2005 International Comparison Program
in Asia and the Pacific

Purchasing Power Parities and Real Expenditures

Economics and Research Department

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FOREWORD

The 2005 International Comparison Program (ICP) is the largest ICP round to date, covering 146 economies. To run the ICP efficiently, the world was grouped into five geographic regions: Africa, Asia and the Pacific, Commonwealth of Independent States, Latin America, and Western Asia, plus an additional "region" of countries included in the regular purchasing power parity (PPP) program managed by the Organisation for Economic Co-operation and Development (OECD) and Eurostat. A regional organization coordinated the project in each of the five geographic regions. The Economics and Research Department of the Asian Development Bank (ADB) assumed the role of Regional Office for ICP in Asia and the Pacific (ICP Asia Pacific). The Regional Office was assisted by the Regional Advisory Board, the highest policy-making body for ICP Asia Pacific, which was responsible for setting regional goals, priorities, and objectives, taking into consideration statistical needs of regional agencies and economies.

The current ICP structure is a result of a comprehensive strategic framework and action plan to address long-standing issues of the program. At its 32nd session in 2001, the United Nations Statistical Commission requested the World Bank, in collaboration with other agencies and "Friends of the Chair," to formulate a new ICP framework that was subsequently endorsed during its 33rd session in 2002. The World Bank set up the ICP in 2002 to produce statistically sound comparisons of activity level and real gross domestic product (GDP) between economies. The ICP Global Office, located at the Development Data Group of the World Bank, provided overall coordination for the project. An ICP Executive Board steered the project to successful completion and delivery of high-quality results.

Initial planning for ICP Asia Pacific was carried out in December 2002 at ADB under the stewardship of Bishnu Dev Pant, with work on the first stage (developing the product lists) starting in late March 2003. The 23 economies that participated in the ICP Asia Pacific comparison—including 21 ADB member-economies—account for over half of the world's population and about a quarter of global GDP. The 21 member-economies were: Bangladesh; Bhutan; Brunei Darussalam; Cambodia; People's Republic of China; Fiji Islands; Hong Kong, China; India; Indonesia; Lao People's Democratic Republic; Malaysia; Maldives; Mongolia; Nepal; Pakistan; Philippines; Singapore; Sri Lanka; Taipei,China; Thailand; and Viet Nam. At their request, the Islamic Republic of Iran and Macao, China also took part.

This publication presents the final results on estimates of PPPs of currencies of participating economies. These include estimates of "real" GDP and its major components, namely, household consumption, government consumption, gross capital formation, and net external trade. The final phase of the 2005 global ICP will integrate results from Asia and the Pacific with results from the other five regions: Africa, Commonwealth of Independent States, Latin America, and Western Asia as well as the OECD/Eurostat "region." The final results for the whole world are scheduled for release by the Global Office on 17 December 2007.

ICP Asia Pacific has achieved several milestones. The simultaneous participation of the People's Republic of China and India, which together account for 64% of total real GDP of the 23 economies involved, was a first for the ICP and significantly increased the coverage of the 2005 ICP. In this round, the diversity in the economies in terms of size, geography, and statistical capacities was overcome as the 23 participating economies worked concertedly to generate price and national accounts data that are broadly comparable. Further, the estimates of PPPs in this round are far more robust than those in previous rounds because of improvements in methodology, data collection, data review, and data processing. Finally, ICP Asia Pacific has established the technical know-how and institutional requirements that future ICP rounds can build on.

I sincerely thank all those who have contributed to making ICP Asia Pacific a success—the government of Japan through the Japan Special Fund managed by ADB, Department for International Development of the Government of the United Kingdom of Great Britain and Northern Ireland, Australian Agency for International Development, and the World Bank, all of which provided funding. The Australian Bureau of Statistics and the ICP Global Office provided technical assistance, and international and local consultants assisted ADB in many ways. I also wish to thank the dedicated staff of the Economics and Research Department, and most important, the national coordinating agencies and other government agencies in each of the 23 participating economies for their in-kind and financial contributions, cooperation, and hard work.

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CONTENTS

PART 3. Governance, Organization, and Methodology for ICP in Asia and the Pacific 52

PART 4. Regional Program Implementation 72

LIST OF TABLES, FIGURES, BOXES

ACRONYMS

ABS	Australian Bureau of Statistics
ADB	Asian Development Bank
AFCE	actual final consumption expenditure
BOCC	basket of construction components
COICOP	Classification of Individual Consumption by Purpose
CPD	country-product dummy
CPI	consumer price index
CPRD	country-product-representativity dummy
CUP	conventional unit to express parity
CV	coefficient of variation
EKS	Eltetö-Köves-Szulc
FISIM	financial intermediation services indirectly measured
GDP	gross domestic product
GFCE	government final consumption expenditure
GFCF	gross fixed capital formation
GK	Geary-Khamis
HFCE	household final consumption expenditure
HK$	Hong Kong dollar
ICP	International Comparison Program
NPISH	nonprofit institutions serving households
NSO	national statistical office
OECD	Organisation for Economic Co-operation and Development
PLI	price level index
PPP	purchasing power parity
PRC	People's Republic of China
SNA	System of National Accounts
SPD	structured product description
TAG	Technical Advisory Group
UN	United Nations
UNSC	United Nations Statistical Commission
UNSD	United Nations Statistics Division
US	United States

PART 1

Introduction: Role and History of the International Comparison Program

The International Comparison Program in Asia and the Pacific

The International Comparison Program (ICP) is a global statistical project set up on the recommendation of the United Nations Statistical Commission (UNSC) to enable international comparisons of economic aggregates such as gross domestic product (GDP), price levels, and purchasing power of currencies. In the current round for the benchmark year 2005, the scale of the project—with 146 participating economies from all geographic regions of the world—is far greater than all the previous phases of the ICP (see the section "History of the International Comparison Program"). The ICP Global Office, located in the Development Data Group of the World Bank (henceforth referred to as the Global Office), has been coordinating the overall program, with various international agencies managing the regional programs. The Asian Development Bank (ADB) was entrusted with the role of coordinating agency for the ICP in Asia and the Pacific (ICP Asia Pacific). ADB established the ICP Regional Office in its Economics and Research Department to manage ICP Asia Pacific.

The Asia and Pacific region is one of the largest and most diverse in the world. The economies in ICP Asia Pacific—including People's Republic of China (PRC), India, Indonesia, Pakistan, and Bangladesh, five of the eight most populous economies in the world—make up more than 50% of the world's population. In 2005, the ICP Asia Pacific economies contributed over 25% of world production, as measured by GDP converted to a common reference currency, (the United States [US] dollar), using purchasing power parities (PPPs).

The already complex task of conducting a large-scale project like ICP Asia Pacific, covering 23 economies, was complicated further by their geographic dispersion, and by the large variations in size, structure, and standard of living. The huge variety in the types of goods and services produced and consumed in different parts of the region presented ADB with some difficulties during the process of developing a common list of products to be priced across the region. (These difficulties, as well as the strategies and solutions adopted, are discussed in detail in Part 3.)

Rising to the challenge, ADB undertook the project and released new data that will be available for the analysis of economic and social structures of economies in the region, and for the comparison of significant characteristics such as GDP consumption expenditure.

The final stage of the 2005 ICP is completed when the Global Office releases its report on global comparisons covering 146 economies, on 17 December 2007. The ICP global results will provide comparisons between economies belonging to different regions of the world without affecting the relativities of the economies belonging to the same region. For example, it will be possible to make comparisons between Hong Kong, China in ICP Asia Pacific, with Japan from the Organisation for Economic Co-operation and Development (OECD), or with Brazil from Latin America. However, comparisons between economies within the Asia and Pacific region will remain unchanged when they are reported in the ICP global results.

International Comparisons in a Globalized World

Globalization and closer integration of countries of the world have resulted in a significant increase in demand for economic statistics that are internationally comparable for purposes of economic and statistical analysis. Understanding the relative size and structures of the countries and their growth performance is a crucial element in evidence-based decision making by researchers, economists in charge of public and private organizations, national governments, and international organizations.

Studies that focus on income catchup and convergence of countries are commonplace, as are studies that examine levels and trends in productivity, both in countries and in different sectors of the economy. Assessments of growth performance and potential require statistics on GDP, labor, and capital in different countries, which are compiled using standard international practice in their measurement to ensure that they are comparable across countries. In addition, analyses focusing on efficiency in health systems and on government expenditure on education require carefully compiled statistics on relevant aspects of such operations in different economies.

The recent debates on the effect of globalization on inequality of income distribution within countries, between countries, and in the world as a whole rely on data on GDPs in different countries expressed in a common currency converted using PPPs. It is well documented that the use of exchange rates tends to overstate inequality. For this reason, use of PPPs is now common.

The regular updates on global and regional poverty, based on $1- and $2-a-day international poverty lines provided by the World Bank and other international organizations, rely on timely and meaningful measures of PPPs between the US dollar and the currencies of developing countries where poverty incidence is high. Thus, there is increasing demand for PPPs based on international comparisons of prices paid for goods and services that are consumed by the poor.

Human development has many dimensions—per capita real GDP, economic growth, health, education, social progress, globalization, and poverty reduction. In each case, it is vital to have internationally comparable, high-quality statistical measures to make reliable intercountry comparisons, monitor progress, and assist in identifying suitable policies for fostering development and reducing poverty. For example, the Human Development Index makes use of per capita real GDP using PPPs as one of its components.

Comparing economic and social data (such as poverty statistics) is complex because economic aggregates are typically expressed in local currencies. The use of exchange rates is a common method to convert economic data from a local currency to a numeraire currency such as the US dollar. However, this simplistic approach is not appropriate for comparisons of per capita real GDP or output and for comparisons of productivity and standard of living.

The increasing importance of economic globalization has drawn greater attention to the shortcomings of the commonly used practice of adjusting economic data into a common currency using market exchange rates. It is a simple task to show that this process often leads to flawed results. Exchange rates' major shortcoming is that they do not take account of differences in the domestic purchasing power of each local currency. In addition, they are influenced by a range of factors unrelated to the actual purchasing power of a currency (e.g., interest rates and international trade). In practice, exchange rates can change very rapidly, thereby leading to illogical comparisons between countries, particularly when the underlying economic conditions have changed only marginally in the countries compared. Events such as the Asian economic crisis in 1997–98 exposed the seriousness of the statistical shortcomings of using exchange rates for international comparisons and have led analysts to better appreciate the usefulness of PPPs. As a result, more explicit use of PPP data is being made for global development goal setting, and

for monitoring progress toward achieving the United Nations' (UN) Millennium Development Goals.

Empirical studies have shown that using exchange rates for international comparisons systematically widens the gap for outcomes between high- and low-income countries. Exchange rates are driven by a number of factors, including the prices of traded goods, which are determined largely in world markets. Exchange rates generally overstate the relative price levels of low-income countries and so understate measures such as per capita real GDP. The reason is that price levels are also low in low-income countries, particularly for services, prices for which are largely dependent on labor costs.

Comparing the Japanese and US economies on both an exchange rate and PPP basis provides an excellent illustration of the problem. On an exchange rate basis, Japan's economy was 60% the size of that of the US in 1996 but only 38% in 2002, which is an economically implausible outcome given their relative rates of average annual economic growth over those 6 years (0.5% in Japan and 3.2% in the US). The comparable PPP estimates were 39% in 1996 and 34% in 2002, which align fairly well with the changes in the relative shares calculated using these economic growth rates.

History of the International Comparison Program

To put the 2005 ICP into perspective, it is necessary to look at the history of PPP development. Economic statisticians have understood for many years the benefits of using PPPs for international comparisons. As far back as the 1950s, projects were set up to examine the implications of bypassing exchange rates to compare activity levels between countries. In the early 1950s, OECD, then known as the Organisation for European Economic Cooperation, produced PPPs for France, Federal Republic of Germany, Italy, United Kingdom, and US. Several other experimental projects were undertaken during the 1960s in various regions—in Eastern Europe (under the auspices of the Council for Mutual Economic Assistance), in Latin America, and in Western Europe. The success of these projects led to the 1965 meeting of UNSC discussing in some detail the problems inherent in exchange rate comparisons. UNSC, which is responsible for setting global statistical standards and priorities, resolved that the United Nations Statistics Division (UNSD), then known as the UN Statistics Office, should investigate the issues associated with using PPPs as an alternative to exchange rates for making international comparisons. At its 1968 meeting, UNSC accepted the recommendations in the resultant report, outlining a project to be run from 1968 to 1971 to develop PPP-based comparisons for a small group of countries. This project became known as Phase I of the ICP.

UNSD did not have sufficient resources to run the ICP alone and so it set up a joint project with the University of Pennsylvania, which established a special unit headed by Professor Irving Kravis. Funding was obtained from sources within the US and elsewhere. The first step was to set up an advisory board to consider detailed proposals for the project and to provide technical advice as the project progressed. Phase I included two Asian countries—India and Japan. It was run in two stages with results for six countries published for 1967 and for 10 countries for 1970. The results of Phase I were released in 1975 (Kravis et al. 1975). Details included the overall results of the multilateral comparison for 1970; a variety of bilateral comparisons for both 1967 and 1970; and outcomes from various experiments on important issues such as rents, motor vehicle prices, and the consistency of some direct quantity comparisons.

The number of countries involved in the next three phases increased markedly with 16 countries in Phase II (for 1973), 34 countries in Phase III (for 1975), and 60 in Phase IV (for 1980). The representation from Asia also increased from two countries in Phase I, to six in Phase II, and to nine in Phase III, but dropped to seven in Phase IV. As the number of economies increased, so did the diversity of those compared, which added to the complexity of the project. The range of products to be priced had to be expanded to enable all participating countries to price a sufficient number of products that were representative of their expenditures. India was one of a small group of countries heavily involved in redefining the product specifications and expanding the product lists in the lead-up to Phase III.

Detailed results for Phase II were published in 1978 (Kravis et al. 1978). Those for Phase III were released in 1982 (Kravis et al. 1982).

Apart from the large increase in the number of participating economies in Phase IV, some major changes also occurred in this round. The most significant was the regionalization of the ICP for the

first time, partly to handle increased participation and partly because OECD decided to set up a PPP program for its member countries in conjunction with the PPP program run by Eurostat for countries in what is now called the European Union. Apart from the OECD/Eurostat "region," the other regions involved in Phase IV were Africa, Asia, and Latin America. The main advantages of regionalization are that the product lists can be more closely directed to the types of products representative of each region and the logistics of organizing the project can be split rather than be centralized, as had been the case previously. The main disadvantage is that the results for each region have to be linked to enable comparisons to be made between countries in different regions. The process used in Phase IV was to link regions using a "core country" approach (sometimes called a "bridge country" approach) in which selected countries priced some product specifications from another region to provide a relationship, or link, between their region and the other region. The results for Phase IV were published in 1986 (UN/Eurostat 1986).

Phase V of the ICP was run in respect of 1985 and there was only a small increase in the number of countries participating (from 60 to 64), with some new countries replacing those dropping out of Phase IV. Once again, a regional approach was adopted, which included Africa, Asia, Caribbean, and OECD/Eurostat. The core country approach was used once more to link regions. However, some of the links were problematic due to difficulties encountered by some core countries in collecting a sufficiently broad range of prices for products from the "other" region. Results were published in 1994 (UN/Eurostat 1994).

Phase VI was conducted in respect of 1993, and included the largest number of countries (117) to that time. The 1993 ICP round produced results for Asia, Africa, and Latin America, but the linking process was again problematic. The regions were not linked with each other or with the countries in the OECD/Eurostat PPP program (which was also conducted in respect of 1993). The outcome was the review commissioned by the 1997 meeting of UNSC.

At its meeting in February 1997, UNSC decided to review the ICP. The report of the review (Ryten 1999) was considered by UNSC during its meeting in March 1999. Broadly speaking, the conclusion of the Ryten report was that the ICP was an important project that should be continued, but that it required better funding and governance arrangements. The ICP was again discussed at the March 2000 UNSC meeting, particularly in the context of making comparisons between countries and regions in the *Human Development Report*. UNSC appointed a group of "Friends of the Chair", comprising experienced statisticians from several countries, to report on a range of issues, particularly the choice of PPPs or market exchange rates to adjust economic data to a common currency. The Friends of the Chair report (UNSC 2001) was considered at UNSC's March 2001 meeting. It strongly reiterated that PPPs provide a more appropriate and robust method of making international comparisons than market exchange rates because, unlike exchange rates, PPPs directly reflect differences in the price levels of the goods and services in the countries being compared.

The coverage of economies from Asia and the Pacific region in the 2005 ICP is impressive, particularly with the simultaneous participation of the PRC and India. The PRC participated for the first time in an ICP global comparison. From the outset it was agreed that the National Bureau of Statistics of China would provide price data for 11 cities and surrounding rural areas and that it would be the responsibility of the Regional Office and the Global Office to extrapolate the 11 city prices to the national average (see Appendix 1 for details). Accordingly, the results for the PRC were based on national annual average prices constructed by the Regional Office and the Global Office from the 11 cities' price data using the extrapolation methodology endorsed by an ADB-constituted Expert Group in June 2006. Given that the 11 cities were not fully representative of the PRC and that the weights used in the extrapolation methodology were also not fully reflective of the PRC as a whole, considerable caution needs to be exercised in the use of PPP estimates for the PRC. India took part in earlier rounds, but has not done so since Phase V in 1985. Therefore, the 2005 ICP brought the two most populous and two of the fastest-growing economies of the region into the ICP fold. In addition, participating economies come from all subregions, including Maldives and Fiji Islands, island economies on the western and eastern frontiers of the region. Table 1 shows economies from Asia and the Pacific taking part in ICP rounds.

Table 1. Participation of Asia and the Pacific in the International Comparison Program

ICP Phase	Benchmark Year	Number of Participating Economies	Participation of the Asia and Pacific Region
I	1970	10	India and Japan[a]
II	1973	16	India, Islamic Republic of Iran, Japan,[a] Repubic of Korea,[a] Malaysia, and Philippines
III	1975	34	Islamic Republic of Iran, India, Japan,[a] Repubic of Korea,[a] Malaysia, Pakistan, Philippines, Sri Lanka, and Thailand
IV	1980	60	Hong Kong, China; India; Indonesia; Japan;[a] Republic of Korea;[a] Pakistan; Sri Lanka
V	1985	64	Bangladesh; Hong Kong, China; India; Islamic Republic of Iran; Japan;[a] Republic of Korea;[a] Nepal; Pakistan; Philippines; Sri Lanka; and Thailand
VI	1993	117	Bangladesh; Hong Kong, China; Indonesia; Japan;[a] Republic of Korea;[a] Lao PDR; Malaysia; Nepal; Pakistan; Philippines; Sri Lanka; Thailand; and Viet Nam
VII	2005	146	Bangladesh; Bhutan; Brunei Darussalam; Cambodia; People's Republic of China; Fiji Islands; Hong Kong, China; India; Indonesia; Islamic Republic of Iran; Lao PDR; Macao, China; Malaysia; Maldives; Mongolia; Nepal; Pakistan; Philippines; Singapore; Sri Lanka; Taipei,China; Thailand; and Viet Nam

a Although the Republic of Korea and Japan are part of Asia, in more recent years they have been included in the OECD comparison.

University of Pennsylvania—Penn World Tables

The University of Pennsylvania has had a lengthy involvement with the ICP, beginning in 1968 when the International Comparison Unit was established to assist UNSD in running Phase I of the ICP. More recently, the University established the Center for International Comparisons in its School of Arts and Sciences in 1990. The Center has had an important role in conducting studies aimed at improving the theoretical backing of PPPs. A major output of the Center has been to extend the ICP results into a comprehensive set of comparisons, to cover countries not participating in the benchmark studies and to include data for non-benchmark years. This dataset is known as the Penn World Tables. It provides an invaluable data source for analysts interested in comparing the economic performance of any country in the world that has a set of national accounts.[1]

[1] More details on the Penn World Tables, including the data in a readily downloadable format, can be found at http://pwt.econ.upenn.edu/php_site/pwt_index.php.

Cost of the International Comparison Program

The ICP is a very expensive project and so it is run infrequently (the last ICP prior to 2005 was in respect of 1993). Work on the 2005 ICP started in late 2002 when the Global Office was set up in the World Bank to coordinate the work. The nature of the ICP is very different from virtually all other statistical activities. As its name suggests, it is an international project, but it is heavily dependent on the cooperation of national statistical offices (NSOs), other government agencies, and the international organizations that coordinate ICP work in different regions.

Not only is the ICP costly for all the NSOs and related government agencies involved in each of the participating countries, but it is also a time-consuming and resource-intensive project to coordinate. As a result, the Global Office decided to run the 2005 ICP on a regional basis, partly to spread the workload and partly to involve organizations that had close relationships with economies in each of the regions. The Global Office decided to group the world into six regions, five of which were geography-based and the sixth "region" consisted of the countries involved in the 2005 round of the OECD/Eurostat PPP program. The five geographic regions were Africa, Asia and the Pacific, Commonwealth of Independent States, Latin America, and Western Asia. At its 12th Session, in November 2001, the UN Economic and Social Commission for Asia and the Pacific (ESCAP) Working Group of Statistical Experts discussed a paper on the ICP (UN ESCAP 2001). One of the outcomes was that ADB was invited to coordinate the ICP work in the Asia and Pacific region.

Structure of the Publication

The task of reporting the activities and the results of a complex project such as the 2005 ICP Asia Pacific is both enormous and challenging. It is essential that the resultant documentation provides the reader with an appreciation of the procedures used in data collection and the methods used in aggregating price data in the process of computing PPPs—and, ultimately, give the reader a summary of the results useful for quick reference and easy interpretation. In addition, the documentation must be useful for a diverse group of general readers as well as specialist economists and researchers who are interested in using the 2005 ICP results. This publication is designed to meet all these requirements.

It is divided into five major parts accompanied by several appendixes. This part—Part 1—has provided useful background material on the ICP with a short description of the 2005 ICP.

Part 2 offers an overview of the whole publication and provides a summary of the main results of the 2005 ICP Asia Pacific in the section "Analysis and Major Findings." For a general reader, Part 2 is useful in understanding PPP concepts and their applications in international comparisons. A brief description of the basic methodology for PPP compilation is provided, and the main results for the region are summarized in a series of tables, where various aspects of the results are discussed.

Readers interested in details of the methods used will find useful material in Parts 3 and 4. Part 3 is devoted to a detailed discussion of the governance and organizational structure as well as the operational arrangements of the 2005 ICP. In particular, readers will find a detailed description of the steps involved in the collection of price data from the participating economies and the methodology used for the aggregation of price data for PPP computation. Procedures used in data collection, data editing, and the use of Tool Pack—the software package developed specially for the 2005 ICP—are also discussed in detail.

Part 4 focuses on program implementation in Asia and the Pacific. As mentioned above in the section "The International Comparison Program in Asia and the Pacific", the region is diverse with geographic and economic dispersion making international comparisons particularly difficult. Therefore, the implementation of the standard procedures described in Part 3 had to be modified and adapted to suit the specific circumstances relevant to this region. Details of lessons learned, which will prove very useful in planning future statistical activities in the region, are also presented.

Part 5 contains the tables presenting the detailed results for ICP Asia Pacific, which complement the summary results presented in Part 2. These tables will be useful for researchers and others who are interested in conducting further analysis of the results.

The publication is completed with a series of appendixes. Of particular interest are the results, including PPPs, derived using an additively consistent aggregation procedure, which is commonly referred to as the Geary-Khamis method. Results derived using this method are particularly useful in analyzing the structure of an economy in real terms. New methodologies adopted for PPP computation used in the ICP Asia Pacific comparison are discussed. ICP experiences in the participating economies, which provide insight into the efforts exerted at making this ICP round a success, are also given in the appendixes.

A glossary of important terms used in the publication is also included.

PART 2

Overview of Methodology and Summary of Results

Introduction

This part of the publication is designed to provide an overview of the conceptual framework that underpins work on international comparisons of economic aggregates, with a special focus on the concept of PPPs of currencies and their uses in economic analysis at the national and international levels. A description of the methodology used in the project is also provided. Most of this part is devoted to the presentation of the main results from the 2005 ICP Asia Pacific. Results presented here are in summary form and refer to some of the principal aggregates found in national accounts publications, such as GDP, household consumption, government expenditure, and investment. Readers will find useful information on PPPs, price level indexes, as well as nominal and real aggregates and comparisons of per capita GDPs for the 23 economies participating in the 2005 benchmark international comparison. Results at a more disaggregated level are presented in detailed tables in Part 5.

Purchasing Power Parities

In making many international comparisons it is necessary to express each country's values (e.g., for GDP) in a common currency. The simplest approach is to use exchange rates to convert them into a selected currency. However, use of exchange rates for this purpose does not adjust for differences in purchasing power of local currencies within each country. PPPs are means of adjusting values to a common currency. If two countries (A and B) are considered, a PPP is the number of currency units required to purchase the same basket, quantity, and quality of goods and services, in country B as could be bought with one unit of the currency of country A in country A.

A more formal definition of PPPs is presented in Chapter 1 of the ICP 2003–2006 Handbook (World Bank 2007a, henceforth referred to as the ICP Handbook):

> The number of currency units required to purchase the amount of goods and services equivalent to what can be bought with one unit of the currency of the base country, for example the U.S. dollar.

The simplest example of a PPP is the Big Mac Index regularly presented by *The Economist* news magazine. It shows the relative levels of the price of Big Mac hamburgers in various countries. This form of presentation provides an indication of which countries are "expensive" (i.e., those whose PPP for a Big Mac is higher than the exchange rate) and those that are "cheap". The aim of the ICP is to produce PPPs that are more robust than the Big Mac Index by taking account of the relative prices between countries of a broad range of the goods and services included in GDP.

For example, if a Big Mac costs 12.00 Hong Kong dollars (HK$) in Hong Kong, China and 5.70 Malaysian Ringgit (RM) in Malaysia, the PPP of the Big Mac is HK$2.105 (i.e., 12.00/5.70) using Malaysia as the "base" or "numeraire" economy. The PPP of 2.105 for Hong Kong, China means that it would

cost HK$2.11 in Hong Kong, China to purchase the same quantity and quality of Big Mac that could be purchased for RM1.00 in Malaysia. Using the Hong Kong dollar as the common currency, the PPP is RM0.475 (i.e., 5.70/12.00), which means it would cost RM0.48 in Malaysia to purchase the same quantity and quality of Big Mac that could be purchased for HK$1.00 in Hong Kong, China. Even though these PPPs are expressed in different currencies, both results present the same picture because the relationships between them are the same (0.475 is the reciprocal of 2.105).

In practice, a PPP is simply a price relative defined on price observations over space (regions or countries). It is similar to the price relatives that are formed in producing a price index such as a consumer price index (CPI) for purposes of measuring changes in prices over time. The key difference is that in a CPI, price relatives are calculated for the same product in the same country in different periods but, in PPPs, price relatives are the ratios of prices for the same product in the same period (2005 in the current ICP) in different countries. Another difference is that a PPP of the currency of a country is expressed in currency units of a currency of the reference (or base) country equivalent in purchasing power to one unit of the currency of the reference country. A PPP simply refers to the number of currency units of a country that has the same purchasing power as one unit of the reference currency.

While the Big Mac Index is useful as an illustration of the concept of PPPs, it is unsuitable for any broader comparisons because it covers only a single product out of the huge range of goods and services included in GDP. The advantage of using the Big Mac is that price comparisons are based on a product that is comparable across countries and hence the resulting PPP is based on a comparison of the price of like with like. However, the Big Mac may not be equally representative in both countries. It is easy to imagine countries where the Big Mac would be considered a luxury item. The ICP, though, is essentially a price comparison based on not just one commodity but on prices of a large collection of goods and services.

Uses of PPPs and PPP-converted Data

As the benefits of PPPs and PPP-converted data have become more apparent, the range and types of users have increased. These include international organizations, universities, economic analysts, private sector businesses, and policy makers. They use PPP-based data for analyzing levels of activity, productivity, income, investment, and inequality in the distribution of incomes between countries, and for compiling statistics on regional and global poverty.

Over the last two and a half decades, PPPs and real GDPs measured using PPP conversion factors have been increasingly used for analyzing productivity, particularly labor productivity; catchup and convergence issues; and global and regional inequality. Phase IV of the ICP (1980) marked a new beginning for ICP through a coverage that could be described as truly global, with 60 countries from all regions of the world. In addition, availability of panel data covering many countries over long periods in the form of the Penn World Tables has made PPPs and PPP-converted data much more accessible to researchers and analysts interested in econometric analysis. Summers and Heston (1991) provide a description of the methodology used in their extrapolations of the benchmark data, and the latest set of Penn World Tables provides extrapolated data for 188 economies over 1950–2004 with 2000 as the base year.

The World Bank also produces extrapolations of PPPs that are used for computing PPP-converted data on GDP, which are regularly published in its flagship publications such as *World Development Indicators*. The World Bank PPPs are also used in the estimation of national, regional, and global poverty estimates showing the number of poor living under the $1- and $2-a-day international poverty lines.

Angus Maddison from the University of Groningen has also constructed long time series of real GDP and per capita real GDP for a large number of economies. His series have been available in his much-celebrated publications such as *Monitoring the World Economy, 1820-1992* published by OECD in 1995, and in his recently published book *Contours of the World Economy 1—2030 AD: Essays in Macro-Economic History* published by the Oxford University Press in 2007. The data series generated by Maddison are available on the Groningen Growth and Development Centre database located at the University of Groningen.[2] The Maddison estimates are expressed in 1990 US dollars.

[2] Available: www.ggdc.net/dseries/totecon.html.

Availability of rich data series from the Penn World Tables, Maddison, and the World Bank has enabled researchers to undertake work on catchup and convergence on an unprecedented scale. Many studies have examined the issue of income convergence using PPP-based measures of per capita GDP. These papers test whether growth rates (typically measured in local currency units rather than PPPs) are significantly explained by the *level* of initial per capita GDP or per worker, which is termed β-convergence. Clearly, international comparability of the latter is important, so PPP-based GDP measures play an important role in this context. Moreover, of particular interest is the strength of the coefficient on initial per capita GDP, since this determines the speed of convergence.

Other studies also examine the *distribution* of per capita GDP, or σ-convergence. Again, since switching from exchange rate- to PPP-converted per capita GDP will significantly alter the distribution of the series (switching to PPP generally raises per capita GDP in the poorest countries), the use of PPPs is once more vital in this context. Prominent studies testing convergence using PPP-based initial GDP measures are Barro and Sala-i-Martin (1992), Barro (1994), Mankiw et al. (1992), and Islam (1995) on using panel data. Extensive reviews of this literature can also be found in Durlauf and Bernard (1995) and Sala-i-Martin (2002).

Availability of real GDP and investment series has prompted researchers to estimate productivity growth and examine issues of convergence. Real GDP is used as an output measure, and real investment series (comprising nonresidential construction, and machinery and equipment) is used in building capital stock series. Färe et al. (1994) use the Malmquist productivity index, in conjunction with labor force figures combined with output and capital data, to examine productivity growth performance among OECD countries. They provide evidence for a catchup in productivity as shown by the movement of countries toward the technology frontier (Coelli et al. 2005). A similar study, on a larger scale, by Rao and Coelli (2002) also focused on the issues of productivity performance. This study considered two outputs, i.e., real GDP (nominal in local currency units converted using PPPs) and levels of inequality measured using the Gini coefficient when real GDP, as well as level of inequality, are considered in assessing the performance of nations. Studies on international productivity comparisons make use of PPPs and PPP-converted real aggregates for analytical purposes.

Applications of PPPs also arise in some unexpected areas. A particular example of interest is the recent debate about the use of PPPs in the construction of projections of carbon emission. The initial approach used by the Intergovernmental Panel on Climate Change based on market exchange rates was criticized by Castles and Henderson (2003). The arguments surround the projected growth rates of industrial and developing countries and how the projections differ if the initial position of the countries is determined on the basis of per capita GDP converted into US dollars (or any other reference currency of choice) using market exchange rates instead of PPPs. McKibbin and Stegman (2005) report results from their models that suggest that market exchange rate-based GDP figures and gaps between countries produce projections of carbon emissions for 2050 that are 22% higher than those derived using PPP-based GDP gaps between countries. Their results suggest that it is important to measure gaps between countries using PPP-converted per capita GDPs.

Another important use of PPPs is in measuring regional and global inequality. In order to study intracountry, intraregional, and interregional inequality, it is necessary to convert per capita GDPs into a common currency unit. The level of inequality is shown to depend on whether market exchange rates or PPPs are used in the conversion process. Milanovic (2002) reports that a commonly used measure of inequality, the Gini coefficient, for 1993 and based on data for over 90 countries, is equal to 0.805[3] when market exchange rates are used, but only 0.660 when PPPs are used.

In a similar vein, a recent study by Dowrick and Akmal (2005) has shown that the aggregation method used in the computation of PPPs can also influence the numerical measure of inequality. Their study demonstrated that the use of the GK method for computing PPPs can lead to a downward bias in the inequality measure compared to that derived using a method developed by Afriat (1967). The type of divergence indicated by Dowrick and Akmal (2005) can also be seen in the case of the more commonly used Eltetö-Köves-Szulc (EKS) method of aggregation (the method used in ICP Asia Pacific).

[3] The Gini coefficient is always in the range of 0 to 1, takes a value of 0 when there is no inequality, and is equal to 1 when there is perfect inequality (where one individual gets all the income and the rest get no income).

Among more celebrated uses of PPPs is in the Human Development Index (e.g., UNDP 2006). This is a measure of country-level well-being based on three different indicators, i.e., life expectancy, literacy and education, and standard of living. The standard of living component of the index is measured using per capita real GDP derived using PPPs. Various countries, including India, have made efforts to produce human development indexes for subregions within the country. Such attempts use PPPs to measure spatial price-level differences explicitly or implicitly.

A more direct application of data generated from ICPs is by Dwyer and Rao (2001) who used PPPs at the basic heading level to generate indexes of price competitiveness of different countries as tourist destinations. Dwyer and Rao use weights derived from surveys conducted in destination countries. While their work focused mainly on Australia and its neighbors in Asia and the Pacific, it is possible to extend their research to cover tourist destinations around the world. They use ICP results at the basic heading level and combine them with spending patterns of tourists.

The applications discussed above serve as an illustration of the diversity of areas for PPP use. Yet it is useful to know when PPPs can be used and where market exchange rates are more appropriate. PPPs are generally required to calculate levels of activity and related data (e.g., per capita volumes) but exchange rates are sometimes more appropriate for comparing relative levels of financial aggregates. These uses are summarized below.

In broad terms, PPPs should be used to:

(i) calculate volumes (i.e., real expenditures) of GDP (also GDP volumes per hour worked, and per capita GDP volumes);

(ii) calculate volumes of components of GDP, such as consumption or fixed capital formation;

(iii) calculate price levels;

(iv) convert the $1-a-day international poverty line to local currency units (such comparisons are usually based on PPPs computed using expenditure share weights of the poor);

(v) calculate the per capita consumption or GDP figures used in computing Gini coefficients; and

(vi) aggregate an individual country's GDP and related data to regional and world totals (e.g., GDP for the whole of Asia and the Pacific), so that its share of regional totals and growth rates can be calculated.

Some key uses of the PPPs and PPP-based volumes, and per capita volumes, of GDP are to:

(i) analyze the extent of convergence in real incomes and prices across countries;

(ii) measure the levels and trends in inequality in real GDPs between countries and between regions within a country;

(iii) assist in establishing aid policies for less-developed countries; and

(iv) calculate cost-of-living adjustments for people assigned to posts in foreign countries.

Exchange rates should generally be used to convert:

(i) the value of a country's exports to determine its ability to purchase imports;

(ii) the value of the balance-of-payments current account balance;

(iii) financial data (in some cases only, such as the volume of investment goods that could be purchased for a given amount of foreign direct investment); and

(iv) share prices.

In some cases, though, it is not necessary to convert values in local currency to a common currency. The following are best analyzed between countries when expressed in their own currency:

(i) growth rates (i.e., percentage changes) in GDP and its components between countries;

(ii) productivity growth rates;

(iii) inflation (e.g., percentage changes in a CPI);

(iv) ratios of national accounts aggregates to GDP (e.g., the ratio of government deficit to GDP or of government debt to GDP); and

(v) shares of different sectors of the economy in GDP (e.g., the percentage of GDP contributed by agricultural gross product).

Limitations of Purchasing Power Parities

While PPPs are a powerful tool for several kinds of economic analysis, a word of caution is needed. First, they do not provide any indication as to what the exchange rate "should be." When the theory of PPPs was first developed, it was argued that PPPs would be close to "equilibrium exchange rates" if all the goods are freely traded. But the PPPs from the 2005 round cover not only tradable products but also nontradables such as construction, personal, and government services. In any event, exchange rates are determined by the total demand for a particular currency, and financing foreign trade is only one component of this demand. PPPs, therefore, cannot be used to determine a country's "correct" exchange rate; this is determined by international currency markets.

Second, PPPs are statistics and therefore subject to sampling errors. National accounts statistics that are used as weights in combining PPPs at basic heading level also contain similar errors. When PPPs and national accounts are combined into total or per capita GDP (in PPP terms), the resulting per capita real GDPs cannot be used to establish strict rankings between countries. Rankings should be used cautiously when differences between countries are relatively small. The reliability of PPPs and volume measures also depend on the level of detail. At a more aggregated level, PPPs are likely to be more reliable. For example, PPPs for food and nonalcoholic beverages would be more reliable than PPPs for food alone; PPPs for bread and cereals are likely to be more reliable than PPPs for just rice. This has been an important consideration in determining the optimal level of data disaggregation in this publication.

Finally, time series of different benchmark estimates of real GDP (in PPP terms) are not directly comparable over time. Real GDP provides a snapshot of the relative real GDP levels among participating countries for a given benchmark year. When benchmark PPP estimates for different benchmarks are placed side by side, these snapshots may appear to provide a moving picture of relative real GDP levels over the years, but this apparent time series of real GDP is actually similar to a current price time series showing the combined effect of changes in relative price levels and changes in relative real GDP levels. Within each year, the indexes are at a uniform price level, but the uniform price level changes from one reference year to the next.

To construct a comparable time series of real GDP for a group of countries, each country's GDP figures should be converted to a numeraire currency using the PPPs for a selected base year. For example, the latest version of the Penn World Tables provides real series that are comparable across countries and over time for 1950–2004 with 2000 as the base year. Similarly, the Maddison series are all expressed in constant 1990 US dollars. It is important to note that time series expressed in this manner will have identical growth rates to those in each country's time series national accounts. The main use of such series is to enable regional (global) totals to be calculated so that volume growth rates can be calculated at the regional (global) level.

Methodology for PPP Compilation—A Brief Description

The methodology used in the compilation of PPPs is explained in detail in the ICP Handbook. However, the actual implementation can vary as the regions respond to their own challenges. The basic approach used and actual implementation of various methods are fully explained in Parts 3 and 4 of this publication.

As a general note, basic heading PPPs refer to specific baskets of goods and services. For example, the Big Mac Index can be considered a PPP covering only one item, the Big Mac. Therefore, in principle, PPPs can be compiled for different baskets of goods and services. These can be at an aggregate level, e.g., PPP for GDP or PPP for government, or at a more disaggregated level for food, clothing, and machinery and equipment or even at a finer level where PPPs are computed for specific items classified under an item, say, rice. (See the section "Compiling Purchasing Power Parities" in Part 2.)

General Approach of the International Comparison Program

Structure of GDP

The first step involved in ICP is to start with an aggregate like GDP and consider components of GDP at different levels of disaggregation. At the most aggregated level, GDP is divided into household consumption, government consumption, gross fixed capital formation (GFCF), balance of exports and imports, and a balancing item consisting of change in inventories and acquisitions less disposals of valuables. These aggregates are further divided into 26 categories, 61 groups, 126 classes, and finally 155 basic headings. See Table 2 for a more detailed distribution of basic headings[4] by different categories and groups. Appendix 2 presents the complete structure of GDP in the form used in the ICP.

Hierarchical Approach

The ICP uses a hierarchical approach to the computation of PPPs. At the most detailed level, PPPs are computed for each basic heading. These PPPs are then aggregated to form PPPs for different classes, groups, and categories using the procedures discussed below.

Data

Computation of PPPs, as in the case of standard index numbers such as the CPI, requires price data along with data on either quantities or expenditure share weights. At the item level, only price data are available but at the basic heading level, weights are also available. Price data are collected through price surveys conducted in all the participating economies. Expenditure share data are obtained from the national accounts of each economy under consideration. Survey frameworks and the general procedures used in data collection are elaborated in Parts 3 and 4. (In addition, this publication also presents a brief summary of the actual survey methods used. The summary was prepared on the basis of notes submitted by the national coordinators of ICP in the participating economies. See Appendix 3.)

Product Lists for Price Surveys

Product Lists

An important first step in ICP work was to prepare a list of goods and services to be priced by all the participating economies. These lists were prepared separately for household consumption, government consumption, and GFCF components of GDP. No price data were collected for imports and exports as exchange rates were used as PPPs for the balance of trade component of GDP. (A more detailed discussion is found in the section "Developing Product Lists" in Part 3.)

Identification of products along with their specifications (price-determining characteristics) was a crucial step in this process. In a diverse region like Asia and the Pacific, it was necessary to consider the whole range of products that were commonly used in all participating economies. Considerable human and financial resources were devoted to preparing the product lists. Two competing considerations were paramount. The first was that the product selected should be sufficiently well specified so that prices collected in different countries for a given product become *comparable*. Strictly, comparability would require a narrow and complete specification of the product. However, a narrowly specified product that can be priced in all the countries may also mean that the product in question may not be *representative*. This was the second consideration. A careful balance was struck between these two requirements. (A more comprehensive discussion can be found in the section "Requirements for Valid Price and Volume Comparisons" in Part 3.)

Once the products and their features were identified, these were recorded in the form of "structured product descriptions" (SPDs) developed

[4] Basic headings are the lowest level of aggregation at which expenditure-share weights are available. For example, "Rice" is a basic heading that covers 19 different varieties of rice. For each variety of rice price quotations are available but no weights in the form of expenditure share attached to each type of rice are available. See Parts 3 and 4 for more details.

Table 2. Number of Categories, Groups, Classes, and Basic Headings by Main Aggregate

Main Aggregates	Categories	Groups	Classes	Basic Headings
11.00 Individual Consumption Expenditure by Households	**13**	**43**	**90**	**110**
- .01 Food and nonalcoholic beverages		2	11	29
- .02 Alcoholic beverages, tobacco and narcotics		3	5	5
- .03 Clothing and footwear		2	5	5
- .04 Housing, water, electricity, gas and other fuels		4	7	7
- .05 Furnishings, household equipment and maintenance		6	12	13
- .06 Health		3	7	7
- .07 Transport		3	13	13
- .08 Communication		3	3	3
- .09 Recreation and culture		6	13	13
- .10 Education		1	1	1
- .11 Restaurants and hotels		2	2	2
- .12 Miscellaneous goods and services		7	10	10
- .13 Net purchases abroad		1	1	2
12.00 Individual Consumption Expenditure by NPISHs	**1**	**1**	**1**	**1**
13.00 Individual Consumption Expenditure by Government	**5**	**7**	**16**	**21**
- .01 Housing		1	1	1
- .02 Health		2	7	12
- .03 Recreation and culture		1	1	1
- .04 Education		2	6	6
- .05 Social protection		1	1	1
14.00 Collective Consumption Expenditure by Government	**1**	**1**	**5**	**5**
15.00 Gross Fixed Capital Formation	**3**	**6**	**11**	**12**
- .01 Machinery and equipment		2	7	8
- .02 Construction		3	3	3
- .03 Other products		1	1	1
16.00 Change in Inventories and Acquisitions Less Disposals of Valuables	**2**	**2**	**2**	**4**
-.01 Change in inventories		1	1	2
-.02 Acquisitions less disposals of valuables		1	1	2
18.00 Balance of Exports and Imports	**1**	**1**	**1**	**2**
Gross Domestic Product	**26**	**61**	**126**	**155**

NPISH = nonprofit institutions serving households.
Source: Chapter 3 of the ICP Handbook.

by the Global Office specifically for this ICP round. Once the SPDs were clearly defined, product lists, along with SPDs and sometimes with photographs of the items, were provided to ensure comparability of prices across participating economies.

Individual Consumption by Households

A total of 656 products (goods and services) were included in the product list for this group. Not all the products were priced in all economies because the product list had to be extensive in order to adequately cover the items purchased in this diverse range of economies. For example, certain products that are commonly used in South Asia may not be that common in East Asia. All participating economies played an active role in preparing the product lists.

General Government Services

For purposes of the ICP, government consumption expenditure was classified by function, such as health and education, and then by the type of expenditure, including compensation of employees, intermediate consumption, gross operating surplus, and net taxes on production and receipts from sales. For comparison of employee compensation, detailed specifications of different types of employees were identified. In this round of the ICP for this region, explicit adjustments allowing for differences in productivity of government workers between different economies were made. (Details of the methodology for productivity adjustment are presented in Appendix 4.)

Health

Health goods and services were considered under several basic headings covering health products and health services. Pricing health-related products is problematic when these are subsidized at different levels and in different ways in different economies. The basic principle that prices should reflect the full price, no matter who is paying for the goods or services, was followed.

Education

Detailed guidelines were established for pricing private education services to ensure comparability of prices collected for education. Prices collected related only to privately provided education services. Education was divided into primary, secondary, and tertiary levels; tutoring-type services were also included.

Construction

The main components of GFCF are construction and equipment. Comparisons of prices for these two aggregates are difficult especially in the case of the Asia and Pacific region, with participating economies ranging from low to high in the level of development. In the case of construction, a new approach, the basket of construction components (BOCC) was proposed by the Global Office and implemented in this region. The PPPs were based on prices of major installed components of construction projects. Components' prices were built up from the costs of building materials and labor. The final implementation of this approach involved 23 components and 11 basic inputs that broadly represented construction activity around the world. (Chapter 9 of the ICP Handbook provides a detailed description of the approach, with worksheets required for implementation. Part 4 provides further details about the implementation of this procedure in ICP Asia Pacific.)

Equipment

Price surveys for equipment goods used specifications for equipment developed by the Global Office (see Chapter 9 of the ICP Handbook), with specifications focusing on the price-determining characteristics of machinery and equipment. Equipment comparisons had seven basic headings but in the final comparisons the basic headings on fabricated metal products and on other manufactured goods were excluded. As comparison of prices of equipment goods is a complex task, ICP Asia Pacific relied on experts from the region to provide advice on product characteristics and their representativity in different economies.

Dwelling Rents

The national accounts measure of dwelling rents covers both the value of rents paid for rented dwellings as well as the imputed rents for owner-occupied dwellings. The Global Office developed a methodology based on the quantity ratio method. As the value ratios[5] are usually available from national accounts, a reliable quantity ratio can be obtained that would lead to an indirect PPP comparison. However, data collected from regional participating economies failed to provide meaningful estimates of quantity ratios and therefore, it was difficult to implement the methodology proposed by the Global Office (see Chapter 10 of the ICP Handbook). Instead, for the 2005 ICP Asia Pacific a "reference volume relative" was used as an indicator of relative volume ratios for dwelling services. (Details of this approach are provided in Part 4 in the section "Procedures Used for Dwelling Rents and Government Compensation of Employees".) This is an area where further refinements are necessary for future rounds of the ICP.

Data Editing and Validation

Ensuring the quality of price data was a major task in the ICP. The general procedure adopted in ICP Asia Pacific was that price data were collected, compiled, and checked at the national level by the national coordinator. Price data were then transmitted in the form of national average prices to the Regional Office. One of the key challenges faced in the 2005 ICP was to ensure that the data used in the calculations were of the highest possible quality. Several standard methods were available for validating data, but both the Global Office and the Regional Office developed new procedures to ensure high-quality and comparable price data. Examples were the introduction by the Global Office of SPDs to improve comparability of product specifications across economies; the development of specialized software (Tool Pack) to store, aggregate, and transmit price data; to provide some detailed edit checks using the Quaranta and Dikhanov tables; and to calculate PPPs and related data. (Details of the editing procedures used are discussed in the section "Data Editing and Validation Procedures" in Part 4. Numerical illustrations of the use of Quaranta and Dikhanov tables are also provided.)

Obviously, some components of GDP are more challenging to compare than others. For example, nonmarket services such as the provision of health, education, and other government services remain difficult to compare despite concerted research efforts that aim to address long-standing problems. Construction projects are another area of weakness in the ICP because of differences in building codes, quality of materials, type and amount of equipment utilized, and labor skills. Striking a delicate balance between comparability and representativity of products and services makes the challenge even more compelling. This is particularly true when economies in the comparison are different in terms of expenditure patterns, as well as in the level of economic and social development. Hence, results in difficult-to-compare sectors have to be approached with greater caution than those for other GDP components.

Special procedures were developed to handle some of the "comparison-resistant" services—dwelling rents, compensation of government employees, and construction. The Regional Office also developed special instructions to participating economies to ensure that the prices of all household consumption products including health, education, and construction were as consistent as possible across economies.

Compiling Purchasing Power Parities

Desirable Properties of Purchasing Power Parities

Base-country invariance is an important property for PPPs because it means that the results of comparisons do not depend on the choice of the base country or of the numeraire currency.

Transitivity is another important property for PPPs because it ensures that comparisons made between any pair of countries are mutually consistent. Having PPPs that are transitive means that an indirect comparison between two countries via a third country will yield the same result as a direct comparison between the first two countries. For example, if the countries concerned are A, B, and C, the PPP between A and B ($PPP_{A,B}$) will be identical to the product of the PPP between A and C ($PPP_{A,C}$) and the PPP between C and B ($PPP_{C,B}$). This relationship can be expressed algebraically as follows:

$$PPP_{A,B} = PPP_{A,C} \times PPP_{C,B}$$

[5] Ratio of dwelling rents expressed in local currency units for each pair of economies in the comparison.

In more general terms, transitivity is satisfied if PPPs are such that the above equation holds for any selected set of three countries from M countries.

Characteristicity means that each binary comparison and the corresponding results from a multilateral comparison with transitivity imposed (e.g., by using the EKS method) should be as similar as possible.

Additivity and other properties. In addition to these three properties, several others are desirable. These are usually referred to as "axioms". Details of the axiomatic approach can be found in Diewert (1988) and Balk (1995). Of all such properties, additivity is one of the most commonly discussed. Additivity ensures that subaggregates converted using PPPs at that level add up to total GDP converted into real aggregate using a PPP at the GDP level. Additivity is a property that is obviously satisfied by the national accounts in local currency units. If PPPs are derived using an aggregation method that guarantees additivity, such as the GK method, the national accounts expressed in a common currency unit will also satisfy additivity. The estimates in this publication have been compiled using the EKS method, which is not additive.

Reference Purchasing Power Parities

For several basic headings, it was not possible to obtain prices that matched directly with the expenditures—net acquisitions of valuables and changes in inventories, for example. An indirect PPP was used for the basic heading in such cases, labeled as "reference PPP". Generally, reference PPPs were taken directly from another basic heading that was related in some way. However, in some cases, more broadly based PPPs were required. For example, the PPP for changes in inventories was based on an aggregation of the PPPs for durable goods (both consumer and investment). (Appendix 5 presents a list of the reference PPPs used by the economies in the region.)

Intraregional Aggregation

Three broad aggregation processes were involved in obtaining PPPs for the 23 participating economies: (i) averaging the individual price observations to form a national annual average price for each product, in each economy; (ii) calculating PPPs at the basic heading level between the economies; and (iii) calculating PPPs for GDP and its major aggregates between the economies.

The first step in the aggregation process was to calculate the national annual average price for each product, as described in the next section. The second and third steps were much more complicated, with some complex statistical formulas required. The "country-product-dummy" (CPD) method was used to calculate PPPs at the basic heading level, and the "EKS method" for aggregating the basic heading data to GDP (and its major components).

National Annual Average Prices

A final consideration related to the prices collected was that they should be national annual average prices. The underlying reason was that they were going to be applied to the annual values recorded in the national accounts for 2005. Ideally, the national annual average price should be obtained for each product as its average unit value for 2005 (i.e., the value of the product sold during 2005 divided by the number of units of that product sold across the whole country). In practice, it was impossible to obtain the detailed data required to calculate unit values, so the process adopted for collecting prices for the ICP was similar to that used by NSOs in collecting price data for their time-series price indexes, such as the CPI.

A sample of products was selected for pricing and their characteristics were defined in considerable detail. Prices were collected for these products in each quarter of 2005 from a range of outlets (supermarkets, local stores, markets) and from the various regions within each economy (urban/rural). In some economies, the collections were spread across these outlets and regions broadly in proportion to their importance in each economy. In some others, sufficient information was available to enable explicit weighting to be applied, particularly to the urban

Box 1. Special Case—People's Republic of China

The People's Republic of China (PRC) participated for the first time in the global 2005 International Comparison Program but agreed to participate to the extent of providing prices for only 11 major cities, namely, Beijing, Chongqing, Dalian, Guangzhou, Harbin, Ningbo, Qingdao, Shanghai, Wuhan, Xiamen, and Xi'an, and surrounding areas. The ICP Regional Office in the Asian Development Bank (ADB) and the ICP Global Office in the World Bank converted the 11 city results into a set of national purchasing power parity (PPP) estimates. This conversion was carried out in consultation with the National Bureau of Statistics of China (NBS). However, the 2005 PPPs that are now available for the PRC will not be officially approved figures but Regional Office and Global Office estimates.

Each of the 11 cities of the PRC included not only densely populated areas but also substantial parts of the surrounding countryside, and NBS reported only average prices for all the 11 cities. The Regional Office and the Global Office consulted with NBS staff to discuss how price data for the 11 cities could be weighted together to obtain national PPPs. The procedure in deriving national annual average prices is described in more detail in Appendix 1.

For government consumption expenditure, NBS also provided data on compensation of government employees for the 11 cities. However, since the NBS *China Statistical Yearbook* had national level figures for government compensation, these figures were used in estimating PPPs for both individual and collective consumption.

For gross fixed capital formation, prices for construction goods were collected for three cities only, and those for machinery and equipment were collected in 11 cities in which the type of equipment could be found that matched the specifications.

A different procedure was used for the national accounts. The national accounts data for the PRC as a whole (rather than for the 11 cities) were used as the starting point for splitting the expenditures on GDP into the 155 basic headings required for the ICP. These national data were disaggregated using detailed sources such as national household income and expenditure surveys and government expenditure data. This exercise was carried out by a special mission that worked in close collaboration with NBS in July–August 2006.

and rural components to ensure that they reflected the relative importance of each. It was very important to weight together the prices when urban and rural prices were significantly different. When explicit weighting could not be applied, national average prices were calculated for each product for each quarter as an arithmetic mean of all the relevant price observations. If the prices for a product were not seasonal, the average annual price was obtained as the simple average of the quarterly prices. In some cases in which a product had significant seasonality in its prices, it was necessary to use a weighted average of the quarterly prices to obtain a national annual average price for that product. The techniques used to deal with products with large seasonal price changes are set out in Chapter 4 of the ICP Handbook.

Purchasing Power Parities at the Basic Heading Level

Basic Heading

The most broadly based economic dataset available is the national accounts, which are compiled in most countries in accordance with the recommendations described in the United Nations (UN) System of National Accounts (SNA) 1993. In several countries, the national accounts are still partly based on the SNA released in1968 and these countries are being encouraged to revise their national accounts to bring them closer to the 1993 version. For the purposes of the ICP, however, the differences are small and the concepts and definitions underlying the national accounts of all 23 participating economies are highly comparable. There are three different methods of measuring GDP. It is critical for the ICP that details are available on the final expenditures

underlying GDP, so the expenditure approach to measuring GDP[6] is required.

Some parallels can be drawn between the starting point for time-series price indexes and PPPs. In both cases, prices are usually aggregated without using any weights up to a particular level and then weights are applied above that level. In time series, the level below which no weights are applied (perhaps more correctly expressed as equal weights being applied) is referred to as the "elementary aggregate". In the ICP, the equivalent level is known as the "basic heading," which is defined in Chapter 1 of the ICP Handbook as "the smallest aggregate for which expenditure data are available".

In the 2005 ICP, 155 basic headings were defined. They were comprehensive, with the result that their sum equaled GDP. Actual final consumption expenditure (AFCE) accounted for 110 of the basic headings. In practice, the basic headings had several important functions:

(i) they provided the framework for identifying the products to be priced;

(ii) they were the starting point for drawing up the regional product lists;

(iii) they provided the framework for editing the prices reported by economies; and

(iv) expenditures within basic headings were used as weights to combine the PPPs calculated for each basic heading.

Table 3 shows the number of basic headings within each broad expenditure category, the number of products specified, and the average share of each category within GDP in Asia and the Pacific. Note that some of these components have been aggregated for publication purposes in the tables in Part 5. (A list of all the basic headings used in the 2005 ICP is presented in Appendix 2.)

Once the national annual average prices were calculated, the next step was to calculate PPPs at the basic heading level using the CPD method. The CPD method is a multilateral approach, i.e., the PPPs are estimated simultaneously for all economies within the region rather than step by step between each pair of economies in turn. The PPPs generated by the CPD model are transitive. In other words, the measure of the relationship between any pair of economies for a product's PPP is the same no matter whether the economies are compared directly or via a third economy within the region.

The starting point for the CPD approach was a matrix of prices (in local currency) for priced products within each of the 23 economies. Obviously, there were gaps in the matrix because it was not possible (nor generally desirable) for all economies to price every product in the list. The CPD method is a regression technique. The underlying model is multiplicative and it assumes that prices vary by product within economies at the same rate across all economies, and that prices vary between economies at the same rate across all products. As is usual with a regression equation, an error term (also multiplicative in this case) is required to handle variations in the observed product/economy prices from those generated by the model. In practice, one economy and one product in one economy have to be chosen as the bases and all other product/economy combinations are measured in terms of their variation from these bases.

The multiplicative CPD model can be shown using a simple example. Assume that we have m economies and their product list consists of n products. Then, for each product (i) in each economy (j) the price observed is p_{ij} for $i = 1, 2, \ldots\ldots, n$ and $j = 1, 2, \ldots\ldots, m$. Note that the prices p_{ij} are expressed in each economy's local currency. The CPD model is expressed as $p_{ij} = \alpha_i \beta_j \upsilon_{ij}$ where α_i is the product term, β_j is the economy term, and υ_{ij} is the error term.

Additive models have some useful properties and so, in practice, the CPD model is converted from a multiplicative one to an additive one by expressing the terms in the model as logarithms:

$$\log(p_{ij}) = \log(\alpha_i \beta_j \upsilon_{ij})$$

$$= \log(\alpha_i) + \log(\beta_j) + \log(\upsilon_{ij}).$$

The parameters in the model are estimated using a least-squares approach. Given that the model requires the outputs to be expressed in terms of one economy's currency, the outputs are simply PPPs expressed in terms of that base economy. In the model, if we assume the base economy is economy 1, then $\alpha_1 = 1$. In addition, it is necessary to select a product

[6] Expenditure-based GDP is total final expenditures on consumption and investment, plus changes in inventories, plus net international trade in goods and services.

Table 3. Gross Domestic Product and Its Structure: Number of Basic Headings and Products and Average Expenditure Shares in Asia and the Pacific, 2005

Category		Number of Basic Headings	Number of Products	Average Share in GDP (%)
GROSS DOMESTIC PRODUCT	a+u+v+z+aa	155	833	100.0
Actual Final Consumption By Households	a = b+p+q	132	676	54.0
Individual Consumption Expenditure By Households	b = Σ(c to o)	110	658	49.0
Food and Nonalcoholic Beverages	c	29	211	14.7
Alcoholic Beverages, Tobacco and Narcotics	d	5	19	1.1
Clothing and Footwear	e	5	71	3.0
Housing, Water, Electricity, Gas and Other Fuels	f	7	14	7.9
Furnishings, Household Equipment and Routine Maintenance of the House	g	13	82	2.1
Health	h	7	70	2.8
Transport	i	13	48	4.5
Communication	j	3	14	1.6
Recreation and Culture	k	13	61	2.2
Education	l	1	6	2.2
Restaurants and Hotels	m	2	21	2.8
Miscellaneous Goods and Services	n	10	39	4.2
Net Expenditures of Residents Abroad	o	2	2	(0.1)
Individual Consumption Expenditure By Nonprofit Institutions Serving Households	p	1	Ref	0.3
Individual Consumption Expenditure By Government	q = Σ(r to t)	21	18	4.7
Health	r	12	13	0.7
Education	s	6	5	2.1
Others	t	3	Ref	1.9
Collective Consumption Expenditure By Government	u	5	32	7.7
Gross Fixed Capital Formation	v = Σ(w to y)	12	125	32.0
Machinery and Equipment	w	8	91	11.3
Construction	x	3	34	19.1
Other products	y	1	Ref	1.6
Changes in Inventories and Net Acquisitions of Valuables	z	4	Ref	2.0
Balance of Exports and Imports	aa	2	Ref	4.3

Ref = reference PPPs were used.

to act as a base product, so if we make $\beta_1 = 1$, then the model produces estimates of prices in terms of their variation from product 1 in economy 1. Any other economy can be made the base economy simply by dividing each other economy's PPP by that (new base) economy's PPP. The CPD model assigns the same weight to each product's price, so it is often referred to as an "unweighted model," although it should really be described as using equal weights.[7]

One useful output from the CPD model is a set of estimated prices for each product for each economy. These prices provide an estimate of what the prices would be if the relationships set out above held in practice. The differences between observed prices and these modeled prices can provide an indication of possible problems with the prices provided by an economy. Large differences indicate possible problems, e.g., because the prices for the same product vary significantly across economies or because the relativities between prices of products within an economy vary significantly compared with those in other economies. The distribution of these differences provides the underlying basis for the "Dikhanov table," developed by Yuri Dikhanov of the World Bank as an editing tool (see the section "The Dikhanov Table" in Part 4). The distributions can be graphed to provide a simple means of identifying potential problem prices, either for a particular product or within an economy.

Purchasing Power Parities for GDP and its Major Aggregates

Once the PPPs were available for each basic heading in all economies in the region, the next step was to aggregate the basic heading PPPs to broader levels such as those for GDP and its major aggregates.

The EKS formula (named after its developers Eltetö, Köves, and Szulc) is a method used to produce transitive PPPs from a set of nontransitive bilateral PPPs. It is not a method of deriving PPPs as such, although the process of making a series of binary comparisons between each pair of economies and then making the results transitive using the EKS formula is regularly referred to as "using the EKS method" to calculate PPPs.

The starting point was to derive PPPs for each broad aggregate above the basic heading level for each pair of economies in the region. Explicit basic heading weights were used in this process, unlike the first stage in which prices were combined using equal weights. The first step was to combine the basic heading parities between two economies using the basic heading values of the first economy (in local currency) as weights. A similar process was then followed, but using the second economy's basic heading values (expressed in terms of that economy's local currency) as the weights. The PPP for each category between the two economies was calculated as the geometric mean of the two PPPs calculated using each economy's weights separately (i.e., Fisher-type PPPs were used in the bilateral comparisons).

The outcome of this process was a matrix of PPPs for each pair of economies, for each aggregate for which PPPs were required, up to the level of GDP. Each matrix consisted of nontransitive PPPs, which were then made transitive by applying the EKS formula described below to obtain transitive PPPs for each aggregate.

The mechanics of the EKS formula are quite straightforward. If there are n economies in the region, transitive PPPs are obtained as the nth root of the n direct and indirect PPPs that can be calculated, with the direct PPPs having twice the weight of the indirect PPPs. The EKS parities which make use of Fisher-binary index numbers as building blocks are given by, for any pair of economies, j and k:

$$PPP_{jk} = \left[\prod_{\ell=1}^{M}\left[F_{j\ell} \times F_{\ell k}\right]\right]^{1/M}$$

where F_{jk} refers to the standard Fisher index for country k with country j as the base.

The EKS formula can be illustrated by a simple example with three economies—A, B, and C. The transitive PPP for economies A and B for a given aggregate is:

$$PPP_{A,B} = \left[\left(F_{A,B} \times F_{B,B}\right) \times \left(F_{A,A} \times F_{A,B}\right) \times \left(F_{A,C} \times F_{C,B}\right)\right]^{1/3}$$

It is useful to note here that both $F_{A,A}$ and $F_{B,B}$ are equal to 1.

[7] There are weighted versions of the CPD model. For some important applications, see Rao (2005) and Diewert (2005).

The EKS formula produces transitive PPPs that are as close as possible to the nontransitive PPPs originally calculated in the binary comparisons. For the EKS formula to work, it is necessary for PPPs to be available for all economies for each basic heading. Occasionally, some PPPs for some economies were missing because of data collection problems or data consistency issues. In such cases, PPPs had to be imputed either by using the PPP of a similar basic heading or from a broader (but related) aggregate.

The aggregation process was identical for each level of aggregation in the national accounts. For example, all 155 basic headings had to be combined to obtain a PPP for GDP, while the 29 basic headings that make up the food and nonalcoholic beverages category within actual household final consumption expenditure were combined using a similar process, to calculate a PPP for that category.

The transitive PPPs were used as deflators to convert aggregates expressed in local currency into volumes expressed in a common currency. It is important to note that the volumes are not additive, with the EKS-based PPPs having to be calculated separately for each category, i.e., it is not possible to obtain volumes for any aggregates directly through aggregating elementary volumes.

Details of these methods and the implications of using them are found in Chapters 11 and 12 of the ICP Handbook.

Index Formulas and Additivity

The Regional Office had a choice of several different index formulas to aggregate basic heading-level real expenditures to broader aggregates and to GDP. There are advantages and disadvantages to each and these were considered in choosing the EKS formula to produce the official results. While EKS has the disadvantage of the real expenditures derived from it being nonadditive, it has the major advantage of producing unbiased estimates. Two additive formulas were considered by the Regional Office—the GK method and the Iklé method. The major drawback of both these methods is that they produce biased results, particularly when comparing economies at very different levels of development, which is the case in Asia and the Pacific. In addition, additive methods impose implausible theoretical restrictions. The Regional Office considered that the problems caused by these biases outweighed any advantage gained by having additive real expenditures. However, it recognizes that additive estimates are useful for some types of analysis, particularly those related to examining the structure of real expenditures within economies. Therefore, real expenditures based on the GK formula are presented in Appendix 6 for this purpose.

Analysis and Major Findings

Introduction

This section represents the essence of this publication, and presents the core results emanating from the 2005 ICP Asia Pacific. As described earlier, the ICP covers all the components of GDP on the expenditure side. Results in the form of PPPs, real expenditures, and per capita real expenditures can be computed for all the 155 basic headings and at any desired level of aggregation. Generally, results at the detailed level tend to be less reliable. Therefore, for purposes of dissemination of results to the wider community of users, a balance was sought between providing as much as possible, and ensuring a degree of reliability in terms of the results published. A general decision has been made at the Global Office to disseminate results for 26 groups. Part 5 of this publication presents results for GDP and major aggregates.

Key Concepts

Numeraire Currency. A numeraire currency is the currency in which PPPs and final expenditures on GDP (nominal and volumes or real) are expressed. The numeraire is usually an actual currency (such as the Hong Kong dollar) but it can be an artificial currency unit developed for purposes of PPP comparisons, such as an average regional currency.

Market Exchange Rates. As market exchange rates fluctuate on a daily basis, the rates used in this section and in this publication are annual average rates drawn from the publications on international financial statistics produced by the International Monetary Fund.[8]

Price Level Index. From the concept and definition of PPPs it is clear that PPPs do not provide a measure of the price level in a country. A measure of the price level or the price level index (PLI) in a given country is obtained by taking the ratio between the PPP and the exchange rate of the currency of a given economy, measured with respect to a common currency generally expressed on a base of 100. PLIs show how the price levels of countries compare to each other.

Real Expenditures or Volumes. Real expenditures for any expenditure category are simply the expenditure for the category in local currency units converted into another currency using PPPs. When the price level differences between two countries have been removed through the use of PPPs, these are referred to as real expenditures.[9] Real expenditures are also referred to as "volumes" since these are similar to quantities for composite commodities.

Nominal Expenditures. Nominal expenditures are expenditure aggregates, in local currency units, converted into a common currency unit using exchange rates. The resulting aggregates are generally referred to as nominal expenditures since the effect of price level differences has not been adjusted for. Usually real and nominal aggregates are compared to gauge the effect of using PPPs instead of market exchange rates.[10]

In addition to aggregate measures for the whole economy, e.g., real GDP or nominal aggregate expenditure, it is useful to consider measures adjusted to the size of the population. The resulting measures are variables expressed in per capita terms. Per capita real GDP is used as a measure of well-being or standard of living. Results presented here are mostly on a per capita basis. Once the aggregates are expressed on a per capita basis, it is standard practice to consider these relative to the corresponding measure in another economy (selected as a reference country) or express them relative to per capita GDP of the region as a whole. Most of the relative measures presented in this section are expressed relative to the average for Asia and the Pacific as an index form. Henceforth, the regional average has an index value of 100.

Part 5 can be used in conjunction with the summary results presented in the following sections. Some "special notes" are presented in Box 2. The reader may want to refer to these notes when economy-specific results are considered and analyzed. The summary results for ICP Asia Pacific and the discussion presented here can be supplemented by the key results that are set out in Part 5 in the form of detailed results tables.

[8] Average annual exchange rates reported here were downloaded on 21 May 2007 from the IFS website. The exchange rate for the New Taiwan dollar was downloaded from http://www.cbc.gov.tw on 2 May 2007.

[9] In concept, these real expenditures are similar to expenditures at constant prices used in the context of temporal comparisons, where the current value aggregates are deflated using a suitable price index.

[10] The ratio of real to nominal aggregates is also equal to the PLI. Therefore, divergence between nominal and real aggregates can be attributed to price level differences even in the case of international comparisons, just as in comparisons over time.

Box 2. Special Notes

The results for the People's Republic of China (PRC) were based on national annual average prices extrapolated by the Global Office and the Regional Office, using price data for 11 cities submitted by the National Bureau of Statistics of China (NBS) and the extrapolation methodology endorsed by an ADB-constituted Expert Group in June 2006. In addition, the gross domestic product (GDP) weights for the PRC at the national level were compiled by a special ADB mission that worked in close collaboration with NBS in July–August 2006.

In most economies, data for nonprofit institutions serving households (NPISHs) were merged with household data because it was difficult to allocate NPISH data to different categories of consumption. However, NPISH data were distributed following the 1999 revision to the Classification of Individual Consumption by Purpose (UNSD 1999) for economies that provided the necessary information.

The net expenditures of residents abroad were distributed proportionately among the relevant basic headings under individual consumption expenditure by households.

The prices of fruit and vegetables provided by Taipei,China were high due to unusual climate conditions in 2005. It was, nevertheless, decided to use these exceptionally high prices because they reflected the actual situation in Taipei,China in the reference year.

For the last several years, Bhutan has undertaken major construction activities for hydropower, roads, bridges, expressways, and housing, resulting in very high expenditure shares for gross fixed capital formation.

For Maldives, the exchange rate relative to the Hong Kong dollar was used for gross fixed capital formation.

"Asia" refers to the 23 participating economies.

Purchasing power parity results presented here are based on data submitted as of 31 August 2007.

Major Results and Findings

Purchasing Power Parities and Nominal and Real Expenditures

The core objective of the ICP is to compile real expenditures of GDP and its major aggregates for each economy using PPPs of currencies in the region. The main results from the 2005 ICP Asia Pacific—estimates of PPPs, real and nominal GDP, and per capita expenditures—are presented in Table 4.

Additional data on market exchange rates, number of local currency units per Hong Kong dollar, and midyear population figures are presented to facilitate analysis of the results presented in the table. Total GDP in local currency units for each economy can be derived by multiplying nominal GDP with exchange rates. (Exchange rate-based comparisons for GDP and per capita GDP are provided in Appendix 7.)

Purchasing Power Parities and Price Levels

The PPPs in column 3, Table 4 show the number of local currency units that have the same purchasing power as HK$1 when the whole GDP is considered.[11] For example, the PPP for the Indian rupee is 2.60 and the market exchange rate is 5.67. These figures imply that prices in India are less than 50% of those observed in Hong Kong, China. A comparison of columns 3 (PPPs) and 4 (exchange rates) shows that PPPs are uniformly lower than exchange rates, with the exception of Fiji Islands, implying that price levels in all participating economies, except for Fiji Islands, are lower than price levels in Hong Kong, China. This is expected as Hong Kong, China is a rich economy with a relatively high per capita real GDP and high price levels. The case of Fiji Islands is indeed exceptional. Given the unexpected nature of PPPs for Fiji Islands relative to the exchange rate, price data supplied by Fiji Islands were thoroughly checked. A possible reason for the high prices could be that most of the products included in the ICP are imported, and therefore, are closer to exchange rates yet slightly higher if transport and marketing margins are added.

As the price levels in participating economies are measured as a ratio of PPP to exchange rate, they do not provide an indication whether prices in an economy are low or if prices in Hong Kong, China are high. In view of this, PLIs for different economies are expressed with Asia (23 economies) as base (see Appendix 8 for details). Table 4, column 5 on PLIs presents some interesting results. For example, the Indonesian price level appears to be close to that of Asia while Hong Kong, China prices are 79% higher. Most of the economies in the lower-income group have price levels below Asia (except for Fiji Islands). The price level in the PRC is 3% higher than Asia whereas that for India is 18% lower.

Figure 1 shows the relationship between PLIs (expressed relative to Asia) and per capita real GDP expenditure indexes in logarithmic form. The figure shows a clear increasing trend in the PLI with increases in per capita real GDP. There are a few notable deviations from this general trend. Fiji Islands, as mentioned, records a very high PLI compared to the common trend implied by the fitted line. Brunei Darussalam and the Islamic Republic of Iran have lower than expected PLIs for the per capita real GDPs associated with these economies. A possible explanation could be that both are oil-rich economies and exports of oil are a major component of their GDP. These economies may be considered as income rich but exhibiting general features expected of low- to middle-income economies. In fact, the real consumption levels, measured by individual consumption by households as well as actual consumption, are relatively lower. For example, in Table 7 the index of per capita real actual final consumption expenditure for Brunei Darussalam is about six times the regional average but when per capita real GDP is considered, it is 13 times the regional average (Table 4).

The horizontal axis is in logarithmic scale, because the range for the per capita real expenditure index goes from 30 in the case of Nepal to 1,321 in the case of Brunei Darussalam.

A large body of literature focuses on providing explanations for the deviations between PPPs and exchange rates, and the general increasing trend in PLIs with per capita real GDP. The literature in these

[11] Users must be judicious as to which PPP they select for purposes of converting a certain aggregate into a common currency unit. This will be evident from the results on PPPs for other aggregates, such as individual consumption by households and GFCF. (See the detailed results in Part 5.) If the PPP for a certain aggregate is unavailable, then PPP for an aggregate that is closest in its coverage should be selected.

Table 4. Summary Results for Gross Domestic Product, 2005
(Hong Kong, China as base)

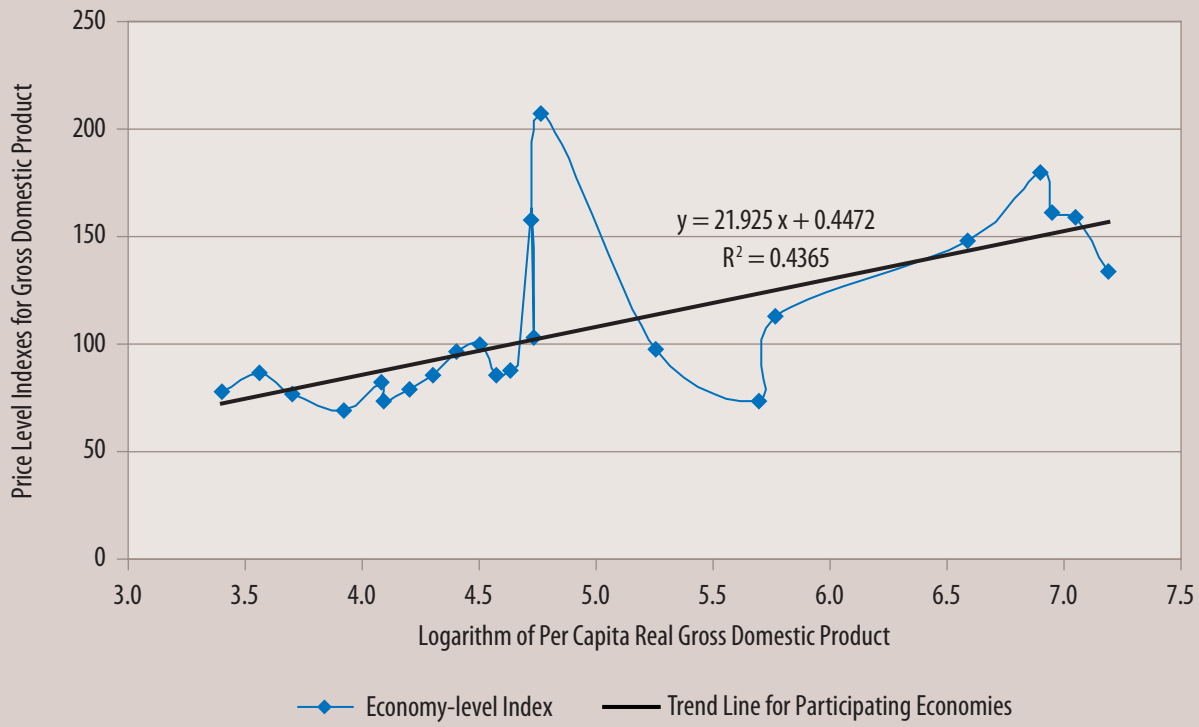
Economy	Currency	Purchasing Power Parity	Exchange Rate (LCU per HK dollar)	Price Level Index (Asia = 100)	Nominal GDP (million HK dollars)
Bangladesh	Taka	3.98	8.27	86	475665
Bhutan	Ngultrum	2.77	5.67	88	6510
Brunei Darussalam	Brunei dollar	0.16	0.21	133	74129
Cambodia	Riel	225	526.21	77	48826
China, People's Republic of	Yuan	0.61	1.05	103	17451129
Fiji Islands	Fiji dollar	0.25	0.22	208	23315
Hong Kong, China	Hong Kong dollar	1.00	1.00	180	1382675
India	Indian rupee	2.58	5.67	82	6055915
Indonesia	Rupiah	692	1247.82	100	2231853
Iran, Islamic Republic of	Iranian rial	470	1152.58	73	1704656
Lao People's Democratic Republic	Kip	525	1370.03	69	22331
Macao, China	Pataca	0.93	1.03	162	90239
Malaysia	Ringgit	0.31	0.49	112	1066769
Maldives	Rufiyaa	1.43	1.65	156	5831
Mongolia	Tugrik	73.4	154.97	85	18132
Nepal	Nepalese rupee	3.98	9.18	78	67599
Pakistan	Pakistani rupee	3.36	7.65	79	920875
Philippines	Philippine peso	3.82	7.08	97	767759
Singapore	Singapore dollar	0.19	0.21	159	907643
Sri Lanka	Sri Lanka rupee	6.18	12.92	86	186333
Taipei,China	New Taiwan dollar	3.40	4.14	148	2761429
Thailand	Baht	2.80	5.17	97	1370535
Viet Nam	Dong	829	2039.12	73	411556
Asia				**100**	**38051705**

LCU = local currency unit.
a Real refers to purchasing power parity-adjusted values.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 4. Summary Results for Gross Domestic Product, 2005 *(continued)*
(Hong Kong, China as base)

Real GDP[a] (million HK dollars)	Population (thousands)	Per Capita Nominal GDP (HK dollars)	Per Capita Real GDP[a] (HK dollars)	Per Capita Real Expenditure Indexes[a] (regional average = 100)
988332	136990	3472	7215	35
13340	635	10252	21009	103
99916	370	200294	269971	1321
114297	13828	3531	8266	40
30334238	1303720	13386	23267	114
20167	842	27674	23938	117
1382675	6813	202941	202941	993
13315076	1101318	5499	12090	59
4026228	218869	10197	18396	90
4177966	68700	24813	60815	298
58230	5651	3951	10303	50
100329	473	190596	211907	1037
1703958	26128	40829	65217	319
6711	294	19850	22845	112
38306	2548	7117	15035	74
155766	25343	2667	6146	30
2098218	153963	5981	13628	67
1421731	85261	9005	16675	82
1024330	4342	209048	235923	1155
389389	19668	9474	19798	97
3358809	22653	121904	148275	726
2530303	64763	21162	39070	191
1012850	83120	4951	12185	60
68371166	**3346291**	**11371**	**20432**	**100**

Figure 1. Per Capita Real and Price Level Indexes on Gross Domestic Product, 2005



areas relies heavily on the PPP theory and the Balassa-Samuelson effect (Balassa 1964, Samuelson 1964). Kravis and Lipsey (1983), Clague (1986), and Ahmad (1992) discuss various theoretical and practical aspects of explaining national price levels. The essential focus of these studies is to explain variations in national price levels (as measured by PLIs) using levels of tradable and nontradable goods, and productivity-level differences between low- and high-income economies. Most of the PPP extrapolation methods, including methods used in earlier versions of the Penn World Tables and in the extrapolation of PPPs by the World Bank, rely heavily on these theoretical explanations.

Nominal and Real Gross Domestic Product—Size and Share of Asian Economies

Total *nominal* GDP for the region, expressed in Hong Kong dollars is HK$38,052 billion (Table 4). Total *real* GDP is HK$68,371 billion. The difference is due to the deviations of PPPs from the exchange rates as measured by the PLI.

In real terms, GDP for the PRC accounts for about 44% of total GDP of the participating economies. Together with India, the two countries account for about 64% of total GDP. The next largest countries are the Islamic Republic of Iran and Indonesia, each of which contributes about 6% of GDP. In other words, the four largest countries contribute just over three quarters of output.

The Islamic Republic of Iran has the third largest economy (in real terms), after the PRC and India. This is partly explained by the country's large export earnings from oil. The Government is pursuing a policy of using oil revenues to subsidize prices of cereals, housing, fuels, and other basic commodities. As a consequence, the price level is low.

The rules of the ICP are clear, however. PPPs compare the actual market prices in participating economies and these prices are determined by the effects of taxes and subsidies on products and production as well as by the underlying costs of producing and distributing them. Many other economies in the region also subsidize some basic necessities, particularly rice and wheat, but often

fuel. Iran's subsidies are larger and more widespread than those in other economies. Its prices and volumes are being compared on level terms with the other 22 economies.

Table 5 presents a comparison between PPP-adjusted GDP (i.e., real GDP) and exchange rate-adjusted GDP (i.e., nominal GDP). Population shares are also presented.[12] The PRC's real GDP share is well above that of its population share, but vice versa in India. At the upper end of the income scale, Hong Kong, China has a GDP share of 3.63% compared with its low population share of only 0.2%. Singapore; Macao, China; and Brunei Darussalam have similar relationships between their population and real GDP shares. A graphical comparison of the shares in both real and nominal terms is presented in Figure 2.

The differences in the shares of different economies measured in nominal and real terms are essentially due to price level differences. Economies with a PLI (expressed relative to Asia being equal to 100) greater than 100 will have a real share less than the nominal share, and vice versa.

Per Capita Real Gross Domestic Product Indexes

A very different picture emerges when the size of the economies is adjusted (or standardized) by taking into account their populations. Rather than dominating the top rankings, the PRC and India drop to 10th and 19th positions, respectively, as indicated in Table 4 and Figure 3. The extent of the dispersion is more obvious when data are presented in terms of indexes, which show each economy's per capita real GDP relative to the regional average. The regional average HK$20,432 is set to a base of 100 for the indexes. The per capita real GDP relative for the PRC is estimated at 114, while that for India is 59.

Indexes of per capita real GDP, from the highest to the lowest, are presented in Figure 3. The five economies that stand out as being significantly richer than the others, each with indexes of per capita real GDP well in excess of 700 (i.e., more than 7 times the regional average) are Brunei Darussalam (1,321); Singapore (1,155); Macao, China (1,037); Hong Kong, China (993); and Taipei,China (726).

A striking feature of these data is the huge dispersion, with the richest economy having a per capita real GDP of more than 40 times that of the poorest.

The indexes in column 11 of Table 4 above highlight the significant spread in per capita real GDP. The index numbers show that the four richest economies in the region have a per capita real GDP at about 10 times the regional average, with the fifth-ranked economy more than seven times the regional average. At the other extreme, three economies (Cambodia, Bangladesh, and Nepal) have less than half the regional average. While not as rich as the top five economies, Malaysia, Islamic Republic of Iran, and Thailand all have per capita real GDP close to two and three times the average. Per capita real GDP in Bhutan, Maldives, PRC, and the Fiji Islands is slightly above the average. Sri Lanka and Indonesia are two of 11 economies below the regional average. Other large economies in this category include Philippines, Pakistan, Viet Nam, and India.

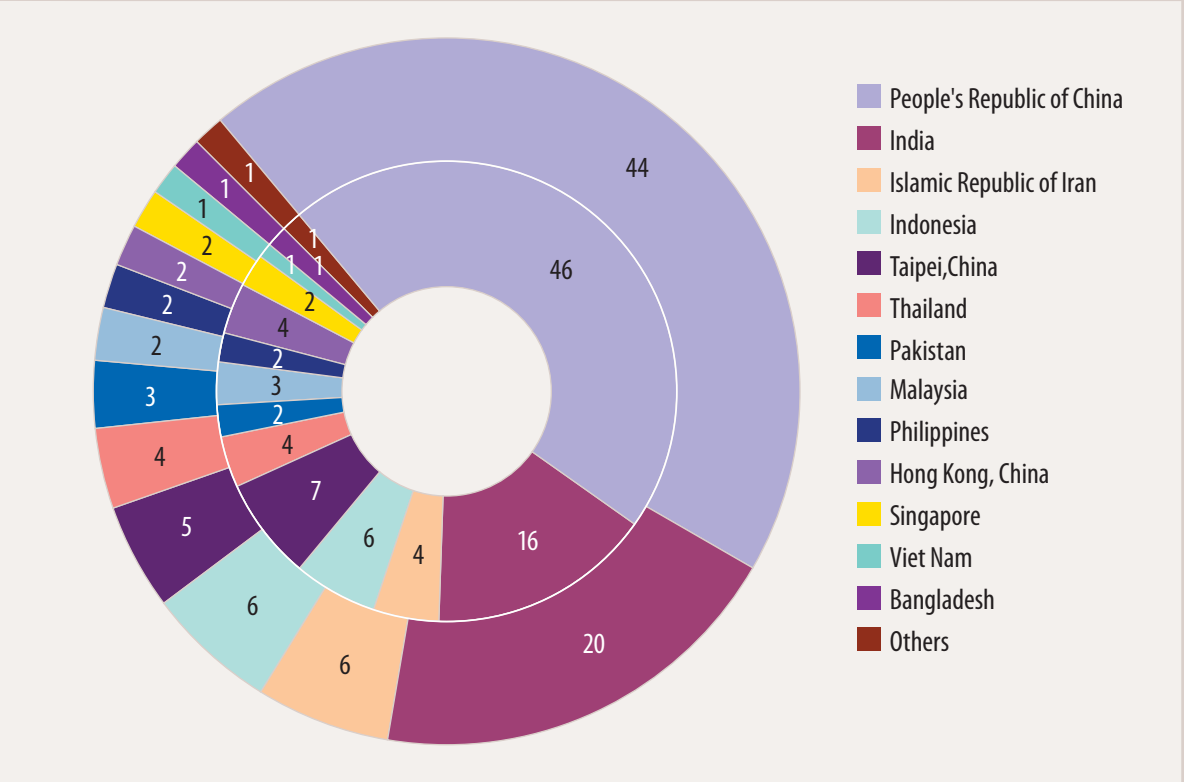
[12] A comparison of population shares and shares in real GDP reflects the level of inequality between economies. This aspect is considered further when results on per capita real GDP are examined below.

Table 5. Comparison of Real and Nominal Gross Domestic Product, 2005 Levels and Economy Shares to Total Asia
(Hong Kong, China as base)

Economy	GDP Levels (billion HK dollars)		Share in Total GDP of Asia (%)		Population (thousands)	Share in Total Population of Asia (%)
	Real[a]	Nominal	Real[a]	Nominal		
China, People's Republic of	30334	17451	44.37	45.86	1303720	38.96
India	13315	6056	19.47	15.91	1101318	32.91
Iran, Islamic Republic of	4178	1705	6.11	4.48	68700	2.05
Indonesia	4026	2232	5.89	5.87	218869	6.54
Taipei,China	3359	2761	4.91	7.26	22653	0.68
Thailand	2530	1371	3.70	3.60	64763	1.94
Pakistan	2098	921	3.07	2.42	153963	4.60
Malaysia	1704	1067	2.49	2.80	26128	0.78
Philippines	1422	768	2.08	2.02	85261	2.55
Hong Kong, China	1383	1383	2.02	3.63	6813	0.20
Singapore	1024	908	1.50	2.39	4342	0.13
Viet Nam	1013	412	1.48	1.08	83120	2.48
Bangladesh	988	476	1.45	1.25	136990	4.09
Sri Lanka	389	186	0.57	0.49	19668	0.59
Nepal	156	68	0.23	0.18	25343	0.76
Cambodia	114	49	0.17	0.13	13828	0.41
Macao, China	100	90	0.15	0.24	473	0.01
Brunei Darussalam	100	74	0.15	0.19	370	0.01
Lao People's Democratic Republic	58	22	0.09	0.06	5651	0.17
Mongolia	38	18	0.06	0.05	2548	0.08
Fiji Islands	20	23	0.03	0.06	842	0.03
Bhutan	13	7	0.02	0.02	635	0.02
Maldives	7	6	0.01	0.02	294	0.01
Asia	**68371**	**38052**	**100.00**	**100.00**	**3346291**	**100.00**

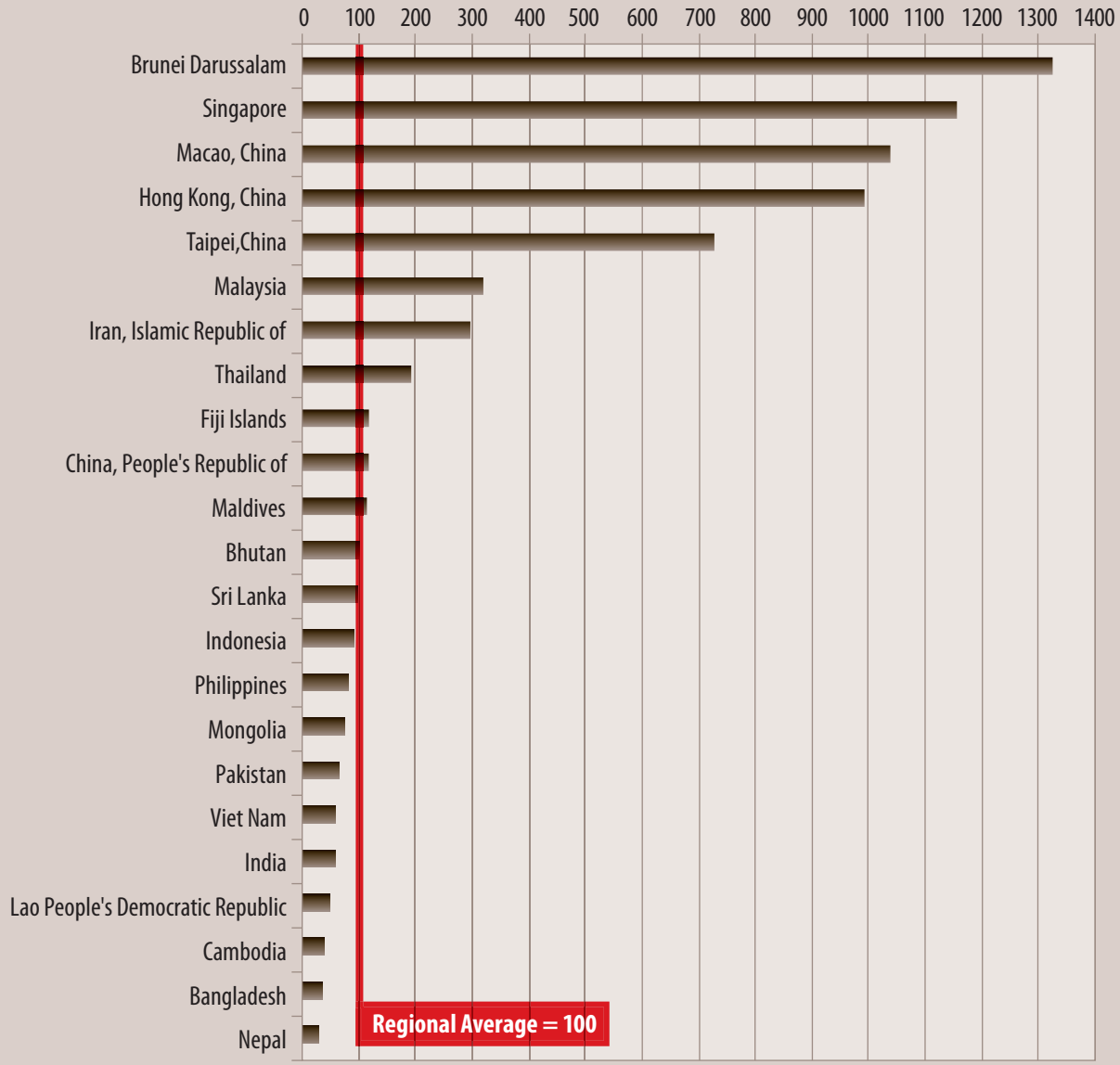
a Real refers to purchasing power parity-adjusted values.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Figure 2. Comparison of Economy Shares (%) within Asia and the Pacific, 2005 (nominal and real gross domestic product)



Note: Inner circle represents nominal GDP; outer circle represents real GDP.

Figure 3. Per Capita Real Gross Domestic Product Indexes, 2005 (regional average = 100)



Dispersion in Per Capita Nominal and Real Gross Domestic Product and Intercountry Inequality

Data presented in Tables 4 and 5 provide useful information on the disparities between participating economies. Regional disparities may be examined using a variety of measures including the difference between the lowest and highest per capita real GDPs, coefficient of variation (CV—the standard deviation divided by the arithmetic mean) in per capita real GDPs, standard deviation of logarithms of per capita real GDPs, and finally, the Gini coefficient.

Disparities are wider when nominal aggregates are used rather than real aggregates. A quick look at Table 4 shows that per capita real GDP of the richest economy, Brunei Darussalam, is 44 times that of the poorest economy, Nepal. If per capita nominal GDP is used, the disparity is further increased to roughly 75 times. As these ratios depend only on the minimum and maximum, and thus ignore all the intermediate levels, other measures previously mentioned are also reviewed. The CV in per capita GDP increases from 91.1% to 138.5% when the nominal aggregate is used in place of the real aggregate. A similar trend is evident when the standard deviation of logarithms of per capita GDP is used, where it increases from 0.22 (real GDP) to 0.28 (nominal GDP). The Gini coefficient also increases from 0.29 (real) to 0.36 (nominal).[13]

As GDP includes consumption (by households and general government), GFCF, change in inventories and net acquisitions of valuables, and net balance of exports, it may be useful to focus on consumption of households if one is interested in comparisons of current welfare. Disparities in consumption are presented in the following discussion.

Household Final Consumption Expenditure, Government Final Consumption Expenditure, and Gross Fixed Capital Formation

Table 6 presents results for major components of GDP. Results are presented for household final consumption expenditure (HFCE), which represents individual consumption expenditure by households and NPISH; GFCE; and expenditure on GFCF, which includes construction, and machinery and equipment. Exchange rates for all the currencies are presented and serve as a reference. Also presented for each of the aggregates are PPPs specific to the aggregate, per capita nominal and real expenditures, and the corresponding indexes.

If one focuses on PPPs for the three aggregates, it is evident that their PPPs differ significantly. For example in the case of Bhutan, PPPs for HFCE, GFCE, and GFCF are, respectively, 2.55, 1.89, and 3.53. This means that capital goods (i.e., construction and equipment) are relatively more costly than household consumption or general government.

Generally, per capita real GFCEs are well below HFCEs, except for Brunei Darussalam where they are roughly the same (HK$67,052 and HK$67,853, respectively). Government expenditures on behalf of households (i.e., "individual government consumption expenditures," which are mainly for health and education) are captured by the concept of actual final consumption expenditure (AFCE—discussed in the next subsection).

How responsive are government consumption and household consumption expenditures to increasing per capita real GDP is examined using Figure 4, which plots logarithms of these two variables on a per capita basis (both on the vertical axis) against logarithms of the index of per capita real GDP (on the horizontal axis).

The two fitted lines indicate that there is a linear relationship in terms of logarithms of the variables with fairly high R^2 values.[14] The slope coefficients here represent expenditure elasticities for HFCE and GFCE because the data on both the X and Y axes are expressed in logarithmic forms. As expected, both

[13] This Gini coefficient measures inequality between per capita incomes of different economies only and does not account for inequality within an economy. Inequality within an economy would remain the same irrespective of whether nominal or real values are used. It means that incomes of households are multiplied by a scalar factor, and therefore the Gini remains unchanged.

[14] R^2 is always in the range of 0 to 1. An R^2 value of 1 implies perfect fit.

Table 6. Summary of Final Consumption Expenditure: Household, Government, and Gross Fixed Capital Formation, 2005
(Hong Kong, China as base)

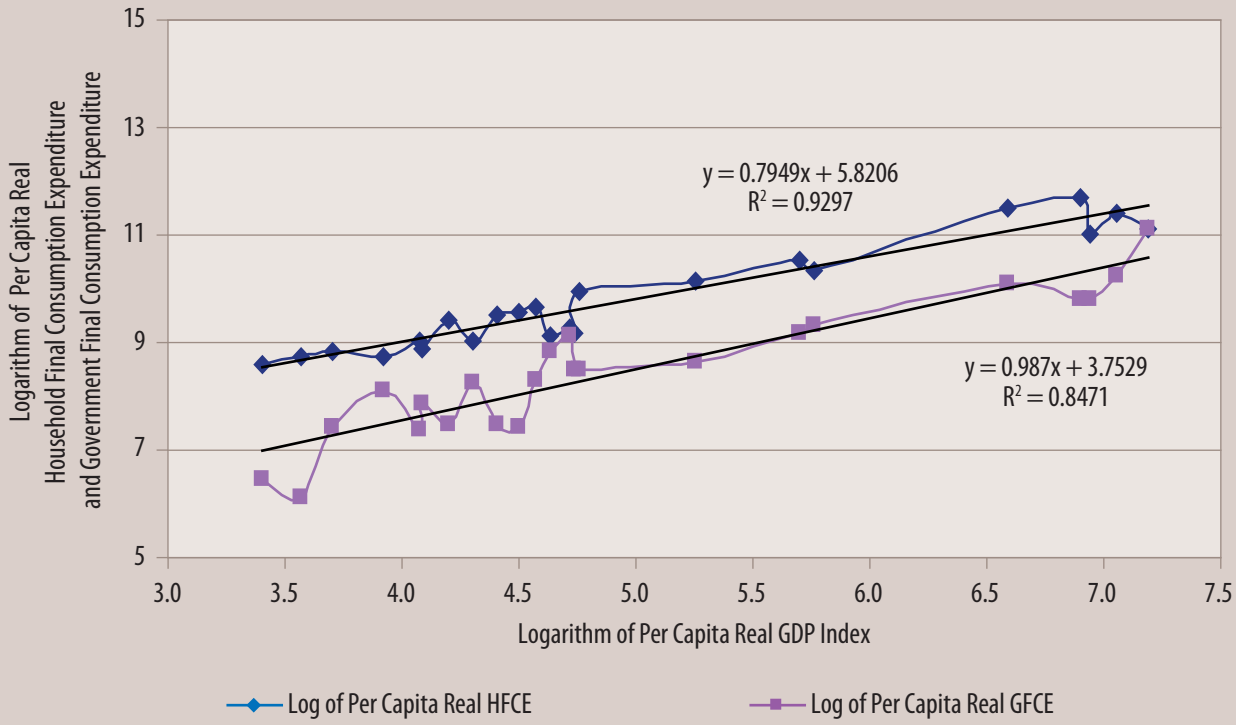
Economy	Exchange rate (LCU per HK dollar)	Household Final Consumption Expenditure[a]			
		Purchasing Power Parity	Per Capita Nominal GDP (HK dollars)	Per Capita Real GDP[b] (HK dollars)	Per Capita Real Expenditure Index (regional average = 100)
Bangladesh	8.27	3.52	2636	6189	54
Bhutan	5.67	2.55	4171	9269	81
Brunei Darussalam	0.21	0.49	47298	67853	590
Cambodia	526.21	223	2868	6760	59
China, People's Republic of	1.05	0.565	5084	9484	82
Fiji Islands	0.22	0.214	20968	21310	185
Hong Kong, China	1.00	1.00	118091	118091	1027
India	5.67	2.16	3234	8506	74
Indonesia	1247.82	579	6547	14100	123
Iran, Islamic Republic of	1152.58	375	12495	38386	334
Lao People's Democratic Republic	1370.03	517	2350	6226	54
Macao, China	1.03	0.889	51566	59769	520
Malaysia	0.49	0.292	18338	30561	266
Maldives	1.65	1.35	8899	10884	95
Mongolia	154.97	72.2	3917	8407	73
Nepal	9.18	3.66	2178	5465	48
Pakistan	7.65	2.86	4555	12178	106
Philippines	7.08	3.34	6248	13243	115
Singapore	0.21	0.203	86635	91436	795
Sri Lanka	12.92	5.53	6588	15384	134
Taipei,China	4.14	3.13	74931	99072	862
Thailand	5.17	2.41	11953	25609	223
Viet Nam	2039.12	818	2873	7161	62
Regional Average			**5606**	**11498**	**100**

LCU = local currency unit; GDP = gross domestic product.
a Includes individual consumption expenditure by households and by nonprofit institutions serving households.
b Real refers to purchasing power parity-adjusted values.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 6. Summary of Final Consumption Expenditure: Household, Government, and Gross Fixed Capital Formation, 2005 *(continued)*
(Hong Kong, China as base)

Government Final Consumption Expenditure				Expenditure on Gross Fixed Capital Formation			
Purchasing Power Parity	Per Capita Nominal GDP (HK dollars)	Per Capita Real GDP[b] (HK dollars)	Per Capita Real Expenditure Index (regional average = 100)	Purchasing Power Parity	Per Capita Nominal GDP (HK dollars)	Per Capita Real GDP[b] (HK dollars)	Per Capita Real Expenditure Index (regional average = 100)
3.54	196	458	13	4.95	869	1450	27
1.89	2278	6833	197	3.53	5459	8774	166
0.124	38766	67052	1933	0.206	23910	28846	469
94	302	1697	49	289	413	751	14
0.393	1865	4996	144	0.725	5554	8066	152
0.186	4196	4896	141	0.274	7060	5593	106
1.00	17821	17821	514	1.00	42450	42450	801
2.27	633	1584	46	3.48	1567	2554	48
616	813	1648	48	938	2377	3161	60
353	2917	9530	275	729	5336	8440	159
242	597	3377	97	740	1314	2432	46
1.002	17229	17715	511	1.205	50787	43404	819
0.219	5052	11222	324	0.330	8425	12427	235
0.78	4414	9319	269	1.74	10619	10069	190
35.1	873	3853	111	90.9	2139	3647	69
3.41	236	635	18	4.93	524	974	18
2.50	566	1732	50	5.10	1131	1698	32
3.40	864	1800	52	4.75	1297	1934	36
0.173	22208	27406	790	0.187	46086	52776	996
3.97	1211	3942	114	8.66	2248	3352	63
2.76	15981	23972	691	3.91	25647	27127	512
2.66	2898	5624	162	3.31	6061	9461	179
414	540	2658	77	1,016	1610	3232	61
	1407	**3469**	**100**		**3644**	**5299**	**100**

Figure 4. Per Capita Real Gross Domestic Product Index and Per Capita Real Expenditures on Household Final Consumption and on Government Final Consumption, 2005



regressions have positive slopes. In Asia and the Pacific, elasticity for GFCE, at 0.96, is higher than that for HFCE, at 0.79. At lower per capita real GDP levels, with logarithms between 3 and 5, there is significant country-specific variability around the regression line compared with what is evident for higher per capita real GDP levels, with Brunei Darussalam an exception.

Actual Final Consumption Expenditure

As indicated in the discussion on the results for aggregate HFCE, a better measure of the welfare of the population is obtained when total consumption of households is captured. Actual final consumption expenditure (AFCE) is a concept designed to capture HFCE on goods and services plus expenditures by government on services (predominantly education and health services) provided to households. It is a measure of what households actually consume—including both what they buy themselves and what they are supplied with for individual use by government. Government services such as police, fire fighting, and defense are classified as "collective consumption" because they are provided to the community as a whole, and it is rarely possible to identify the actual service provided to any individual.

In broad terms, GDP is made up of AFCE, collective expenditures by general government, GFCF, change in inventories and net acquisitions of valuables, and net exports. AFCE is the dominant component, making up 50–80% of GDP in all but a few economies in the region. Fiji Islands, Cambodia, and Nepal have shares of AFCE in GDP greater than 80%, largely because of their very high trade deficit (i.e., their imports significantly outweigh their exports). The share of AFCE in GDP can vary significantly, particularly when economies have very high investment and sizable net exports (either positive or negative). The share of AFCE in GDP is less than 50% in Brunei Darussalam; Singapore; PRC; and Macao, China[15] due to a combination of very high (positive) net exports and high investment (see Table 30 in Part 5).

In Table 7, the economies are shown in order of their per capita real AFCE. While the overall picture is broadly the same as that based on per capita real GDP (Table 4, column 10), some economies change their position by several places when their investment and/or net international trade differ significantly from the overall average share within GDP.

The same group of five economies with the highest per capita real GDP, significantly above the others in Asia and the Pacific, remain at the top but their order changes when the comparison is based on per capita real AFCE rather than per capita real GDP. As can be seen from Table 7, three of these economies each moved by three positions: (i) Hong Kong, China moved up from fourth to first; (ii) Taipei,China moved up from fifth to second; and (iii) Brunei Darussalam dropped from first to fourth.

The largest changes in ranking, however, were by the PRC, which dropped from 10th to 16th, and Bhutan, which dropped from 12th to 15th. The main reason was that both these economies had exceptionally high levels of GFCF in 2005. As a result, the share of AFCE within their GDP was significantly lower than elsewhere in the region.

Some other interesting points are:

(i) Brunei Darussalam and Macao, China also have relatively low per capita real AFCE compared with their per capita real GDP because they have large net exports (petroleum products and tourism services, respectively).

(ii) India's per capita real AFCE is below the average for the region. It is just above the level for Viet Nam but below that for Pakistan and Mongolia.

(iii) The range of differences in per capita real AFCE between economies is much less than is the case for per capita real GDP. Per capita real AFCE in the highest economy, Hong Kong, China, is 21 times as great as in the lowest economy, Nepal, but the difference in per capita real GDP is about 1.5 times.

Though the concepts of HFCE and AFCE differ in their coverage, disparities in per capita nominal and real expenditures in these two concepts remain essentially unchanged. For example, the Gini coefficients for real AFCE and HFCE both round up to 0.24.

[15] Brunei Darussalam and Macao, China may both be considered as economies with high incomes and low consumption, since net exports have a large share in both.

Table 7. Per Capita Real Actual Final Consumption Expenditure,[a,b] 2005

Economy	Levels (HK dollars)	Index (regional average = 100)
Hong Kong, China	125303	973
Taipei,China	107878	838
Singapore	99393	772
Brunei Darussalam	81740	635
Macao, China	67160	521
Iran, Islamic Republic of	42671	331
Malaysia	35544	276
Thailand	28679	223
Fiji Islands	23648	184
Sri Lanka	17464	136
Indonesia	14970	116
Maldives	14061	109
Philippines	14049	109
Pakistan	13087	102
Regional Average	**12878**	**100**
Bhutan	12328	96
China, People's Republic of	11189	87
Mongolia	10360	80
India	9293	72
Viet Nam	8362	65
Cambodia	7713	60
Lao People's Democratic Republic	7101	55
Bangladesh	6456	50
Nepal	5806	45

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
b Real refers to purchasing power parity-adjusted values.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Components of Actual Final Consumption Expenditure

Given that AFCE constitutes a major portion of GDP, in nominal as well as in real terms, it is useful to examine the components of household expenditure. The following subsection provides a glimpse of the possible types of aggregates that can be considered for analytical purposes. (This part is intended to provide an overview only; the results presented in Part 5 contain considerable detail.)

Nondurables, Semidurables, Durables, and Services

The classification of HFCE in the 1993 System of National Accounts is based on the Classification of Individual Consumption by Purpose (COICOP).[16] In addition to classifying individual expenditures into many detailed classes, it groups expenditures into four broad categories—nondurables, semidurables, durables, and services. (These categories are defined in the Glossary.)

Table 8 presents per capita real expenditure indexes of total AFCE and these four categories. The table is sorted by descending order of the total. The data show the relative spread of expenditures among the economies across the categories. The range between the highest and lowest expenditure indexes for durables is significantly wider than for nondurables—a factor of 3,142 to 18 (i.e., 174.6) for durables and 438 to 64 (i.e., 6.8) for nondurables.

The five richest economies and the Islamic Republic of Iran, Malaysia, Thailand, Fiji Islands, and Sri Lanka have above average expenditures for all AFCE components. For the two biggest economies of the PRC and India, both have lower than the regional average expenditures for nondurables, semidurables, durables, and services.

A comparison of India and the PRC provides some interesting contrasts. India has a higher per capita index for both nondurables and semidurables but a significantly lower per capita index for durables—29 compared with an above-average 106 for the PRC. Results for Pakistan, Philippines, and Mongolia suggest that the index for durables is more in line with other lower-income economies than the PRC.

Though not computed and reported here, numbers in Table 8 indicate that regional disparities are likely to be very high for durables compared with nondurables and semidurables. The spread between the highest and lowest for the services component also appears to be lower than those observed for durables and semidurables. The lower level of disparity in services may partly be attributable to the contribution of government expenditures in health and education, which together form a major portion of spending on services in low-income economies.

Composition of Food Expenditures

As previously noted, per capita real expenditures on AFCE vary significantly throughout the region.[17] The shares of expenditures within AFCE also differ significantly. Table 9 presents an interesting perspective on the composition of food consumption in the region. It shows index numbers of per capita PPP-based expenditures on food and four major components (bread and cereals, meat and fish, fruits and vegetables, and other food and nonalcoholic beverages), with the regional average for each component equal to 100. The economies are sorted in descending order of their index for per capita real AFCE.

[16] This classification is used for both HFCE and AFCE. Detailed structure and explanatory notes can be found at: http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=5.

[17] The Gini measure of regional disparities in AFCE is 0.24 when real aggregates are used. This measure shows intercountry differences in per capita real AFCE.

Table 8. Per Capita Real Expenditure Indexes on Actual Final Consumption Expenditure,[a,b] 2005
(regional average = 100)

Economy	AFCE	Nondurables	Semidurables	Durables	Services
Hong Kong, China	973	345	1857	3142	1161
Taipei,China	838	438	1106	1832	1048
Singapore	772	281	863	2639	974
Brunei Darussalam	635	333	931	1330	759
Macao, China	521	260	622	769	695
Iran, Islamic Republic of	331	281	383	389	364
Malaysia	276	169	383	416	338
Thailand	223	146	365	305	271
Fiji Islands	184	202	186	136	183
Sri Lanka	136	150	180	104	113
Indonesia	116	149	129	56	98
Maldives	109	94	108	98	122
Philippines	109	135	80	32	110
Pakistan	102	137	102	43	70
Regional Average	**100**	**100**	**100**	**100**	**100**
Bhutan	96	112	118	51	66
China, People's Republic of	87	82	61	106	89
Mongolia	80	88	109	49	71
India	72	84	80	29	68
Viet Nam	65	64	39	51	76
Cambodia	60	75	27	48	56
Lao People's Democratic Republic	55	79	30	47	40
Bangladesh	50	79	37	23	33
Nepal	45	73	34	18	29

AFCE = actual final consumption expenditure.
a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
b Real refers to purchasing power parity-adjusted values.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 9. Per Capita Real Expenditure Indexes on Food and Nonalcoholic Beverages,[a] 2005
(regional average = 100)

Economy	AFCE[b]	Food and Nonalcoholic Beverages	Bread and Cereals	Meat and Fish	Fruits and Vegetables	Other Food and Nonalcoholic Beverages
Hong Kong, China	973	**357**	154	802	142	343
Taipei,China	838	**398**	431	504	330	348
Singapore	772	**262**	164	339	151	364
Brunei Darussalam	635	**424**	463	564	198	488
Macao, China	521	**271**	199	469	232	204
Iran, Islamic Republic of	331	**186**	144	173	211	238
Malaysia	276	**180**	171	254	143	156
Thailand	223	**123**	97	108	124	144
Fiji Islands	184	**208**	148	253	121	283
Sri Lanka	136	**160**	226	95	192	140
Indonesia	116	**173**	192	134	179	184
Maldives	109	**101**	94	97	67	137
Philippines	109	**171**	301	273	69	102
Pakistan	102	**150**	169	101	130	192
Regional Average	**100**	**100**	**100**	**100**	**100**	**100**
Bhutan	96	**118**	231	58	63	132
China, People's Republic of	87	**75**	55	121	68	56
Mongolia	80	**100**	93	219	21	88
India	72	**89**	79	37	116	112
Viet Nam	65	**67**	116	93	40	34
Cambodia	60	**92**	185	94	47	70
Lao People's Democratic Republic	55	**76**	174	107	45	18
Bangladesh	50	**92**	187	76	65	62
Nepal	45	**84**	223	34	42	66

AFCE = actual final consumption expenditure.
a Real refers only to purchasing power parity-adjusted values.
b Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

As expected, there is a strong positive association between expenditures on food and actual final consumption expenditure. There are several notable features in the indexes of per capita real expenditure on food and nonalcoholic beverages. The relative disparities are low, at a factor of 6.3, with a minimum of 67 for Viet Nam and a maximum of 424 for Brunei Darussalam. The two largest economies in the region, the PRC and India, with about 72% of the population in the participating economies, have per capita real consumption of food below the regional average. In fact, the PRC has the second-lowest level of real expenditure on food with an index of 75. India has an index of 89.

Real expenditure indexes for different components of food reflect the diversity of the consumption habits of the population of the 23 economies. These differences reflect the effects of differences in per capita real GDP and in tastes and preferences, as well as climatic conditions. Interesting results here are the above average indexes of 223 and 231 for bread and cereals for Nepal and Bhutan, respectively. This feature is of note because Nepal has the lowest real GDP in the region, yet it has an index of bread and cereals above twice the regional average. Mongolia and the PRC provide cases where their index of real consumption is well above the regional average for meat and fish but below the regional average for bread and cereals. These indexes reflect consumption patterns dictated by climatic conditions. Hong Kong, China has the highest per capita consumption of meat and fish (more than eight times the regional average).

Education and Health Expenditures

Table 10 presents per capita real expenditures on education and health. As a basis for the comparison, the economies have been sorted in the order of their per capita real AFCE. The five highest-income economies (Hong Kong, China; Taipei,China; Singapore; Brunei Darussalam; and Macao, China) have much higher per capita real expenditures on education than the regional average. Brunei Darussalam was the only economy with education expenditures more than 10 times the regional average. Twelve economies have both higher than average per capita real AFCE and education expenditures, including Maldives with higher than average (sixth place) education expenditures. Among all the 14 economies with higher than average per capita real AFCE, only Sri Lanka and Pakistan have lower than average per capita real expenditures on education. Conversely, Cambodia, Viet Nam, and Mongolia have lower than average per capita real AFCE, but have higher than average expenditures on education.

A completely different picture emerges for health. The top three economies ranked by per capita real AFCE (Hong Kong, China; Taipei,China; and Singapore) have the highest per capita real expenditures on health, well above the other economies. Thailand and Maldives spent at least 1.5 times the regional average. Malaysia and Fiji Islands were above the regional average. However, the PRC have a lower than average AFCE but health expenditures almost equal to the regional average. In contrast, Bhutan notably have a lower than average AFCE but more than 1.5 times the regional average for health expenditures. Indonesia, Pakistan, Philippines and Sri Lanka have higher than average AFCEs but lower than average health expenditures.

Transport and Communication Expenditures

There are some striking differences between economies in the region for transport and communication combined. In Table 11, economies have been sorted by their per capita real expenditure indexes on AFCE. Expenditures on total transportation and communication (which includes IT equipment, software and services, access to the Internet, and mobile telephones) varies significantly throughout the region. The five economies with the highest AFCE have per capita real expenditures on this aggregate of more than seven times the regional average. The other economies significantly above the regional average are the Islamic Republic of Iran and Malaysia, at five times the regional average. At the other extreme, Bangladesh, Bhutan, and Nepal reported expenditures more than 80% below the regional average.

The pattern of per capita real expenditures on transportation (alone) is broadly correlated with the total for AFCE. The top 10 economies ranked on this latter basis also have above average expenditures on transportation, with the remaining 13 economies below the regional average. In some cases, expenditure on transportation appears to be correlated with the size of the economy. For example, the three economies with the lowest per capita real expenditures are Nepal, Bangladesh, and Bhutan, all of which are more than 80% below the regional average. In contrast, Brunei Darussalam and Singapore's per capita real expenditures are the first and second highest, respectively, in the region, at more than 17 times the regional average, even though they are among the smallest economies in the region.

Table 10. Per Capita Real Expenditure Indexes on Education and Health,[a] 2005
(regional average = 100)

Economy	AFCE[b]	Education	Health
Hong Kong, China	973	491	662
Taipei,China	838	796	878
Singapore	772	530	554
Brunei Darussalam	635	1032	304
Macao, China	521	366	394
Iran, Islamic Republic of	331	212	388
Malaysia	276	285	139
Thailand	223	237	190
Fiji Islands	184	168	124
Sri Lanka	136	66	62
Indonesia	116	111	26
Maldives	109	354	171
Philippines	109	135	32
Pakistan	102	83	94
Regional Average	**100**	**100**	**100**
Bhutan	96	75	165
China, People's Republic of	87	98	100
Mongolia	80	191	77
India	72	65	88
Viet Nam	65	169	85
Cambodia	60	101	79
Lao People's Democratic Republic	55	97	30
Bangladesh	50	45	23
Nepal	45	33	59

AFCE = actual final consumption expenditure.
a Real refers only to purchasing power parity-adjusted values.
b Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 11. Per Capita Real Expenditure Indexes on Transportation and Communication,[a] 2005
(regional average = 100)

Economy	AFCE[b]	Transportation and Communication	Transportation
Hong Kong, China	973	884	894
Taipei,China	838	1184	1257
Singapore	772	1473	1753
Brunei Darussalam	635	1478	1777
Macao, China	521	734	706
Iran, Islamic Republic of	331	687	501
Malaysia	276	513	568
Thailand	223	305	426
Fiji Islands	184	147	194
Sri Lanka	136	177	249
Indonesia	116	78	98
Maldives	109	71	48
Philippines	109	82	78
Pakistan	102	58	58
Regional Average	**100**	**100**	**100**
Bhutan	96	16	19
China, People's Republic of	87	67	43
Mongolia	80	52	59
India	72	77	99
Viet Nam	65	36	45
Cambodia	60	33	49
Lao People's Democratic Republic	55	32	46
Bangladesh	50	15	19
Nepal	45	10	14

AFCE = actual final consumption expenditure.
a Real refers only to purchasing power parity-adjusted values.
b Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Expenditures on Recreation and Culture and on Restaurants and Hotels

Per capita real expenditures on recreation and culture presented in Table 12 show considerable variation across the region, with the highest-spending economy (Hong Kong, China), at almost 40 times the regional average. The other four high-income economies all have per capita real expenditures on recreation and culture at least 10 times the regional average. There is a huge gap to the sixth-ranked economy, Malaysia, which sits at three times the regional average, marginally ahead of Thailand. At the other extreme, Bangladesh, Nepal, Philippines, and India all record per capita real expenditures on recreation and culture at more than 70% less than the regional average.

The range of per capita real expenditures on restaurants and hotels is somewhat narrower than that on recreation and culture, with the highest-spending economy (Hong Kong, China), a bit more than 20 times the regional average. Although all five high-income economies have an elevated level of per capita real expenditures on restaurants and hotels, Thailand (792) is marginally higher than Brunei Darussalam (751). The only other economies to record a level higher than the regional average are Malaysia (479) and Indonesia (188). Bhutan, Mongolia, and Pakistan stand out as having very low per capita expenditures on restaurants and hotels, at 99%, 93%, and 89%, respectively, below the regional average.

Gross Fixed Capital Formation

GFCF consists of investment in residential and other buildings, roads, bridges, railways, electricity networks and the like, and purchases of machinery and equipment. GFCF is important because it enhances an economy's potential for future growth. Richer economies generally invest more on a per capita basis than poorer economies—which is partly why they are richer! Table 13 shows levels and expenditure indexes of per capita real GFCF (total, machinery and equipment, and construction) with the economies arranged in descending order of per capita real GFCF.

The levels data presented in Table 13 should be interpreted with caution. Although machinery and equipment, and construction are the two components that make up GFCF, the real values for these two aggregates, expressed in Hong Kong dollars or any other reference currency, do not add up to the total for GFCF. This is mainly due to the use of the EKS aggregation method, which is not additive. In order to discuss real shares of construction and of machinery and equipment in total GFCF, it is necessary to use results from the GK method, which is an additively consistent procedure. (Results based on the GK method are presented in Appendix 6.) Despite this limitation, the regional averages suggest that construction is indeed the dominating component of GFCF. This is also reflected in per capita real expenditures on construction in most of the economies with below-average real GDP, where such expenditures are often three to four times those of machinery and equipment. As machinery and equipment constitute a major component of productive capital, the low levels of per capita real expenditures on this component may be indicative of, possibly, labor-intensive technologies used in these economies.

Relative price levels of machinery and equipment should also be considered in examining real expenditures. Though the expenditure share, in local currency units, may be large in many low-income economies, it may not always reflect real per capita indexes as price levels for machinery and equipment goods are usually higher than those for other goods and services. Machinery and equipment goods are usually all imported and so generally have relatively higher price levels than locally produced goods and services. (The issue of relative price levels for machinery and equipment goods is further considered when PLIs for different aggregates are examined in the next section.)

Table 12. Per Capita Real Expenditure Indexes on Recreation and Culture, and on Restaurants and Hotels,[a] 2005
(regional average = 100)

Economy	AFCE[b]	Recreation and Culture	Restaurants and Hotels
Hong Kong, China	973	3729	2320
Taipei,China	838	2079	1796
Singapore	772	2873	1625
Brunei Darussalam	635	1113	751
Macao, China	521	2135	1522
Iran, Islamic Republic of	331	220	79
Malaysia	276	301	479
Thailand	223	283	792
Fiji Islands	184	223	99
Sri Lanka	136	96	43
Indonesia	116	49	188
Maldives	109	102	27
Philippines	109	26	86
Pakistan	102	58	11
Regional Average	**100**	**100**	**100**
Bhutan	96	63	1
China, People's Republic of	87	111	85
Mongolia	80	52	7
India	72	28	25
Viet Nam	65	69	95
Cambodia	60	34	55
Lao People's Democratic Republic	55	34	31
Bangladesh	50	7	21
Nepal	45	10	20

AFCE = actual final consumption expenditure.
a Real refers only to purchasing power parity-adjusted values.
b Includes individual consumption expenditure by household, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 13. Per Capita Real Gross Fixed Capital Formation,[a] 2005

Economy	Levels (HK dollars)			Indexes (regional average = 100)		
	GFCF	Machinery and Equipment	Construction	GFCF	Machinery and Equipment	Construction
Singapore	52776	23100	28283	996	1830	587
Macao, China	43404	10921	37926	819	865	787
Hong Kong, China	42450	21963	18472	801	1740	383
Taipei,China	27127	12527	12171	512	993	253
Brunei Darussalam	24846	6236	20376	469	494	423
Malaysia	12427	5152	6661	235	408	138
Maldives	10069	3570	4126	190	283	86
Thailand	9461	4194	4642	179	332	96
Bhutan	8774	1063	11509	166	84	239
Iran, Islamic Republic of	8440	3385	4688	159	268	97
China, People's Republic of	8066	1401	8352	152	111	173
Fiji Islands	5593	2437	2370	106	193	49
Regional Average	**5299**	**1262**	**4819**	**100**	**100**	**100**
Mongolia	3647	937	2149	69	74	45
Sri Lanka	3352	872	2954	63	69	61
Viet Nam	3232	517	3540	61	41	73
Indonesia	3161	352	3854	60	28	80
India	2554	839	1873	48	66	39
Lao People's Democratic Republic	2432	440	1982	46	35	41
Philippines	1934	546	1431	36	43	30
Pakistan	1698	447	1355	32	35	28
Bangladesh	1450	203	1750	27	16	36
Nepal	974	77	1005	18	6	21
Cambodia	751	203	666	14	16	14

GFCF = gross fixed capital formation.
a Real refers to purchasing power parity-adjusted values.

Results for a few economies deserve further attention. In the case of construction, Bhutan stands out with relative per capita construction expenditures that are more than twice the regional average (239). This is even higher than the PRC, with an index of 173. This result is entirely due to major construction projects in Bhutan. The PRC has the highest per capita real expenditures outside the five richest economies (Singapore; Macao, China; Hong Kong, China; Taipei,China; and Brunei Darussalam) and Bhutan with per capita real expenditures of HK$8,352. This figure, combined with a large population of 1.3 billion (see Table 5) implies extensive construction activity in the PRC. In fact, the PRC is responsible for almost 60% of all investment in all the participating economies (see Table 31, Part 5).

Per capita real expenditures on machinery and equipment are more in line with relative levels of per capita real GDP. For example, these expenditures in the PRC are only HK$1,401, or 11% above the regional average whereas the corresponding figure for construction is 73% higher than the regional average. Overall, the regional average of per capita real GFCF on construction (HK$4,819) is significantly higher than that on machinery and equipment (HK$1,262). In all except three participating economies (Hong Kong, China; Taipei,China; and Fiji Islands) the GFCF is concentrated in construction rather than on machinery and equipment.

Price Level Indexes for GDP and its Components

The PLI, which is the ratio of a PPP to the corresponding exchange rate, shows how the price levels of economies compare with each other. When a PLI is presented as an index number with Asia as base equaling 100, economies with a PLI greater than 100 are more expensive than the regional average while those with a PLI less than 100 are relatively cheap. As a general rule, high-income economies will have a relatively high PLI while low-income economies will have a lower than average PLI. The reason is that wages, and therefore the price of services, tend to be low in low-income economies so that PPPs are low compared with exchange rates, which are determined largely by the prices of goods and services traded in the world market. The ICP results conform to this general rule at the upper and lower ends of per capita real GDP (see Figure 1.)

The PLIs at the GDP level were presented in Table 4 and were discussed at the economy level. However, it is generally accepted that PLIs for different components of GDP are likely to differ across economies and some general features emerge when these are examined in detail. Table 14 presents PLIs for GDP and its major aggregates.

The economy with the highest overall price level (i.e., the PLI for GDP) is Fiji Islands, mainly because a large share of the products consumed there are imported (so their prices are relatively high). The five economies with the highest per capita real GDP all have PLIs at least one third higher than the regional average. The eight lowest ranked economies have PLIs 15% or more below the regional average.

Table 14. Price Level Indexes for Gross Domestic Product and its Major Components, 2005
(Asia = 100)

Economy	GDP	Actual Final Consumption Expenditure[a]	Household Final Consumption Expenditure[b]	Final Government Consumption Expenditure	Gross Fixed Capital Formation		
					Total	Machinery and Equipment	Construction
Fiji Islands	208	204	202	211	184	137	248
Hong Kong, China	180	210	205	247	145	98	222
Macao, China	162	183	177	240	170	106	223
Singapore	159	198	194	200	127	107	156
Taipei,China	156	159	168	117	153	100	224
Maldives	148	157	155	164	137	104	184
Brunei Darussalam	133	147	143	143	140	113	164
Malaysia	112	123	123	111	99	99	100
China, People's Republic of	103	108	110	92	100	108	98
Asia	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Indonesia	100	96	95	122	109	114	109
Thailand	97	98	96	127	93	97	90
Philippines	97	98	97	118	98	105	94
Bhutan	88	92	92	82	90	128	77
Bangladesh	86	88	87	106	87	105	81
Sri Lanka	86	87	88	76	97	101	97
Mongolia	85	90	96	56	85	110	65
India	82	79	78	99	89	84	96
Pakistan	79	76	77	81	97	106	92
Nepal	78	82	82	92	78	88	75
Cambodia	77	83	87	44	80	97	69
Iran, Islamic Republic of	73	68	67	75	92	94	91
Viet Nam	73	78	82	50	72	99	60
Lao People's Democratic Republic	69	73	77	44	79	96	69

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
b Includes individual consumption expenditure by households, and by nonprofit institutions serving households
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

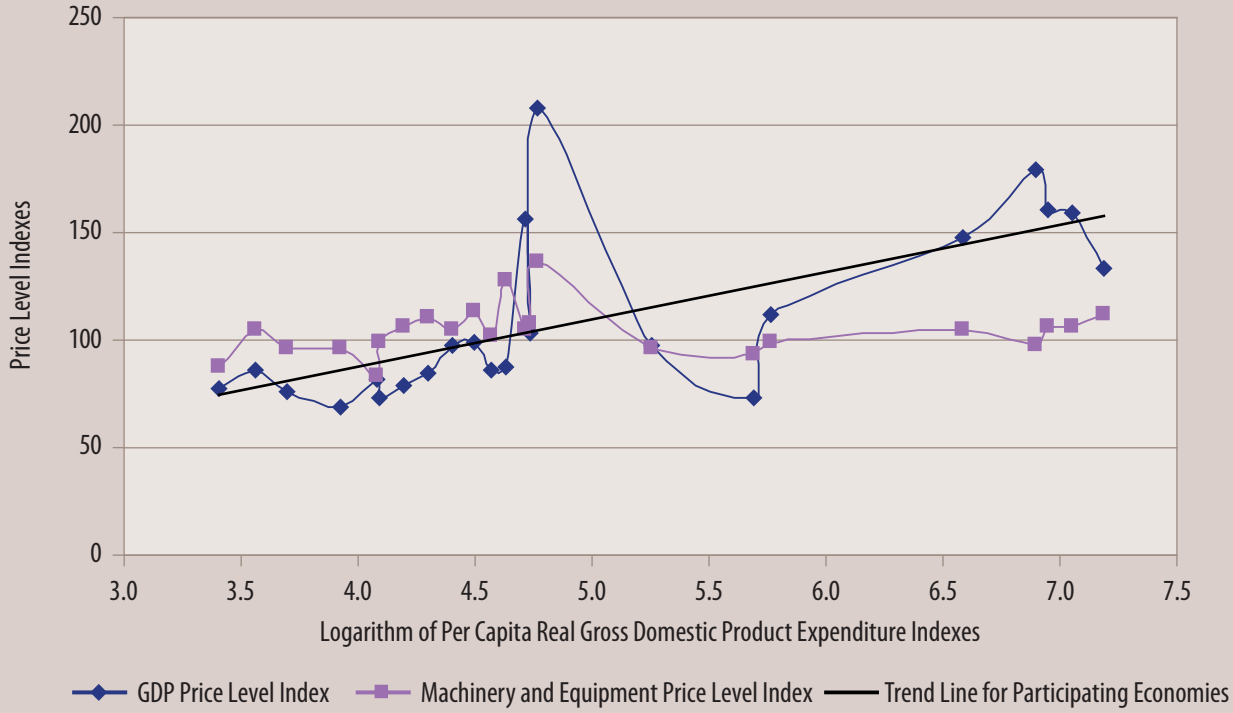
Several economies are very close to the regional average—PRC (103), Indonesia (100), and Thailand and the Philippines both at 97. The four economies with the lowest PLIs are three adjoining economies in Southeast Asia—Lao PDR (69), Viet Nam (73), and Cambodia (77)—along with the Islamic Republic of Iran (73).

The PLIs for AFCE are strongly correlated with those for GDP. The high share of AFCE within GDP in most economies would explain the strength of this relationship.

There is quite a narrow spread in the PLIs for GFCF on machinery and equipment. A large proportion of machinery and equipment is imported by Asia and Pacific economies and so the price levels in each economy are set to a large extent by prices on the world markets. As a result, there is far less variation in the prices observed than is the case for other types of products.

Figure 5 shows the relationship between per capita real GDP (log of per capita real GDP expenditure indexes) and the PLIs at the GDP level, and for machinery and equipment. (The GDP PLIs were analyzed, and show that PLIs increase with a rise in per capita real GDP.) The PLIs for machinery and equipment for low-income economies (with a log index of per capita real GDP between 3 and 5) are higher than the average PLI. For high-income economies, PLIs for machinery and equipment are around the regional average. One implication is that there will be a divergence in expenditure shares in nominal and real terms. (Note that it is necessary to use the GK shares for this analysis because the EKS values are not additive and so cannot be used in calculating "real shares".) It is common practice to use nominal shares, which tend to show exaggerated levels of expenditure on machinery and equipment. In order to assess the flow of services from such expenditures, it is necessary to consider the shares in real GDP. Another interesting feature in Figure 5 is that for low-income economies, machinery and equipment PLIs are well above the PLIs for total GDP, whereas the reverse is true for high-income economies.

Figure 5. Per Capita Real Gross Domestic Product Expenditure Index and Price Level Indexes for Gross Domestic Product and for Machinery and Equipment, 2005



PART 3

Governance, Organization, and Methodology for ICP in Asia and the Pacific

Governance

Introduction

A detailed governance structure was put in place for the 2005 ICP, with the Global Office providing overall project coordination. One of the problems identified with earlier rounds of the ICP (Ryten 1999) was that processes were inconsistent across different regions, which led to operational problems and unreliable results. The outcome was that the Global Office was established as the overall coordinating body. In addition, a coordinating organization was selected for each region to be responsible for statistical issues, such as developing regional product lists, data vetting, and training in each region.

The Global Office developed a governance model designed to encourage coordinated participation at each of the levels—worldwide, regional, and national. The aim was to produce results in each region that were reliable, based on a single set of standards, and consistent, so they could be integrated successfully into worldwide results.

Global Governance

The ICP Executive Board was established as the body to provide strategic leadership and make decisions about priorities, standards, overall work program, and budget. It generally met twice a year and its members were all eminent economists or statisticians, and experienced statistical managers. Several were heads of national statistical offices (NSOs) or of statistics departments in international organizations.

The Global Office was set up in 2002 to carry out the day-to-day work required in implementing the ICP worldwide. The Global Manager was responsible for its operations supported by a team of professional statisticians and administrative staff. The Global Office reported regularly to the ICP Executive Board, with annual work programs and budgets requiring the approval of the Board. Important activities carried out by the Global Office were developing ICP standards; preparing the ICP Handbook and the ICP Operations Manual and Procedures; and producing a software suite that includes the Tool Pack used by the NSOs, regional offices and Global Office.

The Technical Advisory Group (TAG) was responsible for providing advice on technical issues related to the ICP with the key responsibilities of resolving conceptual and methodological issues. Some of those issues considered by the TAG related to establishing standards, methods, and procedures for the ICP. The TAG was also responsible for research into the implications of adopting particular procedures

and for evaluating the outcomes of PPP research projects by academics and others. Membership of the TAG included eminent academic researchers as well as experienced statisticians from international organizations and NSOs.

Governance in Asia and the Pacific

The ICP regional offices undertook the ICP work in each of the five geographic regions (Africa, Asia and the Pacific, Commonwealth of Independent States, Latin America, and Western Asia). The Regional Office in ADB was responsible for coordinating the 23 participating economies in ICP Asia Pacific.

In its region, ADB set up a Regional Advisory Board as the chief policy-making body. Members of the Board were chosen from a mix of the main stakeholders, regional agencies, and NSOs. Its main responsibilities were to:

(i) provide guidance on regional goals, priorities, and objectives, taking into consideration the statistical needs of regional agencies and economies;

(ii) monitor and guide annual work programs prepared by the regional coordinating agency responsible for the day-to-day management of the regional program;

(iii) provide the mechanism for keeping all parties involved and informed;

(iv) review annual reports on ICP progress;

(v) advise on the sustainability of the program; and

(vi) assist in shaping the vision of ICP for future directions.

ADB's member-economies were formally invited to participate in ICP Asia Pacific. ADB established a "Framework of Partnership" and so in this way systematically involved the participating economies in all phases of the project. The Framework of Partnership defined the roles and responsibilities of each of the parties involved, with an emphasis on how the success of the ICP was dependent on all parties taking ownership of the project.

ADB arranged several meetings for senior staff in the NSOs to formally influence the direction of the project. A meeting of the heads of participating national coordinating agencies was held in June 2003, before data collection was under way, to ensure that all agency heads understood the implications of what they were being asked to do, and to establish effective management structures and lines of communication. The Regional Advisory Board met seven times between June 2003 and June 2007, and a report was made available on ADB's ICP website soon after each meeting.[18] A second meeting of the heads of the national coordinating agencies was held in July 2007, shortly before the release of the preliminary estimates, so that the Regional Office could brief them on the results.

The 2005 ICP Asia Pacific

Background

In late 2002, the World Bank invited ADB to take on the role of regional coordinating agency for the Asia and Pacific region in the 2005 ICP. There was no single reason for ADB's selection, but a combination. ADB has nurtured a good relationship with its member-economies through implementing country-specific programs on statistics, among other areas, and has spent much time and resources on the important area of statistical capacity building. The ICP was seen as a practical means of complementing this important work. In addition, ADB had the means of raising substantial funds that were crucial for implementing a large project like the ICP.

ADB set up a Regional Office to manage the ICP in the region. The Principal Statistician of the Development Indicators and Policy Research Division of the Economics and Research Department assumed the role of regional coordinator. The ICP team consisted of five staff on average between mid-2003 and mid-2007, with a peak staff of seven in 2006. The team was heavily involved in training, editing data, running data review workshops, calculating regional results, and coordinating "ring comparison" activities in the region. (See the section "Linking Regional Results—The 'Ring Comparison'," below.)

[18] Available: http://www.adb.org/Statistics/icp/icp.asp.

Coverage

Twenty-one ADB member-economies agreed to take part in the 2005 ICP. They were: Bangladesh; Bhutan; Brunei Darussalam; Cambodia; PRC; Fiji Islands; Hong Kong, China; India; Indonesia; Lao People's Democratic Republic; Malaysia; Maldives; Mongolia; Nepal; Pakistan; Philippines; Singapore; Sri Lanka; Taipei,China; Thailand; and Viet Nam. In addition, two other economies (Islamic Republic of Iran and Macao, China) also took part. (These are often referred to as the "23 economies" or "participating economies".)

Japan, Republic of Korea, Australia, and New Zealand were not included in the 2005 ICP Asia Pacific as they were included in the OECD/Eurostat comparisons. Consequently, no results for these countries are included in this publication. However, it will be possible to compare them with other countries in the region once the global results are compiled by the Global Office. In fact, any pair of the 146 economies for which PPP-based data have been produced for 2005 can be compared when the six sets of regional results are combined into a set of worldwide results, which are scheduled to be released on 17 December 2007. For example, it would be possible to compare, say, Singapore with Australia (from the OECD/Eurostat program) or with Brazil, which is involved in the Latin American comparisons.

Administrative Arrangements

The administrative arrangements for a broad-reaching statistical exercise like the ICP were quite complex and had several dimensions. The governance arrangements determined the administrative arrangements to a large extent. The Global Office set the broad statistical standards and resolved major problems that arose so that the greatest possible degree of consistency was maintained around the world. It also arranged regular meetings with regional coordinators to ensure that standards were applied consistently worldwide. Staff from the Global Office also attended regional meetings and visited countries that needed assistance in resolving problems.

The main functions of the Regional Office were to develop the product lists, train the national coordinators in both theoretical and practical details relating to the ICP, provide technical advice on price surveys, organize and run the data review workshops, edit the data, select the expert groups for construction and equipment prices and organize their meetings, compile the regional results, and coordinate the Asia and Pacific economies involved in the ring comparison. The Regional Office ensured that activities were organized throughout the region.

There were two levels of coordination within each economy—a national coordinating agency and, within it, an ICP National Coordinator. In some cases, where different agencies were involved in providing the national accounts and price data for the ICP, all communications were conveyed through the agency (a list of the agencies is provided in Appendix 9). The main roles of the ICP National Coordinator were to ensure that the economy's ICP data (national accounts, prices and wages) were correctly estimated; that statistical staff and field staff (involved in collecting prices) were trained in the concepts underlying the ICP and the practical implications for collecting prices; that data were edited and entered into the ICP database; and that editing queries from the Regional Office were handled promptly. The National Coordinators were the focal persons through whom all agreements were communicated and they, too, were expected to ensure the proper implementation of such agreements and for communications to the proper authorities in all agencies in their economy. They also attended the data review workshops that were held to check the consistency of the data supplied and preliminary PPP estimates.

Financing ICP Asia Pacific

ICP Asia Pacific was a very costly exercise, in terms of both direct costs and costs absorbed by the agencies involved in collecting and producing the data. ADB met many of these costs from its own resources. However, the successful completion of the ICP would not have been possible without the generosity of the following donors: the Australian Agency for International Development; Department for International Development of the Government of the United Kingdom of Great Britain and Northern Ireland; Government of Japan through the Japan Special Fund managed by ADB; and World Bank.

In addition, the Australian Bureau of Statistics provided in-kind support by allocating staff for 17 months to the team engaged in developing the household product list.

ICP Methodology for Price and Real Expenditure (volume) Comparisons

Conceptual Framework for the ICP

In concept and in practice, PPPs are always expressed in terms of the currency of a base economy. This currency is referred to most commonly as a "numeraire currency" but "common currency" and "reference currency" are also used. The choice of a base (or reference) economy in which to express the results is arbitrary. The results could have been presented in the currency of any of the participating economies or in terms of an artificial "currency" based on a basket of currencies. No matter which currency is used for the results, the relativities (either price relativities or relative volumes) between the economies would be the same.

However, there are several useful characteristics for a numeraire currency to possess. First, it is an advantage to have a broad-based economy, so that prices are available for products in as many basic headings as possible (see the subsection "Basic Heading" in Part 2). Second, having a strong statistical system is important because it enables the country to collect a wide range of prices and to report basic heading data from the national accounts. Third, the numeraire currency provides a reference point as well as the means of direct comparisons between countries, so it is important for its value to be well recognized in the region. The Regional Office chose the Hong Kong dollar as the numeraire currency because Hong Kong, China fulfilled all the above requirements. The Regional Office would like to emphasize that this does not imply that other economies in the region failed to meet these criteria.

In practice, one calculates PPPs by comparing the prices between countries for a specified basket of the major goods and services included in GDP. The simplest situation arises when only two countries are being compared (referred to as a "bilateral comparison"). The resultant PPPs can be expressed in terms of the currency of either of the pair of countries. In such a case, the PPP for a particular product (goods or service) is the rate of exchange at which the currency of the first country would have to be converted into the currency of the second to purchase the same quantity and quality of the product in both. The 23 economies in the 2005 ICP Asia Pacific participated in what is referred to as a "multilateral comparison," which is a much more complicated exercise than a bilateral one, both in terms of the underlying concepts and the practical difficulties that arise from having so many diverse economies to compare.

Despite the emphasis placed on PPPs in the ICP, their role is more of an indirect than a direct nature. Their importance lies in their use as an intermediate step in producing two other datasets that are necessary for making international comparisons—volumes of GDP (or real expenditures) and its major aggregates, and indicators of the comparative price levels between countries (referred to as "price level indexes," or PLIs). Per capita volumes are calculated as a means of standardizing the overall size of countries, by providing a measure of the income accruing from a country's production to each of its residents. Per capita measures are particularly important in poverty analysis.

One of the key reasons for producing PPPs is that there is a systematic difference between PPP-based and exchange rate-based comparisons for low- and high-income countries. The products purchased within a country can be split into those that are traded internationally ("tradables") and those that are not ("nontradables"). Exchange rates are the prices at which currencies trade in the financial market, and are influenced by many factors, including the prices and volumes of products traded, financial flows, and interest rates. However, they are not directly affected by the prices for nontradables, which tend to be strongly correlated with wage levels. The prices of each tradable product tend to be more uniform, regardless of the income status of the countries concerned because their prices are set, at least in broad terms, on world markets. As a result, the prices for nontradables are generally low relative to the prices for tradables in low-income countries compared with high-income countries. Therefore, a unit of local currency has greater purchasing power within a low-income country than it does in global markets, and so the GDP levels for low-income countries will be higher when converted to a common currency using PPPs than when they are converted using exchange rates. These differences are not trivial. As an example, the per capita volume of GDP for Hong Kong, China is 58 times that of Bangladesh on an exchange rate basis but only 28 times on a PPP basis.

Price Level Indexes

A price level index (PLI) is the ratio between a PPP and the exchange rate of the currency of a given country, measured with respect to a reference currency, generally expressed on a base of 100. PLIs show how the price levels of countries compare with each other. Travelers often return home with stories about visiting a country that was "cheap" or "expensive". In effect, such travelers are comparing the PLI in their home country with that of the country they have visited. If the PLI of the country they have visited were less than that in their home country, the country visited would have been considered "cheap". Conversely, the visited country would be considered "expensive" if its PLI were greater than that of the home country. In the ICP, the base of 100 usually refers to a regional average but any country (or group of countries) can be used as the base.

The way in which a PLI is constructed can be seen by taking the Big Mac example a step further (see previous subsection, "Purchasing Power Parities"). Table 15 shows the data used in that example, plus a notional exchange rate between Hong Kong, China and Malaysia.

As seen from Table 14 in Part 2, the PLI can be presented in several different ways. However, in each case, the PLI shows exactly the same thing—that the price level in Hong Kong, China for a Big Mac is about 11% higher than in Malaysia.

In practice, PPPs tend to change slowly over time because price levels do not usually change abruptly. In contrast, exchange rates can (and do) change suddenly, which could cause PLIs to change significantly in the short term. A shift in exchange rates could change PLIs to the extent that a relatively cheap country becomes relatively expensive, even when prices in the various countries have not changed significantly.

Real Expenditure (volume) Comparisons

The main aim of compiling PPPs is to produce volumes (also referred to as "real expenditures"), that can be compared between countries. In a spatial comparison, a volume is a measure of the relative size of an expenditure category between the countries involved in the comparison. The volume of GDP provides a measure of the size of each country, expressed in a common currency. Volumes can also be expressed in terms of index numbers, which indicate the relationship between each country and either a base country or a regional average. The volumes are derived by dividing the corresponding expenditure by the corresponding PPP. In this respect, PPPs are similar to price deflators in the national accounts, which are divided into the values to which they correspond to derive time series of volumes. In the ICP, volumes can be calculated by applying PPPs at any level of expenditure on GDP, from the basic heading right up to GDP itself.

For many uses, volumes are expressed in per capita terms to provide a measure of activity, standardized to provide an indication of the income accruing from production to each resident of a country. The per capita volume of GDP is often used as an indicator of relative incomes between countries. It is important to note that it provides only a broad indication of relative incomes because GDP is a measure of production and so actual income can be affected by other flows, such as income distributed to or from abroad. Despite such shortcomings, it is the

Table 15. Big Mac Index Illustration

Item	Hong Kong, China	Malaysia
Big Mac (in local currency)	HK$12.00	RM5.70
PPP	2.105	0.475
Exchange rate	2.000	0.500
PLI (PPP / Exchange rate * 100)	105.3	95.0
PLI (Hong Kong, China = 100)	100	90
PLI (Malaysia = 100)	111	100

PPP = purchasing power parity; PLI = price level index.

broadest economic measure available on a consistent basis across multiple countries. In addition, analysis has shown that, generally, the wealth of a country is broadly correlated with the per capita volume of GDP.

The 2005 ICP provides a benchmark for comparing economies in Asia and the Pacific. Until benchmark data become available from the next ICP round, the PPPs and volumes will have to be projected forward. The time series national accounts data can be used to update the 2005 benchmarks, although the assumptions underlying this process can be quite restrictive when economies at different stages of development are involved. At this stage, no decision has been made on extrapolation methodologies.

Requirements for Valid Price and Volume Comparisons

Calculating PPPs is only the first step, albeit the most complicated, in producing the data required by analysts to make intercountry comparisons of, for example, standards of living, productivity levels, and poverty. As is the case in producing time-series price data, detailed requirements must be met for the resulting PPPs to be useful. A major input into the compilation of PPPs is price data. Therefore, in order to have PPPs that are meaningful, the prices collected in each country must be consistent with national accounts values; prices collected are for comparable products; and prices are representative of the products purchased. In practice, these constraints are much more restrictive in an ICP context than for a time series of prices within a single country. For example, in a CPI within a country, it is reasonably straightforward to handle a change in the product most commonly purchased, with price collectors instructed to collect the price of a similar product, preferably with a price for both the new and superseded products being collected for an overlap period. However, replacing a product specified in the ICP product list by another is not an acceptable practice because it is critical for the comparison that the products priced in one country can be matched in other countries.

Consistency of Price Measures with National Accounts

Consistency here refers to the relationship between the prices underlying the PPPs and the national accounts data to which the PPPs are applied to derive volume estimates. The price deflators used in deriving time series of volumes in the national accounts must be consistent with the values they are deflating. For example, the prices used to deflate investment in equipment must relate to the types of equipment underlying the expenditures. The same is true with PPPs, but it is more difficult to ensure that this criterion is met because it has to be satisfied simultaneously across multiple countries, which imposes some constraints on the products that can be selected for pricing.

The consistency requirement has important implications for the process involved in preparing product lists for price collection. In order to decide on the products to be priced, it is necessary to examine the coverage of the particular aggregate in the national accounts and then to identify the products. It is in this context that the property of "representativity" becomes important.

Representativity

The next important criterion is that the products selected for pricing are representative of the products purchased in each economy. In practice, it is inevitable that differences will arise in the types of products purchased under the same basic heading in different economies, particularly given the cultural and economic diversity in the region. As a result, some trade-offs were required to ensure that the products priced were representative of the expenditures to which they relate in each economy. The ICP Handbook (chapter 4) defines representativity as follows:

> Representative products [are those that] figure prominently in the expenditures within a basic heading within a country. They are therefore products that are frequently purchased by resident households and are likely to be widely available throughout the country.

Representativity is an important criterion in the ICP because the price levels of nonrepresentative products are generally higher than those of representative products. Therefore, if one country prices representative products while another prices nonrepresentative products under the same basic heading, then the price comparisons between the countries will be distorted. Basic heading—the lowest level for which expenditures are available in the ICP—are broad expenditure categories and so are not sufficiently fine to identify a single product that would be classified as representative of the basic heading. As a result, a fair degree of judgment is required of price statisticians to identify several products that are fairly representative of each basic heading across the region. Some guidelines were set out to assist in this process. For example, the best-selling product of its type (e.g., brand of cigarettes) would be representative. Similarly, any product included in an economy's CPI would be considered representative. It is ideal, and would also lead to more reliable price comparisons, if several different products within a single basic heading could be classified as representative.

One point that needs to be emphasized is that the product lists were set up to provide the greatest possible opportunity for economies to identify representative products to price in each basic heading, so no single economy was expected to price all the products under any individual basic heading. However, all economies were expected to price some product(s) that were available but not representative of their expenditure so that they could be matched with prices collected by other economies.

It is important to note that the criterion of representativity was applied only to products within household final consumption expenditure. The employee categories for which wages data were required in government final consumption expenditure (GFCE) and the goods priced in gross capital formation were specified by the Global Office in a way to ensure they were as representative as much as possible for all economies in the ICP around the world.

Comparability

Comparability was the third important criterion in defining the products to be priced. The ICP Handbook (chapter 4) defines comparability as follows:

> Two or more products are said to be comparable either if their physical and economic characteristics are identical, or if they are sufficiently similar that consumers are indifferent between them.

Alternatively, two similar products may be said to be comparable if consumers are indifferent as to which of the two they consume. This implies that consumers are not prepared to pay more for one than the other.

Identifying comparable products was a difficult process in Asia and the Pacific because of the diversity of cultures and standards of living. The starting point for ensuring comparability was to define detailed specifications for each product to be priced. In some cases, it was necessary to define products specifically to cater to different parts of the region. For example, some economies consume rice as a staple, particularly in South Asia, but in many East Asian economies noodles are much more important. As a result, detailed specifications were set up for rice and for noodles, but economies were not expected to price both unless they were readily available.

Comparability is a difficult criterion to handle in practice. It was necessary in some cases to provide product specifications that were not as tightly defined as desirable so that comparability could be ensured. A product selected for pricing is more likely to be comparable between economies if the specifications are tightly defined—but the more tightly defined the product the more difficult it becomes to find products meeting the specifications precisely. Similarly, two products that differ in respect of some price-determining characteristics will generally not be comparable. Again, it was necessary at times to define products more loosely to enable economies to find products meeting the specifications. The downside of this process, though, was that it became much more difficult to determine whether economies had priced the same items.

When determining product lists for pricing, it is necessary to strike a balance between comparability and representativity. On the one hand, comparability is very important because it is difficult to make sense of price comparisons unless the products have similar characteristics, including quality. On the other, representativity is also important because the prices of nonrepresentative products are usually higher than those of representative ones. If the correct balance between these concepts is not struck, the price comparisons between the economies concerned are likely to be distorted, possibly significantly so. Good judgment is required on the part of the staff collecting prices for the ICP in the trade-offs involved in balancing comparability and representativity. The Regional Office provided training on ICP concepts and principles to the NSO staff who were to collect prices and those who were going to edit the data. This is one reason why the Regional Office conducted several workshops for the preparation of product lists for the region. In addition, several workshops were held to validate price data collected and to ensure that participating economies were collecting prices of comparable products.

Data Requirements

Price Data

The major costs incurred in producing PPPs are those associated with defining the specifications of the products to be priced, collecting the prices for these products, and then editing them. Specifications for products in a CPI can vary from place to place within a country, provided that they are consistent over time. In contrast, in the ICP it was imperative that the products for which prices were collected were strictly comparable across economies, leaving little room for discretion in product selection. As a result, defining the price-determining characteristics of the products was a critical aspect of the whole project. A new approach was adopted in the 2005 ICP to develop the product specifications. It involved systematically defining the characteristics of each product to be priced in each region using "structured product descriptions" (SPDs). (See the section "Structured Product Descriptions," a few pages below.)

Varying numbers of products were specified under different basic headings, depending on the range of products that were considered representative of each basic heading. For example, postal services are highly centralized in most economies, so it was possible to cover the postal services basic heading with only a handful of products. In contrast, the rice basic heading required 21 different rice products to be specified because of the large number of rice products available in the region.

Photographs of products were provided as one way of overcoming language and interpretation problems, although the extent to which this could be done was restricted by the limited time available. The communication problem was particularly important when agencies trained their field staff in how to identify the products to price.

While it was a difficult and time-consuming task to define SPDs for all 656 products in individual consumption expenditure by households, the Regional Office considers it to have been very worthwhile. The SPDs enabled products to be matched across economies more precisely than would have been possible otherwise. In addition, they were used extensively by the ring economies from all regions in identifying products to include in the "product ring list". (See the section "Linking Regional Results—'The Ring Comparison'," a few pages below.)

GDP Aggregates in Local Currencies—Levels and Expenditure Weights

National accounts statistics play two important roles in the ICP. First, one of the main purposes of the ICP is to compare real expenditures on GDP and its components between countries. Such a comparison is made by converting national accounts aggregates expressed in local currency units to a common currency using PPPs. The reliability of these comparisons depends largely on the accuracy and international comparability of the national accounts statistics in local currency units reported by countries.

Second, the price relatives—or PPPs—calculated at the most detailed (basic heading) level are aggregated to progressively higher levels and eventually to GDP using weights derived from the national accounts. The weights are the expenditures on each basic heading as a share of GDP. Again, the accuracy and the comparability of these weights can impact on the accuracy and comparability of the PPPs as they are aggregated up from the basic heading level.

GDP Levels

International comparability of the national accounts statistics reported by participating economies was generally satisfactory because they all follow one of the two latest versions of the UN System of National Accounts (SNA). Several economies are still in the process of changing from the earlier 1968 version to the latest 1993 version which was used as the standard for the 2005 ICP. However, the differences between the two versions are relatively small for total GDP and its expenditure components. The main differences are that, in SNA93, expenditure by enterprises and government on computer software is treated as GFCF rather than as intermediate consumption as in the SNA68, and the imputed service charges for financial institutions (financial intermediation services indirectly measured—FISIM) are distributed to final users. Not all economies followed the 1993 guidelines for software and FISIM, but this would not have had a major impact on comparability.

During the 5 years from the beginning to the end of ICP Asia Pacific, several economies took steps to bring their national accounts more into line with SNA standards. For example, Mongolia widened coverage of its estimates of housing rentals and Cambodia, Lao PDR, and Pakistan revised their methodologies for estimating government consumption expenditure. These are practical examples of "capacity building"—one of the declared objectives of the 2005 ICP.

The accuracy of the national accounts naturally varies considerably among the participating economies: it is clearly much easier to estimate GDP for a small city-state like Singapore or Hong Kong, China than for economies like PRC, India, or Pakistan, which have large areas, huge populations, and major differences in levels of economic development. During the period when ICP Asia Pacific was being implemented, most economies made some revisions to their 2005 national accounts. Most were relatively small revisions from preliminary to final estimates but two economies—PRC and Brunei Darussalam—made much larger "benchmark" revisions. Following its 2004 economic census, GDP for the PRC in current prices was revised upward by nearly 17%. In Brunei Darussalam, a revision of just over 60% was made to current price GDP, following analysis of the results of the 2002 economic census, which showed that there had been substantial underestimation of private sector value added. In addition, a new methodology was introduced so that GDP is now estimated from both the expenditure and production sides. Revisions of this size are a sharp reminder of the uncertainty surrounding GDP estimates in many developing countries—and not just in the Asia and Pacific region.

Bangladesh, India, and Pakistan compile their annual national accounts for "agricultural years" running from 1 July to 30 June; Nepal from 16 July to 15 July; and the Islamic Republic of Iran uses a traditional Persian calendar beginning in March. These countries were required to convert their accounts to a calendar year basis using information from quarterly statistics.

Expenditure Weights

Economies were required to break down final expenditures on the GDP into 155 basic headings. Table 2 shows the main expenditure components of GDP as defined in SNA93 and the number of basic headings in each one.

In their own national accounts publications, most economies classify final expenditures on GDP into much fewer than 155 categories and those that do have detailed breakdowns—Indonesia and Hong Kong, China for example—do not use the ICP classification. For all economies, therefore, providing the 155 expenditure weights for the basic headings was a major undertaking. A variety of sources was used including expenditure weights taken from CPIs, household expenditure surveys, government expenditure accounts, and capital expenditure surveys. In some cases, economies used weights that had been calculated for earlier rounds of the ICP.

When the economies had submitted their initial estimates for the 155 basic headings, the Regional Office calculated the averages for the region as a whole and for subgroups such as South Asia, High-Income Economies, and Southeast Asia. Outliers—particularly high or low expenditure shares—were identified. The participating economies discussed these with the Regional Office and made adjustments as necessary.

Although it is certain that many of the 155 basic heading expenditure weights are approximate, the larger weights are generally much more reliable than the smaller weights. For example, the weights for important basic headings such as rice, poultry, or garments have certainly been more accurately estimated in most economies than the weights for the

smaller basic headings such as "Repair of furniture, furnishings and floor coverings" or "Small tools and miscellaneous accessories". Inaccuracies in the weights for basic headings with small weights do not have a large impact on the calculation of the PPPs for broad aggregates.

The participating economies were initially required to estimate basic heading weights for 2004. These then had to be converted to the 2005 reference year for the ICP. A few economies—Singapore and Taipei,China, for example—estimated a new set of basic heading weights for 2005 but most economies used a less burdensome updating procedure. The detailed 2004 weights were converted to 2005 using the expenditure breakdowns available in each economy's official national accounts. For example, if the national accounts showed that household expenditure on food was 15% of GDP in 2004 and 14% in 2005, the detailed 2004 basic heading weights for food were each multiplied by 14/15—i.e., they were reduced using a factor of 0.933.

In several economies, the published breakdown of expenditures included a statistical discrepancy. It generally arises because economies consider that their best estimate of GDP is obtained by adding up the value added of different kinds of industries rather than by adding up their expenditure estimates. The statistical discrepancy was ignored in calculating the weights. In other words, the weights were calculated as shares of GDP *minus* the statistical discrepancy. This procedure assumes that the statistical discrepancy is distributed on a pro rata basis over all the expenditure components. An exception was made in the case of Fiji Islands because its 155 expenditure weights were based on rather out-of-date information and the statistical discrepancy was over 15% of GDP. The Fiji Islands experts decided that the estimates for government consumption expenditure in 2004 were of good quality, and the statistical discrepancy was distributed only over the other expenditure components.

Data Collection: Sources and Methods

The national accounts provide the framework for the ICP. The classification of the 155 basic headings provides the basis for specifying the products to be priced for the ICP. HFCE is the largest single component of GDP. It was also the most difficult to deal with operationally in the Asia and Pacific region because of the diversity of participating economies.

In some regions, the products priced in the CPI were comparable across several economies and so the prices collected for CPI purposes could be used in many cases. Consequently, the special collections required for ICP purposes could be limited to a relatively small number of products. However, the diversity of economic and social conditions in the region meant that prices for the ICP had to be collected in one-time surveys for many household consumption products.

A total of 656 products was specified in the region for individual consumption expenditure by households. No economy was expected to price all products because some had been defined to cater to different parts of the region. However, some were relevant across most economies.

The special price collections were carried out in a range of outlet types across different localities (including an appropriate urban–rural mix) in each economy. The aim was to have the samples selected in broad proportion to the importance of the outlet types and urban–rural localities, so that specific weights were not required to combine the prices collected for any individual product.

Fewer prices were required for other components of GDP, but the issues associated with ensuring they were comparable and representative were even more difficult to resolve than for household consumption products. Differences in the classifications of government employees, the diversity of materials and methods used in construction, and the variety of equipment used in the region meant that pricing comparable products across the whole region was a very difficult task. (Details of the ways in which the product lists were developed are presented in the next section.)

The participating economies were advised to engage the services of domestic experts for the construction and equipment sectors, since expertise in these fields is often unavailable in NSOs. The Regional Office established two special "core groups"—of experts on construction and on equipment—to tackle the problems associated with the pricing of these products. Members of these two groups all came from the participating economies and were selected on the basis of their skills in the field. Generally, they were not from NSOs; rather they were staff members of agencies directly involved in the relevant fields (e.g., Ministry of Public Works for construction prices) or from private businesses such as a quantity surveyor's office. The core groups provided valuable inputs toward ensuring product parity for the two sectors. Each group held two meetings to review the prices in a similar manner to the household data review workshops, to check the comparability and representativity of the prices supplied for products. For construction, not only did the core group identify outliers, but it also prepared a document on key price-determining characteristics so as to assist participating economies to price construction inputs and components consistently.

Developing Product Lists

Background

The Regional Office was responsible for preparing the product lists for HFCE, other than that for rents (which was produced by the Global Office). It was assisted by the ICP Product List Development Team from the Australian Bureau of Statistics (ABS) between March 2003 and July 2004. The task of defining the HFCE product list was divided into two phases; the first related to food, beverages, and clothing and footwear; and the second to the remaining consumption items. The first phase was completed in early 2004 and the second in July 2004. The Global Office set up the lists for government consumption and for investment on construction and equipment.

The products were defined within the ICP basic headings, which were based on aggregations of classifications based on the COICOP. The importance of products in the region was determined by the share of each basic heading in total HFCE. The number of specifications in any particular basic heading was based mainly on this indicator of importance (e.g., in ICP Asia Pacific, rice was split into 21 individual specifications).

The economic and cultural diversity of the region rendered it impossible to identify products that were both comparable and representative regionwide. As a result, some products were identified on the basis of their importance in economies in one part of the region and were defined in terms of the main characteristics of the products available in those economies. One implication of this approach was that no economy was expected to price everything in the regional product lists. In addition to the rice and noodle example a few paragraphs earlier, was the fact that some types of meat would not be priced in some countries (pork in Bangladesh, beef in India) and spirits were not priced in Brunei Darussalam.

Apart from differences in the products themselves across the region, similar products sometimes turned out to have significant differences in quality. In some cases, it was possible to define the characteristics causing the quality differences in the product specifications (e.g., broken rice) but in others this was infeasible. Defining product specifications is a balancing act between having specifications that are so tight that economies are unable to find products that match, or having looser specifications that result in the products being priced differing significantly from one economy to another.

Quality differences often arose as a problem when specifications were loosely defined. Some cases for which specifications were defined too loosely became more apparent once pricing had started and prices were being compared across economies. Two alternatives were available to deal with such products. In some cases, it was possible to split the initial product into two separate (but similar) products and compare them across the economies that had priced them. In others, it was necessary to delete the product from the list. The main problem areas in this respect were clothing, professional services, telecommunications (because of the difficulty in matching the types of calls in different economies), and public transport fares (because of varying methods of ticketing, based for example on time, distance, or some combination of the two).

Language proved to be a time-consuming issue. All the specifications were originally defined in English and then the finalized specifications had to be translated into 18 different languages before price collection began.

Structured Product Descriptions

A new method was introduced into the 2005 ICP for systematically identifying the characteristics of products to be included in the ICP product list. It was based on setting up the "structured product descriptions" (SPDs) that contain all the possible characteristics associated with a product type. After deleting characteristics that were considered not to be "price-determining," the remaining characteristics were grouped into specifications that identified a particular product. The starting point in defining SPDs was the "open product specifications" prepared by the US Bureau of Labor Statistics for identifying the characteristics of the products to be priced in the US CPI. The Bureau defined these specifications at the level of "elementary list items" that were classified by the structure of the US CPI. The Global Office mapped these categories to ICP basic headings and then sought the assistance of each ICP region in modifying them for more general use in the ICP.

Setting up the SPDs was a very large and relatively complex task requiring both a detailed knowledge of the products that could potentially be priced for the ICP and their price-determining characteristics. The Bureau had developed the open product specifications to assist in collecting the characteristics of products that were to be quality-adjusted using hedonic regression techniques. As a result, they included much detail that proved to be irrelevant to countries with simpler market structures than those in the US. Also, there was no overriding classification structure and US-specific language had to be adapted to cater to the broad range of economies in the ICP. The detailed characteristics identified in the US specifications were used as a starting point. Price statisticians from economies in Asia and the Pacific assisted the team involved in developing the product lists to delete any characteristics that were not relevant and to add in any other characteristics that were important in the region. The types of characteristics included in the SPDs were the type, variety, seasonal availability, quantity, packaging, and pricing basis. Some characteristics were omitted from the SPDs because they were considered not to be price-determining (e.g., color).

For simple items, such as basic food products, the SPD process was reasonably straightforward, but it was a much more difficult process for other parts of HFCE. Language was an important limiting factor in the process used to describe the products to be priced, including SPDs. Precisely specifying the price-determining characteristics of products often required expert knowledge specific to the products in each particular field. For example, knowledge of milling processes and the different types of outputs produced was needed in the area of cereals. In addition, the terms used for the different products (flour, wholemeal flour, semolina, bran, and germ) differed across economies. Individual-economy price statisticians did not always know or were not always readily able to find the translation of these terms into those used in their economy. Another example related to cuts of meat, which varied by economy, and the local equivalent of terms used elsewhere was not often known by price statisticians.

Household Final Consumption Expenditure Products

The starting point was to examine the product lists used in the OECD/Eurostat PPP program and the worldwide product lists from the 1993 ICP. However, only a few of these product specifications could be used so, essentially, development of the ICP Asia Pacific lists had to start from the very beginning.

Developing the product list for household consumption expenditure was a shared responsibility, with regional economies closely involved with the teams working in the Regional Office and ABS. An inception workshop was held in Bangkok at end-July 2003. Apart from formally launching the 2005 ICP in the region, it also agreed on a work program including a timetable and the work and responsibilities involved in defining the product lists for household consumption.

The initial specifications prepared by each economy were reviewed, through visits to the economies, by the ICP Product List Development Team and through visits by economies in groups of about four to ABS in Canberra. Some difficult issues were clarified during these meetings and the product specifications were refined. The next step was to prepare draft regional product specifications, based on the revised economy specifications, and send them to all regional economies for review. Economies were asked to indicate which products they could price

and which of those were representative, and which products they could not readily price. Respectively, these products were classified as *representative* products, or products available for pricing but *not representative*, or products *not available* for pricing. The team produced a consolidated list, which was discussed at a regional workshop held in Bangkok in early 2004 to finalize the regional product list for food, beverages, and clothing and footwear, and to plan the work required on the second phase of the household consumption product list.

This second phase was more difficult than the first, despite the lessons learned from the earlier work. The basic headings covered by the second phase included several difficult areas such as furniture, motor vehicles, and maintenance of dwellings. However, the SPD process worked better in this phase because the teething problems in defining the SPDs had been overcome and the bugs in the SPD software had largely been eliminated. A successful regional workshop was held in Manila in July 2004 to finalize phase 2 of the regional household product list. The Asia and Pacific region went further than the other regions and prepared a product catalogue with pictures and circulated these to ensure correct product identification, and thus comparability, during price surveys.

General Government Services

Most government services are supplied free or at a nominal cost so it is not possible to observe values for their output. Therefore, in the national accounts, the output value of government services is calculated as the sum of the costs involved in producing such services. These costs consist of intermediate consumption, net taxes on production, gross operating surplus, and compensation of employees. Government final consumption expenditure (GFCE) can then be calculated by deducting the value of any receipts from sales from this value of output.

Intermediate consumption covers a wide range of goods and services such as printing supplies, office rent, computer services, office cleaning, and electricity. In all the regional economies, net taxes on production of government services are insignificant or zero. Gross operating surplus consists of the net operating surplus plus consumption of fixed capital. In most economies, the net operating surplus of general government is insignificant or zero, and so this item consists only of consumption of fixed capital. Receipts from sales cover things such as partial charges for education and health services, and entrance charges for museums. For the 2005 ICP, reference PPPs were used for all these items.

For ICP purposes, GFCE was first classified by function (e.g., health, education); and then by four types of expenditure (compensation of employees, intermediate consumption, gross operating surplus, and net taxes on production), and receipts from sales. Compensation of employees was the largest component and most of the effort in collecting price data was concentrated on this item. Detailed specifications were set up for different types of government employees (doctors, nurses, teachers, etc.), by defining those characteristics that would potentially impact on pay rates, such as qualifications, relative grade, and length of experience. Economies were asked to provide total salary rates for each specified type of worker, including any fringe benefits and amounts paid directly into superannuation. Economies also supplied information on hours worked and holidays, so that compensation for each occupation could be converted to an hourly or daily basis. Allowances were made for differences in the productivity of government workers between a number of economies. (Details of the methodology used for the productivity adjustments are presented in Appendix 4.)

Health

Health was one of the most difficult components to measure. For ICP purposes, health goods and services were considered under several basic headings in determining the method to be used for pricing the products concerned to derive PPPs. Health goods and services referred both to those paid for by households and to those provided by government.

Starting from the product list provided by the Global Office, ICP Asia Pacific further refined the product list with more detailed specifications, identifying international brand names for both pharmaceutical and therapeutic products to enhance comparability. For some items where confusion was likely to arise, pictures were also circulated. Previous experience with the household product list showed that the type of the outlet surveyed was a key price determinant. Thus, definitions were provided for the types of outlets from which medical, dental, and hospital services were to be collected.

Products and services can be purchased in four ways: (i) households purchase and pay for them in full; (ii) households purchase private insurance and the insurance company reimburses the purchaser of the products; (iii) they are purchased and paid for in full by government, for distribution to households; and (iv) they are purchased and paid for partly by households and partly by government.

The PPP derived for consumption expenditure on health services included a combination of prices paid by consumers and government contributions measured by the sum of inputs (i.e., compensation of employees plus intermediate consumption, net taxes and gross operating surplus, less receipts from sales). A reference PPP was used for hospital services because of the difficulties involved in specifying and pricing comparable products across economies, particularly given the huge range of ways in which hospital services are provided and charged for in different economies. The reference PPP used was that for the production of health services by government (excluding net taxes on production and receipts from sales).

The prices to be collected should reflect the full price, no matter who is paying for the goods or services. In other words, purchasers' prices are required. In the ICP, the full price paid by the consumers was required for products purchased using either of the first two means listed above. For the third way listed above, the full cost of each product to the government was the "price" required. The final means of payment was the most difficult to handle in practice. The price required for ICP purposes was the total of any amounts paid by the consumer plus any contribution to the overall cost made by the government.

Education

Like health, education was a problematic component for the ICP. The key problem was the wide variety of institutional arrangements for providing education services across the region. The mix between private- and government-provided education services differed significantly, and fees for private education also varied depending on the extent to which components of private education were subject to government subsidies.

Detailed guidelines were established for pricing private education services to ensure that prices collected for education were as comparable as possible between economies. The prices collected related only to private education since most government education is provided free or at nominal prices, so no market price is observable. Education was split into broad categories covering primary school; secondary school; tertiary education; and tutoring-type services such as language or music lessons, or tutoring in school subjects such as mathematics.

Education services can be purchased broadly in three ways: (i) households purchase and pay for them in full; (ii) they are purchased and paid for in full by government, for distribution to households; and (iii) they are purchased and paid for partly by households and partly by government.

Only the first two methods were "priced" for the ICP. Prices were collected for several types of education services that were paid for in full by households. The wages for some specific categories of teachers were used, in conjunction with some reference PPPs, for education services provided by government.

Construction

Construction is a major part of investment. It is also one of the most difficult components of GDP to price. Two different approaches were used in calculating PPPs in the past—one based on pricing inputs and the other on pricing outputs. The first was to price the labor and material inputs used in constructing buildings and in civil engineering projects and to weight the prices together to provide an overall price for each major type of construction activity. The main advantage is that it is the least costly method, but it had the significant disadvantage of making no allowances for differences in profitability between economies or for productivity differences. The second approach was to define models for some specific construction activities (a house, a factory, a length of highway, a bridge) and to have each fully costed by quantity surveyors. The advantages were that it took full account of productivity differences between economies and the overheads associated with each type of construction. However, it was very costly to define the range of construction projects required and to regularly update the specifications so that they continued to reflect up-to-date construction techniques.

The 2005 ICP introduced a new approach, the "basket of construction components" (BOCC). It involved pricing outputs but focuses on pricing major, installed components of construction projects, identified by breaking different projects into their

major components and then specifying the most significant elements of each for pricing. The final prices included the cost of materials, labor (based on the cost of completing a particular task rather than the cost of a fixed amount of labor), and the cost of equipment had it been hired. The materials and the relative proportions of labor and equipment used were different depending on the economy concerned, and the BOCC approach took account of such variations in the shares of labor and equipment used. The Global Office was responsible for specifying all the outputs to be priced, and selected 23 components and 11 basic inputs that represented the broad types of construction activity around the world. Productivity differences were taken into account within each of the 23 components (e.g., digging and pouring a foundation). The profit margins for managing the overall project, as a proportion of the total cost of each component, were assumed to be identical between economies. The prices for the various components could be aggregated, using different weighting patterns, into totals for different types of projects within an economy.

Equipment

The other major part of investment is capital equipment, which has also proven to be problematic for PPPs in the past. As was the case for the construction PPPs, the Global Office developed the specifications for equipment on a worldwide basis, in consultation with the regions. SPDs were defined for a product category and then refined by removal of any characteristics not considered to be price-determining. Experts from the region attended a workshop to check a preliminary regional product list for equipment after which they had to verify whether they could price the majority of items. Experts on equipment products provided technical guidance to the economies on the way in which the product list had been developed and on how to run the price surveys for these products. All economies were advised to engage local experts to conduct the equipment price surveys. Major items of equipment are produced by a limited number of manufacturers so it was generally possible for the region's economies to price one or the other (and sometimes both) of the specifications for each product. When it proved impossible to price either of them, economies were asked to price a similar, readily available model and to describe the divergences in its characteristics from those set out in the ICP specification.

From the original seven basic headings for the equipment sector, two basic headings—fabricated metal products and other manufactured goods—were excluded from the comparison. Comparability was difficult to achieve as a result of the wide variations in local standards and practices, and in the construction technology for fabricated metal products. Other manufactured goods faced the same problem so this category, too, was excluded from the regional list.

Dwelling Rents

In the national accounts, housing rent is made up of two major components: the actual value of rents paid by those renting dwellings (whether from government or the private sector); and the value of the rents imputed for those who either own or are purchasing their own dwellings. In effect, the imputation is based on the assumption that such "owner occupiers" are renting their dwellings from themselves. The reason for the imputation is that it prevents the level of GDP being affected by changes in the share of dwellings being rented within an economy. A simple example can be provided, based on an assumption that there is no change in the composition or size of the total stock of dwellings. In the absence of the imputation, an increase in the share of dwellings rented would show up as an increase in the rent actually paid by renters, and so as an increase in both HFCE and GDP. With the imputation in place, the increase in actual rent paid would be offset by a corresponding decrease in the amount imputed for owner occupiers and so there would be no change recorded in either HFCE or GDP.

Rent of dwellings has proven to be one of the "comparison-resistant" components in the past, for two underlying reasons. The first is that the rental market is very small in some economies and is biased toward a particular socioeconomic group, such as expatriates living temporarily in the country or diplomatic staff, who rent higher-quality dwellings than are typically available to the local population. In such cases, it is difficult to match the types of dwellings in the rental sector with those that are owner-occupied. Second, and much more importantly for the ICP, the prices reported for ICP purposes have not always been consistent with those underlying the national accounts, particularly for the imputed rent component. As a result, the volumes calculated using the PPPs for different economies have not been consistent with the relative sizes of the housing stock in those economies.

Details of the approaches considered and the one finally adopted are presented in Part 4.

Price Survey Framework

Introduction

The issues behind collecting the prices for the products specified in the regional product list differed to some extent, depending on whether the products were in HFCE or in other aggregates (GFCE, GFCF). In each case, the prices were collected from a sample of outlets in a sample of locations. However, different types of outlets had to be sampled at different times of the year for products within HFCE.

Household Final Consumption Expenditure Products

A fundamental concept in the ICP is that the prices used to calculate PPPs should be consistent with the expenditure estimates for each basic heading in the national accounts. This concept leads to the requirement that the prices recorded should be national annual average prices. As a result, the products priced within each basic heading must correspond to (i.e., be representative of) the types of products purchased under that heading, be actual transaction prices, and be collected from different types of outlets and a range of localities across the economy throughout the whole of 2005.

In theory, the national annual average price for each product specified in the ICP lists would be the average transaction price over the course of 2005, obtained as the total value of the product sold throughout an economy divided by the number of units sold. In practice, this is an impossible requirement to meet, so the ICP adopted a similar process to that used by NSOs to collect prices for the products included in their time-series price indexes. It involved selecting a sample of outlets in different localities and recording the price actually charged for each product at that time. Prices were collected quarterly to take account, at least to some extent, of price fluctuations during the year. The prices of some products are seasonal and can vary significantly even within a quarter. The method used to handle this problem was to collect prices from different outlets at different times in the quarter to spread the prices for the product concerned across time.

Prices in rural areas are generally lower than those in urban areas but collecting prices in rural areas is more costly than in towns and cities, and it often proved to be difficult to find the products specified. Also, experience with collecting prices for the time-series price indexes shows that prices collected can vary significantly depending on the type of outlet involved. For example, a local market would generally sell a particular product more cheaply than a department store. Therefore, each product had to be priced in the different types of outlets (local markets, supermarkets, department stores) roughly in proportion to the share of sales from each of these types of outlets. Similarly, prices in urban areas for most products tend to be higher than those in rural areas, so both types of localities had to be represented in the price sample, approximately in proportion to their sales. A key factor in price collection was to ensure that prices for each product related to the same quality, no matter whether it was collected in an urban or rural area or from any type of outlet. The main methods for ensuring constant quality were for price collectors to follow the detailed SPDs defined for each product and for the national coordinator to thoroughly check the prices collected for each product, classified by type of outlet and by locality.

The CPI is one of the most important economic statistics produced in an economy. A supplementary aim of the 2005 ICP round is to provide NSOs with a means of enhancing their price collection infrastructure to enable improvements to be made to their CPIs. With this aim in mind, the computer software developed to collect and edit prices for the ICP ("Tool Pack"—see the last section in this part) can also handle the price data and calculations required for the CPI.

Price collectors have a certain degree of latitude in collecting prices for a time-series price index (such as a CPI) because the key criteria to be met are that each product is representative of the locality and outlet, and that it is identical to the product for which the price was collected in the previous month/quarter. Yet the key ICP requirement is to match "like with like" between economies. As a result, a crucial issue for field staff collecting prices for the ICP was that products priced must meet the specifications completely because the specifications had been defined to provide the best match of comparable products between economies. In some cases, this meant that the product priced might not have been the one that was most representative of expenditures in the outlet or locality.

The number of products to be priced varied from one basic heading to another. Compromises had to be made in defining the basic headings because of the constraint that they had to be consistent in all regions. Therefore, the expenditures in some basic headings were much more significant as a share of GDP in some regions than in others (the same was true for some economies within a region as well). As a result, the number of products specified under a basic heading could differ markedly from one region to another. For example, there were many more specifications for rice in Asia and the Pacific than in Latin America. One outcome was the need to balance the types of products within each region, so that all economies could price at least some products in each basic heading, was that some products defined were not representative, or even not available, within an economy. Clearly, products that were unavailable could not be priced. (The number of products specified in ICP Asia Pacific under each basic heading and the average number priced are presented in Appendix 2.)

Products for Government Final Consumption Expenditure and for Investment Goods

As already discussed, a different approach was adopted for products in GFCE, and investment in construction and equipment, with the Global Office defining the specifications. The issues in collecting prices were quite different from those for HFCE. The numbers of outlets selling investment goods were relatively limited compared with those selling consumer goods, and seasonality of prices was generally not an issue. Substantially fewer prices were collected for these types of products and the price collection was not spread on a quarterly basis. Similarly, the prices collected for the compensation of employees related to about 50 different types of jobs, although a requirement was that national annual average prices should be supplied.

Wage rates were used as the basis for a large part of the comparison of government expenditure. Details of a range of occupations covering all major types of government workers were set out to enable economies to price the wages for comparable workers. However, it proved necessary to make adjustments for productivity differences between some economies. (Details of the economies concerned, the methods used to make these productivity adjustments, and the effect of them are presented in Appendix 4.)

Linking Regional Results—The Ring Comparison

Background

Since 1980, the ICP has been run on a regional basis, with the 2005 ICP having six separate regions. The results produced for the economies within each of the regions have to be amalgamated into a worldwide set of consistent results so that any pair of economies in the world can be compared directly. In past rounds of the ICP, regions were linked by having an economy in one region price the products in another region's product list. In effect, this link economy participated in the ICP in both regions and so was able to provide a relationship between the pair of regions. The advantage of this approach was that it was relatively inexpensive overall, although the economies that provided the link between each pair of regions incurred the costs of pricing an extra set of products. The weakness, though, was that the reliability of the comparisons between the economies in any pair of regions was dependent on how well the link economy was able to price the other region's products and how representative the relationships calculated from the link economy were of all the economies in the pair of regions.

For the 2005 ICP, the link economy approach was used to link the Commonwealth of Independent States countries with the OECD/Eurostat group. The Russian Federation was used as the link economy and had to take part in both the OECD/Eurostat comparisons and the comparisons with other Commonwealth of Independent States countries.

For the other regions, including the OECD/Eurostat group, a new approach was adopted in the 2005 ICP, with 18 economies being used to link the regional groups together by running a "mini-ICP" worldwide to provide the relationships between each pair of regions. The linking process has become known as the "ring comparison" because the multilateral methods used effectively formed a ring in which the resulting regional links were transitive.[19] In theory, it would be possible to run a ring comparison with

[19] The Commonwealth of Independent States did not participate in the ring comparison. It was linked to the rest of the world by a simple link to the OECD/Eurostat results, which were integrated with the other regions via the ring comparison.

only one country from each region. However, this would expose the linking process to the same sort of weaknesses that led to the ring comparison being set up in the first place.

Criteria for Selecting Ring Economies

Ring economies should meet several criteria to participate effectively, but there is no need to have the same number of economies from each region.

The ring economies had to meet the following criteria:

(i) having developed markets and an open economy;

(ii) having a wide range of goods and services that were likely to be found in ring economies in other regions;

(iii) able to participate in the full GDP comparison;

(iv) having acceptable price data and expenditure weights;

(v) able to derive national annual average prices; and

(vi) willing to act as a ring economy.

The economies in the ring comparison are shown in Table 16.

The ring comparison was used to link PPPs between regions at both the basic heading and broader levels. The first step was to link the PPPs for each basic heading. Prices at the individual product level within each basic heading for each of the ring economies provided the starting point. The procedure used focused on calculating interregional PPPs rather than PPPs for the individual ring economies. PPPs at the basic heading level for each region (rather than for the individual economies) were calculated using the CPD method. The EKS method was used for aggregation above the basic heading level.

Preparing the Product List for the Ring Comparison

As was the case for the regional comparisons, the product list (referred to as "the ring list") for pricing by economies in the ring comparison was developed separately for HFCE and for the other major aggregates in GDP. The work on the product list was a joint exercise between the ring economies, the regional coordinators, and the Global Office. Broadly speaking, the product list for HFCE was an amalgam of the products that each ring economy had been able to price in its respective regional comparison plus a number of additional products that had been selected for basic headings that did not have sufficient products identified through the first step. SPDs were used extensively in matching products across regions (see the section above, "Structured Product Descriptions"). Similar products were often named differently in different regions and so the characteristics of the products were the most important means of identifying comparable products.

The product lists for the regional comparisons for the aggregates other than HFCE had been developed by the Global Office to be used worldwide. Some changes were made to cater for particular regional circumstances, but the regional lists matched very well across the regions, which meant these lists could be transformed into a ring list relatively easily compared with the process required for the lists for HFCE.

Two workshops were held at ADB headquarters for the four regional ring economies to finalize the ring list: 31 January–11 February 2005 and 28 June–2 July

Table 16. Ring Comparison Economies

Africa	Asia	Latin America	Western Asia	OECD/Eurostat
Cameroon	Hong Kong, China	Chile	Egypt	Estonia
Egypt	Malaysia	Brazil	Jordan	Japan
Kenya	Philippines		Oman	Slovenia
Senegal	Sri Lanka			United Kingdom
South Africa				
Zambia				

2005. The four economies indicated the availability of the products from the combined list built up from the product lists for the five ICP regions involved in the ring comparison. The four regional ring economies were requested to make a preliminary survey of the trimmed product list to determine the specifications and brands available in each economy. This information was used in the second meeting for preparing the region's final comments on the ring list.

In some cases, the prices collected by the ring economies for the regional comparison could also be used for the ring comparison. In most cases, though, extra prices had to be collected. The major challenge for the ring economies was to identify products that could be priced in the other regions but which were also representative of Asia and the Pacific. The trade-offs involved were more difficult to deal with than had been the case in the regional comparison. A data review workshop was held in June 2006 to systematically examine the prices collected for the ring comparison.

Purchasing Power Parities at the Basic Heading Level (interregional)

The first stage in obtaining worldwide results was to calculate PPPs for the ring economies at the basic heading level for Africa, Asia and Pacific, Latin America, OECD/Eurostat, and Western Asia. A separate pricing list was developed, although the focus was on having at least one economy within each region being able to price products in each basic heading, rather than every economy within a region being required to do so.

The relationships between regions, at the basic heading level, were established by first obtaining regional mean prices expressed in a regional numeraire currency (Hong Kong dollars for Asia and the Pacific). Representativity was important in identifying the products to price because having a preponderance of nonrepresentative products in a region would tend to bias its observed price levels upward. Regional average prices were calculated for each product for each region, expressed in a regional numeraire currency. Basic heading PPPs were then obtained for each region by means of the CPD procedure, which provided transitive PPPs. It was a similar process to that described above for calculating basic heading PPPs for economies in a region (see the earlier section "Purchasing Power Parities at the Basic Heading Level").

Purchasing Power Parities for GDP and its Major Aggregates (interregional)

The transitive interregional PPPs provided a measure of the relativities between each of the five regions in the ring comparison at the basic heading level. These relationships were applied to the results for each region obtained through each regional comparison.

The next step was to obtain the regional expenditure. Expenditures for each basic heading in local currencies were converted into the numeraire currency using the PPPs that had been calculated in the regional comparison and summed across all economies within the region to obtain the regional total expenditure in the numeraire currency. Effectively, this regional total for each basic heading is like an individual country's value expressed in its local currency.

The interregional PPPs were combined with the regional expenditure in the numeraire currency. The standard EKS aggregation procedure was used to obtain the interregional PPPs at levels above the basic heading. PPPs were produced for each of the five regions for GDP and each of its subtotals that were of interest. The outcome was PPPs that could be used in combination with intraregional PPPs to obtain the PPPs between any pair of countries in the world. As a result, the relationships between regions obtained through the ring comparison could be used to adjust the results from each region to a comparable level.

Fixity

Each region's results were subject to "fixity". The weighting and price patterns underlying spatial price indexes change as extra countries are included in the calculations because multilateral PPPs are based on the expenditure and price patterns of the countries included in the comparison. The precise effect of including additional countries in the comparison depends on the formula being used to aggregate basic heading data. In a large-scale undertaking like the 2005 ICP, with 146 economies participating, the project was organized on a regional basis, largely for practical reasons. The results for each of the six regions would potentially change if PPPs were calculated concurrently for all countries participating worldwide because of the different weights that would be used in the aggregation process. A method commonly used to prevent this change in the PPPs (and the potential change in economy rankings) is to apply *fixity* to the

regional results. The underlying principle is that the PPPs between economies (and therefore the volume relativities based on the PPPs) in a region do not change when the results from that region are combined with those from another region (or regions).

Fixity is an important subject in the 2005 ICP, given that the PPPs and associated data for each of the six regions were compiled and published independently of each other. In practice, it would be impossible to run a single comparison for all economies worldwide because the product lists, particularly those for household consumption, were developed separately for each region and so the product specifications for which prices were collected would not match across regions.

Tool Pack

The ICP Asia Pacific Regional Office used the software developed specially by the Global Office—"Tool Pack"—to transmit and process the ICP data. The Global Office's aim in developing the software was to provide a single package that would store ICP data in a consistent format worldwide and enable PPP-based calculations and simulations to be run. Tool Pack included a database component for storing individual prices and national accounts basic heading data, and a data manipulation feature, which enabled data at all levels to be aggregated. For example, at the lowest level, Tool Pack could weight together the individual prices to national annual average prices for each product. At the highest level, it could aggregate basic heading PPPs to broader national accounts aggregates up to GDP itself, using one of a range of alternative aggregation methods. Tool Pack could also produce the Quaranta and Dikhanov tables (see the relevant sections in Part 4), which were very important editing tools since they provided the means to systematically edit data supplied by economies within each region.

Apart from the basic data input and transmission facilities used by individual economies, Tool Pack was designed to handle the various types of usage required by the different coordinating groups. The national coordinator in each economy could use Tool Pack to check on the individual prices collected within the economy, aggregate them to national annual average prices, check them using "diagnostic reports" (which provided information that was very useful in editing the prices both within and between economies), and then transmit the clean data to the Regional Office.

The Regional Office used Tool Pack in two broad ways. The first was for editing via the Quaranta and Dikhanov tables, both of which provided summary information in the diagnostic reports that enabled various edit checks to be carried out on the data for individual economies within a region, particularly comparing the distribution of their data with those for the region as a whole. The second key use of Tool Pack was after the data had been cleaned, to calculate PPPs for individual products, for basic headings and for various national accounts aggregates, including GDP. The effects of using different aggregation methods were tested as part of this process.

Tool Pack was developed in a flexible way, with statistical capacity building in mind, so it could be used for collecting and storing the data required for time-series price indexes, such as CPIs, as well as for PPPs. Tool Pack's editing and aggregation facilities were also developed in a way that enabled them to be used for processing time-series price indexes so that it could handle all aspects of collecting, storing, editing, and aggregating time-series price data.

Several training workshops were held for Tool Pack. Aside from the regional training workshops, Tool Pack training was provided for the participating economies on request. As there were problems initially encountered in Tool Pack installation, the Regional Office provided both desktop and laptop computers to address compatibility issues.

As Tool Pack was a new software, the Regional Office, as well as the participating economies, experienced teething problems. This led to suggestions on improvements and revisions, such as the following: the batch upload utility function; data consistency; mismatch between Tool Pack and the product list; inclusion of a weighted averaging function in the data processing module; and facilitating data validation in the Quaranta tables. (More details about the background to these suggested improvements are presented in the section "Data Validation for ICP Asia Pacific" in Part 4, below.)

Some economies found Tool Pack useful while others made little or no use of it. This information obviously will be valuable in designing an updated version of the program for future rounds of the ICP. (In Appendix 3, participating economies describe in detail the problems encountered and the solutions they adopted for the 2005 ICP.)

PART 4

Regional Program Implementation

ICP Asia Pacific Regional Activities

Introduction

The 2005 ICP was coordinated worldwide by the Global Office, while ADB was the coordinating agency for ICP Asia Pacific. The coordinating agency in each region had a large degree of autonomy in arranging its own activities, provided that it complied with the general guidelines drawn up by the Global Office. One of the first initiatives of ADB was to set up a governance structure, with the ICP Asia Pacific Regional Advisory Board overseeing the region's ICP activities (see the earlier section "Governance in Asia and the Pacific").

ADB was responsible for arranging the funding for ICP Asia Pacific. ADB provided seed funds to the national coordinating agencies in the participating economies but the agencies themselves absorbed a large share of ICP costs. ADB financed direct costs (travel, accommodation, etc.) of each economy's participation at various meetings, workshops, and training courses while in a few cases the national coordinating agencies were provided with additional funding for data collection costs and for in-country training.

Timeline

The initial planning for ICP Asia Pacific began in 2002, with work on the first stage (developing the product lists) starting in late March 2003. The release of this publication containing the detailed results for the Asia and Pacific region conclude ADB's direct involvement in the 2005 ICP. The final step is the release of the worldwide estimates by the Global Office, which is expected to be on 17 December 2007.

The major milestones for ICP Asia Pacific and their timing are set out in Table 17. (A detailed list of the key events is presented in Appendix 10.)

Data Editing and Validation Procedures

From the outset, the ICP Asia Pacific Regional Advisory Board emphasized that data quality was a paramount consideration. As a result, a large amount of the Regional Office's work involved managing the editing and data validation activities. Editing was an ongoing process from the time that the price data were first collected. The consistency of prices within localities and types of outlets was checked by the National Coordinators. At this stage, various teething problems were resolved, particularly incorrect units of measurement and different interpretations of the product specifications by price collectors. Once price collection had been completed for the first quarter of 2005, data review workshops were held for participating economies to compare data. They provided an opportunity to resolve problems with product specifications, particularly regarding the consistency in the way in which they were interpreted in different economies. Later workshops focused more on data issues, with the consistency of price observations, both within and between economies, as the central focus.

Data Review Workshops

Conducting data review workshops was a critical factor in ensuring the quality of the regional comparisons. The aim was to identify errors in the data submitted to the Regional Office, resolve these data problems, and develop means of eliminating such errors in the future. The workshops also provided a forum for the economies to share details of the types of problems they had encountered in collecting data and the ways in which they had overcome them. In total, seven data review workshops were held to assess the quality of the price data supplied. In addition, four other workshops were held—one to check the consistency of the national accounts data, a second to check the prices collected by the ring economies for the ring comparison, and two to evaluate the preliminary results shortly before they were published.

Table 17. Milestones in ICP Asia Pacific

Date	Activity
November 2001	ADB was approached to coordinate ICP Asia Pacific
December 2002	Work plan prepared
February 2003	Invitations sent to ADB member-economies to participate in ICP Asia Pacific
June 2003	First meeting of the ICP Asia Pacific Regional Advisory Board
June 2003	Meeting of heads of ICP Asia Pacific national coordinating agencies
July/August 2003	ICP Asia Pacific Regional Inception Workshop
2005	Collecting prices for household consumption
2006	Collecting prices for investment
2006	Collecting prices for government consumption
June 2007	Seventh (final) meeting of the ICP Asia Pacific Regional Advisory Board
July 2007	Meeting of heads of ICP Asia Pacific national coordinating agencies
July 2007	Release of preliminary PPPs for the Asia and Pacific region
December 2007	Release of final PPPs for the Asia and Pacific region

The Regional Office adopted its own data validation procedures. For the household product list, a document on the price data validation procedure was prepared to assist the participating economies in their initial review of household price data prior to submission to the Regional Office. Some of the concerns they were advised to review were (i) price data with a coefficient of variation (CV—the standard deviation divided by the arithmetic mean) greater than 30%; (ii) that at least 15 price quotations were collected for each of the products priced; (iii) that minimum-maximum price ratios should be less than 0.33; and (iv) that the prices were national annual average prices. All these were consistent with the recommendations in the ICP Handbook. Any issues that the Regional Office identified were checked with the participating economies for confirmation that the data were correct or for them to take appropriate remedial action.

The first step in the review process was to compare the prices for each product within a basic heading using exchange rates to convert them into a common currency. It may seem counterintuitive to use exchange rates for this purpose, given that the ICP was established to overcome the problems inherent in using exchange rates to convert values into a common currency. However, PPPs would be affected by any problems in the prices on which they were based and so they could hide potential problems prior to cleaning of the basic price data. Once the major problems in prices had been resolved, the procedure was repeated using PPPs rather than exchange rates to finalize the editing process.

The Quaranta and Dikhanov tables proved to be very useful in the workshops (see the following two sections). They provided a systematic means of validating data and of identifying consistency problems with the prices reported. One of the most important aims of the data review workshops was to ascertain the reasons for major price variations between economies for the same product. In most cases, they turned out to be attributable to ambiguity in the units of measurement, different interpretations of loosely defined product specifications, or incorrect survey operations. In some cases, though, apparent data problems (such as large price differences) turned out to be due to differences in the economic structures or institutional arrangements between economies.

Five data review workshops were held for household consumption products in 2005 and 2006 to check the quality and consistency of price data. Some of the data review workshops were split so that groups of economies with similar economic or geographic characteristics attended separate workshops covering the same datasets. The aim was to make it easier to identify and discuss problems by having small groups of like economies together. Findings from the data review workshops revealed problems related to product specifications. In cases where no specific brands were mentioned, a mixture of high- and low-quality products was often priced. Product specifications proved to be quite difficult for a few products, such as ladies' handbags, leather wallets, and watches. For some products, wide price variations stemmed from differences in the interpretation of the product specifications for a shirt, such as "businessmen's, 50–100% cotton" because there is a large price difference between a 50% and a 100% cotton shirt. Language problems also resulted in pricing some nonsimilar products. A "blouse" in the South Asian context is different from elsewhere. It was also observed that using varied reference quantity ranges for some packed products also led to large price differentials. The quantity range is an important price-determining factor as the price of 250 grams of margarine derived from a reference quantity of a 200–300 gram tub would be different if the price were calculated for 250 grams from a 1 kilogram tub. The numbers of products priced under each basic heading for which data were provided were also checked.

Other sources of variations were in the implementation of the ICP price surveys. Quotations were collected mostly from high-end outlets in a few participating economies. The treatment of services that were provided free of charge in some cases but charged for in others, e.g., withdrawing cash from an automated teller machine, was problematic. Issues also arose with an unreasonably low sample size: fewer than 15 price quotations were provided in some cases, even for products for which it was reasonable to expect collection of at least that number of prices.

The product priced may have varied in quality when the brand was not specified or the brand priced was not the specified brand. In some cases, the observed quantity was outside the quantity range specified or the unit of measurement was different from that in the product specifications. High divergences in prices across quarters for the same product within an economy also led to queries.

Some important outcomes from the data review workshops were that the product specifications were revised in some cases, products were deleted from

the list from time to time, and some new products were added. Occasionally, a single specification was split into two separate specifications when it became apparent that different economies had priced products that fell into two separate, identifiable categories (within the product specification).

As a result of the workshops, eight products were expanded, resulting in an additional 17 products; clarifications or modifications were made for 170 products; and 104 products were deleted. Ultimately, 656 products were included in the household product list for PPP computation.

The Regional Office, in consultation with participating economies, checked the representativity of the products priced. Representativity is a difficult concept to define precisely as different people will interpret it in different ways. Initially, the aim was to use a method to calculate the basic heading PPPs that would explicitly take representativity into account in the calculations. It is a variation of the CPD calculation method and is referred to as the country-product-representativity dummy (CPRD) method ("R" standing for "representativity"). However, investigations showed there was a lack of consistency between economies in declaring products as representative or nonrepresentative. As a result, it was not possible to use the CPRD method, and CPD was used instead. However, it was critical to identify any nonrepresentative products that were extreme outliers (e.g., products with "prestige labels" that are sold in very small numbers at high prices) because they would bias the results unless excluded.

The Regional Office also developed "What to Price Guides", which clarified several issues identified by the data review workshops as having led to inconsistent prices. The guides concentrated on the units of measurement and the quantity ranges that were acceptable for pricing each particular problem product. An additional guide ("List of Products Needing Special Attention") was prepared to explain in detail the problems faced in pricing 59 products that had been identified as being particularly problematic. With the main objective of ensuring accurate product identification, the Regional Office also prepared a printed product catalogue, including photographs of the products, which it distributed to the participating economies.

Quaranta Tables

Quaranta tables provide general information relating to each basic heading and a summary of the characteristics of each product within the basic heading. They were named after Vincenzo Quaranta, from the Italian National Statistical Office, who developed them in 1990 to assist in editing the PPPs produced in the OECD/Eurostat PPP program. Quaranta tables show details of the product, the reference period, the mean, the highest and lowest observations, PPP, PLI, exchange rate, weight, and CV for each product within a basic heading, for each economy. They also provide summaries for basic headings. The following paragraphs discuss both summary and detailed Quaranta tables.

The first example of a Quaranta table (Table 18) presents details at the basic heading level. In this example, all 23 economies are included and the base economy is economy A. As a result, the exchange rate and the PPP for economy A are both equal to 1.00, while the PLI for economy A is 100.0. The weight is the basic heading's share of GDP in each economy, expressed on a base of 10,000. The column headed Products shows the number of products priced by each economy in the basic heading and the figure preceded by the asterisk (*) is the number of those products priced that are considered to be representative in the economy. The CV is the ratio of the standard deviation of all the price observations for each of the products in the basic heading in each economy divided by their mean, averaged across the products in the basic heading and then expressed as a percentage.

The second example of a Quaranta table (Table 19) presents details at the individual product level; in this case it relates to chocolate bars. The second column shows the average price observed for the chocolate bars, expressed in each economy's local currency, with the third column showing the number of price observations on which the average is based. The fourth column is the CV (i.e., the standard deviation divided by the mean of the price observations, multiplied by 100 to express it as a percentage). The fifth column is the average price adjusted to a common currency via exchange rates, with economy A as the base economy. The sixth column is the ratio of the exchange rate-based price in each economy to the geometric mean of this price for all economies, expressed on a base of 100. It is a measure of the dispersion of the price levels for a

Table 18. Quaranta Table Diagnostics—Filters: Confectionery, Chocolate, and Other Cocoa Preparations

Basic Heading Code	1101183	**Time Period**	June-05	**Run Date**	
Scope of Coverage	Economy	**Upper Bound**	150	**Lower Bound**	50
Averaging Method	**Arithmetic Mean**	**Imputation**	CPD		
Price Attributes	**National Accounts**				
Location Attributes	**National Accounts**				
Product Attributes	**National Accounts**				

Summary Information			
No. of Products in the Analysis	5 out of 5	Average Weight of Basic Heading in Total Expenditure	26.3
No. of Economies in the Analysis	23 out of 23	Average Coefficient of Variation	32.1
Base Economy	A		

Economy-level Details

Economy	Exchange Rate	Purchasing power parity	Price level index (%)	Weight	Products[a]	Coefficient of Variation
A	1.00	1.00	100.0	7.6	5;*4	36.8
B	159.86	139.64	87.3	21.0	4;*4	23.2
C	3.45	2.24	65.0	9.6	3;*2	38.9
D	0.130	0.135	104.0	22.3	5;*2	37.5
E	207.24	134.53	64.9	16.3	5;*5	32.3
F	0.64	0.62	97.6	8.9	5;*5	39.2
G	0.13	0.21	156.8	63.9	4;*4	20.6
H	5.58	4.94	88.5	27.5	4;*2	36.4
I	3.45	2.95	85.8	28.1	3;*2	27.9
J	2.51	3.14	124.8	33.7	5;*5	24.4
K	236.75	95.03	40.1	50.1	2;*1	18.9
L	0.13	0.17	129.3	20.3	4;*4	39.1
M	0.62	0.79	126.5	21.2	5;*5	41.7
N	0.89	0.76	85.9	30.7	5;*5	20.0
O	5.03	5.94	118.1	7.8	4;*4	8.5
P	94.16	70.52	74.9	70.0	4;*4	38.8
Q	151.64	127.26	83.9	74.3	5;*5	34.5
R	4.65	3.62	77.9	24.0	5;*2	20.7
S	4.30	2.89	67.1	12.4	4;*4	37.3
T	0.61	0.83	135.7	19.8	5;*5	33.8
U	7.85	5.64	71.8	15.8	4;*2	71.8
V	3.14	3.03	96.6	10.9	5;*5	37.7
W	166.49	127.13	76.4	9.8	3;*3	18.9
Mean				**26.3**		**32.1**

a See text.

Table 19. Quaranta Table—Item-level Details

Product Code	Chocolate Bar - Plain				Base Economy	A		
1101183011					Coefficient of Variation	24.0		
Economy	Price (Local Currency)	Number of Price Quotations	Coefficient of Variation	Exchange Rate Price	Exchange Rate Ratio	CUP Price	CUP Ratio	Preferred Unit of Measurement
A	6.609	55	8.8	6.61	129.0	6.61	116.1	50 - grams
B	293.000	102	10.1	1.83	35.8	2.10	36.8	50 - grams
C	11.200	45	13.4	3.25	63.5	5.00	87.9	50 - grams
D	2.042	185	8.2	15.71	306.6	15.10	265.2	50 - grams
E	816.700	216	18.6	3.94	76.9	6.07	106.6	50 - grams
F	6.571	585	27.0	10.26	200.4	10.52	184.7	50 - grams
G	1.607	147	14.4	12.16	237.4	7.76	136.2	50 - grams
H	22.352	200	22.9	4.01	78.3	4.53	79.5	50 - grams
I	16.504	985	16.9	4.79	93.5	5.59	98.1	50 - grams
J	20.541	60	6.3	8.17	159.6	6.55	115.0	50 - grams
K	230.120	118	21.6	0.97	19.0	2.42	42.5	50 - grams
L	1.101	168	9.9	8.47	165.3	6.55	115.0	50 - grams
M	6.574	87	5.7	10.53	205.7	8.33	146.3	50 - grams
N	2.016	85	5.3	2.27	44.3	2.64	46.4	50 - grams
O	34.418	632	5.4	6.85	133.7	5.80	101.8	50 - grams
P	196.439	66	13.3	2.09	40.7	2.79	48.9	50 - grams
Q	412.110	50	24.2	2.72	53.1	3.24	56.9	50 - grams
R	27.748	970	25.1	5.97	116.5	7.67	134.6	50 - grams
S	27.970	243	14.1	6.50	126.9	9.68	170.0	50 - grams
T	6.673	82	13.2	10.97	214.1	8.08	142.0	50 - grams
U	26.400	233	9.0	3.36	65.6	4.68	82.2	50 - grams
V	21.263	348	25.8	6.77	132.1	7.01	123.1	50 - grams
W	76.890	97	31.2	5.87	114.6	7.68	134.9	50 - grams
Geometric Mean				**5.12**		**5.69**		

CUP = conventional unit to express parity.

product in the different economies and indicates those economies whose prices need to be checked for possible errors (e.g., economy D has a very high conventional unit to express parity (CUP) price ratio and economy K has a very low one). The CUP price is the price in local currency for each economy adjusted to a common currency using the PPP for the basic heading to which this product belongs. The CUP ratio is the ratio of the CUP price for each economy to the geometric mean of the price for all economies, expressed on a base of 100. It provides a view on the variation of price ratios for different products within a basic heading (a similar, but by no means identical, view to the exchange rate ratio in the sixth column).

The Dikhanov Table

The Dikhanov table (Table 20) was an innovation introduced to assist in editing prices collected for the 2005 ICP. It shows the relationships between product prices across basic headings up to the level of GDP for each economy in a region. The Dikhanov table uses the CPD model as the basis for analyzing the price data and it shows the distribution of the prices actually provided by an economy compared with the prices estimated by the model. The difference between the observed and estimated price is an analogue of the CUP indexes used in the Quaranta tables. Large differences between the

Table 20. Illustrative Dikhanov Table—Household Final Consumption Expenditure Products

		Economy A	Economy B	Economy C	Economy D
Purchasing Power Parity		**5.22**	**4.72**	**0.391**	**47.0**
Standard Deviation		**0.467**	**0.390**	**0.462**	**0.387**
Number of Items Priced		**553**	**414**	**446**	**471**
Exchange Rate (local currency per US dollar)		**43.28**	**37.12**	**1.82**	**400.2**
Exchange Rate (local currency/regional base economy)		**6.99**	**6.00**	**0.294**	**64.7.**
Price Level Index		**74.7**	**78.7**	**133.0**	**72.6**
Product code	**Product name**				
11011110118	Premium rice #1	0.33	0.02	-	-0.22
11011110119	Premium rice #2	0.11	-	-	-0.69
11011110120	Premium rice #3	0.15	-	-	-0.47
11011110121	Premium rice #4	0.08	-	-0.47	-
1101111018	White rice #1	0.45	-	-	-0.08
1101111019	White rice #2	0.08	-	-	0.01
1101112011	Wheat flour prepackaged	-0.26	-0.29	0.23	0.29
1101112016	Corn flour prepackaged	0.78	-	-0.18	-
1101112017	Rice flour	-	-	-0.34	0.11
1101112021	Cake mix	0.13	-	0.03	0.30
1101112031	Oats	0.50	-	-0.29	-
1101112032	Cornflakes	0.40	0.49	-0.29	-
1101161031	Apples medium	0.18	-0.23	-0.11	-0.09
1101161072	Mango	-0.03	-0.13	0.51	-0.00
1101161073	Pawpaw/papaya	0.01	0.10	-0.16	-0.15
1101161074	Pineapple	-0.38	-0.03	-0.10	-0.26
1101161081	Watermelon	-0.01	-0.17	-0.10	-0.08
1101162021	Roasted Peanuts	-0.27	-	-0.09	0.15
1102211011	Cigarettes international brand	-0.05	0.69	-0.21	-0.23
1102211012	Cigarettes local brand	-0.77	0.40	-	-0.83
1103111011	Shirt fabric cotton polyester	0.31	0.56	-0.30	0.01
1103111014	Dress fabric Chinese silk	0.42	0.19	-	0.17
1103111015	Suit fabric wool blend	-0.19	-0.24	-	-0.06
1103111041	Handkerchief men's	-0.16	-0.19	0.17	0.74
1103111051	Belt men's	0.04	-0.11	0.48	0.22
1111211023	2 star hotel room	-0.05	0.61	0.03	-0.25
1111211024	Budget hotel (zero star)	0.08	-0.16	-	-0.03
1112111017	Women's basic haircut	-0.53	-0.29	0.58	-0.14
1112111019	Women's style cut with shampoo	0.08	0.06	0.54	-0.11
1112111023	Child basic cut no shampoo	-0.29	-0.37	-0.20	-0.51
1112111025	Men's basic haircut	-0.37	-0.53	-0.12	-0.45
1112121011	Hair dryer	-0.11	0.31	-0.66	0.09
1112121021	Shampoo	0.35	0.73	-0.31	-
1112311101	Wall clock	0.16	-0.86	-0.16	0.03
1112321011	Men's wallets	-0.27	-0.43	0.51	0.17
1112321031	Women's handbags	-0.38	0.10	-0.41	-0.18
1112321061	Travel bag (Samsonite, Polo or VIP)	-0.24	-0.20	-0.70	-
1112321063	School bag	-0.02	0.20	0.01	0.01

Table 20. Illustrative Dikhanov Table—Household Final Consumption Expenditure Products *(continued)*

Economy E	Economy F	Economy G	Economy H	Economy I	Standard Deviation	No. of Products Priced
1.00	**0.346**	**1.59**	**3.69**	**122**		
0.546	**0.445**	**0.501**	**0.425**	**0.462**	**0.453**	
558	**456**	**543**	**581**	**620**		**688**
6.19	**1.53**	**6.58**	**32.3**	**940.7**		
1.00	**0.247**	**1.06**	**5.22**	**152**		
100.0	**140.1**	**150.0**	**70.7**	**80.3**		
-0.10	-	0.05	-	-0.40	0.256	11
-	-	0.07	0.35	-	0.450	12
-	-	-	-	-	0.371	4
-	0.05	0.11	0.31	0.15	0.383	13
-0.11	-	-	-	-	0.254	9
-	-	-	0.18	-	0.122	7
-0.08	-0.39	0.29	-0.22	-0.08	0.340	23
-0.75	0.47	-0.35	-	-0.16	0.378	17
0.38	0.01	-0.31	-0.28	-0.04	0.348	17
-0.23	0.09	0.16	-	-0.04	0.231	19
-0.34	-0.63	-0.11	0.32	0.19	0.445	17
-1.68	0.22	0.0	-0.48	-0.10	0.539	21
-0.53	0.18	-0.26	0.09	0.31	0.276	22
0.52	-	0.10	-0.47	-0.74	0.411	20
1.17	-0.36	0.86	-0.30	-0.88	0.471	21
0.03	-0.28	0.47	-0.08	-0.71	0.547	22
0.18	0.32	0.32	-0.46	-0.58	0.322	23
-0.15	-0.10	-0.25	-0.26	0.10	0.205	22
0.27	-0.04	0.46	0.27	-0.69	0.432	22
0.25	-	0.79	0.54	0.03	0.689	19
-0.16	-0.70	-0.27	0.24	-0.25	0.437	23
-	-	0.38	-0.89	0.47	0.406	19
0.37	-0.63	-0.03	0.75	0.39	0.415	19
0.67	-0.76	0.36	-0.55	-0.26	0.425	22
-	-0.58	-0.08	-0.00	-0.07	0.338	21
-0.14	0.39	-0.41	0.22	-0.20	0.382	21
-0.10	1.08	-	-0.22	0.31	0.376	16
-0.16	0.40	0.76	-0.22	-0.39	0.448	21
-0.19	0.18	0.58	-0.26	-0.70	0.426	23
0.15	0.20	1.26	-0.54	-0.38	0.602	21
0.15	0.16	1.28	-0.62	0.20	0.613	22
0.11	0.61	-0.30	0.45	0.13	0.373	23
0.00	-0.14	-0.29	0.32	-0.27	0.285	22
0.92	-	-0.23	-	0.32	0.381	17
-	0.22	0.24	-0.45	0.42	0.358	20
-	-0.92	0.35	-0.21	0.15	0.453	20
1.08	0.55	-0.22	0.12	-0.51	0.548	20
0.88	-0.61	-0.16	0.08	-0.03	0.322	23

observed and estimated prices can indicate potential problems with the consistency of the prices collected for a product within an economy or the possibility that an economy is not pricing the same product as the other economies.

The above Dikhanov table (Table 20) is presented for illustrative purposes and shows data for nine economies rather than the 23, and presents only a small proportion of the products actually specified for the region. In the Dikhanov table used in practice, the products were grouped by basic heading.

Columns 3 to 11 show the results for each of the nine economies, while the last two columns show the regional standard deviation and the number of products priced in the region. The body of the table shows the residuals for each product in each economy, calculated as the difference between the observed price and the price estimated using the CPD model (in logarithmic terms). Any residual greater than 0.25 is highlighted in yellow, while any greater than 0.75 is highlighted in red. Black shading was used for residuals greater than 2.00, although they rarely occurred.

The first six rows below the heading row present summary data (PPPs, exchange rates, etc). The PPPs in the first row are those calculated by applying the CPD method to all products from all economies in the region. The standard deviations in the second row are those for the residuals for each economy, while the second to the last column in the second row shows the overall standard deviation of the residuals in the region. The final column shows the number of economies pricing each product, with the number in the third row of that column being the number of products priced in the whole region.

Data Validation for ICP Asia Pacific

One of the most important processes in ICP Asia Pacific was checking the prices and national accounts data to ensure reliability. This section describes the data validation procedures used in ICP Asia Pacific to ensure the comparability and reliability of price data collected by the participating economies. In addition to the Quaranta and Dikhanov diagnostics for data validation, the Regional Office developed and implemented other data validation procedures. There were two distinct stages in data validation—the first was the *intracountry* validation process, in which the individual price observations were edited and checked and also where the first checks were carried out on the average prices; and the second was the *intercountry* validation process, in which the average prices for the same products in different economies were checked against each other. While there is an attempt to describe separately the procedures adopted by the Regional Office, intercountry and intracountry data validation processes are interdependent.

Intracountry Data Validation for Household Products

Formulation of a Price Data Validation Procedure for Economies

Initial submission of price data revealed significantly high CVs in spite of the facilities available for data validation in Tool Pack and the guidelines provided by the Global Office. To further assist participating economies in conducting their respective data validation, the Regional Office prepared and circulated both hard and soft copies of the "Price Data Validation Procedure for Countries" for validating and reviewing their templates and raw price data prior to sending their data to the Regional Office. It suggested a number of points to check in validating data (e.g., a minimum number of prices to be collected for a product; data validation to be undertaken as soon as possible after the price surveys; and limits on their variability) and the courses of action to be followed when potential problems had been identified.

Economies were also strongly advised to price products within the quantity range as specified and that the correct unit of measurement and the preferred quantity were followed. For consistency across economies, they were also advised to price medium-quality products when the brand was not specified, and to use outlets frequented by many people.

Development of an Automated Country-level Data Validation Procedure

To accelerate intracountry data validation, the Regional Office developed an automated system that involved the extensive use of Microsoft Excel features such as macros, auto filter, and Visual Basic programming. It had two subroutines: the first automatically created summary information from a template generated in Tool Pack, while the second processed raw price data.

Information from the Tool Pack template included the total number of products priced, a list of products with fewer than 15 quotations, and a list of products with CVs greater than 30%. These were validated against individual price data to ensure consistency between the template and the unit-level data. The individual price data subroutine identified specific sources of errors such as products with zero values in the observed/converted price; products with fewer than 15 observations; and minimum-maximum price ratios less than 0.33. (A "converted price" is the price for the required quantity based on product specifications.) Further checking was done to ensure that products priced were within the specified quantity range which was allowed to take on values within 10% or 20% extension in range (e.g., if the quantity range is 300–500 grams, the 10% extension range would be 270–550 grams) in consideration of different national practices. The products collected from very high-end outlets were reviewed for representativity. Economies were also reminded to choose medium-quality products/items when the brand was unspecified and that a product/item that was rarely locally available did not have to be priced, as this might have distorted the price level.

Quarterly Validation

Applying the guidelines and the methodology as described in the previous subsection, Table 21 was generated and sent to the participating economies when data validation for the first quarter data was completed. The "Excel reference sheet" shows the products for review.

As data validation progressed, and as more quarterly data became available, additional data validation procedures were adopted. The concept of interquarter comparison became necessary. While identifying the criteria for outliers for interquarter data validation, the Regional Office considered the average inflation rate across economies in deciding the range for identifying outliers. In addition, the data validation report sent to the participating economies became more detailed over time. It classified the products that needed to be reviewed with regard to the following concerns:

(i) **Products with price ratios exhibiting high divergence.** These were selected when the average price ratios between quarters were outside the defined range of 80–125%, or in some cases when the CVs across quarters exhibited a wide range.

(ii) **Products with high CVs for at least two quarters.** Unless the economies provided the reasons for high CVs, the Regional Office raised this issue with them.

(iii) **Some representative products with less than 15 price quotations.** Representative products should be commonly available in the economies. Thus, economies should be able to provide at least 15 price quotations.

Adequacy of the Number of Products Priced per Basic Heading

The structure of the GDP expenditure weights shows the importance of each particular basic heading to the consumption patterns of a particular economy. Therefore, basic headings with significant weights need to be properly represented through the number of products priced per basic heading. However, it was also possible that even with a significant weight in their GDP structures, some economies could not price enough products—or even any at all. The Regional Office also reviewed this concern and classified its findings into three major groups.

Table 21. Sample Validation Concerns

Validation Concern	Number	Name of Excel Reference Sheet
Products Priced	434	All
Products with Less than 15 Observations	120	Observations less than 15
Products with Minimum/maximum Ratio of Less than 0.33	5	Min/Max ratio less than 0.33
Products with Coefficients of Variation (CV) Greater than 30.0%	7	CV greater than 30%
Total Number of Quotations	4710	All

(i) **Not priced but with GDP weights.** Ideally, economies should be able to price products where they have GDP weights. However, they were requested to document items in the product list that were "not available" and advised to collect prices for more products under basic headings with GDP weights of at least 0.5%, where possible.

(ii) **Priced but without GDP weights.** First, the economies were requested to confirm whether: (i) there is really no expenditure for the basic heading, (ii) the basic heading weight is zero due to no data being available and therefore the economy is unable to estimate the expenditures, and (iii) the weight is zero only because the weight is very small (almost zero).

(iii) **Not priced and without GDP weights.** Economies were asked to confirm that the GDP weight for the basic heading was really zero and so products under that particular basic heading need not be priced.

Intercountry Data Validation for Household Products

Comparison of Exchange Rate Prices

The Regional Office computed CVs of the average exchange rate prices for each of the products for all participating economies, and subregional groupings were computed to identify outliers of the exchange rate prices. (Exchange rate prices are prices converted to the numeraire currency, the Hong Kong dollar, via market exchange rates.) If the CVs based on prices of all the economies were found to be extremely high, but the subregional comparison yielded an acceptable CV, then the economies were not requested to review their average prices anymore. However, if the CVs were high in both the overall and subregional comparisons, the economies with prices deemed to be outliers were requested to review and validate their average prices. A subregional comparison was carried out for better comparison in similar economies. The list of products to be reviewed as a result of the intercountry data validation was provided to economies in a separate Excel sheet to make a clear distinction of the list of products that needed to be reviewed based on intracountry and intercountry reviews by the Regional Office.

For the purpose of intereconomy data validation, the subregional groupings were as follows:

(i) **High Income:** Brunei Darussalam; Hong Kong, China; Macao, China; Singapore; and Taipei,China.

(ii) **Southeast Asia:** Cambodia, PRC, Fiji Islands, Indonesia, Lao PDR, Malaysia, Mongolia, Philippines, Thailand, and Viet Nam.

(iii) **South Asia:** Bangladesh, Bhutan, India, Islamic Republic of Iran, Maldives, Nepal, Pakistan, and Sri Lanka.

Data Review Workshops

Consistent with the Regional Advisory Board's recommendation on data review workshops to improve quality and comparability of data within the region, five such workshops were held for the household consumption list. The concept of these workshops was inspired by Latin American experience. Based on the findings and agreements of the data review workshops, economies were requested to revalidate their observations and make the necessary updates. Products that were difficult to price either because they were hard to find or simply did not exist in many economies were deleted from the list.

Preparation of "What to Price" and "List of Products Needing Special Attention" Guides

During the data review workshops, problems were identified relating to the correct product identification as well as the correct entry for the observed quantity. In this regard, "What to Price" guides were prepared for price data entry in Tool Pack. In addition, the Regional Office prepared a separate guide, "List of Products Needing Special Attention", for 59 problematic products. Problems encountered in pricing these products were mainly due to ambiguous units of measurement or differences between preferred quantities in the Tool Pack and the product catalogue, or where a new approach for pricing was adopted after the initial ICP surveys (e.g., from "renewal of registration of an 800 cc vehicle" to "registration of a new 800 cc vehicle"). Additional products were identified using statistical parameters such as high CVs in the basic headings from the Quaranta table and high residuals using Dikhanov tables. Economies were advised to review the prices of these products as well.

The more common data problems identified during the intracountry and intercountry data validation can be split broadly into those that arose from difficulties with the product lists and those related to price collection and entering the price data into Tool Pack. The main problems with the product lists were misinterpreting the product specifications (some were not specific enough to ensure consistency while others used terminology that was interpreted differently in different parts of the region), not specifying a reference quantity range, and a mixture of high-and low-quality products being priced when brands were not specified in the product description. The main price collection and data entry problems included the following: too many products being priced in high-end outlets, product specifications not being followed completely, data entry errors, unit price conversion errors, insufficient number of prices collected for some products, inconsistent prices for a product across quarters, and wide dispersion in the prices collected for a product (i.e., high CVs).

Data Validation for Compensation of Government Employees

Compensation data were requested for some 50 government positions. Not all positions were expected to be available in all participating economies, but all economies nevertheless were requested to provide data for the maximum possible number of positions.

Several steps were followed for data validation for the sector. First, basic entries such as the number of working days and number of holidays were checked for a certain level of consistency across economies.

Checks were made for consistency of reported compensation within each major occupation group, e.g., health services, education services, and defense services. Within health services, a doctor, head of department is expected to have lower compensation than the hospital chief executive within an economy.

The most common areas needing clarification were: determining the correct position equivalent to that described in the position description; determining the level of seniority for each position; determining the allowances that should be reported; and reporting on the number of working days/hours for different occupations (for example, working hours for policemen/firemen are not the same as for other occupations). After the data were reviewed by the Regional Office, it became apparent that there were huge productivity differences between the higher- and lower-income economies in the region. As a result, it was necessary to adjust wages data to take account of these differences. A detailed description of the background to the productivity adjustments and the way in which they were calculated is presented in the section below, "Procedures Used for Dwelling Rents and Government Compensation of Employees".

Data Validation for Construction

The ICP requires items included in the construction comparison to be comparable across participating economies, and to be commonly found in the domestic markets of the economies. However, both conditions are often difficult to satisfy for construction, with the result that the sector is described as "comparison resistant". Previous ICP rounds followed the standard projects-based method, using a selected set of standard hypothetical model construction projects. While the prices reflected full market (purchaser) prices that were consistent with prices used in the national accounts, and the methodology satisfied comparability, the disadvantage was that representativity had to be sacrificed. The standard projects-based method was considered to be expensive and difficult to implement in developing economies due to its detailed and comprehensive data needs and its high survey costs.

Largely for expense reasons, the basket of construction components (BOCC) approach was introduced in this ICP round. It divides the three construction basic headings—residential construction, nonresidential construction, and civil engineering works—into several systems that are in turn disaggregated into well-defined construction components. It involves pricing identifiable, complete, installed construction components. Prices were collected for 11 basic inputs and 23 composite components. Examples of components include a reinforced concrete column, or painting 100 square meters of a building's exterior surface. BOCC requires all economies to price the same construction components, but an advantage of the BOCC approach is that it allows economies to vary the mix of inputs in line with their building practices and relative input costs.

BOCC strikes a balance between representativity and comparability—it simplifies the technical aspects of the survey procedures and it is less expensive to implement than the standard projects-based method. BOCC enables components to be set up in such a way that they are more comparable between different economies, while still being reasonably representative of actual building projects in those economies. Also, prices can be collected fairly readily in multiple cities and towns throughout each participating economy to obtain better national average prices. The major shortcoming of the approach is that the margins applying to the overall project, particularly profits for the whole project (as distinct from those at the individual component level), are not incorporated in the final quoted price. Such margins can fluctuate significantly, depending on market conditions in the pricing period.

The economies were advised to engage the services of domestic experts for the construction price surveys since most NSOs do not have expertise in this sector. The Regional Office undertook data validation with technical guidance from both international and domestic experts. Initially, the Regional Office convened the core group of experts on construction to undertake a preliminary review of price data prior to the regional data review workshop to which all economies were invited. The core group members (Hong Kong, China; India; Malaysia; Mongolia; Philippines; and Viet Nam) were selected from the domestic experts based on their inputs in the construction product list finalization workshops. An expert's view from the private construction sector in Malaysia was also provided in the second core group meeting. The economies were requested to review their prices based on the initial comments of the core group and the revised data were used during the first regional data review workshop for construction conducted under the technical guidance of the international construction experts, who also reviewed the price data against the row-wise and column-wise geometric means in addition to the validation procedures followed by the Regional Office.

Intercountry comparison of the shares within the components was also evaluated on a subregional basis on the assumption that neighboring economies might be using similar technology. At the same time, the prices were compared against the average of the subregion to which an economy belonged. Another approach was to check the component prices against the basic input prices. However, quality issues affected the construction price data, even after the regional data review workshop for construction. A second meeting of the core group was convened to take a final look at the data. This time, economies were not grouped on a subregional basis, which had been the case in analyzing the prices at the data review workshop. Rather, prices were compared across all economies for basic components grouped together on the basis of using similar technology, construction processes, and inputs.

The BOCC approach uses three types of expenditure weights: (i) W1 or weights for aggregation of the three basic headings—residential construction, nonresidential construction, and civil engineering works; (ii) W2 or weights for aggregation of systems; and (iii) W3 or weights at the component level. The W1 weights are the expenditure shares from the national accounts and the W3 weights were set at unity, meaning that all components within a single component system were given equal weights. The participating economies were asked to estimate their own W2 weights. However, in view of the difficulties faced by some economies in providing W2 weights, the geometric means (excluding outliers) of the W2 weights based on the data submitted by a majority of the economies were used in the ICP Asia Pacific PPP computation.

Data Validation for Equipment

As was the case with construction prices, most NSOs did not have much expertise in pricing equipment. As a result, they generally used the services of experts to collect prices. The Regional Office undertook data validation with technical guidance from both international and domestic experts. Initially, it convened a core group of experts on equipment to make a preliminary review of the price data prior to the regional data review workshop. The core group members from Bangladesh; Cambodia; India; Malaysia; Nepal; and Taipei,China gave their initial comments on the equipment price data submissions. The first regional data review workshop for equipment was conducted under the technical guidance of an international equipment expert. The first core group meeting was held in conjunction with a video conference with an international equipment expert.

Data validation for the equipment sector was not straightforward because the economies were left to decide on pricing unspecified alternates if the preferred or specified alternates were not available. However, in a few cases, even what were identified

as preferred or specified alternates did not exactly match the required specifications, with the preferred products as priority for pricing. If both models were unavailable, unspecified alternates were priced but the key identifying characteristic were noted very clearly. To address this issue, the international consultant determined if the models/products priced were equivalent or not to the specified models, and at the same time commented on the prices reported.

A second core group meeting was organized to further ensure product parity. With the revised responses, products were then grouped by the international expert based on the product specifications. For some products, as many as three groups were formed.

The number of products priced within each equipment group was checked and economies were advised to increase product coverage where possible.

Data Validation for Dwellings

Two methods can be used to obtain PPPs for the basic heading of actual and imputed rentals for housing. The first method, the "modified SPD method", was recommended for use where regular surveys of rents were carried out in most parts of the economy. However, only Hong Kong, China; Malaysia; and Philippines have regular rent surveys with sufficiently broad coverage to use the modified SPD method. An attempt was made to use this method in these three economies, but this was abandoned when the classifications of dwellings they used could not be matched.

The second method is the "quantity approach". It involves calculating a volume index for each economy that takes account of both the quantity of dwellings and their quality. The quantity is measured by, in order of preference, usable floor space, number of rooms, or number of dwellings. The quality is measured by availability of electricity, inside water, and private toilet.

Initially, data were checked for completeness and consistency. Among the quantity indicators, all economies were able to provide the number of dwellings, but the usable floor space and number of rooms, which are better quantity indicators than the number of dwellings, were unavailable in some economies. The data review workshops showed that there were several misunderstandings regarding the quality indicators—in particular what was meant by "inside water" and "private toilet." For these reasons, this approach, too, could not be implemented. The Regional Office therefore considered a "reference" method as a fall-back solution. (See the section below, "Procedures Used for Dwelling Rents and Government Compensation of Employees" for details.)

Validation of GDP Weights

The Regional Office reviewed the initial GDP data submissions and found that some had gaps in the data, while others suffered from data consistency problems. Among them were: not providing disaggregations by basic headings; reverse mathematical operations being done; and subcomponents not adding up to totals.

These were communicated to the economies for appropriate action. The revised GDP weights were then evaluated with some of the analysis being based on subgroups of economies. Outliers were identified mainly through examination of values outside a range of plus or minus two standard deviations from the mean. Several iterations were generally required as the data were cleaned progressively.

The steps enumerated above were first carried out simultaneously on all the economies that submitted GDP values. However, the Regional Office decided that subgrouping would bring about a more meaningful analysis. It originally grouped the economies by subregion but later determined that, since not all the economies in the respective geographic subregions were at the same level of economic development, comparison of the GDP structure would be more appropriate if the high-income economies were grouped together.

Aside from the validation of low and high values, the economies were also requested to confirm where weights were zero or almost zero, based on the following: (i) there was really no expenditure for the basic heading, (ii) the basic heading weight was zero since no data were available and therefore the expenditures could not be estimated, and (iii) the weight was shown as zero only because the weight was very small.

Another procedure adopted was to match the basic heading with weights against the list of products

priced by each economy. If there were products priced but no corresponding weight for the basic heading under which the products were classified, a request was made to estimate the basic heading weight. In the reverse situation where there were basic heading weights but no products priced, a reference PPP from a similar basic heading was used to estimate the PPP for the basic heading with missing prices.

The international consultant on national accounts also visited Cambodia, Lao PDR, and Sri Lanka to advise them either on the compilation of GDP using the expenditure approach or in the estimation of weights at the basic heading level.

Two workshops on the national accounts were convened in February 2005 and May 2006. The first workshop aimed to provide guidance on estimating expenditure weights at the basic heading level and to exchange information and experience, and how to make the national accounts coverage consistent with SNA93. Seventeen economies submitted data at the meeting. At the second workshop, with more complete GDP data submissions, discussions focused on formulating solutions on weight estimation for the basic headings that were difficult to estimate.

Consistency between the GDP data submitted for ICP purposes and those with data in the respective economy websites, UN publications, and especially in ADB's *Key Indicators 2007* (ADB 2007b) was validated. Data in *Key Indicators 2007* were used to update 2004 values to 2005 at the basic heading level. Discrepancies identified were referred to the economies.

The economies were also requested to submit available data for the disaggregation of expenditures by nonprofit institutions serving households (NPISHs). Where this information could not be provided, NPISH total expenditures were proportionally distributed to the relevant household consumption expenditures (except alcoholic beverages, tobacco, and narcotics).

Allocation of Net Expenditure of Residents Abroad

The adjustment item, net expenditure of residents abroad, was not handled consistently in the national accounts of the participating economies. Nine reported zero expenditures for this item, which implied that it had been included in (or distributed across) the relevant components of HFCE. The size of the adjustment in the other 14 economies was generally small, with the exception of Fiji Islands, which had a very large, negative net expenditure of residents abroad. In order to provide consistency across the region, the Regional Office distributed any nonzero amounts reported across a number of products in household final consumption. The distribution was based on the assumption that the net amount was all tourism related.

The starting point for the allocation was the Tourism Satellite Accounts (TSA) framework. The TSA definitions are complicated by the definition of tourism since it includes domestic and international tourism. Therefore, the focus was on those products that are mainly related to international tourism. Products in the TSA are split into "characteristic goods and services" and "connected goods and services". Those defined as characteristic have a high incidence of tourist purchases while those that are connected have a degree of tourist purchases but somewhat less than for characteristic products.

Ideally, the two gross flows underlying the net expenditure of residents abroad would be distributed on the basis of the TSAs for each economy. However, the allocation had to be rather arbitrary because so few economies have TSAs. To minimize the effect of any misallocations, a broad range of products was included so that no PPP for a single product would have a big impact on the overall result. For example, most food items were included because food is a major expenditure of tourists and it was not possible to narrow the types of food products likely to be purchased by tourists. Characteristic products that were excluded from the allocation were those most likely to be purchased mainly by domestic tourists (motor vehicles, major durables for outdoor and indoor recreation, etc.).

The final category (medical products) contains the types of expenditures that most tourists hope not to incur. Inevitably, though, tourists fall sick or have a dental problem that needs immediate treatment, or are involved in an accident requiring paramedical and/or hospital services. Therefore, on balance, all four medical services were included.

Table 22 shows the products over which net expenditure of residents abroad was distributed, in proportion to the expenditures recorded in their national accounts.

Table 22. Allocation of Net Expenditure of Residents Abroad
Characteristic Goods and Services
Garments
Passenger transport by air
Recreational and sporting services
Cultural services
Accommodation services
Passenger transport by railway
Passenger transport by road
Passenger transport by sea and inland waterway
Combined passenger transport
Insurance
Connected Goods and Services
Rice, cereals, bread, other bakery products
Pasta products
Beef, veal, pork, lamb, mutton, goat, poultry
Fish and seafood (fresh, chilled, frozen, preserved, processed)
Fresh milk, preserved milk and other milk products
Dairy products (cheese, eggs, butter)
Fruit and vegetables (fresh, chilled, preserved, processed)
Sugar, jams, marmalades and honey
Confectionery, chocolate and ice cream
Coffee, tea and cocoa
Mineral waters, soft drinks, fruit and vegetable juice
Beer, wine, spirits
Telephone and telefax services
Games of chance
Medical Products
Medical services
Dental services
Paramedical services
Hospital services

Special Price Collection Guidelines

The Regional Office had to manage a geographically dispersed region, with significantly different types of economies and living standards, and with a wide variety of institutional arrangements, particularly for health and education. As a result, it proved necessary for it to develop special collection guidelines to cover the situations that price collectors were likely to encounter.

The special guidelines were developed over time as problems were encountered. The aim was not only to provide guidance on the most appropriate way of proceeding but also on how best to ensure that comparable prices were collected in all regional economies. In addition, the price validation procedures that the Regional Office intended to follow were sent to all economies. The aim was for them to apply similar, basic editing procedures to their data before they provided the prices to the Regional Office, thereby identifying and resolving some of the problems before formal checking by the Regional Office and before comparisons in data review workshops. The main features of the guidelines and validation procedures are described below.

Health

The health products for which pricing guidelines were set out included: (i) pharmaceutical products (26 items); (ii) other medical products (9 items); (iii) therapeutic appliances and equipment (11 items); (iv) medical services (6 items); (v) dental services (6 items); and (vi) paramedical services (8 items).

The guidelines identified the different ways in which health products can be purchased (i.e., paid for in full by the purchaser, paid for in full by the government and provided free to households, or paid for partly by households and partly by government). They described the type of products to be priced, the outlets that should be included and their distribution across urban/rural areas, the pricing basis required, and the period(s) during which prices could be collected. The brands were also specified broadly (local, regional, and international), as well as a list of international manufacturers.

Some instructions were included to cover different situations that could arise during price collection. For example, a significant degree of variability in the prices collected for a particular product would indicate a need to collect additional prices to obtain a more reliable national average price. In contrast, collecting prices from a single pharmacy chain could lead to little price variability, but the guidelines pointed out that this was undesirable because the prices could be biased. Finally, the guidelines specified some of the traps that price collectors should watch out for (pricing the correct dose/measure, whether the specifications identified a tablet, capsule, or suspension, etc.). Similar guidelines covered other medical products such as therapeutic appliances and equipment, and private medical, dental, and paramedical services. A set of supplementary guidelines was released midway through the collection describing how to deal with some identified problems associated with subsidies, reimbursements, and copayments.

Health (and education) is affected significantly by differing institutional arrangements in different economies. For example, health can be supplied to varying degrees by the private sector or by government, prices can be affected by government subsidies or by private insurance, and the effects of such arrangements can be different for various components, such as hospital services compared with doctors' services. Detailed definitions and examples were provided for each of "subsidies", "reimbursements", and "copayments" so that each could be identified correctly and treated appropriately. Supplementary guidelines also emphasized that the pricing basis should be the full price, before deduction of any subsidies or reimbursements.

Education

As with health, the aim of setting out the guidelines for pricing private education services was to standardize price collection procedures for this difficult component.

Private education expenditures were classified into two broad categories—"regular programs" and "other education programs". The regular programs covered primary, secondary, and tertiary education. Other education programs included foreign language courses, private lessons in mathematics (outside school hours), and music lessons. As was the case with health services, three payment methods were identified (i.e., paid for in full by the purchaser, paid for in full by the government and provided free to households, or paid for partly by households and partly by government).

The guidelines covered how a range of possible situations should be dealt with. For example, for primary and secondary education, the prices required were the total prices for the specified programs; the prices had to relate to a day student (i.e., not a boarder) who was a national of the economy; and any discounts (e.g., if a private school had discounted rates depending on the financial capacity or the scholastic standing of the student) should not be deducted from the price recorded, so that it would be the full undiscounted cash price for full-paying students. Similarly, any subsidies paid by an employer or the government should not be deducted from the price recorded.

Other points emphasized the importance of collecting the annual fee no matter whether the fees were levied on a term basis, spreading the sample broadly enough across types of schools and urban/rural areas, and having a minimum of 15 observations to derive representative national average prices. Schools had to be a typical size in terms of enrollment level for the economy concerned and, ideally, the class size should be 40–50 students. A checklist was provided of items to be excluded from the price (e.g., payments for meals; uniforms; school supplies such as notebooks or pens; educational field trips; special interest clubs such as science/math, art, or dance; and school bus services).

At the tertiary level, the specifications for university fees were split into two parts—one for a university degree in computer science and one for a degree other than in computer science or natural sciences (physics, biology, botany, or medicine). The price required was the total fees charged for the whole degree (e.g., if it takes 4 years for a degree, then the present total cost for the 4 years from first to fourth year was required, using the current rates for each year of the course). The cash full payment price, rather than an installment price, had to be collected. As was the case with school fees, a list of exclusions from the recorded price (payments for meals, books, field trips, etc.) was provided.

For other education programs, the key issue was to ensure that the sample of teachers or tutors selected was sufficient to derive representative national average prices for these programs. The prices had to be for tuition from teachers or private tutors with at least 5 years of experience in their respective fields of

expertise and the price required was "per lesson or per person", with a 1-hour lesson being the preferred basis for pricing. Particular types of lessons were specified for pricing. They included language lessons, mathematics tutoring, and music lessons.

Construction

The BOCC approach was a completely new methodology introduced for this round of the ICP, so no region had any previous experience in handling the issues associated with it. The Regional Office set up a core group of construction experts to assist in validating data. The core group met twice. The first meeting examined in detail the prices for each of the region's economies and identified those areas in which some type of follow-up was required.

During the second meeting, the core group defined some key price-determining characteristics for construction products. It focused on those products for which it appeared that different economies had not interpreted BOCC specifications correctly or consistently when pricing the specifications. Actual engineering estimates (rather than quotations) were to be used in pricing the specifications. Examples of the types of points covered were:

(i) Aggregate base—compaction should be done in four or six layers. Total thickness is 600 millimeters, area = 1,000 square meters. Person-hours should be commensurate with the required compaction.

(ii) Aluminum frame window—double glazing but single pane.

(iii) Bridge T-beam—should include form-works.

(iv) Concrete airfield pavement—subgrade compaction and costs excluded but cost for filling dummy included.

(v) Underground utility—includes cost of a 100 meter long, 400 millimeter diameter steel pipe. Price should include supporting the trench sides, preparation of bed, filling with native soil or sand, and backfilling.

Procedures Used for Dwelling Rents and Government Compensation of Employees

Some problems were encountered during the compilation of PPPs for dwelling rents and government compensation of employees. The procedures recommended in the ICP Handbook had to be reviewed and new procedures had to be devised to obtain meaningful PPPs and volume measures for these categories. In this section, the new procedures actually adopted for dwelling rents and for compensation of employees are described. Because these procedures were new and had not been adopted in any other region, they were referred to the ICP's Technical Advisory Group (TAG) for approval, which was given at the TAG's meeting in September 2007.

Dwelling Rents

Chapter 10 of the ICP Handbook describes two methods that can be used to obtain PPPs for the basic heading of actual and imputed rentals for housing. The first is based on collecting prices for rents for a number of broadly defined types of dwellings, such as "an apartment, built more than 50 years ago, with one or two rooms and approximately 50 square meters of floor space and without climate control, or a house built less than 25 years ago, with four or five rooms and approximately 115 square meters of living space and with climate control".

The second method, the quantity approach, requires countries to supply information on both the quantities of dwellings and on their quality to estimate the volume of dwelling services consumed in each economy. The quantity of dwellings in each economy is measured by, in order of preference, usable floor space, number of rooms, or number of dwellings. The quality of the stock of dwellings in each economy is measured by whether they have electricity, inside water, and private toilet. A quality index is constructed by taking the unweighted geometric average of the percentages of dwellings with each of these facilities and the quantity measure, e.g., the total number of rooms in the economy, multiplied by the quality index to obtain a measure of the volume of dwelling services in each economy.

It proved impossible to obtain sufficiently detailed data from regional economies to implement either approach. Therefore, the Regional Office considered a "reference" method as a fall-back solution. Usually, this means using a reference PPP, which is either a PPP that has been calculated for a similar aggregate or a PPP that is "neutral" in the sense that it does not disturb the PPP for the main aggregate to which the problem basic heading belongs. For this basic heading, however, the use of a reference PPP was inappropriate. The national accounts expenditures on actual and imputed rentals for housing reported by the economies appeared to be very unreliable with the result that the volume relatives that would be indirectly obtained by dividing the reference PPPs into the expenditure relatives would contain all the errors in the expenditure estimates. Figure 6 shows the expenditure shares reported by the economies.

Expenditures on rents as a share of GDP generally increase as incomes rise, but Figure 6 shows no such pattern. Two rich economies—Macao, China and Brunei Darussalam—report shares of below 3%; three poor economies—Nepal, Bangladesh, and Cambodia—report shares in excess of 6%; and three middle-income economies—Fiji Islands, Maldives, and Islamic Republic of Iran—report shares of over 10%. Note that this is not a problem unique to Asia. All economies, including many OECD members, have difficulty in estimating rentals for housing and, in particular, the imputed rents for owner-occupied dwellings.

The main objective of the ICP is to compare expenditure volumes between economies. Given the impossibility of using a reference PPP, the Regional Office gave priority to this and decided to use a reference volume relative rather than a reference PPP. The volume relative selected was based on each economy's individual consumption expenditure by households (excluding housing rentals). It is neutral in the sense that it does not change the volume relatives for household consumption expenditure and it is likely that, in general, the relative volumes of housing services consumed will rise in line with the relative volumes of total household consumption expenditure.

Figure 7 shows the per capita real expenditure relatives on rents that were obtained using the reference volume relatives, with Hong Kong, China as the base economy. While this approach is favored over reference PPPs, it definitely has limitations that may require further investigation in future ICP rounds or in development activities. Hence, the Regional Office decided to accept the estimates with some reservations. Special studies have to be conducted to find answers to interesting observations such as: the low volume relatives for Bhutan, PRC, and Maldives; the large difference between Hong Kong, China and Macao, China; and the fact that Singapore's volume relative is only 80% of Hong Kong, China's.

Government Compensation of Employees

Compensation of employees is the largest component of the costs of producing government services. The Global Office defined around 50 occupations that are typically found in government health, education, defense, and general administrative services. These occupations were representative of the various education and skill levels that are commonly found among employees working in these government services and they were used by all regions.

Compensation of employees includes, in addition to wages and salaries, employers' actual and imputed social security contributions, the value of free or subsidized food and accommodation, and various allowances. For Asia and the Pacific, it was decided that only allowances payable to all staff regardless of their individual circumstances would be included. Therefore, cost of living allowances were included in compensation but not allowances for dependent persons. Economies were asked to report compensation of employees for a person who had been in the relevant post for 5 years. In addition, economies were required to report the number of hours worked per year, and the cost comparisons were based on hourly compensation.

When hourly compensation of government employees was calculated for the 23 participating economies, the intercountry differences were found to be very large. For example, average compensation (based on exchange rates) in the government health sector in Hong Kong, China was about 120 times as high as that in Lao PDR. Economies like Viet Nam, Cambodia, Nepal, and Bangladesh, where government salaries are very low, would therefore have relatively high per capita real consumption of government services compared with economies like Hong Kong, China; Taipei,China; and Singapore where government salaries are much higher. These results did not appear plausible to statisticians familiar with the ways that governments function in the region.

Figure 6. Nominal Shares in GDP of Expenditure on Rents (%)

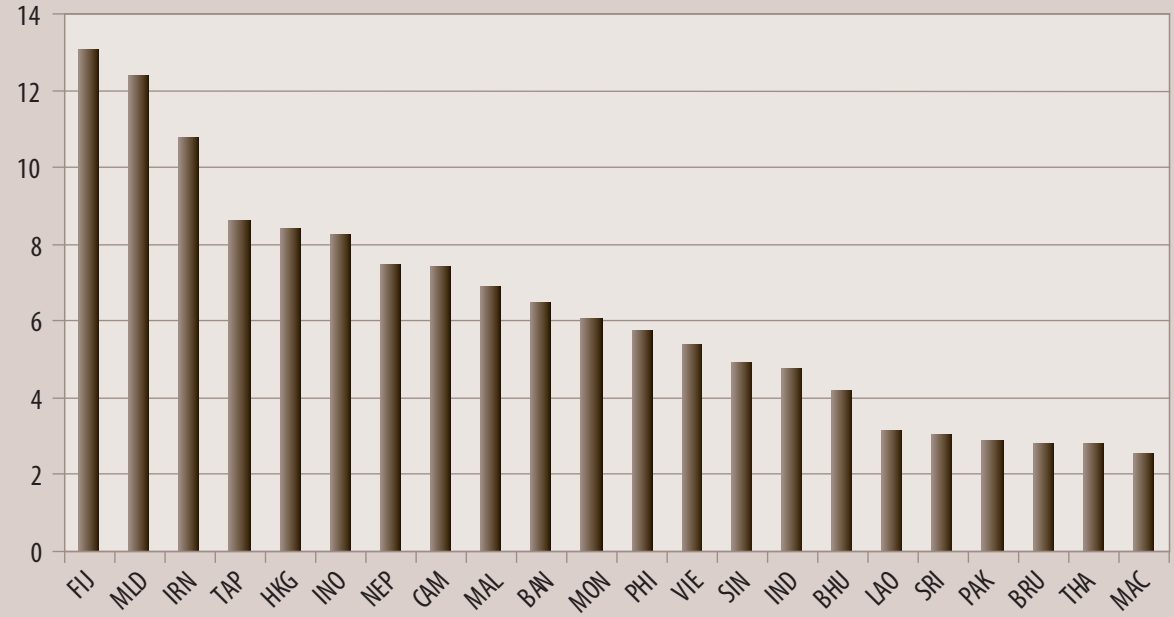
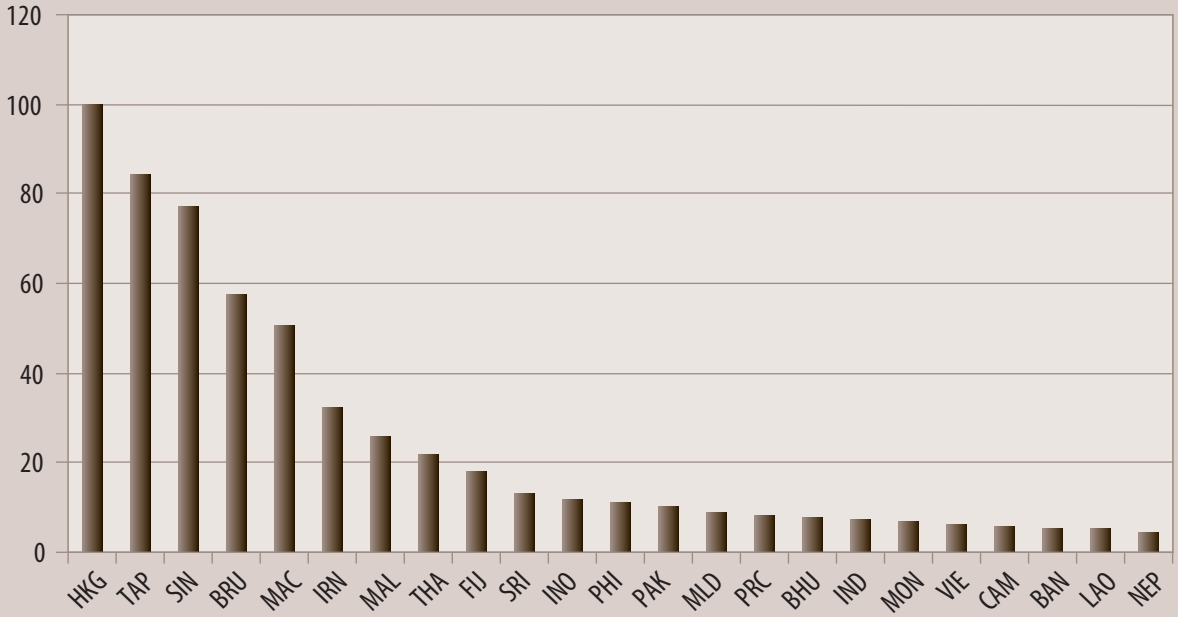


Figure 7. Per Capita Real Relative Expenditure on Rents



The solution adopted by the Regional Office was to adjust government compensation—and hence government consumption expenditure and GDP—by assuming that the productivity of government employees depends on their access to capital equipment. (A detailed description of the procedures used is presented in Appendix 4.)

Finalization of Regional Results

Finalizing the regional results involved several iterations. After the prices had been validated using the Quaranta and the Dikhanov tables, the next step was to compile real expenditures on GDP and its major components. Standardizing these by converting them to a per capita basis was the next step. Per capita real expenditures for each component were compared across all economies in the region and significant variations were checked closely with statisticians from the economies concerned where necessary.

Ring Comparison and the Global Office

Details of the ring comparison methodology are described in the earlier section "Linking Regional Results—The 'Ring Comparison'." The Asia and Pacific economies in the ring comparison were Hong Kong, China; Malaysia; Philippines; and Sri Lanka.

The data collection for the ring comparison was for a single quarter only (first quarter of 2006) and several steps were involved in validating the data. After some initial data cleaning, a meeting of the four economies was held at ADB in Manila in June 2006 to check the consistency of price data. The first step was to compare prices, adjusted to Hong Kong dollars using exchange rates. Once the queries raised at this meeting had been resolved and the price data were cleaned, the prices were compared based on PPPs rather than on exchange rates. The next step was to compare the prices for the region with those of the ring economies from the other regions. This process raised a further round of queries, particularly because the price levels from Asia and the Pacific appeared too low. As a result, the Global Office conducted market surveys in both Hong Kong, China and Malaysia to confirm that the prices related to products of consistent quality. The outcome was a confirmation that prices collected met the requirements of the ring comparison.

Reports on Experiences

At the end of the process, the Regional Office requested the 23 participating economies to provide a brief report on their experiences of working on the 2005 ICP. It suggested the following headings: adminis-trative setup; the extent to which the CPI infrastructure was used in ICP data collection; survey framework; GDP expenditure weights (i.e., basic heading data); price data validation; experience of using Tool Pack; extent to which ICP work could be integrated into the overall statistical work program; and overall assessment of the economy's participation in the ICP.

The reports (presented in Appendix 3) cover a range of issues. In general, economies were very positive about their experiences with the ICP, although some noted problems they faced in collecting prices for the specified products, in estimating the national accounts data at the required level of 155 basic headings, and in installing and using Tool Pack.

Most economies instituted formal administrative arrangements especially for the ICP, although they varied significantly. In some cases, an individual was responsible, generally the head of either the prices or national accounts division; in others, ICP coordination was the responsibility of a small team, commonly consisting of statisticians from these divisions; while some economies established a high-level committee of senior staff from the NSO, sometimes also including representatives from an economics ministry.

The extent to which ICP data collection could be integrated with the CPI varied considerably. Most economies used CPI field staff to collect prices for the ICP. Some, though, stated that very few products priced for the CPI could be used in the ICP, with the result that ICP data collection was an almost completely separate exercise. The main difficulty was that the products priced for the CPI often varied in different localities because of the discretion that CPI field staff had in pricing products within a product group. In particular, the reports noted the differences between pricing the same product over time compared with pricing the same product across all localities within an economy.

The survey framework used also varied significantly around the region. A common theme was that the framework was either based directly on the CPI survey frame, or at least used similar principles. In some cases, the ICP framework was a subset of that for the CPI, particularly with respect to the coverage across the economy. In many cases, ICP data collection was more heavily concentrated in urban areas than the CPI was.

No economy had national accounts data available in sufficient detail to readily provide detailed estimates at the 155 basic heading level. The method commonly used to provide the estimates for HFCE was to draw on data from household expenditure surveys. Many economies reported difficulties in estimating splits for NPISHs, and in providing details for financial intermediation services indirectly measured (FISIM) and for valuables. A variety of sources was used to break down the expenditure on GFCF, with import data mentioned as a data source by several economies.

Price data validation was a critical part of the ICP processing. Initial data validation was the responsibility of each national coordinating agency, which had to check the consistency of its price data before forwarding them to the Regional Office. Typically, prices for the same product were checked for consistency across all localities within the economy and they were also compared with prices for similar products in the CPI. Some agencies verified their data within a formal group, similar to the data review workshops organized by the Regional Office for data validation. The key points checked were that products were comparable, prices were consistent, and that correct units of measurement had been priced.

The comments on Tool Pack varied significantly. Most economies found it useful for storing, checking, and transmitting data. However, a range of problems was identified, including difficulties in installing the program, particularly on networks; difficulties in using some of the features; and problems caused by the units of measurement being either ambiguous or incorrect. Several suggestions were made to improve Tool Pack, including greater user-friendliness, more intensive training, and better documentation.

Most national coordinating agencies responded positively about integrating ICP work into their work programs. They mentioned the following as possibilities that they would investigate: including ICP products in the CPI, using Tool Pack to process the CPI, and adapting some of the ICP editing procedures for checking the prices collected for the CPI.

Most economies were very positive in their overall assessment of their participation in the ICP, finding that the techniques used in the ICP provided their staff with very useful experience that could be used elsewhere. A benefit mentioned by several was that the meetings to discuss the product lists and to verify the data provided an opportunity for their statisticians to compare experiences and to pick up new ideas.

Lessons Learned and the Future of the ICP

Introduction

An indirect but very important benefit from ICP Asia Pacific is that ADB has been able to use it as a major statistical capacity-building initiative. Within individual economies, ADB has aimed to establish the greatest possible synergies between data collections for the ICP and those for related economic statistics, particularly price statistics. The software and hardware required for collecting and storing the data required for the ICP have been developed in such a way that they can be used for collecting prices for the time-series price indexes, such as the CPI and a range of producer price indexes. The ICP has also been useful in establishing a set of standardized procedures across the region for collecting and editing price and national accounts data.

Harmonizing the ICP and the Consumer Price Index

Ideally, all products priced by each economy for the ICP would be included in its CPI, which would simplify price data collection in future ICP rounds. However, in practice, difficult trade-offs are involved in selecting products that are both representative of expenditures and comparable across at least several economies in the region to use in calculating PPPs. When an economy selects the products to be included in its CPI, representativity is the key criterion and comparability with other economies does not matter. Once a representative product is selected for pricing, the important issue is to price the same product in

subsequent periods so that price changes in the product can be measured over time. The product lists for calculating PPPs within the ICP have been developed so that the competing aims of representativity and comparability are balanced. As a result, products in the ICP product list can be quite different from those in each economy's CPI.

The experience gained in setting up the product lists for the 2005 ICP showed that the diversity of regional economies made it very difficult to identify products that were simultaneously representative and comparable. The Regional Office intends to explore the extent to which ICP products could be included in each economy's CPI but it is important that expectations not be raised too high because this will be a very difficult process to carry out in practice. In addition, the ICP product lists will have to be changed significantly before the next ICP round because of changes in the range and types of products becoming available since the 2005 product lists were established, which will also make it difficult to harmonize the ICP and CPI product lists.

Subregionalization

One of the major difficulties that the Regional Office faced in defining the products for pricing in the 2005 ICP was the diversity of the economies (the richest economy had more than 20 times the per capita real consumption of the poorest) and the products typically consumed in each. The product lists for consumption were set up so that characteristics of some parts of the region (i.e., subregions) were taken into account. The simplest example was including a large number of specifications for rice, which is most commonly consumed in South Asia, as well as a large number of specifications for noodles, which are more common in East Asia.

An alternative approach would be to split the region into two or more subregions. The advantage is that product lists could be more tightly defined for each subregion than for the 2005 ICP (for which subregional differences had to be accommodated within a single list). The disadvantage is that a method of linking would be required to integrate the results for each subregion into the overall results for the region, which is a difficult process. It would be useful to experiment with the 2005 results to determine whether the potential advantages from subregionalizing the region in a future ICP would outweigh the costs involved.

Implementing SNA93 in Asia and Pacific

The national accounts are an integral part of the ICP—they provide the weights used to combine the PPPs and directly influence real expenditure calculated using the PPPs. The basis on which the expenditures in the 2005 ICP were required was SNA93.

The Regional Office was very conscious of the importance of the national accounts and ran two workshops to ensure that economies were reporting their national accounts as consistently as possible. It did not adjust economies' national accounts to remove any inconsistencies that arose from those relatively few economies not yet compiling their national accounts on the basis of SNA93. (The previous version of this standard was released in 1968 and some economies still adhere to this old version.) The differences in GDP are unlikely to be huge but, generally, GDP tends to be about 2% higher on the basis of the later version. Metadata are available on the website of the International Monetary Fund under the General Data Dissemination Standards.[20] These metadata identify economies with national accounts differing from the 1993 standard, and in what areas they deviate. The economies still compiling their national accounts on the basis of the 1968 standard are being encouraged to move to the 1993 framework as soon as possible.

Most economies had some difficulty in reporting the national accounts data at the required level of 155 basic headings. This level of detail is important for the purposes of the ICP. ADB will encourage economies to take account of this requirement when they upgrade their national accounts or when they improve the economic surveys on which their accounts are based.

Extrapolating from the 2005 ICP Benchmark

It is clear that the ICP will be conducted infrequently in the future because of the lead time required, the high monetary costs involved, and the staff resources required by the NSOs. As a result, it is highly desirable to develop some means of extrapolation. Ideally, PPPs would be extrapolated from 2005 using detailed price data at the level of

[20] Available:http://dsbb.imf.org/Applications/web/getpage/?pagename = gddshome.

the 155 basic headings. However, as economies do not have consistent time-series price indexes at this very detailed level, it is most likely that the extrapolation will be carried out for GDP only or, perhaps, for a handful of major components of GDP.

The procedure consistent with that used in other extrapolations would be to calculate the ratio each year of the GDP deflator between Hong Kong, China and each economy in Asia and the Pacific (assuming Hong Kong, China is used as the base economy) and extrapolate the PPP for 2005 to other years by the change in this ratio from 2005. This method will provide useful indicators of what the benchmark PPPs would be had they been calculated for each year from 2005. However, the PPPs estimated using this process will differ from those obtained from a full benchmark ICP. There are several reasons for this.

First, the weighting patterns for the deflators in the national accounts are different from those underlying the PPP benchmarks. Second, the composition of the price series differs because the key requirement in producing PPPs is for the products priced to be representative and comparable between economies, while in time series the main requirement is for each product to be priced to consistent quality over time. Third, an assumption underlying the extrapolation process is that the structures of the economies involved change at the same rate, which is not going to happen in practice. Fourth, the prices underlying the national accounts deflators are adjusted to remove changes in quality over time, but the procedures for doing so differ between economies. Yet, despite these limitations, some useful results can be obtained by extrapolation.

Purchasing Power Parities and Poverty Analysis

The World Bank has established an "absolute poverty line," which is the equivalent in local currency to US$1.08 per day (often referred to in a rounded form as US$1 a day). Converting this into local currency will produce significantly different outcomes depending on whether the conversion is via exchange rates or PPPs. The World Bank uses PPPs to measure the purchasing power in local currency of this amount because exchange rates significantly understate the purchasing power of the currency of lower-income economies in their own markets.

The expenditure patterns of the poor differ significantly from the overall national average in most lower-income economies. Therefore, for this ICP round, the Global Office's Poverty Advisory Group identified the basic headings covering those goods and services that are most important to the poor (e.g., food, clothing and footwear, housing, and health). PPPs can be computed for a country using expenditure weights for those living in poverty based on the prices in relevant basic headings together with weights relevant to their expenditure patterns (generated from household income and expenditure surveys). The Global Office's aim is to adopt a more sophisticated approach in future ICP rounds based on an analysis of data from the current round.

The size of the gaps in living standards between comparatively rich and poor economies is not the only major policy concern. Equally important is determining whether the gaps are narrowing or widening over time, and at what rate. National accounts provide the basic data required for these types of analysis but, as noted above, PPPs need to be calculated at regular intervals to allow their conversion into a common currency for analytical purposes.

Language

A problem that affected the Asia and Pacific (probably more than any other region) was language. Everything produced and circulated by the Global Office was in English. The Tool Pack menu system was initially only in English, although it was later translated into a handful of other languages. The Asia and Pacific economies were using 18 different languages between them. Although correspondence in English was a generally acceptable approach, it was very difficult for the NSOs to work with product specifications and collection instructions unless they were translated into the local language. This need for translation activities was not anticipated. Thus, this was not included in the project's timetable.

It is important that the timetable for the next round explicitly allows the time required to translate the product specifications and collection instructions into local languages, and for the translations to be checked. Also, the Tool Pack menu system should be translated into all local languages in the region because of its important role in storing, editing, and transmitting data.

Ensuring Data Quality—Investment in Construction and Equipment

An innovation introduced in the 2005 ICP Asia Pacific was to establish "core groups" of experts to assist in pricing products in construction and in equipment. For construction, this involved a completely new approach (the basket of construction components method—see the section "Construction," a few pages earlier, for details). While this method broadly catered to the different techniques used in the construction industry in the region, pricing the various components and inputs was still a task for experts in the field rather than the staff in a NSO. Similarly, the types of equipment specified in the product lists were often difficult for people other than experts in that field to identify correctly. As a result, each economy engaged the services of experts in these fields to price the products specified by the Global Office.

Establishing the core groups for construction and equipment was a very useful initiative. The changes to the prices initially reported that resulted from their discussions were often significant. The PPPs ultimately produced for investment were far more coherent than they would have been if these groups had not closely examined the specifications and provided their advice on the accuracy of the prices initially reported.

Conclusion

The real expenditures presented in this publication are a huge step forward in providing economic analysts with the data needed to study the economic relationships between economies in Asia and the Pacific. The Regional Office is confident that the estimates of PPPs and associated data in this ICP round are far more robust than those compiled in earlier rounds because of the improved procedures in methodology, as well as in data collection, review, and processing. There are also some important side benefits. Data consistency is a critical element of the ICP and the data-vetting procedures developed for the ICP by the Global Office and the Regional Office have proven to be a very useful means for economies to validate their national accounts and price data. Also, the data review workshops provided the region's economic statisticians with an all-too-rare opportunity to meet and compare their collection methods and compilation procedures. These workshops also helped in creating a sense of ownership among the participating economies of the procedures and methods employed and of the final results compiled.

Improvements in the quality of the region's economic statistics will enable ADB to better monitor and compare the economic situations in its member-economies. In addition, participating in a broad-reaching statistical exercise like the ICP has given the region's economic statisticians an ideal opportunity to expand their skills through involvement in innovative statistical work. As well as learning more about their own fields of statistics, they have been able to learn about related fields and the interrelations between them. ADB considers that this statistical capacity building has turned out to be a very important by-product of the 2005 ICP.

PART 5

TABLES

The key results for the Asia and Pacific region are set out in this part. The tables include all the broad aggregates within GDP: actual final consumption expenditure; collective consumption expenditure by government; gross fixed capital formation; changes in inventories and net acquisitions of valuables; and balance of exports and imports. Important components of these aggregates, particularly for household consumption, are also reflected in these tables. The results presented here have been derived using the EKS method. Hence, real expenditures are not additive within a particular economy.

The following tables are presented in this part:

Further, participating economies are alphabetically arranged in all the tables using the following abbreviations:

BAN	Bangladesh
BHU	Bhutan
BRU	Brunei Darussalam
CAM	Cambodia
PRC	People's Republic of China
FIJ	Fiji Islands
HKG	Hong Kong, China
IND	India
INO	Indonesia
IRN	Islamic Republic of Iran
LAO	Lao People's Democratic Republic
MAC	Macao, China
MAL	Malaysia
MLD	Maldives
MON	Mongolia
NEP	Nepal
PAK	Pakistan
PHI	Philippines
SIN	Singapore
SRI	Sri Lanka
TAP	Taipei,China
THA	Thailand
VIE	Viet Nam

Table 23. Gross Domestic Product, 2005
(billion local currency units)

EXPENDITURE CATEGORY/ECONOMY	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**3934**	**36.91**	**15.86**	**25693**	**18387**	**5.07**	**1383**	**34339**
Actual Final Consumption Expenditure[a]	**3056**	**19.53**	**4.54**	**22093**	**7903**	**4.21**	**854**	**21768**
Food and Nonalcoholic Beverages	1525	6.74	0.83	10427	1906	1.10	76.0	7332
Bread and Cereals	675	2.79	0.17	3489	295	0.15	7.19	1412
Meat and Fish	293	0.70	0.27	2907	680	0.31	37.1	708
Fruits and Vegetables	206	0.92	0.13	1425	445	0.18	8.78	2127
Other Food and Nonalcoholic Beverages	351	2.34	0.26	2606	487	0.47	22.9	3085
Clothing and Footwear: of which	177	1.25	0.20	403	498	0.10	84.3	1134
Clothing	156	1.00	0.17	209	381	0.05	72.8	1024
Housing, Water, Electricity, Gas and Other Fuels	531	3.24	0.55	2772	1158	1.09	152	2641
Health and Education	284	3.69	0.96	3014	1265	0.54	137	2837
Health	112	2.53	0.24	1689	491	0.23	72.5	1593
Education	173	1.17	0.72	1326	774	0.31	64.9	1243
Transportation and Communication: of which	139	0.45	0.93	1650	648	0.34	79.4	3665
Transportation	125	0.37	0.69	1595	318	0.32	54.2	3335
Recreation and Culture	24	0.66	0.35	535	368	0.21	97.9	416
Restaurants and Hotels	68	0.01	0.23	1051	414	0.12	78.5	405
Other Consumption Expenditure Items	308	3.48	0.48	2241	1647	0.71	148	3338
Collective Consumption Expenditure by General Government	154	3.69	2.28	970	1642	0.40	72	2387
Gross Fixed Capital Formation: of which	**984**	**19.66**	**1.89**	**3003**	**7629**	**1.29**	**289**	**9787**
Machinery and Equipment	**246**	**4.99**	**0.57**	**1461**	**2114**	**0.62**	**150**	**4481**
Construction	725	14.30	1.19	1509	5072	0.49	126	5072
Change in Inventories and Net Acquisitions of Valuables	-	0.10	0.00	140	206	0.06	-5	1432
Balance of Exports and Imports	**-259**	**-6.06**	**7.15**	**-513**	**1007**	**-0.89**	**172**	**-1034**
Household Final Consumption Expenditure	2987	15.02	3.75	20866	6983	3.84	805	20198
Government Final Consumption Expenditure	222	8.20	3.07	2197	2562	0.77	121	3956
Actual Final Consumption Expenditure[a]	**3056**	**19.53**	**4.54**	**22093**	**7903**	**4.21**	**854**	**21768**
All Goods	2254	12.13	1.97	15153	4106	2.06	334	**13332**
Nondurables	1889	8.57	0.99	12699	2802	1.59	113	9716
Semidurables	246	2.82	0.54	1230	731	0.30	120	2888
Durables	**118**	**0.74**	**0.44**	**1223**	**573**	**0.18**	**100**	**728**
Services	**790**	**5.43**	**2.38**	**6632**	**3257**	**2.10**	**511**	**7920**
Exchange Rate (LCU/HKG)	8.27	5.67	0.21	526	1.05	0.22	1.00	5.67
Population (Million)	136.99	0.63	0.37	13.83	1303.72	0.84	6.81	1101.32

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 23. Gross Domestic Product, 2005 *(continued)*
(billion local currency units)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE
2784960	**1964745**	**30594**	**93.0**	**519**	**9.60**	**2810**	**620**	**7047**	**5438**	**194.2**	**2408**	**11421**	**7088**	**839211**
1872506	**1095433**	**19254**	**28.6**	**266**	**5.16**	**1750**	**525**	**5614**	**3959**	**87.2**	**1837**	**7544**	**4473**	**527461**
779045	256199	9116	3.79	46.0	1.18	628	256	2738	1738	7.17	669	1118	710	165305
187649	51925	3729	0.63	8.9	0.21	131	135	574	568	0.94	175	265	113	55201
138799	63594	3298	1.45	13.8	0.20	256	24	456	606	2.46	100	318	137	63081
172630	62085	1336	0.91	11.9	0.33	53	30	558	243	1.13	216	280	200	20917
279967	78595	753	0.80	11.4	0.44	187	67	1150	321	2.64	178	256	260	26106
66501	68308	336	1.40	5.9	0.18	189	33	421	85	3.09	168	274	311	18695
51963	53621	271	1.19	5.1	0.15	120	26	317	61	2.68	158	218	283	15626
378251	268642	2382	3.98	46.5	1.53	294	73	768	552	12.4	138	1141	321	79929
160618	176007	1912	4.70	36.9	1.21	274	70	661	493	14.3	115	1448	771	91502
56466	92286	595	2.32	12.9	0.49	92	46	406	135	7.36	62	631	372	42884
104152	83721	1316	2.39	24.0	0.72	182	24	254	358	6.97	54	817	399	48617
156342	128108	2114	4.10	47.6	0.34	143	22	400	375	16.5	326	1004	712	55085
122061	101271	2029	2.49	33.7	0.18	110	21	291	218	14.5	308	765	653	50536
32111	39329	573	4.38	11.0	0.18	57	5	151	43	10.6	68	627	264	25301
115485	16968	572	3.50	20.3	0.06	10	13	39	124	6.6	31	574	665	35561
184154	141873	2250	2.72	52.0	0.47	154	54	438	548	16.6	321	1359	720	56084
137711	124961	3559	4.96	31.5	1.27	141	36	420	336	13.9	145	974	500	51102
649145	**422520**	**10178**	**24.8**	**107**	**5.13**	**844**	**122**	**1333**	**783**	**42.8**	**571**	**2403**	**2030**	**272902**
111838	**256880**	**3331**	**5.77**	**66**	**1.76**	**417**	**16**	**570**	**352**	**23.4**	**230**	**1249**	**1388**	**88740**
518658	152831	4776	18.6	38	2.01	247	79	661	366	18.5	328	949	631	161281
7585	218311	568	0.65	-2	0.00	183	41	111	586	-6.29	73	33	177	22460
118012	**103520**	**-2964**	**33.99**	**117**	**-1.97**	**-109**	**-104**	**-430**	**-227**	**56.6**	**-219**	**467**	**-93**	**-34714**
1788138	989396	18194	25.15	233	4.30	1547	507	5367	3773	80	1674	7020	4003	486989
222079	230999	4619	8.40	64	2.13	344	55	667	522	21	308	1497	970	91574
1872506	**1095433**	**19254**	**28.59**	**266**	**5.16**	**1750**	**525**	**5614**	**3959**	**87.2**	**1837**	**7544**	**4473**	**527461**
1220972	553842	14986	10.25	116	2.39	1158	389	4223	2437	36.3	1258	3114	2465	317129
985062	328010	11915	5.55	64	1.69	799	324	3425	2076	12.8	900	1595	1247	228833
169200	116159	1386	2.90	27	0.40	275	44	617	289	8.2	221	796	783	37813
66710	**109673**	**1685**	**1.80**	**26**	**0.30**	**83**	**22**	**181**	**71**	**15.3**	**137**	**723**	**435**	**50483**
633679	**507180**	**4136**	**16.93**	**142**	**2.66**	**544**	**133**	**1195**	**1508**	**48.2**	**503**	**4219**	**1978**	**196087**
1248	1153	1370	1.03	0.49	1.65	155	9.18	7.65	7.08	0.21	12.9	4.14	5.17	2039
218.87	68.70	5.65	0.47	26.13	0.29	2.55	25.34	153.96	85.26	4.34	19.67	22.65	64.76	83.12

Table 24. Purchasing Power Parities, 2005
(Hong Kong, China = 1.00)

EXPENDITURE CATEGORY/ECONOMY	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**3.98**	**2.77**	**0.16**	**225**	**0.61**	**0.25**	**1.00**	**2.58**
Actual Final Consumption Expenditure[a]	**3.46**	**2.49**	**0.15**	**207**	**0.54**	**0.21**	**1.00**	**2.13**
Food and Nonalcoholic Beverages	3.89	2.88	0.17	261	0.63	0.20	1.00	2.40
Bread and Cereals	3.87	2.78	0.14	200	0.60	0.17	1.00	2.38
Meat and Fish	4.12	2.78	0.19	330	0.64	0.22	1.00	2.54
Fruits and Vegetables	2.57	2.53	0.20	244	0.56	0.19	1.00	1.84
Other Food and Nonalcoholic Beverages	4.23	2.84	0.15	274	0.67	0.20	1.00	2.54
Clothing and Footwear: of which	4.99	3.58	0.22	303	1.12	0.20	1.00	2.73
Clothing	5.16	3.54	0.23	320	1.15	0.18	1.00	2.79
Housing, Water, Electricity, Gas and Other Fuels	2.55	1.57	0.13	187	0.37	0.27	1.00	1.35
Health and Education	1.77	1.39	0.12	69.3	0.29	0.13	1.00	0.93
Health	2.22	1.50	0.13	95.9	0.23	0.14	1.00	1.02
Education	1.45	1.26	0.10	49.0	0.31	0.11	1.00	0.89
Transportation and Communication: of which	5.24	3.42	0.13	275	0.57	0.21	1.00	3.28
Transportation	5.44	3.37	0.12	264	0.64	0.22	1.00	3.45
Recreation and Culture	5.99	4.32	0.22	297	0.66	0.29	1.00	3.51
Restaurants and Hotels	4.86	3.53	0.17	277	0.75	0.29	1.00	3.00
Other Consumption Expenditure Items	3.68	2.99	0.16	235	0.69	0.20	1.00	2.92
Collective Consumption Expenditure by General Government	4.10	1.94	0.12	100	0.44	0.19	1.00	2.71
Gross Fixed Capital Formation: of which	**4.95**	**3.53**	**0.21**	**289**	**0.73**	**0.27**	**1.00**	**3.48**
Machinery and Equipment	**8.85**	**7.39**	**0.25**	**520**	**1.16**	**0.30**	**1.00**	**4.85**
Construction	3.02	1.96	0.16	164	0.47	0.24	1.00	2.46
Change in Inventories and Net Acquisitions of Valuables	4.64	3.32	0.19	298	0.70	0.24	1.00	3.03
Balance of Exports and Imports	**8.27**	**5.67**	**0.21**	**526**	**1.05**	**0.22**	**1.00**	**5.67**
Household Final Consumption Expenditure	3.52	2.55	0.15	223	0.56	0.21	1.00	2.16
Government Final Consumption Expenditure	3.54	1.89	0.12	93.7	0.39	0.19	1.00	2.27
Actual Final Consumption Expenditure[a]	**3.46**	**2.49**	**0.15**	**207**	**0.54**	**0.21**	**1.00**	**2.13**
All Goods	4.47	3.18	0.17	300	0.68	0.22	1.00	2.78
Nondurables	3.62	2.51	0.17	256	0.54	0.19	1.00	2.18
Semidurables	5.07	3.95	0.16	349	0.96	0.20	1.00	3.45
Durables	**8.03**	**4.92**	**0.19**	**391**	**0.89**	**0.33**	**1.00**	**4.90**
Services	**2.67**	**1.99**	**0.13**	**132**	**0.44**	**0.21**	**1.00**	**1.65**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 24. Purchasing Power Parities, 2005 *(continued)*
(Hong Kong, China = 1.00)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE
692	**470**	**525**	**0.93**	**0.30**	**1.43**	**73.4**	**3.98**	**3.36**	**3.82**	**0.19**	**6.18**	**3.40**	**2.80**	**829**
571	**374**	**480**	**0.90**	**0.29**	**1.25**	**66.3**	**3.57**	**2.79**	**3.31**	**0.20**	**5.35**	**3.09**	**2.41**	**759**
660	643	681	0.94	0.31	1.28	79.1	3.87	3.79	3.81	0.20	6.80	3.96	2.85	947
652	769	553	0.98	0.29	1.12	81.0	3.49	3.23	3.24	0.19	5.76	3.97	2.62	834
697	787	801	0.96	0.31	1.05	67.7	4.09	4.33	3.84	0.25	7.87	4.10	2.88	1204
486	472	577	0.91	0.35	1.86	108.1	3.15	3.08	4.55	0.19	6.32	4.14	2.76	693
708	490	758	0.84	0.28	1.11	84.6	4.04	3.96	3.77	0.17	6.60	3.30	2.84	933
631	538	751	1.01	0.37	1.51	102.2	4.60	3.80	4.60	0.26	5.77	3.52	3.45	1121
669	589	787	1.05	0.37	1.58	97.4	4.78	4.01	4.86	0.27	5.80	3.65	3.65	1116
456	265	209	0.74	0.27	2.22	60.7	2.81	1.33	2.48	0.18	2.30	2.71	1.24	591
349	257	163	0.75	0.20	0.47	24.1	1.68	1.34	2.19	0.18	2.62	2.22	1.60	259
607	215	217	0.77	0.22	0.60	29.2	1.93	1.74	3.11	0.19	3.14	1.97	1.88	378
220	296	124	0.71	0.17	0.36	19.2	1.48	1.02	1.60	0.16	2.13	2.33	1.34	178
698	206	888	0.90	0.27	1.23	82.4	6.47	3.42	4.06	0.20	7.09	2.84	2.73	1406
642	331	878	0.84	0.26	1.41	82.1	6.78	3.67	3.68	0.21	7.07	3.02	2.66	1509
783	674	774	1.12	0.36	1.56	112.9	5.22	4.39	5.10	0.22	9.40	3.46	3.74	1138
564	631	664	0.98	0.33	1.45	115.4	5.00	4.41	3.43	0.19	7.45	2.84	2.61	909
622	427	631	0.94	0.33	1.14	85.0	4.51	3.49	3.24	0.24	7.47	3.36	3.03	981
729	352	269	1.11	0.22	0.84	40.0	3.93	2.94	3.74	0.17	4.28	2.92	3.08	486
938	**729**	**740**	**1.21**	**0.33**	**1.74**	**90.9**	**4.93**	**5.10**	**4.75**	**0.19**	**8.66**	**3.91**	**3.31**	**1016**
1453	**1105**	**1338**	**1.12**	**0.49**	**1.68**	**174.5**	**8.20**	**8.29**	**7.56**	**0.23**	**13.39**	**4.40**	**5.11**	**2065**
615	474	426	1.03	0.22	1.66	45.2	3.10	3.17	3.00	0.15	5.64	3.44	2.10	548
794	544	707	1.11	0.33	1.55	91.2	4.68	4.30	4.47	0.21	7.85	3.68	3.28	1066
1248	**1153**	**1370**	**1.03**	**0.49**	**1.65**	**155.0**	**9.18**	**7.65**	**7.08**	**0.21**	**12.92**	**4.14**	**5.17**	**2039**
579	**375**	**517**	**0.89**	**0.29**	**1.35**	**72.2**	**3.66**	**2.86**	**3.34**	**0.20**	**5.53**	**3.13**	**2.41**	**818**
616	353	242	1.00	0.22	0.78	35.1	3.41	2.50	3.40	0.17	3.97	2.76	2.66	414
571	**374**	**480**	**0.90**	**0.29**	**1.25**	**66.3**	**3.57**	**2.79**	**3.31**	**0.20**	**5.35**	**3.09**	**2.41**	**759**
726	451	698	1.01	0.33	1.47	91.2	4.64	4.00	4.36	0.23	7.51	3.51	3.28	1154
630	353	552	0.94	0.30	1.27	74.4	3.66	3.38	3.76	0.22	6.32	3.34	2.74	889
633	465	868	1.04	0.28	1.34	104.3	5.27	4.12	4.47	0.23	6.55	3.34	3.48	1228
1163	**875**	**1349**	**1.05**	**0.50**	**2.21**	**142.5**	**9.96**	**5.83**	**5.57**	**0.29**	**14.30**	**3.72**	**4.70**	**2565**
456	**314**	**286**	**0.80**	**0.25**	**1.15**	**46.5**	**2.82**	**1.71**	**2.48**	**0.18**	**3.50**	**2.75**	**1.74**	**479**

Table 25. Real Expenditures,[a] 2005
(billion Hong Kong dollars)

EXPENDITURE CATEGORY/ECONOMY	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**988**	**13.3**	**99.92**	**114**	**30334**	**20.17**	**1383**	**13315**
Actual Final Consumption Expenditure[b]	**884**	**7.83**	**30.25**	**107**	**14587**	**19.92**	**854**	**10235**
Food and Nonalcoholic Beverages	392	2.34	4.91	39.9	3045	5.47	76.0	3058
Bread and Cereals	175	1.00	1.17	17.5	492	0.85	7.19	594
Meat and Fish	71	0.25	1.42	8.80	1070	1.45	37.1	279
Fruits and Vegetables	80	0.36	0.67	5.85	799	0.92	8.78	1155
Other Food and Nonalcoholic Beverages	83	0.82	1.77	9.5	723	2.34	22.9	1214
Clothing and Footwear: of which	35	0.35	0.91	1.33	443	0.50	84.3	415
Clothing	30	0.28	0.77	0.65	332	0.30	72.8	367
Housing, Water, Electricity, Gas and Other Fuels	208	2.06	4.23	14.8	3131	3.98	152	1949
Health and Education	160	2.66	8.19	43.5	4431	4.29	137	3039
Health	50	1.69	1.81	17.6	2100	1.68	72.5	1558
Education	119	0.93	7.42	27.0	2474	2.74	64.9	1396
Transportation and Communication: of which	27	0.13	7.21	5.99	1143	1.64	79.4	1118
Transportation	23	0.11	5.85	6.04	501	1.45	54.2	966
Recreation and Culture	4	0.15	1.59	1.80	557	0.72	97.9	118
Restaurants and Hotels	14	0.00	1.38	3.79	548	0.42	78.5	135
Other Consumption Expenditure Items	84	1.16	2.94	9.54	2390	3.49	148	1143
Collective Consumption Expenditure by General Government	38	1.91	18.81	9.74	3701	2.09	72.3	880
Gross Fixed Capital Formation: of which	**199**	**5.57**	**9.20**	**10.39**	**10516**	**4.71**	**289**	**2813**
Machinery and Equipment	**28**	**0.68**	**2.31**	**2.81**	**1826**	**2.05**	**150**	**924**
Construction	240	7.31	7.54	9.21	10889	2.00	126	2062
Change in Inventories and Net Acquisitions of Valuables	-	0.03	0.01	0.47	295	0.23	-4.76	473
Balance of Exports and Imports	**-31**	**-1.07**	**33.42**	**-0.98**	**956**	**-4.09**	**172**	**-182**
Household Final Consumption Expenditure	**848**	**5.89**	**25.11**	**93.5**	**12364**	**17.95**	**805**	**9368**
Government Final Consumption Expenditure	63	4.34	24.82	23.5	6513	4.12	121	1744
Actual Final Consumption Expenditure[b]	**884**	**7.83**	**30.3**	**107**	**14587**	**19.9**	**854**	**10235**
All Goods	504	3.81	11.4	50.5	6074	9.24	334	4800
Nondurables	522	3.41	5.93	49.6	5158	8.18	113	4449
Semidurables	49	0.71	3.27	3.53	760	1.49	120	837
Durables	**15**	**0.15**	**2.31**	**3.13**	**644**	**0.54**	**100**	**149**
Services	**296**	**2.73**	**18.2**	**50.3**	**7462**	**9.96**	**511**	**4810**

a Real refers to purchasing power parity adjusted values.
b Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 25. Real Expenditures,[a] 2005 *(continued)*
(billion Hong Kong dollars)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE
4026	**4178**	**58.2**	**100.3**	**1704**	**6.71**	**38.3**	**156**	**2098**	**1422**	**1024**	**389**	**3359**	**2530**	**1013**
3277	**2931**	**40.1**	**31.8**	**929**	**4.13**	**26.4**	**147**	**2015**	**1198**	**432**	**343**	**2444**	**1857**	**695**
1180	399	13.4	4.01	146.7	0.92	7.94	66.2	722	456	36	98.4	282	249	174
288	68	6.74	0.64	30.5	0.19	1.62	38.6	178	175	5	30.3	66.7	43.1	66.2
199	81	4.12	1.51	45.0	0.19	3.79	5.93	105	158	10	12.7	77.5	47.5	52.4
355	131	2.31	0.99	33.7	0.18	0.49	9.54	181	53.5	6	34.2	67.6	72.5	30.2
395	160	0.99	0.95	39.9	0.40	2.20	16.5	290	85.1	16	27.0	77.4	91.5	28.0
105	127	0.45	1.39	16.1	0.12	1.85	7.08	111	18.6	12	29.2	77.9	90.2	16.7
78	91	0.34	1.13	13.7	0.10	1.23	5.53	79.1	12.6	10	27.2	59.9	77.5	14.0
830	1012	11.4	5.38	172.4	0.69	4.85	25.9	575	223	69	60.0	420	259	135
461	685	11.7	6.23	189.3	2.59	11.4	41.7	492	226	81	44.0	653	482	353
93.0	429	2.74	3.00	58.6	0.81	3.15	24.1	233	43.4	39	19.6	320	198	113
473	283	10.6	3.36	144.5	2.02	9.47	16.2	249	224	45	25.2	350	298	273
224	622	2.38	4.58	176.5	0.27	1.74	3.44	117	92.4	84	45.9	353	261	39.2
190	306	2.31	2.97	132.0	0.12	1.34	3.05	79.2	59.2	68	43.5	253	246	33.5
41.0	58	0.74	3.90	30.3	0.12	0.51	1.02	34.4	8.48	48	7.27	181	70.6	22.2
205	27	0.86	3.58	62.2	0.04	0.08	2.52	8.75	36.2	35	4.16	202	255	39.1
296	332	3.57	2.91	157.0	0.42	1.81	11.9	126	169	68	43.0	405	238	57.2
189	355	13.2	4.46	145.2	1.52	3.54	9.16	143	89.7	83	33.8	334	162	105
692	**580**	**13.75**	**20.5**	**325**	**2.96**	**9.29**	**24.7**	**261**	**165**	**229**	**65.9**	**614**	**613**	**269**
77	**233**	**2.49**	**5.17**	**135**	**1.05**	**2.39**	**1.96**	**69**	**47**	**100**	**17.1**	**284**	**272**	**43**
844	322	11.20	18.0	174	1.21	5.48	25.5	209	122.0	123	58.1	276	301	294
9.55	401	0.80	0.58	-6	-	2.01	8.68	25.8	131.1	-30	9.36	9.03	53.8	21.1
94.6	**90**	**-2.16**	**33.0**	**239**	**-1.20**	**-0.70**	**-11.3**	**-56.3**	**-32.0**	**264**	**-17.0**	**113**	**-17.9**	**-17.0**
3086	**2637**	**35.2**	**28.3**	**798**	**3.20**	**21.4**	**139**	**1875**	**1129**	**397**	**303**	**2244**	**1659**	**595**
361	655	19.1	8.39	293	2.74	9.8	16.1	267	153	119	77.5	543	364	221
3277	**2931**	**40.1**	**31.8**	**929**	**4.13**	**26.4**	**147**	**2015**	**1198**	**432**	**343**	**2444**	**1857**	**695**
1683	1227	21.5	10.13	349	1.63	12.7	83.9	1056	559	156	167	888	752	275
1565	929	21.6	5.92	212	1.33	10.7	88.4	1015	552	59	142	477	456	258
267	250	1.60	2.80	95.0	0.30	2.64	8.29	150	64.7	36	33.7	238	225	30.8
57.4	**125**	**1.25**	**1.71**	**50.9**	**0.14**	**0.58**	**2.17**	**31.00**	**12.8**	**54**	**9.57**	**194**	**92.7**	**19.7**
1389	**1616**	**14.5**	**21.3**	**571**	**2.31**	**11.7**	**47.0**	**699**	**609**	**273**	**144**	**1535**	**1135**	**409**

Table 26. Per Capita Real Expenditures,[a] 2005
(Hong Kong dollars)

EXPENDITURE CATEGORY/ECONOMY	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**7215**	**21009**	**269971**	**8266**	**23267**	**23938**	**202941**	**12090**
Actual Final Consumption Expenditure[b]	**6456**	**12328**	**81740**	**7713**	**11189**	**23648**	**125303**	**9293**
Food and Nonalcoholic Beverages	2863	3687	13256	2885	2336	6495	11158	2777
Bread and Cereals	1275	1577	3161	1264	378	1012	1055	539
Meat and Fish	518	395	3832	637	821	1715	5448	253
Fruits and Vegetables	587	573	1797	423	613	1092	1288	1049
Other Food and Nonalcoholic Beverages	605	1297	4791	688	554	2778	3367	1102
Clothing and Footwear: of which	258	550	2450	96	340	598	12368	377
Clothing	221	445	2073	47	255	355	10684	333
Housing, Water, Electricity, Gas and Other Fuels	1518	3243	11435	1071	2402	4729	22289	1770
Health and Education	1171	4194	22133	3145	3398	5087	20175	2759
Health	367	2663	4895	1273	1611	1989	10647	1414
Education	867	1457	20037	1955	1898	3254	9528	1268
Transportation and Communication: of which	194	207	19477	433	877	1941	11647	1015
Transportation	168	173	15815	437	384	1725	7954	877
Recreation and Culture	29	241	4288	130	427	859	14371	108
Restaurants and Hotels	102	6	3729	274	420	494	11521	123
Other Consumption Expenditure Items	611	1832	7941	690	1833	4146	21775	1037
Collective Consumption Expenditure by General Government	274	3003	50818	704	2839	2477	10609	799
Gross Fixed Capital Formation: of which	**1450**	**8774**	**24846**	**751**	**8066**	**5593**	**42450**	**2554**
Machinery and Equipment	**203**	**1063**	**6236**	**203**	**1401**	**2437**	**21963**	**839**
Construction	1750	11509	20376	666	8352	2370	18472	1873
Change in Inventories and Net Acquisitions of Valuables	-	49	29	34	227	274	-699	430
Balance of Exports and Imports	**-229**	**-1684**	**90295**	**-71**	**733**	**-4855**	**25277**	**-166**
Household Final Consumption Expenditure	**6189**	**9269**	**67853**	**6760**	**9484**	**21310**	**118091**	**8506**
Government Final Consumption Expenditure	458	6833	67052	1697	4996	4896	17821	1584
Actual Final Consumption Expenditure[b]	**6456**	**12328**	**81740**	**7713**	**11189**	**23648**	**125303**	**9293**
All Goods	3677	6002	30913	3650	4659	10965	48968	4358
Nondurables	3807	5374	16012	3587	3957	9704	16594	4040
Semidurables	354	1125	8849	255	583	1764	17658	760
Durables	**108**	**238**	**6230**	**226**	**494**	**636**	**14716**	**135**
Services	**2163**	**4293**	**49073**	**3635**	**5724**	**11826**	**75050**	**4368**

a Real refers to purchasing power parity adjusted values.
b Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 26. Per Capita Real Expenditures,[a] 2005 *(continued)*
(Hong Kong dollars)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE	Ave
18396	**60815**	**10303**	**211907**	**65217**	**22845.38**	**15035**	**6146**	**13628**	**16675**	**235923**	**19798**	**148275**	**39070**	**12185**	**20432**
14970	**42671**	**7101**	**67160**	**35544**	**14061**	**10360**	**5806**	**13087**	**14049**	**99393**	**17464**	**107878**	**28679**	**8362**	**12878**
5394	5803	2370	8479	5615	3146	3117	2612	4687	5348	8189	5003	12447	3843	2099	3126
1315	983	1192	1357	1166	643	637	1523	1155	2056	1119	1543	2944	666	796	683
910	1177	728	3183	1723	656	1488	234	685	1852	2305	644	3423	733	630	679
1623	1913	410	2100	1292	609	194	376	1175	627	1370	1740	2986	1120	363	905
1806	2336	176	2009	1529	1346	865	653	1884	998	3581	1374	3416	1412	336	983
482	1850	79	2936	615	412	726	279	719	218	2716	1486	3440	1393	201	477
355	1324	61	2383	526	330	483	218	514	148	2294	1381	2643	1197	168	381
3793	14730	2013	11353	6598	2351	1902	1020	3738	2615	15834	3050	18553	4006	1628	2770
2105	9978	2078	13162	7244	8807	4460	1647	3197	2646	18709	2239	28808	7448	4243	3456
425	6246	484	6339	2242	2746	1236	949	1517	509	8921	998	14128	3058	1364	1609
2160	4119	1877	7103	5531	6866	3715	637	1618	2623	10296	1281	15460	4601	3290	1942
1023	9060	421	9668	6755	930	683	136	758	1083	19408	2335	15598	4024	471	1318
869	4456	409	6279	5053	425	528	120	515	694	15595	2214	11180	3794	403	890
187	850	131	8227	1160	395	200	40	223	99	11072	370	8011	1090	267	385
935	391	152	7558	2381	133	33	99	57	425	8068	212	8920	3931	471	497
1353	4836	631	6149	6008	1415	712	470	815	1982	15699	2186	17871	3673	688	1701
863	5161	2341	9422	5556	5187	1388	361	927	1052	19075	1721	14726	2504	1265	1911
3161	**8440**	**2432**	**43404**	**12427**	**10068.92**	**3647**	**974**	**1698**	**1934**	**52776**	**3352**	**27127**	**9461**	**3232**	**5299**
352	**3385**	**440**	**10921**	**5152**	**3569.55**	**937**	**77**	**447**	**546**	**23100**	**872**	**12527**	**4194**	**517**	**1262**
3854	4688	1982	37926	6661	4125.80	2149	1005	1355	1431	28283	2954	12171	4642	3540	4819
44	5842	142	1227	-216	0	788	343	168	1538	-6920	476	398	831	253	419
432	**1307**	**-383**	**69688**	**9161**	**-4082**	**-276**	**-445**	**-365**	**-375**	**60885**	**-862**	**4989**	**-277**	**-205**	**484**
14100	**38386**	**6226**	**59769**	**30561**	**10884**	**8407**	**5465**	**12178**	**13243**	**91436**	**15384**	**99072**	**25609**	**7161**	**11498**
1648	9530	3377	17715	11222	9319	3853	635	1732	1800	27406	3942	23972	5624	2658	3469
14970	**42671**	**7101**	**67160**	**35544**	**14061**	**10360**	**5806**	**13087**	**14049**	**99393**	**17464**	**107878**	**28679**	**8362**	**12878**
7688	17862	3798	21386	13372	5533	4985	3311	6856	6555	35896	8512	39191	11615	3305	5686
7149	13527	3816	12508	8128	4532	4215	3489	6590	6476	13537	7237	21058	7036	3098	4812
1222	3638	283	5910	3638	1024	1037	327	974	759	8208	1716	10513	3474	370	951
262	**1824**	**221**	**3604**	**1949**	**460**	**229**	**86**	**201**	**151**	**12362**	**487**	**8584**	**1431**	**237**	**468**
6346	**23518**	**2562**	**44931**	**21849**	**7859**	**4592**	**1855**	**4542**	**7140**	**62970**	**7315**	**67765**	**17520**	**4921**	**6466**

Table 27. Price Level Indexes, 2005
(Hong Kong, China = 100)

EXPENDITURE CATEGORY/ECONOMY	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**48**	**49**	**74**	**43**	**58**	**116**	**100**	**45**
Actual Final Consumption Expenditure[a]	**42**	**44**	**70**	**39**	**51**	**97**	**100**	**38**
Food and Nonalcoholic Beverages	47	51	79	50	59	93	100	42
Bread and Cereals	47	49	67	38	57	79	100	42
Meat and Fish	50	49	88	63	60	100	100	45
Fruits and Vegetables	31	45	95	46	53	89	100	32
Other Food and Nonalcoholic Beverages	51	50	69	52	64	92	100	45
Clothing and Footwear: of which	60	63	103	58	107	90	100	48
Clothing	62	62	105	61	109	83	100	49
Housing, Water, Electricity, Gas and Other Fuels	31	28	61	36	35	125	100	24
Health and Education	21	24	55	13	27	58	100	16
Health	27	26	62	18	22	64	100	18
Education	18	22	46	9	30	52	100	16
Transportation and Communication: of which	63	60	61	52	54	95	100	58
Transportation	66	59	55	50	60	101	100	61
Recreation and Culture	72	76	103	57	63	132	100	62
Restaurants and Hotels	59	62	78	53	72	132	100	53
Other Consumption Expenditure Items	45	53	76	45	65	94	100	52
Collective Consumption Expenditure by General Government	50	34	57	19	42	89	100	48
Gross Fixed Capital Formation: of which	**60**	**62**	**96**	**55**	**69**	**126**	**100**	**61**
Machinery and Equipment	**107**	**130**	**115**	**99**	**110**	**140**	**100**	**86**
Construction	37	35	74	31	44	112	100	43
Change in Inventories and Net Acquisitions of Valuables	56	59	87	57	66	111	100	53
Balance of Exports and Imports	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Household Final Consumption Expenditure	**43**	**45**	**70**	**42**	**54**	**98**	**100**	**38**
Government Final Consumption Expenditure	43	33	58	18	37	86	100	40
Actual Final Consumption Expenditure[a]	**42**	**44**	**70**	**39**	**51**	**97**	**100**	**38**
All Goods	54	56	81	57	64	103	100	49
Nondurables	44	44	78	49	52	89	100	39
Semidurables	61	70	77	66	91	93	100	61
Durables	**97**	**87**	**90**	**74**	**84**	**153**	**100**	**86**
Services	**32**	**35**	**61**	**25**	**41**	**97**	**100**	**29**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 27. Price Level Indexes, 2005 *(continued)*
(Hong Kong, China = 100)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE
55	**41**	**38**	**90**	**63**	**87**	**47**	**43**	**44**	**54**	**89**	**48**	**82**	**54**	**41**
46	**32**	**35**	**87**	**59**	**76**	**43**	**39**	**36**	**47**	**94**	**41**	**75**	**47**	**37**
53	56	50	92	64	78	51	42	50	54	94	53	96	55	46
52	67	40	95	60	68	52	38	42	46	90	45	96	51	41
56	68	58	93	63	64	44	45	57	54	115	61	99	56	59
39	41	42	89	72	113	70	34	40	64	89	49	100	53	34
57	42	55	82	58	67	55	44	52	53	79	51	80	55	46
51	47	55	98	75	92	66	50	50	65	122	45	85	67	55
54	51	57	102	77	96	63	52	52	69	126	45	88	71	55
37	23	15	72	55	135	39	31	17	35	84	18	66	24	29
28	22	12	73	40	28	16	18	18	31	82	20	54	31	13
49	19	16	75	45	37	19	21	23	44	89	24	48	36	19
18	26	9	69	34	22	12	16	13	23	73	16	56	26	9
56	18	65	87	55	75	53	71	45	57	92	55	69	53	69
51	29	64	81	52	85	53	74	48	52	100	55	73	51	74
63	58	57	109	74	95	73	57	57	72	103	73	84	72	56
45	55	48	95	67	88	74	55	58	48	88	58	69	50	45
50	37	46	91	68	69	55	49	46	46	114	58	81	59	48
58	31	20	108	45	51	26	43	38	53	78	33	71	60	24
75	**63**	**54**	**117**	**68**	**105**	**59**	**54**	**67**	**67**	**87**	**67**	**95**	**64**	**50**
116	**96**	**98**	**108**	**101**	**102**	**113**	**89**	**108**	**107**	**109**	**104**	**106**	**99**	**101**
49	41	31	100	45	101	29	34	41	42	70	44	83	41	27
64	47	52	108	68	94	59	51	56	63	98	61	89	63	52
100	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
46	**33**	**38**	**86**	**60**	**82**	**47**	**40**	**37**	**47**	**95**	**43**	**76**	**47**	**40**
49	31	18	97	45	47	23	37	33	48	81	31	67	52	20
46	**32**	**35**	**87**	**59**	**76**	**43**	**39**	**36**	**47**	**94**	**41**	**75**	**47**	**37**
58	39	51	98	68	89	59	51	52	62	109	58	85	63	57
50	31	40	91	62	77	48	40	44	53	101	49	81	53	44
51	40	63	101	58	81	67	57	54	63	108	51	81	67	60
93	**76**	**98**	**102**	**103**	**134**	**92**	**109**	**76**	**79**	**134**	**111**	**90**	**91**	**126**
37	**27**	**21**	**77**	**51**	**70**	**30**	**31**	**22**	**35**	**82**	**27**	**66**	**34**	**24**

Table 28. Per Capita Real Expenditure Indexes,[a] 2005
(regional average = 100)

EXPENDITURE CATEGORY/ECONOMY	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**35**	**103**	**1321**	**40**	**114**	**117**	**993**	**59**
Actual Final Consumption Expenditure[b]	**50**	**96**	**635**	**60**	**87**	**184**	**973**	**72**
Food and Nonalcoholic Beverages	92	118	424	92	75	208	357	89
Bread and Cereals	187	231	463	185	55	148	154	79
Meat and Fish	76	58	564	94	121	253	802	37
Fruits and Vegetables	65	63	198	47	68	121	142	116
Other Food and Nonalcoholic Beverages	62	132	488	70	56	283	343	112
Clothing and Footwear: of which	54	115	514	20	71	125	2594	79
Clothing	58	117	544	12	67	93	2805	87
Housing, Water, Electricity, Gas and Other Fuels	55	117	413	39	87	171	805	64
Health and Education	34	121	640	91	98	147	584	80
Health	23	165	304	79	100	124	662	88
Education	45	75	1032	101	98	168	491	65
Transportation and Communication: of which	15	16	1478	33	67	147	884	77
Transportation	19	19	1777	49	43	194	894	99
Recreation and Culture	7	63	1113	34	111	223	3729	28
Restaurants and Hotels	21	1	751	55	85	99	2320	25
Other Consumption Expenditure Items	36	108	467	41	108	244	1280	61
Collective Consumption Expenditure by General Government	14	157	2660	37	149	130	555	42
Gross Fixed Capital Formation: of which	**27**	**166**	**469**	**14**	**152**	**106**	**801**	**48**
Machinery and Equipment	**16**	**84**	**494**	**16**	**111**	**193**	**1740**	**66**
Construction	36	239	423	14	173	49	383	39
Change in Inventories and Net Acquisitions of Valuables	-	12	7	8	54	65	-167	103
Balance of Exports and Imports	**-47**	**-348**	**18651**	**-15**	**151**	**-1003**	**5221**	**-34**
Household Final Consumption Expenditure	**54**	**81**	**590**	**59**	**82**	**185**	**1027**	**74**
Government Final Consumption Expenditure	13	197	1933	49	144	141	514	46
Actual Final Consumption Expenditure[b]	**50**	**96**	**635**	**60**	**87**	**184**	**973**	**72**
All Goods	65	106	544	64	82	193	861	77
Nondurables	79	112	333	75	82	202	345	84
Semidurables	37	118	931	27	61	186	1857	80
Durables	**23**	**51**	**1330**	**48**	**106**	**136**	**3142**	**29**
Services	**33**	**66**	**759**	**56**	**89**	**183**	**1161**	**68**

a Real refers to purchasing power parity adjusted values.
b Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 28. Per Capita Real Expenditure Indexes,[a] 2005 *(continued)*
(regional average = 100)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE	Ave
90	**298**	**50**	**1037**	**319**	**112**	**74**	**30**	**67**	**82**	**1155**	**97**	**726**	**191**	**60**	**100**
116	**331**	**55**	**521**	**276**	**109**	**80**	**45**	**102**	**109**	**772**	**136**	**838**	**223**	**65**	**100**
173	186	76	271	180	101	100	84	150	171	262	160	398	123	67	100
192	144	174	199	171	94	93	223	169	301	164	226	431	97	116	100
134	173	107	469	254	97	219	34	101	273	339	95	504	108	93	100
179	211	45	232	143	67	21	42	130	69	151	192	330	124	40	100
184	238	18	204	156	137	88	66	192	102	364	140	348	144	34	100
101	388	17	616	129	86	152	59	151	46	570	312	722	292	42	100
93	348	16	625	138	87	127	57	135	39	602	363	694	314	44	100
137	532	73	410	238	85	69	37	135	94	572	110	670	145	59	100
61	289	60	381	210	255	129	48	93	77	541	65	833	215	123	100
26	388	30	394	139	171	77	59	94	32	554	62	878	190	85	100
111	212	97	366	285	354	191	33	83	135	530	66	796	237	169	100
78	687	32	734	513	71	52	10	58	82	1473	177	1184	305	36	100
98	501	46	706	568	48	59	14	58	78	1753	249	1257	426	45	100
49	220	34	2135	301	102	52	10	58	26	2873	96	2079	283	69	100
188	79	31	1522	479	27	7	20	11	86	1625	43	1796	792	95	100
80	284	37	361	353	83	42	28	48	117	923	129	1050	216	40	100
45	270	123	493	291	271	73	19	49	55	998	90	771	131	66	100
60	**159**	**46**	**819**	**235**	**190**	**69**	**18**	**32**	**36**	**996**	**63**	**512**	**179**	**61**	**100**
28	**268**	**35**	**865**	**408**	**283**	**74**	**6**	**35**	**43**	**1830**	**69**	**993**	**332**	**41**	**100**
80	97	41	787	138	86	45	21	28	30	587	61	253	96	73	100
10	1394	34	293	-52	0	188	82	40	367	-1652	114	95	198	60	100
89	**270**	**-79**	**14394**	**1892**	**-843**	**-57**	**-92**	**-75**	**-77**	**12576**	**-178**	**1031**	**-57**	**-42**	**100**
123	**334**	**54**	**520**	**266**	**95**	**73**	**48**	**106**	**115**	**795**	**134**	**862**	**223**	**62**	**100**
48	275	97	511	324	269	111	18	50	52	790	114	691	162	77	100
116	**331**	**55**	**521**	**276**	**109**	**80**	**45**	**102**	**109**	**772**	**136**	**838**	**223**	**65**	**100**
135	314	67	376	235	97	88	58	121	115	631	150	689	204	58	100
149	281	79	260	169	94	88	73	137	135	281	150	438	146	64	100
129	383	30	622	383	108	109	34	102	80	863	180	1106	365	39	100
56	**389**	**47**	**769**	**416**	**98**	**49**	**18**	**43**	**32**	**2639**	**104**	**1832**	**305**	**51**	**100**
98	**364**	**40**	**695**	**338**	**122**	**71**	**29**	**70**	**110**	**974**	**113**	**1048**	**271**	**76**	**100**

Table 29. Price Level Indexes, 2005
(Asia = 100)

EXPENDITURE CATEGORY/ECONOMY	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**86**	**88**	**133**	**77**	**103**	**208**	**180**	**82**
Actual Final Consumption Expenditure[a]	**88**	**92**	**147**	**83**	**108**	**204**	**210**	**79**
Food and Nonalcoholic Beverages	89	96	149	94	112	175	188	80
Bread and Cereals	93	98	134	76	113	159	200	84
Meat and Fish	84	82	149	105	101	167	168	75
Fruits and Vegetables	72	104	220	108	123	206	232	75
Other Food and Nonalcoholic Beverages	96	94	129	98	120	172	188	84
Clothing and Footwear: of which	84	88	144	81	149	126	140	67
Clothing	86	86	144	83	149	113	137	68
Housing, Water, Electricity, Gas and Other Fuels	93	84	184	108	106	379	302	72
Health and Education	82	93	210	50	103	221	381	63
Health	107	105	246	72	88	253	397	72
Education	68	86	177	36	115	201	387	61
Transportation and Communication: of which	120	114	115	99	102	179	190	110
Transportation	113	103	94	87	104	175	173	105
Recreation and Culture	103	108	145	80	89	188	142	88
Restaurants and Hotels	93	99	124	84	114	209	158	84
Other Consumption Expenditure Items	73	87	125	73	107	154	164	85
Collective Consumption Expenditure by General Government	109	75	124	41	92	195	219	105
Gross Fixed Capital Formation: of which	**87**	**90**	**140**	**80**	**100**	**184**	**145**	**89**
Machinery and Equipment	**105**	**128**	**113**	**97**	**108**	**137**	**98**	**84**
Construction	81	77	164	69	98	248	222	96
Change in Inventories and Net Acquisitions of Valuables	102	107	158	103	121	203	182	97
Balance of Exports and Imports	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Household Final Consumption Expenditure	**87**	**92**	**143**	**87**	**110**	**202**	**205**	**78**
Government Final Consumption Expenditure	106	82	143	44	92	211	247	99
Actual Final Consumption Expenditure[a]	**88**	**92**	**147**	**83**	**108**	**204**	**210**	**79**
All Goods	92	95	137	97	109	174	170	83
Nondurables	93	94	165	103	109	188	211	81
Semidurables	89	101	111	96	132	134	145	88
Durables	**109**	**97**	**101**	**83**	**95**	**171**	**112**	**97**
Services	**82**	**89**	**155**	**64**	**105**	**246**	**253**	**74**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 29. Price Level Indexes, 2005 *(continued)*
(Asia = 100)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE
100	**73**	**69**	**162**	**112**	**156**	**85**	**78**	**79**	**97**	**159**	**86**	**148**	**97**	**73**
96	**68**	**73**	**183**	**123**	**159**	**90**	**82**	**76**	**98**	**198**	**87**	**157**	**98**	**78**
100	105	94	173	121	147	96	79	93	101	177	99	181	104	88
104	133	81	191	120	136	104	76	84	91	181	89	192	101	82
94	115	98	157	106	107	73	75	95	91	193	102	166	94	99
91	95	98	206	168	262	162	80	94	149	206	114	233	124	79
107	80	104	153	110	127	102	83	97	100	149	96	150	103	86
71	65	77	137	105	128	92	70	69	91	171	62	119	93	77
74	70	79	140	105	132	86	71	72	94	172	62	121	97	75
110	70	46	218	167	408	118	93	53	106	254	54	198	72	88
106	85	45	279	153	108	59	70	67	118	314	77	204	118	48
193	74	63	298	180	146	75	83	90	174	353	96	189	144	74
68	99	35	267	132	85	48	63	52	88	282	64	218	100	34
106	34	123	165	105	142	101	134	85	109	174	104	130	100	131
89	50	111	140	91	148	91	128	83	90	172	94	126	89	128
89	83	80	155	105	135	103	81	81	102	146	103	118	102	79
72	87	77	151	106	140	118	86	91	77	139	91	109	80	71
82	61	76	149	112	114	90	81	75	75	186	95	133	96	79
128	67	43	237	98	111	57	94	84	116	172	73	155	131	52
109	**92**	**79**	**170**	**99**	**153**	**85**	**78**	**97**	**98**	**127**	**97**	**137**	**93**	**72**
114	**94**	**96**	**106**	**99**	**100**	**110**	**88**	**106**	**105**	**107**	**101**	**104**	**97**	**99**
109	91	69	223	100	224	65	75	92	94	156	97	184	90	60
116	86	94	197	124	172	107	93	102	115	178	111	162	116	95
100	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
95	**67**	**77**	**177**	**123**	**168**	**96**	**82**	**77**	**97**	**194**	**88**	**155**	**96**	**82**
122	75	44	240	111	117	56	92	81	118	200	76	164	127	50
96	**68**	**73**	**183**	**123**	**159**	**90**	**82**	**76**	**98**	**198**	**87**	**157**	**98**	**78**
99	66	86	167	116	151	100	86	89	104	185	99	144	107	96
107	65	85	192	130	163	101	84	93	112	214	103	171	112	92
73	58	92	146	83	118	97	83	78	91	156	73	117	97	87
104	85	110	115	116	150	103	122	85	88	150	124	101	102	141
93	**69**	**53**	**196**	**130**	**177**	**76**	**78**	**57**	**89**	**208**	**69**	**168**	**85**	**60**

Table 30. Shares in Gross Domestic Product within Each Economy (%), 2005

EXPENDITURE CATEGORY/ECONOMY	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Actual Final Consumption Expenditure[a]	**77.7**	**52.9**	**28.6**	**86.0**	**43.0**	**83.0**	**61.7**	**63.4**
Food and Nonalcoholic Beverages	38.8	18.3	5.25	40.6	10.4	21.78	5.5	21.4
Bread and Cereals	17.16	7.55	1.06	13.58	1.60	2.90	0.52	4.11
Meat and Fish	7.44	1.88	1.69	11.32	3.70	6.18	2.68	2.06
Fruits and Vegetables	5.24	2.49	0.85	5.55	2.42	3.49	0.63	6.19
Other Food and Nonalcoholic Beverages	8.92	6.35	1.65	10.14	2.65	9.21	1.66	8.99
Clothing and Footwear: of which	4.49	3.39	1.26	1.57	2.71	1.95	6.09	3.30
Clothing	3.98	2.71	1.09	0.81	2.07	1.06	5.26	2.98
Housing, Water, Electricity, Gas and Other Fuels	13.49	8.78	3.47	10.79	6.30	21.41	10.98	7.69
Health and Education	7.23	10.01	6.08	11.73	6.88	10.68	9.94	8.26
Health	2.84	6.85	1.51	6.57	2.67	4.57	5.25	4.64
Education	4.39	3.16	4.56	5.16	4.21	6.11	4.70	3.62
Transportation and Communication: of which	3.54	1.22	5.89	6.42	3.52	6.64	5.74	10.67
Transportation	3.17	1.00	4.32	6.21	1.73	6.32	3.92	9.71
Recreation and Culture	0.60	1.79	2.20	2.08	2.00	4.11	7.08	1.21
Restaurants and Hotels	1.73	0.04	1.45	4.09	2.25	2.36	5.68	1.18
Other Consumption Expenditure Items	7.83	9.42	3.01	8.72	8.96	14.06	10.73	9.72
Collective Consumption Expenditure by General Government	3.91	10.00	14.36	3.78	8.93	7.95	5.23	6.95
Gross Fixed Capital Formation: of which	**25.0**	**53.2**	**11.9**	**11.7**	**41.5**	**25.5**	**20.9**	**28.5**
Machinery and Equipment	**6.26**	**13.5**	**3.58**	**5.69**	**11.5**	**12.3**	**10.8**	**13.05**
Construction	18.4	38.7	7.52	5.87	27.58	9.57	9.1	14.8
Change in Inventories and Net Acquisitions of Valuables	-	0.28	0.01	0.54	1.12	1.10	-0.34	4.17
Balance of Exports and Imports	**-6.59**	**-16.4**	**45.1**	**-2.00**	**5.5**	**-17.5**	**12.46**	**-3.01**
Household Final Consumption Expenditure	**75.93**	**40.69**	**23.61**	**81.21**	**37.98**	**75.77**	**58.19**	**58.82**
Government Final Consumption Expenditure	5.65	22.22	19.35	8.55	13.93	15.16	8.78	11.52
Actual Final Consumption Expenditure[a]	**77.7**	**52.9**	**28.6**	**86.0**	**43.0**	**83.0**	**61.7**	**63.4**
All Goods	57.3	32.9	12.4	59.0	22.3	40.7	24.1	38.8
Nondurables	48.0	23.2	6.2	49.4	15.2	31.3	8.2	28.3
Semidurables	6.26	7.65	3.40	4.79	3.97	5.90	8.70	8.41
Durables	**3.01**	**2.02**	**2.80**	**4.76**	**3.12**	**3.51**	**7.25**	**2.12**
Services	**20.1**	**14.7**	**15.0**	**25.8**	**17.7**	**41.5**	**37.0**	**23.1**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 30. Shares in Gross Domestic Product within Each Economy (%), 2005 *(continued)*

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE
100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
67.2	**55.8**	**62.9**	**30.8**	**51.2**	**53.8**	**62.3**	**84.7**	**79.7**	**72.8**	**44.9**	**76.3**	**66.1**	**63.1**	**62.9**
28.0	13.0	29.80	4.08	8.8	12.3	22.3	41.3	38.9	32.0	3.69	27.8	9.79	10.0	19.7
6.74	2.64	12.19	0.68	1.71	2.21	4.68	21.73	8.14	10.45	0.48	7.26	2.32	1.60	6.58
4.98	3.24	10.78	1.56	2.66	2.10	9.13	3.91	6.48	11.15	1.27	4.14	2.78	1.93	7.52
6.20	3.16	4.37	0.98	2.29	3.46	1.90	4.85	7.92	4.47	0.58	8.98	2.45	2.83	2.49
10.05	4.00	2.46	0.86	2.19	4.57	6.64	10.77	16.32	5.90	1.36	7.41	2.24	3.66	3.11
2.39	3.48	1.10	1.51	1.13	1.91	6.73	5.25	5.97	1.57	1.59	7.00	2.40	4.39	2.23
1.87	2.73	0.89	1.28	0.99	1.60	4.27	4.26	4.50	1.13	1.38	6.54	1.91	3.99	1.86
13.58	13.67	7.79	4.29	8.95	15.97	10.46	11.72	10.89	10.15	6.37	5.74	9.99	4.52	9.52
5.77	8.96	6.25	5.06	7.11	12.63	9.76	11.33	9.37	9.07	7.38	4.79	12.68	10.88	10.90
2.03	4.70	1.95	2.49	2.49	5.08	3.28	7.47	5.77	2.48	3.79	2.56	5.53	5.25	5.11
3.74	4.26	4.30	2.57	4.62	7.55	6.48	3.86	3.61	6.59	3.59	2.23	7.15	5.63	5.79
5.61	6.52	6.91	4.41	9.17	3.51	5.10	3.58	5.67	6.90	8.50	13.52	8.79	10.04	6.56
4.38	5.15	6.63	2.68	6.49	1.83	3.93	3.33	4.12	4.00	7.45	12.79	6.70	9.21	6.02
1.15	2.00	1.87	4.71	2.11	1.89	2.04	0.86	2.14	0.80	5.48	2.84	5.49	3.73	3.01
4.15	0.86	1.87	3.77	3.90	0.59	0.34	2.03	0.55	2.29	3.38	1.29	5.02	9.38	4.24
6.61	7.22	7.35	2.93	10.00	4.94	5.49	8.66	6.22	10.08	8.53	13.34	11.90	10.16	6.68
4.94	6.36	11.63	5.34	6.06	13.28	5.03	5.80	5.96	6.17	7.15	6.02	8.52	7.06	6.09
23.3	**21.5**	**33.3**	**26.6**	**20.6**	**53.5**	**30.1**	**19.6**	**18.9**	**14.4**	**22.0**	**23.7**	**21.0**	**28.6**	**32.5**
4.0	**13.1**	**10.89**	**6.2**	**12.7**	**18.4**	**14.83**	**2.59**	**8.09**	**6.5**	**12.0**	**9.54**	**10.9**	**19.6**	**10.6**
18.62	7.8	15.6	19.99	7.35	20.98	8.8	12.73	9.38	6.7	9.51	13.6	8.31	8.90	19.2
0.27	11.11	1.86	0.70	-0.36	-	6.52	6.55	1.57	10.78	-3.24	3.05	0.29	2.49	2.68
4.24	**5.27**	**-9.7**	**36.6**	**22.4**	**-20.56**	**-3.9**	**-16.69**	**-6.11**	**-4.17**	**29.1**	**-9.10**	**4.09**	**-1.31**	**-4.14**
64.21	**50.36**	**59.47**	**27.05**	**44.91**	**44.83**	**55.04**	**81.67**	**76.16**	**69.38**	**41.44**	**69.53**	**61.47**	**56.48**	**58.03**
7.97	11.76	15.10	9.04	12.37	22.24	12.26	8.84	9.47	9.59	10.62	12.79	13.11	13.69	10.91
67.2	**55.8**	**62.9**	**30.8**	**51.2**	**53.8**	**62.3**	**84.7**	**79.7**	**72.8**	**44.9**	**76.3**	**66.1**	**63.1**	**62.85**
43.8	28.2	49.0	11.0	22.3	24.9	41.2	62.8	59.9	44.8	18.7	52.2	27.3	34.8	37.79
35.4	16.7	38.9	6.0	12.3	17.6	28.4	52.2	48.6	38.2	6.6	37.4	14.0	17.6	27.27
6.08	5.91	4.53	3.12	5.13	4.21	9.80	7.04	8.76	5.32	4.23	9.18	6.97	11.05	4.51
2.40	**5.58**	**5.51**	**1.93**	**4.92**	**3.11**	**2.96**	**3.48**	**2.56**	**1.31**	**7.90**	**5.68**	**6.33**	**6.14**	**6.02**
22.8	**25.8**	**13.5**	**18.2**	**27.4**	**27.7**	**19.3**	**21.4**	**17.0**	**27.7**	**24.8**	**20.9**	**36.9**	**27.9**	**23.37**

Table 31. Shares of Each Economy to Total Real Expenditures of the Asia and Pacific Region (%),[a] 2005
(Asia = 100)

EXPENDITURE CATEGORY/ECONOMY	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**1.45**	**0.02**	**0.15**	**0.17**	**44.37**	**0.03**	**2.02**	**19.47**
Actual Final Consumption Expenditure[a]	**2.05**	**0.02**	**0.07**	**0.25**	**33.85**	**0.05**	**1.98**	**23.75**
Food and Nonalcoholic Beverages	3.75	0.02	0.05	0.38	29.11	0.05	0.73	29.24
Bread and Cereals	7.64	0.04	0.05	0.76	21.54	0.04	0.31	25.97
Meat and Fish	3.12	0.01	0.06	0.39	47.08	0.06	1.63	12.27
Fruits and Vegetables	2.65	0.01	0.02	0.19	26.38	0.03	0.29	38.11
Other Food and Nonalcoholic Beverages	2.52	0.03	0.05	0.29	21.98	0.07	0.70	36.92
Clothing and Footwear: of which	2.22	0.02	0.06	0.08	27.80	0.03	5.28	25.99
Clothing	2.38	0.02	0.06	0.05	26.05	0.02	5.71	28.76
Housing, Water, Electricity, Gas and Other Fuels	2.24	0.02	0.05	0.16	33.78	0.04	1.64	21.03
Health and Education	1.39	0.02	0.07	0.38	38.31	0.04	1.19	26.27
Health	0.93	0.03	0.03	0.33	39.00	0.03	1.35	28.93
Education	1.83	0.01	0.11	0.42	38.08	0.04	1.00	21.48
Transportation and Communication: of which	0.60	0.00	0.16	0.14	25.93	0.04	1.80	25.36
Transportation	0.77	0.00	0.20	0.20	16.81	0.05	1.82	32.44
Recreation and Culture	0.31	0.01	0.12	0.14	43.15	0.06	7.59	9.19
Restaurants and Hotels	0.84	0.00	0.08	0.23	32.97	0.03	4.72	8.13
Other Consumption Expenditure Items	1.47	0.02	0.05	0.17	41.98	0.06	2.61	20.07
Collective Consumption Expenditure by General Government	0.59	0.03	0.29	0.15	57.88	0.03	1.13	13.76
Gross Fixed Capital Formation: of which	**1.12**	**0.03**	**0.05**	**0.06**	**59.31**	**0.03**	**1.63**	**15.86**
Machinery and Equipment	**0.66**	**0.02**	**0.05**	**0.07**	**43.24**	**0.05**	**3.54**	**21.87**
Construction	1.49	0.05	0.05	0.06	67.52	0.01	0.78	12.79
Change in Inventories and Net Acquisitions of Valuables	-	0.00	0.00	0.03	21.07	0.02	-0.34	33.74
Balance of Exports and Imports	**-1.94**	**-0.07**	**2.06**	**-0.06**	**58.98**	**-0.25**	**10.63**	**-11.25**
Household Final Consumption Expenditure	**2.20**	**0.02**	**0.07**	**0.24**	**32.13**	**0.05**	**2.09**	**24.35**
Government Final Consumption Expenditure	0.54	0.04	0.21	0.20	56.11	0.04	1.05	15.03
Actual Final Consumption Expenditure[a]	**2.05**	**0.02**	**0.07**	**0.25**	**33.85**	**0.05**	**1.98**	**23.75**
All Goods	2.65	0.02	0.06	0.27	31.92	0.05	1.75	25.23
Nondurables	3.24	0.02	0.04	0.31	32.04	0.05	0.70	27.63
Semidurables	1.53	0.02	0.10	0.11	23.89	0.05	3.78	26.33
Durables	**0.94**	**0.01**	**0.15**	**0.20**	**41.11**	**0.03**	**6.40**	**9.48**
Services	**1.37**	**0.01**	**0.08**	**0.23**	**34.49**	**0.05**	**2.36**	**22.23**

a Real refers to purchasing power parity-adjusted values.
b Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Table 31. Shares of Each Economy to Total Real Expenditures of the Asia and Pacific Region (%),[a] 2005 *(continued)*
(Asia = 100)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE	ASIA
5.89	**6.11**	**0.09**	**0.15**	**2.49**	**0.01**	**0.06**	**0.23**	**3.07**	**2.08**	**1.50**	**0.57**	**4.91**	**3.70**	**1.48**	**100**
7.60	**6.80**	**0.09**	**0.07**	**2.15**	**0.01**	**0.06**	**0.34**	**4.68**	**2.78**	**1.00**	**0.80**	**5.67**	**4.31**	**1.61**	**100**
11.29	3.81	0.13	0.04	1.40	0.01	0.08	0.63	6.90	4.36	0.34	0.94	2.70	2.38	1.67	100
12.59	2.95	0.29	0.03	1.33	0.01	0.07	1.69	7.78	7.67	0.21	1.33	2.92	1.89	2.89	100
8.77	3.56	0.18	0.07	1.98	0.01	0.17	0.26	4.64	6.95	0.44	0.56	3.41	2.09	2.30	100
11.72	4.34	0.08	0.03	1.11	0.01	0.02	0.31	5.97	1.76	0.20	1.13	2.23	2.39	1.00	100
12.02	4.88	0.03	0.03	1.21	0.01	0.07	0.50	8.82	2.59	0.47	0.82	2.35	2.78	0.85	100
6.61	7.97	0.03	0.09	1.01	0.01	0.12	0.44	6.93	1.16	0.74	1.83	4.88	5.65	1.05	100
6.09	7.14	0.03	0.09	1.08	0.01	0.10	0.43	6.21	0.99	0.78	2.13	4.70	6.08	1.10	100
8.96	10.92	0.12	0.06	1.86	0.01	0.05	0.28	6.21	2.41	0.74	0.65	4.53	2.80	1.46	100
3.98	5.93	0.10	0.05	1.64	0.02	0.10	0.36	4.26	1.95	0.70	0.38	5.64	4.17	3.05	100
1.73	7.97	0.05	0.06	1.09	0.01	0.06	0.45	4.34	0.81	0.72	0.36	5.94	3.68	2.11	100
7.28	4.35	0.16	0.05	2.22	0.03	0.15	0.25	3.83	3.44	0.69	0.39	5.39	4.59	4.21	100
5.08	14.11	0.05	0.10	4.00	0.01	0.04	0.08	2.65	2.09	1.91	1.04	8.01	5.91	0.89	100
6.39	10.28	0.08	0.10	4.43	0.00	0.05	0.10	2.66	1.99	2.27	1.46	8.51	8.25	1.12	100
3.18	4.53	0.06	0.30	2.35	0.01	0.04	0.08	2.67	0.66	3.73	0.56	14.07	5.48	1.72	100
12.31	1.62	0.05	0.22	3.74	0.00	0.01	0.15	0.53	2.18	2.11	0.25	12.16	15.32	2.35	100
5.20	5.84	0.06	0.05	2.76	0.01	0.03	0.21	2.20	2.97	1.20	0.76	7.11	4.18	1.00	100
2.95	5.55	0.21	0.07	2.27	0.02	0.06	0.14	2.23	1.40	1.30	0.53	5.22	2.54	1.64	100
3.90	**3.27**	**0.08**	**0.12**	**1.83**	**0.02**	**0.05**	**0.14**	**1.47**	**0.93**	**1.29**	**0.37**	**3.47**	**3.46**	**1.52**	**100**
1.82	**5.51**	**0.06**	**0.12**	**3.19**	**0.02**	**0.06**	**0.05**	**1.63**	**1.10**	**2.37**	**0.41**	**6.72**	**6.43**	**1.02**	**100**
5.23	2.00	0.07	0.11	1.08	0.01	0.03	0.16	1.29	0.76	0.76	0.36	1.71	1.86	1.82	100
0.68	28.63	0.06	0.04	-0.40	-	0.14	0.62	1.84	9.35	-2.14	0.67	0.64	3.84	1.50	100
5.84	**5.54**	**-0.13**	**2.04**	**14.77**	**-0.07**	**-0.04**	**-0.70**	**-3.47**	**-1.97**	**16.32**	**-1.05**	**6.98**	**-1.11**	**-1.05**	**100**
8.02	**6.85**	**0.09**	**0.07**	**2.08**	**0.01**	**0.06**	**0.36**	**4.87**	**2.93**	**1.03**	**0.79**	**5.83**	**4.31**	**1.55**	**100**
3.11	5.64	0.16	0.07	2.53	0.02	0.08	0.14	2.30	1.32	1.03	0.67	4.68	3.14	1.90	100
7.60	**6.80**	**0.09**	**0.07**	**2.15**	**0.01**	**0.06**	**0.34**	**4.68**	**2.78**	**1.00**	**0.80**	**5.67**	**4.31**	**1.61**	**100**
8.84	6.45	0.11	0.05	1.84	0.01	0.07	0.44	5.55	2.94	0.82	0.88	4.67	3.95	1.44	100
9.72	5.77	0.13	0.04	1.32	0.01	0.07	0.55	6.30	3.43	0.37	0.88	2.96	2.83	1.60	100
8.41	7.86	0.05	0.09	2.99	0.01	0.08	0.26	4.71	2.04	1.12	1.06	7.49	7.07	0.97	100
3.66	**8.00**	**0.08**	**0.11**	**3.25**	**0.01**	**0.04**	**0.14**	**1.98**	**0.82**	**3.42**	**0.61**	**12.40**	**5.91**	**1.26**	**100**
6.42	**7.47**	**0.07**	**0.10**	**2.64**	**0.01**	**0.05**	**0.22**	**3.23**	**2.81**	**1.26**	**0.66**	**7.09**	**5.24**	**1.89**	**100**

APPENDIX 1

Estimating Average Prices for Household Consumption Items of the People's Republic of China

The International Comparison Program (ICP) price surveys for household consumption items conducted by the National Bureau of Statistics of China (NBS) covered rural and urban localities only in the 11 cities of Beijing, Shanghai, Ningbo, Qingdao, Guangzhou, Xiamen, Dalian, Harbin, Wuhan, Chongqing, and Xi'an. However, the computation of purchasing power parity requires national annual average prices. In response, the ICP Global Office and Regional Office initiated an electronic expert group discussion in early 2006 to identify an appropriate methodology to derive national annual average prices. The Regional Office convened a meeting of this Expert Group on 19–21 June 2006 to discuss and finalize the extrapolation methodology to derive national annual average prices for items priced in 11 cities of the People's Republic of China (PRC).

At this meeting, the Group was guided by the following principles:

(i) that the methodology be general enough for use, if necessary, by other economies in Asia and the Pacific and by other regions participating in the ICP;

(ii) that the recommended methodology be transparent; and

(iii) that the methodology be practical and feasible within the time and resources available.

The extrapolation methodology presented by the Global Office was examined and discussed at length during the meeting and the methodology was endorsed on the following grounds:

(i) The proposal essentially provides a weighted average of the observed average prices from 11 cities and therefore the resulting national average would lie within the range of the observed minimum and maximum of the average prices in the 11 cities.

(ii) If the average prices in the 11 cities, due to their geographic location, are located on the higher end of the distribution of prices in the country then an average of the 11 cities (weighted or unweighted) would still lie in the higher end of the distribution.

(iii) Each city contributes to one, and only one, of the four regions (Capitals, Coast, North-East, and Inner PRC) into which 31 administrative divisions (22 provinces, five autonomous regions, and four municipalities) of the PRC were grouped. This approach means that Beijing prices, for example, contribute to only the Capital and not to the other three regions.

(iv) There was no need to explore the issue of robustness of the average prices to the choice of the clustering methodology since the analysis done on the 11-city data exhibited only a limited variation in the PPPs even though many price data were found to be outliers.

The possibility of using spatial price deflators in extrapolating the 11 cities' prices prior to the computation of national annual average prices was also explored and examined by the Expert Group. While this approach was consistent with the ICP Technical Advisory Group recommendation, the available data at the time were found to be deficient in terms of "substitution bias" resulting from the use of a fixed basket from 1990 and from price biases, as no appropriate quality adjustment had been made.

Data Requirement of the Recommended Extrapolation Methodology

In order to implement the recommendation, it was necessary to have average prices for rural and urban areas in the 11 cities. NBS was requested to compute and provide the average prices separately for these rural and urban areas. It provided rural and urban price ratios for each of the cities, i.e. the ratio of the average price of each rural and urban area to the average of the 11 cities. Price ratios were provided by commodity wherever possible. Prior to the extrapolation activity, the average prices for the 11 cities underwent the same stringent intra- and intercountry validation used for the other economies to ensure comparability and reliability of price data. Within NBS, data review workshops, market surveys and research, and telephone interviews were also conducted for verification of data collected through field surveys.

The next step for the extrapolation was the grouping of all the 31 administrative divisions (22 provinces, five autonomous regions, and four municipalities of the PRC) using a clustering methodology into four groups; grouping was done for rural and urban components in each administrative division. Data used for the clustering were per capita consumption expenditures of rural and urban households by administrative divisions, and the corresponding urban and rural population for calendar year 2005. The figures were extracted from the 2005 and 2006 China Statistical Yearbooks.

Estimation Methodology

In line with the Expert Group's recommendation and using all available information at the time of estimation, the ICP Global Office and Regional Office, in consultation with NBS, adopted the following procedures to derive national annual average prices:

(i) The urban and rural price ratios were used to estimate average prices for each commodity, by urban and rural area of every city. These were then used to estimate weighted national annual average prices by commodity.

(ii) The procedure for deriving the weights involved principal components analysis. A methodological note of the weighting scheme, recently prepared by Yuri Dikhanov of the Global Office and adopted by the Regional Office is provided in the following pages. It should be noted that the data contained in the note, an unpublished document, are for illustration purposes only.

(iii) PPPs for the basic headings in household consumption were calculated using these extrapolated national annual average prices.

METHODOLOGICAL NOTE—PRC: ESTIMATING NATIONAL AVERAGE PRICES

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Introduction

The 2005 round of the International Comparison Program (ICP) is the first truly global comparison in the history of ICP. The People's Republic of China (PRC), representing more than 20% of the global population, is participating in this program for the first time. Together with India, which have not participated in the ICP since 1985, these two countries represent almost two-fifths of the global population. It would be impossible to speak about a global comparison without full participation of these two countries.

Both the PRC and India cover huge geographical areas with large and diverse populations. As one of the most important elements in the ICP is determining national average prices of individual items, it is critical for averaging process to be done right. The purpose of this note is to show how to conduct proper averaging for the PRC given the participation of 11 cities with surrounding areas.

Setting Up a Weighting Scheme

In order to set up a proper weighting procedure, there was a need to carry out a regional analysis and map the 11 cities to arrive at the corresponding regions that those cities would represent.

Regional Structure of the PRC

The country has administrative control over 22 provinces; apart from provinces there are five autonomous regions containing concentrations of several minorities; four municipalities for the largest cities and two special administrative regions (SARs) governed by the PRC. The 22 provinces, 5 autonomous regions and 4 municipalities can be collectively referred to as "mainland", a term which usually excludes Hong Kong, China; Macao, China; and Taipei,China, which participate in the ICP as separate entities.

Appendix Table 1.1 provides the list of administrative divisions of the PRC. Meanwhile, the list of 11 cities participating in the ICP price collection together with the provinces they belong to is shown in Appendix Table 1.2.

Setting up a Principal Components Framework

In statistics, principal components analysis (PCA) is a technique that can be used to simplify a dataset; more formally it is a linear transformation that chooses a new coordinate system for the dataset such that the greatest variance by any projection of the data set comes to lie on the first axis (then called the first principal component), the second greatest variance on the second axis, and so on. PCA can be used for reducing dimensionality in a dataset while retaining those characteristics of the dataset that contribute most to its variance by eliminating the later principal components (by a more or less heuristic decision).

In this report, PCA is used in order to classify regions in the PRC. The criterion for regions to be similar is their closeness in the principal component space. The principal components were computed on the basis of per capita provincial household expenditures (see Appendix Table 1.3). The 16 expenditure categories (eight urban and eight rural) add up to the average provincial per capita expenditures. For example, urban food is obtained as the product of average food consumption in the urban part of province and urban population share of that province. Thus, these expenditure categories describe not only urban and rural expenditure structures, but also relative importance of both urban and rural parts in total expenditures. The two first principal components account for about 80% of total variance, and, thus, can be reliably used in describing provincial structures. Appendix

Appendix Table 1.1 List of Administrative Divisions of the People's Republic of China

Provinces（省）
Anhui (安徽)
Fujian (福建)
Gansu (甘肃)
Guangdong (广东)
Guizhou (贵州)
Hainan (海南)
Hebei (河北)
Heilongjiang (黑龙江)
Henan (河南)
Hubei (湖北)
Hunan (湖南)
Jiangsu (江苏)
Jiangxi (江西)
Jilin (吉林)
Liaoning (辽宁)
Qinghai (青海)
Shaanxi (陕西)
Shandong (山东)
Shanxi (山西)
Sichuan (四川)
Yunnan (云南)
Zhejiang (浙江)

Autonomous Regions（自治区）
Guangxi (广西壮族自治区)
Inner Mongolia (Nèi) (内蒙古自治区)
Ningxia (宁夏回族自治区)
Xinjiang (新疆维吾尔自治区)
Tibet (Xīzàng) (西藏自治区)
Municipalities（直辖市）
Beijing (北京市)
Chongqing (重庆市)
Shanghai (上海市)
Tianjin (天津市)
Special Administrative Regions（特别行政区）
Hong Kong (Xiānggǎng) (香港特别行政区)
Macau (Àomén) (澳门特别行政区)

Appendix Table 1.2 List of Participating Cities and their Corresponding Provinces

Number	Participating Cities	Provinces (or equivalent level)
1	Beijing (北京市)	Beijing (北京市)
2	Chongqing (重庆市)	Chongqing (重庆市)
3	Shanghai (上海市)	Shanghai (上海市)
4	Harbin (哈尔滨)	Heilongjiang (黑龙江)
5	Dalian (大连)	Liaoning (辽宁)
6	Ningbo (宁波)	Zhejiang (浙江)
7	Guangzhou (广州)	Guangdong (广东)
8	Xiamen (厦门)	Fujian (福建)
9	Qingdao (青岛)	Shandong (山东)
10	Wuhan (武汉)	Hubei (湖北)
11	Xi'an (西安)	Shaanxi (陕西)

Appendix Table 1.3 Data Inputs into Principal Component Analysis
(composition of household expenditures, by province, rural and urban)

Province	Rural Expenditures (yuan)							
	Food	Clothing	Household	Medical	Transport	Recreation	Residence	Other
Beijing	277.42	51.38	95.81	56.12	51.50	48.51	105.28	16.47
Tianjin	254.41	46.95	68.41	28.32	33.23	22.43	57.06	22.64
Hebei	432.06	78.50	193.40	59.99	50.78	53.48	100.58	20.27
Shanxi	351.43	70.48	66.71	33.84	37.95	30.12	78.51	12.67
Inner Mongolia	443.93	61.96	131.29	36.98	54.54	38.98	97.61	13.52
Liaoning	374.59	66.36	96.36	32.87	37.15	37.20	79.07	17.27
Jilin	361.79	55.97	80.05	31.31	33.44	31.42	69.75	14.26
Heilongjiang	351.38	48.67	109.68	24.68	34.68	28.46	55.53	12.14
Shanghai	195.22	23.69	79.70	45.48	18.72	23.05	55.51	11.05
Jiangsu	599.81	71.18	263.61	90.06	63.05	76.25	147.82	29.96
Zhejiang	663.30	78.08	230.19	85.76	82.51	101.75	148.00	50.21
Anhui	511.37	50.13	139.96	46.74	37.29	27.51	105.65	21.75
Fujian	618.89	65.27	171.71	60.00	35.80	74.92	127.03	36.91
Jiangxi	666.73	49.50	166.09	49.92	44.20	39.89	124.14	21.70
Shandong	508.87	70.54	156.45	66.19	55.58	56.00	112.90	14.92
Henan	474.21	57.03	151.56	41.99	38.58	26.19	81.11	23.25
Hubei	516.36	44.49	118.40	44.83	33.12	41.32	127.30	14.78
Hunan	789.12	55.50	184.92	53.65	43.45	40.62	143.67	25.53
Guangdong	603.32	44.62	186.84	69.11	44.41	66.41	142.78	33.14
Guangxi	609.85	37.67	143.56	48.06	29.82	33.24	124.01	20.23
Hainan	453.28	32.56	103.44	38.83	17.57	15.37	78.66	15.59
Chongqing	548.25	41.93	116.11	41.53	31.99	24.86	74.29	10.28
Sichuan	616.80	53.43	141.44	46.29	41.88	27.66	103.29	14.53
Guizhou	549.57	36.97	81.09	34.31	17.97	18.79	63.78	11.65
Yunnan	597.89	41.48	93.92	39.16	42.81	20.49	75.40	19.26
Tibet	404.19	75.54	28.51	39.98	12.95	7.79	5.92	8.90
Shaanxi	423.91	59.79	133.91	45.11	49.80	27.75	131.19	19.12
Gansu	379.05	34.87	86.75	30.29	31.33	19.52	74.35	13.13
Qinghai	456.03	63.88	80.97	30.02	37.12	23.07	32.71	15.32
Ningxia	453.60	66.84	121.18	49.01	47.15	25.26	79.84	15.43
Xinjiang	454.38	79.31	97.66	33.66	48.22	39.08	71.33	25.37

Appendix Table 1.3 Data Inputs into Principal Component Analysis *(continued)*
(composition of household expenditures, by province, rural and urban parts)

Urban Expenditures (yuan)							
Food	Clothing	Household	Medical	Transport	Recreation	Residence	Other
2293.37	566.36	580.79	397.84	362.60	884.91	370.78	354.67
1771.03	356.74	502.08	218.07	204.62	529.90	411.00	219.66
390.36	134.65	94.58	74.47	71.24	141.09	95.24	49.23
490.81	166.74	101.26	72.79	70.32	144.74	98.36	74.02
556.80	223.87	108.81	82.06	106.67	197.74	122.92	82.39
938.12	300.21	133.83	151.66	129.64	241.30	178.99	88.81
776.24	244.73	99.64	108.52	109.68	228.43	179.16	73.44
726.21	263.02	109.12	142.71	115.69	194.06	163.57	78.72
3277.97	486.30	788.85	306.34	465.34	913.89	636.05	407.97
916.15	186.49	237.55	87.95	125.37	242.87	178.35	104.80
1280.40	271.41	335.90	212.18	250.64	387.59	280.40	157.48
512.85	119.62	75.42	35.12	69.66	142.66	87.29	42.09
1127.14	178.09	138.99	66.88	168.54	192.05	222.61	96.63
433.17	84.11	64.77	29.89	58.09	109.14	141.10	44.35
636.78	233.06	209.27	83.52	103.58	227.78	141.22	80.50
331.21	100.18	66.94	48.29	50.34	78.36	97.74	38.35
716.94	205.78	113.70	80.81	95.52	248.33	210.46	73.37
578.78	152.66	119.61	61.41	95.74	207.77	146.79	67.48
1680.34	194.28	310.51	195.95	446.53	480.18	595.55	231.45
573.55	84.83	95.50	44.49	92.79	175.33	165.54	61.55
825.20	74.76	81.29	68.89	132.19	191.35	125.48	111.96
762.39	195.29	170.87	78.30	133.70	241.65	145.11	74.74
527.13	135.57	92.06	54.26	64.14	153.55	114.91	59.66
400.04	104.62	110.32	36.64	60.86	106.50	82.72	45.76
585.86	143.38	98.54	66.63	77.65	150.03	108.86	88.36
632.54	200.69	48.86	49.98	90.65	88.68	64.43	93.05
343.20	91.08	104.37	60.47	53.73	114.38	109.30	44.58
366.14	113.52	78.94	52.77	49.60	107.93	59.92	54.77
575.83	152.34	90.06	105.44	85.24	166.88	100.42	82.31
445.65	155.81	88.72	102.81	81.35	137.62	74.11	63.48
543.78	181.18	146.17	79.71	84.59	182.96	116.56	72.47

Figure 1.1 shows the provinces plotted in the space of two principal components.

It was assumed that cities would represent their respective provinces. Of course, in the case of Beijing, Chongqing, and Shanghai, the cities are provinces. As the result of PCA, the PRC can be grouped into four large regions (see Appendix Table 1.4):

1. Capitals
2. Coast
3. North-East
4. Inner PRC

Each of the regions has two to four representative cities.

Inner PRC and Coast each are responsible for about 40% of national GDP. Two other regions have about 10% of national GDP each (see Appendix Table 1.5).

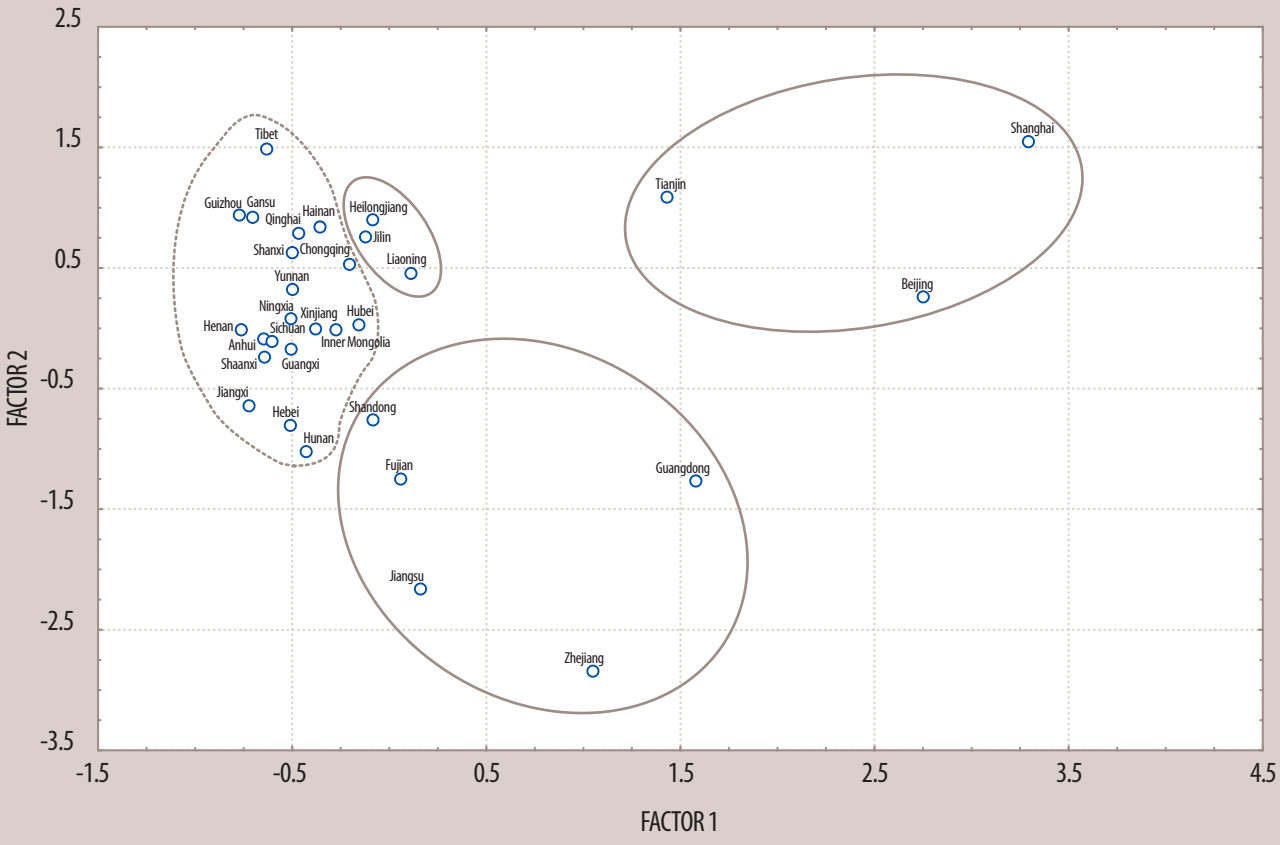
Appendix Figure 1.2 shows the four regions broken down into individual provinces. The provinces that are directly represented in the sample are shown with round markers. The cities in the regions are representative to various degrees. Appendix Table 1.6 (last pane: share of 11 cities to regional totals) shows that while the representation of the first three regions is very good—70–80% on average—Inner PRC is represented only at a 15–20% rate with its three cities.

Individual City Weights[1]

Having established the regions, individual city weights can be estimated for each group of products (eight groups altogether). Those weights will be applied to all products within respective group to arrive at the average national price. Appendix Table 1.6 shows distribution of

1 Individual city weights have been updated with the latest 2005 data.

Appendix Figure 1.1 Provinces in Two Principal Component Space



Appendix Table 1.4 Regions of the People's Republic of China

Coast	Capitals	North-East	Inner PRC
Guangdong (广东)	Beijing (北京市)	Heilongjiang (黑龙江)	Anhui (安徽)
Fujian (福建)	Shanghai (上海市)	Liaoning (辽宁)	Gansu (甘肃)
Jiangsu (江苏)	Tianjin (天津市)	Jilin (吉林)	Guizhou (贵州)
Zhejiang (浙江)			Hainan (海南)
Shandong (山东)			Hebei (河北)
			Henan (河南)
			Hubei (湖北)
			Hunan (湖南)
			Jiangxi (江西)
			Qinghai (青海)
			Shaanxi (陕西)
			Shanxi (山西)
			Sichuan (四川)
			Yunnan (云南)
			Guangxi (广西壮族自治区)
			Inner Mongolia (Nèi Měnggǔ) (内蒙古自治区)
			Ningxia (宁夏回族自治区)
			Xinjiang (新疆维吾尔自治区)
			Tibet (Xīzàng) (西藏自治区)
			Chongqing (重庆市)

Appendix Table 1.5 Regions and Provinces

Province	Population	Urban Share	Urban Pop	Rural Pop	GDP 1999	GDPcap 1999	GDP 2002	GDPcap 2002
TOTAL	**1242.2**	**36.31**	**451.1**	**791.1**	**8767.1**	**7058**	**11658.8**	**9386.0**
Capitals								
Beijing	12.57	77.5	9.74	2.83	217.45	17299	357.6	28449
Tianjin	9.59	72.0	6.90	2.69	145.01	15121	214.6	22380
Shanghai	14.74	88.3	13.02	1.72	403.50	27374	599.1	40646
Coast								
Jiangsu	72.13	41.5	29.93	42.20	769.78	10672	1038.0	14391
Zhejiang	44.75	48.7	21.79	22.96	536.49	11989	753.5	16838
Fujian	33.16	41.6	13.79	19.37	355.02	10706	447.6	13497
Shandong	88.83	38.0	33.76	55.07	766.21	8626	1034.4	11645
Guangdong	72.7	55.0	39.98	32.72	846.43	11643	1092.7	15030
North-East								
Liaoning	41.71	54.2	22.61	19.10	417.17	10002	541.6	12986
Jilin	26.58	49.7	13.21	13.37	166.96	6281	221.5	8334
Heilongjiang	37.92	51.5	19.53	18.39	289.74	7641	386.2	10184
Inner PRC								
Hebei	66.14	26.1	17.26	48.88	456.92	6908	602.9	9115
Shanxi	32.04	34.9	11.18	20.86	150.68	4703	196.9	6146
Inner Mongolia	23.62	42.7	10.09	13.53	126.82	5369	171.0	7241
Anhui	62.37	27.8	17.34	45.03	290.86	4663	362.8	5817
Jiangxi	42.31	27.7	11.72	30.59	196.30	4640	246.6	5829
Henan	93.87	23.2	21.78	72.09	457.61	4875	604.1	6436
Hubei	59.38	40.2	23.87	35.51	385.80	6497	494.0	8319
Hunan	65.32	29.8	19.47	45.85	332.68	5093	428.8	6565
Guangxi	47.13	28.2	13.29	33.84	195.33	4144	240.3	5099
Hainan	7.62	40.1	3.06	4.56	47.12	6184	59.5	7803
Chongqing	30.75	33.1	10.18	20.57	147.97	4812	195.2	6347
Sichuan	85.5	26.7	22.83	62.67	371.16	4341	493.0	5766
Guizhou	37.1	23.9	8.87	28.23	91.19	2458	117.0	3153
Yunnan	41.92	26.7	11.19	30.73	185.57	4427	217.1	5179
Tibet	2.56	23.9	0.61	1.95	10.56	4125	15.6	6093
Shaanxi	36.18	23.3	8.43	27.75	148.76	4112	199.8	5523
Gansu	25.43	24.0	6.10	19.33	93.20	3665	114.3	4493
Qinghai	5.1	34.8	1.77	3.33	23.84	4674	32.8	6426
Ningxia	5.43	32.4	1.76	3.67	24.15	4447	31.5	5804
Xinjiang	17.74	33.8	6.00	11.74	116.86	6587	148.7	8382
Regions								
Capitals	36.9	80.4	29.7	7.2	765.9	20757	1171.4	31744
Coast	311.6	44.7	139.3	172.3	3,273.9	10508	4366.2	14014
North-East	106.2	52.1	55.3	50.9	873.9	8228	1149.3	10821
Inner PRC	787.5	28.8	226.8	560.7	3,853.4	4893	4971.9	6313
Percent of PRC								
Capitals	3.0	221.4	6.6	0.9	8.7	294	10.0	338
Coast	25.1	123.1	30.9	21.8	37.3	149	37.4	149
North-East	8.6	143.5	12.3	6.4	10.0	117	9.9	115
Inner PRC	63.4	79.3	50.3	70.9	44.0	69	42.6	67

pop = population; GDP = gross domestic product; cap = per capita.

Appendix Figure 1.2 Regions of the People's Republic of China by Principal Component Analysis

Note: Markers indicate the provinces containing the 11 cities participating in the ICP Asia Pacific.

expenditures by province, urban/rural, and by product group. Appendix Figure 1.3 shows the province-level division of the PRC.

The weight of each region was distributed among the cities that belonged to that region. For example, the weight for Beijing and Shanghai was adjusted to equal the total weight of Beijing, Shanghai, and Tianjin (regional capitals). As Tianjin was absent from the price collection, its weight was redistributed among Beijing and Shanghai.

The result of that redistribution is presented in Appendix Table 1.7. All rural and urban entries for each product group are equal to 100%. i.e., rural food entries are responsible for 40.8% and urban food 59.2%. Thus, in computing the average national price of a food item (e.g., rice) the Beijing urban price will have a 2.22% weight, and the Chongqing rural price 6.75%.

Conclusion

The proposed methodology allows for an estimation of national average prices using the 11 cities participating in the comparison. Perhaps, weights for some of the most important products, such as rice, can be estimated more precisely, which would have a positive effect on the overall quality of ICP data originating from the PRC. For the next comparison, we would hope to see a more equal distribution of the cities/areas among the major regions of the PRC.

Appendix Table 1.6 Expenditures by Province

Province	Rural							
	Food	Clothing	Household	Medical	Transport	Recreation	Residence	Other
TOTAL	931.7	113.2	87.0	128.2	190.8	229.0	287.3	43.9
Capitals								
Beijing	4.91	1.07	0.92	1.43	1.74	2.25	2.42	0.29
Tianjin	3.15	0.69	0.31	0.48	0.88	0.88	1.65	0.11
Shanghai	4.63	0.63	0.79	0.97	1.29	1.62	2.28	0.35
Coast								
Jiangsu	66.22	8.07	7.09	8.38	15.35	20.21	21.62	3.59
Zhejiang	47.32	7.32	5.98	9.54	14.19	16.60	20.98	2.78
Fujian	21.06	3.09	2.64	3.65	5.70	7.30	8.63	0.89
Shandong	98.55	7.90	8.38	11.23	22.67	19.87	29.21	6.40
Guangdong	49.65	6.11	5.05	5.04	11.96	11.66	14.96	3.29
North-East								
Liaoning	21.53	4.22	1.92	4.46	5.74	7.20	7.22	1.30
Jilin	13.41	2.25	1.10	2.59	3.81	3.49	3.43	0.75
Heilongjiang	16.99	3.39	1.36	4.66	4.72	5.09	9.69	0.90
Inner PRC								
Hebei	43.42	7.60	4.96	6.59	10.85	11.04	19.50	1.90
Shanxi	17.32	4.22	1.44	2.15	3.34	5.83	4.18	0.68
Inner Mongolia	14.27	2.03	1.14	2.39	3.97	4.19	4.53	0.59
Anhui	45.02	5.29	4.79	6.02	8.86	11.56	15.53	1.83
Jiangxi	37.34	3.81	2.95	4.73	7.02	8.45	9.98	1.70
Henan	61.93	9.54	5.96	8.90	11.51	12.81	22.92	2.79
Hubei	42.34	4.44	3.91	4.81	7.92	9.65	11.02	2.21
Hunan	65.71	5.86	5.24	7.71	10.04	15.10	14.09	2.64
Guangxi	40.16	2.69	3.23	4.18	7.24	7.66	12.85	1.50
Hainan	5.18	0.30	0.42	0.42	0.81	0.91	0.67	0.27
Chongqing	23.25	1.97	1.97	2.93	3.35	5.14	4.76	0.69
Sichuan	77.99	7.29	6.40	9.05	10.75	14.11	14.67	2.27
Guizhou	23.15	2.25	1.74	2.03	2.80	4.54	6.65	0.67
Yunnan	29.98	2.47	2.06	3.76	3.07	5.61	6.94	1.09
Tibet	2.31	0.36	0.16	0.09	0.15	0.05	0.16	0.08
Shaanxi	22.56	3.45	2.32	4.60	4.53	8.25	5.87	1.04
Gansu	16.60	1.78	1.43	2.20	3.00	4.98	4.65	0.52
Qinghai	2.97	0.52	0.28	0.51	0.69	0.36	1.10	0.14
Ningxia	3.39	0.53	0.28	0.73	0.66	0.65	1.27	0.19
Xinjiang	9.44	2.01	0.80	1.99	2.15	1.87	3.91	0.43
Regions								
Capitals	12.7	2.4	2.0	2.9	3.9	4.8	6.3	0.8
Coast	282.8	32.5	29.1	37.8	69.9	75.6	95.4	16.9
North-east	51.9	9.9	4.4	11.7	14.3	15.8	20.3	3.0
Inner PRC	584.3	68.4	51.5	75.8	102.7	132.8	165.2	23.2
Region (11 cities only)								
Capitals	9.54	1.70	1.71	2.39	3.03	3.87	4.69	0.64
Coast	216.6	24.4	22.1	29.5	54.5	55.4	73.8	13.4
North-East	38.5	7.6	3.3	9.1	10.5	12.3	16.9	2.2
Inner PRC	88.1	9.9	8.2	12.3	15.8	23.0	21.6	3.9
Share of 11 Cities to Regional Totals								
Capitals	75.2	71.1	84.5	83.3	77.5	81.4	74.0	85.6
Coast	76.6	75.2	75.7	77.9	78.0	73.3	77.3	78.8
North-East	74.2	77.2	74.9	77.9	73.3	77.9	83.1	74.5
Inner PRC	15.1	14.4	15.9	16.3	15.4	17.4	13.1	17.0

Note: Provinces in boldface contain the 11 cities participating in the ICP Asia Pacific.

Appendix Table 1.6 Expenditures by Province *(continued)*

Urban							
Food	Clothing	Household	Medical	Transport	Recreation	Residence	Other
1,351.9	359.9	203.1	269.3	464.1	503.8	376.2	129.2
41.07	11.54	8.30	12.62	18.93	21.30	10.13	5.13
24.46	4.83	3.62	6.88	6.89	8.86	8.92	2.19
64.30	12.24	10.42	10.37	25.82	29.58	18.38	8.16
95.96	24.07	17.57	17.34	31.46	38.55	23.80	9.34
90.23	27.55	13.28	18.13	45.71	40.31	23.09	8.76
34.66	12.77	6.94	7.99	12.45	14.35	10.37	3.34
143.97	22.75	20.43	23.79	78.75	56.34	39.88	12.73
143.75	28.34	18.21	19.13	41.93	44.26	42.86	13.16
64.68	16.75	6.89	16.98	16.82	19.21	17.92	7.35
31.12	10.91	3.69	8.93	9.69	10.57	11.17	3.67
40.46	17.15	5.52	11.97	11.66	15.67	13.58	4.64
39.98	13.59	7.16	11.09	13.33	13.73	13.16	3.62
23.00	10.43	4.02	6.02	6.76	10.43	8.14	2.12
21.96	10.57	3.98	5.38	7.62	9.77	7.29	3.31
48.23	13.24	5.04	6.94	11.74	11.55	10.23	3.43
29.24	7.59	5.00	3.83	6.65	9.44	7.57	2.27
45.03	17.56	8.19	10.29	13.86	17.53	14.20	4.83
62.67	19.26	8.86	11.92	15.51	21.60	16.32	4.67
52.35	15.39	8.78	11.71	15.60	22.16	15.02	5.08
38.63	6.91	5.59	6.19	9.35	13.28	10.23	3.29
8.62	0.95	0.93	1.07	2.23	1.99	1.79	0.55
31.92	8.65	5.94	6.41	9.46	14.16	8.98	2.26
61.86	14.63	9.65	10.11	18.89	20.75	16.10	5.32
21.80	6.23	2.98	3.58	5.55	7.20	5.17	2.11
33.55	7.21	3.26	7.42	10.42	8.68	6.08	1.71
2.34	0.64	0.29	0.21	0.80	0.41	0.32	0.25
20.24	5.67	3.13	5.10	5.31	9.12	5.51	2.02
14.36	4.92	2.23	3.00	3.90	5.75	4.15	1.52
4.02	1.23	0.63	0.98	1.23	1.43	1.18	0.38
3.92	1.37	0.73	0.94	1.24	1.35	1.25	0.46
13.54	4.95	1.86	2.99	4.54	4.45	3.43	1.47
129.8	28.6	22.3	29.9	51.6	59.7	37.4	15.5
508.6	115.5	76.4	86.4	210.3	193.8	140.0	47.3
136.3	44.8	16.1	37.9	38.2	45.4	42.7	15.7
577.2	171.0	88.3	115.2	164.0	204.8	156.1	50.7
105.36	23.78	18.72	22.99	44.75	50.88	28.51	13.29
412.6	91.4	58.9	69.0	178.8	155.3	116.2	38.0
105.1	33.9	12.4	29.0	28.5	34.9	31.5	12.0
114.8	33.6	17.9	23.4	30.3	44.9	30.8	8.9
81.2	83.1	83.8	77.0	86.7	85.2	76.2	85.8
81.1	79.2	77.0	79.9	85.0	80.1	83.0	80.3
77.2	75.6	77.1	76.4	74.6	76.7	73.8	76.6
19.9	19.6	20.3	20.3	18.5	21.9	19.7	17.7

Appendix Table 1.7 Individual City Weights

Province	City	Rural							
		Food	Clothing	Household	Medical	Transport	Recreation	Residence	Other
Beijing	Beijing	0.29	0.32	0.38	0.43	0.34	0.38	0.49	0.20
Shanghai	Shanghai	0.27	0.19	0.32	0.29	0.25	0.27	0.46	0.24
Zhejiang	Ningbo	2.71	2.06	2.72	3.08	2.78	3.09	4.09	2.04
Shandong	Qingdao	1.20	0.87	1.20	1.18	1.12	1.36	1.68	0.65
Guangdong	Guangzhou	5.63	2.22	3.82	3.63	4.44	3.70	5.69	4.69
Fujian	Xiamen	2.84	1.72	2.30	1.63	2.34	2.17	2.92	2.41
Liaoning	Dalian	1.27	1.16	0.88	1.44	1.20	1.26	1.31	1.01
Heilongjiang	Harbin	1.00	0.93	0.62	1.51	0.98	0.89	1.76	0.70
Hubei	Wuhan	12.29	6.51	8.46	7.42	7.86	7.59	12.67	7.53
Chongqing	Chongqing	6.75	2.89	4.26	4.53	3.33	4.04	5.47	2.35
Shaanxi	Xi'an	6.55	5.06	5.02	7.11	4.49	6.49	6.76	3.55
TOTAL		40.80	23.92	29.99	32.25	29.13	31.25	43.30	25.36

Appendix Table 1.7 Individual City Weights *(continued)*

Urban							
Food	Clothing	Household	Medical	Transport	Recreation	Residence	Other
2.22	2.93	3.41	4.13	3.34	3.41	2.00	3.45
3.47	3.11	4.28	3.39	4.55	4.74	3.64	5.50
4.87	7.36	5.94	5.71	8.21	6.87	4.19	6.31
1.87	3.41	3.11	2.51	2.23	2.44	1.88	2.41
7.77	6.08	9.14	7.49	14.14	9.60	7.24	9.17
7.76	7.57	8.15	6.02	7.53	7.54	7.78	9.47
3.67	4.68	3.08	5.59	3.44	3.42	3.66	5.55
2.30	4.79	2.47	3.94	2.39	2.79	2.77	3.51
13.80	20.73	15.03	14.74	12.82	13.45	12.47	15.29
7.03	9.31	10.08	7.92	7.82	8.82	6.86	7.39
4.46	6.11	5.32	6.31	4.39	5.68	4.21	6.60
59.20	76.08	70.01	67.75	70.87	68.75	56.70	74.64

Appendix Figure 1.3 Province-level Divisions of the People's Republic of China

APPENDIX 2

ICP Classification: Gross Domestic Product and its Structure, 2005

Code	Description	Average Share in GDP (%)	Number of Items Specified	Number of Items Priced/Collected		
				Average	Minimum	Maximum
100000	**GROSS DOMESTIC PRODUCT**	**100.00**	**833**			
	Actual Final Consumption Expenditure	**54.01**	**676**			
110000	**Individual Consumption Expenditure By Households**	**48.95**	**658**			
110100	**Food and Nonalcoholic Beverages**	**14.67**	**211**			
110110	**Food**	**13.99**	**196**			
110111	Bread and cereals	3.02	53			
1101111	Rice	1.71	19	5	2	17
1101112	Other cereals, flour and other cereal products	0.70	13	8	4	11
1101113	Bread	0.18	6	4	2	6
1101114	Other bakery products	0.21	10	8	4	10
1101115	Pasta products	0.22	5	4	2	5
110112	Meat	2.27	34			
1101121	Beef and Veal	0.28	7	4	1	7
1101122	Pork	0.70	6	5	1	6
1101123	Lamb, mutton and goat	0.20	5	3	1	5
1101124	Poultry	0.59	9	6	1	9
1101125	Other meats and meat preparations	0.50	7	4	1	7
110113	Fish	1.31	22			
1101131	Fresh, chilled or frozen fish and seafood	0.99	15	9	1	15
1101132	Preserved or processed fish and seafood	0.31	7	5	1	7
110114	Milk, cheese, and eggs	1.62	20			
1101141	Fresh milk	0.69	4	2	1	4
1101142	Preserved milk and other milk products	0.49	8	7	4	8
1101143	Cheese	0.03	4	3	1	4
1101144	Eggs and egg-based products	0.40	4	3	2	4
110115	Oils and fats	0.82	13			
1101151	Butter and Margarine	0.14	3	2	1	3
1101153	Other edible oils and fats	0.68	10	6	1	10
110116	Fruit	1.51	13			
1101161	Fresh or chilled fruit	1.30	10	9	7	10
1101162	Frozen, preserved or processed fruit and fruit-based products	0.21	3	3	1	3
110117	Vegetables	1.93	20			
1101171	Fresh or chilled vegetables other than potatoes	1.57	11	11	10	11
1101172	Fresh or chilled potatoes	0.21	3	2	1	3

Code	Description	Average Share in GDP (%)	Number of Items Specified	Number of Items Priced/Collected		
				Average	Minimum	Maximum
1101173	Frozen, preserved or processed vegetables, and vegetable-based products	0.14	6	5	1	6
110118	Sugar, jam, honey, chocolate, and confectionery	0.69	11			
1101181	Sugar	0.41	3	3	2	3
1101182	Jams, marmalades, and honey	0.11	3	3	1	3
1101183	Confectionery, chocolate, and ice cream	0.18	5	4	2	5
110119	Food products n.e.c.	0.81	10			
1101191	Food products n.e.c.	0.81	10	9	7	10
110120	**Nonalcoholic beverages**	**0.69**	**15**			
110121	Coffee, tea, and cocoa	0.33	8			
1101211	Coffee, tea, and cocoa	0.33	8	5	2	8
110122	Mineral waters, soft drinks, fruit and vegetable juices	0.36	7			
1101221	Mineral waters, soft drinks, fruit and vegetable juices	0.36	7	7	5	7
110200	**Alcoholic Beverages, Tobacco, and Narcotics**	**1.11**	**19**			
110210	**Alcoholic beverages**	**0.39**	**11**			
110211	Spirits	0.18	2			
1102111	Spirits	0.18	2	2	1	2
110212	Wine	0.06	5			
1102121	Wine	0.06	5	3	1	5
110213	Beer	0.15	4			
1102131	Beer	0.15	4	3	2	4
110220	**Tobacco**	**0.65**	**6**			
110221	Tobacco	0.65	6			
1102211	Tobacco	0.65	6	3	1	6
110230	**Narcotics**	**0.07**	**2**			
110231	Narcotics	0.07	2			
1102311	Narcotics	0.07	2	2	1	2
110300	**Clothing and Footwear**	**3.01**	**71**			
110310	**Clothing**	**2.45**	**61**			
110311	Clothing materials, other articles of clothing and clothing accessories	0.35	5			
1103111	Clothing materials, other articles of clothing and clothing accessories	0.35	5	5	3	5
110312	Garments	2.01	54			
1103121	Garments	2.01	54	44	23	53
110314	Cleaning, repair, and hire of clothing	0.09	2			
1103141	Cleaning, repair, and hire of clothing	0.09	2	2	1	2
110320	**Footwear**	**0.56**	**10**			
110321	Shoes and other footwear	0.53	8			
1103211	Shoes and other footwear	0.53	8	8	5	8
110322	Repair and hire of footwear	0.02	2			
1103221	Repair and hire of footwear	0.02	2	2	1	2
110400	**Housing, Water, Electricity, Gas and Other Fuels**	**7.95**	**14**			
110410	**Actual and imputed rentals for housing**	**4.92**	**a**			
110411	Actual and imputed rentals for housing	4.92	a			
1104111	Actual and imputed rentals for housing	4.92	a	a	a	a
110430	**Maintenance and repair of the dwelling**	**0.40**	**6**			
110431	Maintenance and repair of the dwelling	0.40	6			
1104311	Maintenance and repair of the dwelling	0.40	6	5	3	6
110440	**Water supply and miscellaneous services relating to the dwelling**	**0.36**	**2**			
110441	Water supply	0.22	1			
1104411	Water supply	0.22	1	1	1	1
110442	Miscellaneous services relating to the dwelling	0.14	1			
1104421	Miscellaneous services relating to the dwelling	0.14	1	1	1	1

Code	Description	Average Share in GDP (%)	Number of Items Specified	Number of Items Priced/Collected		
				Average	Minimum	Maximum
110450	**Electricity, Gas and Other Fuels**	**2.27**	**6**			
110451	Electricity	1.09	1			
1104511	Electricity	1.09	1	1	1	1
110452	Gas	0.48	2			
1104521	Gas	0.48	2	1	1	2
110453	Other fuels	0.70	3			
1104531	Other fuels	0.70	3	2	1	3
110500	**Furnishings, Household Equipment, and Routine Maintenance of the House**	**2.13**	**82**			
110510	**Furniture and furnishings, carpets and other floor coverings**	**0.35**	18			
110511	Furniture and furnishings	0.29	15			
1105111	Furniture and furnishings	0.29	15	11	6	15
110512	Carpets and other floor coverings	0.06	3			
1105121	Carpets and other floor coverings	0.06	3	2	1	3
110513	Repair of furniture, furnishings and floor coverings	0.01	[a]			
1105131	Repair of furniture, furnishings and floor coverings	0.01	[a]	[a]	[a]	[a]
110520	**Household textiles**	**0.18**	**7**			
110521	Household textiles	0.18	7			
1105211	Household textiles	0.18	7	6	1	7
110530	**Household appliances**	**0.55**	**26**			
110531	Major household appliances whether electric or not	0.41	13			
1105311	Major household appliances whether electric or not	0.41	13	10	4	13
110532	Small electric household appliances	0.08	10			
1105321	Small electric household appliances	0.08	10	9	6	10
110533	Repair of household appliances	0.07	3			
1105331	Repair of household appliances	0.07	3	3	1	3
110540	**Glassware, tableware and household utensils**	**0.33**	**8**			
110541	Glassware, tableware and household utensils	0.33	8			
1105411	Glassware, tableware and household utensils	0.33	8	7	3	8
110550	**Tools and equipment for house and garden**	**0.20**	**8**			
110551	Major tools and equipment	0.09	[a]			
1105511	Major tools and equipment	0.09	[a]	[a]	[a]	[a]
110552	Small tools and miscellaneous accessories	0.11	8			
1105521	Small tools and miscellaneous accessories	0.11	8	8	7	8
110560	**Goods and services for routine household maintenance**	**0.52**	**15**			
110561	Nondurable household goods	0.26	13			
1105611	Nondurable household goods	0.26	13	12	9	13
110562	Domestic services and household services	0.26	2			
1105621	Domestic services	0.23	2	2	1	2
1105622	Household services	0.03	[a]	[a]	[a]	[a]
110600	**Health**	**2.80**	**70**			
110610	**Medical products, appliances, and equipment**	**1.66**	**53**			
110611	Pharmaceutical products	1.43	35			
1106111	Pharmaceutical products	1.43	35	26	8	35
110612	Other medical products	0.12	8			
1106121	Other medical products	0.12	8	7	3	8
110613	Therapeutical appliances and equipment	0.11	10			
1106131	Therapeutical appliances and equipment	0.11	10	9	3	10
110620	**Outpatient services**	**0.70**	**17**			
110621	Medical Services	0.50	6			
1106211	Medical Services	0.50	6	6	3	6
110622	Dental services	0.10	4			
1106221	Services of dentists	0.10	4	4	2	4

Code	Description	Average Share in GDP (%)	Number of Items Specified	Number of Items Priced/Collected		
				Average	Minimum	Maximum
110623	Paramedical services	0.11	7			
1106231	Paramedical services	0.11	7	6	1	7
110630	**Hospital services**	**0.43**	[a]			
110631	Hospital services	0.43	[a]			
1106311	Hospital services	0.43	[a]	[a]	[a]	[a]
110700	**Transport**	**4.54**	**48**			
110710	**Purchase of vehicles**	**1.08**	**9**			
110711	Motor cars	0.71	5			
1107111	Motor cars	0.71	5	3	1	5
110712	Motor cycles	0.25	3			
1107121	Motor cycles	0.25	3	2	1	3
110713	Bicycles	0.10	1			
1107131	Bicycles	0.10	1	1	1	1
110714	Animal-drawn vehicles	0.02	[a]			
1107141	Animal-drawn vehicles	0.02	[a]	[a]	[a]	[a]
110720	**Operation of personal transport equipment**	**1.46**	**20**			
110722	Fuels and lubricants for personal transport equipment	1.04	8			
1107221	Fuels and lubricants for personal transport equipment	1.04	8	5	2	7
110723	Maintenance and repair of personal transport equipment	0.27	12			
1107231	Maintenance and repair of personal transport equipment	0.27	12	8	4	12
110724	Other services in respect of personal transport equipment	0.15	[a]			
1107241	Other services in respect of personal transport equipment	0.15	[a]	[a]	[a]	[a]
110730	**Transport services**	**1.99**	**19**			
110731	Passenger transport by railway	0.17	5			
1107311	Passenger transport by railway	0.17	5	3	1	5
110732	Passenger transport by road	1.50	6			
1107321	Passenger transport by road	1.50	6	4	2	6
110733	Passenger transport by air	0.22	4			
1107331	Passenger transport by air	0.22	4	3	1	4
110734	Passenger transport by sea and inland waterway	0.05	2			
1107341	Passenger transport by sea and inland waterway	0.05	2	1	1	2
110735	Combined passenger transport	0.00	[a]			
1107351	Combined passenger transport	0.00	[a]	[a]	[a]	[a]
110736	Other purchased transport services	0.05	2			
1107361	Other purchased transport services	0.05	2	2	1	2
110800	**Communication**	**1.59**	**14**			
110810	**Postal services**	**0.14**	**2**			
110811	Postal services	0.14	2			
1108111	Postal services	0.14	2	2	1	2
110820	**Telephone and telefax equipment**	**0.29**	**5**			
110821	Telephone and telefax equipment	0.29	5			
1108211	Telephone and telefax equipment	0.29	5	4	2	5
110830	**Telephone and telefax services**	1.16	7			
110831	Telephone and telefax services	1.16	7			
1108311	Telephone and telefax services	1.16	7	4	2	6
110900	**Recreation and Culture**	**2.15**	**61**			
110910	**Audio-visual, photographic, and information processing equipment**	**0.86**	**22**			
110911	Audio-visual, photographic, and information processing equipment	0.74	11			
1109111	Audio-visual, photographic, and information processing equipment	0.74	11	10	8	11
110914	Recording media	0.09	9			
1109141	Recording media	0.09	9	8	6	9
110915	Repair of audio-visual, photographic, and information processing equipment	0.04	2			

Code	Description	Average Share in GDP (%)	Number of Items Specified	Number of Items Priced/Collected		
				Average	Minimum	Maximum
1109151	Repair of audio-visual, photographic and information processing equipment	0.04	2	2	1	2
110920	**Other major durables for recreation and culture**	**0.11**	**4**			
110921	Major durables for outdoor and indoor recreation	0.09	4			
1109211	Major durables for outdoor and indoor recreation	0.09	4	3	2	4
110923	Maintenance and repair of other major durables for recreation and culture	0.02	[a]			
1109231	Maintenance and repair of other major durables for recreation and culture	0.02	[a]	[a]	[a]	[a]
110930	**Other recreational items and equipment, gardens and pets**	**0.14**	**16**			
110931	Other recreational items and equipment	0.09	10			
1109311	Other recreational items and equipment	0.09	10	8	4	10
110933	Gardens and pets	0.04	5			
1109331	Gardens and pets	0.04	5	4	1	5
110935	Veterinary and other services for pets	0.01	1			
1109351	Veterinary and other services for pets	0.01	1	1	1	1
110940	**Recreational and cultural services**	**0.44**	**7**			
110941	Recreational and sporting services	0.14	3			
1109411	Recreational and sporting services	0.14	3	2	1	3
110942	Cultural services	0.16	4			
1109421	Cultural services	0.16	4	4	2	4
110943	Games of chance	0.14	[a]			
1109431	Games of chance	0.14	[a]	[a]	[a]	[a]
110950	**Newspapers, books, and stationery**	**0.34**	**8**			
110951	Newspapers, books, and stationery	0.34	8			
1109511	Newspapers, books, and stationery	0.34	8	8	6	8
110960	**Package holidays**	**0.26**	**4**			
110961	Package holidays	0.26	4			
1109611	Package holidays	0.26	4	3	2	4
111000	**Education**	**2.18**	**6**			
111010	Education	2.18	6			
111011	Education	2.18	6			
1110111	Education	2.18	6	5	2	6
111100	**Restaurants and Hotels**	**2.76**	**21**			
111110	**Catering services**	**2.47**	**17**			
111111	Catering services	2.47	17			
1111111	Catering services	2.47	17	13	6	17
111120	**Accommodation services**	**0.30**	**4**			
111121	Accommodation services	0.30	4			
1111211	Accommodation services	0.30	4	3	1	4
111200	**Miscellaneous Goods and Services**	**4.18**	**39**			
111210	**Personal care**	**0.99**	**22**			
111211	Hairdressing salons and personal grooming establishments	0.32	6			
1112111	Hairdressing salons and personal grooming establishments	0.32	6	6	2	6
111212	Appliances, articles, and products for personal care	0.67	16			
1112121	Appliances, articles, and products for personal care	0.67	16	16	10	16
111220	**Prostitution**	-	[a]			
111221	Prostitution	-	[a]			
1112211	Prostitution	-	[a]	[a]	[a]	[a]
111230	**Personal effects n.e.c.**	**0.49**	**10**			
111231	Jewellery, clocks, and watches	0.34	6			
1112311	Jewellery, clocks, and watches	0.34	6	6	3	6
111232	Other personal effects	0.15	4			
1112321	Other personal effects	0.15	4	4	2	4

Code	Description	Average Share in GDP (%)	Number of Items Specified	Number of Items Priced/Collected		
				Average	Minimum	Maximum
111240	**Social protection**	**0.37**	[a]			
111241	Social protection	0.37	[a]			
1112411	Social protection	0.37	[a]	[a]	[a]	[a]
111250	**Insurance**	**0.69**	[a]			
111251	Insurance	0.69	[a]			
1112511	Insurance	0.69	[a]	[a]	[a]	[a]
111260	Financial services n.e.c.	1.22	5			
111261	Financial intermediation services indirectly measured (FISIM)	0.80	[a]			
1112611	Financial intermediation services indirectly measured (FISIM)	0.80	[a]	[a]	[a]	[a]
111262	Other financial services n.e.c	0.42	5			
1112621	Other financial services n.e.c.	0.42	5	3	1	5
111270	**Other services n.e.c.**	**0.43**	**2**			
111271	Other services n.e.c.	0.43	2			
1112711	Other services n.e.c.	0.43	2	2	1	2
111300	**Net Expenditures of Residents Abroad**	**(0.12)**	**2**			
111310	**Balance of Expenditures of Residents Abroad and Expenditures of Non Residents on the Economic Territory**	**(0.12)**	**2**			
111311	Balance of Expenditures of Residents Abroad and Expenditures of Nonresidents on the Economic Territory	(0.12)	2			
1113111	Final consumption expenditure of resident households in the rest of the world	0.78	1	1	1	1
1113112	Final consumption expenditure of nonresident households on the economic territory	(0.90)	1	1	1	1
120000	**Individual Consumption Expenditure by Nonprofit Institutions Serving Households (NPISHs)**	**0.35**	[a]			
120100	**Individual Consumption Expenditure by NPISHs**	**0.35**	[a]			
120110	**Individual consumption expenditure by NPISHs**	**0.35**	[a]			
120111	Individual consumption expenditure by NPISHs	0.35	[a]			
1201111	Individual consumption expenditure by NPISHs	0.35	[a]	[a]	[a]	[a]
130000	**Individual Consumption Expenditure by Government**	**4.71**	**18**			
130100	**Housing**	**0.09**	[a]			
130110	**Housing**	**0.09**	[a]			
130111	Housing	0.09	[a]			
1301111	Housing	0.09	[a]	[a]	[a]	[a]
130200	**Health**	**0.75**	**13**			
130210	**Health benefits and reimbursements**	**0.15**	[a]			
130211	Medical products, appliances, and equipment	0.06	[a]			
1302111	Pharmaceutical products	0.05	[a]	[a]	[a]	[a]
1302112	Other medical products	0.00	[a]	[a]	[a]	[a]
1302113	Therapeutic appliances and equipment	0.01	[a]	[a]	[a]	[a]
130212	Health services	0.09	[a]			
1302121	Outpatient medical services	0.02	[a]	[a]	[a]	[a]
1302122	Outpatient dental services	0.01	[a]	[a]	[a]	[a]
1302123	Outpatient paramedical services	0.02	[a]	[a]	[a]	[a]
1302124	Hospital services	0.04	[a]	[a]	[a]	[a]
130220	**Production of health services**	**0.60**	**13**			
130221	Compensation of employees	0.39	13			
1302211	Compensation of employees	0.39	13	12	7	13
130222	Intermediate consumption	0.21	[a]			
1302221	Intermediate consumption	0.21	[a]	[a]	[a]	[a]
130223	Gross operating surplus	0.03	[a]			
1302231	Gross operating surplus	0.03	[a]	[a]	[a]	[a]
130224	Net taxes on production	0.00	[a]			
1302241	Net taxes on production	0.00	[a]	[a]	[a]	[a]

Code	Description	Average Share in GDP (%)	Number of Items Specified	Number of Items Priced/Collected		
				Average	Minimum	Maximum
130225	Receipts from sales	(0.04)	a			
1302251	Receipts from sales	(0.04)	a	a	a	a
130300	**Recreation and Culture**	**0.21**	**a**			
130310	**Recreation and culture**	**0.21**	**a**			
130311	Recreation and culture	0.21	a			
1303111	Recreation and culture	0.21	a	a	a	a
130400	**Education**	**2.09**	**5**			
130410	**Education benefits and reimbursements**	**0.05**	**a**			
130411	Education benefits and reimbursements	0.05	a			
1304111	Education benefits and reimbursements	0.05	a	a	a	a
130420	**Production of education services**	**2.04**	**5**			
130421	Compensation of employees	1.43	5			
1304211	Compensation of employees	1.43	5	4	2	5
130422	Intermediate consumption	0.57	a			
1304221	Intermediate consumption	0.57	a	a	a	a
130423	Gross operating surplus	0.11	a			
1304231	Gross operating surplus	0.11	a	a	a	a
130424	Net taxes on production	0.00	a			
1304241	Net taxes on production	0.00	a	a	a	a
130425	Receipts from sales	(0.07)	a			
1304251	Receipts from sales	(0.07)	a	a	a	a
130500	**Social Protection**	**1.57**	**a**			
130510	Social protection	1.57	a			
130511	Social protection	1.57	a			
1305111	Social protection	1.57	a	a	a	a
140000	**Collective Consumption Expenditure by Government**	**7.67**	**32**			
140100	**Collective Services**	**7.67**	**32**			
140110	**Collective services**	**7.67**	**32**			
140111	Compensation of employees	4.03	32			
1401111	Compensation of employees	4.03	32	26	4	32
140112	Intermediate consumption	3.24	a			
1401121	Intermediate consumption	3.24	a	a	a	a
140113	Gross operating surplus	0.58	a			
1401131	Gross operating surplus	0.58	a	a	a	a
140114	Net taxes on production	0.07	a			
1401141	Net taxes on production	0.07	a	a	a	a
140115	Receipts from sales	(0.26)	a			
1401151	Receipts from sales	(0.26)	a	a	a	a
150000	**Expenditure on Gross Fixed Capital Formation**	32.05	125			
150100	**Machinery and Equipment**	**11.33**	**91**			
150110	**Metal products and equipment**	**8.67**	**80**			
150111	Fabricated metal products, except machinery and equipment	0.87	a			
1501111	Fabricated metal products, except machinery and equipment	0.87	a	a	a	a
150112	General purpose machinery	1.28	15			
1501121	General purpose machinery	1.28	15	7	2	15
150113	Special purpose machinery	1.57	37			
1501131	Special purpose machinery	1.57	37	21	3	37
150114	Electrical and optical equipment	4.63	28			
1501141	Electrical and optical equipment	4.63	28	20	11	28
150115	Other manufactured goods n.e.c.	0.33	a			
1501151	Other manufactured goods n.e.c.	0.33	a	a	a	a
150120	**Transport equipment**	**2.66**	**11**			
150121	Road transport equipment	1.92	11			

Code	Description	Average Share in GDP (%)	Number of Items Specified	Number of Items Priced/Collected		
				Average	Minimum	Maximum
1501211	Motor vehicles, trailers and semitrailers	1.61	11	7	2	11
1501212	Other road transport	0.31	a	a	a	a
150122	Other transport equipment	0.74	a			
1501221	Other transport equipment	0.74	a	a	a	a
150200	**Construction**[b]	**19.12**	**34**[b]			
150210	**Residential buildings**	**5.57**	**34**			
150211	Residential buildings	5.57	34			
1502111	Residential buildings	5.57	34	33	27	34
150220	**Nonresidential buildings**	**3.84**	**34**			
150221	Nonresidential buildings	3.84	34			
1502211	Non-residential buildings	3.84	34	33	27	34
150230	**Civil engineering works**	**9.71**	**34**			
150231	Civil engineering works	9.71	34			
1502311	Civil engineering works	9.71	34	33	27	34
150300	**Other products**	**1.60**	**a**			
150310	**Other products**	**1.60**	**a**			
150311	Other products	1.60	a			
1503111	Other products	1.60	a	a	a	a
160000	**Changes in Inventories and Net Acquisitions of Valuables**	**2.02**	**a**			
160100	**Changes in Inventories**	**1.83**	**a**			
160110	**Changes in inventories**	**1.83**	**a**			
160111	Changes in inventories	1.83	a			
1601111	Opening value of inventories	(43.82)	a	a	a	a
1601112	Closing value of inventories	45.65	a	a	a	a
160200	**Acquisitions Less Disposals of Valuables**	**0.19**	**a**			
160210	**Acquisitions less disposals of valuables**	**0.19**	**a**			
160211	Acquisitions less disposals of valuables	0.19	a			
1602111	Acquisitions of valuables	0.19	a	a	a	a
1602112	Disposals of valuables	(0.00)	a	a	a	a
170000	**Balance of Exports and Imports**	**4.26**	**a**			
170100	**Balance of Exports and Imports**	**4.26**	**a**			
170110	**Balance of Exports and Imports**	**4.26**	**a**			
170111	**Balance of Exports and Imports**	**4.26**	**a**			
1701111	Exports of goods and services	66.49	a	a	a	a
1701112	Imports of goods and services	(62.23)	a	a	a	a

a Reference PPPs were used.
b Only one set of basic inputs and components were used for total construction.
Note: The basic headings are in gray highlight for quick reference.

APPENDIX 3

Reports on Experiences with the International Comparison Program

Overview

This appendix provides a summary of the experiences of the national coordinating agencies in the implementation of their national International Comparison Program (ICP) activities. It is acknowledged that the Asia and Pacific region is diverse and the national profiles reflect both this and the complexities involved in conducting an international project like ICP Asia Pacific. These profiles are designed to provide an appreciation of the general procedures followed in each of the participating economies. While the emphasis is on the surveys for household products, the profiles also discuss the administrative setup, gross domestic product (GDP) expenditure weights estimation, Tool Pack experience, data validation, future plans, and an overall assessment of the ICP experience.

Bangladesh

Administrative Setup

The Price and Wage Section of the National Accounting Wing, Bangladesh Bureau of Statistics (BBS) was responsible for the collection and compilation of price and wage statistics. This Section collects monthly retail and wholesale prices of selected commodities through price collection surveys for the computation of the consumer price index (CPI) and the wholesale price index (WPI). Headed by a Deputy Director, this Section was assigned to undertake the ICP activities. Twenty four staff members in the headquarters and 130 field staff were involved in price collection surveys. The Director of the National Accounting Wing, BBS, served as the coordinator of ICP activities. To undertake the 2005 ICP activities, a core group was formed consisting of eight officers/staff from the Price and Wage Section and the National Accounts Section headed by the Director, National Accounting Wing. Three staff members in the Price and Wage Section were also trained in the use of Tool Pack.

Use of CPI Infrastructure in ICP Data Collection

The Price and Wage Section undertook the ICP price surveys. This setup was advantageous because the staff were experienced in price collection surveys; less effort was required for training and editing of data; data collection was less costly; and the capacity to undertake future ICP rounds was developed. Also, there is the possibility of institutionalizing ICP activities.

Survey Framework

The 2005 ICP price survey was conducted covering the entire country to provide reliable prices for the ICP product list. In view of funding and time constraints, an optimum sample size of outlets/shops was surveyed to ensure reliable price estimates. For the selection of samples, the whole country was divided into two "subuniverses": urban areas and rural areas. The urban areas were subdivided into two strata: metropolitan cities and municipalities (primarily district towns/headquarters) because of the significant proportion of the urban population.

Bangladesh consists of 64 administrative districts. For the ICP price surveys, a total of 57 markets, from both urban (37) and rural (20) areas, were selected with at least one urban and one rural market from each old district (i.e., from 23 districts), except Chittagong Hill tracts/districts in the case of rural markets. The remaining 14 sample urban markets were allocated in five metropolitan cities based on population size and market transaction in these cities.

The sample markets (in both urban and rural areas) were those canvassed for the regular monthly price survey for the CPIs. In the ICP price survey, most of the markets

selected for regular monthly price surveys were included as samples.

A total of 370 outlets from urban areas and 200 outlets from rural areas were selected, for a total of 570 outlets from 57 sample markets for household goods in the ICP price survey. The ICP price survey for food items under two basic headings was conducted on a monthly basis, while price collection survey for items other than food was done on a quarterly basis (middle of each quarter). Data on health and education were collected from urban areas only. The following table shows the number of outlets and the sample areas.

Appendix Table 3.1 Number of Outlets and Sample Areas, Bangladesh

	Province/City/District	Number of Outlets
1	Barisal	20
2	Patuakhali	20
3	Chittagong	50
4	Comilla	20
5	Noakhali	20
6	Rangamati	10
7	Khagrachari	10
8	Bandarban	10
9	Khulna	30
10	Jessore	20
11	Kushtia	20
12	Rajshahi	30
13	Rangpur	20
14	Dinajpur	20
15	Bogra	20
16	Pabna	20
17	Sylhet	30
18	Faridpur	20
19	Mymenshing	20
20	Tangail	20
21	Jamalpur	20
22	Kishoregonj	20
23	Dhaka	100
Total		**570**

GDP Expenditure Weights

The National Accounting Wing was responsible for the compilation of GDP and other national accounts aggregates. The Expenditure Subsection of the National Accounts Section estimated private consumption expenditures residually and through extrapolation using Household Income and Expenditure Survey (HIES) data for validation purposes. There were certain limitations in HIES data, particularly in expenditures on consumer durables, health, education, and recreation and culture. Also, there was minimal expenditure on financial services concerning nonprofit institutions serving households and other goods and services according to HIES data. In these cases, some adjustments and indirect methods were applied to derive reliable estimates of these basic headings.

Price Data Validation

Prices of various products collected through the ICP price survey were checked against CPI items or products (for common items). Unusual prices of products were verified during field visits and follow-ups; statistical methods were also used to check/validate national average prices of the products. Moreover, lessons learned from the data validation workshop were applied in checking price data.

Tool Pack Experience

Tool Pack was very appropriate for data entry and processing of ICP data. However, BBS was faced with the following difficulties when using Tool Pack: (i) it was time consuming for editing and saving raw data generated in Excel format, etc.; (ii) it was difficult to handle large amounts of data; and (iii) Tool Pack was not working in office computers due to computer security settings.

Integration of ICP Work in National Statistical Office Work Programs

The National Accounting Wing of BBS is planning to institutionalize the ICP work in its regular work programs through the following approaches:

(i) For the ICP product lists with structured product descriptions, a good number of products may be included in the regular price collection survey (CPI compilation).

(ii) GDP expenditures for 155 basic headings and the share in total GDP will be compiled on a regular basis and published in BBS publications.

(iii) Data on compensation of employees will be collected and compiled for publication in BBS regular documents.

(iv) The Price and Wage Section is planning to compute a producer price index for capital goods. BBS will include products in the equipment sector.

Previously, BBS compiled aggregate consumption expenditures by two major groups: government consumption expenditure, and private consumption expenditure. BBS attempted to compile or estimate consumption expenditures for 155 basic headings using HIES data (for private consumption expenditure), government budget, and net export data for 2004/05, and provisionally published these estimates. At the time of deriving weights/shares of the total expenditure under 155 basic headings, the following problems were encountered:

(i) Household consumption expenditures, particularly on food and beverage, were fairly good except that expenditures on pasta products and frozen foods were relatively low.
(ii) There were no disaggregated data for net purchases abroad.
(iii) Individual consumption expenditure by nonprofit institutions serving households data were not directly available.
(iv) There were no disaggregated data at the basic heading level under gross fixed capital formation.
(v) Financial intermediation services indirectly measured data were also not available.
(vi) Changes in inventories and acquisitions less disposal of valuables were almost unavailable.

In the above circumstances, indirect methods and other data sources were used to derive the expenditure shares/weights of these basic headings. GDP expenditure weights for 155 basic headings for financial year 2005 (from 1 July 2004 to 30 June 2005) were further reconciled and revised based on lessons learned from the data validation workshop.

Overall Assessment of ICP Participation

BBS gained enough experience through this phase of the ICP to be capable of carrying out future rounds of ICP activities.

Bhutan

Administrative Setup

An ICP unit was set up within the Price Section of the National Statistical Bureau (NSB) for all ICP-related matters. The National Coordinator was also the head of the ICP unit. One staff member each from price statistics and national accounts were fully engaged in the ICP project.

Use of CPI Infrastructure in ICP Data Collection

In most cases, CPI infrastructure was used for ICP price collection as regular CPI price surveys are also performed quarterly, as in ICP. In many cases, the same outlets were used for both price surveys. However, for the ICP, additional outlets were visited for rural areas. Some rural outlets were accessible only by walking two or three days from the nearest road.

Survey Framework

There were 20 data collection centers in 20 districts. The ICP survey covered two big cities, 21 urban towns, and all the major rural areas. Field staff were instructed to provide as many quotations as possible. For data collection, all the 20 District Statistical Officers (DSOs) and NSB staff participated in all the quarterly price surveys for household products. Over 35% of the CPI items were covered in the ICP. The number of outlets surveyed for the 2005 round of ICP is presented in the following table:

Appendix Table 3.2 Number of Outlets and Sample Areas, Bhutan

	City/District	Number of Outlets
1	Thimphu (city)	15
2	Chhukha	8
3	Paro	8
4	Punakha	7
5	Haa	5
6	Wangdue	7
7	Tsirang	6
8	Samtse	9
9	Sarpang	7
10	Geylegphu (city)	5
11	Phuentsholing(city)	7
12	Zhemgang	7
13	Trongsa	7
14	Bumthang	6
15	Lhuentse	6
16	Mongar	9
17	Trashigang	10
18	Trashiyangtse	7
19	Pemagatsel	6
20	Jongkhar	12
21	Dagana	8
22	Gasa	4
Total		**166**

GDP Expenditure Weights

Private Final Consumption Expenditure. Weights of different commodities were derived from the results of the 2000 HIES and the Bhutan Living Standard Survey 2003 for private final consumption. Both surveys were

carried out by NSB. For government final consumption expenditure, the sources of information were mainly the annual documents of the Ministry of Finance.

On capital formation, no proper information could be obtained from any sources for the machinery and equipment basic headings. The weights assigned were questionable and need to be changed as soon as information becomes available. For construction, proxy figures were derived from government budget documents.

Price Data Validation

The data collected by the DSOs were first reported to the National Coordinator and then discussed among the NSB staff and finally with the Director before submission to the Regional Office. NSB also organized a one-week data review workshop where data were cleaned. Participants agreed that the workshop minimized data errors and expressed the need for another workshop to review annual price data. However, funding and time constraints prevented NSB from undertaking the latter. Instead, a small group of price experts reviewed and finalized Bhutan's national average prices. Immediate steps were always taken at the country level after the regional data review workshops. Some noncomparable products were excluded from the products that were priced.

Tool Pack Experience

Tool Pack is very useful, powerful, and user friendly. NSB used all its functionalities. It is now also being used for CPI computation and has considerably improved data quality. However, a few minor changes are necessary for CPI purposes. Creation of new templates and processing of price indexes in the Data Processing Module should be available. All the functionalities in Tool Pack currently being used for ICP could be made available for CPI purposes. Both the Regional Office and the Global Office can encourage and support countries in using Tool Pack for CPI purposes.

Integration of ICP Work in National Statistical Office Work Programs

Plans are already in place to integrate the ICP work with NSB's regular CPI program. The Tool Pack software is being used for CPI. The ICP price collection will continue with the CPI collection in all the districts in the selected outlets.

Overall Assessment of ICP Participation

The ICP project has helped to strengthen Bhutan's national statistical system. To sustain the ICP in the future, the next ICP round should start immediately after this round so that the present resources and experienced personnel can also be utilized for the next round.

Brunei Darussalam

Administrative Setup

The Department of Statistics (DOS) is part of the Department of Economic Planning and Development in the Prime Minister's Office of Brunei Darussalam. DOS has two divisions: the Economic Statistics Division (ESD) and the Social Statistics and Survey Division. ESD, through the Consumer Price Statistics Section, with one statistician and seven support staff, implemented the ICP project.

Use of CPI Infrastructure in ICP Data Collection

The ICP survey used existing CPI infrastructure in price collection. Prices of CPI items that met ICP specifications were used. The overlap between the CPI and ICP items was around 30%. Additional outlets had to be visited and more staff were needed for the ICP price surveys.

Survey Framework

The prices of household items, including health and education, were collected in 416 outlets, as shown in the following table.

Appendix Table 3.3 Number of Outlets and Sample Areas, Brunei Darussalam

	District	Number of Outlets
1	Brunei-Muara	277
2	Belait	72
3	Tutong	67
Total		**416**

The number of prices quoted in the ICP surveys varied from 1 to 20 for each item depending on the types of goods and services being priced. More prices were collected for items with frequent price fluctuations and fewer prices for items with more or less stable price movements.

GDP Expenditure Weights

For personal consumption expenditure, the HIES conducted from January to December 2005 was used to obtain the weights for the detailed components. Government consumption expenditure was based on the accounts of actual expenditures while gross fixed capital formation used the commodity-flow approach, economic census or survey, government accounts, and import statistics. The change in inventories was derived from the opening and closing inventories obtained from company accounts, government accounts, economic censuses, and surveys.

Price Data Validation

The price data collected were validated before data entry in Tool Pack to ensure that items were priced based on the structured product descriptions, and were submitted to the Regional Office according to the timeline given. Price data that were inconsistent with those from other economies were reviewed in the data review workshops, and after which the required revisions were made.

Experience in Using Tool Pack

Tool Pack installation was done by DOS with assistance from the Information Communication Technology Division. In-country technical assistance on Tool Pack was not provided because Brunei Darussalam was not yet an ADB member at the start of ICP Asia Pacific (it joined ADB only in April 2006). While some problems were encountered at the initial stage, most were solved during Tool Pack training workshops.

CPI and ICP Integration

In the DOS work program, ICP is considered a new field of statistics. Permanent staff will be recruited for ICP if it becomes a regular activity.

Overall Assessment in ICP Participation

This was the first time for Brunei Darussalam to participate in the ICP and it successfully met all ICP requirements. The data review workshops were very useful in reviewing and improving price data quality and comparability, and also in terms of gaining new knowledge related to price and national accounts statistics. Some difficulties were encountered, especially in the collection of nonhousehold items; but this would have been easier had technical assistance been provided. Brunei Darussalam looks forward to joining the next ICP round.

Cambodia

Administrative Setup

The National Institute of Statistics (NIS), by law, is the official statistical agency of the Royal Government of Cambodia. It is responsible for data collection and dissemination of all statistics for the country. To implement the ICP project, NIS created a working group led by the NIS Director-General with four members from the Price Statistics Section, one from the National Accounts Section, and an information technology expert.

Use of CPI Infrastructure in ICP Data Collection

The central office and provincial staff responsible for CPI price collection also collected ICP prices for the same products in the CPI list. Additional surveys were conducted for the other items in the ICP list. The overlap between the CPI and ICP items was around 25%.

Survey Framework

The capital city of Phnom Penh was selected as one of the sample areas for the price surveys, and five provincial cities: Battambang, Kampong Cham, Siem Reap, Kandal, and Sihanoukville. The outlets selected included open markets and small retail shops. Ten quotations per product were collected from the sample areas shown in the following table.

Appendix Table 3.4 Number of Outlets and Sample Areas, Cambodia

	Province/City	Total
1	Phnom Penh	1500
2	Battambang	339
3	Kampong Cham	357
4	Siem Reap	280
5	Kandal	227
6	Sihanoukville	265
Total		**2968**

GDP Expenditure Weights

The latest socioeconomic survey (conducted in 2004) was used to derive some of the required weights for the 155 basic headings. The ICP international consultant for national accounts also provided technical assistance on GDP expenditure weights estimation.

Price Data Validation

The products priced were checked to ensure that they matched the specifications. Some errors in the prices submitted to the Regional Office were traced to problems in Tool Pack and data entry errors, but NIS tried its best to respond to the concerns raised by the Regional Office.

Tool Pack Experience

The problems initially encountered with Tool Pack were subsequently addressed with the issuance of "patches." On the whole, Tool Pack was very useful in processing data for ICP surveys. For the next ICP round, there is a need to improve Tool Pack and better preparations should be made before the start of data processing. The Regional Office should send Tool Pack experts to train country staff more rigorously.

Integration of ICP Work in National Statistical Office Work Programs

To integrate the ICP work program in the NIS, there is a plan to train price collectors and supervisors, and to schedule monthly and quarterly price collections. It is suggested that the Regional Office train staff on Tool Pack, as this will facilitate the integration of ICP work in the NSO work programs.

Overall Assessment of ICP Participation

Much experience and knowledge were gained in the conduct of price surveys, from both the Regional Office and other economies.

People's Republic of China

Administrative Setup

The ICP network in the People's Republic of China (PRC) was established at several management levels:

Interministerial Coordinating Group for ICP. Established in 2002 for the smooth implementation of the ICP in the PRC, members came from the Ministry of Foreign Affairs, Ministry of Finance, National Development and Reform Commission, Ministry of Commerce, Ministry of Construction, People's Bank, Development Research Center of the State Council, and State Administration of Foreign Exchange.

Leading Group within the National Bureau of Statistics of China (NBS). The leading group responsible for ICP was established in NBS, with the NBS Deputy Commissioner designated as head of the group. Members included the Directors-General from the Department of International Cooperation, Department of Statistical Design and Administration, Department of Comprehensive Statistics, Department of National Accounts, Urban Survey Organization of NBS, Rural Survey Organization of NBS, and the International Statistical Information Center (ISIC).

ICP Implementing Office of NBS. The ICP Division, established in ISIC under NBS, was responsible for the survey design, data aggregation, translation, technical assistance for local offices, communication with international organizations (including ADB and World Bank), and the day-to-day activities required for ICP.

City Offices. The local implementing groups, established in statistical bureaus and survey organizations of the selected 11 cities, were responsible for data collection and processing.

Use of CPI Infrastructure in ICP Data Collection

NBS employed the CPI infrastructure, including survey organization, interviewers, and sample outlets, for the ICP price surveys. However, two main problems in data collection were encountered as more than 70% of ICP products in the country were collected from special surveys, while the other products directly obtained from the CPI surveys accounted for less than 30%. Special training had to be organized for price surveys in rural areas. Experts in medical services and medical products were engaged due to technical difficulties in price collection for health products.

Survey Framework

The 11 cities that participated in the ICP survey were Beijing, Shanghai, Chongqing, Dalian, Harbin, Guangzhou, Ningbo, Xiamen, Qingdao, Wuhan, and Xi'an. The outlets were classified by levels and categories, which were obtained mainly from CPI samples. Prices were collected for the ICP household product list according to the following scheme:

Appendix Table 3.5 Number of Outlets and Sample Areas, People's Republic of China

	City	Total
1	Beijing	128
2	Shanghai	187
3	Chongqing	163
4	Dalian	127
5	Harbin	207
6	Guangzhou	83
7	Ningbo	167
8	Xiamen	193
9	Wuhan	140
10	Qingdao	168
11	Xi'an	132
Total		**1695**

GDP Expenditure Weights

The foundation of GDP estimation using the expenditure approach is weak in the PRC. Only the expenditure data of five major categories are published. The PRC submitted 155 basic heading levels of GDP expenditure data for 11 cities.

Price Data Validation

Data review workshops, market survey and research, experts' estimation, and telephone verification were used in reviewing price data for 11 cities. At the regional level, data validation was done through regional data review workshops, and by responding to comments from the Regional Office. NBS also organized its own review workshops to assess prices and conformity with product specifications.

Tool Pack Experience

While Tool Pack is very practical and functional for ICP purposes, the main problem encountered was in its translation from English to Chinese. Since Tool Pack is still new, the Global Office should further refine the software. Relevant training by the Regional Office or the Global Office should be available prior to its use.

Integration of ICP Work in National Statistical Office Work Programs

NBS agrees to participate in the preparatory work to pursue the other objective of harmonizing ICP and CPI processes. NBS also believes that this project will help improve the quality and efficiency of ICP Asia Pacific, and strengthen the statistical capacities of developing economies.

Overall Assessment of ICP Participation

In retrospect, the following problems were encountered:

(i) There is a need for a deviation from the basic ICP principles that representativity and comparability in ICP should be balanced. This is due to wide differences in levels of economic development, income, and consumption among participating economies in Asia and the Pacific. Overemphasizing comparability among the economies affected the representativity of items priced.

(ii) The current ICP is not harmonized well with routine price statistical activities, CPI in particular, which resulted in increased workload and burden for participating economies.

In this regard, the following actions are suggested:

(i) Improving preparatory work before starting the project. Preparatory work is very important for ICP so that the economies can appropriately plan for their respective national programs. At the start of the ICP, economies should be informed of all requirements, such as the organizational structure, funding requirements, personnel training, and the product specification list which should be as complete as possible. After completion of the product list, when possible, the relevant photos should be made available on time; and revision of the list should be minimized.

(ii) Classifying the participating economies by per capita GDP into several groups for comparison first, then achieving comparison using the "ring country" method for all participating economies in the region to improve the quality of comparison and data reliability.

(iii) Improving harmonization between ICP and the CPI in the participating economies. ICP implementation has strengthened the statistical capacity of national statistical offices. This has provided the PRC with the opportunity to raise its level of statistics to acceptable international standards. However, two points should be noted. First, the publication of PPP results should fully respect the opinion of each participating economy. While PPP results have their practical use, the same results may have strong political implications, especially when these are not within expectations. Therefore, it is essential to consult participating economies prior to the publication of regional and global ICP results. Second, there should be more caution in using ICP results as the ICP methodology is still in the research and experimentation stage. Therefore, the system still faces many problems. Consequently, the use of PPP results should be limited to research and analysis, and not for policy making such as computing the share of funds and loan availment, etc.

In consideration of the benefits derived from the PRC's participation in the ICP, it supports continuing efforts toward more in-depth research to further develop the ICP methodology. The PRC supports the efforts of international organizations toward this end.

Fiji Islands

Administrative Setup

In the Fiji Islands, ICP activities were conducted by the Economic Statistics Division, Bureau of Statistics. The Divisional Manager was designated as the ICP National Coordinator. Within this Division, the Senior Business Unit Manager of the National Accounts and Tourism Satellite Accounts Unit was in charge of the GDP expenditure weights estimation, while the Business Unit Manager of the Prices and International Comparison Program Unit was responsible for ICP activities.

Use of CPI Infrastructure in ICP Data Collection

The use of CPI infrastructure for the collection of price data in ICP price surveys was advantageous because CPI price collectors possessed the technical know-how for price data collection of ICP products. However, the CPI price collectors had to contend with long hours of work for price collection and data entry.

Survey Framework

Prices were collected from the two cities of Suva and Lautoka; and the four towns of Nausori, Ba, Nadi, and Labasa. ICP household consumption prices were collected

from a total of 481 outlets which included small retail stores; markets; specialized outlets such as chemists and private clinics; and supermarket chains. A minimum of 15 quotations was targeted, but in many cases this was not possible given the size of the country. The overlap in the CPI and ICP items was 13%.

The following table shows how the ICP product list was priced for household items, including health and education.

Appendix Table 3.6 Number of Outlets and Sample Areas, Fiji Islands

	Province/City	Number of Outlets
1	Suva	139
2	Nausori	45
3	Nadi	91
4	Lautoka	86
5	Ba	65
6	Labasa	55
Total		**481**

GDP Expenditure Weights

GDP expenditure data at the aggregate level were readily available since they are published quarterly in "Key Statistics" and on the website www.statsfiji.gov.fj. However, to obtain the 155 basic headings, appropriate statistical tools were applied to the following GDP expenditure components:

(i) Private final consumption expenditure data that were only available at the "class" level (6-digit level) were disaggregated into 110 basic headings based on the 2002 HIES.

(ii) Government final consumption data were reclassified according to "Individual and Collective" Consumption Expenditure by Government.

(iii) Gross fixed capital formation data that were available at the "Category level" (4-digit level) were disaggregated into 12 basic headings:

  (a) The machinery and equipment category was disaggregated into eight basic headings based on appropriate Harmonized System codes as per the Central Product Classification Version 1 on Imports of Machinery & Equipment.

  (b) The construction category was disaggregated into three basic headings based on building completion certificates issued.

  (c) The Other Products category was treated as the residual.

Price Data Validation

Price data were manually checked prior to data entry in Tool Pack with the units of measurement in Tool Pack carefully checked against those used in the prices collected. The data review workshops were valuable in understanding data validation better. Comparative analysis with other economies helped improve data quality and fasttracked the data validation/revision process.

Tool Pack Experience

Despite difficulties faced in the early stages such as units of measurement not aligning with the product catalogue, and teething programming problems, Tool Pack was a good tool. In the next ICP round, and only if a new program is introduced, longer training sessions on familiarization with the program should be held involving the price statisticians and information technology specialists.

Integration of ICP Work in National Statistical Office Work Programs

The following are suggested for ICP implementation:

(i) Develop a "Year planner" for ICP activities to enable the national statistical offices to balance ICP work with core activities.

(ii) Use of palm pilots for data collection to enable data transfer directly to the computer, thus saving long hours required for data entry.

(iii) Involvement of other Pacific island countries.

(iv) Capacity building for national statistical offices through consultation among participating economies.

(v) ADB to push for governments to set up permanent units within their organizations for ICP work.

(vi) Advance information on ICP commodities prior to ICP price collection.

(vii) More funding to recruit field staff and purchase equipment.

Overall Assessment of ICP Participation

The main disadvantage lies in not having a permanent ICP unit. Because of this, the Bureau of Statistics was unable to retain staff and the bulk of the work was done by the permanent CPI staff who had to work long hours. Another disadvantage was the duplication of work, i.e., one had to write prices on a worksheet and then do data entry, thus the suggestion for palm pilots. However, at least one Pacific Island country participated, and Fiji Islands was privileged to represent all of them.

Hong Kong, China

Administrative Setup

ICP data collection was undertaken by the Census and Statistics Department under the supervision of an Assistant Commissioner, who was also the National Coordinator. A team of 10 professional and subprofessional staff from the Department's Price Statistics Branch and National Income Branch were involved, some working full-time and others part-time.

Use of CPI Infrastructure in ICP Data Collection

The ICP data collection work was integrated into the regular retail price survey, which collects price data for the compilation of the CPI, to achieve optimum efficiency and cost effectiveness. Over 40,000 price quotations of household consumption items were submitted for regional comparison. For most of these items, price data were extracted directly from the CPI database and thus duplication in pricing of similar items was avoided.

For items not covered in the retail price survey, additional data were collected through the same survey to make use of the staff's experience and product knowledge. Moreover, additional data were collected from outlets already covered in the CPI to the extent possible, to minimize extra effort in outlet recruitment and data collection.

Survey Framework

Among the household consumption items required in the ICP, some 75% of the items were covered in the CPI. The survey collected price data on household consumption items from about 1,800 outlets throughout the whole economy, covering both urban and rural areas.

GDP Expenditure Weights

In mapping the 155 basic headings with the existing expenditure breakdowns of GDP, it was found that direct data were available for most of the basic headings. In cases where the expenditure items were relatively less significant and detailed breakdowns were not fully available in the GDP compilation system, estimates were produced by making reference to comprehensive data collected in the latest 2004/05 round of the Household Expenditure Survey, and retained imports statistics with detailed commodity breakdowns.

Price Data Validation

All collected data were thoroughly checked before submission to the Regional Office. Particularly, the product specifications of items priced were examined to ensure that they exactly matched the ICP requirements. Moreover, the price level of individual products and price relativity between comparable items were checked to identify possible outliers. References were made to indicators such as the "coefficient of variation (CV)" and "minimum to maximum price ratio" of individual items in performing these validations. In the course of conducting the ICP, validation rules were revised, taking into consideration the concerns raised by the Regional Office at the data review workshops. For instance, stricter rules (i.e., smaller CV and larger minimum to maximum ratio) were adopted after the workshops in screening possible outliers.

Tool Pack Experience

Hong Kong, China used the Price Administration Module (PAM) and Data Processing Module (DPM) but not the Price Collection Module (PCM) because most data were collected for the purpose of CPI compilation and thus data input was performed through the regular CPI compilation system instead. Basically, the PAM and DPM were easy to use. From experience, Tool Pack could be further enhanced by:

(i) Streamlining the process from uploading the comma separated values (CSV) file containing raw data quotations through exporting output files for data submission (currently, switching between PAM and DPM is required more than once for this purpose).

(ii) Providing more detailed guidelines on how to apply weights (e.g., outlet type weights, geographic location weights, population weights) in compiling the national average prices through Tool Pack.

(iii) Shortening the time required for generating raw data files (currently, more than 30 minutes are required to generate a file containing around 15,000 quotations).

Overall Assessment of ICP Participation

The experience gained and the dialogue engendered in the ICP will definitely strengthen statistical capacity in compiling price statistics, particularly in developing economies. Participation in the ICP was a valuable experience. It gave the opportunity to exchange experiences and views on price statistics with other economies and with international experts/consultants, and has increased understanding of the price surveys in other economies. The data review workshops, product list workshops, and the experience of using validation tools such as the Quaranta Table and Dikhanov Table in detecting outliers in price data were particularly useful.

India

Administrative Setup

The overall responsibility of collection, validation, analysis, and coordination with various agencies for ICP activities was delegated to the Prices and Cost of Living Unit, which is part of the National Accounts Division of the Central Statistical Organisation, Ministry of Statistics and Program Implementation (MOSPI). This Division is headed by an Additional Director General, also nominated as National Coordinator for ICP.

Various agencies were involved in ICP. The Field Operations Division of the National Sample Survey Organisation was entrusted with carrying out all household consumption item surveys. The entire work pertaining to testing, operation of software, and data entry was entrusted to the Computer Centre of MOSPI.

In view of the importance of ICP, MOSPI constituted the "Expert Committee on ICP" to provide technical advice for ICP activities.

Use of CPI Infrastructure in ICP Data Collection

The CPI infrastructure was used for price data collection of household consumption items. As specifications of the price dataset of the ICP list were quite different from the CPI for many items, this translated to a significant increase in workload and adoption of a different sampling design for ICP. The overlap in the CPI and ICP items was difficult to determine because items in the CPIs varied across price collection centers.

Survey Framework

For household consumption items, two different sampling schemes were adopted for computing national average prices. Food, clothing, footwear, and education were priced in 31 urban centers and 201 rural villages. For household consumption items other than food, clothing, and footwear, surveys were conducted in all the 31 urban centers selected. For private medical services, therapeutic appliances, and equipment, sampling design was the same but prices were collected only from August to September 2006. The number of distinct outlets selected for pricing as per the sampling design is given below:

Appendix Table 3.7 Number of Outlets and Sample Areas, India

	State	Food, Clothing, and Footwear	Other Household Items	Health Services	Education
1	Jammu and Kashmir	19	2	2	12
2	Himachal Pradesh	15	2	2	12
3	Punjab	17	2	2	12
4	Haryana	16	2	2	12
5	Delhi	36	6	6	36
6	Rajasthan	31	4	4	24
7	Uttar Pradesh	56	6	6	36
8	Bihar	25	2	2	12
9	Sikkim	12	2	2	12
10	Manipur	15	2	2	12
11	Tripura	15	2	2	12
12	Meghalaya	15	2	2	12
13	Assam	21	2	2	12
14	West Bengal	61	8	8	48
15	Orissa	23	2	2	12
16	Madhya Pradesh	47	4	4	24
17	Gujarat	46	6	6	36
18	Maharashtra	78	10	10	60
19	Andhra Pradesh	55	6	6	36
20	Karnataka	48	6	6	36
21	Kerala	19	2	2	12
22	Tamil Nadu	47	6	6	36
Total		**717**	**86**	**86**	**516**

GDP Expenditure Weights

Household consumption expenditure estimates were derived for all the 110 basic headings of household consumption using private final consumption expenditure (PFCE) estimates of 157 items/groups prepared for National Accounts Statistics (NAS) based on a detailed concordance between PFCE items and ICP basic headings. The results of the Consumption Expenditure Survey, Annual Survey of Industries data, and subjective judgment were used to derive basic heading weights for the other GDP expenditure groups, for which no concordance between NAS-disaggregated PFCE and the basic heading items could be established.

Price Data Validation

Aside from the detailed training undertaken for the ICP price surveys, a trial survey before regular price collection was first undertaken. The close supervision of experienced CPI price collectors engaged for the surveys also ensured the quality of data for the ICP price surveys. Issues raised in the data validation workshops were also communicated to the field for appropriate action.

Tool Pack Experience

India was one of the countries where Tool Pack was tested and suggestions to improve the software were incorporated. However, since these were made prior to the ICP price surveys, a number of shortcomings was encountered during the actual survey period. Although Tool Pack was found to be very helpful in data analysis and validation, it was felt that it is not too user friendly. Introducing frequent amendments to the software created problems in the use of Tool Pack. Moreover, for the optimal utilization of the software, more intensive training is required.

Integration of ICP Work in National Statistical Office Work Programs

If a decision is made to continue ICP regularly, India may consider integrating ICP work with its CPI activity, notwithstanding the fact that the integration of ICP and CPI activities may put an additional burden on available human resources. Besides reducing the costs involved in ICP data collection, such integration will likely reduce possible subjectivity and biases in the ICP data as the data are also used in the national statistical activities. This would eventually lead to more robust and credible purchasing power parity (PPP) numbers.

Overall Assessment of ICP Participation

It is appreciated that a lot of effort has been invested in the 2005 ICP to overcome problems of data comparability and reliability and to enhance the statistical capacity of participating economies. On the basis of the experience gained so far, some suggestions are outlined below:

(i) Explore the possibility of providing technical support by economies to participating economies faced with technical problems in future ICP rounds.

(ii) For the successful execution of the program, it is necessary for the economies to assess the exact quantum of work before starting the field work. Toward this end, it is proposed that for future ICP phases, all the structured product descriptions and the methodology for computing PPPs be finalized well before the launch of the program.

(iii) Colored photographs of the product list certainly help in product identification, but more effort is required to be taken to improve the structured product descriptions and to ensure the comparability of prices collected by the different economies. Some of the suggestions in this regard are:

  (a) A subregional approach to product list preparation may be adopted in view of the heterogeneity of the Asia and Pacific region.

  (b) As the ICP survey is not part of regular surveys in any economy in the region, it is felt that after finalizing all the structured product descriptions, a pilot survey may be conducted to identify the outlets and other problems encountered. The main survey may start only after threshing out problems in the pilot survey.

Indonesia

Administrative Setup

Badan Pusat Statistik—Statistics Indonesia (BPS) was responsible for the ICP in Indonesia. The National Accounts and Statistical Analysis Directorate, Financial and Price Statistics Directorate, Rural Producer and Consumer Price Statistics Division, Wholesale Price Statistics Division, and the Division of Urban Consumer Price Statistics were involved in the program, together with various statistical officers at the subnational level.

Use of CPI Infrastructure in ICP Data Collection

The Indonesian ICP survey was a combination of the regular CPI survey and specific ICP survey. Additional data from the CPI system helped increase the number of ICP price quotations.

Survey Framework

Originally, the ICP household survey was conducted in four areas, representing urban-rural areas, Western-Eastern Indonesia, Java-Outer Java islands, and large-medium cities. The coverage was later increased for a better representation of the national average prices. The following table shows the distribution of the ICP outlets.

Appendix Table 3.8 Number of Outlets and Sample Areas, Indonesia

	Province	Total
1	Aceh	8
2	Sumatra Utara	17
3	Sumatra Barat	9
4	Riau	8
5	Jambi	6
6	Sumatra Selatan	7
7	Bengkulu	138
8	Lampung	6
9	Bangka Belitung	3
10	DKI Jakarta	718
11	Jawa Barat	22
12	Jawa Tengah	18
13	Yogyakarta	4
14	Jawa Timur	52
15	Banten	7
16	Bali	3
17	Nusa Tenggara Barat	3
18	Nusa Tenggara Timur	3
19	Kalimantan Barat	165
20	Kalimantan Tengah	5
21	Kalimantan Selatan	5
22	Kalimantan Timur	4
23	Sulawesi Utara	8
24	Sulawesi Tengah	6
25	Sulawesi Selatan	10
26	Sulawesi Tenggara	101
27	Sulawesi Barat	9
28	Papua	7
Total		**1352**

GDP Expenditure Weights

The BPS updates GDP expenditure data regularly. However, for ICP purposes, special efforts were made to develop GDP expenditure weights for the 155 basic headings.

Price Data Validation

Data validation was the most demanding job among the ICP activities. Unlike the CPI where the use of substitute items was appropriate, the ICP focused more on comparability among areas/economies and representativity at the same time. As a result, the validation process was applied several times and involved data collectors and the Regional Office. The guidelines from several ICP workshops such as the minimum number of quotations, the coefficients of variance, and the ranges between the lowest and the highest prices were followed.

Tool Pack Experience

The BPS did not encounter major problems with Tool Pack.

Integration of ICP Work in National Statistical Office Work Programs

In addition to representativity, the ICP helped improve the CPI system by giving attention to comparability. BPS is studying the possibility of integrating the ICP into its regular work program.

Overall Assessment of ICP Participation

Overall, participation in the ICP has enriched BPS's experience in dealing with prices within the country and among economies. It guided the BPS to be more careful with data validation; and helped to explore items that were not given attention, such as machinery and equipment prices. Above all, the shared global perspectives developed closeness and friendship among statisticians in the Asia and Pacific region.

The PPP results from the ICP provide a realistic picture of the purchasing power parity between the Indonesian currency and those of other economies. The PPP also offers a better perspective on the general condition of the Indonesian economy compared to other economies.

Islamic Republic of Iran

Administrative Setup

The Statistical Center of Iran (SCI) implemented the ICP national program. There was no formally designated national coordinator, but one staff member led the ICP activities and was assisted by other staff members of the SCI's Price Indices Office.

Use of CPI Infrastructure in ICP Data Collection

After undergoing the required training, the CPI price collectors also conducted the ICP price surveys. This arrangement proved to be very advantageous as the CPI price collectors were familiar with price concepts, real sale prices, price collection, sample areas, and price submission to the SCI.

Survey Framework

The household price surveys were carried out in the urban areas of all 30 provinces and the rural areas of 28 provinces in four separate seasons in 2005. For the purpose of price collection, a number of questionnaires were designed. The urban questionnaires included 440 items of goods and services from all groups of the Classification of Individual Consumption by Purpose (COICOP), while the rural questionnaires consisted of 266 items of goods and services. For each item in the urban questionnaires, up to 138 price quotations were collected for one season.

And for each item in the rural questionnaires, up to 62 price quotations were collected. In this project, besides 30 provincial capitals, 50 more cities in the country were also covered. The project was also implemented in 62 villages across the nation.

The following table shows details of provinces/cities and the number of outlets where the ICP price data for household items, including health and education, were collected.

Appendix Table 3.9 Number of Outlets and Sample Areas, Islamic Republic of Iran

	Province	Total
1	Markazi	7
2	Gilan	12
3	Mazandaran	14
4	Azarbayejan Sharghi	17
5	Azarbayejan Gharbi	13
6	Kermanshah	10
7	Khozestan	17
8	Fars	18
9	Kerman	11
10	Khorasan Razavi	29
11	Esfehan	25
12	Sistan Balochestan	7
13	Kordestan	6
14	Hamedan	8
15	Chahar Mahal va Bakhtyari	3
16	Lorestan	8
17	Ilam	2
18	Kohgiloyeh va Boyer Ahmad	3
19	Boshehr	3
20	Zanjan	5
21	Semnan	2
22	Yazd	5
23	Hormozgan	6
24	Tehran	80
25	Ardebil	5
26	Ghom	6
27	Ghazvin	5
28	Golestan	6
29	Khorasan Shomali	4
30	Khorasan Jenobi	1
Total		**338**

Since all items were included in the price collection questionnaires, enumerators had to go to all kinds of data sources (including food retail establishments, supermarkets, clothes shops, shoe shops, textile shops, pharmacies, public and private clinics, and public and private institutions) in order to complete the questionnaires. Therefore, all data sources were covered in selected urban and rural areas.

SCI cannot really ascertain the exact overlap in CPI and ICP items, because only a small number of items were used directly from the CPI.

SCI uses loose specifications for pricing items in the CPI and advised price collectors to record the exact specification for any outlet and keep it consistent. So, there was more than one specification for any specific item all over the country. But in the ICP, SCI used tight specifications and applied them for all rural and urban areas. There was a complete overlap in the CPI and ICP outlets.

GDP Expenditure Weights

The information on expenditure weights for all 155 basic headings was available in SCI. The expenditure weights for 105 basic headings for household individual consumption were based on the 2005 Urban and Rural Households Income and Expenditure Survey by the Price Indices Office, ratified later by the Office of National Accounts. Expenditure weights of the remaining 50 basic headings were calculated by the Office of National Accounts.

Price Data Validation

A group of price experts undertook the price validation procedure. The unit of measurement and specification for items were initially checked for conformity with the regional product list, and then outlier prices were reviewed. Statistical parameters were also employed to validate results and make price averages meaningful at the national level.

Tool Pack Experience

All Tool Pack modules were thoroughly used at different stages, though their being not in the Farsi language caused some problems.

Integration of ICP Work in National Statistical Office Work Programs

SCI has not identified any plan to integrate ICP activities into its regular work. But in the years ahead, it plans to organize a group of experts consisting of statisticians, price statisticians, national accountants, construction experts, machinery experts, systems analysts, and programmers to prepare for the next round of ICP.

Overall Assessment of ICP Participation

(i) The ICP experience provided the opportunity for SCI to participate, and to collaborate with international organizations and other economies, in the largest worldwide statistical activity conducted simultaneously across the globe.

(ii) Iran's participation gave access to state-of-the-art technology in data collection and editing, and PPP computation methods. These could help improve the quality of the CPI.

(iii) In establishing proper connections with other economies and international organizations, Iran benefited from this experience in improving the quality of its ICP project.

(iv) Iran is also improving the procedure of providing accurate statistical data on national accounts and price indexes in line with global standards.

Lao People's Democratic Republic

Administrative Setup

The National Statistical Center (NSC) was the ICP implementing agency in Lao People's Democratic Republic (Lao PDR), and it established an advisory group to assist the ICP National Coordinator with ICP activities. The advisory group's members were from the National Accounts Division and Social Statistics Division.

Use of CPI Infrastructure in ICP Data Collection

In the ICP price collection, 11 CPI price collectors were responsible for food items, and clothing and footwear items. Some of these items were priced from the same CPI outlet. For the health and education price survey, price collectors from the Department of Food and Medicine Management in the Ministry of Health, and the Department of Private Education Management in the Ministry of Education, conducted the surveys. The outlets for health and education items were different from those used for the CPI.

Survey Framework

The NSC conducted monthly household price surveys from which quarterly averages were derived. The provincial price statistician was the price collector in the province. The overlap between ICP and CPI was about 15%, mostly for food items. The following table summarizes the coverage of household price surveys.

Appendix Table 3.10 Number of Outlets and Sample Areas, Lao People's Democratic Republic

	Province	Number of Outlets
1	Vientiane Capital	17
2	Khammuane	7
3	Savannakhet	7
4	Luangphrabang	4
5	Oudomxay	4
6	Xayaboury	4
7	Saravan	4
8	Champasack	7
Total		**54**

The ICP household price surveys were conducted in the capital city and seven provinces. Actual surveys began in the second quarter of 2005. The NSC and Department of Food and Medicine Management of the Health Ministry together conducted the health price survey in the last quarter of 2005. This survey was conducted in eight provinces but only one outlet was surveyed because prices of medicine, health instruments, and health services are government controlled.

GDP Expenditure Weights

Problems with GDP expenditure were data availability at the NSC and deriving GDP expenditure weights for the 155 basic headings.

Price Data Validation

NSC conducted training for price collectors before the field operation. Topics included the importance of ICP, the sample selection, and data collection and data validation in the field. It was emphasized that data validation should follow both the product specifications and the product catalogue. Two survey supervisors in four provinces were employed to ensure the integrity of the surveys. After collecting prices in the field, the prices were aggregated and validated before submission to the NSC on a monthly basis. The NSC checked and validated the prices before data entry was undertaken.

The data validation in the NSC involved reviewing the products priced for conformity with ICP product specifications; comparison with similar or the same CPI product; and comparison with data in other sample areas.

Tool Pack Experience

Tool Pack is very useful, but it is also very difficult to use when so many modules are used at the same time. It is not easy to perform data editing and data cleaning with Tool Pack.

Integration of ICP Work in National Statistical Office Work Programs

It is appreciated that the ICP is very important for each economy, especially PPP computations. However, Lao PDR can only continue its participation with the necessary funding support.

Macao, China

Administrative Setup

The Statistics and Census Service (DSEC), as the producer of the official statistics of Macao, China, was responsible for ICP price collection. Supervised by the Chief of the Services and Prices Statistics Department of DSEC, the ICP team (comprising a senior officer and nine enumerators) conducted ICP price surveys for household and nonhousehold consumption items while collecting prices for the CPI. The National Accounts Division of DSEC was responsible for verifying GDP weights necessary for the compilation of PPP.

Use of CPI Infrastructure in ICP Data Collection

Members of the ICP team were experienced CPI enumerators familiar with the outlets and the proper procedures for collecting prices. However, CPI price collectors had to adjust their routines to visit other outlets to collect prices for ICP items. In addition, CPI enumerators had difficulties in pricing unfamiliar items for pharmaceutical products. Fortunately, they were able to get the cooperation of shopkeepers who provided them with prices according to the listed specifications.

Survey Framework

ICP price surveys covered the entire area of Macao, China that consists of the Macao Peninsula, as well as the Taipa and Coloane islands. As a result, over 1,400 outlets were covered, among which 1,079 outlets were covered in the ICP household price surveys, including health and education. More than 35,000 price quotations were included in this operation, with 43% of ICP items overlapping with the CPI items.

GDP Expenditure Weights

No major difficulties were encountered in calculating the 155 basic headings of the GDP expenditure weights. Similar to many other economies in the region, the common problems included the estimation of financial intermediation services indirectly measured and valuables, as well as the pricing of illegal activities such as prostitution.

Price Data Validation

Similar validation rules for CPI data were adopted with slight modifications to account for the difference between CPI and ICP. Prices were verified through manual and automated processes. For fresh food, it was decided to use a price if it is 30% higher or lower than the previous price. For other goods and services, if the price is 10% more or less than the previous one, enumerators revisited the outlet and verified the price and specifications of the item. Because of dissimilarities in product specifications and local conditions among economies, price discrepancies were still inevitable even with rigorous data validation rules. Consequently, the process of price confirmation/review was repeated as needed.

Tool Pack Experience

Tool Pack, a powerful software package for compiling the CPI and ICP, was also useful for geographically large economies where regional or subregional data can be easily transmitted using its built-in network function. For Macao, China, integrating Tool Pack with the existing CPI program in DSEC yielded less favorable results as the computer system had to be reset before switching to Tool Pack. Consequently, price data were retrieved from the CPI database prior to incorporation with ICP price quotations. The setup procedure in Tool Pack should be improved. It is rather time consuming to wait after each step for the screen to be refreshed. Local technical support should be reinforced, for instance, where a technical handbook could be given to local information technology staff.

Integration of ICP Work in National Statistical Office Work Programs

A concrete ICP work schedule would help in the integration of ICP activities in DSEC's annual work plan.

Overall Assessment of ICP Participation

For economies planning to set up or improve their own price surveys, the ICP provides the best opportunity to share practical experience in the essential stages of product specification, price collection, data validation, and data review, etc.

At the initial stage, late communication on price collection details such as scale of price collection, items in the product list, number of prices needed, etc., caused some NSOs to allocate extra resources to collect, review, and revise price data. Despite these difficulties, the successful conclusion of ICP Asia Pacific testifies to the effective cooperation among the national statistical offices and the Regional Office. Learning from this experience, the next ICP operation is expected to be better and more efficient.

DSEC was delighted to participate in this important project and looks forward to joining the next round. The ICP team has benefited from the expertise and the inspiring views of colleagues in ICP Asia Pacific.

Malaysia

Administrative Setup

The Department of Statistics (DOS) set up an administrative unit in the Prices Section exclusively for ICP work. The unit was headed by the National Coordinator and assisted by an Assistant Director, Senior Statistical Officer, Senior Clerical Officer, and two Clerical Officers. The Director of the Prices, Income and Expenditure Division was appointed as the National Coordinator.

Use of CPI Infrastructure in ICP Data Collection

More than half the ICP items were in the CPI basket, and collection was done in both urban and rural centers throughout Malaysia. Since the price collection for CPI is done monthly, these were simply copied into the ICP database. Enumerators collected prices for CPI and ICP using the same questionnaire.

Problems encountered during ICP price collection:

(i) In order to integrate CPI data with the ICP database, prices needed to be transformed into CSV format with the other ICP items for uploading in Tool Pack.

(ii) Conversion of the CPI items to ICP requirements (in terms of units of measure) needed to be done.

(iii) Specific items in terms of brand and quality were difficult to find in Peninsular Malaysia, Sabah, and Sarawak.

(iv) Training had to be conducted from time to time for the regional offices and frequent visits to the field were made to ensure that uniform methodology and systems were used. This was also one of the ways to inform field staff of the changes made in the product list.

(v) The unit of measurement and specifications in the product catalogue changed quite frequently and prices collected for the previous months prior to the changes needed to be amended to capture the changes.

Survey Framework

Price collection was done in 14 states of Peninsular Malaysia, Sabah, and Sarawak. The ICP price surveys were conducted in 36 capital and urban centers, and 15 rural centers. At least three quotations were collected for each item. Types of outlets included wet markets for perishable items, supermarkets, department stores, sundry shops, electrical supply stores, bakeries, etc. Approximately 33% of ICP items were in the CPI basket of goods and services.

Malaysia priced the ICP product list for household items, including health and education, from 5,332 outlets distributed across three major areas.

Appendix Table 3.11 Number of Outlets and Sample Areas, Malaysia

	Province/City	Total
1	Peninsular Malaysia	5035
2	Sabah	150
3	Sarawak	147
	Total	**5332**

GDP Expenditure Weights

No problems were encountered in deriving the GDP expenditure weights for 155 basic headings.

Price Data Validation

Data received from all the regional centers were merged and the final listing was edited to ensure that products were priced based on the required specifications. The necessary clarifications were sent to the respective regional centers for review and verification. Field visits were also carried out in cases of wide price variations and for products that were not priced according to the required specifications.

Tool Pack Experience

Problems were encountered at the initial stage but were resolved as the ICP staff became more familiar with the software. The more common errors experienced were the following:

(i) Uploading CSV files the first time was smooth, but when revisions were made on the CSV files and uploaded for the second time, there was duplication in the data.

(ii) Prices were collected according to the product specifications and units given, but the diagnostic reports showed erroneous results as the units of measure in Tool Pack were different from those in the product catalogue.

The units of measurement in Tool Pack should follow the product catalogue exactly. Economies should be informed of any changes in the product catalogue as early as possible.

Integration of ICP Work in National Statistical Office Work Programs

ICP work required extra commitment on top of the current tight workload but DOS managed to integrate ICP work and assign appropriate officers/staff for ICP work. Some issues to note:

(i) Since most of the items in the CPI basket of goods and services are similar in specifications, integrating ICP items would only involve fixing the units of measurement of the items in the CPI.

(ii) Tool Pack is used for calculating ICP average prices, whereas the CPI has its own program. DOS has since decided to adopt Tool Pack for CPI prices, particularly the analysis component of Tool Pack.

Overall Assessment of ICP Participation

Participation in the ICP project was an honor for Malaysia. DOS managed to contribute efforts and expertise in price collection and shared data with participating economies. Malaysia's participation was a good experience in meeting its international commitment for data collection for ICP Asia Pacific and the Ring Comparison.

Maldives

Administrative Setup

The Short Term Indicators (STI) Unit under the National Accounts and Economic Indicators Section in the Statistics Division, Ministry of Planning and National Development, was responsible for ICP activities. The STI Unit is composed of a unit head and four staff members; it is also in charge of the CPI, producer price index, import and export unit value indexes, and other short-term indicators of the economy. Price collection was carried out jointly by the STI Unit staff, island staff involved in CPI data collection, and Survey Unit staff of the Statistics Division.

Use of CPI Infrastructure in ICP Data Collection

ICP activities expanded CPI data collection outside the capital, Malé. ICP and CPI price surveys were simultaneously done in the islands, thus minimizing survey cost. However, one disadvantage of using the same infrastructure was the greater burden experienced by data collectors as they had to gather data for both CPI and ICP.

Survey Framework

Sample outlets were distributed as follows:

Appendix Table 3.12 Number of Outlets and Sample Areas, Maldives

	Province/City	Total
1	Malé	184
2	S. Hithadoo	16
3	HDh. Kulhudhuffushi	13
4	GDh. Thinadhoo	13
5	Gn. Fuvahmulah	10
Total		**236**

CPI and ICP items overlapped by about 50%.

GDP Expenditure Weights

GDP expenditure weights were calculated using the HIES conducted in 2002/03. However, as this was the first exercise of its kind, external help was used in the calculation of the weights. It must be noted that not all 155 basic headings were available for Maldives as some of these are not part of its consumption data.

Price Data Validation

Initial data validation was done by checking for price consistency throughout the country, and cross-checked with CPI prices, where possible. Telephone or field verification was done to check for possible errors. Data cleaning and data validation were done under the guidance of the STI Unit head. Some informal discussions on the final outputs sent by the Regional Office for confirmation were carried out with senior staff of the Statistics Division, during the final stages of ICP.

Tool Pack Experience

The software was quite useful and thoroughly used in ICP activities. However, largely due to insufficient training to tackle problems encountered in the software use, the STI Unit had to deal with many issues. Tool Pack may have to be improved to enable economies to use all the functions in the program.

Integration of ICP Work in National Statistical Office Work Programs

ICP data collection was totally integrated with CPI data collection, even though separate forms were used as most of the specifications for the products were different from those in the CPI. If Tool Pack is improved and all functions are made available for country use, it can be a very good program for index calculations as it offers ample opportunity to recheck data.

Overall Assessment of ICP Participation

Maldives' participation in this international enterprise gave confidence to the STI Unit, and Statistics Division as a whole, in undertaking statistical activities. In addition, the sharing of economy experiences gave them better insight into the statistical systems of other economies in the region. As a statistical organization, the Statistics Division matured and gained much knowledge in the technical aspects of the ICP. All data validation workshops were very useful in improving the technical capability of the STI Unit.

Mongolia

Administrative Setup

The Statistical Planning and Policy Coordination Department of the National Statistical Office implemented the ICP in Mongolia. An ICP working group was established in 2003, chaired by the ICP National Coordinator.

Use of CPI Infrastructure in ICP Data Collection

The use of the CPI infrastructure facilitated ICP price surveys because of the experience of CPI price collectors in undertaking price surveys. They also received additional training from the ICP working group.

Survey Framework

ICP price collection covered the capital city of Ulaanbaatar and 21 provincial centers. At least 15 price quotations were collected where possible. About 40% of CPI items was the same as ICP items, though there were some differences in terms of units of measurement and product specifications. As shown in the following table, a total of 506 outlets were covered by the ICP household price surveys.

Appendix Table 3.13 Number of Outlets and Sample Areas, Mongolia

	Province/City	Total
1	Arkhangai	10
2	Bayan-Ulgii	8
3	Bayankhongor	10
4	Bulgan	6
5	Govi-Altai	8
6	Dornogovi	12
7	Dornod	13
8	Dundgovi	8
9	Zavkhan	9
10	Uvurkhangai	14
11	Umnugovi	10
12	Sukhabaatar	12
13	Selenge	16
14	Tuv	10
15	Uvs	11
16	Hovd	8
17	Huvsgul	12
18	Hentii	10
19	Govisumber	6
20	Darkhan	36
21	Orkhon	45
22	Ulaanbaatar	232
Total		**506**

GDP Expenditure Weights

No problems were encountered in deriving GDP expenditure weights, except for data on prostitution and narcotics.

Price Data Validation

To check and validate ICP data collected in each survey, the National Statistical Office used some CPI prices which were harmonized with ICP and checked the product specifications, units of measurement, and data entry errors.

Tool Pack Experience

Initial problems encountered with Tool Pack were eventually addressed by the software developers, who made it more user friendly. In the future, it will be useful to guide economies on how to produce output tables.

Integration of ICP Work in National Statistical Office Work Programs

The products and services of Mongolia's CPI basket were reclassified from 2006 according to the COICOP; the HIES expenditures were also classified using COICOP. The National Statistical Office is planning to include more ICP products in the CPI basket which will be revised in 2010.

Overall Assessment of ICP Participation

The ICP experience gave Mongolia an opportunity to improve its price data quality and enhance statistical capacity through knowledge gained from the training and workshops conducted by the Regional Office.

Future rounds should emphasize evaluation of national accounts data quality, and preparation of product lists. The number of products for the household consumption survey has to be reduced, taking into consideration the scope and coverage of future surveys.

Nepal

Administrative Setup

The Central Bureau of Statistics (CBS), through its Price Statistics Section, implemented the ICP. The Section's Deputy Director was designated as the National Coordinator. Administrative supervision and guidance was provided by the Deputy Director General as Division Chief of the Economic Statistics Division, but the Director-General of CBS made the final decision on the administrative side of the program.

To provide technical guidance for ICP implementation, a National Coordination Committee was formed under the leadership of the ICP National Coordinator, with the following members: Chief, National Accounts Section/CBS; Chief, Price Statistics Division/Nepal Rastra Bank (Central Bank of Nepal), and Chief, Market Development Directorate/Department of Agriculture. As needed, the Committee invited subject-matter experts from different sections of CBS; university teachers from the Tribhuvan University; consultants from the Ministry of Finance; Undersecretary of the Ministry of Industry, Commerce and Supply; and professionals from various sectors. For construction and equipment, two engineers from the Department of Roads provided technical expertise for the price surveys. Various private and government engineers and professionals were also invited to the committee meetings to discuss issues related to construction and equipment. The Director-General and Deputy Directors General of CBS participated in the committee meetings as observers.

Use of CPI Infrastructure in ICP Data Collection

As the CPI is compiled and published by the Central Bank of Nepal, the CPI infrastructure could not be used directly for ICP price surveys. However, as an ICP National Coordination Committee member, the Central Bank representative provided guidance in the conduct of the ICP price surveys that were carried out by the 15 branch offices of CBS.

Survey Framework

The country was divided into four domains: Mountain, Hill, Terai, and Kathmandu valley. ICP price surveys covered 31 price collection centers throughout the country, 14 urban price collection centers with 2,908 outlets, and 17 rural price collection centers with 903 outlets. A total of 73,299 price quotations were collected.

The following table shows the number and distribution of outlets for the ICP product list for household items, including health and education.

Appendix Table 3.14 Number of Outlets and Sample Areas, Nepal

	District	Number of Outlets
1	Morang	507
2	Dhanusha	215
3	Parsa	365
4	Makawanpur	265
5	Dhankuta	182
6	Rupendhi	230
7	Banke	291
8	Pokhara	347
9	Surkhet	188
10	Kanchanpur	200
11	Baitadi	149
12	Jumla	59
13	Taplejung	44
14	Dolakha	55
15	Kathmandu	714
Total		**3811**

GDP Expenditure Weights

As Nepal estimates GDP from the production approach only, expenditure data at the basic heading level were unavailable. Distribution of the GDP according to the required basic headings was based on the Nepal Living Standards Survey results and other relevant documents. However, problems were encountered as these data did not follow the COICOP classification; foreign trade data were not presented according to broad economic categories; and details of capital formation data were unavailable using central product classification. In such cases, technical guidance was provided by experts on the sectors.

Price Data Validation

Simple statistical procedures were used to validate price data. Average prices were compared between the urban and rural price collection centers. If variation was high, the enumerators at the branch statistics offices were asked to review the data. ICP team members from the center conducted field verification. Likewise, CPI prices were compared with ICP prices. Expert opinion was also used to confirm prices for special cases.

Tool Pack Experience

Tool Pack was very useful in ensuring data quality for PPP computation as it minimized human errors significantly and reduced the time required for data processing.

Overall Assessment of ICP Participation

The current round provided more opportunities to share experiences with economies in the region. Nepal gained a lot of practical experience in conducting price surveys. The core staff of the ICP team enhanced their statistical capacities in dealing with price statistics.

Pakistan

Administrative Setup

The Federal Bureau of Statistics (FBS) was responsible for the national ICP program in Pakistan. A separate administrative unit for ICP was created to oversee the day-to-day operations of the ICP. An ICP Advisory Group was also constituted to discuss and make final decisions regarding ICP matters. Both were headed by the FBS Deputy Director General.

Use of CPI Infrastructure in ICP Data Collection

The FBS used the expertise of its CPI field force in undertaking the ICP price surveys. The cities and markets of CPI were selected for ICP as well.

Survey Framework

Thirty five cities in the CPI surveys covering 71 markets, and 284 outlets/quotations per month per product were covered by the ICP price surveys. Out of 605 ICP household items, 20% are overlapping with the CPI basket. The following table shows the sample areas of ICP, which are also the same for CPI.

Appendix Table 3.15 Number of Outlets and Sample Areas, Pakistan

Province		Total
1	Punjab	140
2	Sind	96
3	North-West Frontier Province	28
4	Baluchistan	20
Total		**284**

GDP Expenditure Weights

GDP weights were computed by the ICP Advisory Group whose members are also national accountants. Data were not readily available from one source for all 155 basic headings. Household Integrated Economic Survey, Census of Manufacturing Industries, etc., were explored as data sources.

Price Data Validation

Data were edited and extreme values were validated at the data entry stage. Further validation was done when the intercountry indicators became available, which helped in identifying product specification errors.

Tool Pack Experience

Tool Pack was very useful for data validation and data management at the regional level for small datasets, but problems were encountered at the national level when numerous data had to be managed, making data entry and cleaning very slow.

Integration of ICP Work in National Statistical Office Work Program

The FBS welcomes the integration of ICP with CPI. Analytical capabilities of Tool Pack need to be introduced to the participating economies. If it is introduced in CPI work, integration of both surveys will get wide support.

Overall Assessment of ICP Participation

The ICP experience enhanced knowledge and skills in comparing consumer behavior and price variations across markets and across economies. It helped in understanding the statistical systems of other participating economies and developed professional contacts among the participants. Seminars and workshops on the use of PPP are recommended.

Philippines

Administrative Setup

The Chief of the Economic Indices and Indicators Division (EIID) of the Industry and Trade Statistics Department, National Statistics Office, was designated as the National Coordinator. This is the same division in charge of the compilation of the CPI. GDP expenditure weights estimation was done by another agency, the National Statistical Coordination Board, the government office that generates the country's national accounts.

Use of CPI Infrastructure in ICP Data Collection

While the same CPI structure and resources were used for ICP price surveys, separate surveys were undertaken for the ICP and CPI because of differences in items to be priced, sample areas, outlet coverage, and timing of surveys. Regular provincial staff doing the CPI price collection also undertook surveys for the ICP in the provinces. As in the CPI, prices for the ICP were collected from retail sample outlets.

Survey Framework

Aware of the importance of ensuring that the same products based on the regional product list should be priced throughout the country, the National Statistics Office prepared its own manual and catalogue with photos for price collection. EIID staff also decided on a national brand for some of the products (especially clothing) so that comparability could be attained throughout the country. For items that were more difficult to price such as seafoods,

Appendix Table 3.16 Number of Outlets and Sample Areas, Household Consumption, Philippines

	Region	Number of Outlets
1	CAR	257
2	Region 1	319
3	Region 2	258
4	Region 3	357
5	CALABARZON	544
6	MIMAROPA	297
7	Region 5	185
8	Region 6	300
9	Region 7	58
10	Region 8	194
11	Region 9	98
12	Region 10	268
13	Region 11	366
14	ARMM	145
15	Region 12	359
16	CARAGA	241
17	NCR 1	133
18	NCR 2	200
19	NCR 3	293
20	NCR 4	105
21	NCR 5	64
22	NCR 6	395
Total		**5436**

ARMM = Autonomous Region in Muslim Mindanao.
CAR = Cordillera Autonomous Region.
NCR = National Capital Region.

Appendix Table 3.17 Number of Outlets and Sample Areas, Education, Philippines

	Region	Number of Outlets
1	CAR	20
2	Region 1	20
3	Region 2	20
4	Region 3	20
5	Region 4	20
6	Region 5	20
7	Region 6	20
8	Region 7	40
9	Region 8	12
10	Region 9	40
11	Region 10	20
12	Region 11	20
13	Region 12	14
14	CARAGA	20
15	NCR 1	67
16	NCR 2	16
17	NCR 3	32
18	NCR 4	44
19	NCR 5	22
20	NCR 6	50
Total		**537**

CAR = Cordillera Autonomous Region.
NCR = National Capital Region.

the price collection time was set as well as the suggested size/number of items per kilogram. This was to ensure that products of similar quality were priced across the country. Price surveys were done in 17 regions of the country, specifically in provinces considered as regional centers.

Separate instructions for the field offices were prepared by EIID during the price surveys for health and education.

Basically, the same CPI sample municipalities and outlets in the urban areas were covered by the ICP surveys, but additional municipalities were included to satisfy the requirement for rural representativity of prices collected. The number of items in the CPI that overlap with the ICP is about 39%.

The tables show the number of outlets covered by the ICP price surveys for household items, including health and education.

GDP Expenditure Weights

On the GDP weights estimation, the National Statistical Coordination Board undertook additional estimation activities to be able to satisfy the disaggregation of the GDP expenditures into the 155 basic headings. Problems were encountered in the computation of details required by ICP as the GDP expenditures available are those for the major items only. To get the details, the structure obtained from the 2000 Family Income and Expenditure Survey was used.

Price Data Validation

Validation procedures for manual and machine processing were prepared by EIID and their programmer counterparts. During manual processing at the head office, price quotations that were outliers were not included in the

Appendix Table 3.18 Number of Outlets and Sample Areas, Health, Philippines

	Region	Number of Outlets
1	CAR	14
2	Region 1	7
3	Region 2	16
4	Region 3	14
5	Region 4	25
6	Region 5	16
7	Region 6	9
8	Region 7	11
9	Region 8	8
10	Region 9	12
11	Region 10	20
12	Region 11	19
13	Region 12	13
14	CARAGA	11
15	ARMM	6
16	NCR	103
Total		**304**

ARMM = Autonomous Region in Muslim Mindanao.
CAR = Cordillera Autonomous Region.
NCR = National Capital Region.

computation of average price data. These were the price quotations that deviated by plus or minus 15% from the mean of the price in the region/country. Price trends across the regions within a quarter, as well as across quarters, were scrutinized for outliers and reinvestigated if these price variations were not within reasonable bounds.

Tool Pack Experience

Initially, the National Statistics Office developed its own program for data entry and processing of ICP price data to enable field encoding of ICP price data as information technology facilities in the regional and provincial offices were not appropriate for Tool Pack requirements. However, as all economies were requested to use Tool Pack to standardize data processing both at the economy and regional levels, the National Statistics Office developed a bridge program where the data already collected and encoded could still be used in the batch upload utility function for Tool Pack processing.

The Philippines plans to adapt and integrate the software in its current processing system for the monthly CPI once information technology facilities in the provincial offices are upgraded to accommodate the requirements of Tool Pack. It is suggested that a bridge program be made to facilitate the uploading of CPI data to Tool Pack.

Integration of ICP Work in National Statistical Office Work Programs

The Philippines plans to integrate ICP work into regular CPI activities in its plan of rebasing the CPI starting in 2008. Matching the items in the current CPI market basket with those in the ICP list is being done to assess the possibility of including the matched items in the Commodity and Outlet Survey (the purpose is to update the CPI market basket) scheduled for operation in 2008.

Overall Assessment of ICP Participation

The ICP offered insights on how other economies in the region do their price surveys and their pricing practices. The possibility of replicating PPP computation across regions of the country has also become one of the benefits from participating in the project. The same can be done with PPP for the poor, thus making possible the comparison of prices paid by poor households across space. Integrating Tool Pack in processing price survey results for the CPI and other price indexes would also improve the monitoring system of price surveys and further enhance the accuracy of price data.

The Philippines expects that once the PPP figures are finalized, details of the actual method used in its generation and interpretation of results will be discussed by the Regional Office, including the actual benefits that a participating economy can derive from these PPPs vis-à-vis multilateral institutions like the World Bank and the ADB.

Singapore

Administrative Setup

Three officers from the Consumer Price Index Section and two officers from the National Accounts Section of the Department of Statistics assisted in the compilation of the required data for ICP.

Use of CPI Infrastructure in ICP Data Collection

Where possible, the required price data were obtained from CPI regular price surveys. Additional efforts were exerted to obtain more detailed specifications and to collect prices of the ICP's additional items.

Survey Framework

Price surveys covered the whole country. The outlets selected for price collection are those commonly patronized by shoppers. For price-regulated items, such as tuition fees at tertiary institutions and utility tariffs, price information was obtained from relevant authorities. To ensure greater representativity, prices of each item were obtained from

at least two popular outlets commonly patronized by households, except for items with standardized pricing.

Only about 60% of the price data for ICP items were obtained from CPI regular price surveys. For each of these items, significant effort was exerted to compare the specifications and ensure that they were consistent with the regional product list. As for the remaining 40%, additional human resources were deployed to check with the relevant outlets on the availability of the required items, as well as to collect and verify the prices.

In all, around 350 outlets were surveyed to obtain the relevant price data for household items, and health and education services. The effective sample size is, however, greater as some of the outlets have many branches spread all over the country with slight price variations between them (e.g. some large supermarket chains have as many as 180 branches). In Singapore, which is a small city-state-country, though price differentials between outlets/locations are small, special efforts were expended to ensure that the price quotations collected from selected outlets are sufficient and representative.

Computation of National Average Prices

Where value weights were available in the CPI, data referred to weighted average prices. Otherwise, a simple arithmetic mean was used to derive average prices. Examples of household consumption items with weighted average prices are cigarettes, gasoline, admission charges to movies, garbage collection fees, train/bus fares, etc.

GDP Expenditure Weights

GDP expenditure weights for 155 basic headings were generally available from the national accounts. Government consumption expenditures were compiled according to the basic headings as far as possible, based on data and information available on the functions of government outlays.

Gross fixed capital formation on machinery and equipment were compiled according to the Standard International Trade Classification, which closely approximates the Classification of Products by Activity at the broad level.

Price Data Validation

Reported prices were scrutinized carefully by comparing them with prices reported previously or prices of similar items from different outlets. Unusual price changes were also verified with the respondents, especially if they fell outside some predefined limits such as plus or minus 20–30% of the previous price.

In response to data issues and concerns raised during the workshops and in emails, further verifications and clarifications were made with the respondents to ensure that the specifications and prices are correct.

Tool Pack Experience

Singapore did not use Tool Pack as some security issues were encountered during installation. Though the difficulties were overcome at a later stage, much of the price data had already been provided to the Regional Office via Excel format. It was decided that it was not efficient to use Tool Pack for data submission at such an advanced stage.

Integration of ICP Work in National Statistical Office Work Programs

While price data were obtained from CPI regular price surveys wherever possible, many of the items required for PPP computation were not included in the current CPI surveys. These items were either not common or representative in Singapore or the specifications required by ICP were different.

Most of the requirements for construction and equipment are not included in current CPI surveys. As such, significant effort was spent to collate and verify relevant data with various agencies. For example, for construction, additional resources and effort were required as the industry practice differs from those required by ICP. Hence, it would not be possible to fully integrate ICP work into Singapore's current work programs.

Overall Assessment of ICP Participation

As the ICP's specifications were very detailed, additional efforts were made to check with the respondents on the detailed specifications of items priced to ensure data comparability with other economies. Consequently, this enabled the Department of Statistics to refine specifications of CPI items, hence improving the quality of CPI data.

Through participation in the ICP, greater understanding and appreciation were gained on the importance of establishing good PPP estimates.

Sri Lanka

Administrative Setup

The Prices and Wages Division of the Department of Census and Statistics (DCS) was responsible for ICP work. It appointed the Director of Prices and Wages Division as the National Coordinator for the national ICP program. The ICP unit, in the Prices and Wages Division, with seven staff, assisted the National Coordinator.

Use of CPI Infrastructure in ICP Data Collection

Open market retail prices of food and nonfood items for all district towns are collected on a weekly, monthly, and quarterly basis, mainly for CPI compilation. This was expanded for the ICP price surveys, which were conducted from March to December 2005 for all items except health and education, which were surveyed in the first quarter of 2006.

Almost 60% of the CPI list was included in the ICP product list.

Survey Framework

The price outlets were selected in the 68 price collection centers, with the number of price collection centers proportionately drawn based on population density. Supermarkets, open markets, covered markets, mobile shops, street vendors, pharmacies, private clinics, private hospitals, and private outlets for therapeutic appliances and equipment were covered in the survey. The distribution of outlets is shown below.

GDP Expenditure Weights

Sri Lanka has participated in the ICP starting in 1975. As a result of this experience, the National Accounts Division of the DCS prepared GDP by expenditure for ICP basic headings annually and included these in the annual bulletin of the National Accounts of Sri Lanka.

Price Data Validation

The price data collected through the surveys at the national level were analyzed on the basis of Hong Kong dollar-converted prices and Quaranta tables. The review and validation of raw prices with CVs greater than 30% were prioritized for review. The following aspects were considered in the review of price data, and concerns were raised at the data review workshops.

(i) For each product, a minimum of 15 prices should have been collected for each quarter, where applicable.

(ii) National average prices were reviewed, and these prices were validated against the CPI prices for the same/similar products in the ICP product list.

Appendix Table 3.19 Number of Outlets and Sample Areas, Sri Lanka

	District	Number of Outlets
1	Colombo	5
2	Gampaha	3
3	Kalutara	4
4	Kandy	4
5	Matale	3
6	N' eliya	3
7	Galle	4
8	Matara	4
9	Hambantota	3
10	Jaffna	2
11	Mannar	1
12	Vavuniya	1
13	Kilinochchi	1
14	Batticaloa	2
15	Ampara	1
16	Trincomalee	3
17	Kurunegala	4
18	Puttalam	3
19	A'pura	3
20	Polonnaruwa	2
21	Badulla	4
22	Monaragala	2
23	Ratnapura	4
24	Kegalle	2
	Total	**68**

(iii) Products priced were checked if they satisfied the product specifications, including units of measurement, reference range, packaging, etc., in the ICP product list.

(iv) Products with high CVs resulting from justifiable reasons were communicated to the Regional Office.

Tool Pack Experience

The Tool Pack manual was inadequate and it would be worthwhile to enhance it by incorporating solutions for all the issues encountered during the project.

Integration of ICP Work in National Statistical Office Work Programs

It is worthwhile to note that the Prices and Wages Division at the DCS is currently using Tool Pack for its data collection program and data validation activities.

Price schedules used for DCS price surveys have been revised using the product catalogue for ICP price surveys.

Overall Assessment of ICP Participation

The Price Division staff, including the National Coordinator, enhanced their capability for price collection, data validation, and national accounting requirements through participation in ICP work.

Taipei,China

Administrative Setup

This round was the first time for Taipei,China to participate in the ICP with the program conducted by the Statistical Department of the Directorate General of Budget, Accounting and Statistics (DGBAS), Executive Yuan, which is responsible for national statistics. Most core affairs were done by the staff specializing in government statistics.

Use of CPI Infrastructure in ICP Data Collection

The ICP price surveys mostly adopted the existing CPI price survey system. If the CPI specifications corresponded to the ICP product specifications, the CPI data were used directly. If the CPI item did not exactly match those in ICP, two conditions were possible. First, if a close match was found, the CPI item was replaced by the ICP product; second, if the discrepancy was considerable, an additional item survey for ICP was conducted.

The compilation and release of the GDP and CPI are the responsibilities of DGBAS and thus the integration of data has been smooth. To minimize the workload for price collectors involved in the ICP, the CPI price survey operations shifted from paper-and-pencil to personal digital assistants (PDA), which obviously improved efficiency and accuracy, and thus achieved the goal of e-statistics.

Survey Framework

There were 16 survey areas, of which eight cities and 34 towns and townships were selected as pricing localities in Taipei,China's CPI. The same areas were covered for the ICP price surveys.

In the initial stage, the transaction prices for all items in different outlet types were collected. However, if the price discrepancy was large for items from different types of outlets (e.g., department store and traditional market) or for those with the same structured product description in different economies, the outlets for price surveys were modified to satisfy product comparability among the Asia and Pacific economies.

Fifteen or more different prices for each item were usually collected in a quarter. For agricultural and fisheries goods with larger price fluctuations, the frequency for price surveys was increased.

The following table shows how ICP household products, including health and education, were priced.

Appendix Table 3.20 Number of Outlets and Sample Areas, Taipei,China

	Province/City	Number of Outlets
1	Taipei City	102
2	Taichung City	97
3	Kaohsiung City	157
4	Hualien County	73
5	Keelung City	73
6	Hsinchu City	75
7	Chiayi City	51
8	Tainan City	73
9	Taipei County	28
10	Yilan County	29
11	Miaoli County	25
12	Nantou County	26
13	Chiayi County	17
14	Pingtung County	21
15	Taitung County	19
16	Penghu County	19
Total		**885**

The ICP prices were collected by CPI field staff and used current collection machinery. In the initial stage of ICP price collection, if one CPI product aligned with the ICP, the price data was used directly. At that time, the total overlap percentage was about 46%. However, after reviewing price data with other Asia and the Pacific economies, it was observed that prices for Taipei,China's medium-quality products were much higher than in most economies due to quality issues. Additional items of medium quality were surveyed. The present ICP adopted fewer CPI prices than originally planned. There was only about 11% overlap between CPI and ICP items.

GDP Expenditure Weights

Apart from narcotics and prostitution, data in most categories were readily available, though some basic headings had somewhat insufficient reference data.

Price Data Validation

The procedures for data validation were as follows: (i) Checked specifications of products priced if they conformed with the structured product descriptions; (ii) Double checked products with high CVs; (iii) Checked if the local currency price was representative of the national average for the product surveyed; and (iv) Checked if the

specifications and quality of the products surveyed in Taipei, China were comparable with those from other Asia and the Pacific economies, and undertook the necessary steps in cases of discrepancies.

The infrastructure and policies of different economies are diverse due to their distinct cultures, leading to some discrepancies in price survey results. Taipei,China's financial service fee, for example, was substantially lower than that of other Asia and the Pacific economies, the direct result of policy deregulation on setting up new banks. Also, the establishment of the National Health Insurance in Taipei,China led to relatively low prices for medical products. Since these are the representative prices, the comparison results will be biased if the above quotations were not adopted.

Tool Pack Experience

Aside from Tool Pack, the CPI reporting system was redesigned to include ICP requirements; price collectors keyed prices directly into PDAs, which were then reported to DGBAS. To reduce the workload of price collectors, the ICP items were included in the regular price reporting system. An additional computer program was developed to export ICP price data and subsequently import them into Tool Pack, eliminating repetitive data entry.

For the operation of Tool Pack, the Regional Office responded effectively to ICP demands and recommendations, and thus the operations and functions of Tool Pack were generally well managed.

Integration of the ICP work in National Statistical Office Work Program

So far, there are no plans to integrate ICP activities into the regular work program of DGBAS.

Overall Assessment of ICP Participation

On the issue of strengthening connections with other national statistical offices through international participation, ICP involvement gave insights on relevant issues and provided a valuable opportunity for an exchange of statistical experiences with other economies.

Thailand

Administrative Setup

Three agencies were responsible for ICP work in Thailand: the National Statistical Office as the national coordinating agency; the National Accounts Office of the National Economic and Social Development Board for GDP expenditure weights estimation; and the Bureau of Trade and Economic Indices (BTEI) in the Ministry of Commerce for price surveys. In the latter part of ICP implementation, the BTEI became the national coordinating agency.

The Executive Director of the BTEI set up a working group to oversee ICP implementation in Thailand, with the Head of the Consumer Price Index Group as chairperson, and selected officers from the BTEI as members.

Use of CPI Infrastructure in ICP Data Collection

Price collection was done by BTEI officers at the central office and in the provinces.

Survey Framework

The Thai CPI items with specifications similar to ICP items was 51%.

The following table shows how Thailand priced the ICP product list for household items, including health and education.

Appendix Table 3.21 Number of Outlets and Sample Areas, Thailand

	Province/City	Number of Outlets
1	Bangkok (Pratunum market)	92
2	Bangkok (Taves market)	53
3	Bangkok (Wongveanyai market)	104
4	Bangkok (Bangkapi market)	39
5	Pathum Thani	91
6	Ayutthaya	54
7	Chon Buri	82
8	Ratchaburi	63
9	Nakhonratchasima	59
10	Surin	104
11	Ubon Ratchathani	64
12	Nong Khai	87
13	Chiang Mai	62
14	Uttaradit	107
15	Chiang Rai	62
16	Phitsanulok	84
17	Krabi	79
18	Phuket	154
19	Surat Thani	106
20	Trang	80
Total		**1626**

Consumers prefer to buy goods in urban areas because rural shops offer less choice. Therefore, the collection of prices was done in 16 provinces and four areas of the capital. Two quotations were collected for each item per data collection area.

GDP Expenditure Weights

Private Consumption Expenditure. Although this was classified by COICOP, some items, particularly food and beverages consumed away from home, were still included in food and nonalcoholic and alcoholic beverages. Moreover, GDP excludes some underground activities, particularly illegal activities such as narcotics and prostitution.

Government Consumption Expenditure. This cannot be classified by basic heading under the item of medical product and health services. Gross operating surplus can be calculated using the 1993 System of National Accounts, but this has not yet been done for the current GDP series. Furthermore, the components of published government consumption expenditure were only compensation of employees and purchase of goods and services. It did not cover social security benefits and current transfers from government to households.

Gross Fixed Capital Formation. Due to lack of data, some basic headings were not calculated, such as computer software (except public sector) and mineral exploration. Valuables were not also calculated in GDP. Change in inventories cannot be estimated.

Price Data Validation

All prices collected from different places were thoroughly checked to ensure that the products priced were according to the required specifications. If there were questions on the prices collected, the officers requested the enumerators to review their submissions, after which data were submitted to the Regional Office.

Tool Pack Experience

At the beginning, BTEI encountered many problems when using Tool Pack. The most significant problem was that any amendments to the CSV files that were already uploaded accumulated price quotations in the database, which led to a duplication of price data. There was a need to save the data under a new filename when amendments were introduced in the database. However, the latest version of Tool Pack was easy to use.

Integration of ICP Work in National Statistical Office Work Programs

BTEI is pleased to cooperate with the ICP program. However, due to the limitation of budget and workforce, it cannot integrate the ICP into its routine tasks.

Overall Assessment of ICP Participation

Participation in ICP was a good experience as BTEI picked up many useful ideas and practices. It was also an opportunity for participants to exchange views and ideas, including the sharing of data among economies in the region. The skills derived from Tool Pack software can be usefully adapted to the present work of the Bureau.

Viet Nam

Administrative Setup

The Director-General of the General Statistics Office (GSO) created the working group on ICP work composed of the ICP National Coordinator and eight members from the Trade, Services and Price Department; National Accounts Department, and other departments.

Use of CPI Infrastructure in ICP Data Collection

The CPI price collectors also collected ICP prices. For the ICP price surveys, the CPI price collectors needed training to ensure: (i) correct ”transaction price” measurement, (ii) observance of ICP product specifications, (iii) ICP geographic coverage to reflect national averages, and (iv) ICP item scope coverage.

Survey Framework

The ICP survey was conducted in the urban and rural areas of 20 provinces, which included the biggest provinces in Viet Nam, accounting for about 42.5% of Viet Nam’s population and about 55.2% of the country’s expenditure.

The overlap in the CPI and ICP items was about 15%. The following table shows how the ICP product list for household items, including health and education, was priced.

Appendix Table 3.22 Number of Outlets and Sample Areas, Viet Nam

	Location	Household	Health and Education
1	Hanoi	5	4
2	Haiphong	3	4
3	Thai Binh	3	
4	Lang Son	3	
5	Quang Ninh	3	
6	Thai Nguyen	4	
7	Son La	3	
8	Thua Thien Hue	4	
9	Thanh Hoa	5	
10	Binh Dinh	4	
11	Da Nang	3	4
12	Khanh Hoa	4	
13	Lam Dong	3	
14	Binh Duong	3	
15	Binh Thuan	2	
16	Dong Nai	4	
17	Ho Chi Minh	6	4
18	An Giang	4	
19	Can Tho	4	4
20	Kien Giang	3	
Total		**73**	**20**

GDP Expenditure Weights

The main sources used for deriving GDP expenditure weights for the required 155 basic headings were the following: Household Standards Living Survey; state budget; Capital Investment Survey; and surveys done by the Industrial Department, Trade and Prices Department and Agricultural Department of GSO. No estimates on narcotics and prostitution were made.

Price Data Validation

After the price surveys, provincial statistics office staff had to check the price data before data entry in Tool Pack. Before carrying out the surveys, GSO conducted training for provincial statistics office staff. They were provided with the product catalogue in CD format. During the survey, GSO checked prices between provinces.

Tool Pack Experience

Tool Pack was very useful for data processing at the country level and for data transfer from the GSO to the Regional Office. However, many problems were initially encountered and had to be addressed with a number of patches. For the next ICP round, Viet Nam looks forward to an improved version of Tool Pack.

Overall Assessment of ICP Participation

ICP participation helped improve the CPI infrastructure in Viet Nam. The ICP provided a reliable and relevant data platform for GSO and the government. It is noted that the ICP provided data for production, sales or purchases abroad, and compensation levels in different economies.

APPENDIX 4

PRODUCTIVITY ADJUSTMENT FOR GOVERNMENT COMPENSATION

The 23 participating economies of the 2005 ICP Asia Pacific span the whole range of development levels—from some of the highest in the world to some of the lowest. Hong Kong, China is ranked in purchasing power parity (PPP) terms as number 9 and Nepal as number 179, respectively, in the *World Development Indicators 2007* (World Bank 2007b). In this respect, the Asian comparison faces unique challenges compared to other regional comparisons. For example, the difference between the highest and the lowest per capita GDP in PPP terms among South American countries is only 3 to 1, whereas in Asia and the Pacific the difference between Singapore and Nepal reaches 40 times in real terms and 83 times in nominal terms.

Services, in general, and the compensation part of government services in particular, are among the most difficult areas of the ICP Asia Pacific. There are two approaches to compensation measurement. Approach 1 is "an hour is an hour", which means that productivity is uniform across all economies. In Approach 2, productivity is adjusted to reflect differences in capital intensity. (We confine the adjustment to differences in capital inputs and assume constant quality of labor.)

Given that salaries across the region vary by over 100 times (120 times between Lao People's Democratic Republic and Hong Kong, China in the health sector), it is unrealistic to expect that there would be no differences in productivity between those economies, especially given the fact that large differences in productivity can be observed in the rest of the GDP. Government workers in high-income economies would certainly be aided by access to modern communications services, high-speed networks, office equipment, science laboratories in schools and universities, and modern medical equipment in hospitals, compared to workers in low-income economies.

In describing the two approaches, we employ the Cobb-Douglas functional form. In its typical homothetic (linear homogenous) specification, output *(Y)* is a function of labor *(L)* and capital *(K)*, with labor and capital coefficients being α and *(1-α)*, respectively, or $Y=cL^{\alpha}K^{1-\alpha}$. We denote the government part with subscript *G*; the symbols referring to the whole economy are without a subscript. Thus L_G becomes the labor input in government sectors whereas L refers to the economy-wide labor input. L is the employment (estimated as the 15–64 years age group) adjusted for labor quality (in the government case, employment is estimated as total compensation divided by average annual wages).[1] The government production function is expressed as:

$$Y_G = cL_G^{\alpha} K_G^{1-\alpha} \tag{1}$$

Under Approach 1 (without productivity adjustment), equation (1) becomes

$$Y_G = c_1 L_G \tag{2}$$

Productivity is expressed as

$$\frac{Y_G}{L_G} = c\left(\frac{K_G}{L_G}\right)^{1-\alpha} \tag{3}$$

and, in the case with no adjustment,

[1] It is important to note that the Cobb-Douglas production function refers to increases in both quality and quantity of labor and capital. Whereas we can assume that quality of capital is reflected in its price and thus is included in our value estimates, quality of labor should reflect cross-economy differences in professional composition, education, skills, etc. For our purposes we assume that for the government sector, we collect salaries for equivalent qualifications, and thus L_G refers to standard quality of labor employed in the government sector across economies. So while for the whole economy $L = L^{Quality} * L^{Quantity}$, for the government sector $L_G = L_G^{Quality} * L_G^{Quantity}$.

$$\frac{Y_G}{L_G} = c_1 \tag{4}$$

As we cannot assess the government-specific capital-labor ratio directly, we have to make the assumption that capital intensity in government in different economies is proportional across sectors: i.e., if in one economy *K/L* in government is lower than in the finance sector but higher than agriculture, the same proportions among those sectors would be found in other economies as well. Thus, one needs to estimate *K/L* only for the whole economy.

The capital-to-output ratio was estimated based on the perpetual inventory method with geometric decline as

$$K_{2005} = \sum_{t=1981}^{2005} \frac{I_t}{(1 + 0.05)^{2005-t}} \tag{5}$$

where I_t is total investments in year t and 0.05 is the depreciation rate.

The *K/Y* ratio has been found to vary from 2.5 to 3.5, with the high-income economies having higher values. It is important to note that even though this perpetual inventory method calculation omits investments prior to 1981, it nevertheless estimates the capital consistently across different economies.

With this in mind, equation (3) can be rewritten as follows[2]:

$$\frac{Y_G}{L_G} = c\left(\frac{Y}{L} * \frac{K}{Y}\right)^{1-\alpha} \tag{6}$$

One problem with such a presentation is that we need to know productivity before we can compute the productivity adjustment, as *Y* (real GDP) can be estimated only after the productivity adjustment has been made and incorporated into the computation of *Y* for the whole economy, thus necessitating iterations. This would make computation somewhat cumbersome, necessitating six or seven iterations. Another solution would be using *Y/L* ratio only for the components of GDP other than government. In that case iterations are not needed: one would compute the *Y/L* ratio for the GDP without government and then proceed with formula (6). Practically, the second approach may turn out to be difficult in many economies as it is difficult to collect relevant data.

Next, one needs to determine the labor coefficient. Usually in the Cobb-Douglas specification this is determined by the wage share in GDP. Labor coefficient is generally higher in more developed economies and lower in less developed ones. In this exercise, we assumed that the low-income economies had a labor coefficient of 50% and high-income economies, 70%. Hence, (1-α) in equation (6) is set at 0.5 and 0.3 for low-income and high-income economies, respectively.

An obvious improvement in estimating the productivity adjustment could come from measuring service-specific capital-output ratios. However, this would be even more difficult practically and would lie further away in the future.

[2] It is important to note that the Cobb-Douglas production function for the whole economy would refer to increases in both quality and quantity of labor and capital. While we can assume that quality of capital is reflected in its price and thus is included in our value estimates, quality of labor differences is harder to measure because they should reflect cross-economy differences in professional composition, education, skills, etc. For our purposes, we assume that for the government sector, we collect salaries for equivalent qualifications and thus L_G refers to standard quality of labor employed in the government sector across economies.

APPENDIX 5

REFERENCE PURCHASING POWER PARITIES USED IN ICP ASIA PACIFIC

Code	Description	Reference
1102311	Narcotics	PPP for tobacco
1104111	Actual and Imputed Rentals for Housing	Volume relatives of household final consumption expenditures including NPISH
1104421	Miscellaneous Services Relating to the Dwelling	Weighted average of PPPs for maintenance of the dwellings and water supply
1105131	Repair of Furniture, Furnishings and Floor Coverings	PPPs for maintenance of the dwelling
1105331	Repair of Household Appliances	PPPs for maintenance of the dwelling
1105511	Major Tools and Equipment	Weighted average of the PPPs for glassware, tableware, and utensils; small tools and miscellaneous accessories; and nondurable household goods
1105622	Household Services	PPPs for maintenance of the dwelling
1106311	Hospital Services	Weighted average of PPPs for medical services, dental services, and paramedical services
1107121	Motor Cycles	PPP for purchase of vehicles (excluding reference PPP basic headings)
1107141	Animal Drawn Vehicles	PPPs for purchase of vehicles (excluding reference PPP basic headings)
1107341	Passenger Transport by Sea and Inland Waterway	Weighted average of PPPs for operation of personal transport equipment and transport service (excluding reference PPP basic headings)
1107351	Combined Passenger Transport	Weighted average of PPPs for operation of personal transport equipment and transport service (excluding reference PPP basic headings)
1107361	Other Purchased Transport Services	Weighted average of PPPs for operation of personal transport equipment and transport service (excluding reference PPP basic headings)

Code	Description	Reference
1109211	Major Durables for Outdoor and Indoor Recreation	Weighted average of PPPs for bicycles and audio-visual, photographic, and information-processing equipment
1109231	Maintenance and Repair of Other Major Durables for Recreation and Culture	PPPs for maintenance and repair of the dwelling
1109331	Gardens and Pets	PPPs for household final consumption expenditure on the domestic market (excluding reference PPP basic headings)
1109351	Veterinary and Other Services for Pets	Weighted PPPs for household final consumption expenditure on the domestic market (excluding reference PPP basic headings)
1109431	Games of Chance	PPPs for household final consumption expenditure on the domestic market (excluding reference PPP basic headings)
1112411	Social Protection	PPPs for household final consumption expenditure on the domestic market (excluding health and education basic headings and reference PPP basic headings)
1112511	Insurance	PPPs for household final consumption expenditure on the domestic market (excluding health and education basic headings and reference PPP basic headings)
1112611	FISIM	PPPs for household final consumption expenditure on the domestic market (excluding health and education basic headings and reference PPP basic headings)
1112621	Other Financial Services n.e.c.	PPPs for household final consumption expenditure on the domestic market (excluding health and education basic headings and reference PPP basic headings)
1112711	Other Services n.e.c.	PPPs for household final consumption expenditure on the domestic market (excluding health and education basic headings and reference PPP basic headings)
1301111	Housing	PPP for actual and imputed rentals for housing from households
1302111	Pharmaceutical Products	PPP for pharmaceutical products from households
1302112	Other Medical Products	PPP for other medical products from households
1302113	Therapeutic Appliances and Equipment	PPP for therapeutic appliances and equipment from households
1302121	Outpatient Medical Services	PPP for outpatient medical services from households
1302122	Outpatient Dental Services	PPP for outpatient dental services from households
1302123	Outpatient Paramedical Services	PPP for outpatient paramedical services from households
1302124	Hospital Services	PPP for hospital services from households

Code	Description	Reference
1302211	Compensation of Employees (Physicians, Nurses, and Other Medical and Nonmedical Staff)	Compensation for occupations 110-113 per Box 3, ICP Handbook Chapter 3. PPPs were adjusted to account for productivity
1302221	Intermediate Consumption	Weighted PPPs for household final consumption expenditure on the domestic market (excluding reference PPP basic headings)
1302231	Gross Operating Surplus	Weighted PPPs for gross fixed capital formation
1302241	Net Taxes on Production	Weighted PPPs for household final consumption expenditure on the domestic market (excluding reference PPP basic headings) and PPP for compensation of employees for the production of health services by government
1303111	Recreation and Culture	PPPs for recreation and culture from households
1304111	Education Benefits and Reimbursements	PPP for education from households
1304211	Compensation of Employees (Primary, Secondary, and Postsecondary Education)	Occupations 106, 201-212,216, and 301-305 per Chapter 3, ICP Handbook. PPPs were adjusted to account for productivity
1304221	Intermediate Consumption	Weighted PPPs for household final consumption expenditure on the domestic market (excluding reference PPP basic headings)
1304231	Gross Operating Surplus	Weighted PPPs for gross fixed capital formation
1304241	Net Taxes on Production	Weighted PPPs for household final consumption expenditure on the domestic market (excluding reference PPP basic headings) and PPP for compensation of employees for the production of education services by government
1305111	Social Protection	PPPs for household final consumption expenditure on the domestic market (excluding health and education basic headings and reference PPPs basic headings)
1401111	Compensation of Employees (Defense and Nondefense Collective Services)	Occupations 201-226 and 401-406 per Chapter 3, ICP Handbook. PPPs were adjusted to account for productivity
1401121	Intermediate Consumption	Weighted PPPs for household final consumption expenditure on the domestic market and PPPs for gross fixed capital formation (excluding reference PPP basic headings)
1401131	Gross Operating Surplus	Weighted PPPs for gross fixed capital formation
1401141	Net Taxes on Production	Weighted PPPs for household final consumption expenditure on the domestic market (excluding reference PPP basic headings) and PPP for compensation of employees for the collective services by the government
1501100	Metal Products and Equipment	Geometric mean of the PPPs of general-purpose machinery, special-purpose machinery, and electrical and optical equipment

Code	Description	Reference
1501111	Fabricated Metal Products, except Machinery and Equipment	PPPs for metal products
1501151	Other Manufactured Goods n.e.c.	PPPs for metal products and equipment (excluding reference PPP basic headings)
1501200	Transport Equipment	PPP for motor vehicles, trailers, and semi-trailers
1501212	Other Road Transport	PPPs for transport equipment (excluding reference PPP basic headings)
1501221	Other Transport Equipment	PPPs for transport equipment (excluding reference PPP basic headings)
1503111	Other Products	PPPs for metal products and equipment (excluding reference PPP basic headings)
1600000	Changes in Inventories and Net Acquisitions of Valuables	PPPs for durable and nondurable goods, and gross fixed capital formation (excluding reference PPP basic headings)
1701111	Exports of Goods and Services	Exchange rates
1701112	Imports of Goods and Services	Exchange rates

n.e.c. = not elsewhere classified.

APPENDIX 6

AGGREGATION USING THE GEARY-KHAMIS METHOD

The Geary-Khamis (GK) aggregation method is an alternative to the Eltetö-Köves-Szulc (EKS) method. The GK method involves taking a vector of weighted average regional prices and applying it to the equivalent national accounts values (notional quantities) to obtain volumes. The weight allocated to each economy within the region for an item (category) is equal to its share of the regional total. As a result, the weights are dominated by the economic structure of the large economies (People's Republic of China and India) in the region. One of its disadvantages is that a change in the number of economies participating in the region can significantly affect the average prices. A more important one is that the volumes are affected by what is known as the "Gerschenkron effect," which is a bias affecting economies whose price structures are significantly different from the average. It tends to artificially raise the levels of real gross domestic product (GDP) of lower-income economies compared with what would have been calculated if their price structures had been more closely correlated with the average price structures.

The main advantage of real GDP calculated using the GK method is that, unlike EKS-based real GDPs, they are additive within an economy. As a result, they can be more useful than EKS-based real GDPs when economic structures are being compared across economies (e.g., the share of investment within GDP or price structures).

The following tables are presented in this appendix:

Appendix Table 6.1. Purchasing Power Parities, 2005 (Hong Kong, China as base)

Appendix Table 6.2. Real Expenditures, 2005 (billion Hong Kong dollars)

Appendix Table 6.3. Per Capita Real Expenditures, 2005 (Hong Kong dollars)

Appendix Table 6.4. Price Level Indexes, 2005 (Hong Kong, China = 100)

Appendix Table 6.5. Percent Shares of Real Expenditures to GDP within Each Economy, 2005

Appendix Table 6.1 Purchasing Power Parities, 2005
(Hong Kong, China as base)

Expenditure Category/Economy	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**4.16**	**2.82**	**0.17**	**230**	**0.68**	**0.28**	**1.00**	**2.86**
Actual Final Consumption Expenditure[a]	**4.19**	**3.07**	**0.18**	**241**	**0.72**	**0.26**	**1.14**	**2.73**
Food and Nonalcoholic Beverages	4.18	3.14	0.17	268	0.68	0.21	1.04	2.63
Bread and Cereals	4.40	3.25	0.16	208	0.66	0.19	1.11	2.72
Meat and Fish	4.29	2.76	0.18	343	0.65	0.21	0.99	2.57
Fruits and Vegetables	3.32	3.58	0.26	327	0.72	0.27	1.25	2.44
Other Food and Nonalcoholic Beverages	4.33	2.99	0.14	281	0.70	0.21	1.04	2.76
Clothing and Footwear: of which	4.11	3.06	0.19	275	0.94	0.17	0.77	2.42
Clothing	4.12	2.97	0.20	316	0.94	0.15	0.75	2.42
Housing, Water, Electricity, Gas and Other Fuels	4.60	3.01	0.21	272	0.73	0.47	1.65	2.53
Health and Education	3.73	3.15	0.24	154	0.70	0.31	2.26	2.30
Health	5.66	3.14	0.23	215	0.60	0.31	2.05	2.46
Education	3.05	3.17	0.25	113	0.77	0.30	2.55	2.12
Transportation and Communication: of which	5.87	3.79	0.14	271	0.74	0.22	1.09	3.51
Transportation	5.69	3.47	0.11	268	0.66	0.22	1.06	3.46
Recreation and Culture	5.47	3.52	0.20	263	0.64	0.26	0.92	3.31
Restaurants and Hotels	5.06	4.87	0.17	284	0.77	0.27	1.05	3.09
Other Consumption Expenditure Items	3.51	2.81	0.17	228	0.71	0.21	0.95	2.96
Collective Consumption Expenditure by General Government	**5.31**	**2.52**	**0.17**	**109**	**0.61**	**0.26**	**1.34**	**3.64**
Gross Fixed Capital Formation: of which	**4.31**	**2.96**	**0.19**	**255**	**0.65**	**0.23**	**0.80**	**3.12**
Machinery and Equipment	5.31	4.39	0.15	299	0.69	0.19	0.58	2.89
Construction	4.05	2.65	0.21	223	0.64	0.32	1.38	3.37
Change in Inventories and Net Acquisitions of Valuables	**4.32**	**3.09**	**0.17**	**277**	**0.65**	**0.23**	**0.93**	**2.81**
Balance of Exports and Imports	**6.34**	**4.35**	**0.16**	**403**	**0.81**	**0.17**	**0.77**	**4.35**
Household Final Consumption Expenditure	**4.18**	**3.04**	**0.17**	**255**	**0.74**	**0.26**	**1.12**	**2.70**
Government Final Consumption Expenditure	**5.25**	**2.85**	**0.18**	**117**	**0.60**	**0.29**	**1.44**	**3.50**
Actual Final Consumption Expenditure[a]	**4.19**	**3.07**	**0.18**	**241**	**0.72**	**0.26**	**1.14**	**2.73**
All Goods	**4.35**	**3.02**	**0.15**	**277**	**0.71**	**0.22**	**0.87**	**2.83**
Nondurables	4.32	2.93	0.18	276	0.70	0.23	1.18	2.73
Semidurables	4.23	3.27	0.13	314	0.85	0.17	0.80	3.09
Durables	5.23	3.25	0.12	261	0.64	0.21	0.74	3.42
Services	**3.80**	**3.05**	**0.21**	**188**	**0.72**	**0.33**	**1.43**	**2.58**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Appendix Table 6.1 Purchasing Power Parities, 2005 *(continued)*
(Hong Kong, China as base)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE
738	**498**	**515**	**0.98**	**0.34**	**1.48**	**74.5**	**4.16**	**3.59**	**4.02**	**0.19**	**6.46**	**3.62**	**3.04**	**850**
685	**438**	**562**	**1.10**	**0.35**	**1.48**	**74.6**	**4.39**	**3.48**	**3.95**	**0.24**	**6.43**	**3.77**	**2.99**	**896**
689	636	707	1.01	0.33	1.25	71.1	4.12	4.13	3.95	0.20	7.07	4.11	3.06	1002
721	773	598	1.01	0.33	1.21	92.7	4.02	3.89	3.50	0.22	6.36	4.17	2.68	865
641	770	832	1.00	0.30	0.91	53.1	4.07	4.08	3.93	0.24	7.19	4.11	2.94	1262
665	623	787	1.19	0.48	2.29	129.3	4.23	4.21	6.21	0.22	8.69	5.17	3.71	919
710	512	759	0.86	0.28	1.09	86.1	4.28	4.25	3.80	0.17	6.28	3.32	2.91	920
514	449	618	0.79	0.31	1.29	86.5	4.19	3.31	3.83	0.21	4.79	2.74	2.81	975
528	486	631	0.79	0.31	1.32	79.2	4.34	3.50	3.98	0.21	4.76	2.73	2.86	960
813	412	327	1.30	0.49	3.86	102.9	4.84	2.42	4.18	0.30	3.91	4.83	1.95	1030
609	587	320	1.64	0.42	0.98	48.3	4.25	2.99	4.05	0.40	6.04	5.03	4.09	524
1144	484	411	1.60	0.44	1.15	49.7	5.03	4.07	6.09	0.42	6.53	4.23	4.67	760
486	765	291	1.68	0.41	0.89	47.6	3.27	2.11	3.60	0.37	5.56	5.88	3.67	411
748	220	973	1.07	0.29	1.69	96.9	6.92	3.49	5.17	0.23	6.58	3.20	2.88	1625
640	336	962	0.84	0.24	1.53	85.8	6.89	3.52	3.77	0.23	6.37	2.95	2.77	1663
729	667	624	0.97	0.33	1.59	101.0	4.76	3.87	5.14	0.20	8.46	3.17	3.45	1007
578	661	632	1.03	0.34	1.68	120.8	5.07	5.09	3.46	0.20	8.28	2.99	2.74	951
635	438	630	1.01	0.33	1.14	86.8	4.68	3.52	3.22	0.22	7.98	3.38	3.07	999
961	**482**	**305**	**1.50**	**0.30**	**1.16**	**50.8**	**5.28**	**3.85**	**5.07**	**0.22**	**5.53**	**3.84**	**4.11**	**615**
847	**658**	**657**	**1.12**	**0.30**	**1.49**	**82.5**	**4.36**	**4.65**	**4.28**	**0.16**	**7.83**	**3.24**	**3.00**	**868**
868	664	801	0.67	0.29	1.03	104.1	4.86	5.11	4.50	0.14	7.97	2.61	3.06	1203
842	649	581	1.42	0.30	2.34	61.4	4.24	4.31	4.09	0.21	7.73	4.60	2.87	747
738	**506**	**658**	**1.04**	**0.31**	**1.44**	**84.8**	**4.36**	**4.00**	**4.16**	**0.19**	**7.30**	**3.42**	**3.05**	**992**
956	**883**	**1050**	**0.79**	**0.37**	**1.26**	**118.8**	**7.03**	**5.86**	**5.43**	**0.16**	**9.90**	**3.17**	**3.96**	**1563**
680	**427**	**598**	**1.08**	**0.35**	**1.59**	**80.8**	**4.37**	**3.48**	**3.90**	**0.24**	**6.45**	**3.73**	**2.91**	**952**
900	**526**	**298**	**1.41**	**0.34**	**1.13**	**48.5**	**5.10**	**3.73**	**5.14**	**0.24**	**5.86**	**3.99**	**4.00**	**571**
685	**438**	**562**	**1.10**	**0.35**	**1.48**	**74.6**	**4.39**	**3.48**	**3.95**	**0.24**	**6.43**	**3.77**	**2.99**	**896**
684	**405**	**653**	**0.97**	**0.31**	**1.36**	**80.4**	**4.45**	**3.95**	**4.01**	**0.22**	**7.07**	**3.26**	**3.24**	**1141**
709	370	615	1.14	0.36	1.38	76.4	4.37	4.06	4.05	0.25	7.37	3.87	3.41	1064
540	385	783	0.89	0.21	1.20	89.3	4.38	3.46	3.83	0.20	5.27	2.89	2.99	1065
807	607	933	0.74	0.35	1.53	98.0	6.59	3.70	3.67	0.20	9.85	2.70	3.26	1842
689	**480**	**379**	**1.21**	**0.39**	**1.75**	**64.1**	**4.21**	**2.46**	**3.85**	**0.26**	**5.18**	**4.27**	**2.72**	**678**

Appendix Table 6.2 Real Expenditures,[a] 2005
(billion Hong Kong dollars)

Expenditure Category/Economy	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**945**	**13.1**	**92.79**	**112**	**27032**	**18.05**	**1383**	**12022**
Actual Final Consumption Expenditure[b]	**729**	**6.36**	**25.25**	**92**	**11052**	**16.02**	**747**	**7962**
Food and Nonalcoholic Beverages	365	2.15	4.85	38.8	2803	5.15	72.9	2785
Bread and Cereals	153	0.86	1.06	16.8	444	0.78	6.46	520
Meat and Fish	68	0.25	1.45	8.47	1040	1.51	37.4	275
Fruits and Vegetables	62	0.26	0.53	4.36	620	0.67	7.01	871
Other Food and Nonalcoholic Beverages	81	0.78	1.81	9.3	699	2.19	22.1	1119
Clothing and Footwear: of which	43	0.41	1.03	1.46	530	0.58	109.4	469
Clothing	38	0.34	0.89	0.66	407	0.37	97.4	423
Housing, Water, Electricity, Gas and Other Fuels	115	1.08	2.62	10.2	1584	2.31	92	1046
Health and Education	76	1.17	3.94	19.6	1820	1.76	61	1234
Health	20	0.80	1.04	7.8	816	0.74	35.4	648
Education	57	0.37	2.90	11.7	1004	1.02	25.5	586
Transportation and Communication: of which	24	0.12	6.88	6.08	878	1.55	73.1	1044
Transportation	22	0.11	6.24	5.94	483	1.49	51.2	964
Recreation and Culture	4	0.19	1.77	2.03	574	0.79	106.7	126
Restaurants and Hotels	13	0.00	1.38	3.70	537	0.44	74.9	131
Other Consumption Expenditure Items	88	1.24	2.77	9.83	2327	3.43	157	1127
Collective Consumption Expenditure by General Government	**29**	**1.47**	**13.80**	**8.93**	**2700**	**1.53**	**53.9**	**656**
Gross Fixed Capital Formation: of which	**228**	**6.65**	**10.12**	**11.79**	**11715**	**5.59**	**363**	**3133**
Machinery and Equipment	46	1.14	3.84	4.88	3067	3.34	256	1553
Construction	179	5.40	5.57	6.78	7972	1.50	91	1505
Change in Inventories and Net Acquisitions of Valuables	**-**	**0.03**	**0.01**	**0.50**	**318**	**0.25**	**-5.12**	**509**
Balance of Exports and Imports	**-41**	**-1.40**	**43.61**	**-1.27**	**1247**	**-5.34**	**225**	**-238**
Household Final Consumption Expenditure	**715**	**4.94**	**21.87**	**81.9**	**9501**	**14.90**	**716**	**7488**
Government Final Consumption Expenditure	**42**	**2.88**	**17.18**	**18.7**	**4252**	**2.65**	**84**	**1130**
Actual Final Consumption Expenditure[b]	**729**	**6.36**	**25.2**	**92**	**11052**	**16.0**	**747**	**7962**
All Goods	**518**	**4.01**	**13.1**	**54.7**	**5764**	**9.59**	**381**	**4706**
Nondurables	437	2.92	5.48	46.1	4013	6.99	96	3559
Semidurables	58	0.86	4.09	3.92	860	1.75	150	934
Durables	23	0.23	3.57	4.69	891	0.84	136	213
Services	**208**	**1.78**	**11.3**	**35.3**	**4506**	**6.29**	**358**	**3067**

a Real refers to purchasing power parity-adjusted values.
b Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Appendix Table 6.2 Real Expenditures,[a] 2005 *(continued)*
(billion Hong Kong dollars)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE
3776	**3948**	**59.5**	**95.0**	**1527**	**6.46**	**37.7**	**149**	**1963**	**1351**	**1002**	**373**	**3156**	**2329**	**987**
2732	**2498**	**34.3**	**26.0**	**754**	**3.49**	**23.5**	**120**	**1613**	**1003**	**361**	**286**	**2003**	**1496**	**589**
1131	403	12.9	3.76	137.7	0.95	8.83	62.2	662	440	36	94.6	272	232	165
260	67	6.24	0.62	27.0	0.18	1.42	33.5	147	162	4	27.5	63.5	42.2	63.8
216	83	3.96	1.45	45.5	0.22	4.83	5.97	112	154	10	13.9	77.4	46.5	50.0
260	100	1.70	0.76	24.6	0.15	0.41	7.11	133	39.1	5	24.9	54.1	54.0	22.7
394	154	0.99	0.93	40.6	0.40	2.17	15.6	271	84.4	16	28.4	77.1	89.2	28.4
130	152	0.54	1.77	18.8	0.14	2.19	7.77	127	22.3	14	35.1	100.0	110.6	19.2
98	110	0.43	1.49	16.4	0.12	1.51	6.10	90.6	15.4	13	33.1	80.1	98.8	16.3
465	653	7.3	3.08	94.3	0.40	2.86	15.0	317	132	42	35.3	236	164	78
264	300	6.0	2.87	87.7	1.24	5.7	16.5	221	122	36	19.1	288	188	175
49.3	190	1.45	1.45	29.3	0.42	1.85	9.2	100	22.2	17	9.4	149	80	56
214	109	4.5	1.42	58.3	0.82	3.83	7.3	121	99	19	9.6	139	109	118
209	582	2.17	3.83	165.1	0.20	1.48	3.21	115	72.6	72	49.5	314	247	33.9
191	302	2.11	2.96	143.0	0.11	1.29	3.00	82.6	57.7	63	48.4	260	236	30.4
44.1	59	0.92	4.54	33.3	0.11	0.57	1.12	39.1	8.42	52	8.07	198	76.5	25.1
200	26	0.90	3.40	60.0	0.03	0.08	2.49	7.59	35.9	34	3.74	192	243	37.4
290	324	3.57	2.71	156.6	0.42	1.78	11.5	124	170	76	40.3	402	235	56.1
143	**259**	**11.7**	**3.30**	**105.1**	**1.10**	**2.78**	**6.81**	**109**	**66.3**	**63**	**26.2**	**253**	**122**	**83**
767	**642**	**15.49**	**22.1**	**362**	**3.44**	**10.23**	**28.0**	**287**	**183**	**265**	**73.0**	**743**	**676**	**315**
129	387	4.16	8.62	225	1.71	4.00	3.31	111	78	171	28.8	478	453	74
616	236	8.23	13.1	128	0.86	4.03	18.6	153	89.5	89	42.4	206	220	216
10.27	**432**	**0.86**	**0.62**	**-6**	**-**	**2.16**	**9.33**	**27.7**	**141.0**	**-32**	**10.06**	**9.70**	**57.9**	**22.6**
123.4	**117**	**-2.82**	**43.1**	**312**	**-1.56**	**-0.92**	**-14.7**	**-73.4**	**-41.7**	**345**	**-22.1**	**147**	**-23.4**	**-22.2**
2629	**2319**	**30.4**	**23.3**	**671**	**2.70**	**19.1**	**116**	**1543**	**968**	**340**	**259**	**1881**	**1376**	**512**
247	**439**	**15.5**	**5.94**	**188**	**1.89**	**7.1**	**10.7**	**179**	**101**	**84**	**52.5**	**376**	**242**	**160**
2732	**2498**	**34.3**	**26.0**	**754**	**3.49**	**23.5**	**120**	**1613**	**1003**	**361**	**286**	**2003**	**1496**	**589**
1785	**1368**	**23.0**	**10.59**	**375**	**1.75**	**14.4**	**87.4**	**1070**	**608**	**168**	**178**	**956**	**761**	**278**
1389	886	19.4	4.88	179	1.22	10.5	74.2	843	513	51	122	412	366	215
314	302	1.77	3.27	124.2	0.34	3.08	9.97	178	75.6	40	41.9	276	262	35.5
82.6	181	1.81	2.44	72.0	0.20	0.85	3.27	48.82	19.5	77	13.90	268	133.7	27.4
919	**1056**	**10.9**	**14.0**	**362**	**1.52**	**8.5**	**31.6**	**487**	**392**	**184**	**97**	**987**	**727**	**289**

Appendix Table 6.3 Per Capita Real Expenditures,[a] 2005
(Hong Kong dollars)

Expenditure Category/Economy	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**6899**	**20646**	**250716**	**8074**	**20735**	**21423**	**202941**	**10916**
Actual Final Consumption Expenditure[b]	**5320**	**10011**	**68222**	**6631**	**8478**	**19012**	**109580**	**7230**
Food and Nonalcoholic Beverages	2663	3387	13099	2809	2150	6110	10701	2529
Bread and Cereals	1120	1351	2868	1212	340	926	948	472
Meat and Fish	498	397	3925	612	798	1788	5482	250
Fruits and Vegetables	454	404	1422	315	476	791	1029	791
Other Food and Nonalcoholic Beverages	592	1235	4884	669	537	2604	3242	1016
Clothing and Footwear: of which	314	644	2781	106	407	694	16061	426
Clothing	277	531	2393	48	312	436	14302	384
Housing, Water, Electricity, Gas and Other Fuels	842	1696	7089	736	1215	2742	13524	949
Health and Education	557	1846	10654	1414	1396	2094	8939	1121
Health	144	1267	2811	568	626	881	5203	588
Education	413	579	7843	846	770	1213	3737	532
Transportation and Communication: of which	173	187	18603	440	674	1837	10726	948
Transportation	160	168	16864	430	370	1765	7517	875
Recreation and Culture	31	296	4795	147	440	942	15660	114
Restaurants and Hotels	98	4	3717	267	412	520	10995	119
Other Consumption Expenditure Items	640	1951	7484	711	1785	4073	22973	1023
Collective Consumption Expenditure by General Government	**212**	**2310**	**37283**	**646**	**2071**	**1816**	**7913**	**596**
Gross Fixed Capital Formation: of which	**1667**	**10470**	**27351**	**853**	**8986**	**6637**	**53215**	**2845**
Machinery and Equipment	338	1789	10389	353	2353	3969	37574	1410
Construction	1308	8501	15038	490	6115	1783	13416	1367
Change in Inventories and Net Acquisitions of Valuables	**-**	**52**	**31**	**36**	**244**	**294**	**-751**	**462**
Balance of Exports and Imports	**-299**	**-2198**	**117828**	**-92**	**956**	**-6336**	**32984**	**-216**
Household Final Consumption Expenditure	**5222**	**7784**	**59094**	**5922**	**7287**	**17681**	**105133**	**6800**
Government Final Consumption Expenditure	**309**	**4538**	**46412**	**1355**	**3261**	**3147**	**12360**	**1026**
Actual Final Consumption Expenditure[b]	**5320**	**10011**	**68222**	**6631**	**8478**	**19012**	**109580**	**7230**
All Goods	**3783**	**6322**	**35499**	**3955**	**4421**	**11378**	**55966**	**4273**
Nondurables	3192	4602	14815	3332	3078	8302	14038	3232
Semidurables	425	1359	11044	284	659	2075	22020	848
Durables	165	361	9639	339	684	1000	19908	193
Services	**1520**	**2798**	**30649**	**2556**	**3456**	**7461**	**52473**	**2784**

a Real refers to purchasing power parity-adjusted values.
b Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Appendix Table 6.3 Per Capita Real Expenditures,[a] 2005 *(continued)*
(Hong Kong dollars)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE	Ave
17251	**57471**	**10520**	**200647**	**58460**	**22005.17**	**14802**	**5887**	**12751**	**15851**	**230717**	**18959**	**139322**	**35963**	**11874**	**11371**
12482	**36367**	**6061**	**54814**	**28844**	**11879**	**9207**	**4727**	**10478**	**11764**	**83080**	**14530**	**88414**	**23105**	**7085**	**5370**
5167	5867	2281	7948	5271	3217	3466	2454	4303	5160	8189	4811	12007	3581	1984	1592
1190	978	1103	1318	1033	597	556	1322	957	1901	1006	1397	2803	652	768	307
989	1203	701	3057	1742	754	1896	236	726	1811	2386	706	3415	718	601	407
1186	1451	300	1615	943	495	162	280	861	459	1203	1265	2388	834	274	311
1802	2236	176	1958	1553	1371	850	616	1758	989	3593	1444	3402	1377	341	504
592	2215	96	3741	720	482	858	307	827	261	3326	1787	4412	1707	231	443
449	1606	76	3152	629	395	594	241	588	181	2893	1684	3536	1526	196	372
2126	9498	1289	6496	3611	1353	1122	593	2062	1548	9588	1796	10426	2534	933	556
1205	4366	1058	6061	3356	4226	2230	652	1433	1427	8290	971	12718	2908	2101	402
225	2773	256	3053	1123	1443	728	363	648	260	4010	480	6589	1231	679	198
979	1593	802	3008	2232	2783	1502	289	785	1167	4280	490	6129	1677	1422	197
955	8471	384	8099	6320	676	580	127	744	851	16472	2516	13864	3817	408	640
872	4390	373	6249	5475	391	505	118	537	677	14605	2460	11456	3637	366	487
201	859	162	9579	1275	389	223	44	254	99	11984	410	8743	1181	302	297
913	373	160	7171	2297	115	31	98	49	421	7740	190	8477	3753	450	299
1324	4718	631	5720	5995	1421	698	453	807	1998	17492	2048	17766	3623	675	1094
655	**3775**	**2065**	**6975**	**4021**	**3744**	**1092**	**269**	**707**	**777**	**14601**	**1332**	**11189**	**1881**	**999**	**650**
3503	**9342**	**2740**	**46602**	**13873**	**11709.34**	**4015**	**1103**	**1862**	**2146**	**61026**	**3710**	**32780**	**10445**	**3785**	**4569**
589	5630	736	18206	8610	5815.76	1571	131	724	917	39300	1465	21109	6997	888	2205
2814	3429	1456	27591	4893	2925.01	1580	735	995	1050	20412	2155	9106	3392	2597	1579
47	**6281**	**153**	**1320**	**-233**	**-**	**847**	**368**	**180**	**1654**	**-7440**	**512**	**428**	**894**	**272**	**247**
564	**1706**	**-499**	**90937**	**11954**	**-5326**	**-360**	**-581**	**-477**	**-489**	**79450**	**-1125**	**6511**	**-361**	**-267**	**632**
12010	**33750**	**5382**	**49242**	**25670**	**9204**	**7512**	**4572**	**10024**	**11351**	**78232**	**13190**	**83025**	**21243**	**6155**	**4991**
1127	**6392**	**2744**	**12547**	**7195**	**6418**	**2787**	**424**	**1161**	**1190**	**19449**	**2671**	**16578**	**3742**	**1929**	**976**
12482	**36367**	**6061**	**54814**	**28844**	**11879**	**9207**	**4727**	**10478**	**11764**	**83080**	**14530**	**88414**	**23105**	**7085**	**5370**
8155	**19912**	**4061**	**22374**	**14370**	**5966**	**5651**	**3451**	**6952**	**7131**	**38783**	**9050**	**42202**	**11753**	**3344**	**3833**
6345	12890	3428	10312	6860	4158	4107	2928	5477	6016	11769	6212	18206	5646	2587	1927
1433	4391	313	6905	4753	1144	1210	393	1158	887	9323	2131	12165	4043	427	820
378	2630	320	5158	2757	664	334	129	317	228	17690	707	11831	2064	330	566
4200	**15371**	**1933**	**29652**	**13870**	**5169**	**3330**	**1245**	**3161**	**4592**	**42346**	**4938**	**43575**	**11222**	**3479**	**1785**

Appendix Table 6.4 Price Level Indexes, 2005
(Hong Kong, China = 100)

Expenditure Category/Economy	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**50**	**50**	**80**	**44**	**65**	**129**	**100**	**50**
Actual Final Consumption Expenditure[a]	**51**	**54**	**84**	**46**	**68**	**121**	**114**	**48**
Food and Nonalcoholic Beverages	51	55	80	51	65	99	104	46
Bread and Cereals	53	57	74	40	63	87	111	48
Meat and Fish	52	49	86	65	62	96	99	45
Fruits and Vegetables	40	63	120	62	68	122	125	43
Other Food and Nonalcoholic Beverages	52	53	68	53	66	98	104	49
Clothing and Footwear: of which	50	54	91	52	89	78	77	43
Clothing	50	52	91	60	89	67	75	43
Housing, Water, Electricity, Gas and Other Fuels	56	53	98	52	69	216	165	45
Health and Education	45	56	114	29	66	141	226	41
Health	68	55	108	41	57	144	205	43
Education	37	56	117	22	73	139	255	37
Transportation and Communication: of which	71	67	63	52	70	100	109	62
Transportation	69	61	51	51	63	99	106	61
Recreation and Culture	66	62	92	50	61	121	92	58
Restaurants and Hotels	61	86	78	54	73	125	105	54
Other Consumption Expenditure Items	42	49	81	43	67	96	95	52
Collective Consumption Expenditure by General Government	**64**	**44**	**77**	**21**	**58**	**121**	**134**	**64**
Gross Fixed Capital Formation: of which	**52**	**52**	**87**	**48**	**62**	**106**	**80**	**55**
Machinery and Equipment	64	77	69	57	65	86	58	51
Construction	49	47	100	42	60	149	138	59
Change in Inventories and Net Acquisitions of Valuables	**52**	**54**	**81**	**53**	**62**	**104**	**93**	**50**
Balance of Exports and Imports	**77**	**77**	**77**	**77**	**77**	**77**	**77**	**77**
Household Final Consumption Expenditure	**50**	**54**	**80**	**48**	**70**	**119**	**112**	**48**
Government Final Consumption Expenditure	**64**	**50**	**84**	**22**	**57**	**133**	**144**	**62**
Actual Final Consumption Expenditure[a]	**51**	**54**	**84**	**46**	**68**	**121**	**114**	**48**
All Goods	**53**	**53**	**70**	**53**	**68**	**99**	**87**	**50**
Nondurables	52	52	84	52	66	104	118	48
Semidurables	51	58	62	60	81	79	80	55
Durables	63	57	58	50	61	97	74	60
Services	**46**	**54**	**98**	**36**	**69**	**154**	**143**	**46**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Appendix Table 6.4 Price Level Indexes, 2005 *(continued)*
(Hong Kong, China = 100)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE
59	**43**	**38**	**95**	**70**	**90**	**48**	**45**	**47**	**57**	**91**	**50**	**87**	**59**	**42**
55	**38**	**41**	**107**	**73**	**90**	**48**	**48**	**45**	**56**	**113**	**50**	**91**	**58**	**44**
55	55	52	98	69	76	46	45	54	56	94	55	99	59	49
58	67	44	98	68	73	60	44	51	49	101	49	101	52	42
51	67	61	97	62	55	34	44	53	55	111	56	99	57	62
53	54	57	115	99	139	83	46	55	88	101	67	125	72	45
57	44	55	84	57	66	56	47	56	54	79	49	80	56	45
41	39	45	77	64	79	56	46	43	54	100	37	66	54	48
42	42	46	77	64	80	51	47	46	56	100	37	66	55	47
65	36	24	126	101	234	66	53	32	59	139	30	117	38	51
49	51	23	159	86	59	31	46	39	57	186	47	122	79	26
92	42	30	156	90	70	32	55	53	86	198	51	102	90	37
39	66	21	163	85	54	31	36	28	51	175	43	142	71	20
60	19	71	104	59	103	63	75	46	73	108	51	77	56	80
51	29	70	82	48	93	55	75	46	53	107	49	71	54	82
58	58	46	94	68	96	65	52	51	73	96	65	77	67	49
46	57	46	100	69	102	78	55	66	49	91	64	72	53	47
51	38	46	98	68	69	56	51	46	45	102	62	82	59	49
77	**42**	**22**	**146**	**62**	**70**	**33**	**58**	**50**	**72**	**102**	**43**	**93**	**79**	**30**
68	**57**	**48**	**109**	**61**	**91**	**53**	**47**	**61**	**60**	**76**	**61**	**78**	**58**	**43**
70	58	58	65	60	63	67	53	67	64	64	62	63	59	59
67	56	42	138	61	142	40	46	56	58	97	60	111	56	37
59	**44**	**48**	**101**	**63**	**88**	**55**	**47**	**52**	**59**	**91**	**56**	**83**	**59**	**49**
77	**77**	**77**	**77**	**77**	**77**	**77**	**77**	**77**	**77**	**77**	**77**	**77**	**77**	**77**
55	**37**	**44**	**105**	**71**	**97**	**52**	**48**	**45**	**55**	**111**	**50**	**90**	**56**	**47**
72	**46**	**22**	**137**	**70**	**69**	**31**	**56**	**49**	**73**	**114**	**45**	**96**	**77**	**28**
55	**38**	**41**	**107**	**73**	**90**	**48**	**48**	**45**	**56**	**113**	**50**	**91**	**58**	**44**
55	**35**	**48**	**94**	**63**	**83**	**52**	**49**	**52**	**57**	**101**	**55**	**79**	**63**	**56**
57	32	45	110	73	84	49	48	53	57	117	57	94	66	52
43	33	57	86	44	73	58	48	45	54	95	41	70	58	52
65	53	68	71	73	93	63	72	48	52	93	76	65	63	90
55	**42**	**28**	**117**	**81**	**106**	**41**	**46**	**32**	**54**	**122**	**40**	**103**	**53**	**33**

Appendix Table 6.5 Percent Shares of Real Expenditures to GDP within Each Economy, 2005

Expenditure Category/Economy	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Actual Final Consumption Expenditure[a]	**77.1**	**48.5**	**27.2**	**82.1**	**40.9**	**88.7**	**54.0**	**66.2**
Food and Nonalcoholic Beverages	38.6	16.4	5.22	34.8	10.4	28.52	5.3	23.2
Bread and Cereals	16.23	6.54	1.14	15.01	1.64	4.32	0.47	4.32
Meat and Fish	7.22	1.92	1.57	7.58	3.85	8.35	2.70	2.29
Fruits and Vegetables	6.58	1.96	0.57	3.90	2.29	3.69	0.51	7.25
Other Food and Nonalcoholic Beverages	8.58	5.98	1.95	8.29	2.59	12.16	1.60	9.31
Clothing and Footwear: of which	4.55	3.12	1.11	1.31	1.96	3.24	7.91	3.90
Clothing	4.02	2.57	0.95	0.59	1.50	2.03	7.05	3.52
Housing, Water, Electricity, Gas and Other Fuels	12.21	8.22	2.83	9.12	5.86	12.80	6.66	8.70
Health and Education	8.07	8.94	4.25	17.51	6.73	9.77	4.40	10.27
Health	2.09	6.14	1.12	7.03	3.02	4.11	2.56	5.39
Education	5.99	2.80	3.13	10.48	3.71	5.66	1.84	4.88
Transportation and Communication: of which	2.51	0.90	7.42	5.45	3.25	8.58	5.29	8.69
Transportation	2.32	0.82	6.73	5.32	1.79	8.24	3.70	8.02
Recreation and Culture	0.46	1.43	1.91	1.82	2.12	4.40	7.72	1.04
Restaurants and Hotels	1.42	0.02	1.48	3.31	1.99	2.43	5.42	1.09
Other Consumption Expenditure Items	9.28	9.45	2.99	8.80	8.61	19.01	11.32	9.37
Collective Consumption Expenditure by General Government	**3.07**	**11.19**	**14.87**	**8.00**	**9.99**	**8.48**	**3.90**	**5.46**
Gross Fixed Capital Formation: of which	**24.2**	**50.7**	**10.9**	**10.6**	**43.3**	**31.0**	**26.2**	**26.1**
Machinery and Equipment	4.90	8.7	4.14	4.37	11.3	18.5	18.5	12.92
Construction	19.0	41.2	6.00	6.07	29.49	8.32	6.6	12.5
Change in Inventories and Net Acquisitions of Valuables	**-**	**0.25**	**0.01**	**0.45**	**1.18**	**1.37**	**-0.37**	**4.23**
Balance of Exports and Imports	**-4.33**	**-10.6**	**47.0**	**-1.14**	**4.6**	**-29.6**	**16.25**	**-1.98**
Household Final Consumption Expenditure	**75.70**	**37.70**	**23.57**	**73.35**	**35.15**	**82.53**	**51.80**	**62.29**
Government Final Consumption Expenditure	**4.48**	**21.98**	**18.51**	**16.78**	**15.73**	**14.69**	**6.09**	**9.40**
Actual Final Consumption Expenditure[a]	**77.1**	**48.5**	**27.2**	**82.1**	**40.9**	**88.7**	**54.0**	**66.2**
All Goods	**54.8**	**30.6**	**14.2**	**49.0**	**21.3**	**53.1**	**27.6**	**39.1**
Nondurables	46.3	22.3	5.9	41.3	14.8	38.8	6.9	29.6
Semidurables	6.16	6.58	4.41	3.51	3.18	9.69	10.85	7.76
Durables	2.39	1.75	3.84	4.20	3.30	4.67	9.81	1.77
Services	**22.0**	**13.6**	**12.2**	**31.7**	**16.7**	**34.8**	**25.9**	**25.5**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Appendix Table 6.5 Percent Shares of Real Expenditures to GDP within Each Economy, 2005 *(continued)*

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE
100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
72.4	**63.3**	**57.6**	**27.3**	**49.3**	**54.0**	**62.2**	**80.3**	**82.2**	**74.2**	**36.0**	**76.6**	**63.5**	**64.2**	**59.7**
29.9	10.2	21.68	3.96	9.0	14.6	23.4	41.7	33.7	32.6	3.55	25.4	8.62	10.0	16.7
6.90	1.70	10.49	0.66	1.77	2.71	3.76	22.46	7.51	11.99	0.44	7.37	2.01	1.81	6.47
5.73	2.09	6.67	1.52	2.98	3.43	12.81	4.00	5.70	11.42	1.03	3.72	2.45	2.00	5.06
6.87	2.52	2.85	0.81	1.61	2.25	1.10	4.76	6.76	2.90	0.52	6.67	1.71	2.32	2.30
10.45	3.89	1.67	0.98	2.66	6.23	5.74	10.46	13.78	6.24	1.56	7.61	2.44	3.83	2.88
3.43	3.85	0.91	1.86	1.23	2.19	5.80	5.21	6.48	1.65	1.44	9.42	3.17	4.75	1.94
2.60	2.79	0.72	1.57	1.08	1.80	4.01	4.09	4.61	1.14	1.25	8.88	2.54	4.24	1.65
12.32	16.53	12.25	3.24	6.18	6.15	7.58	10.07	16.17	9.76	4.16	9.47	7.48	7.05	7.86
6.98	7.60	10.05	3.02	5.74	19.20	15.06	11.07	11.24	9.00	3.59	5.12	9.13	8.09	17.69
1.31	4.82	2.43	1.52	1.92	6.56	4.92	6.17	5.08	1.64	1.74	2.53	4.73	3.42	5.71
5.68	2.77	7.62	1.50	3.82	12.65	10.15	4.90	6.15	7.36	1.86	2.59	4.40	4.66	11.98
5.53	14.74	3.65	4.04	10.81	3.07	3.92	2.15	5.83	5.37	7.14	13.27	9.95	10.61	3.44
5.05	7.64	3.55	3.11	9.37	1.78	3.41	2.01	4.21	4.27	6.33	12.98	8.22	10.11	3.08
1.17	1.49	1.54	4.77	2.18	1.77	1.51	0.75	1.99	0.62	5.19	2.16	6.28	3.29	2.55
5.29	0.65	1.52	3.57	3.93	0.52	0.21	1.67	0.39	2.66	3.35	1.00	6.08	10.43	3.79
7.68	8.21	6.00	2.85	10.25	6.46	4.71	7.70	6.33	12.60	7.58	10.80	12.75	10.08	5.69
3.80	**6.57**	**19.63**	**3.48**	**6.88**	**17.01**	**7.38**	**4.57**	**5.55**	**4.90**	**6.33**	**7.03**	**8.03**	**5.23**	**8.42**
20.3	**16.3**	**26.0**	**23.2**	**23.7**	**53.2**	**27.1**	**18.7**	**14.6**	**13.5**	**26.5**	**19.6**	**23.5**	**29.0**	**31.9**
3.4	9.8	6.99	9.1	14.7	26.4	10.62	2.22	5.68	5.8	17.0	7.73	15.2	19.5	7.5
16.31	6.0	13.8	13.75	8.37	13.29	10.7	12.49	7.80	6.6	8.85	11.4	6.54	9.43	21.9
0.27	**10.93**	**1.45**	**0.66**	**-0.40**	**-**	**5.73**	**6.26**	**1.41**	**10.43**	**-3.22**	**2.70**	**0.31**	**2.49**	**2.29**
3.27	**2.97**	**-4.7**	**45.3**	**20.4**	**-24.20**	**-2.4**	**-9.87**	**-3.74**	**-3.09**	**34.4**	**-5.93**	**4.67**	**-1.00**	**-2.25**
69.62	**58.73**	**51.16**	**24.54**	**43.91**	**41.83**	**50.75**	**77.67**	**78.61**	**71.61**	**33.91**	**69.57**	**59.59**	**59.07**	**51.83**
6.53	**11.12**	**26.09**	**6.25**	**12.31**	**29.16**	**18.83**	**7.20**	**9.11**	**7.51**	**8.43**	**14.09**	**11.90**	**10.41**	**16.25**
72.4	**63.3**	**57.6**	**27.3**	**49.3**	**54.0**	**62.2**	**80.3**	**82.2**	**74.2**	**36.0**	**76.6**	**63.5**	**64.2**	**59.67**
47.3	**34.6**	**38.6**	**11.2**	**24.6**	**27.1**	**38.2**	**58.6**	**54.5**	**45.0**	**16.8**	**47.7**	**30.3**	**32.7**	**28.16**
36.8	22.4	32.6	5.1	11.7	18.9	27.7	49.7	43.0	38.0	5.1	32.8	13.1	15.7	21.79
8.30	7.64	2.98	3.44	8.13	5.20	8.18	6.68	9.08	5.59	4.04	11.24	8.73	11.24	3.60
2.19	4.58	3.04	2.57	4.72	3.02	2.25	2.19	2.49	1.44	7.67	3.73	8.49	5.74	2.78
24.3	**26.7**	**18.4**	**14.8**	**23.7**	**23.5**	**22.5**	**21.2**	**24.8**	**29.0**	**18.4**	**26.0**	**31.3**	**31.2**	**29.30**

APPENDIX 7

EXCHANGE RATE-BASED COMPARISONS

This appendix presents results on exchange rate-based (or nominal) gross domestic product (GDP) expressed in Hong Kong dollars. The estimates were obtained by dividing GDPs in local currency units by the corresponding exchange rate in each particular economy. Per capita GDPs were derived by dividing nominal GDPs by population estimates.

While reasons for using GDP data adjusted by purchasing power parity (PPP) are the preferred means of making international comparisons, these tables showing nominal GDPs are also presented to enable a comparison between the outcomes of using exchange rate-based figures and PPP-based estimates. It is important to note that nominal GDPs reflect differences in both the volumes and price levels. The PPP-adjusted (i.e., real) values reflect differences only in the volumes between economies because PPPs remove the effects of differences in the purchasing power of currencies.

The following tables are presented in this appendix:

Appendix Table 7.1 Exchange Rates and Population, 2005

Economy	Exchange Rates		Population
	(LCU per US dollar)	(LCU per HK dollar)	(thousands)
Bangladesh	64.33	8.27	136990.14
Bhutan	44.10	5.67	634.98
Brunei Darussalam	1.66	0.21	370.10
Cambodia	4092.50	526.21	13828.00
China, People's Republic of	8.19	1.05	1303720.00
Fiji Islands	1.69	0.22	842.49
Hong Kong, China	7.78	1.00	6813.20
India	44.10	5.67	1101318.00
Indonesia	9704.74	1247.82	218868.79
Iran, Islamic Republic of	8963.96	1152.58	68700.00
Lao People's Democratic Republic	10655.20	1370.03	5651.50
Macao, China	8.01	1.03	473.46
Malaysia	3.79	0.49	26127.67
Maldives	12.80	1.65	293.75
Mongolia	1205.22	154.97	2547.75
Nepal	71.37	9.18	25342.64
Pakistan	59.51	7.65	153962.65
Philippines	55.09	7.08	85261.00
Singapore	1.66	0.21	4341.80
Sri Lanka	100.50	12.92	19668.00
Taipei,China	32.17	4.14	22652.54
Thailand	40.22	5.17	64763.00
Viet Nam	15858.90	2039.12	83119.92

LCU = local currency unit.

Appendix Table 7.2 Nominal Expenditures, 2005
(billion Hong Kong dollars)

Expenditure Category/Economy	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**476**	**6.5**	**74.13**	**49**	**17451**	**23.31**	**1383**	**6056**
Actual Final Consumption Expenditure[a]	**369**	**3.44**	**21.21**	**42**	**7500**	**19.35**	**854**	**3839**
Food and Nonalcoholic Beverages	184	1.19	3.89	19.8	1809	5.08	76.0	1293
Bread and Cereals	82	0.49	0.79	6.6	280	0.68	7.19	249
Meat and Fish	35	0.12	1.25	5.53	646	1.44	37.1	125
Fruits and Vegetables	25	0.16	0.63	2.71	422	0.81	8.78	375
Other Food and Nonalcoholic Beverages	42	0.41	1.22	5.0	462	2.15	22.9	544
Clothing and Footwear: of which	21	0.22	0.94	0.77	472	0.45	84.3	200
Clothing	19	0.18	0.81	0.40	362	0.25	72.8	181
Housing, Water, Electricity, Gas and Other Fuels	64	0.57	2.57	5.3	1099	4.99	152	466
Health and Education	34	0.65	4.50	5.7	1200	2.49	137	500
Health	14	0.45	1.12	3.2	466	1.07	72.5	281
Education	21	0.21	3.38	2.5	734	1.42	64.9	219
Transportation and Communication: of which	17	0.08	4.36	3.14	615	1.55	79.4	646
Transportation	15	0.07	3.20	3.03	302	1.47	54.2	588
Recreation and Culture	3	0.12	1.63	1.02	349	0.96	97.9	73
Restaurants and Hotels	8	0.00	1.08	2.00	393	0.55	78.5	71
Other Consumption Expenditure Items	37	0.61	2.23	4.26	1563	3.28	148	589
Collective Consumption Expenditure by General Government	**19**	**0.65**	**10.64**	**1.84**	**1559**	**1.85**	**72.3**	**421**
Gross Fixed Capital Formation: of which	**119**	**3.47**	**8.85**	**5.71**	**7241**	**5.95**	**289**	**1726**
Machinery and Equipment	30	0.88	2.65	2.78	2006	2.87	150	790
Construction	88	2.52	5.57	2.87	4813	2.23	126	894
Change in Inventories and Net Acquisitions of Valuables	**0**	**0.02**	**0.01**	**0.27**	**196**	**0.26**	**-4.76**	**253**
Balance of Exports and Imports	**-31**	**-1.07**	**33.42**	**-0.98**	**956**	**-4.09**	**172**	**-182**
Household Final Consumption Expenditure	**361**	**2.65**	**17.50**	**39.7**	**6628**	**17.67**	**805**	**3562**
Government Final Consumption Expenditure	**27**	**1.45**	**14.35**	**4.2**	**2431**	**3.54**	**121**	**698**
Actual Final Consumption Expenditure[a]	**369**	**3.44**	**21.2**	**42**	**7500**	**19.3**	**854**	**3839**
All Goods	**272**	**2.14**	**9.2**	**28.8**	**3897**	**9.49**	**334**	**2351**
Nondurables	228	1.51	4.62	24.1	2659	7.29	113	1713
Semidurables	30	0.50	2.52	2.34	694	1.38	120	509
Durables	14	0.13	2.08	2.32	544	0.82	100	128
Services	**96**	**0.96**	**11.1**	**12.6**	**3092**	**9.67**	**511**	**1397**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Appendix Table 7.2 Nominal Expenditures, 2005 *(continued)*
(billion Hong Kong dollars)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE	Asia
2232	**1705**	**22.3**	**90.2**	**1067**	**5.83**	**18.1**	**68**	**921**	**768**	**908**	**186**	**2761**	**1371**	**412**	**38052**
1501	**950**	**14.1**	**27.8**	**546**	**3.14**	**11.3**	**57**	**734**	**559**	**408**	**142**	**1824**	**865**	**259**	**20550**
624	222	6.7	3.68	94.4	0.72	4.05	27.9	358	245	34	51.8	270	137	81	5554
150	45	2.72	0.61	18.3	0.13	0.85	14.7	75	80	4	13.5	64.0	21.9	27.1	1145
111	55	2.41	1.41	28.4	0.12	1.66	2.65	60	86	12	7.7	76.8	26.4	30.9	1353
138	54	0.98	0.88	24.4	0.20	0.34	3.28	73	34.3	5	16.7	67.7	38.8	10.3	1303
224	68	0.55	0.78	23.3	0.27	1.20	7.3	150	45.3	12	13.8	61.8	50.2	12.8	1753
53	59	0.25	1.36	12.1	0.11	1.22	3.55	55	12.1	14	13.0	66.3	60.2	9.2	1142
42	47	0.20	1.15	10.5	0.09	0.77	2.88	41.5	8.7	13	12.2	52.8	54.7	7.7	930
303	233	1.7	3.87	95.4	0.93	1.90	7.9	100	78	58	10.7	276	62	39	3066
129	153	1.4	4.57	75.8	0.74	1.8	7.7	86	70	67	8.9	350	149	45	3035
45.3	80	0.43	2.25	26.5	0.30	0.59	5.0	53	19.1	34	4.8	153	72	21	1356
83	73	1.0	2.32	49.3	0.44	1.18	2.6	33	51	33	4.2	197	77	24	1679
125	111	1.54	3.98	97.8	0.20	0.93	2.42	52	52.9	77	25.2	243	138	27.0	2325
98	88	1.48	2.42	69.2	0.11	0.71	2.25	38.0	30.7	68	23.8	185	126	24.8	1725
25.7	34	0.42	4.25	22.5	0.11	0.37	0.58	19.8	6.11	50	5.28	152	51.1	12.4	911
93	15	0.42	3.40	41.6	0.03	0.06	1.37	5.04	17.5	31	2.40	139	129	17.4	1049
148	123	1.64	2.64	106.7	0.29	1.00	5.9	57	77	77	24.9	329	139	27.5	3468
110	**108**	**2.6**	**4.82**	**64.7**	**0.77**	**0.91**	**3.92**	**55**	**47.4**	**65**	**11.2**	**235**	**97**	**25**	**2917**
520	**367**	**7.43**	**24.0**	**220**	**3.12**	**5.45**	**13.3**	**174**	**111**	**200**	**44.2**	**581**	**393**	**134**	**12195**
90	223	2.43	5.60	136	1.07	2.69	1.75	75	50	109	17.8	302	268	44	4312
416	133	3.49	18.0	78	1.22	1.60	8.6	86	51.7	86	25.4	229	122	79	7274
6.08	**189**	**0.41**	**0.63**	**-3.8**	**-**	**1.18**	**4.43**	**14.5**	**82.8**	**-29**	**5.69**	**8.04**	**34.1**	**11.0**	**769**
94.6	**90**	**-2.16**	**33.0**	**239**	**-1.20**	**-0.70**	**-11.3**	**-56.3**	**-32.0**	**264**	**-17.0**	**113**	**-17.9**	**-17.0**	**1620**
1433	**858**	**13.3**	**24.4**	**479**	**2.61**	**10.0**	**55**	**701**	**533**	**376**	**130**	**1697**	**774**	**239**	**18759**
178	**200**	**3.4**	**8.16**	**132**	**1.30**	**2.2**	**6.0**	**87**	**74**	**96**	**23.8**	**362**	**188**	**45**	**4708**
1501	**950**	**14.1**	**27.8**	**546**	**3.14**	**11.3**	**57**	**734**	**559**	**408**	**142**	**1824**	**865**	**259**	**20550**
978	**481**	**10.9**	**9.95**	**238**	**1.45**	**7.5**	**42.4**	**552**	**344**	**170**	**97**	**753**	**477**	**156**	**11222**
789	285	8.7	5.39	131	1.03	5.2	35.3	448	293	60	70	386	241	112	7621
136	101	1.01	2.82	54.7	0.25	1.78	4.76	81	40.9	38	17.1	193	151	18.5	2201
53.5	95	1.23	1.75	52.5	0.18	0.54	2.35	23.62	10.1	72	10.59	175	84.2	24.8	1399
508	**440**	**3.0**	**16.4**	**292**	**1.62**	**3.5**	**14.5**	**156**	**213**	**225**	**39**	**1020**	**383**	**96**	**8541**

Appendix Table 7.3 Per Capita Nominal Expenditures, 2005
(Hong Kong dollars)

Expenditure Category/Economy	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**3472**	**10252**	**200294**	**3531**	**13386**	**27674**	**202941**	**5499**
Actual Final Consumption Expenditure[a]	**2697**	**5424**	**57308**	**3036**	**5753**	**22964**	**125303**	**3486**
Food and Nonalcoholic Beverages	1346	1873	10521	1433	1388	6028	11158	1174
Bread and Cereals	596	774	2124	479	214	804	1055	226
Meat and Fish	258	193	3387	400	495	1709	5448	113
Fruits and Vegetables	182	255	1702	196	324	967	1288	341
Other Food and Nonalcoholic Beverages	310	651	3307	358	354	2548	3367	494
Clothing and Footwear: of which	156	347	2528	55	362	539	12368	182
Clothing	138	278	2184	29	278	294	10684	164
Housing, Water, Electricity, Gas and Other Fuels	468	900	6953	381	843	5924	22289	423
Health and Education	251	1026	12171	414	921	2956	20175	454
Health	99	702	3032	232	357	1266	10647	255
Education	152	324	9138	182	563	1690	9528	199
Transportation and Communication: of which	123	125	11790	227	472	1836	11647	587
Transportation	110	103	8652	219	232	1748	7954	534
Recreation and Culture	21	184	4397	73	268	1138	14371	67
Restaurants and Hotels	60	4	2909	144	301	652	11521	65
Other Consumption Expenditure Items	272	966	6039	308	1199	3890	21775	535
Collective Consumption Expenditure by General Government	**136**	**1025**	**28755**	**133**	**1195**	**2200**	**10609**	**382**
Gross Fixed Capital Formation: of which	**869**	**5459**	**23910**	**413**	**5554**	**7060**	**42450**	**1567**
Machinery and Equipment	217	1385	7173	201	1539	3404	21963	718
Construction	640	3972	15063	207	3692	2649	18472	812
Change in Inventories and Net Acquisitions of Valuables	**-**	**29**	**25**	**19**	**150**	**305**	**-699**	**229**
Balance of Exports and Imports	**-229**	**-1684**	**90295**	**-71**	**733**	**-4855**	**25277**	**-166**
Household Final Consumption Expenditure	**2636**	**4171**	**47298**	**2868**	**5084**	**20968**	**118091**	**3234**
Government Final Consumption Expenditure	**196**	**2278**	**38766**	**302**	**1865**	**4196**	**17821**	**633**
Actual Final Consumption Expenditure[a]	**2697**	**5424**	**57308**	**3036**	**5753**	**22964**	**125303**	**3486**
All Goods	**1989**	**3370**	**24896**	**2083**	**2989**	**11260**	**48968**	**2135**
Nondurables	1667	2379	12473	1745	2040	8655	16594	1556
Semidurables	217	785	6812	169	532	1632	17658	463
Durables	104	207	5611	168	417	973	14716	117
Services	**697**	**1507**	**30013**	**911**	**2371**	**11482**	**75050**	**1268**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Appendix Table 7.3 Per Capita Nominal Expenditures, 2005 *(continued)*
(Hong Kong dollars)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE	Asia
10197	**24813**	**3951**	**190596**	**40829**	**19850**	**7117**	**2667**	**5981**	**9005**	**209048**	**9474**	**121904**	**21162**	**4951**	**11461**
6856	**13834**	**2487**	**58623**	**20914**	**10677**	**4432**	**2259**	**4765**	**6556**	**93891**	**7229**	**80520**	**13356**	**3112**	**6189**
2852	3236	1177	7769	3613	2450	1590	1101	2324	2878	7718	2633	11932	2119	975	1673
687	656	482	1296	699	438	333	580	487	941	1012	688	2827	338	326	345
508	803	426	2969	1086	418	650	104	387	1004	2652	393	3391	408	372	407
632	784	173	1862	935	687	135	129	473	402	1215	851	2988	598	123	393
1025	993	97	1642	892	908	472	287	976	531	2839	702	2727	775	154	528
243	863	43	2880	462	378	479	140	357	141	3323	663	2926	929	110	344
190	677	35	2430	404	318	304	114	269	102	2884	620	2330	845	92	280
1385	3393	308	8168	3653	3171	745	313	652	914	13310	544	12175	957	472	923
588	2223	247	9647	2902	2507	694	302	561	817	15424	454	15454	2302	540	914
207	1165	77	4751	1015	1008	233	199	345	224	7925	243	6739	1111	253	408
381	1057	170	4896	1887	1499	461	103	216	593	7499	211	8715	1191	287	506
572	1618	273	8404	3744	697	363	96	339	621	17773	1281	10714	2125	325	700
447	1279	262	5106	2650	364	280	89	247	360	15570	1212	8162	1949	298	520
118	497	74	8985	863	375	145	23	128	72	11454	269	6692	789	149	274
423	214	74	7186	1594	117	24	54	33	206	7066	122	6123	1985	210	316
674	1792	291	5584	4085	981	391	231	372	907	17823	1264	14503	2149	331	1045
504	**1578**	**460**	**10172**	**2476**	**2636**	**358**	**155**	**356**	**556**	**14952**	**570**	**10392**	**1494**	**302**	**879**
2377	**5336**	**1314**	**50787**	**8425**	**10619**	**2139**	**524**	**1131**	**1297**	**46086**	**2248**	**25647**	**6061**	**1610**	**3673**
409	3244	430	11836	5199	3646	1055	69	484	583	25160	903	13330	4146	524	1299
1899	1930	617	38100	2999	4165	626	339	561	606	19887	1289	10125	1884	952	2191
28	**2757**	**73**	**1327**	**-147**	**-**	**464**	**175**	**94**	**971**	**-6767**	**289**	**355**	**527**	**133**	**232**
432	**1307**	**-383**	**69688**	**9161**	**-4082**	**-276**	**-445**	**-365**	**-375**	**60885**	**-862**	**4989**	**-277**	**-205**	**488**
6547	**12495**	**2350**	**51566**	**18338**	**8899**	**3917**	**2178**	**4555**	**6248**	**86635**	**6588**	**74931**	**11953**	**2873**	**5650**
813	**2917**	**597**	**17229**	**5052**	**4414**	**873**	**236**	**566**	**864**	**22208**	**1211**	**15981**	**2898**	**540**	**1418**
6856	**13834**	**2487**	**58623**	**20914**	**10677**	**4432**	**2259**	**4765**	**6556**	**93891**	**7229**	**80520**	**13356**	**3112**	**6189**
4471	**6995**	**1936**	**21025**	**9119**	**4942**	**2932**	**1674**	**3584**	**4035**	**39091**	**4950**	**33239**	**7361**	**1871**	**3380**
3607	4142	1539	11388	5014	3490	2024	1393	2907	3438	13737	3542	17027	3724	1350	2295
620	1467	179	5950	2095	835	697	188	524	479	8848	870	8500	2338	223	663
244	1385	218	3687	2010	617	211	93	153	118	16506	539	7712	1299	298	421
2320	**6405**	**534**	**34716**	**11194**	**5498**	**1377**	**571**	**1015**	**2498**	**51824**	**1981**	**45034**	**5906**	**1157**	**2572**

Appendix Table 7.4 Percent Shares of Expenditures to GDP in Nominal Terms within Each Economy, 2005

Expenditure Category/Economy	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Actual Final Consumption Expenditure[a]	**77.66**	**52.90**	**28.61**	**85.99**	**42.98**	**82.98**	**61.74**	**63.39**
Food and Nonalcoholic Beverages	38.77	18.27	5.25	40.58	10.37	21.78	5.50	21.35
Bread and Cereals	17.16	7.55	1.06	13.58	1.60	2.90	0.52	4.11
Meat and Fish	7.44	1.88	1.69	11.32	3.70	6.18	2.68	2.06
Fruits and Vegetables	5.24	2.49	0.85	5.55	2.42	3.49	0.63	6.19
Other Food and Nonalcoholic Beverages	8.92	6.35	1.65	10.14	2.65	9.21	1.66	8.99
Clothing and Footwear: of which	4.49	3.39	1.26	1.57	2.71	1.95	6.09	3.30
Clothing	3.98	2.71	1.09	0.81	2.07	1.06	5.26	2.98
Housing, Water, Electricity, Gas and Other Fuels	13.49	8.78	3.47	10.79	6.30	21.41	10.98	7.69
Health and Education	7.23	10.01	6.08	11.73	6.88	10.68	9.94	8.26
Health	2.84	6.85	1.51	6.57	2.67	4.57	5.25	4.64
Education	4.39	3.16	4.56	5.16	4.21	6.11	4.70	3.62
Transportation and Communication: of which	3.54	1.22	5.89	6.42	3.52	6.64	5.74	10.67
Transportation	3.17	1.00	4.32	6.21	1.73	6.32	3.92	9.71
Recreation and Culture	0.60	1.79	2.20	2.08	2.00	4.11	7.08	1.21
Restaurants and Hotels	1.73	0.04	1.45	4.09	2.25	2.36	5.68	1.18
Other Consumption Expenditure Items	7.83	9.42	3.01	8.72	8.96	14.06	10.73	9.72
Collective Consumption Expenditure by General Government	**3.91**	**10.00**	**14.36**	**3.78**	**8.93**	**7.95**	**5.23**	**6.95**
Gross Fixed Capital Formation: of which	**25.02**	**53.25**	**11.94**	**11.69**	**41.49**	**25.51**	**20.92**	**28.50**
Machinery and Equipment	6.26	13.51	3.58	5.69	11.50	12.30	10.82	13.05
Construction	18.43	38.74	7.52	5.87	27.58	9.57	9.10	14.77
Change in Inventories and Net Acquisitions of Valuables	**-**	**0.28**	**0.01**	**0.54**	**1.12**	**1.10**	**-0.34**	**4.17**
Balance of Exports and Imports	**-6.59**	**-16.43**	**45.08**	**-2.00**	**5.48**	**-17.54**	**12.46**	**-3.01**
Household Final Consumption Expenditure	**75.93**	**40.69**	**23.61**	**81.21**	**37.98**	**75.77**	**58.19**	**58.82**
Government Final Consumption Expenditure	**5.65**	**22.22**	**19.35**	**8.55**	**13.93**	**15.16**	**8.78**	**11.52**
Actual Final Consumption Expenditure[a]	**77.66**	**52.90**	**28.61**	**85.99**	**42.98**	**82.98**	**61.74**	**63.39**
All Goods	**57.28**	**32.87**	**12.43**	**58.98**	**22.33**	**40.69**	**24.13**	**38.83**
Nondurables	48.02	23.20	6.23	49.43	15.24	31.28	8.18	28.29
Semidurables	6.26	7.65	3.40	4.79	3.97	5.90	8.70	8.41
Durables	3.01	2.02	2.80	4.76	3.12	3.51	7.25	2.12
Services	**20.09**	**14.70**	**14.98**	**25.81**	**17.72**	**41.49**	**36.98**	**23.06**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Appendix Table 7.4 Percent Shares of Expenditures to GDP in Nominal Terms within Each Economy, 2005 *(continued)*

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE	Asia
100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
67.24	**55.75**	**62.93**	**30.76**	**51.22**	**53.79**	**62.27**	**84.70**	**79.67**	**72.81**	**44.91**	**76.30**	**66.05**	**63.11**	**62.85**	**54.00**
27.97	13.04	29.80	4.08	8.85	12.34	22.35	41.26	38.85	31.96	3.69	27.79	9.79	10.01	19.70	14.60
6.74	2.64	12.19	0.68	1.71	2.21	4.68	21.73	8.14	10.45	0.48	7.26	2.32	1.60	6.58	3.01
4.98	3.24	10.78	1.56	2.66	2.10	9.13	3.91	6.48	11.15	1.27	4.14	2.78	1.93	7.52	3.56
6.20	3.16	4.37	0.98	2.29	3.46	1.90	4.85	7.92	4.47	0.58	8.98	2.45	2.83	2.49	3.43
10.05	4.00	2.46	0.86	2.19	4.57	6.64	10.77	16.32	5.90	1.36	7.41	2.24	3.66	3.11	4.61
2.39	3.48	1.10	1.51	1.13	1.91	6.73	5.25	5.97	1.57	1.59	7.00	2.40	4.39	2.23	3.00
1.87	2.73	0.89	1.28	0.99	1.60	4.27	4.26	4.50	1.13	1.38	6.54	1.91	3.99	1.86	2.44
13.58	13.67	7.79	4.29	8.95	15.97	10.46	11.72	10.89	10.15	6.37	5.74	9.99	4.52	9.52	8.06
5.77	8.96	6.25	5.06	7.11	12.63	9.76	11.33	9.37	9.07	7.38	4.79	12.68	10.88	10.90	7.98
2.03	4.70	1.95	2.49	2.49	5.08	3.28	7.47	5.77	2.48	3.79	2.56	5.53	5.25	5.11	3.56
3.74	4.26	4.30	2.57	4.62	7.55	6.48	3.86	3.61	6.59	3.59	2.23	7.15	5.63	5.79	4.41
5.61	6.52	6.91	4.41	9.17	3.51	5.10	3.58	5.67	6.90	8.50	13.52	8.79	10.04	6.56	6.11
4.38	5.15	6.63	2.68	6.49	1.83	3.93	3.33	4.12	4.00	7.45	12.79	6.70	9.21	6.02	4.53
1.15	2.00	1.87	4.71	2.11	1.89	2.04	0.86	2.14	0.80	5.48	2.84	5.49	3.73	3.01	2.39
4.15	0.86	1.87	3.77	3.90	0.59	0.34	2.03	0.55	2.29	3.38	1.29	5.02	9.38	4.24	2.76
6.61	7.22	7.35	2.93	10.00	4.94	5.49	8.66	6.22	10.08	8.53	13.34	11.90	10.16	6.68	9.11
4.94	**6.36**	**11.63**	**5.34**	**6.06**	**13.28**	**5.03**	**5.80**	**5.96**	**6.17**	**7.15**	**6.02**	**8.52**	**7.06**	**6.09**	**7.67**
23.31	**21.51**	**33.27**	**26.65**	**20.63**	**53.50**	**30.05**	**19.63**	**18.91**	**14.41**	**22.05**	**23.73**	**21.04**	**28.64**	**32.52**	**32.05**
4.02	13.07	10.89	6.21	12.73	18.37	14.83	2.59	8.09	6.47	12.04	9.54	10.93	19.59	10.57	11.33
18.62	7.78	15.61	19.99	7.35	20.98	8.80	12.73	9.38	6.73	9.51	13.61	8.31	8.90	19.22	19.12
0.27	**11.11**	**1.86**	**0.70**	**-0.36**	**-**	**6.52**	**6.55**	**1.57**	**10.78**	**-3.24**	**3.05**	**0.29**	**2.49**	**2.68**	**2.02**
4.24	**5.27**	**-9.69**	**36.56**	**22.44**	**-20.56**	**-3.87**	**-16.69**	**-6.11**	**-4.17**	**29.12**	**-9.10**	**4.09**	**-1.31**	**-4.14**	**4.26**
64.21	**50.36**	**59.47**	**27.05**	**44.91**	**44.83**	**55.04**	**81.67**	**76.16**	**69.38**	**41.44**	**69.53**	**61.47**	**56.48**	**58.03**	**49.30**
7.97	**11.76**	**15.10**	**9.04**	**12.37**	**22.24**	**12.26**	**8.84**	**9.47**	**9.59**	**10.62**	**12.79**	**13.11**	**13.69**	**10.91**	**12.37**
67.24	**55.75**	**62.93**	**30.76**	**51.22**	**53.79**	**62.27**	**84.70**	**79.67**	**72.81**	**44.91**	**76.30**	**66.05**	**63.11**	**62.85**	**54.00**
43.84	**28.19**	**48.98**	**11.03**	**22.33**	**24.90**	**41.20**	**62.75**	**59.92**	**44.81**	**18.70**	**52.25**	**27.27**	**34.78**	**37.79**	**29.49**
35.37	16.69	38.94	5.97	12.28	17.58	28.44	52.23	48.60	38.18	6.57	37.38	13.97	17.60	27.27	20.03
6.08	5.91	4.53	3.12	5.13	4.21	9.80	7.04	8.76	5.32	4.23	9.18	6.97	11.05	4.51	5.78
2.40	5.58	5.51	1.93	4.92	3.11	2.96	3.48	2.56	1.31	7.90	5.68	6.33	6.14	6.02	3.68
22.75	**25.81**	**13.52**	**18.21**	**27.42**	**27.70**	**19.35**	**21.40**	**16.96**	**27.74**	**24.79**	**20.91**	**36.94**	**27.91**	**23.37**	**22.45**

Appendix Table 7.5 Percent Shares of Each Economy to Total Nominal Expenditures in the Asia and Pacific Region, 2005

Expenditure Category/Economy	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**1.25**	**0.02**	**0.19**	**0.13**	**45.86**	**0.06**	**3.63**	**15.91**
Actual Final Consumption Expenditure[a]	**1.80**	**0.02**	**0.10**	**0.20**	**36.50**	**0.09**	**4.15**	**18.68**
Food and Nonalcoholic Beverages	3.32	0.02	0.07	0.36	32.58	0.09	1.37	23.28
Bread and Cereals	7.13	0.04	0.07	0.58	24.42	0.06	0.63	21.76
Meat and Fish	2.62	0.01	0.09	0.41	47.72	0.11	2.74	9.23
Fruits and Vegetables	1.91	0.01	0.05	0.21	32.38	0.06	0.67	28.78
Other Food and Nonalcoholic Beverages	2.42	0.02	0.07	0.28	26.36	0.12	1.31	31.05
Clothing and Footwear: of which	1.87	0.02	0.08	0.07	41.38	0.04	7.38	17.51
Clothing	2.03	0.02	0.09	0.04	38.93	0.03	7.83	19.42
Housing, Water, Electricity, Gas and Other Fuels	2.09	0.02	0.08	0.17	35.85	0.16	4.95	15.19
Health and Education	1.13	0.02	0.15	0.19	39.55	0.08	4.53	16.48
Health	1.00	0.03	0.08	0.24	34.35	0.08	5.35	20.72
Education	1.24	0.01	0.20	0.15	43.75	0.08	3.87	13.06
Transportation and Communication: of which	0.72	0.00	0.19	0.13	26.45	0.07	3.41	27.80
Transportation	0.88	0.00	0.19	0.18	17.51	0.09	3.14	34.09
Recreation and Culture	0.31	0.01	0.18	0.11	38.32	0.11	10.75	8.05
Restaurants and Hotels	0.78	0.00	0.10	0.19	37.42	0.05	7.48	6.81
Other Consumption Expenditure Items	1.07	0.02	0.06	0.12	45.06	0.09	4.28	16.97
Collective Consumption Expenditure by General Government	**0.64**	**0.02**	**0.36**	**0.06**	**53.42**	**0.06**	**2.48**	**14.43**
Gross Fixed Capital Formation: of which	**0.98**	**0.03**	**0.07**	**0.05**	**59.37**	**0.05**	**2.37**	**14.15**
Machinery and Equipment	0.69	0.02	0.06	0.06	46.53	0.07	3.47	18.33
Construction	1.21	0.03	0.08	0.04	66.17	0.03	1.73	12.30
Change in Inventories and Net Acquisitions of Valuables	**-**	**0.00**	**0.00**	**0.03**	**25.46**	**0.03**	**-0.62**	**32.83**
Balance of Exports and Imports	**-1.94**	**-0.07**	**2.06**	**-0.06**	**58.98**	**-0.25**	**10.63**	**-11.25**
Household Final Consumption Expenditure	**1.93**	**0.01**	**0.09**	**0.21**	**35.33**	**0.09**	**4.29**	**18.99**
Government Final Consumption Expenditure	**0.57**	**0.03**	**0.30**	**0.09**	**51.64**	**0.08**	**2.58**	**14.82**
Actual Final Consumption Expenditure[a]	**1.80**	**0.02**	**0.10**	**0.20**	**36.50**	**0.09**	**4.15**	**18.68**
All Goods	**2.43**	**0.02**	**0.08**	**0.26**	**34.73**	**0.08**	**2.97**	**20.95**
Nondurables	3.00	0.02	0.06	0.32	34.89	0.10	1.48	22.48
Semidurables	1.35	0.02	0.11	0.11	31.51	0.06	5.47	23.14
Durables	1.02	0.01	0.15	0.17	38.89	0.06	7.17	9.18
Services	**1.12**	**0.01**	**0.13**	**0.15**	**36.20**	**0.11**	**5.99**	**16.35**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Appendix Table 7.5 Percent Shares of Each Economy to Total Nominal Expenditures in the Asia and Pacific Region, 2005 *(continued)*

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE	Asia
5.87	**4.48**	**0.06**	**0.24**	**2.80**	**0.02**	**0.05**	**0.18**	**2.42**	**2.02**	**2.39**	**0.49**	**7.26**	**3.60**	**1.08**	**100**
7.30	**4.63**	**0.07**	**0.14**	**2.66**	**0.02**	**0.05**	**0.28**	**3.57**	**2.72**	**1.98**	**0.69**	**8.88**	**4.21**	**1.26**	**100**
11.24	4.00	0.12	0.07	1.70	0.01	0.07	0.50	6.44	4.42	0.60	0.93	4.87	2.47	1.46	100
13.14	3.94	0.24	0.05	1.60	0.01	0.07	1.28	6.55	7.01	0.38	1.18	5.59	1.91	2.36	100
8.22	4.08	0.18	0.10	2.10	0.01	0.12	0.20	4.41	6.33	0.85	0.57	5.68	1.95	2.29	100
10.61	4.13	0.07	0.07	1.87	0.02	0.03	0.25	5.59	2.63	0.40	1.28	5.19	2.97	0.79	100
12.80	3.89	0.03	0.04	1.33	0.02	0.07	0.42	8.57	2.58	0.70	0.79	3.52	2.86	0.73	100
4.67	5.19	0.02	0.12	1.06	0.01	0.11	0.31	4.82	1.06	1.26	1.14	5.81	5.27	0.80	100
4.48	5.00	0.02	0.12	1.13	0.01	0.08	0.31	4.46	0.93	1.35	1.31	5.68	5.88	0.82	100
9.89	7.60	0.06	0.13	3.11	0.03	0.06	0.26	3.27	2.54	1.88	0.35	9.00	2.02	1.28	100
4.24	5.03	0.05	0.15	2.50	0.02	0.06	0.25	2.84	2.29	2.21	0.29	11.53	4.91	1.48	100
3.34	5.90	0.03	0.17	1.96	0.02	0.04	0.37	3.91	1.41	2.54	0.35	11.26	5.31	1.55	100
4.97	4.33	0.06	0.14	2.94	0.03	0.07	0.16	1.98	3.01	1.94	0.25	11.76	4.59	1.42	100
5.39	4.78	0.07	0.17	4.21	0.01	0.04	0.10	2.25	2.28	3.32	1.08	10.44	5.92	1.16	100
5.67	5.09	0.09	0.14	4.01	0.01	0.04	0.13	2.20	1.78	3.92	1.38	10.72	7.32	1.44	100
2.83	3.75	0.05	0.47	2.47	0.01	0.04	0.06	2.17	0.67	5.46	0.58	16.64	5.61	1.36	100
8.82	1.40	0.04	0.32	3.97	0.00	0.01	0.13	0.48	1.67	2.92	0.23	13.22	12.26	1.66	100
4.26	3.55	0.05	0.08	3.08	0.01	0.03	0.17	1.65	2.23	2.23	0.72	9.47	4.01	0.79	100
3.78	**3.72**	**0.09**	**0.17**	**2.22**	**0.03**	**0.03**	**0.13**	**1.88**	**1.62**	**2.23**	**0.38**	**8.07**	**3.32**	**0.86**	**100**
4.27	**3.01**	**0.06**	**0.20**	**1.80**	**0.03**	**0.04**	**0.11**	**1.43**	**0.91**	**1.64**	**0.36**	**4.76**	**3.22**	**1.10**	**100**
2.08	5.17	0.06	0.13	3.15	0.02	0.06	0.04	1.73	1.15	2.53	0.41	7.00	6.23	1.01	100
5.71	1.82	0.05	0.25	1.08	0.02	0.02	0.12	1.19	0.71	1.19	0.35	3.15	1.68	1.09	100
0.79	**24.62**	**0.05**	**0.08**	**-0.50**	**-**	**0.15**	**0.58**	**1.88**	**10.76**	**-3.82**	**0.74**	**1.04**	**4.44**	**1.43**	**100**
5.84	**5.54**	**-0.13**	**2.04**	**14.77**	**-0.07**	**-0.04**	**-0.70**	**-3.47**	**-1.97**	**16.32**	**-1.05**	**6.98**	**-1.11**	**-1.05**	**100**
7.64	**4.58**	**0.07**	**0.13**	**2.55**	**0.01**	**0.05**	**0.29**	**3.74**	**2.84**	**2.01**	**0.69**	**9.05**	**4.13**	**1.27**	**100**
3.78	**4.26**	**0.07**	**0.17**	**2.80**	**0.03**	**0.05**	**0.13**	**1.85**	**1.56**	**2.05**	**0.51**	**7.69**	**3.99**	**0.95**	**100**
7.30	**4.63**	**0.07**	**0.14**	**2.66**	**0.02**	**0.05**	**0.28**	**3.57**	**2.72**	**1.98**	**0.69**	**8.88**	**4.21**	**1.26**	**100**
8.72	**4.28**	**0.10**	**0.09**	**2.12**	**0.01**	**0.07**	**0.38**	**4.92**	**3.07**	**1.51**	**0.87**	**6.71**	**4.25**	**1.39**	**100**
10.36	3.73	0.11	0.07	1.72	0.01	0.07	0.46	5.87	3.85	0.78	0.91	5.06	3.16	1.47	100
6.16	4.58	0.05	0.13	2.49	0.01	0.08	0.22	3.67	1.86	1.75	0.78	8.75	6.88	0.84	100
3.82	6.80	0.09	0.12	3.75	0.01	0.04	0.17	1.69	0.72	5.12	0.76	12.49	6.01	1.77	100
5.95	**5.15**	**0.04**	**0.19**	**3.42**	**0.02**	**0.04**	**0.17**	**1.83**	**2.49**	**2.63**	**0.46**	**11.94**	**4.48**	**1.13**	**100**

Appendix Table 7.6 Per Capita Nominal Expenditure Indexes, 2005
(regional average = 100)

Expenditure Category/Economy	BAN	BHU	BRU	CAM	PRC	FIJ	HKG	IND
GROSS DOMESTIC PRODUCT	**30**	**89**	**1748**	**31**	**117**	**241**	**1771**	**48**
Actual Final Consumption Expenditure[a]	**44**	**88**	**926**	**49**	**93**	**371**	**2025**	**56**
Food and Nonalcoholic Beverages	80	112	629	86	83	360	667	70
Bread and Cereals	173	224	616	139	62	233	306	66
Meat and Fish	63	47	831	98	122	419	1337	28
Fruits and Vegetables	46	65	434	50	82	246	328	87
Other Food and Nonalcoholic Beverages	59	123	626	68	67	483	638	94
Clothing and Footwear: of which	45	101	735	16	105	157	3597	53
Clothing	49	99	780	10	99	105	3816	59
Housing, Water, Electricity, Gas and Other Fuels	51	97	753	41	91	642	2414	46
Health and Education	27	112	1331	45	101	323	2207	50
Health	24	172	742	57	87	310	2606	62
Education	30	64	1807	36	111	334	1885	39
Transportation and Communication: of which	18	18	1684	32	67	262	1663	84
Transportation	21	20	1665	42	45	336	1531	103
Recreation and Culture	8	67	1603	27	98	415	5238	24
Restaurants and Hotels	19	1	921	46	95	206	3647	21
Other Consumption Expenditure Items	26	92	578	29	115	372	2084	51
Collective Consumption Expenditure by General Government	**15**	**117**	**3273**	**15**	**136**	**250**	**1207**	**43**
Gross Fixed Capital Formation: of which	**24**	**149**	**651**	**11**	**151**	**192**	**1156**	**43**
Machinery and Equipment	17	107	552	15	118	262	1691	55
Construction	29	181	688	9	169	121	843	37
Change in Inventories and Net Acquisitions of Valuables	**-**	**12**	**11**	**8**	**65**	**132**	**-302**	**99**
Balance of Exports and Imports	**-47**	**-345**	**18505**	**-14**	**150**	**-995**	**5180**	**-34**
Household Final Consumption Expenditure	**47**	**74**	**837**	**51**	**90**	**371**	**2090**	**57**
Government Final Consumption Expenditure	**14**	**161**	**2734**	**21**	**132**	**296**	**1257**	**45**
Actual Final Consumption Expenditure[a]	**44**	**88**	**926**	**49**	**93**	**371**	**2025**	**56**
All Goods	**59**	**100**	**737**	**62**	**88**	**333**	**1449**	**63**
Nondurables	73	104	543	76	89	377	723	68
Semidurables	33	118	1028	26	80	246	2664	70
Durables	25	49	1331	40	99	231	3492	28
Services	**27**	**59**	**1167**	**35**	**92**	**446**	**2917**	**49**

a Includes individual consumption expenditure by households, by nonprofit institutions serving households, and by government.
Note: Results for the People's Republic of China were based on national annual average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

Appendix Table 7.6 Per Capita Nominal Expenditure Indexes, 2005 *(continued)*
(regional average = 100)

INO	IRN	LAO	MAC	MAL	MLD	MON	NEP	PAK	PHI	SIN	SRI	TAP	THA	VIE	Asia
89	**217**	**34**	**1663**	**356**	**173**	**62**	**23**	**52**	**79**	**1824**	**83**	**1064**	**185**	**43**	**100**
111	**224**	**40**	**947**	**338**	**173**	**72**	**37**	**77**	**106**	**1517**	**117**	**1301**	**216**	**50**	**100**
171	193	70	464	216	146	95	66	139	172	461	157	713	127	58	100
199	190	140	376	203	127	97	168	141	273	293	199	820	98	94	100
125	197	105	729	267	103	159	26	95	246	651	96	832	100	91	100
161	200	44	474	238	175	34	33	121	102	309	217	761	152	31	100
194	188	18	311	169	172	89	54	185	101	538	133	517	147	29	100
71	251	13	837	134	110	139	41	104	41	966	193	851	270	32	100
68	242	13	868	144	113	108	41	96	36	1030	221	832	302	33	100
150	367	33	884	396	343	81	34	71	99	1441	59	1318	104	51	100
64	243	27	1055	317	274	76	33	61	89	1687	50	1691	252	59	100
51	285	19	1163	248	247	57	49	84	55	1940	59	1650	272	62	100
75	209	34	968	373	296	91	20	43	117	1483	42	1724	236	57	100
82	231	39	1200	535	99	52	14	48	89	2538	183	1530	304	46	100
86	246	50	983	510	70	54	17	47	69	2996	233	1571	375	57	100
43	181	27	3275	314	137	53	8	47	26	4175	98	2439	288	54	100
134	68	23	2275	504	37	8	17	10	65	2237	39	1938	628	66	100
65	172	28	535	391	94	37	22	36	87	1706	121	1388	206	32	100
57	**180**	**52**	**1158**	**282**	**300**	**41**	**18**	**41**	**63**	**1702**	**65**	**1183**	**170**	**34**	**100**
65	**145**	**36**	**1383**	**229**	**289**	**58**	**14**	**31**	**35**	**1255**	**61**	**698**	**165**	**44**	**100**
32	250	33	911	400	281	81	5	37	45	1937	70	1026	319	40	100
87	88	28	1739	137	190	29	15	26	28	908	59	462	86	43	100
12	**1190**	**32**	**573**	**-63**	**-**	**200**	**75**	**41**	**419**	**-2921**	**125**	**153**	**228**	**57**	**100**
89	**268**	**-78**	**14282**	**1877**	**-837**	**-56**	**-91**	**-75**	**-77**	**12478**	**-177**	**1023**	**-57**	**-42**	**100**
116	**221**	**42**	**913**	**325**	**158**	**69**	**39**	**81**	**111**	**1533**	**117**	**1326**	**212**	**51**	**100**
57	**206**	**42**	**1215**	**356**	**311**	**62**	**17**	**40**	**61**	**1566**	**85**	**1127**	**204**	**38**	**100**
111	**224**	**40**	**947**	**338**	**173**	**72**	**37**	**77**	**106**	**1517**	**117**	**1301**	**216**	**50**	**100**
132	**207**	**57**	**622**	**270**	**146**	**87**	**50**	**106**	**119**	**1157**	**146**	**983**	**218**	**55**	**100**
157	180	67	496	218	152	88	61	127	150	598	154	742	162	59	100
93	221	27	898	316	126	105	28	79	72	1335	131	1282	353	34	100
58	329	52	875	477	146	50	22	36	28	3916	128	1830	308	71	100
90	**249**	**21**	**1350**	**435**	**214**	**54**	**22**	**39**	**97**	**2015**	**77**	**1751**	**230**	**45**	**100**

APPENDIX 8

PRICE LEVEL INDEXES AND REAL EXPENDITURES RELATIVE TO THE REGIONAL AVERAGE

The price level indexes (PLIs) presented in the main body of this publication are either based on the Hong Kong dollar as the reference currency or as an index based on the regional average being equal to 100. The procedures used in deriving PLIs relative to the regional average and volume indexes expressed in terms of the Asia and Pacific average equal to 100 are described in this appendix.

Price Level Index with a Reference Currency

When the Hong Kong dollar is used as the reference currency, the PLI for any given economy is defined as the ratio of the purchasing power parity (PPP) and the exchange rate (XR) of the currency of the economy considered. Thus for economy *j* the PLI is defined as:

$$PLI_j = \frac{PPP_j}{XR_j} \tag{1}$$

By definition, the PLI for Hong Kong is equal to 1, although it is common for PLIs to be expressed on a base of 100, similar to time-series price indexes such as a consumer price index. A major disadvantage with this measure is that all PLIs are expressed relative to Hong Kong, China, so information on price levels in Hong Kong, China cannot be obtained.

Price Level Index based on the Regional Average

In order to derive PLIs based on a regional average, it is necessary to define the average PLI for the region. As economies differ in size, the average used is a weighted average where the weights are the relative sizes of different economies measured using the real gross domestic product (RGDP). RGDP is defined as gross domestic product (GDP) expressed in local currency units converted into a reference currency using PPPs. If GDP and real GDP represent the GDP in local currency units and in reference currency units based on a PPP conversion, then for economy *j*, we have

$$RGDP_j = \frac{GDP_j}{PPP_j} \tag{2}$$

Using RGDP as weights, the regional average is defined as:

$$\text{Regional Average } PLI = \sum_{j=1}^{23} PLI_j \times \frac{RGDP_j}{\sum_{j=1}^{23} RGDP_j} \tag{3}$$

Now using the expressions for PLI and RGDP from equations (1) and (2), we can expand the expression for the regional average PLI as:

$$\sum_{j=1}^{23} PLI_j \times \frac{RGDP_j}{\sum_{j=1}^{23} RGDP_j} = \sum_{j=1}^{23} \left[\frac{PPP_j}{XR_j}\right] \times \frac{\left(GDP_j / PPP_j\right)}{\sum_{j=1}^{23} RGDP_j} \tag{4}$$

This expression can now be equivalently expressed as:

$$\text{Regional Average PLI} = \frac{\sum_{j=1}^{23} \left(GDP_j / XR_j\right)}{\sum_{j=1}^{23} \left(GDP_j / PPP_j\right)} = \mu \text{ (constant)} \tag{5}$$

The regional average PLI is simply the ratio of the sum of nominal GDP (GDP converted using exchange rates) and the real GDP (GDP converted using PPPs), expressed on the base of the economy whose currency is being used as the reference currency (HK$). Obviously the regional average, μ, will generally not be equal to 1.

Now we can define the PLI for each economy on the base of the regional average PLI equal to 1 by dividing the PLI in equation (1) for each economy by the constant μ.

$$PLI \text{ (with regional average = 1)} = (PLI \text{ with HK\$ as reference currency})/\mu. \quad (6)$$

Note that the PLIs defined relative to a regional average equal to unity do not depend on which currency is used as the reference currency in the first place. The PLIs would be identical even if we used another currency in the place of Hong Kong dollar as the reference currency, although the constant (μ) used to convert from the reference currency to the regional average would be different.

Real Expenditure Indexes, Expressed on a Base of Regional Average Equal to 100

In the main body of this publication, several tables report results relative to the regional average as the base. In particular, per capita real GDP as well as the PLIs are also presented as indexes with the Asia and Pacific region average equal to 100 by multiplying all the ratios by 100.

The GDP of each economy is expressed in that economy's local currency, referred to here as local currency units (LCUs). To make valid comparisons among various economies, these GDP figures must first be converted to a numeraire currency, in this case the Hong Kong, dollar. These conversions may be accomplished using official exchange rates. GDPs converted to the Hong Kong, dollar using official exchange rates are expressed in nominal terms because they will incorporate differences in price levels among economies. When GDPs are converted to a numeraire currency using PPPs, they are expressed in real terms. They become comparable from one economy to another, because the purchasing power of each local currency has been taken into account. Being comparable, these GDP figures can be summed directly to calculate a regional GDP. Note that it does not matter what currency is used as the numeraire currency. It can be the Hong Kong, dollar, Indian rupee, or any other currency, including one from outside the region, such as United States dollar. The shares of each economy's GDP within the regional GDP will not change nor will the position of each economy compared with other economies in the region. Note also that the purchasing power of HK$1 is not the same as the purchasing power of one unit based on the regional average.

Computing the Constant μ for GDP

The calculation is explained by reference to Appendix Table 8.1. The table shows national GDPs in local currency column (1), PPPs with Hong Kong, China equal to one column (2), and official exchange rates between each country and Hong Kong, China column (4). GDP in local currency for each country is converted to Hong Kong dollars in real terms using the PPPs [column (1)/column (2) = column (3)]. These are summed to obtain the regional GDP in Hong Kong dollars in real terms (3a). Meanwhile, the GDPs in local currencies are converted to GDP in nominal terms, expressed in terms of Hong Kong dollars, using the exchange rate column [(1)/column (4) = column (5)]. These GDPs are summed to obtain a total regional GDP in Hong Kong dollars in nominal terms (5a). To calculate the conversion factor between the regional average for Asia and the actual Hong Kong dollar, we divide the *nominal* regional total in Hong Kong dollars by the *real* regional total in Hong Kong dollars: (5a)/(3a) = (6). This is the constant μ used in adjusting PLIs from Hong Kong dollars so that they are expressed relative to a regional average = 1. In practice, for the 2005 ICP, it was equal to 0.560 for GDP.

This methodology is applied at each level of analysis (i.e., for each expenditure aggregate for which results are required). Thus, the conversion factor (μ) differs from one expenditure category to another.

Appendix Table 8.1 Deriving Price Level Indexes and Real Expenditures with the Regional Average

Economy	Gross GDP (in billion LCU) (1)	Purchasing Power Parity (Hong Kong, China=1.0) (2)	Real GDP (Hong Kong, China as base) (3) = (1) / (2)	Exchange Rate (LCU/HK dollar) (4)	Nominal GDP (Hong Kong dollar) (5) = (1) / (4)	Real GDP (Regional Average = 100) (7) = (3) * (6)	Price Level Index (Asia = 100) (8) = (5) / (7)
Bangladesh	3934	3.98	988	8.27	475.67	550.05	86
Bhutan	36.9	2.77	13	5.67	6.51	7.42	88
Brunei Darussalam	15.9	0.159	100	0.21	74.13	55.61	133
Cambodia	25693	225	114	526.21	48.83	63.61	77
Fiji Islands	5.07	0.251	20	0.22	23.31	11.22	208
Hong Kong, China	1383	1.00	1383	1.00	1382.68	765.92	180
India	34339	2.58	13315	5.67	6055.91	7410.45	82
Indonesia	2784960	692	4026	1247.82	2231.85	2240.78	100
Iran, Islamic Republic of	1964745	470	4178	1152.58	1704.66	2325.23	73
Lao, People's Democratic Republic	30594	525	58	1370.03	22.33	32.41	69
Macao, China	93.0	0.926	100	1.03	90.24	55.84	162
Malaysia	519	0.305	1704	0.49	1066.77	948.33	112
Maldives	10	1.430	7	1.65	5.83	3.73	156
Mongolia	2810	73.35	38	154.97	18.13	21.32	85
Nepal	620	3.98	156	9.18	67.60	86.69	78
Pakistan	7047	3.36	2098	7.65	920.88	1167.75	79
Philippines	5438	3.82	1422	7.08	767.76	7921.26	97
China, People's Republic of	18387	0.606	30334	1.05	17451.13	16882.40	103
Singapore	194	0.190	1024	0.21	907.64	570.09	159
Sri Lanka	2408	6.18	389	12.92	186.33	216.71	86
Taipei,China	11421	3.40	3359	4.14	2761.43	1869.33	148
Thailand	7088	2.80	2530	5.17	1370.54	1408.23	97
Viet Nam	839211	829	1013	2039.12	411.56	563.70	73
			(3a)		**(5a)**	**(7a)**	
Asia			**68371**		**38051.7**	**38051.7**	**100**
Conversion factor:					**(6) = (5a) / (3a)**		
Nominal GDP for Asia(HK dollar)/Real GDP for Asia (HK dollar)						**=** **0.56**	

LCU = local currency unit.

Note: Results for the People's Republic of China were based on national average prices extrapolated by the ICP Asia Pacific Regional Office and the ICP Global Office using prices for 11 cities submitted by the National Bureau of Statistics of China.

APPENDIX 9

List of National Coordinating Agencies in ICP Asia Pacific

Economy	National Coordinating Agency
Bangladesh	Bangladesh Bureau of Statistics
Bhutan	National Statistical Bureau
Brunei Darussalam	Department of Economic Planning and Development
Cambodia	National Institute of Statistics
China, People's Republic of	National Bureau of Statistics
Fiji Islands	Bureau of Statistics
Hong Kong, China	Census and Statistics Department
India	Ministry of Statistics and Programme Implementation
Indonesia	Badan Pusat Statistik
Iran, Islamic Republic of	Statistical Center of Iran
Lao People's Democratic Republic	National Statistical Center
Macao, China	Statistics and Census Service
Malaysia	Department of Statistics
Maldives	Ministry of Planning and National Development
Mongolia	National Statistical Office
Nepal	Central Bureau of Statistics
Pakistan	Federal Bureau of Statistics
Philippines	National Statistics Office
Singapore	Department of Statistics
Sri Lanka	Department of Census and Statistics
Taipei,China	Directorate-General of Budget, Accounting and Statistics
Thailand	Bureau of Trade and Economic Indices
Viet Nam	General Statistics Office

APPENDIX 10

TIMELINE

The 12th Session of the United Nations Economic and Social Commission for Asia and the Pacific Working Group of Statistical Experts discussed the International Comparison Program (ICP)
ESCAP Headquarters, Bangkok, 27–30 November 2001

The Working Group considered a paper "International Comparison Programme: Plans for Asia and the Pacific" (available: http://www.unescap.org/stat/cos12/wgse12/wgse12-07.asp). One of the outcomes was that the Asian Development Bank (ADB) was asked to coordinate the ICP work in the Asia and Pacific region.

Work plan prepared
December 2002

A broad work plan was drawn up and presented to ADB management for approval.

Invitations sent to ADB member-economies to participate in the International Comparison Program in Asia and the Pacific (ICP Asia Pacific)
February 2003

ADB invited 22 member-economies to participate in ICP Asia Pacific. Twenty member-economies accepted the invitation; subsequently, three non-ADB member-economies, namely Brunei Darussalam (which later became an ADB member in April 2006); Islamic Republic of Iran; and Macao, China were included, so that 23 economies participated.

Development of specifications for household consumption products
March 2003–July 2004

A team from the ICP Regional Office and the Australian Bureau of Statistics (ABS) started developing the product lists for household consumption products in March 2003, with the first phase concentrating on food, clothing, and footwear. The draft list of products to be priced for household consumption was completed in July 2004.

Pilot testing of Tool Pack software
March 2003

Tool Pack, the ICP/consumer price index software, was developed in preparation for the 2005 ICP round. World Bank staff pilot tested it in three Asian capitals, Manila (ADB Headquarters), Beijing, and New Delhi in March 2003.

First meeting of the ICP Asia Pacific Regional Advisory Board
Asian Institute of Technology (AIT), Bangkok, 18 June 2003

The meeting discussed the following issues: new governance structure of the program, technical aspects of the current round, and ICP Asia Pacific work program and resource requirements. The report is available at: http://www.adb.org/Statistics/icp/18June.asp.

Meeting of heads of national statistical offices of ICP Asia Pacific participating economies
AIT, Bangkok, 19–20 June 2003

The 2-day meeting was organized to enjoin the support of heads of national statistical offices of participating economies in implementing ICP. It contributed to forging a better appreciation of the new ICP initiatives and to establishing a well-coordinated and effective national, regional, and global management structure. The body also agreed on a Framework of Partnership (see http://www.adb.org/Statistics/icp/files/fop/pdf) outlining the respective roles and responsibilities

of the Regional Office and the participating economies. Documents are available at: http://www.adb.org/Statistics/icp/19_20_June.asp.

Regional inception workshop
AIT, Bangkok, 28 July –1 August 2003

This workshop formally launched the 2005 Round of ICP in Asia and the Pacific. It was attended by a price statistician and a national accountant from each of the participating economies, resource persons from the Global Office and ABS, as well as observers from the Islamic Republic of Iran. Aside from the meeting being successful in outlining the core features of the program, the participants also fully understood their roles and discussed in great detail the ICP work program for 2003 to 2006. The support shown by the participating economies set off the ICP to a good start. Documents are available at: http://www.adb.org/Statistics/icp/18July_01August.asp.

ICP advocacy paper prepared
5 December 2003

The Regional Office commissioned Sultan Ahmad, an ICP expert, to prepare an advocacy paper, which details the importance of purchasing power parity (PPP) data to the participating economies. The paper is available at: http://www.adb.org/Statistics/icp/files/S_Ahmad.pdf.

Second meeting of the ICP Asia Pacific Regional Advisory Board
ADB Headquarters, Manila, 15–16 December 2003

The meeting discussed progress made since the first Regional Advisory Board meeting in June and the launch of ICP Asia Pacific in July. Other matters discussed were level of participation of regional economies, development of the product list, funding and staffing situation, and detailed work program for 2004 and 2005 onward. The report is available at: http://www.adb.org/Statistics/icp/files/Highlights_2nd_RAB.pdf.

Regional workshop to draft product lists for Phase I (food, beverages, clothing, and footwear)
AIT, Bangkok, 26 January– 6 February 2004

Participants met to agree on the regional product list for food, beverages, clothing, and footwear and to start work on the rest of the household consumption product list. The list provided the basis for conducting price surveys. The report is available at: http://www.adb.org/Statistics/icp/files/Workshop_on_Product_Spec.pdf.

Subregional "Train-the-trainers" workshop for field staff collecting prices
Putrajaya, Malaysia, 22–27 March 2004, attended by 12 economies
Goa, India, 29 March–3 April 2004, attended by 10 economies

Two subregional workshops were held in March and April 2004. The workshop for East and Southeast Asian economies was held in Putrajaya, Malaysia; while the South Asian economies met in Goa, India. The workshops trained price statisticians who were going to conduct the training for price surveys in their respective economies. The workshops provided the venue for deciding on the methods for estimating national annual average prices, and data collection timetables. There was also a session on the computation of PPPs.

In-economy training programs for field staff collecting prices
July–October 2004

The Regional Office assisted the participating economies in conducting training programs at the national level for price collectors for ICP price surveys and Tool Pack. This training program was conducted in 18 economies: Bangladesh; Bhutan; Cambodia; People's Republic of China (PRC); Fiji Islands; India; Indonesia; Lao People's Democratic Republic; Malaysia; Maldives; Mongolia; Nepal; Pakistan; Philippines; Sri Lanka; Taipei,China; Thailand; and Viet Nam. The Global Office assisted in Tool Pack training for the PRC and the Philippines, while ABS also provided the PRC with additional training on conducting ICP price surveys in rural areas.

Regional workshop to draft product lists for Phase II
ADB Headquarters, Manila, 5–15 July 2004

National coordinators from 22 economies met to prepare phase II of the household product list, covering services related to dwellings, furnishings, transport, communication, and other services. This completed the household consumption product list.

Third meeting of the ICP Asia Pacific Regional Advisory Board
ADB Headquarters, Manila, 9 July 2004

The meeting discussed and approved the election of Mr. Frederick Ho, Commissioner of the Hong Kong Census and Statistics Department; membership of the Philippines to the Board in place of Singapore, which had opted out of the Regional Advisory Board; the change in ICP reference year from 2004 to 2005; participation of Hong Kong, China; Malaysia; Philippines; and Sri Lanka in the Ring Comparison. The report is available at: http://www.adb.org/Statistics/icp/files/Third-Regional-Advisory-Meeting.pdf.

Collecting prices for household consumption, and validation of prices at the economy and regional levels
January–December 2005

Price collection for household consumption products began in January 2005 in most of the participating economies. Survey operations in Sri Lanka and India started in March and April, respectively, due to the tsunami in late December 2004. Quarterly ICP household consumption price surveys were carried out for the whole year 2005.

Participating economies had to submit internally validated price data to the Regional Office for further validation through bilateral discussions and data review workshops. These validated data were used in the computation of PPPs.

First ring list workshop
ADB Headquarters, Manila, 31 January–11 February 2005

The Global Office held the ring list workshop for Hong Kong, China; Malaysia; Philippines; and Sri Lanka, the ring economies in Asia and the Pacific. The purpose was to reduce the list that had been amalgamated from all six ICP regional lists into a more manageable list. The ring list contained the product specifications to be priced for the Ring Comparison, the mechanism to link all six ICP regions to obtain a single set of transitive parities at the global level. The data collection for the Ring Comparison was scheduled for the first quarter of 2006.

National accounts workshop and submission of gross domestic product weights
AIT, Bangkok, 15–17 February 2005

The workshop aimed to provide guidance on estimating expenditure weights for the 155 basic headings and to exchange information and experience among the participants. During the workshop, 17 economies provided preliminary gross domestic product (GDP) weights for private final consumption expenditures based on their latest available data. A number of methods were discussed; they agreed on how to fill up data gaps/disaggregate data into the required number of basic headings; and how to make the national accounts coverage consistent with the recommendations of the 1993 System of National Accounts (SNA93). The report is available at: http://www.adb.org/Statistics/icp/files/Natl-Acct-highlights.pdf.

Training on Tool Pack v1.2
ADB Headquarters, Manila, 14–15 April 2005
National Statistics Office, Manila, Philippines, 18–19 April 2005
ADB Headquarters, Manila, 20–22 April 2005
Ministry of Statistics and Programme Implementation, New Delhi, India, 27 April 2005
AIT, Bangkok, 13–15 June 2005, attended by 7 economies
AIT, Bangkok, 16–18 June 2005, attended by 7 economies

The Global Office conducted training on the new features of Tool Pack. These included the data transfer facility from the economies to the Regional Office, use of the batch upload utility function for economies not using Tool Pack for price data entry, and the regional component of Tool Pack. Training for the Philippines was conducted at its National Statistics Office to evaluate Tool Pack in a "real" environment.

The workshops held in Bangkok in June were designed to introduce Tool Pack version 1.2 to those economies using the price collection module for data entry.

Fourth meeting of the ICP Asia Pacific Regional Advisory Board
ADB Headquarters, Manila, 23–24 May 2005

The meeting agenda included updates on ICP global and regional developments, finalization of the product list for the nonhousehold groups, review strategy for participating economies, Tool Pack v1.2 updates including data transfer and validation, Ring Comparison program, and advocacy campaign. The report is available at: http://www.adb.org/Statistics/icp/files/4th-RAB-Meeting-Highlights.pdf.

Second ring list workshop
ADB Headquarters, Manila, 28 June– 2 July 2005

The Global Office held the second ring list workshop for the Asia and Pacific ring economies: Hong Kong, China; Malaysia; Philippines; and Sri Lanka. The workshop identified the representativity of the products and provided feedback on product specifications in the draft list prepared drawn from the product lists of all the ICP regions.

Data review workshop for first quarter price surveys (household consumption products)
ADB Headquarters, Manila, 4–8 July 2005, attended by 4 economies
AIT, Bangkok, 8–12 August 2005, attended by 8 economies
AIT, Bangkok, 29 August–2 September 2005, attended by 9 economies

The Regional Office conducted data review workshops for small groups of economies using the data collected during the first quarter to improve the comparability and reliability of ICP price data.

Workshop to finalize the remaining product lists
AIT, Bangkok, 1–6 August 2005, attended by 23 economies

A finalization workshop was conducted to complete the product list for health, education, government

compensation, construction, equipment, and dwellings, for pricing in late 2005 and early 2006. The list completed the specification of all price inputs for PPP computation.

First regional course on price statistics and the ICP
Malé, Maldives, 25–29 September 2005

The UN Statistical Institute for Asia and the Pacific organized the course to introduce the ICP to the countries. Two days devoted to ICP discussion were conducted by the Regional Office.

Data review workshop for second quarter price surveys (household consumption products)
Kuala Lumpur, Malaysia, 28 September–5 October 2005, attended by 22 economies

In its continuing efforts to improve data quality, the ADB held a single data review workshop for the second quarter price data for all participating economies. The workshop was cosponsored by the Department of Statistics, Malaysia.

Data review workshop for household consumption products
ADB Headquarters, Manila, 23–26 November 2005, attended by 22 economies

The workshop primarily focused on evaluating the results of the implementation of the decisions taken in the previous data review workshops to improve data quality.

Workshop on construction products
ADB Headquarters, Manila, 28–30 November 2005, attended by 21 economies

The Regional Office and the Global Office jointly organized the workshop, with an international consultant for construction as a resource person. Participants were the ICP National Coordinators or senior price statisticians and construction experts from the participating economies. The Basket of Construction Components Approach for pricing the construction list was explained. An overview of the concepts for construction set out in the SNA93 was presented by a national accounts expert. During a short visit to a construction project participants were able to clarify a number of issues regarding the construction components.

Workshop on equipment products
ADB Headquarters, Manila, 1–3 December 2005, attended by 20 economies

The Regional Office and the Global Office jointly organized the workshop, with an international consultant for equipment as a resource person. Participants were the ICP National Coordinators or senior price statisticians and equipment experts from the participating economies. The list of equipment items for pricing was finalized, with indicative brands and models being identified.

Fifth meeting of the ICP Asia Pacific Regional Advisory Board
ADB Headquarters, Manila, 8–9 December 2005

The meeting discussed and agreed on the selection of Ms. Carmelita Ericta, Administrator of the Philippines' National Statistics Office as Chair, updates on global and regional developments, requirements for participation in the current ICP round, submission of data to the Global Office and the Regional Office, data review issues and actions taken, poverty PPPs, other household sectors and nonhousehold sectors, Tool Pack concerns, the Ring Comparison, advocacy issues, and funding issues. The report is available at: http://www.adb.org/Statistics/icp/files/5th-RAB-Meeting-Highlights.pdf.

Collecting prices for other product groups (excluding construction and equipment)
First quarter 2006

Price data collection for health and education were mostly conducted in the first quarter of 2006 while a few economies carried out price surveys in 2005. Government compensation and dwellings data were also submitted in 2005.

Collecting prices for construction and equipment
April to September 2006

Most of the economies undertook price data collection for construction and for equipment in the second and third quarters of 2006.

Data review workshop for national accounts
ADB Headquarters, Manila, 10–12 May 2006, attended by 22 economies

National accounts experts attended the data review workshop to validate GDP expenditure weights to ensure reliability and comparability of GDP weights across participating economies in Asia and the Pacific, share best practices in the disaggregation of GDP into the required 155 basic headings, formulate possible solutions relating to GDP weights estimation including basic headings with zero weights, discuss metadata with special reference to SNA93, and confirm submission dates for the 2005 GDP weights for the final PPPs.

Second regional course on price statistics and the ICP
Jakarta, Indonesia, 5–9 June 2006

The regional course was jointly organized by the UN Statistical Institute for Asia and the Pacific and Statistics Indonesia with resource persons from the International Labour Organization and ADB. Twenty two middle level managers from national statistical offices were trained on fundamentals and concepts of the consumer price index

(CPI) and ICP, international standards and framework of CPI and ICP, and ICP data compilation and calculation techniques.

The ICP component of the course comprising theory and practical exercises covered the following areas: introduction to ICP, national accounts for the ICP, regional ICP product list, ICP price collections, PPP methods, and data validation.

Data review workshop for household consumption products
Jakarta, Indonesia with Statistics Indonesia, 12–15 June 2006, attended by 9 economies
ADB Headquarters, Manila, 21–24 June 2006, attended by 5 economies
New Delhi, India with Central Statistical Organisation of India, 11–14 July 2006, attended by 6 economies
ADB Headquarters, Manila, 11–15 September 2006, attended by 2 economies

The review for household consumption data for all quarters of 2005 was conducted in a series of subregional workshops to further ensure product consistency for PPP computation.

Expert group meeting on extrapolation methodology
ADB Headquarters, Manila, 19–20 June 2006

The Regional Office set up an Expert Group to examine the various methodologies available and to recommend a suitable methodology to derive national annual average prices for the ICP product list based on the PRC's 11-city price data.

Data review workshop for ring prices
ADB Headquarters, Manila, 26–29 June 2006, attended by 4 economies

With experts from ABS, the workshop was conducted to validate data for the Ring Comparison covering 19 economies from six ICP regions. The Ring Comparison was designed to generate a set of PPPs to link all the regions into a global comparison. Delegates from Hong Kong, China; Malaysia; Philippine; and Sri Lanka attended the workshop.

Sixth meeting of the ICP Asia Pacific Regional Advisory Board
ADB Headquarters, Manila, 21–22 August 2006

Important agreements reached included the extrapolation of missing prices, differences in the temporal coverage of price surveys and deriving national level figures from subnational level data, release schedule of preliminary and final PPPs, and policy access to ICP micro data. The report is available at: http://www.adb.org/Statistics/icp/files/6th-RAB-Meeting-Highlights.pdf.

First meeting of the core group of equipment experts
ADB Headquarters, Manila, 11–13 October 2006

The core group of equipment experts from five participating economies convened to make an initial assessment of the equipment price data submissions. Most of the participating economies engaged domestic experts for this sector, as the expertise required for pricing equipment is not available in most of the national statistical offices.

First meeting of the core group of construction experts
ADB Headquarters, Manila, 16–18 October 2006

The core group of construction experts from four participating economies convened to make an initial assessment of the construction price data submissions. Most of the participating economies engaged domestic experts for this sector, as the expertise required for pricing construction is unavailable in most of the national statistical offices.

Cooperative visit to the People's Republic of China
Beijing, PRC, 31 October–11 November 2006

On recommendation of the Regional Advisory Board, price experts from Malaysia and the Philippines, together with the Regional Office and Global Office, visited the PRC to assist them in resolving issues related to the PRC's price data submissions. The PRC price experts conducted a reciprocal visit to the Philippines to confirm the findings and agreements at the cooperative visit to the PRC.

Data review workshop for construction products
Bangkok, Thailand, 7–9 December 2006, attended by 22 economies

International construction experts provided technical guidance in conducting the data review for construction, aimed at establishing product consistency for computing robust PPPs.

Data review workshop for equipment products
Bangkok, Thailand, 11–13 December 2006, attended by 22 economies

An international equipment expert provided technical guidance in conducting the data review for equipment. The workshop aimed at establishing product consistency for computing robust PPPs.

Data review workshop for household consumption products, dwellings, and compensation
Bangkok, Thailand, 14–16 December 2006, attended by 23 economies

Annual household consumption (including dwellings, health, and education) price data underwent a

final validation review. Government compensation data were also reviewed. The workshop aimed to establish product consistency for computing robust PPPs.

Second meeting of the core group of construction experts
ADB Headquarters, Manila, 7–9 March 2007

The core group of construction experts met to make a final assessment of construction price data to ensure product consistency for computing construction PPPs.

Second meeting of the core group of equipment experts
ADB Headquarters, Manila, 12–15 March 2007

The core group of equipment experts met to make a final assessment of equipment price data to ensure product consistency for computing equipment PPPs.

Data review workshop for preliminary PPP results
Kathmandu, Nepal, 29–31 March 2007

National price statisticians from all the 23 participating economies convened to review preliminary full GDP PPP results. The workshop provided an opportunity for further comments/suggestions prior to the finalization of the results.

Workshop to review preliminary PPP results
ADB Headquarters Manila, 18–21 June 2007

The meeting's main objective was to validate the preliminary PPP results. Discussions concentrated on resolving concerns/issues/clarifications relating to the preliminary results before their release on 31 July 2007.

Seventh meeting of the ICP Asia Pacific Regional Advisory Board
ADB Headquarters, Manila, 22 June 2007

The meeting discussed the methodology for computing PPPs for dwellings and compensation, comments on the draft report for preliminary PPP results, and categories of release for the publication of PPP results. The report is available at: http://www.adb.org/Statistics/icp/files/2007/Highlights-of-7th-RAB-Meeting.pdf.

Meeting of heads of national coordinating agencies of ICP Asia Pacific
ADB Headquarters, Manila, 30 July 2007

Heads of the national coordinating agencies of ICP Asia Pacific convened in a meeting to discuss the highlights of the preliminary PPP results, lessons learned from the program, and future directions. A report is available at http://www.adb.org/Statistics/icp/files/2007/Highlights-Meeting-of-Heads-NIAs.pdf.

Release of preliminary 2005 Purchasing Power Parities for Asia and the Pacific
ADB Headquarters, Manila, 31 July 2007

A media briefing was held to formally release the 2005 preliminary PPP results to the public with the heads of the national coordinating agencies of ICP Asia Pacific among the special guests, as stakeholders of the program. A formal news release was issued in conjunction with the media briefing. A copy is available at: http://www.adb.org/Media/Articles/2007/12057-asian-economics-studies/default.asp.

The formal report (2005 International Comparison Program in Asia and the Pacific: Purchasing Power Parity Preliminary Report) was also released to the public. A copy of the report is available at: http://www.adb.org/Documents/Reports/ICP-Purchasing-Power-Parity/Main-Report.pdf.

A separate report describing the highlights of the results was released at the same time. It is available at: http://www.adb.org/Documents/Reports/ICP-Purchasing-Power-Parity/Highlights.pdf.

Release of final PPPs for Asia and the Pacific
ADB Headquarters, Manila, December 2007

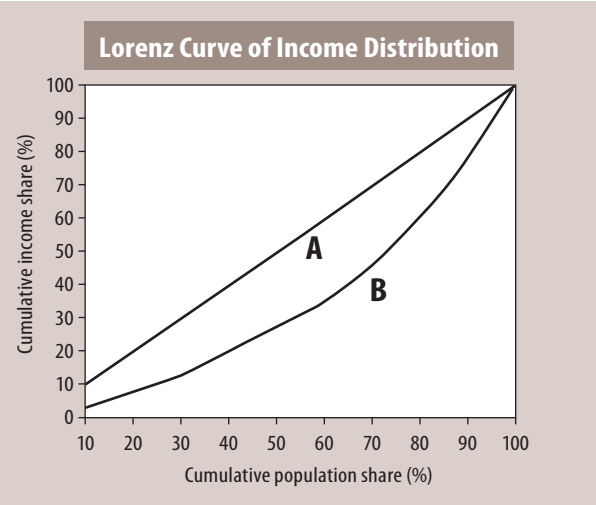
GLOSSARY

Term	Definition
Acquisitions	Goods (including assets) and services acquired by institutional units when they become the new owners of the goods or when the delivery of services to them is completed.
Actual final consumption expenditure (AFCE)	Total value of household final consumption expenditures including nonprofit institutions serving households, and of expenditures by government on services provided to households.
Additivity	Additivity means that the real expenditures for higher-level aggregates can be obtained simply by adding the real expenditures of the subaggregates of which they are composed.
Base-country invariance	The property whereby the relativities between the PPPs, the price level indexes, and the volume indexes of countries are not affected by either the choice of currency as numeraire or the choice of reference country.
Basic heading	In principle, a group of similar well-defined goods or services for which a sample of products can be selected that are both representative of their type and of the purchases made in countries. In practice, a basic heading is defined as the smallest aggregate for which expenditure data are available.
Binary comparison	A price or volume comparison between two countries that draws on data only for those two countries. Also referred to as a "bilateral comparison".
Bridge country	A country that provides a "bridge" between two regions by pricing two lists—one relating to its own region and the other containing products from the second region. The relationships between the PPPs derived from the two sets of prices are used to link together the two regions so that any country in one region can be compared with any country in the other region.

Term	Definition
Changes in inventories	Consist of changes in (i) stocks of outputs that are still held by the units that produced them prior to their being further processed, sold, delivered to other units, or used in other ways; and (ii) stocks of products acquired from other units that are intended to be used for intermediate consumption or for resale without further processing. They are measured by the value of the entries into inventories less the value of withdrawals and the value of any recurrent losses of goods held in inventories.
Characteristicity	The property that requires transitive multilateral comparisons between members of a group of countries to retain the essential features of the intransitive binary comparisons that existed between them before transitivity. A transitive multilateral comparison between a pair of countries is influenced by the price and quantity data of all other countries. Characteristicity requires that the impact of these influences should be kept to a minimum when they are introduced into the intransitive binary comparison. In other words, the multilateral PPP between two countries should deviate as little as possible from their binary PPP.
Classification of Individual Consumption by Purpose (COICOP)	A classification used to identify the objectives of both individual consumption expenditure and actual individual consumption.
Collective consumption service	A service provided by general government simultaneously to all members of the community or to all members of a particular section of the community, such as all households living in a particular region. It is the same as collective consumption expenditure by general government.
Comparability	A requirement for countries to price products that are identical or, if not identical, equivalent. Pricing comparable products ensures that differences in prices between countries for a product reflect actual price differences and are not influenced by differences in quality. Two, or more, products are said to be comparable either if their physical and economic characteristics are identical, or if they are sufficiently similar that consumers are indifferent between them.
Comparative price levels (CPLs)	See "Price level index" below.
Comparison resistant	A term first used to describe nonmarket services that are difficult to compare across countries because they have no economically-significant prices with which to value outputs, or their units of output cannot be otherwise defined and measured, or the institutional arrangements for their provision and the conditions of payment differ from country to country, or their quality varies between countries but the differences cannot be identified and quantified. Increasingly, the term is being used to describe capital goods and many market services whose complexity, variation, and country specificity make it difficult for them to be priced comparably across countries.

Term	Definition
Consistency	The requirement that the prices collected by countries are consistent with the prices underlying their estimates of final expenditure on GDP. In most cases this means that they should be national annual purchasers' prices. As the basis of comparison is the identity: expenditure = price x volume, volumes are obtained by dividing expenditures by prices; using prices that do not correspond to those used to derive the expenditures will result in the volumes being either underestimated or overestimated.
Consumer durables	Durable goods acquired by households for final consumption (i.e., those that are not used by households as stores of value or by unincorporated enterprises owned by households for purposes of production); they may be used for purposes of consumption repeatedly or continuously over a period of 1 year or more.
Country-product-dummy (CPD) method	The CPD method is a generalized multilateral method that uses regression techniques to obtain transitive PPPs for each basic heading. The data for a given category consist of all the prices available for the various specifications for the entire collection of countries in the region.
Country-product-representativity-dummy (CPRD) method	The CPRD method is an extension of the CPD method. Unlike the CPD method, which assumes that all products priced are equally representative in each country, the CPRD method explicitly takes into account whether each product is representative or nonrepresentative in each country in which it is priced.
Disposals of assets	Disposals of assets (inventories, fixed assets or land or other non-produced assets) by institutional units occur when one of those units sells or transfers any of the assets to another institutional unit. When the ownership of an existing fixed asset is transferred from one resident producer to another, the value of the asset sold, bartered or transferred is recorded as negative gross fixed capital formation by the former and as positive gross fixed capital formation by the latter.
Durable good	A good that may be used repeatedly or continuously over a period of more than 1 year, assuming a normal or average rate of physical usage. A consumer durable is a good that may be used for purposes of consumption repeatedly or continuously over a period of 1 year or more.
Eltetö-Köves-Szulc (EKS) method	A procedure that enables binary PPPs, which are nontransitive when more than two countries are involved in the comparison, to be transformed into transitive PPPs, so that comparisons made between any pair of countries are mutually consistent. The EKS method produces transitive PPPs that are as close as possible to the nontransitive PPPs originally calculated in the binary comparisons. In practice, the EKS method is relevant only to the second part of this process (i.e., making the PPPs transitive). Real expenditures obtained using EKS-based PPPs are not additive, so the sum of the real expenditures for the components of GDP does not equal the real expenditure on GDP.

Term	Definition
Expenditure relatives	Real measures expressed in index form with the level of an individual country or an average for a group (such as Asia and the Pacific region) set to a value of 100.
Final consumption	Goods and services used by individual households or the community to satisfy their individual or collective needs or wants.
Final expenditure	The sum of final consumption expenditures of households, nonprofit institutions serving households, and general government; and of expenditures on gross fixed capital formation.
Fisher-type PPP	The geometric mean of the Laspeyres-type PPP and the corresponding Paasche-type PPP.
Fixity	The principle that the PPPs between countries in a region (and therefore the volume relativities based on the PPPs) do not change when the results from that region are combined with those from another region (or regions).
Geary-Khamis (GK) method	A method for aggregating basic headings and above in which category international prices (reflecting relative category values) and country PPPs (depicting relative country price levels) are estimated simultaneously from a system of linear equations. In practice, it involves valuing a matrix of quantities by applying a vector of international prices. The GK method produces PPPs that are transitive and real final expenditures that are additive.
General government	The sector consisting of the totality of institutional units which, in addition to fulfilling their political responsibilities and their role of economic regulation, produce principally nonmarket services (possibly goods) for individual or collective consumption and redistribute income and wealth.

Term	Definition
Gini coefficient (of inequality)	The Gini coefficient is the most commonly used measure of inequality. The coefficient varies between 0, which reflects complete equality, and 1, which indicates complete inequality (i.e., one person has all the income or consumption, all others have none). Graphically, the Gini coefficient can be represented by the area between the Lorenz curve and the line of equality, as follows:  In the figure above, the Lorenz curve maps the cumulative income share on the vertical axis against the distribution of the population on the horizontal axis. In this example, 40% of the population obtains around 20% of total income. If each individual had the same income, or total equality, the income distribution curve would be the straight line in the graph—the line of total equality. The Gini coefficient is calculated as the area A divided by the sum of areas A and B. If income is distributed completely equally, then the Lorenz curve and the line of total equality are merged and the Gini coefficient is zero. If one individual receives all the income, the Lorenz curve would pass through the points (0,0), (100,0) and (100,100), and the surfaces A and B would be similar, leading to a value of one for the Gini coefficient.
Government final consumption expenditure (GFCE)	Or final consumption expenditure of government, consists of expenditure, including imputed expenditure, incurred by general government on both individual consumption goods and services and collective consumption services.
Gross capital formation (GCF)	Measured by the total value of gross fixed capital formation, changes in inventories, and acquisitions less disposals of valuables for a unit or sector.

Term	Definition
Gross domestic product—expenditure based	Total final expenditures at purchasers' prices (including the free-on-board value of exports of goods and services), less the free-on-board value of imports of goods and services.
Gross fixed capital formation (GFCF)	Measures the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period. It includes certain additions to the value of nonproduced assets (such as subsoil assets or major improvements in the quantity, quality, or productivity of land) realized by the productive activity of institutional units.
Household final consumption expenditure (HFCE)	Or final consumption expenditure of households, consists of the expenditure, including imputed expenditure, incurred by resident households on individual consumption goods and services, including those sold at prices that are not economically significant.
Laspeyres-type PPP	In a binary comparison between two countries, A and B, country A's Laspeyres-type PPP measures country B's price level relative to that of country A (the reference country), using country A's expenditures as the weights.
Local currency unit (LCU)	Or national currency unit, is the monetary unit in which economic values are expressed in an economy.
Multilateral comparison	A price or volume comparison of more than two countries simultaneously that produces consistent relations among all pairs of countries—that is, one that satisfies the transitivity requirement.
National annual average price	A price that has been averaged both over all localities of a country so as to take account of regional variations in prices and over the days, weeks, months, or quarters of the reference year so as to allow for seasonal variations in prices as well as general inflation and changes in price structures.
Net expenditures of residents abroad (NERA)	The final consumption expenditure of resident households in the rest of the world less final consumption expenditure of nonresident households in the economic territory.
Nondurable good	A good that may be used only once because its initial use results in it being completely used up or consumed. Food products are examples of consumer nondurables.
Nonprofit institutions serving households (NPISHs)	Consist of nonprofit institutions that are not predominantly financed and controlled by government and that provide goods or services to households free or at prices that are not economically significant.
Nonresident	A unit is nonresident if its center of economic interest is not in the economic territory.

Term	Definition
Numeraire currency	A currency unit selected to be the common currency in which PPPs and final expenditures on GDP (nominal and volumes) are expressed. The numeraire is usually an actual currency (such as the United States dollar) but it can be an artificial currency unit developed for the purposes of PPP comparisons. The Hong Kong dollar is the numeraire currency for ICP Asia Pacific comparisons.
Owner-occupied housing	Dwellings owned by the households that live in them. Owner-occupiers use the dwellings to produce housing services for themselves. The imputed rents of these housing services should be valued at the estimated rent that a tenant pays for a dwelling of the same size and quality in a comparable location with similar neighborhood amenities.
Paasche-type PPP	In a binary comparison between two countries, A and B, country A's Paasche-type PPP measures country B's price level relative to that of country A (the reference country), using country B's expenditures as the weights.
Per capita volumes	Standardized measures of real expenditure (or volume). They indicate the relative levels of the product groups or aggregates being compared after adjusting for differences in the size of populations between countries. At the level of GDP they are often used to compare the economic well-being of populations. They may be presented either in terms of a particular currency or as an index number.
Price level index (PLI)	The PLI for a basic heading (or broader aggregate) is the ratio of the relevant PPP to the exchange rate. It is expressed as an index on a base of 100. A PLI greater than 100 means that, when the national average prices are converted at exchange rates, the resulting prices tend to be higher on average than prices in the base country (or countries) of the region (and vice versa). At the level of GDP, PLIs provide a measure of the differences in the general price levels of countries. PLIs are also referred to as "comparative price levels".
Price relative	The ratio of the price of an individual product in one period to the price of that same product in some other period. In the ICP context, a price relative refers to the price of a product in one country to that of the same product in another country.
Principal component analysis (PCA)	A technique that uses mathematical procedures to recognize patterns in a complex dataset in order to simplify the dataset. PCA enables any correlated variables to be identified so that the dataset can be collapsed into a smaller number of variables, which are not correlated with each other, so that the dataset can be more readily analyzed. The principal components are ranked in the order of the extent to which they explain the variability in the data.
Purchaser's price	The amount paid by the purchaser, excluding any deductible value-added tax or similar deductible tax, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. The purchaser's price of a good includes any transport charges paid separately by the purchaser to take delivery at the required time and place.

Term	Definition
Purchasing power parity (PPP)	A PPP is a price relative that measures the number of units of country B's currency that are needed in country B to purchase the same quantity of an individual good or service, which one unit of country A's currency can purchase in country A.
Real expenditure	Measures obtained by using PPPs to convert final expenditures on product groups, major aggregates, and GDP of different countries into a common currency, by valuing them at a uniform price level. They are the spatial equivalent of a time series of GDP for a single country expressed at constant prices. They provide a measure of the relative magnitudes of the product groups or aggregates being compared. At the level of GDP, they are used to compare the economic size of countries. They may be presented either in terms of a particular currency or as an index number. See "Price relative".
Reference PPPs	Used for basic headings for which no prices are collected; they are based on prices collected for other basic headings.
Relative price levels	The ratios of PPPs for components of GDP to the overall PPP for GDP for a country. They indicate whether the price level for a given basic heading or aggregate is higher or lower relative to the general price level in the country. The relative price levels in this publication are based on the Geary-Khamis method because they must be calculated using an additive aggregation method.
Representative product	An item that accounts for a significant share of the expenditures within a basic heading in the country in question.
Representativity	Representative products are those that figure prominently in the expenditures within a basic heading within a country. They are therefore products that are frequently purchased by resident households and are likely to be widely available throughout the country.
Resident	An institutional unit is resident in a country when it has a center of economic interest in the economic territory.
Rest of the world	The rest of the world consists of all nonresident institutional units that enter into transactions with resident units, or that have other economic links with resident units.
Semidurable good	A good that can be used multiple times over a period of more than 1 year. But it has an expected lifetime of use significantly shorter than that of a durable good and its purchaser's price is substantially less than that for a durable good.

Term	Definition
Services	Outputs produced to order, which cannot be traded separately from their production. Ownership rights cannot be established over services and by the time their production is completed they must have been provided to the consumer.
Transitivity	The property whereby the direct PPP between any two countries (or regions) yields the same result as an indirect comparison via a third country (or region). It is sometimes referred to as "circularity".
Volume	See "Real expenditure".

The definitions in this Glossary are based on definitions from Eurostat/OECD (2006), Kravis et al. (1982), OECD (2001), and World Bank (2007a).

BIBLIOGRAPHY AND REFERENCES

Afriat, S.N. 1967. "The Construction of a Utility Function from Expenditure Data." *International Economic Review* 8(1):67–77.

Ahmad, S. 1992. *Regression Estimates of Per Capita GDP Based on Purchasing Power Parity*. Washington, DC: World Bank.

Asian Development Bank. 2007a. *International Comparison Program for Asia and the Pacific*. Manila. Available: http://www.adb.org/statistics/icp/icp.asp.

———. 2007b. *Key Indicators 2007*. Manila. Available: http://adb.org/Documents/Books/Key_Indicators/2007/default.asp.

Balassa, B. 1964. "The Purchasing Power Parity Doctrine: A Reappraisal." *Journal of Political Economy* 72(6):584–596.

Balk, B. 1995. "Axiomatic Price Index Theory: A Survey." *International Statistical Review* 63(1):69–93.

Barro, R. 1994. *Economic Growth and Convergence*. San Francisco: Institute for Contemporary Studies.

Barro, R. and X. Sala-i-Martin. 1992. "Convergence." *Journal of Political Economy* 100(2):223–251.

Bernard, A. and S. Durlauf. 1995. "Convergence of International Output Movements." *Journal of Applied Econometrics* 10(2):97–108.

Castles, I. and D. Henderson. 2003. "Intergovernmental Panel on Climate Change Issues: A Swag of Documents." Canberra. Available: http://www.lavoisier.com.au/papers/articles/IPPCissues.html.

Central Bank. *Foreign Exchange Statistics*. Available: http://www.cbc.gov.tw/EngHome/Eforeign/Statistics/Eyearly.asp.

Clague, C. 1986. "Determinants of the National Price Level: Some Empirical Results." *The Review of Economics and Statistics* 68(2):320–23.

Coelli, T., D.S.P. Rao, C. O'Donnell, and G. Ballese. 2005. *An Introduction to Efficiency and Productivity Analysis*. Second Edition. New York: Springer.

Diewert, W. E. 1988. "The Early History of Price Index Research." NBER Working Papers 2713. National Bureau of Economic Research. Cambridge, Mass.

———. 2005. "Weighted Country-Product Dummy Variable Regressions and Index Number Formulae." *Review of Income and Wealth* 51(4):561–570.

Dowrick, S. and M. Akmal. 2005. "Contradictory Trends in Global Income Inequality: A Tale of Two Biases." *Review of Income and Wealth* 51(2):201–229.

Durlauf S. and A. Bernard. 1995. "Convergence of International Output Movements." *Journal of Applied Econometrics* 10(2):97–108.

Dwyer, F. and D.S.P. Rao. 2001. "PPPs and Price Competitiveness of International Tourism Destinations." A paper presented at the International Seminar on the International Comparison Program organized jointly by the World Bank and OECD, January. Washington, DC.

Eurostat, OECD, United Nations, International Monetary Fund, and World Bank. 1993. *System of National Accounts 1993*. Brussels, Paris, New York, and Washington, DC. Available: http://unstats.un.org/unsd/sna1993/toctop.asp?L1=5.

Eurostat and OECD. 2006. Eurostat-OECD *Methodological Manual on Purchasing Power Parities (PPP)*. Brussels and Paris. Available: http://circa.europa.eu/Public/irc/dsis/palojpi/library?l=/methodological_papers/ppp_manual&vm=detailed&sb=Title.

Färe, R., S. Grosskopf, M. Norris, and Z. Zhang. 1994. "Productivity Growth, Technical Progress, and Efficiency Change in Industrialized Countries." *American Economic Review* 84(1):66–83.

International Labour Organization (ILO). 2004. *Consumer Price Index Manual: Theory and Practice*. Geneva. Available: http://www.ilo.org/public/english/bureau/stat/guides/cpi/index.htm.

International Monetary Fund (IMF). *General Data Dissemination System (GDDS)*. Washington DC. Available: http://dsbb.imf.org/Applications/web/getpage/?pagename=gddshome.

———. International Financial Statistics (IFS) Online. Available: http://www.imfstatistics.org/imf/website

Islam, N. 1995. "Growth Empirics: A Panel Data Approach." *Quarterly Journal of Economics* 110(4):1127–1130.

Kravis, I., Z. Kenessey, A. Heston, and R. Summers. 1975. *A System of International Comparisons of Gross Product and Purchasing Power*. Baltimore and London: The Johns Hopkins University Press.

Kravis, I., A. Heston, and R. Summers. 1978. *International Comparisons of Real Product and Purchasing Power*. Baltimore and London: The Johns Hopkins University Press.

———. 1982. *World Product and Income: International Comparisons of Real Gross Product*. Baltimore and London: The Johns Hopkins University Press.

Kravis, I. and R. Lipsey. 1983. *Toward an Explanation of National Price Levels*. Princeton University: Princeton.

Maddison, A. 1995. Monitoring the World Economy. Paris: OECD Development Centre. Paris.

———. 2007. Contours of the World Economy 1-2030 AD: Essays in Macro-Economic History. Oxford: Oxford University Press.

Mankiw, N. G., D. Romer, and D. Weil. 1992. "A Contribution to the Empirics of Economic Growth." *Quarterly Journal of Economics* 107(2): 407–437.

McKibbin W. and A. Stegman. 2005. "Convergence and Per Capita Carbon Emissions." CAMA Working Papers 2005-10. Center for Applied Macroeconomic Analysis, Australian National University, Canberra.

Milanovic, B. 2002. "True World Income Distribution, 1988 and 1993: First Calculation Based on Household Surveys Alone." *Economic Journal* 112(476):51–92.

Organisation for Economic Co-operation and Development (OECD). 2001. *The System of National Accounts, 1993—Glossary*. Paris. Available: http://www.oecd.org/dataoecd/38/18/2674296.pdf.

Rao, D.S.P. 2005. "On the Equivalence of Weighted Country-Product Dummy (CPD) Method and the Rao System for Multilateral Price Comparisons." *Review of Income and Wealth* 51(4):571–580,

Rao, D.S.P. and T. Coelli. 2002. "Economic Performance of Selected Asian Countries in an International Perspective: Economic Growth, Productivity and Inequality." In C. Huang, C. Lovell, and T. Fung (eds.), *Economic Efficiency and Productivity Growth in the Asia-Pacific Region II*. Northampton: Edward Elgar Publishing.

National Bureau of Statistics (NBS). 2005. *China Statistical Yearbook*. Beijing: China Statistics Press.

———. 2006. *China Statistical Yearbook*. Beijing: China Statistics Press.

Ryten, J. 1999. "Report of the Consultant on the Evaluation of the International Comparison Programme". New York. Available: http://unstats.un.org/unsd/statcom/doc99/8-e.pdf.

Sala-i-Martin, X. 2002. "15 Years of New Growth Economics: What Have We Learnt?." Discussion Paper #0102-47. New York: Columbia University.

Samuelson, P. 1964. "Theoretical Notes on Trade Problems." *The Review of Economics and Statistics* 46(2):145–154.

Summers, R. and A. Heston. 1991. "The Penn World Table (Mark 5): An Expanded Set of International Comparisons, 1958–1988." *Quarterly Journal of Economics* 106(2):327–368.

The Economist. "Big Mac Index." London. Available: http://www.economist.com/markets/bigmac/.

United Nations Development Programme (UNDP). 1999. *Human Development Report 1999*. New York: Oxford University Press.

———. 2006. *Human Development Report 2006*. New York: Oxford University Press.

United Nations and Eurostat. 1986. *World Comparisons of Purchasing Power and Real Product in 1980*. New York.

———. 1994. *World Comparisons of Real Gross Domestic Product and Purchasing Power, 1985—Phase V of the International Comparison Programme*. New York. Available: http://siteresources.worldbank.org/ICPINT/Resources/worldcomparisongdp1985.pdf.

United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP). 2001. "International Comparison Programme: Plans for Asia and the Pacific." Available: http://www.unescap.org/stat/cos12/wgse12/wgse12-07.asp

United Nations Statistical Commission (UNSC). 2001. Report by the Friends of the Chair: An Assessment of the Statistical Criticisms made by the Human Development Report, 1999. New York. Available: http://unstats.un.org/unsd/statcom/doc01/2001-18e.pdf.

United Nations Statistics Division (UNSD). 1999. *Classification of Individual Consumption by Purpose*. New York. Available: http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=5&Lg=1.

University of Groningen. Groningen Growth and Development Center (GGDC) database. Available: http://www.ggdc.net/dseries/totecon.html.

University of Pennsylvania. *Penn World Tables*. Philadelphia. Available: http://pwt.econ.upenn.edu/.

World Bank. 2007a. *ICP 2003–2006 Handbook*. Washington, DC. Available: http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/ICPEXT/contentMDK:20962711~menuPK:2666036~pagePK:60002244~piPK:62002388~theSitePK:270065,00.html.

———. 2007b. *Operations Manual and Procedures*. Washington DC. Available: http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/ICPEXT/contentMDK:20962711~menuPK:2666036~pagePK:60002244~piPK:62002388~theSitePK:270065,00.html.

———. 2007c. *ICP Suite of Software Tools*. Washington DC. Available: http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/ICPEXT/contentMDK:20126602~menuPK:2666098~pagePK:60002244~piPK:62002388~theSitePK:270065,00.html.

———. 2007d. *World Development Indicators 2007*. Washington, DC. Available: http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/contentMDK:21298138~pagePK:64133150~piPK:64133175~theSitePK:239419,00.html.