on poverty PPPs can be extended.

- **Increased coverage of countries.** The poverty PPP study covered 16 ADB member countries. It is necessary to bring other countries into this study as poverty reduction is a major goal for most countries in this region.
- **Subregionalization.** There is a strong subregional influence on the types of commodities consumed by the poor. This influence was considered stronger in the study on poverty PPPs than in the 2005 ICP Asia Pacific, which may be due to the fact the poor tend to consume more local than imported products. A related direction for the study could be to examine compilation of within-country (intracountry) poverty PPPs in large countries like India and Indonesia.
- **Integrating poverty PPP with regular ICP and consumer price index exercises.** In future rounds of the ICP, the feasibility of coordinating and integrating activities of poverty PPP studies into the general ICP should be explored to make both projects cost-effective.
- **Research on analytical aspects.** Further research on the theoretical foundations of poverty PPPs should be undertaken. The study found poverty PPP computations to be complex and labor-intensive with simultaneous use of household expenditure data and PPPs in the iterative process. Development of software to automate these steps would not only be greatly beneficial but would also assist in enhancing the use of the methodology.

- **Strengthen statistical capacity.** Increased participation of ADB regional members in poverty PPP studies will further strengthen statistical capacities in these countries. Conducting poverty-specific price surveys would help improve the infrastructure for price collection in both urban and rural areas and could assist in compiling consumer price indices for the poor. These could facilitate the monitoring of the effects of increasing prices, food prices in particular, on the welfare of the poorer sections of society.

The poverty PPP study has proved to be very successful, and findings from this study will have a profound effect on the way PPPs are compiled for the purpose of poverty measurement at the national and regional level.



Conducting poverty-specific price surveys could assist in compiling consumer price indices for the poor, and would facilitate in monitoring the effects of increasing prices on the welfare of the poorer sections of society.

About the Highlights of Research Study on Poverty Purchasing Power Parities for Selected Countries in Asia and the Pacific

These Highlights provide a summary of the major points in the *Research Study on Poverty Purchasing Power Parities for Selected Countries in Asia and the Pacific*, a methodological research that compiles purchasing power parities for measuring poverty in the region and seeks to broaden understanding of international poverty lines.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries substantially reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two thirds of the world's poor. Nearly 1.7 billion people in the region live on \$2 or less a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance. In 2007, it approved \$10.1 billion of loans, \$673 million of grant projects, and technical assistance amounting to \$243 million.

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