Purchasing Power Parity and the 2005 International Comparison Program

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Introduction

The International Comparison Program (ICP) is a global statistical project to collect price and expenditure data for the estimation of purchasing power parity (PPP). The main objective of the ICP is to enable PPP-based international comparisons of macro-economic aggregates such as income and output (Gross Domestic Product, GDP), productivity and standards of living, which take into account relative price levels between economies. This article presents the concept of PPP and an overview of the benchmark 2005 ICP project. It reviews the final global PPP comparisons from the 2005 ICP (released in February 2008) and highlights, in particular, Singapore's relative price level and per capita measures of GDP, household consumption and gross fixed capital formation.

Purchasing Power Parities

PPP refers to the number of currency units required to purchase an amount of goods and services equivalent to what can be bought with one unit of currency of the base country, for example, the US dollar (a commonly used base currency). Unlike market exchange rates, PPPs adjust for differences in price levels between countries/economies and enable more robust cross-country comparisons of economic output, productivity and standards of living, based on a common set of average international prices.

In contrast, comparisons based on market exchange rates which are determined by the demand and supply of currencies in international transactions do not necessarily reflect the real value of an economy's output and the standard of living of its residents. As market exchange rates do not take into account relative prices between economies which are typically lower in developing economies due to cheaper non-traded (labor-intensive) goods and services, they tend to exaggerate income and productivity differentials between economies at different levels of development.

The use of PPPs for international comparisons of macro-economic data is generally considered more appropriate vis-à-vis market exchange rates. Hence, PPP-based macro-economic aggregates are featured prominently as key fundamental macro-economic indicators in many international studies, programs and targets. For example, the World Bank's *World Development Indicators*, the International Monetary Fund's (IMF) *World Economic Outlook* and the United Nation's Millennium Development Goals. However, PPPs should not be used for all types of economic analysis. Market exchange rates which reflect demand for currencies as a medium of exchange, store of value (investments) or official reserves should be used, for example, for comparisons of international trade, capital flows and foreign debt.

2005 ICP Programme

The construction of PPPs is a complex and challenging exercise, requiring detailed high quality price and expenditure data (on products that are both representative of an economy and comparable with other economies) from countries/economies whose PPPs are being calculated. Launched in 1968, the ICP spearheads the development of PPPs and has, over the years, carried out several rounds of international comparison.

In this latest 2005 round which began in 2003, the worldwide ICP program covered over 140 economies and includes for the first time, the participation of China and India – the two most populous economies in the world. Due to the scale and complexity of the project, the 2005 ICP in effect comprises two separate PPP programs, namely :

(a) the World Bank coordinated global ICP program, which covered over 100 (mostly developing) economies from five geographical regions (Africa, Asia Pacific, Commonwealth of Independent States, Latin America and Western Asia); and

(b) the Statistical Office of the European Communities (Eurostat) and the Organization for Economic Co-operation and Development (OECD) PPP program, which included 46 (mostly member) economies.

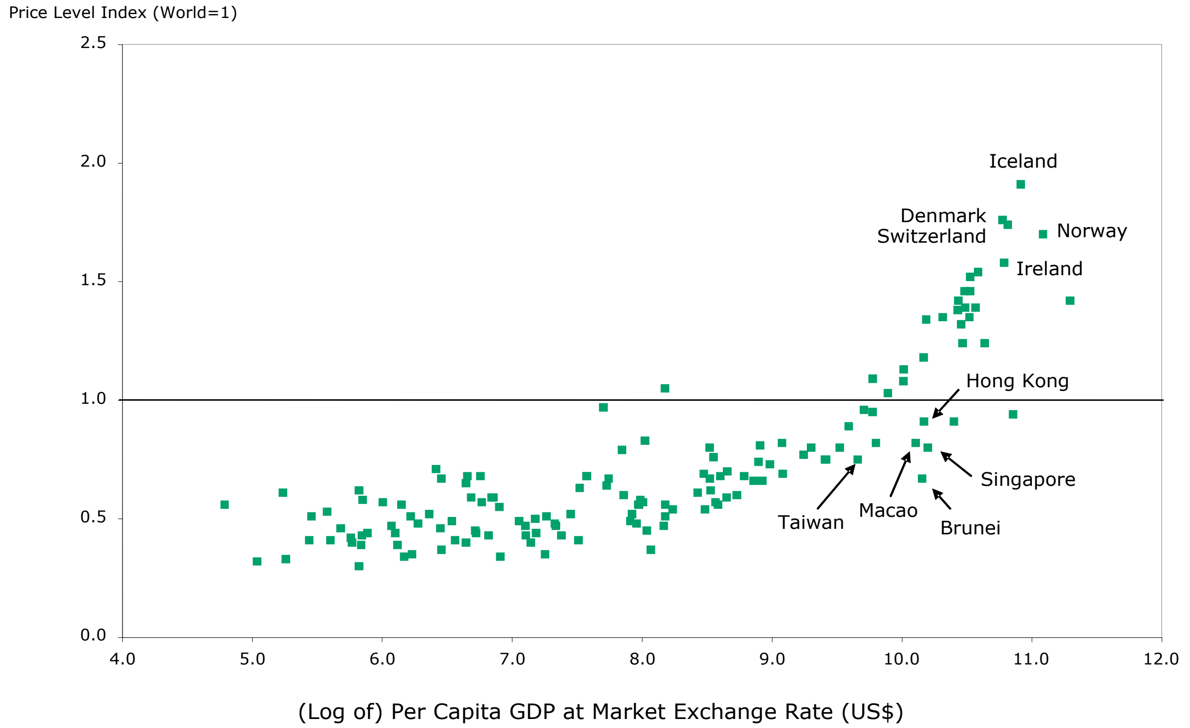
With the ICP conducted on a regional basis, overall global comparisons are obtained by linking regional results through "ring comparisons" — where a few economies from each region participate in a separate parallel international comparison organized specifically to provide a link between regions.

2005 ICP Global Results

Relative Price Levels

Price level indices (ratios of PPPs to market exchange rates) which are used to express the relative price levels between economies generally correlate positively with income i.e. per capita GDP (Chart 1). For example, high-income economies such as Iceland, Denmark, Switzerland, Norway and Ireland, were the most expensive places to live and work in 2005 with price levels as high as two times the world average.

CHART 1 RELATIVE PRICE LEVELS AND PER CAPITA GDP, 2005



Source : 2005 International Comparison Programme : Tables of Final Results, 2008

In comparison, price levels in Singapore were about one-fifth lower than the world average. They were also relatively lower than price levels in Hong Kong and Macao but higher than price levels in Taiwan and Brunei – the other high-income Asia Pacific economies.

GDP at PPP

Cross-country comparisons of GDP at PPP show that the United States and China were the world's largest economies in 2005, with world GDP shares of 23 per cent and 10 per cent respectively (Table 1). This was followed by Japan with a world share of 7 per cent, Germany with 5 per cent and India with 4 per cent. These five economies collectively accounted for nearly half of global GDP valued at approximately US$55 trillion at PPP in 2005.

In contrast, the standard (poorer) currency conversion method using market exchange rates results in comparisons that under or overstate the relative sizes of some economies. For example, the 2005 GDP levels of China, India and the Russian Federation at market exchange rates grossly understated the sizes of these economies (with low domestic price levels) relative to other high-income economies.

TABLE 1 RELATIVE SIZE OF ECONOMIES, 2005

Economies	GDP at PPP			GDP at Market Exchange Rates		
	US$ Billion	Share (World=100)	Rank	US$ Billion	Share (World=100)	Rank
United States	12,376.1	22.51	1	12,376.1	27.93	1
China	5,333.2	9.70	2	2,243.8	5.06	5
Japan	3,870.3	7.04	3	4,549.2	10.27	2
Germany	2,514.8	4.57	4	2,791.3	6.30	3
India	2,341.0	4.26	5	778.7	1.76	12
United Kingdom	1,901.7	3.46	6	2,244.1	5.06	4
France	1,862.2	3.39	7	2,136.3	4.82	6
Russian Federation	1,697.5	3.09	8	764.4	1.73	14
Italy	1,626.3	2.96	9	1,769.6	3.99	7
Brazil	1,583.2	2.88	10	882.5	1.99	10

Source : 2005 International Comparison Programme : Tables of Final Results, 2008

Per Capita GDP at PPP

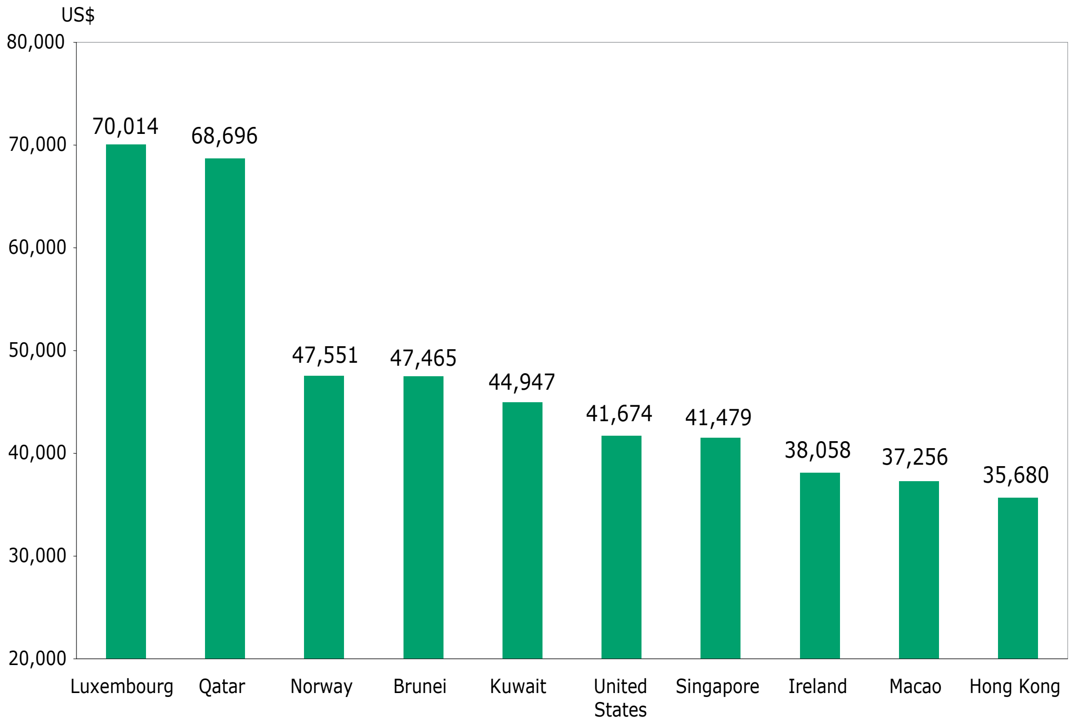
Per capita measures of GDP at PPP are useful for comparing the average standard of living in different economies. In 2005, the top five economies with the highest per capita GDP at PPP were Luxembourg, Qatar, Norway, Brunei and Kuwait (Chart 2). These economies, all very small and mostly oil-rich, accounted for less than 1 per cent of the world economy.

Singapore's PPP-based per capita GDP at US$41,479 was also amongst the highest in the world and comparable to the United States. Within the Asia Pacific region, Singapore's per capita GDP at PPP was ranked second, behind Brunei (US$47,465) and above Macao (US$37,256) and Hong Kong (US$35,680).

Per Capita Actual Final Consumption of Households (AFCH)

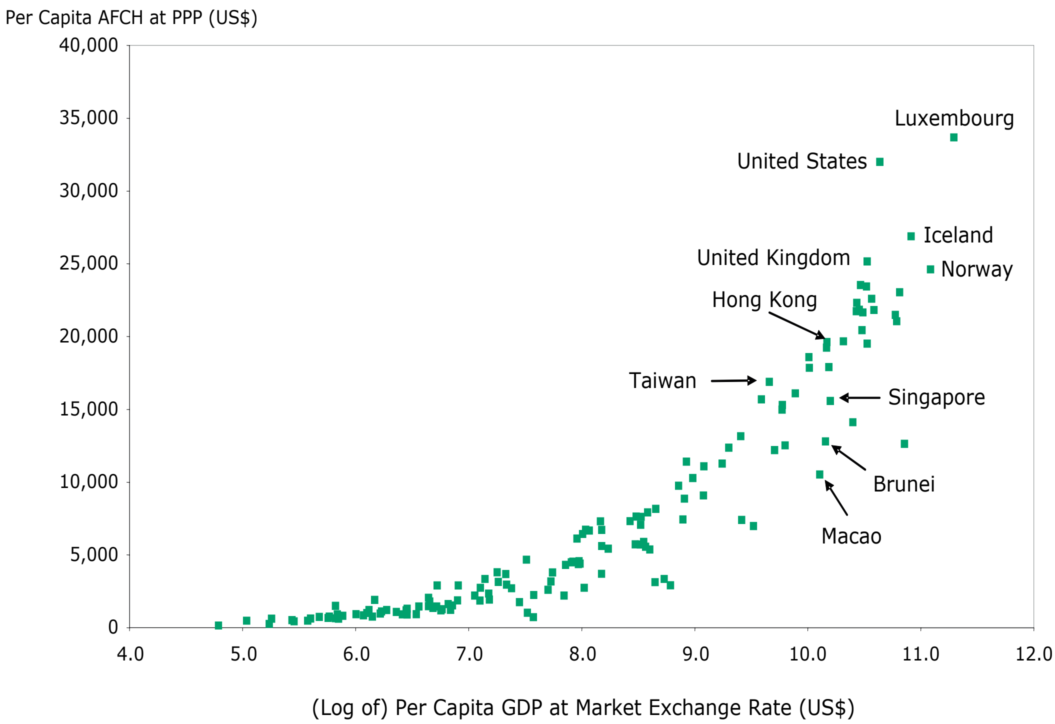
AFCH measures the amount of goods and services consumed by households. High-income economies generally have higher per capita AFCH. Based on the 2005 ICP, Luxembourg, United States, Iceland, United Kingdom and Norway had the highest per capita AFCH at PPP while Singapore's per capita AFCH at PPP (US$15,564) was about two and a half times the world average (US$6,095) and the third largest among high-income Asia Pacific economies (i.e. Brunei, Macao, Hong Kong and Taiwan) (Chart 3).

CHART 2 ECONOMIES WITH HIGHEST PER CAPITA GDP AT PPP, 2005



Source : 2005 International Comparison Programme : Tables of Final Results, 2008

CHART 3 PER CAPITA AFCH AT PPP, 2005



Source : 2005 International Comparison Programme : Tables of Final Results, 2008

Per Capita Gross Fixed Capital Formation (GFCF)

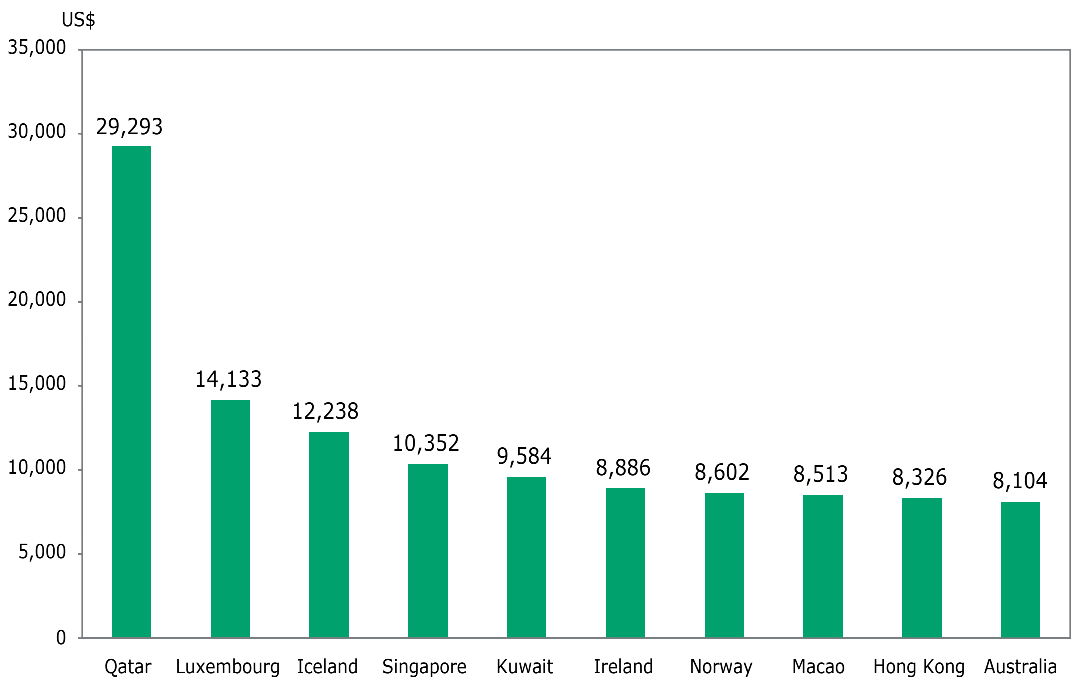
In terms of GFCF – that is, investments in buildings & infrastructure, machinery, equipment and software, which are important drivers of economic growth – economies with the highest per capita spending were Qatar, Luxembourg, Iceland, Singapore and Kuwait (Chart 4). Singapore's per capita GFCF at PPP, for instance, was roughly five and half times the world average.

Conclusion

Unlike market exchange rates, PPPs adjust for differences in price levels between countries/economies and enable more robust and meaningful cross-country comparisons of macro-economic aggregates.

The updated PPPs with 2005 as the reference year will serve as important inputs to the World Bank, IMF and other international agencies in developing and monitoring policies, programs and targets.

CHART 4 ECONOMIES WITH HIGHEST PER CAPITA GFCF AT PPP, 2005



Source : 2005 International Comparison Programme : Tables of Final Results, 2008