

## CHINA IN ICP 2005

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### Background

There has never been an official PPP estimate for China because China did not participate in any previous phases of the UN-World Bank International Comparison Programme. International organisations and private researchers have tried to gauge the true size of China's economy by estimating a purchasing power parity for China. Professor Irving Kravis made one of the earliest attempts to calculate a PPP for China.<sup>1</sup> A more recent estimate was made by Professors Ren Ruoan and Chen Kai and their estimates have been used both for the "Penn Table" and by the World Bank for its World Development Report.<sup>2</sup> The OECD carried out a PPP comparison in which 7 cities in China were compared with OECD Member countries for the year 2000. The results were never published, however, because the OECD staff considered that the prices reported by the Chinese statisticians were not sufficiently representative of the broad range of goods and services in the 7 cities.

There may be several reasons for the Chinese government's reluctance to participate in the International Comparison Programme. The following is taken from the English language "Peoples Daily" 5 August 2004. The journalist starts by explaining the difficulties of making international comparisons for non-market services, construction and other "comparison resistant" products, and continues:

"Even if China admits the PPP method is scientific and set China's GDP higher accordingly, China's economy cannot be interpreted as having a stronger purchasing power in the world market, for the payment is still settled by official exchange rate in the international market, says Song Xiaojun, an expert on international problems.

According to Song, setting China's per capita GDP higher in accordance with PPP will do no good to China. This is not the actual case and will exaggerate China's strength. In addition, this will give China more duty to pay fees in international organizations and will influence China's preferential treatments in international trade. "So this is not a mainstream calculation method".

Another reason for China's hesitation to fully participate in ICP may be connected with the long standing dispute with the United States about the Yuan - Dollar exchange rate. When the theory of PPPs was first developed, it was thought that PPPs would be close to "equilibrium exchange rates" that would balance a country's imports and exports taking one year with the next. But the PPPs from ICP 2005 cover not only tradable products but non-tradables as well such as construction goods and government services. In any event, exchange rates are

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<sup>1</sup> Kravis, I B., 1981, 'An approximation of the relative real per capita GDP of the People's Republic of China', *Journal of Comparative Economics*, vol. 5, pp. 60-78.

<sup>2</sup> Ren, R., 1997, *China's Economic Performance in An International Perspective*, OECD Development Centre, Paris.

Ren, R and Chen, Kai, 1993, An expenditure-based bilateral comparison of gross domestic product between China and the United States, The World Bank (mimeo)

Ren, R., and Chen, Kai, 1994, 'An expenditure-based bilateral comparison of gross domestic product between China and the United States', *Review of Income and Wealth*, Series 40, no. 1, pp. 377-94.

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 indicate a country's "correct" exchange rate. The Chinese authorities understand that PPPs do not tell us what the exchange rate "should be" but they have the political acumen to see that if the PPP for the Yuan *vis-à-vis* the Dollar is much below the current exchange rate of about 8 Yuan to the Dollar, this could be interpreted (wrongly) by US legislators as proof of unfair manipulation of the Dollar-Yuan exchange rate.

A third possible consideration is that the Chinese authorities appear to be wary of assuming the mantle of second-biggest economy in the World, and this what PPP converted GDP may show to be the case. China is comfortable being categorized as a non-threatening, good-neighbor, developing country and it could be more difficult to sustain this image within the Asian region if China is shown to be an economic giant. In addition, of course, the second biggest economy would also come under pressure to play a larger role in international affairs, including peace-keeping and development aid.

Whatever the reasons for China's hesitations about joining the ICP – and the two paragraphs above are pure speculation – the National Bureau of Statistics has adopted a compromise solution for ICP 2005. They have taken part in the ICP for the Asian Region but only by providing prices and expenditure weights for 11 cities. The ICP Global Office (Washington) and the Asian Development Bank (Manila) have converted the 11 city results into a national PPP estimate. This conversion has been done in consultation with NBS staff, but the 2005 PPP that will be published for China will not be an officially approved figure but an ADB/World Bank estimate.

#### **ADB/World Bank PPPs for China**

Both rich and poor cities were included in the eleven chosen by NBS so that the prices and expenditure weights can be considered as representative of China as a whole. Moreover, each of the 11 cities included not only densely populated areas but also substantial parts of the surrounding country-side, and NBS reported prices separately for the urban and rural parts of the 11 cities. The ICP Global Office, the ADB and experts from the Australian Bureau of Statistics consulted with NBS staff to determine how the data for the 11 cities could be used to obtain national PPPs. This is the procedure that was followed:

- For household expenditures, national expenditure weights were estimated separately for urban and rural areas using data from the urban and rural household income and expenditure surveys. Urban and rural prices, averaged over the 11 cities were then used to calculate PPPs.
- For government consumption expenditure, the data on compensation of government employees that had been provided by NBS for the 11 cities were somewhat higher than those published in the NBS *China Statistical Yearbook*. ADB considered that the *Yearbook* figures were more representative for all China and the latter were used in estimating PPPs for both individual and collective consumption. National expenditure weights were obtained in consultation with NBS.

- For gross fixed capital formation, prices for construction goods and for machinery and equipment were averaged over the 11 cities and used with all China weights to obtain PPPs.

Two special features of the Asia-ICP should be mentioned. They concern dwelling services and government consumption expenditure.

It was originally planned that PPPs for the basic heading Actual and Imputed Rentals for Housing would be estimated using the "quantity approach" as described in Chapter 10 of the ICP Handbook. The quantity approach requires countries to provide detailed information on the numbers and characteristics of dwellings. Despite the best efforts of the countries and ADB, it proved impossible to apply the quantity approach because several countries did not have comprehensive and up-to-date information about their housing stocks. Therefore, a "reference" method was used. A "reference" method usually means the use of a reference PPP. However, for this basic heading, a reference volume relative was used. This was done because the expenditure shares estimated by countries for Actual and Imputed Rentals for Housing were judged to be particularly unreliable. If a reference PPPs had been used, the volume relatives indirectly obtained by dividing the reference PPPs into the expenditure relatives, would have included all the inconsistencies in countries' estimates of expenditures on rentals for housing. It was considered more important to have good volume relatives than good PPPs.

The reference volume relatives used here were for *Individual Consumption Expenditure by Household* (Excluding Rentals for Housing). This is a "neutral" approach in that it does not affect the volume relative for household consumption expenditure. An additional advantage is that it is based on a plausible assumption – namely that the volumes of housing services consumed in each country rise in line with the volumes of total consumption expenditures by households.

Government consumption expenditure is a difficult area for ICP, because labour productivity in government varies greatly between countries. For the OECD-Eurostat, CIS and ECLA regions it was decided to ignore these differences because they were judged to be sufficiently small that ignoring them does not invalidate the comparisons. But it would be difficult to do this in the Asian region because the 23 participating countries are at very different levels of economic development and these differences are reflected in great variations in the levels of government compensation. For example, average compensation (based on exchange rates) in the government health sector in Hong Kong is about 120 times higher than in Lao PDR. If no productivity adjustment is made, countries like Vietnam, Lao PDR, or Bangladesh where government salaries are very low would be seen as having very high real consumption of government services – and hence very high real GDP – compared with countries like Hong Kong and Singapore where government salaries are at the levels of the richer OECD countries.

The solution adopted by ADB 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 such as high-speed communications networks, office equipment, science laboratories in schools and universities

and modern medical equipment in hospitals. Cobb-Douglas functions of the form  $Y = CL^\alpha K^{1-\alpha}$  were estimated. Gross Domestic Product (Y) is a function of the amount of labour (L) and the capital stock(K), with labour and capital coefficients being  $\alpha$  and  $(1-\alpha)$ , respectively. Capital stocks were estimated by the perpetual inventory method over a twenty-year period and the labour coefficient was set at 0.7 for high income countries and 0.5 for the remainder.<sup>3</sup> The table below is taken from the preliminary report on ICP Asia 2005 and shows the effects of the adjustment. The adjustment factor for China was 0.26 meaning that, compared with Hong Kong, per capita consumption of government services in China was reduced to about a quarter of what it would have been in the absence of any adjustment.

Adjustment factors for labour productivity applied to per capita real consumption of government services in ten Asian countries	
Hong Kong, China	1.00
Taipei, China	0.89
Malaysia	0.55
Thailand	0.37
Bhutan	0.28
China, People's Republic	0.26
Mongolia	0.24
India	0.22
Vietnam	0.19
Lao PDR	0.19

### Some results

Results for China relate only to the Asia comparison. The 23 countries that took part in ICP-Asia will be incorporated into the global estimates, along with the other regions, when the results of the global “Ring Comparison”<sup>4</sup> become available later this year. It is only at that stage that it will be possible to rank China against the United States, Japan, Germany and other major economies outside the ICP-Asia group. Note however that the within-region results are fixed and will not be altered when the Global Comparisons are published.

The charts and graphs that follow are based on the two tables in the Appendix, which also contains an explanation of the country codes in Figures 2 through 6.

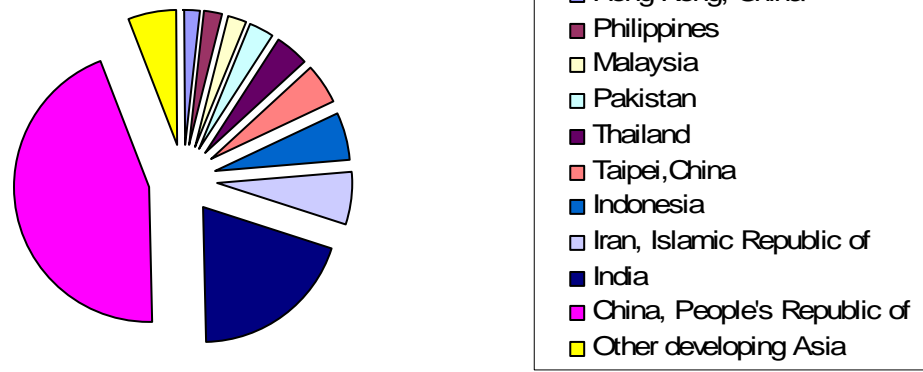
### Country size

Figure 1 shows the position of China and the 9 next largest countries among the 23 countries that took part in ICP-Asia 2005. India which has a similar population to China's is only about a third of China's size as measured by real GDP.

<sup>3</sup> More details are given in Appendix D of the preliminary report on Asia-ICP 2005.

<sup>4</sup> The *Ring Comparison* compares price levels between 18 countries selected from all the regions : ECLAC, Asia, Africa, Western Asia and OECD-Eurostat –CIS. The results of the Ring Comparison will be used to calibrate the PPPs from each region to the World level.

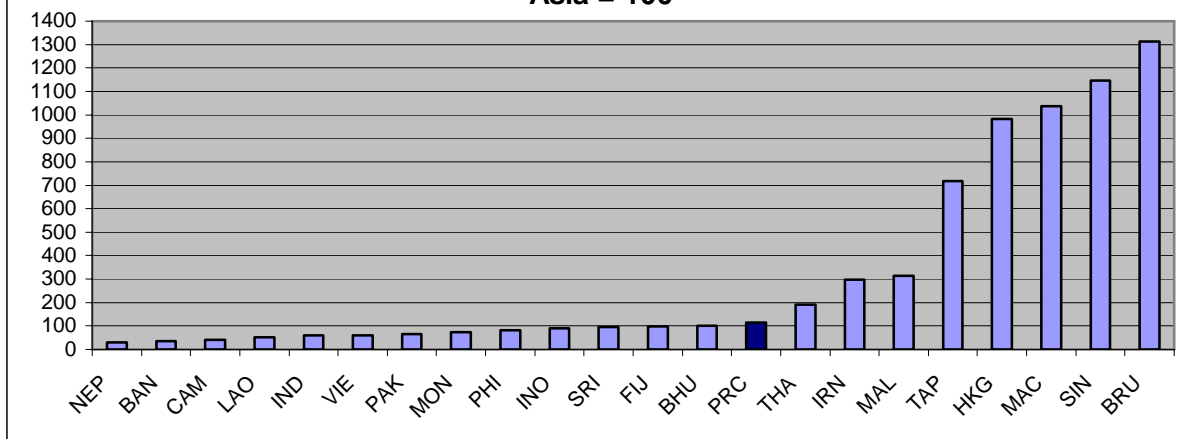
**Figure 1. Shares of real GDP in the total GDP of Developing Asia**



***Real per capita GDP***

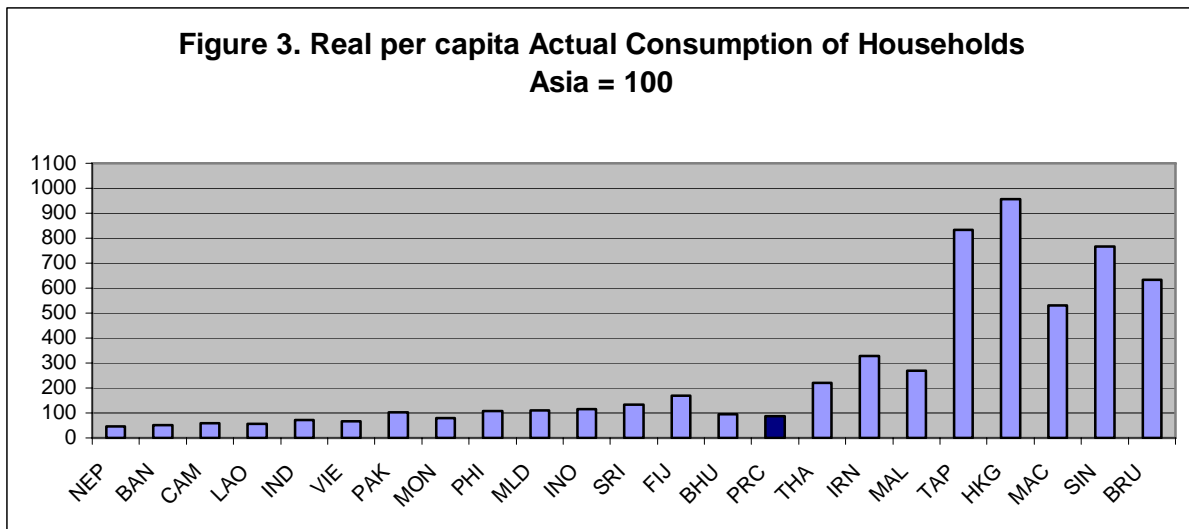
Real per capita GDP is widely used to distinguish between rich and poor countries. China is tenth richest among the 23 - just above the average for Asia but a long way behind the other “China” countries - Hong Kong, China; Macau, China; and Taipei, China.

**Figure 2. Real per capita GDP  
Asia = 100**



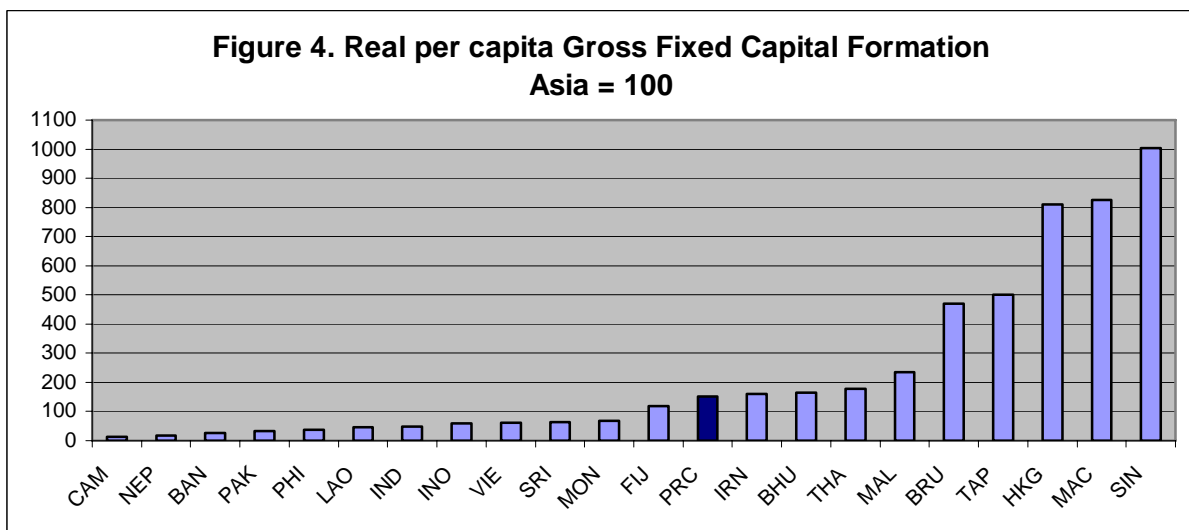
***Real per capita actual consumption of households***

Actual consumption of households is the total of what households purchase for themselves and the health and education services they obtain free from government. It is a broad measure of household “well-being”. In Figure 3 the countries are arranged in the same order as in the previous figure. It can be seen that several countries that are “GDP rich” are “consumption poor”. China is one of these because a substantial part of China’s GDP is in the form of net exports and capital formation rather than household consumption.



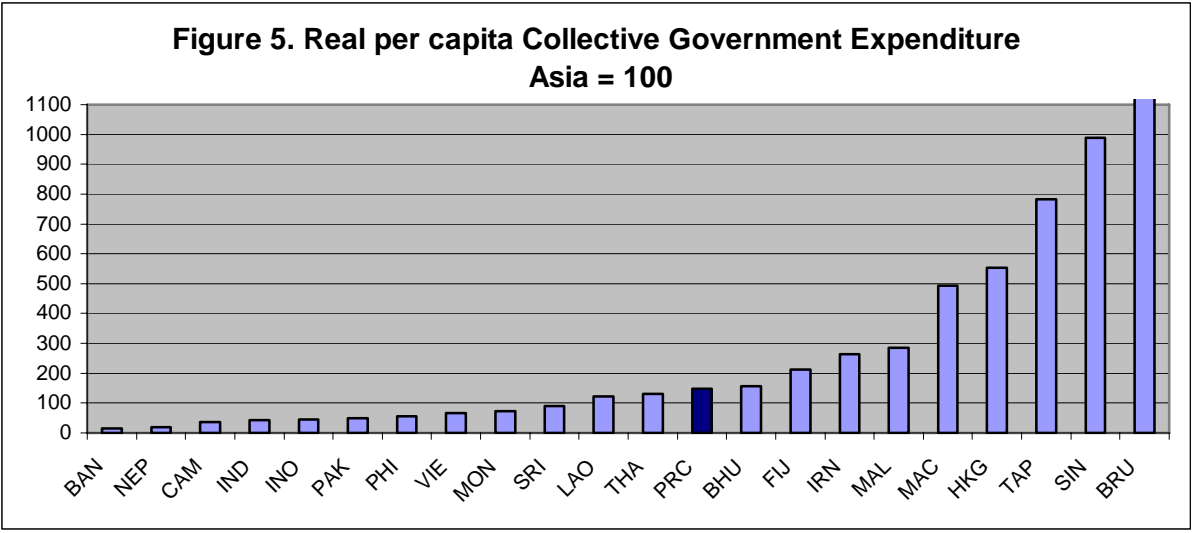
***Real per capita Gross Fixed Capital Formation***

Figure 4 shows real per capita gross fixed capital formation (GFCF). This is an indicator of countries’ potential for future growth. Note that all the rich countries have high per capital GFCF – which is mainly why they are rich. China is well above the Asian average and around the same levels as Iran and Thailand.



***Collective Consumption Expenditures of Government***

Collective expenditures of government include defence, law and order, ministries of finance, development, agriculture, transport and general administration. On a per capita basis they indicate the relative “size of government”. China is above the Asian average and several times higher than other large countries such as India, Pakistan and Indonesia.



**Price levels**

The price level indices shown in Figure 6 are the ratios of PPPs to Exchange Rates multiplied by 100. Indices in excess of 100 indicate a domestic price level above the average for the region. China is close to the Asia average together with Philippines, Indonesia and Thailand

