

**STATISTICAL COMMISSION and  
ECONOMIC COMMISSION FOR EUROPE**

**Working Paper No 21**

**CONFERENCE OF EUROPEAN STATISTICIANS**

**ECE-Eurostat-OECD Joint Consultation  
on the European Comparison Programme**

**(Geneva, 23-25 October 2000)**

**China and the OECD International Comparison Programme**

Paper submitted by OECD Secretariat

## 1. What are we planning to do and why?

Over the next three years, China will participate in the OECD International Comparison Programme. The object of China's participation is to compare the total GDP of seven major cities<sup>1</sup> in China with the total GDP of the 29 Member Countries of the OECD<sup>2</sup>. In order to effect this bilateral comparison, it is necessary to convert the total GDP of the seven cities and the total GDP of the OECD into the same currency. It is also necessary to express the two GDPs at the same price level otherwise it will not be clear whether the differences observed are due to differences in the prices used to value the quantities produced or to actual differences in the quantities produced. In other words, before the comparison can be made, it is necessary to calculate the currency conversion rates that will equate the purchasing power of the two currencies – the yuan and the US dollar – in which the two GDPs are expressed. Such conversion rates are called “purchasing power parities” or “PPPs”.

## 2. What is the OECD International Comparison Programme?

The OECD International Comparison Programme was established in the early 1980's to provide internationally comparable volume measures of GDP for the Member Countries of the OECD. To date, the OECD has completed five rounds of comparisons – 1980, 1985, 1990, 1993 and 1996 – covering 18, 22, 24, 24 and 32 countries respectively. China will be participating in the current round of the Programme, that is the 1999 round. This round covers 40 countries - 29 OECD Member Countries plus 11 non-member countries. Responsibility for the round is shared between Eurostat<sup>3</sup> and the OECD. Eurostat co-ordinates data collection in 29 countries - the fifteen Member States of the European Union<sup>4</sup>, the eleven Candidate Countries to the European Union<sup>5</sup> and Iceland, Norway and Switzerland. The OECD co-ordinates the data collection in the remaining eleven countries<sup>6</sup>. The OECD is also responsible for ensuring that the data sets for the two groups of countries can be combined in order to obtain results across all 40 countries. The comparison for the 1999 round, like the comparisons for previous rounds, will be a multilateral comparison. China, however, will not be included in the multilateral comparison. Instead it will participate in a bilateral comparison with the OECD as a single entity.

## 3. Why is China participating?

For the purpose of international comparison, estimates of GDP for China in yuan are usually converted into US dollars using exchange rates. Recently, however, the IMF and the World Bank have started to publish estimates of GDP for China that have been converted to US dollars using

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<sup>1</sup> Beijing, Shanghai, Chongqing, Xian, Guangzhou, Wuhan and Harbin.

<sup>2</sup> Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, Norway, New Zealand, Poland, Portugal Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.

<sup>3</sup> Statistical Office of the European Communities

<sup>4</sup> Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal Spain, Sweden, United Kingdom.

<sup>5</sup> Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia.

<sup>6</sup> Australia, Canada, China, Israel, Japan, Korea, Mexico, New Zealand, Russian Federation, Turkey, United States.

PPPs. There is a big difference between the two figures. For example, those published by the World Bank suggest that when PPPs are used the GDP of China is four times greater than it is when exchange rates are used.<sup>7</sup> The PPPs used for China by the IMF and the World Bank are at best educated guesses<sup>8</sup>. Nonetheless, in the absence of more reliable PPPs, these international organisations and others involved in making international comparisons will continue using the PPPs that are available. To ensure that more reliable PPPs are available for China, it has been decided that China should participate in the OECD International Comparison Programme with the object of undertaking a bilateral comparison between the OECD and China. However, as China's experience in international comparison work is limited to the ESCAP comparison, it has also been decided that, initially, participation in the OECD Programme will be on an experimental basis - that is the comparison will be based on seven cities rather than the whole of China. Basing the comparison on seven cities will enable the NBS to build on the experience gained from the ESCAP comparison and will reduce substantially the additional burden that participation in the OECD Programme places on China's limited statistical resources.

#### **4. Why compare GDP?**

GDP is the aggregate used most frequently to represent the economic size of countries and, on a per capita basis, the economic well-being of their residents. International organisations use these aggregates when calculating member countries' contributions and when assessing their eligibility for aid grants or access to loans on favourable terms. For these purposes, international organisations convert national estimates of GDP to US dollars using exchange rates. International organisations also use these aggregates to make comparisons across countries when researching and analysing levels of economic performance, economic welfare, private consumption expenditure, investment, economic growth, overall productivity, energy consumption, emission of pollutants and selected government expenditures. For such comparisons, which are volume comparisons, international organisations convert national estimates of GDP to US dollars using PPPs.

#### **5. How to compare GDP?**

International volume comparisons of GDP depend on three conditions being met. The first is that the same definition of GDP is used in all countries being compared. The second is that the currency unit in which GDP is expressed is the same. The third is that the price level at which GDP is valued is the same. Generally, the GDP estimates of countries that are compiled in line with the international system of national accounts<sup>9</sup> meet the first condition, but they do not meet either the second or third condition since they are expressed in national currency units and are valued at national prices. PPPs allow the last two conditions to be met.

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<sup>7</sup> Exchange rate converted data are misleading on the relative size of economies. They overstate the size of economies with relatively high price levels and understate the size of economies with relatively low price levels.

<sup>8</sup> Some more educated than others. See, for example, *China's Economic Performance in an International Perspective*, Ren Ruoan, Development Centre Studies, OECD, Paris, 1997.

<sup>9</sup> *System of National Accounts 1993*, Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank, 1993.

## **6. Why not use exchange rates?**

Before PPPs became available, exchange rates had to be used to express GDPs of countries in a common currency for the purpose of international comparison. The assumption underlying this practice is that exchange rates reflect the relative prices of domestically-produced goods and services in different countries. However, many goods and services, such as buildings and government services, are not traded between countries. Moreover, other factors, such as relative interest rates and capital flows between countries, also have a significant impact on exchange rates and their influence is such that exchange rates do not adequately reflect the relative purchasing power of currencies in their national markets. Hence, when GDPs of countries are converted to a common currency using exchange rates, they remain valued at national prices and reflect not only differences in the quantities produced in the countries, but also differences in the price levels of the countries.

## **7. Why use PPPs?**

PPPs are currency conversion rates that both convert to a common currency and equalise the purchasing power of different currencies. In other words, they eliminate the differences in price levels between countries in the process of conversion. This means that a given sum of money, when converted into different currencies by means of PPPs, will buy same volume of goods and services in all countries. Conversely, the sums of national currency needed to purchase a given volume of goods and services in different countries will all equal the same amount of common currency when PPPs are used as conversion rates. Hence, when GDPs of countries converted to a common currency using PPPs, they are revalued at “international prices” and reflect only differences in the volume of goods and services produced.

## **8. What are needed to calculate PPPs?**

Comparisons for the OECD Programme are made from the “expenditure” side, that is private consumption, government consumption and investment. Hence, the calculation of PPPs requires each country participating in the comparison to provide a set of national annual average prices and a detailed breakdown of national expenditures. The prices should be for a selection of products chosen from a common basket of goods and services; the expenditures should be broken down by commodity group according to a common classification. Both prices and expenditures should refer to the year of the comparison and both should cover the whole range of goods and services included in final expenditure on GDP. The prices supplied by countries must be for items that are representative of their final expenditure on GDP and are comparable between countries, while the prices themselves should be consistent with the methods of valuation used to estimate the expenditures, that is they should be market prices. Failure to observe any of these three requirements will result in either an underestimation or an overestimation of volumes.

The data requirements of the OECD-China bilateral comparison are given in Table 1. All the data sets listed in the Table, except the detailed CPIs for the seven cities, are needed by the OECD to

effect the comparison. The detailed CPIs are used by the seven cities to adjust average survey prices to annual average prices.

## **9. How are data collected in countries co-ordinated by the OECD?**

Final expenditure on GDP consists of six major aggregates: private final consumption expenditure of households, final consumption expenditure of non-profit institutions serving households, government final consumption expenditure, gross fixed capital formation, increase in stocks and the balance of exports and imports.

Detailed price and expenditure data are required for three of these aggregates: private final consumption expenditure of households, government final consumption expenditure and gross fixed capital formation. For the other three aggregates - final consumption expenditure of non-profit making institutions serving households, increase in stocks and the balance of exports and imports - only aggregated expenditure data are required. No price data are collected for these aggregates and they are not covered by the common basket of goods and services.<sup>10</sup>

The common basket of common goods and services is actually three baskets: one for private final consumption expenditure of households covering consumer goods and services, one for gross fixed capital formation covering equipment goods and construction projects and one for government final consumption expenditure covering the various collective and individual services<sup>11</sup> provided by government. Products selected from these baskets are priced as follows:

- Prices of consumer goods and services<sup>12</sup> are collected over three years, with one third of the basket priced each year. Price collections for the 1999 round started in 1997 and finish in 1999. Organisation of the price collections is the responsibility of the national statistical services. Two surveys are conducted each year, one in each half of the year. Countries report national average prices for the survey month. The OECD subsequently centres these prices on the year of the comparison - which for the 1999 round is 1999 - using detailed temporal price indices providing by the countries.
- The prices of capital goods are collected in the year of the comparison. Countries report national mid-year (July) prices. The pricing of equipment goods is undertaken by the national statistical services. Most countries conduct special surveys of producers of domestic products and of distributors of imported products. The pricing of construction projects has to be done by experts

<sup>10</sup> "Reference PPPs" are used for these aggregates. The PPPs for private consumption expenditure of households are used for final consumption expenditure of non-profit institutions serving households, special PPPs covering both consumer goods and equipment goods are calculated for increase in stocks, and exchange rates are taken as PPPs for balance of exports and imports.

<sup>11</sup> Collective services are those that benefit the community as a whole and include general public services, defence, public order and safety, economic affairs, environment protection and community amenities. Individual services are those that benefit identifiable households and include health, education, social protection, recreation and culture.

<sup>12</sup> Except rents and medical goods and services. Rent data are not surveyed specifically for the comparison, but extracted from rent surveys or censuses of housing. The prices for medical goods (including pharmaceuticals) and services are obtained from the government or quasi-government bodies responsible for the pricing of such goods and services. Countries report either market prices when products are unsubsidised or quasi-market prices, that is without subsidies, when they are.

outside the national statistical services, usually by another government or quasi-government agency or by private consultants.

- Prices collected for government services cover compensation of employees only. Countries report the average compensation<sup>13</sup> paid in the year of the comparison to those working in selected occupations in government, in public health and in public education.

Because estimates of GDP become available sometime after the period to which they refer, expenditure data are collected in the year following the year of the comparison (that is 2000 in the case of the 1999 round). Countries provide a detailed breakdown of national expenditure by commodity group for the latest year available which may not necessarily be the same as the year of the comparison. This breakdown is applied to the latest estimates for GDP and the main expenditure categories available for the year of the comparison at the time of calculation.

Data on exchange rates and population are also required for the year of the comparison. The exchange rates are the annual averages of daily market or central rates; the population totals are those available to the OECD at the time of the calculation.

## **10 How will data be collected in the seven cities?**

Overall responsibility for the collection, editing and averaging of price and expenditure data will rest with the NBS. Within the seven cities, all price collections, except those for construction capital goods, will be carried out by their Statistical Bureaux. The pricing of construction projects will be undertaken by outside experts. It has still to be decided whether these experts will be based centrally in Beijing or locally in each city. The detailed estimates of final expenditure on GDP required for the seven cities will be provided by their Statistical Bureaux.

The pricing of consumer goods and services will start in Q1 2000 and finish in Q2 2001. Six price surveys will be conducted:

- Survey I covering clothing and footwear in Q1 2000;
- Survey II covering durable goods in Q2 2000;
- Survey III covering food, beverages and tobacco in Q3 2000;
- Survey IV covering services in Q4 2000;
- Survey V covering personal transport equipment and other goods and services in Q1 2001;
- Survey VI covering furniture, glassware and tableware in Q2 2001.

After each survey, the Statistical Bureaux will edit the individual price quotations collected for each product surveyed. Basically this will involve insuring that the balance of outlets at which the product has been priced is representative for the type of products being surveyed, that price

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<sup>13</sup> In addition to gross salary, compensation included employer's contributions to social security, pension and life insurance schemes. When such schemes are unfunded, employer's contributions are imputed in line with the national accounting practices followed by the country.

collectors have priced the same products, that the prices for observed quantities have been correctly converted to prices for specified quantities and that the individual price quotations for each product all fall within an acceptable range. After editing, the Statistical Bureaux will calculate an average survey price<sup>14</sup> for each product and adjust it to an annual average price using details from their CPIs. The average annual prices will be sent to the NBS where they will be averaged across the seven cities to obtain seven-city average prices<sup>15</sup> for 1999. Prior to averaging, the NBS will verify that the seven cities have priced comparable products and that the annual average prices provided by the cities for each product fall within an acceptable range.

Equipment goods and construction projects will be priced in Q1 2000. However, they are to be priced using the prices of July 1999. Because of limited resources, only 70 to 100 equipment goods (instead of 200) and three construction projects (instead of nine) will be surveyed. The editing of the prices and the calculation of seven-city average prices will be undertaken by the NBS.

The methodology and timing of the surveys covering rents, medical goods and services and government services has still to be decided. The quantity approach<sup>16</sup> will probably be used for rents. It has to be verified whether the OECD selection of medical goods and services can be priced in China. It also has to be ascertained whether the OECD selection of occupations in government, public health and public education can be identified in China.

Both the aggregate and detailed estimates of final expenditure on GDP for the seven cities will be prepared by their Statistical Bureaux. This will be done between Q4 2000 and Q2 2001. The starting point will be the estimate for total GDP from the production side. Separate estimates will be made for the following aggregates: private final consumption expenditure of households, final consumption expenditure of non-profit institutions serving households, government final consumption expenditure, gross fixed capital formation and, perhaps, increase in stocks. The balance of exports and imports will be estimated as a residual. The estimates for private final consumption expenditure of households, government final consumption expenditure and gross fixed capital formation will need to be broken down into 164, 13 and 33 commodity groups respectively.<sup>17</sup>

The provisional timetable for the OECD-China bilateral comparison is shown in Table 2.

## **11. How will PPPs be calculated?**

(Still under discussion.)

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<sup>14</sup> A simple average of the edited individual price quotations.

<sup>15</sup> These will be weighted averages. Initially the weights will be population shares, but later, when detailed expenditure data become available, the weights will be expenditure shares.

<sup>16</sup> The quantity approach involves estimating volume directly using indicators of quantity and quality; the PPP is then derived using the volume measure. It is the reverse of the price approach in which the PPP is calculated using price data and the volume derived using the PPP.

<sup>17</sup> It may be necessary to reduce the number of commodity groups. However, any reduction will be consistent with the OECD expenditure classification.

**12. Publication of results**

(To be discussed. Probably mid-2002.)



Table 1. OECD-China Bilateral Comparison: Data Requirements for 1999

Survey	Data Set	OECD	NBS
I	Clothing including repairs; Footwear including repairs; Household textiles and repairs.	National average annual market prices	Seven-city average annual market prices
II	Major household appliances and repairs; Recreational equipment and accessories; Durable toilet articles and their repair.	National average annual market prices	Seven-city average annual market prices
III	Food; Beverages; Tobacco.	National average annual market prices	Seven-city average annual market prices
IV	Maintenance and repair of dwelling; Water charges; fuel and power; Operation of transport equipment; Purchased transport services; Communication; Entertainment, recreation and culture; Books, newspapers, other printed matter; Education fees.	National average annual market prices	Seven-city average annual market prices
V	Personal transport equipment; Household operation; Domestic services; Personal care services; Non-durable toilet articles; Goods n.e.c.; Restaurants, cafés, canteens and hotels; Financial services n.e.c.; Other services n.e.c.	National average annual market prices	Seven-city average annual market prices
VI	Furniture, floor coverings and repairs; Glassware, tableware, household utensils and repairs	National average annual market prices	Seven-city average annual market prices
VII	Medical goods and services	National average annual (quasi) market prices	Seven-city average annual (quasi) market prices
VIII	Rents	Quantity data for bridge countries	Quantity data for seven cities
IX	Compensation of employees in general government, public education and public hospitals	National average annual compensation	Seven-city average annual compensation
X	Equipment goods and construction projects	National average prices for July	Seven-city average prices for July
XI	GDP: details	National expenditures for 1998 or 1999	Seven-city expenditures for 1998 or 1999
XII	GDP: aggregates	National expenditures for 1999	Seven-city expenditures for 1999
XIII	Detailed CPIs	National	For each of the seven cities