

ESTIMATING PER CAPITA INCOME FOR OPERATIONAL PURPOSES

1	Introduction	2
2	Problems Measuring Income in National Currencies	3
2.2	Differences in International Standards	4
2.3	Differences in Coverage and Quality of National Estimates	4
3	Choosing a Conversion Factor.....	5
3.1	Using Exchange Rates as Conversion Factors	5
3.2	Using Purchasing Power Parities as Conversion Factors	6
4	The World Bank Approach to Country Comparisons for Operational Purposes	8
4.1	Estimating GNI in National Currency	8
4.2	Estimating Population	8
4.3	Using the Atlas Conversion Factor	9
4.4	Measuring International Inflation.....	10
5	Recommendations and Conclusions	11
Annex A	Current Atlas Methodology	13
Annex B	Synthetic Atlas Conversion Factor	15
Annex C	Modified Atlas Methodology based on U.S. Inflation Rates.....	16
Annex D	Effects on Country Classification of Using Alternative Atlas Methodology.....	17
Annex E	Effects on Country Classification of Using PPP-Based GNI Estimates	21
Annex F	Participants in ICP and Related Exercises, 1975-96	26

This report provides an overview of the methodological and data issues involved in estimating per capita income for operational purposes. The main conclusion is that the Bank should retain its current Atlas methodology for estimating internationally comparable per capita income for operational purposes. The procedure of updating income thresholds based on international inflation rates should also be continued. Because international comparability of income per capita is affected by differences in quality of national statistics, priority should be placed on enhancing statistical capacity in developing countries. Once national statistics improve, the use of PPP-based GNI estimates should be reconsidered.

1 Introduction

The purpose of World Bank OP 3.10, "Loan Charges, Currencies, and Payment Terms of IBRD Loans and IDA Credits," is to ensure that the Bank sets its lending terms in a clear and transparent manner and provides the neediest borrowers with the most attractive loan terms. Under OP 3.10, an indicator of economic wellbeing is used to rank countries, and thresholds are established to determine the conditions applied to borrowing member countries. Since 1984 the methodology used to establish these rankings has been reviewed every five years. This report represents the 2000 assessment of the Bank's methodology.

Historically, countries have been ranked by per capita gross national income (GNI) (previously called per capita GNP)¹, converted into U.S. dollars using the World Bank *Atlas* conversion factor². These rankings are important because members classified as low-income countries receive more preferential lending terms (longer grace and repayment periods, lower fees, and lower interest rates) than those countries classified as middle-income countries.

The Bank has identified the need to reduce the number of poor people in the world as its most important global objective. The methods used to achieve this goal are being scrutinized in a broader context in order to identify policies that will prove most efficient in a rapidly changing environment. While overall prosperity and human progress depend on long-term growth, the dimensions of development extend well beyond narrow notions of average per capita income and its rate of accumulation. Per capita income serves as a proxy for individuals' potential command over resources that enhance their well-being, but it does not indicate how well income is shared within the community. This raises an

¹ In 1993 the Commission of the European Communities, the International Monetary Fund, The Organization for Economic Cooperation and Development, the United Nations, and the World Bank revised the System of National Accounts. One of the changes from A System of National Accounts 1968 to its successor System of National Accounts 1993, was the replacement of the term GNP (Gross National Product) with GNI.

² See annex A.

important question: Is the use of average per capita income as a major operational criterion for determining the Bank's lending strategy appropriate? Or should it be complimented by the use of social indicators, such as those selected for the international development goals?

This report recognizes the need for a broader discussion of how the World Bank can best allocate its resources to fulfill its mission, but limits its scope to an analysis of the best way to measure internationally comparable per capita income.

In compiling internationally comparable income numbers, three conceptual, methodological, and practical issues arise, namely: what is the best measure (in national currency) of a country's income, how can that measure best be converted into a common currency, and is the methodology used to generate the data simple and transparent? Each of these issues is examined in this report.

2 Problems Measuring Income in National Currencies

The use of GNI as a basis for estimating comparable per capita income measures is accepted by all international organizations, and has been used by the Bank for many years. GNI measures the income generated by a nation's residents from international and domestic activity. It is preferred to Gross Domestic Product (GDP), which measures income generated from domestic activity by residents of the economy as well as by non-residents³.

A common and valid argument against ranking countries using per capita GNI is that it does not take into account factors that affect a country's ability to sustain or increase its current income level. These factors include demographic characteristics, such as differences in age or gender composition; whether income is used for consumption or capital formation; and the evolution of a country's natural resources. Using per capita income also fails to take account of the distribution of income.

In view of the Bank's focus on targeting its activities to help the poor directly, a better measure might be the number of people living below a given poverty level, such as the widely quoted "dollar a day" criterion. Regrettably, the income distribution and PPP data required to compile such an estimate with confidence and in a timely manner are not available at a sufficiently high quality to justify its use in determining operational lending criteria.

In general, the more factors taken into consideration in determining lending criteria, the less transparent the methodology will be. Moreover, the likelihood of creating internationally comparable and reliable data diminishes. For these reasons, in practice, GNI represents the best measure for estimating internationally comparable income. This conclusion seems to have been reached by several multilateral organizations, including

³ GNI equals GDP plus net compensation of employees and property income from abroad (GDP plus net factor income from abroad in 1968 SNA terminology).

the United Nations and the European Union, which use per capita GNI as the major criterion for operational purposes such as calculating membership contributions.

International guidelines for compiling national accounts are designed to yield internationally comparable income measures by including production of all goods and services (with a few exceptions) as income-generating activities, whether or not they are produced for the market, for own use, or provided to others free of charge. In particular, informal, illegal, and subsistence activities should all be included. In practice, however, international comparability is hampered by the use of different vintages of international standards and by differences in compilation practices, in coverage, and in quality of the estimates. The latter is the most severe problem, and may result in systematic biases in the income estimates; it is generally thought that income in developing countries is underestimated compared to that of developed countries.

2.2 Differences in International Standards

Many countries are currently in the process of updating their national accounts compilation systems to reflect new international guidelines, resulting in the existing estimates not being entirely comparable. Several countries have already implemented the System of National Accounts 1993 (1993 SNA) while some still base their estimates on the principles laid out in the 1968 guidelines. There are some minor differences between the definition of GDP and GNI in the 1968 SNA and in the 1993 SNA. However, analyses carried out for some of the countries that have adopted 1993 SNA indicate that the change in levels of GDP and GNI has been rather small (a one to two percentage point increase).

The long-standing problem of international comparability due to differences between the Material Product System and the SNA has disappeared, as all transition economies are now following the 1993 SNA.

2.3 Differences in Coverage and Quality of National Estimates

The lack of adequate source data and estimation methods for measuring informal, illegal, and subsistence activities generates severe problems. Several countries try to include explicit estimates, or adjustments, for informal and subsistence activities; some have also tried to obtain estimates of illegal production. Due to poor or unavailable source data, these estimates are generally very approximate, however, and the procedures for estimating these parts of the economy vary substantially from country to country. For some developing countries, information on subsistence activities is available from household or agricultural surveys conducted every 5-10 years. These estimates provide a base for establishing a benchmark level for these activities, but information on how to update them is typically lacking.

These data problems introduce systematic biases in income figures. Because monetization and market orientation rise with the level of development, subsistence and informal activities constitute a larger share of the total economy in developing countries than they

do in industrial economies. As a result, income levels tend to be underestimated less in industrial countries than in developing countries.

Capturing the nonmonetized and hidden economy has allowed several countries to revise their income estimates upward. Zimbabwe, for example, increased its estimates of GDP (and GNI) by some 20 percent in 1998 after it improved its estimates for subsistence farming and the hidden economy in general. Ethiopia is in the process of revising its GDP upward by about 50 percent to reflect new estimates of the nonmonetized economy based on a recent household survey.

In several low-income countries with particularly weak statistical systems, even coverage of formal activities is problematic, because of difficulties in establishing and maintaining comprehensive business registers and low response rates on surveys without appropriate imputation for nonrespondents. In some countries, in fact, undercoverage of formal sector activities may be as important as undercoverage of activities in the informal economy. Coverage of formal activities is generally not a major problem in countries using advanced statistical methods.

Transition economies have experienced their own set of problems. In the beginning of the transition period most of the data reporting systems in the transition countries did not operate effectively, and most of the countries in transition have developed growing informal and partly illegal sectors, which are difficult to measure. The transition economies are in the process of building statistical data collection systems that are better tailored to the needs of a market economy. But the process is slow and costly. Although data coverage is improving, it appears that several countries have been unable to make retroactive adjustments. As a result, their measures of economic growth may be distorted by changes in coverage over time.

Due to the weaknesses in their statistical system, GNI may well be underestimated for many transition economies. However, several transition countries incorporate adjustments for what they call the “shadow” economy. Furthermore, substantial problems in adjusting the measure of output for holding gains on changes in inventories can result in an overestimation for some transition countries. So the issue is far from clear-cut.

3 Choosing a Conversion Factor

To make cross-country comparisons of income levels possible, income must be converted to a common currency, such as the U.S. dollar. Exchange rates and purchasing power parities (PPPs) of the International Comparison Programme (ICP) offer two alternatives for conversion. PPPs have typically been used for analytical purposes, while exchange rates have remained the basis for comparing income levels for operational purposes.

3.1 Using Exchange Rates as Conversion Factors

Because they are observable and generally available for most countries, exchange rates are commonly used as conversion factors. Conversion using exchange rates can be

misleading, however. The use of exchange rates as conversion factors assumes that relative prices on goods and services are about the same for all countries. If free trade, stable exchange rates, low transportation costs, full capital mobility, and no market imperfections existed, the use of exchange rates to convert income measures from a national to a common currency would generate comparable estimates across countries. Market imperfections exist, however, and many services are not traded across national boundaries. According to the purchasing power theory, changes in the exchange rates are caused by changes in relative price levels between countries. In practice, however, exchange rates are affected by capital flows, speculation, and interventions by governments and central banks. Thus what one U.S. dollar buys in the United States does not necessarily correspond to the amount of goods and services that one U.S. dollar converted into another country's currency buys in that country.

A potential problem in exchange rate conversion is the effect of abrupt changes in the exchange rate. By applying a moving average exchange rate rather than a single year's exchange rate, the effect of sudden changes can be dampened. The *Atlas* conversion factor is an average of the past three years' exchange rates, with the earlier years' rates adjusted to reflect the ratio of domestic to international rates of inflation.

3.2 *Using Purchasing Power Parities as Conversion Factors*

PPPs measure the relative purchasing power of different currencies over equivalent goods and services. PPP is the number of units of a national currency required to purchase the same amount of goods and services as a numeraire currency unit (for example, one U.S. dollar) would buy in the numeraire country. By correcting for differences in relative prices, PPPs allow meaningful comparisons to be made across countries.

Ideally, the use of PPPs eliminates the inconsistencies in valuation inherent in exchange rate conversions, though concerns remain about methodology, quality, timeliness, and geographic coverage.

PPPs have been estimated for different groups of economies under the ICP. The basic ICP approach is to collect detailed data on prices and GDP by type of expenditure from all participating economies for individual goods and services. The implicit volumes obtained from the price and expenditure data are then explicitly or implicitly revalued at a uniform set of average international prices denominated in a numeraire currency. The resulting values based on international prices can be considered internationally comparable. The ratio of the original national currency value to the corresponding value in international prices is a PPP. PPPs can be derived for various national accounting categories at different levels of aggregation, up to the level of GDP. Equivalently, the volume revalued at international prices can be obtained by converting the national currency value at PPP.

PPPs tend to be more stable than exchange rates, which, as noted, are more sensitive to international capital movements, currency speculation, and direct government intervention. PPP-based data thus provide a more robust basis for comparing prices and quantities for economies at comparable levels of development. Furthermore, PPPs and PPP-based estimates at disaggregated levels provide relevant information for analysis and

policy work, particularly on subsectors of the economy or subgroups of the population. PPPs for basic products, for example, which are consumed mostly by the poor, can be used for poverty analysis, including comparison of real incomes of the poor across countries. The Bank uses PPP-based data extensively in poverty analysis. Such data have not been used for operational purposes, however, because of concerns about conceptual and methodological issues, comparability of price data across countries, gaps in geographical coverage, and timeliness.

Conceptually, the valuation of different countries' national accounts at uniform international prices eliminates the systemic differences in price structures of economies at different stages of development. However, estimates of PPP conversion factors are sensitive to the choice of aggregation procedure. PPP-converted income differences between poorer and richer economies are much wider under one aggregation method than under another, and the ranking of economies by income level may also change.

In collecting price data, it is difficult to match ICP specifications (including specifications for quality) for individual products in different countries. This problem is especially serious for products that are not internationally traded. Typically, the prices of personal, medical, educational, and other services are much lower relative to those of other products in low-income countries. These prices are used in the ICP without adjustment or with subjective adjustments for substantial differences in service quality. Ideally, PPPs should be computed based on prices of products that are representative for the country concerned and comparable across countries. But representative products for individual countries, particularly low-income countries, may not be internationally comparable, and internationally comparable products may not be representative for individual countries. Some of these problems can be mitigated by estimation techniques that make regional comparisons first and then align them through "bridge" countries.

Another problem involves lack of coverage. Country coverage of the ICP survey is almost complete for high-income countries, but it remains incomplete and irregular for low- and middle-income economies, even though the number of participating economies has generally increased over time (34 countries participated in 1975, 60 in 1980, 64 in 1985, 118 in 1993/96 (annex F)). For countries that did not conduct a survey in a given year and for the years in which the ICP survey was not conducted, current estimates are extrapolated from the most recent survey available. For countries that have not participated in an ICP survey in the last 15 years, estimates are based on regressions.

Using PPP-converted income for ranking and classifying countries would also require estimations of PPP-based income thresholds. One option would be to set income thresholds so that the smallest number of countries were reclassified when switching from the *Atlas* methodology. The thresholds could then be annually updated applying U.S. inflation rates⁴. As the classification structure would change every five years or so (when

⁴ U.S. inflation rates would be used because PPP-based income for the years between benchmark years are extrapolated with real growth adjusted for U.S. inflation.

new benchmark data became available), income thresholds would be re-estimated following the same simple procedure.

To compare the two alternatives, the results of Operational Guidelines FY01 were compared with the same GNI data converted into U.S. dollars using available PPP estimates. Differences in ranking and classification of countries were significant (annex E). However, concerns about timeliness, coverage, and methodology suggest that using PPP-based income estimates for operational purposes is not recommended at this stage.

4 The World Bank Approach to Country Comparisons for Operational Purposes

The World Bank uses *Atlas* per capita GNI estimates as a transparent and readily available indicator for operational purposes, such as determining country eligibility for preferential credit. It updates income thresholds annually based on international inflation.

Measures other than income are also used to make operational decisions. In deciding which countries are eligible for IDA lending terms, for example, relative poverty, lack of creditworthiness, and other special factors are taken into consideration. Exceptions are also made for countries such as small island economies with relatively high per capita incomes but without access to international funding because of their small size.

4.1 *Estimating GNI in National Currency*

Estimates of GNI are provided to the Development Data Group (DECDG) by the Bank's country economists or analysts, either on the basis of preliminary estimates from the national statistical offices or, when official data are not available, as best estimates by the country economists.

The quality of the income data in national currencies underpins the use of per capita income in U.S. dollars for operational purposes. Intensive checking for consistency and validity of sources is therefore conducted in order to obtain the best estimates possible.

For seven out of 143 countries in the FY01 Operational Guidelines (a decrease over previous years), there was no basis on which to derive reliable estimates of GNI. It has been the Bank's practice to not show the per capita GNI for these countries.

4.2 *Estimating Population*

Population estimates are compiled jointly by the Human Development Network and DECDG, in consultation with operational staff. These estimates are usually based on censuses, but the frequency and quality of the censuses vary by country. Most countries conduct a complete enumeration no more than once a decade. Population estimates are thus typically extrapolations based on demographic models.

4.3 Using the Atlas Conversion Factor

The *Atlas* conversion factor, based on official or market exchange rates, is used to convert income estimates from national currency to U.S. dollars (annex A). Special methods are used for countries where multiple exchange rate systems exist, the real exchange rate changes substantially, or market exchange rates are lacking. These methods are described below.

The *Atlas* conversion factor is the simple arithmetic average of the current exchange rate and the exchange rate in the previous two years adjusted for the ratio of domestic to international inflation. The SDR deflator is used to represent international inflation, compiled from inflation measures in the G5 countries (Germany, France, Japan, the United Kingdom, and the United States).

The change in the GDP deflator will, in the future, be used as the measure of domestic inflation. This represents a slight change, as the GNP deflator, in theory, was applied in the past. This change is made for two reasons. First, what is needed in estimating the *Atlas* conversion factor is a broad measure of inflation that captures the changes in prices that, according to purchasing power theories, lead to change in the nominal exchange rate. The strong correlation among the GDP deflator, the GNP deflator, and the GNI deflator means that they have roughly the same ability to predict exchange rate movements⁵. Second, per capita GNI figures are needed in U.S. dollars less than four months after the end of the year, and the GDP deflator is available sooner than the GNP deflator.

The *Atlas* method lessens the effect of fluctuations and abrupt changes in the exchange rate, which can be heavily affected by capital flows. Income measures converted using the *Atlas* conversion factor tend to be more stable over time, and changes in income rankings are more likely to reflect changes in relative economic performance than exchange rate fluctuations.

4.3.1 Estimating Conversion Factors in Countries with Multiple Exchange Rate Systems

For countries with multiple exchange rate systems, the Bank's practice has been to apply a weighted average of the exchange rates, with shares of foreign exchange transactions subject to the different exchange rates used as weights. The weighted-average exchange rate is then used in the *Atlas* formula.

4.3.2 Estimating Conversion Factors in Countries with Exchange Rate Distortions

To identify countries with exchange rate distortions, the Bank reviews real exchange rate movements. The objective is to identify distortions resulting from speculation, severe

⁵ The implicit GNP deflator is a World Bank created measure, and not a SNA concept. The difference between the GNP and the GNI deflators is that the GNI deflator takes into account the effect of changes in the terms of trade.

trade or foreign exchange restrictions, domestic price controls or policy interventions. The review is carried out by comparing the change in the nominal exchange rate with the change in the relative rate of inflation (the ratio of domestic to international inflation). If real appreciation or depreciation exceeds 30 percent over three years, an alternative conversion factor is applied. Typically, an alternative conversion factor is estimated by extrapolating a "normal" period's exchange rate with the change in relative inflation. Each case must be judged on its merits, and there is always an unavoidable element of professional judgment.

4.3.3 Estimating Conversion Factors in Countries without Market-Based Exchange Rates

Much of the international trade of transition economies has been carried out at exchange rates that differ markedly from official rates. In these cases, official exchange rates cannot be used to convert GNI from local currency to U.S. dollars. The alternative approach used for market economies of selecting a past exchange rate as a basis for forward extrapolations is not feasible, given the history of managed price and exchange rate regimes in these countries. In view of these problems, an alternative method, known as the synthetic *Atlas*-type conversion factor, has been developed (annex B)⁶.

In theory the synthetic *Atlas*-type conversion factor and the official exchange rates should converge as the transition economies become more open and market oriented. Lack of such convergence may reflect the fact that some transition economies have not yet become sufficiently market oriented. It may also indicate that the synthetic *Atlas*-type conversion factors were based on unreliable data.

The synthetic *Atlas*-type conversion factors were used in operational guidelines for the first time in FY92, when they were used to convert per capita income for 16 transition economies. In FY98 official exchange rates replaced the synthetic *Atlas*-type conversion factor for 11 of these countries (Armenia, Azerbaijan, Estonia, Georgia, Kazakhstan, the Kyrgyz Republic, Latvia, Lithuania, Moldova, the Russian Federation, and Ukraine). Two more countries, Macedonia and Turkmenistan, moved to official exchange rates in FY01. The synthetic *Atlas*-type conversion factor continues to be used in the remaining three countries, Belarus, Tajikistan, and Uzbekistan.

4.4 Measuring International Inflation

A measure of international inflation is needed to apply the *Atlas* methodology and update the income thresholds. The change in the SDR deflator expressed in U.S. dollar terms is chosen for both purposes.

The SDR deflator is calculated as a weighted-average of the GDP deflators of the G5-countries in SDR terms, where the weights are determined by the amount of each

⁶ See: SecM93-589: "Estimating dollar per capita income for the states of the Former Soviet Union," June 15, 1993.

currency included in one SDR unit and the exchange rate from local currencies to SDRs⁷. The SDR deflator is then converted into U.S. dollars using a three-year inflation-adjusted average exchange rate.

Using U.S. rather than international inflation rates in the *Atlas* methodology and in updating income thresholds would improve transparency. But a recent review suggests that international inflation rates generate slightly better results. In most circumstances using U.S. inflation rates in the *Atlas* methodology would not change country classifications, as long as the income thresholds are updated to reflect U.S. inflation. To compare the two alternatives, the results of Operational Guidelines FY01 were compared to the same GNI data converted into U.S. dollars using the *Atlas* methodology with U.S. inflation rates (annexes C and D). No changes in rankings or classification were evident. If, however, the dollar were volatile, the SDR-deflator might predict the coming year's exchange rate more accurately than using U.S. inflation.

Replacing international inflation rates with U.S. rates would result in a simpler, more transparent method, but possibly at the cost of some accuracy. Retaining the Bank's current practice of using international inflation in the *Atlas* methodology thus continues to make sense.

5 Recommendations and Conclusions

For operational purposes the Bank should retain the *Atlas* methodology to derive per capita GNI estimates. Priority should be placed on enhancing statistical capacity in developing countries as the most effective means of improving the quality and comparability of national income statistics.

Because current PPP-based per capita income estimates are not available for all countries and methods of extrapolations over time and space continue to suffer from the lack of recent survey data, a strong case cannot be made for using PPPs rather than the *Atlas* conversion factor.

Furthermore, because the current *Atlas* methodology tends to yield more accurate estimates than the modified *Atlas* method based on the U.S. GDP deflator (annex C), the current *Atlas* method should be retained.

Divergent national accounting practices, differing statistical capacity, and resource constraints across countries are probably the greatest limitation to intercountry comparisons of per capita GNI. Despite extended technical assistance to improve the available statistics in low-income countries, the quality of the data, especially in Africa, appears to be declining. The 1993 SNA specifies that all subsistence, informal, and illegal activities should be included in the measure of production, but lack of source statistics in many countries makes it difficult to do so. There are positive signs, however. Although

⁷ The composition of the SDR deflator changed slightly in 1999, as a consequence of the introduction of the euro.

some transition economies still have far to go before their statistical systems are adequate, many have come a long way, and both the coverage and the quality of the statistics are improving.

PPP-based statistics, such as PPP-converted income estimates, income distribution data, and the “dollar a day” measure of extreme poverty, are of particular importance to the Bank. But such statistics are meaningful only if the underlying price data are timely and reliable. Efforts are needed to strengthen price data collection. Toward that end, the Bank has supported the ICP since the program’s inception in 1968. In addition to funding the program, the Bank has supported research on ICP methodology, as well as the collection and processing of basic data. In recent years, the Bank has focused on integrating ICP surveys into national statistical work as part of its efforts to strengthen national statistical capacity. For the future, priority should be given to statistical capacity building, and to the comparison work carried out by the international organizations. Such work is needed before PPP and income distribution statistics can be used extensively in operational work.

Annex A Current Atlas Methodology

The *Atlas* conversion factor in year t is given by:

$$e_{i,t}^{ATLAS} = \left\{ e_{i,t} + e_{i,t-1} \left(\frac{P_{i,t}/P_{i,t-1}}{P_t^{SDR(\$)} / P_{t-1}^{SDR(\$)}} \right) + e_{i,t-2} \left(\frac{P_{i,t}/P_{i,t-2}}{P_t^{SDR(\$)} / P_{t-2}^{SDR(\$)}} \right) \right\} / 3$$

where $e_{i,t}^{ATLAS}$ is the *Atlas* conversion factor for country i in year t , $e_{i,t}$ is the exchange rate from national currency to U.S. dollar for country i in year t , $p_{i,t}$ is the GDP deflator for country i in year t , and $P_t^{SDR(\$)}$ is the international deflator (SDR deflator) in U.S. dollar-terms in year t .

In SDR- terms, the SDR deflator in year t is given by:

$$P_t^{SDR} = \left\{ \left(\sum_j \left(\frac{P_{j,t}^{SDR}}{P_{j,t-1}^{SDR}} \right) w_{j,t-1} \right) \cdot \left(1 / \sum_j \left(\frac{P_{j,t-1}^{SDR}}{P_{j,t}^{SDR}} \right) w_{j,t} \right) \right\}^{1/2}$$

where P_t^{SDR} is the international deflator (SDR deflator) in SDR-terms in year t .

The G5 country j 's GDP deflator in SDR terms is given by:

$$P_{j,t}^{SDR} = (p_{j,t}) \cdot (e_{j,t}^{SDR/LC})$$

and the weights are calculated as:

$$w_{j,t} = (ca_{j,t}) \cdot (e_{j,t}^{SDR/LC})$$

where $P_{j,t}^{SDR}$ is the GDP deflator in SDR-terms for country j in year t , $e_{j,t}^{SDR/LC}$ is the exchange rate from local currency to SDR for country j in year t , $p_{j,t}$ is the national GDP deflator in local currency for country j in year t , $w_{j,t}$ is the weight of country j in year t , and $ca_{j,t}$ is the currency amount for country j included in one unit of SDR in year t .

In US-dollar terms, the SDR-deflator is given by:

$$P_t^{SDR(\$)} = (P_t^{SDR}) \cdot (e_{adj-t}^{\$/SDR})$$

where $e_{adj-t}^{\$/SDR}$ is the conversion factor from SDR to U.S. dollars in year t .

The conversion factor is calculated as:

$$e_{adj-t}^{\$/SDR} = \left\{ e_t^{\$/SDR} + e_{t-1}^{\$/SDR} \left(\frac{P_{USA,t}/P_{USA,t-1}}{P_t^{SDR} / P_{t-1}^{SDR}} \right) + e_{t-2}^{\$/SDR} \left(\frac{P_{USA,t}/P_{USA,t-2}}{P_t^{SDR} / P_{t-2}^{SDR}} \right) \right\} / 3$$

where $e_t^{$/SDR}$ is the exchange rate from SDR to U.S. dollar in year t , and $p_{USA,t}$ is the U.S. GDP deflator in U.S. dollar terms in year t .

Internationally comparable per capita GNI estimates can then be derived by dividing local currency per capita GNI estimates by the *Atlas* conversion factor.

Annex B Synthetic Atlas Conversion Factor

For economies in transition, where market exchange rates were lacking, a synthetic *Atlas* conversion factor was introduced in 1992. The synthetic exchange rate was estimated in the following manner: U.S. dollar GNI estimates in PPP terms were derived for all countries in transition and for comparator countries in the low- to middle-income group. For the comparator countries linear regression techniques were used to determine the relation between the ratio of the official exchange rate to the PPP and the PPP-converted per capita GNI as a ratio to the U.S. GNI per capita. This relation was then used to deduce a synthetic *Atlas* conversion factor for each country in transition, given the estimated PPP for the particular economy.

A hypothetical exchange rate deviation index (ERDI), the ratio of the nominal exchange rate to PPP, was estimated for each transition economy. The ERDI was derived from an estimated inverse relationship in low- to middle-income market economies between the ERDI as the dependent variable and PPP-converted per capita income as the independent variable:

$$\frac{1}{ERDI_{i,t}} \equiv \left(\frac{PPP}{ER} \right)_{i,t} = \alpha_t + \beta_t \left\{ \left(\frac{GNI_{i,t}}{N_{i,t}} \cdot \frac{1}{PPP_{i,t}} \right) / \left(\frac{GNI_{USA,t}}{N_{USA,t}} \right) \right\}$$

where $GNI_{i,t}$ is gross national income in local currency for country i in year t , α_t, β_t are regression coefficients for year t , estimated on the basis of data for m comparator countries in the low- and middle-income group in year t , and N_t^i is mid-year population for country i in year t .

The synthetic *Atlas* conversion factor for each year and economy in transition was then derived as the product of PPP and ERDI:

$$SACF_{i,t} = PPP_{i,t} / \left(\frac{PPP}{ER} \right)_{i,t} \equiv PPP_{i,t} / \left(\frac{1}{ERDI} \right)_{i,t} \equiv PPP_{i,t} \cdot ERDI_{i,t}.$$

The *Atlas* conversion factor was then defined as a three-year average:

$$e_{i,t}^{ATLAS(SACF)} = \left\{ SACF_{i,t} + SACF_{i,t-1} \left(\frac{P_{i,t} / P_{i,t-1}}{P_t^{SDR(\$)} / P_{t-1}^{SDR(\$)}} \right) + SACF_{i,t-2} \left(\frac{P_{i,t} / P_{i,t-2}}{P_t^{SDR(\$)} / P_{t-2}^{SDR(\$)}} \right) \right\} / 3.$$

Annex C Modified Atlas Methodology based on U.S. Inflation Rates

A simpler, more transparent *Atlas* conversion factor, based on U.S. rather than international inflation rates, is given by:

$$e_{i,t}^{ATLAS*} = \left\{ e_{i,t} + e_{i,t-1} \left(\frac{P_{i,t}/P_{i,t-1}}{P_{USA,t}/P_{USA,t-1}} \right) + e_{i,t-2} \left(\frac{P_{i,t}/P_{i,t-2}}{P_{USA,t}/P_{USA,t-2}} \right) \right\} / 3 .$$

Internationally comparable per capita GNI figures can then be derived by dividing local currency per capita GNI estimates by the alternative *Atlas* conversion factor.

Annex D Effects on Country Classification of Using Alternative Atlas Methodology

Income thresholds are currently updated with international inflation. If substituting international with U.S. inflation rates in the *Atlas* conversion factor, the corresponding income thresholds should be developed with U.S. inflation. The choice of inflation rate affects the Bank's operational categories (table D.1).

Table D.1 Operational Categories Based on Current and Alternative Atlas Methodologies, FY2001 (in U.S. dollars)

<i>Operational category</i>	<i>Current Atlas per capita income thresholds</i>	<i>Alternative Atlas per capita income thresholds</i>
I: Civil works preference	Less than 756	Less than 776
II: IDA eligibility, or 20-year IBRD terms	Less than 1,446	Less than 1,486
III: 17-year IBRD terms	1,446 - 2,995	1,486 - 3,075
IV: 15-Year IBRD terms	More than 2,995	More than 3,075
V: IBRD graduation	More than 5,225	More than 5,355

Source: DECDG, World Bank.

The choice of inflation rate had no effect on the ranking or classification of countries in FY2001. If real exchange rate movements between the U.S. dollar and the SDR are sufficiently large, however, rankings could be affected.

Table D.2 Classification of Economies Based on Current and Alternative Atlas Methodologies, FY2001 (in U.S. dollars)

<i>Category</i>	<i>Per capita GNI based on current Atlas methodology</i>	<i>Per capita GNI based on alternative Atlas methodology</i>
<i>Category V</i>	<i>More than 5,225</i>	<i>More than 5,355</i>
Slovenia	9,890	10,200
Korea, Rep.	8,490	8,740
Argentina	7,600	7,830
Seychelles	6,540	6,740
St. Kitts and Nevis	6,420	6,630
Uruguay	5,900	6,090
Antigua and Barbuda	n.a.	n.a.
<i>Category IV</i>	<i>More than 2,995</i>	<i>More than 3,075</i>
Czech Republic	5,060	5,220
Chile	4,740	4,880
Hungary	4,650	4,790
Croatia	4,540	4,680
Brazil	4,420	4,550
Mexico	4,400	4,540
Trinidad and Tobago	4,390	4,520
Poland	3,960	4,080
St. Lucia	3,770	3,890
Lebanon	3,700	3,820
Venezuela	3,670	3,790
Mauritius	3,590	3,700

<i>Category</i>	<i>Per capita GNI based on current Atlas methodology</i>	<i>Per capita GNI based on alternative Atlas methodology</i>
Slovak Republic	3,590	3,700
Estonia	3,480	3,600
Grenada	3,450	3,560
Malaysia	3,400	3,500
Botswana	3,380	3,480
Gabon	3,350	3,440
Dominica	3,170	3,270
South Africa	3,160	3,260
Panama	3,070	3,170
Palau	n.a.	n.a.
<i>Category III</i>	<i>More than 1,446</i>	<i>More than 1,486</i>
Turkey	2,900	2,990
Costa Rica	2,740	2,830
Belize	2,730	2,810
St. Vincent and the Grenadines	2,700	2,780
Belarus	2,630	2,710
Lithuania	2,620	2,700
Latvia	2,470	2,550
Peru	2,390	2,460
Jamaica	2,330	2,400
Russian Federation	2,270	2,340
Colombia	2,250	2,320
Fiji	2,210	2,270
Tunisia	2,100	2,170
Thailand	1,960	2,020
Dominican Republic	1,910	1,970
El Salvador	1,900	1,960
Namibia	1,890	1,940
Micronesia, Fed. Sts.	1,810	1,870
Iran, Islamic Rep.	1,760	1,810
Tonga	1,720	1,780
Macedonia, FYR	1,690	1,740
Guatemala	1,660	1,710
Paraguay	1,580	1,630
Marshall Islands	1,560	1,610
Algeria	1,550	1,600
Romania	1,520	1,570
Jordan	1,500	1,570
Suriname	n.a.	n.a.
<i>Category II</i>	<i>Less than 1,446</i>	<i>II - less than 1,486</i>
Egypt	1,400	1,450
Bulgaria	1,380	1,430
Swaziland	1,360	1,400
Cape Verde	1,330	1,370
Ecuador	1,310	1,350
Kazakhstan	1,230	1,260
Morocco	1,200	1,230

<i>Category</i>	<i>Per capita GNI based on current Atlas methodology</i>	<i>Per capita GNI based on alternative Atlas methodology</i>
Maldives	1,200	1,230
Equatorial Guinea	1,170	1,200
Vanuatu	1,170	1,200
Samoa	1,060	1,100
Philippines	1,020	1,050
Syrian Arab Republic	970	1,000
Kiribati	910	940
Albania	870	900
Sri Lanka	820	850
Papua New Guinea	800	820
Djibouti	790	810
China	780	810
Honduras	760	790
Guyana	760	790
Bosnia and Herzegovina	n.a.	n.a.
<i>Category I</i>	<i>Less than 756</i>	<i>Less than 776</i>
Ukraine	750	770
Solomon Islands	750	770
Uzbekistan	720	740
Cote d'Ivoire	710	730
Congo, Rep.	670	690
Turkmenistan	660	690
Georgia	620	640
Cameroon	580	600
Indonesia	580	590
Lesotho	550	570
Azerbaijan	550	560
Zimbabwe	520	530
Guinea	510	530
Senegal	510	530
Bhutan	510	530
Armenia	490	510
Pakistan	470	490
Haiti	460	480
India	440	460
Nicaragua	430	440
Ghana	390	400
Mauritania	380	400
Benin	380	390
Moldova	370	380
Vietnam	370	380
Bangladesh	370	380
Kenya	360	370
Mongolia	350	360
Comoros	350	360
Yemen, Rep.	350	360
Gambia, The	340	350
Sudan	330	340

<i>Category</i>	<i>Per capita GNI based on current Atlas methodology</i>	<i>Per capita GNI based on alternative Atlas methodology</i>
Zambia	320	330
Togo	320	330
Uganda	320	330
Nigeria	310	320
Kyrgyz Republic	300	310
Central African Republic	290	300
Tajikistan	290	300
Lao PDR	280	290
Sao Tome and Principe	270	280
Cambodia	260	270
Rwanda	250	260
Madagascar	250	250
Tanzania	240	250
Mali	240	250
Burkina Faso	240	250
Mozambique	230	230
Angola	220	230
Nepal	220	220
Chad	200	210
Eritrea	200	210
Niger	190	200
Malawi	190	190
Guinea-Bissau	160	170
Sierra Leone	130	140
Burundi	120	130
Ethiopia	100	110
Afghanistan	n.a.	n.a.
Congo, Dem. Rep.	n.a.	n.a.
Liberia	n.a.	n.a.
Myanmar	n.a.	n.a.
Somalia	n.a.	n.a.

n.a. Not available.

Source: DECDG, World Bank.

Annex E Effects on Country Classification of Using PPP-Based GNI Estimates

The first step in using PPP-converted GNI estimates for Operational Guidelines is to define the appropriate cut-off levels for various terms of lending. Because country ranking may differ depending on the conversion method used, some countries will change to a different income category. The strategy adopted was to minimize such changes. As the classification structure will change every five years or so (when new benchmark data become available), all values will be recalculated and the cut-off levels reset in a way that minimizes changes. Within these five-year intervals, levels should be extrapolated using U.S. rates of inflation.

Table E.1 Operational Categories Based on Current Atlas Methodology and PPPs, FY2001 (in U.S. dollars)

<i>Operational Category</i>	<i>Atlas per capita income thresholds</i>	<i>PPP-based per capita income thresholds</i>
I: Civil works preference	Less than 756	Less than 2,701
II: IDA eligibility, and 20-year IBRD terms	Less than 1,446	Less than 4,251
III: 17-year IBRD terms	1,446 - 2,995	4,251 - 6,650
IV: 15-year IBRD terms	More than 2,995	More than 6,650
V: IBRD graduation	More than 5,225	More than 10,750

Source: DECDG, World Bank.

Based on the cut-offs in table E.1, 23 of 143 countries would have been reclassified into different income categories in FY2001 (table E.2).

Table E.2 Reclassification of Economies as a Result of Using PPP-Based Income Estimates Rather than the Atlas Method, FY2001

<i>Countries moving up one category (less favorable lending terms)</i>		<i>Countries moving down one category (more favorable lending terms)</i>	
<i>Category change</i>	<i>Economy</i>	<i>Category change</i>	<i>Economy</i>
From I to II	Turkmenistan	From II to I	Bolivia
	Ukraine		Honduras
From II to III	Bulgaria	From III to II	Papua New Guinea
	Kazakhstan		Guatemala
	Swaziland		Jordan
From III to IV	Belarus	From IV to III	Jamaica
	Russian Federation		Dominica
			Gabon
			Grenada
			Lebanon
			Panama
			St. Lucia
			Venezuela
From IV to V	Czech Republic	From V to IV	St. Kitts and Nevis
			Uruguay

15 countries would have moved down a category (qualified for more favorable lending terms); eight countries would have moved up a category (qualifying for less favorable lending terms). Three of the 23 countries changed category in Operational Guidelines FY01 (Ukraine from II to I, Honduras from I to II,

and Dominica from III to IV), and another four countries are less than 5 percent from a threshold.⁸ Thus, it may be that the use of PPP conversion would push some countries to change category a year earlier, while others would change a bit later.

Table E.3 Distribution of Economies by Income Category Based on Atlas Methodology and PPPs, FY2001

<i>Operational Category</i>	<i>Atlas Guidelines</i>	<i>PPP Guidelines</i>
I: Civil works preference	63	64
II: IDA eligibility, and 20-year IBRD terms	23	22
III: 17-year IBRD terms	28	33
IV: 15-year IBRD terms	22	17
V: IBRD graduation	7	7

Source: DECDG, World Bank.

The ranking and classification of countries differ significantly depending on conversion method used (table E.4).

Table E.4 Per capita GNI Based on Atlas Methodology and PPPs, FY2001 (in U.S. dollars)

<i>Country</i>	<i>Per capita GNI based on Atlas methodology</i>		<i>Per capita GNI based on PPP conversion</i>	
	<i>Per capita GNI</i>	<i>Category</i>	<i>Per capita GNI</i>	<i>Category</i>
Slovenia	9,890	V	16,080	V
Korea, Rep.	8,490	V	15,630	V
Czech Republic	5,060	IV	13,120	V
Argentina	7,600	V	12,090	V
Hungary	4,650	IV	11,190	V
Seychelles	6,540	V	11,080	V
Antigua and Barbuda	n.a.	V	n.a.	V
Slovak Republic	3,590	IV	10,470	IV
St. Kitts and Nevis	6,420	V	10,460	IV
Mauritius	3,590	IV	9,240	IV
Chile	4,740	IV	8,930	IV
South Africa	3,160	IV	8,920	IV
Uruguay	5,900	V	8,840	IV
Malaysia	3,400	IV	8,500	IV
Poland	3,960	IV	8,430	IV
Estonia	3,480	IV	8,350	IV
Mexico	4,400	IV	8,240	IV
Trinidad and Tobago	4,390	IV	7,770	IV
Croatia	4,540	IV	7,330	IV
Belarus	2,630	III	6,960	IV
Botswana	3,380	IV	6,770	IV

⁸ In the FY01 Operational Guidelines, per capita GNI estimates for nine countries are available in ranges only. This number increases to 14 when PPP rates are used.

<i>Country</i>	<i>Per capita GNI based on Atlas methodology</i>		<i>Per capita GNI based on PPP conversion</i>	
	<i>Per capita GNI</i>	<i>Category</i>	<i>Per capita GNI</i>	<i>Category</i>
Russian Federation	2,270	III	6,770	IV
Brazil	4,420	IV	6,740	IV
Palau	n.a.	IV	n.a.	IV
Turkey	2,900	III	6,550	III
Lithuania	2,620	III	6,500	III
Latvia	2,470	III	6,310	III
Grenada	3,450	IV	6,240	III
Costa Rica	2,740	III	6,160	III
Colombia	2,250	III	6,090	III
Romania	1,520	III	6,030	III
Thailand	1,960	III	5,990	III
Tunisia	2,100	III	5,850	III
Namibia	1,890	III	5,730	III
Iran, Islamic Rep.	1,760	III	5,730	III
Gabon	3,350	IV	5,680	III
Venezuela	3,670	IV	5,620	III
St. Lucia	3,770	IV	5,360	III
Panama	3,070	IV	5,350	III
Bulgaria	1,380	II	5,250	III
Dominica	3,170	IV	5,150	III
Algeria	1,550	III	5,090	III
St. Vincent and the Grenadines	2,700	III	4,980	III
Dominican Republic	1,910	III	4,970	III
Fiji	2,210	III	4,840	III
Belize	2,730	III	4,790	III
Kazakhstan	1,230	II	4,710	III
Peru	2,390	III	4,680	III
Macedonia, FYR	1,690	III	4,630	III
Tonga	1,720	III	4,570	III
Swaziland	1,360	II	4,480	III
Paraguay	1,580	III	4,450	III
Lebanon	3,700	IV	4,410	III
El Salvador	1,900	III	4,320	III
Marshall Islands	1,560	III	n.a.	III
Micronesia, Fed. Sts.	1,810	III	n.a.	III
Suriname	n.a.	III	n.a.	III
Samoa	1,060	II	4,180	II
Philippines	1,020	II	4,070	II
Maldives	1,200	II	3,870	II
Cape Verde	1,330	II	3,790	II
Jordan	1,520	III	3,790	II
Guatemala	1,660	III	3,770	II
Egypt	1,400	II	3,530	II

<i>Country</i>	<i>Per capita GNI based on Atlas methodology</i>		<i>Per capita GNI based on PPP conversion</i>	
	<i>Per capita GNI</i>	<i>Category</i>	<i>Per capita GNI</i>	<i>Category</i>
China	780	II	3,510	II
Jamaica	2,330	III	3,500	II
Guyana	760	II	3,460	II
Kiribati	910	II	3,420	II
Morocco	1,200	II	3,410	II
Ukraine	750	I	3,350	II
Turkmenistan	660	I	3,310	II
Sri Lanka	820	II	3,260	II
Albania	870	II	3,090	II
Vanuatu	1,170	II	2,960	II
Syrian Arab Republic	970	II	2,950	II
Ecuador	1,310	II	2,780	II
Equatorial Guinea	1,170	II	n.a.	II
Bosnia and Herzegovina	990	II	n.a.	II
Djibouti	790	II	n.a.	II
Zimbabwe	520	I	2,640	I
Indonesia	580	I	2,600	I
Georgia	620	I	2,530	I
Moldova	370	I	2,520	I
Azerbaijan	550	I	2,480	I
Papua New Guinea	800	II	2,420	I
Honduras	760	II	2,410	I
Kyrgyz Republic	300	I	2,370	I
Armenia	490	I	2,360	I
Bolivia	1,010	II	2,340	I
Lesotho	550	I	2,270	I
Nicaragua	430	I	2,260	I
India	440	I	2,250	I
Uzbekistan	720	I	2,230	I
Solomon Islands	750	I	2,000	I
Guinea	510	I	1,880	I
Pakistan	470	I	1,880	I
Ghana	390	I	1,870	I
Vietnam	370	I	1,870	I
Lao PDR	280	I	1,840	I
Mauritania	380	I	1,660	I
Cote d'Ivoire	710	I	1,650	I
Bhutan	510	I	1,600	I
Mongolia	350	I	1,600	I
Gambia, The	340	I	1,590	I
Bangladesh	370	I	1,570	I
Cameroon	580	I	1,540	I
Haiti	460	I	1,500	I
Comoros	350	I	1,450	I
Togo	320	I	1,440	I

<i>Country</i>	<i>Per capita GNI based on Atlas methodology</i>		<i>Per capita GNI based on PPP conversion</i>	
	<i>Per capita GNI</i>	<i>Category</i>	<i>Per capita GNI</i>	<i>Category</i>
Senegal	510	I	1,430	I
Sao Tome and Principe	270	I	1,430	I
Sudan	330	I	1,390	I
Cambodia	260	I	1,370	I
Nepal	220	I	1,300	I
Uganda	320	I	1,210	I
Central African Republic	290	I	1,210	I
Eritrea	200	I	1,080	I
Tajikistan	290	I	1,050	I
Kenya	360	I	1,040	I
Burkina Faso	240	I	960	I
Congo, Rep.	670	I	960	I
Benin	380	I	950	I
Chad	200	I	860	I
Mozambique	230	I	850	I
Madagascar	250	I	820	I
Nigeria	310	I	800	I
Yemen, Rep.	350	I	790	I
Niger	190	I	780	I
Zambia	320	I	730	I
Mali	240	I	730	I
Angola	220	I	670	I
Ethiopia	100	I	640	I
Guinea-Bissau	160	I	640	I
Malawi	190	I	620	I
Burundi	120	I	590	I
Tanzania	240	I	510	I
Sierra Leone	130	I	440	I
Rwanda	250	I	n.a.	I
Afghanistan	n.a.	I	n.a.	I
Liberia	n.a.	I	n.a.	I
Myanmar	n.a.	I	n.a.	I
Somalia	n.a.	I	n.a.	I
Congo, Dem. Rep.	n.a.	I	n.a.	I

n.a. Not available.

Source: DECDG, World Bank.

Annex F Participants in ICP and Related Exercises, 1975-96

PPP data have been estimated for all but seven countries in which the Bank has operations (table F.1). In most cases PPP data are based on price information gathered through participation in the ICP exercises. For some countries the PPP data are based on more limited price surveys or no price statistics at all. Where no price statistics were provided, special regression techniques were applied to deduce implicit knowledge about price levels.

Table F.1 Participating economies in ICP and Related Exercises

<i>Economy</i>	<i>1975</i>	<i>1980</i>	<i>1985</i>	<i>1990</i>	<i>1993</i>	<i>1996</i>
Albania						ICP
Algeria ^a						
Angola ^a						
Antigua and Barbuda					RIA	
Argentina		ICP			RIA	
Armenia					ICP	ICP
Australia			ICP	ICP	ICP	ICP
Austria	ICP	ICP	ICP	ICP	ICP	ICP
Azerbaijan					ICP	ICP
Bahamas, The			ICP		RIA	
Bahrain					RIA	
Bangladesh			ICP		ICP	
Barbados			ICP		RIA	
Belarus					ICP	ICP
Belgium	ICP	ICP	ICP	ICP	ICP	ICP
Belize					RIA	
Benin			ICP		ICP	
Bermuda					RIA	
Bolivia		ICP			RIA	
Botswana		ICP	ICP		ICP	
Brazil	ICP	ICP			RIA	
Bulgaria					ICP	ICP
Burkina Faso ^a						
Burundi ^a						
Cambodia ^a						
Cameroon		ICP	ICP		ICP	
Canada		ICP	ICP	ICP	ICP	ICP
Cape Verde ^a						
Central African Republic ^a						
Chad ^a						
Chile		ICP			RIA	
China					ICP (limited)	
Colombia	ICP	ICP				
Comoros ^a						
Congo, Dem. Rep. ^a						
Congo, Rep.			ICP		ICP	
Costa Rica		ICP				

<i>Economy</i>	<i>1975</i>	<i>1980</i>	<i>1985</i>	<i>1990</i>	<i>1993</i>	<i>1996</i>
Cote d'Ivoire		ICP	ICP		ICP	
Croatia					ICP	ICP
Czech Republic					ICP	ICP
Denmark	ICP	ICP	ICP	ICP	ICP	ICP
Dominica					RIA	
Dominican Republic		ICP				
Ecuador		ICP			RIA	
Egypt			ICP		ICP	
El Salvador		ICP				
Estonia					ICP	ICP
Ethiopia		ICP	ICP			
Fiji					ICP	
Finland		ICP	ICP	ICP	ICP	ICP
France	ICP	ICP	ICP	ICP	ICP	ICP
Gabon					ICP	
Gambia, The ^a						
Georgia					ICP	ICP
Germany	ICP	ICP	ICP	ICP	ICP	ICP
Ghana ^a						
Greece		ICP	ICP	ICP	ICP	ICP
Grenada			ICP		RIA	
Guatemala		ICP				
Guinea					ICP	
Guyana					ICP	
Haiti ^a						
Honduras		ICP				
Hong Kong (China)		ICP	ICP		ICP	
Hungary	ICP	ICP	ICP	ICP	ICP	ICP
Iceland				ICP	ICP	ICP
India	ICP	ICP	ICP			
Indonesia		ICP			ICP	
Iran, Islamic Rep.	ICP		ICP		ICP	
Ireland	ICP	ICP	ICP	ICP	ICP	ICP
Israel		ICP				ICP
Italy	ICP	ICP	ICP	ICP	ICP	ICP
Jamaica	ICP		ICP		RIA	
Japan	ICP	ICP	ICP	ICP	ICP	ICP
Jordan					RIA	
Kazakhstan					ICP	ICP
Kenya	ICP	ICP	ICP		ICP	
Korea	ICP	ICP	ICP		ICP	
Kuwait ^a						
Kyrgyz Republic					ICP	ICP
Lao PDR					RIA	
Latvia					ICP	ICP
Lebanon					RIA	
Lesotho ^a						
Lithuania					ICP	ICP

<i>Economy</i>	<i>1975</i>	<i>1980</i>	<i>1985</i>	<i>1990</i>	<i>1993</i>	<i>1996</i>
Luxembourg	ICP	ICP	ICP	ICP	ICP	ICP
Macedonia, FYR						ICP
Madagascar		ICP	ICP		ICP	
Malawi	ICP	ICP	ICP		ICP	
Malaysia	ICP				RIA	
Maldives ^a						
Mali		ICP	ICP		ICP	
Malta ^a						
Mauritania ^a						
Mauritius			ICP		ICP	
Mexico	ICP				RIA	ICP
Moldova					ICP	ICP
Mongolia						ICP
Morocco		ICP	ICP		ICP	
Mozambique ^a						
Namibia ^a						
Nepal			ICP		ICP	
Netherlands	ICP	ICP	ICP	ICP	ICP	ICP
New Zealand			ICP	ICP	ICP	ICP
Nicaragua ^a						
Niger ^a						
Nigeria		ICP	ICP		ICP	
Norway		ICP	ICP	ICP	ICP	ICP
Oman					RIA	
Pakistan	ICP	ICP	ICP		ICP	
West Bank and Gaza					RIA	
Panama		ICP			RIA	
Paraguay		ICP				
Peru		ICP			RIA	
Philippines	ICP	ICP	ICP		ICP	
Poland	ICP	ICP	ICP	ICP	ICP	ICP
Portugal		ICP	ICP	ICP	ICP	ICP
Qatar					RIA	
Romania	ICP			ICP	ICP	ICP
Russian Federation					ICP	ICP
Rwanda			ICP			
Samoa ^a						
Saudi Arabia					RIA	
Senegal		ICP	ICP		ICP	
Sierra Leone			ICP		ICP	
Singapore					ICP	
Slovak Republic					ICP	ICP
Slovenia					ICP	ICP
Solomon Islands ^a						
South Africa ^a						
Spain	ICP	ICP	ICP	ICP	ICP	ICP
Sri Lanka	ICP	ICP	ICP		ICP	
St. Kitts and Nevis					RIA	

<i>Economy</i>	<i>1975</i>	<i>1980</i>	<i>1985</i>	<i>1990</i>	<i>1993</i>	<i>1996</i>
St. Lucia			ICP		RIA	
St. Vincent and Grenadines					RIA	
Sudan ^a						
Suriname			ICP			
Swaziland			ICP		ICP	
Sweden			ICP	ICP	ICP	ICP
Switzerland				ICP	ICP	ICP
Syrian Arabic Republic	ICP				RIA	
Tajikistan					ICP	ICP
Tanzania		ICP	ICP		ICP	
Thailand	ICP		ICP		ICP	
Togo ^a						
Trinidad and Tobago			ICP		RIA	
Tunisia		ICP	ICP		ICP	ICP
Turkey			ICP	ICP	ICP	
Turkmenistan					ICP	ICP
Uganda ^a						
Ukraine					ICP	ICP
United Arab Emirates					RIA	
United Kingdom	ICP	ICP	ICP	ICP	ICP	ICP
United States	ICP	ICP	ICP	ICP	ICP	ICP
Uruguay	ICP	ICP			RIA	
Uzbekistan					ICP	ICP
Vanuatu ^a						
Venezuela		ICP			RIA	
Vietnam					ICP	
Yemen, Rep.					RIA	
Zambia	ICP	ICP	ICP		ICP	
Zimbabwe		ICP	ICP		ICP	
Former Czechoslovakia				ICP		
Former Soviet Union				ICP		
Former Yugoslavia	ICP	ICP	ICP	ICP		
TOTAL	34	60	64	30	118	52

^a Regression estimates.

ICP: International Comparison Programme (full scale price survey).

RIA: Reduced information approach (limited price survey).

Source: DECDG, World Bank.