

City populations

Measuring the urban millions

by Kam Wing Chan

“Virtually overnight, Chongqing has become the largest city not only in China but in the world,” *Time* magazine proclaimed in 2005. This is an odd statement because Chongqing is not generally considered the largest city in China – at least not in the meaning of “city” as we normally understand it. Common confusion over the true population size of Chongqing and other Chinese cities reflects the fact that China has highly complex and confusing urban and city statistical data. Making sense of these statistics – the basis for calculating per capita urban incomes and therefore estimating the size of consumer markets – is essential for producing an accurate analysis of China’s economy and business environment.

What is clear enough is that China has the world’s largest urban population. The National Bureau of Statistics (NBS) reports that the urban population grew to nearly 600m by the end of 2007, accounting for about 45% of the nation’s 1.32 bn inhabitants. The statistics become murkier, however, when we move down to individual cities. Two major causes of the statistical confusion are the multiple indicators used to define city/urban populations and a rather complicated urban administrative system. The situation is entangled further by the continuing rapid economic and social changes in the country and the periodic adjustments of its administrative and statistical systems.

Studying city development requires delimiting cities within meaningful geographical boundaries. All cities of any size contain a continuous built-up area, and many have nearby residential and industrial suburbs. Many large cities, especially in developed countries, also have an extensive daily commuting zone closely related functionally to the urban core. The urban core and the commuting zone combine to form the metropolitan area.

Cities made of grass

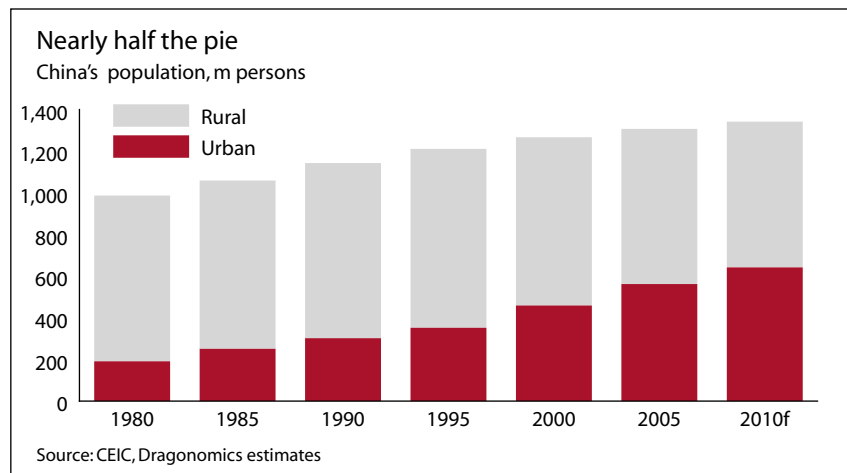
As in other countries, a Chinese city or municipality (*shi*) is an administrative unit. Confusion over urban population sizes arises because the boundaries of large Chinese cities typically encompass an urbanized core (high-density built-up area) surrounded by numerous scattered towns and large stretches of rural territory, usually with dense farming populations. These cities are so large in area that they are more aptly called regions. The most extreme example is Chongqing, which has an administrative area of 82,300 sq km (about the size of Austria) and a resident population of around 32m. Clearly this figure does not represent the true metropolitan population because more than two-thirds of the employed workers in Chongqing are engaged in agriculture.

Kam Wing Chan is professor of geography at the University of Washington. He gratefully acknowledges the help of Richard L. Forstall for his comments and assistance.

Understanding Chinese definitions of what constitutes a city is vital for all economic and business analysis

China already has the world’s largest urban population

Many Chinese cities include large agricultural populations



There are two main ways to define urban areas in China: by administrative boundaries or by objective criteria such as the density of population and buildings. In Chinese cities, administrative boundaries and objectively urbanized zones overlap, often confusingly. A Chinese municipality comprises two types of administrative jurisdictions, “city districts” (*shiqu*) and counties (*xian*). Typically, most of the *shiqu* are objectively urbanized. The counties are mostly rural but may contain urbanized pockets, often referred to as “towns.”

For most big cities, the actual population is significantly bigger than the registered population

The situation is complicated further by the important official distinction between two groups of individual Chinese citizens, those with local residence permits or *hukou* and those without (see “*Hukou* system: still going strong”). Although population statistics based on the number of local *hukou* holders are issued every year and are widely available, they do not show the actual population of cities. The numbers are, however, often mistakenly used as such. For almost all major cities, the *hukou* population is smaller than the actual population, which includes migrants whose *hukou* remains back in their original community. In some cases, such as in the well-known migrant city of Shenzhen, the differences are huge. Shenzhen’s 2000 population with local *hukou* was only 1.3m, whereas the 2000 Census, based on exactly the same geographic boundary, reported a *de facto* resident population of 7m. The gap between Shenzhen’s *hukou* and actual population continues to expand, rising from 5.7m in 2000 to 6.3m in 2005.

In summary, a Chinese city’s population number may refer to any one of the following:

- The entire administrative municipality, including both city districts and counties.
- The city districts alone.
- The urbanized areas within the city districts.
- The population of city *hukou* holders (for any of the three geographic definitions above).

Four ways to slice it

Actual and registered (*hukou*) populations of China's 10 largest cities in 2000, m persons

| | Municipality (city districts plus counties; actual) | City districts (actual) | City districts: urban areas (actual) | City districts (registered) |
|-------------|--|----------------------------|--|--------------------------------|
| 1 Shanghai | 16.4 | 14.4 | 13.5 | 11.4 |
| 2 Beijing | 13.6 | 11.5 | 9.9 | 9.7 |
| 3 Guangzhou | 9.9 | 8.5 | 7.6 | 5.7 |
| 4 Wuhan | 8.3 | 8.3 | 6.8 | 7.5 |
| 5 Tianjin | 9.9 | 7.5 | 6.8 | 6.8 |
| 6 Shenzhen | 7.0 | 7.0 | 6.5 | 1.3 |
| 7 Chongqing | 30.5 | 9.7 | 6.2 | 9.0 |
| 8 Shenyang | 7.2 | 5.3 | 4.6 | 4.9 |
| 9 Chengdu | 11.1 | 4.3 | 4.0 | 3.4 |
| 10 Dongguan | 6.5 | 6.5 | 3.9 | 1.5 |

Source: 2000 Census

The third definition, which is closest to the concept of “urban agglomeration” used by the United Nations, is considered a reasonable way to define the population of a city. This definition clearly supports the commonly held view that Shanghai is China's biggest city. Chongqing (6.2m), far from being the world's largest city, only ranked seventh in China with a population less than half that of Shanghai (13.5m) in 2000.

A question of definition

Officially, the national urban population is the aggregate of the urbanized areas of cities and towns. This approach yields an urban population of 562m (43% of national population) in 2005, up from 459m in 2000 – implying an annual increase in the Chinese urban population of about 21m. The vast majority of experts agree this is a reasonable way to define the urban population, although some consultants have raised serious doubts about that claim (one extreme survey estimated China's true urban population at 350m in 2005).*

In 2006, the National Bureau of Statistics (NBS) adopted a new urban definition to give a better estimate of the actual urban population. The new definition uses smaller population units to differentiate more precisely between urban and rural areas, and relies more on urban physical extent than on administrative geography. This change had limited net statistical impact at the national level: under the new definition, the urban population reached 594m (45% of the population) in 2007, an increase of 32m or 5.7% over the 2005 urban population. But some individual cities showed greater sensitivity to this definitional change. One example is Dongguan, a major export-processing city in Guangdong with a dispersed urban-industrial spatial pattern. Based on the population of the city's urbanized areas, Dongguan's population grew from 3.9m in 2000 to 4.8m in 2005 under the 2000 definition, averaging about 4.3% per year. The urban population based on the new definition leapt by 20% to 5.7m in 2006. However, most cities are likely to show smaller population growth under the new definition.

New counting methods have led to major revisions of city populations

*UBS, *How to Think About China*, Part 7 (2008 Edition), p.9.

Seeking the average Zhou

Per capita GDP of China's 10 largest cities, Rmb

| | 2000 Calculated using registered pop'n | 2000 Calculated using actual pop'n | 2006 As reported in yearbook |
|-----------|--|--|------------------------------------|
| Shanghai | 36,100 | 28,600 | 59,300 |
| Beijing | 23,900 | 20,300 | 52,000 |
| Guangzhou | 38,200 | 25,400 | 67,400 |
| Wuhan | 16,100 | 14,500 | 45,500 |
| Tianjin | 20,400 | 18,600 | 52,000 |
| Shenzhen | 133,300 | 23,800 | 69,500 |
| Chongqing | 8,800 | 8,100 | 17,100 |
| Shenyang | 19,300 | 17,700 | 45,800 |
| Chengdu | 19,900 | 15,500 | 39,300 |
| Dongguan | 32,100 | 7,600 | 39,500 |

Source: China City Statistical Yearbooks 2001 and 2007

Most new additions to urban populations are low-income migrants from the countryside

Definitional changes and different statistical approaches to calculating urban populations matter because they can have a huge impact on economic planning and investment decisions. Multiple city population statistics in use in China serve different administrative, fiscal and statistical purposes – and failure to differentiate or interpret them correctly can result in highly distorted, if not outright erroneous, analysis.

Many business analysts, for example, see the large and growing urban population as a potentially enormous mass consumer market. But since the bulk of China's present and likely future urban population growth comes from net migration from rural areas (including reclassification of the rural environs as cities expand), most new additions to the city population are low-income migrants from the countryside. Their situation is often aggravated by institutional discrimination and exclusion through the *hukou* system. Equating the expansion of the urban population with the growth of the middle class is simplistic. On the contrary, one could argue that since the urban newcomers are mostly poor migrants with little chance of assimilating into the urban population, China may well face an urban underclass rising to 250m within 10 years if the past trend continues.

Dodgy data

Choosing carefully the appropriate population statistics to represent the city is critical when generating per capita indicators. City population itself can represent market size, while per capita GDP is frequently employed as a yardstick of a city's economic well-being or its average consumer purchasing power. Since per capita GDP in China is a major indicator used to assess the performance of local government officials, there is also considerable political incentive to skew the per capita GDP numbers upwards (which can be done by understating the population).

Many efforts at calculating citizens' wealth have been seriously flawed by using the wrong population measure

Numerous studies comparing the competitiveness or productivity of cities in China have used the wrong city population numbers to generate per capita GDP and other measures. Many have applied the *hukou* population to compute per capita urban GDP, unaware that this population statistic

does not encompass all city residents and in some cases may include only a minority of the true population. According to calculations based on official data, for example, GDP per head in Shenzhen in 2000 was an astronomical RMB133,305 (US\$16,097) – a ludicrous figure derived by counting only registered residents in a city largely populated by migrant workers.

In an attempt to solve this problem, NBS demanded that all per capita GDP statistics published from 2005 onwards be based on the actual rather than *hukou* population. Judging from the data for the 10 largest cities for 2005 and 2006 published in *China City Statistical Yearbooks*, this move has successfully pulled Shenzhen's and Dongguan's per capita GDP numbers into line. Yet problems remain with the data for many other cities. Per capita GDP for Guangzhou (2005), Tianjin (2006) and Shenyang (2005 and 2006) was still calculated on the basis of the *hukou* population, producing inflated results. Even more unsystematic, Wuhan's 2006 per capita GDP actually used a base that excluded four of its city districts.

All this is evidence that, while national urban population figures are broadly accurate, individual city population numbers remain a statistical

All per capita GDP figures must be treated with caution

Hukou system: still going strong

The industrialization strategy pursued by China during the Maoist era was based on strictly controlling rural-to-urban migration. The major means for doing this was the *hukou* or household registration system, set up in 1958. Under this system, all citizens were classified as either urban or rural residents. Urban residents (also called "non-agricultural population") had state-guaranteed food, jobs, housing and access to an array of subsidized welfare and social services. Rural residents had very few of these perquisites and had to rely on themselves or their collectives. In essence, the *hukou* system functioned as an internal passport system, similar to the *propiska* system used in the former Soviet Union.

Since the early 1980s, development of markets and the demand for cheap factory labor led to easing of some migratory controls. Rural migrants are now allowed to work in cities, mostly in low-end jobs shunned by many urban residents, but they are not eligible for basic urban social services and education programs. This group (called "rural migrant labor") was estimated at about 132m in 2006, most of whom lived in cities. This two-tier system of urban citizenship and the unequal treatment of the migrant population have drawn much concern and criticism both within China and outside.

In response, in recent years China has initiated a number of reforms to the *hukou* system. Those reforms have been widely interpreted as steps toward abolition of the *hukou* institution. For example, a *New York Times* headline in 2005 proclaimed: "China to Drop Urbanite-Peasant Legal

Differences." This is a misunderstanding: most of the changes in the *hukou* system since the late 1990s have had only a marginal impact on the system's foundation – the separation of the population into two segments (loosely, rural and urban) – and discrimination based on that.

Actual changes in recent years include some devolving of the *hukou* system to local control, and the partial opening of city *hukou* to those with money or professional skills. Instead of the central government, city governments now approve the granting of local *hukou* for their jurisdiction. Cities have granted *hukou* mostly to wealthy individuals able to purchase a high-end apartment or make large business investments, or to those who have a degree or professional qualifications. Spouses and children of existing residents with local *hukou* may also be eligible. This has produced some easing in the *hukou* migration system for these select groups. Moreover, in some cities farmers in the urban periphery who have become landless through requisitioning are compensated by city *hukou* with partial welfare benefits. A handful of cities also experimented with plans in the early 2000s to allow some qualified migrant laborers to acquire city *hukou*. But these experiments were very limited in scope and were all soon withdrawn.

For the 100m-plus mostly poor rural migrant laborers, the chance of getting city *hukou* has not improved. The criteria for gaining city *hukou* set by local governments under the more "entrepreneurial" approach are clearly beyond the reach of most peasant migrants.

minefield. The result is that per capita GDP figures cannot be taken at face value in China. For economists and businessmen alike, careful research to understand what such numbers really represent is crucial before cranking the data.

How many houses?

The combination of strong urban population growth and the birth of the commercial housing market in the late 1990s created a housing boom that has been one of the principal drivers of China's economic growth over the past eight years. A severe slowdown in the housing market in early 2008 was one of the main contributors to the sudden economic slump later in the year.

To estimate the likelihood of a property market recovery – a crucial component of a more general economic recovery – we need to know the underlying demand for housing. In general terms, of course, a lot of people will move into the cities over the next couple of decades and this will create demand for new housing. But how many units, exactly, will need to be built? And is the current rate of construction higher or lower than the underlying demand? Unfortunately, available data make it hard to answer this question.

A simple way to estimate urban housing demand is to take the annual increase in urban population and divide by three (the average urban household size). Official data show that the average annual increase in the urban population in the years 2000-05 was 21m; in 2006-07 this figure dropped to 16m. This implies that through 2005 average underlying new housing demand could have been as high as 7m units, but that it dropped to 5.3m units in the latter two years.

This is unlikely to be correct. Chinese statisticians changed the way they counted urban population in 2006, to exclude people who had previously been classified as city-dwellers (because of expanding urban administrative boundaries) even though in reality they still lived in the countryside. In other words, the apparent decline in the rate of urban population growth in 2006-07 may simply have been the result of the adoption

of a more accurate – and more restrictive – statistical definition of “urban.” The true rate of people taking up urban residence may have stayed the same or even increased. Or it may have decreased – but by a smaller amount than the official numbers suggest. Since the urban population data before and after 2005 are non-comparable, it is hard to know for sure.

The bad news is another piece of data suggests the rate of true urban population growth may indeed have declined sharply in 2006-07. The annual rise in the number of people holding non-agricultural *hukou* fell from an average of 17m in 2000-05 to just 11m in 2006-07. The vast majority of people with non-agricultural *hukou* are urban, and so far as we know this annual data series is more consistent over time than the urban population figure because it is based on actual registrations (although coverage has changed somewhat because of recent *hukou* reforms).

But there are problems with this calculation too. The non-agricultural *hukou* count fails to capture more than a quarter of the true urban population: migrants who have retained agricultural *hukou*, or people with no *hukou* at all. The slowdown in the rise of non-agricultural *hukou* holders could simply mean that city governments were making it more difficult to swap one's original agricultural *hukou* for a non-agricultural one. And it is hard to square these statistics with the widespread on-the-ground impression in the boom years of 2006-07 that villages were emptying out and all their residents were moving to the cities. The questions of how many new urban households are created each year, and how much new housing they require, still await a definitive answer.

– Kam Wing Chan & Arthur Kroeber