May 2014

Will China's Economy Surpass the United States in 2014?

For *Century Weekly*

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In late April the World Bank released the most recent update of its program to compare national economies, covering 2011 (the previous one covered 2005), with the gratuitous suggestion that at recent growth rates China's GDP would probably exceed that of the United States later this year, to become the world's largest national economy. Expected Chinese jubilation, where ranking is routine and being #1 is usually highly sought after, did not materialize. Instead, Chinese reaction was muted and critical. One senior Chinese official downplayed the suggestion, observing that China is not yet ready to take on the responsibilities of the world's largest economy. Articles in *China Daily*, China's official English-language newspaper, dismissed the claim as being based on seriously flawed interpretation of the published data.

Who is right? In this case, in my view, the official Chinese reaction is correct. To explain why, we need to delve into the somewhat technical aspects of the data underlying the claim, which is based on something called "purchasing power parity."

Gross domestic product (GDP) is the measure of an economy's total production of goods and services, eliminating the double counting that would occur if we just added up total sales (cotton into cloth into shirts). Of course, for each economy total output is measured in the currency of that economy, USD for the United States, rmb for China. To compare two countries, we need to convert their GDP into the same currency, e.g. rmb into USD. What rate of exchange should we use? It is natural to use the exchange rate that everyone uses in trade between the two countries, or to purchase assets across borders – in mid-2014 that would be 6.2 rmb/USD, slightly more for 2011.

This widely used exchange rate is flawed if one wants to compare standards of living between the two countries, particularly between rich and relatively poor countries. Many of the items that people purchase are not involved in foreign trade. Haircuts is the classic example, but the list is long, including even the local service component (rents, wages of retail clerks) involved in selling internationally traded goods. In poor countries, wages are lower than in rich countries, and so therefore are the prices of labor-intensive services. A haircut is a haircut (skilled barbers would dispute this). To allow for this phenomenon, economists compute a purchasing power parity (ppp) exchange rate between two countries, one that equates the prices of a specified bundle of goods and services in the countries being compared.

(This is a laborious and expensive process: specifying the appropriate bundle of comparable goods and services, finding market prices for them at roughly the same time, doing that for many locations in large countries, and finding common weights for the diverse prices on the basis of expenditure patterns, which typically differ from country to country.)

Typically, the ppp exchange rate will differ from the market exchange rate, as any traveler can observe. Switzerland and Norway seem very expensive to American travelers, while India and Egypt are very cheap. There is a general pattern: the poorer the country, the more undervalued is the market exchange rate compared with the ppp rate. On the recent World Bank calculations, the ppp rate for China was 3.5rmb/USD, compared with a market exchange rate during 2011 of 6.46rmb/USD.

Thus, at market rate per capita GDP in China was $5456 in 2011, measured in USD, or 11 percent of the comparable US figure of $49,782. This makes China's standard of living look suspiciously low. But at the ppp rate per capita GDP in China was $10,054 in 2011, just over 20 percent of the American level, a more reasonable comparison. So purchasing power parity has a valid role, although the requirements mentioned above – choosing and pricing comparable goods and services, choosing appropriate weights – mean it is necessarily a rough approximation.

Although it is tempting, it is extremely misleading to extrapolate this ppp rate for comparing household standards of living to comparing total GDP between two countries. This is for at least three reasons. First, expenditure weights (e.g. of food in the typical household budget) differ significantly from country to country. Any choice of weights (often a geometric average) is necessarily arbitrary, yet it makes a significant difference (by a factor of 1.7 in the case of China and the United States). Moreover, applying US prices to Chinese goods and services would lead to a substantial alteration in the expenditure patterns in China, away from goods and services that are much pricier in the United States than they are in China, thus altering China's GDP.

Second, in large sectors of modern economies (especially government and education) it is difficult to measure output, so those components of GDP are typically measured as inputs, e.g. wages of teachers and government employees, including soldiers. The ppp exchange rate in effect imputes US wages to Chinese teachers, government employees, and soldiers, who lack the huge stock of equipment enjoyed by US soldiers.

Third, if the labor market functions well, the marginal product of labor in the market for non-traded goods and services will be similar (controlling for skill of workers) to what it is in the production of traded goods. If they are low in the latter, they will be low in the former, and that is properly reflected in measurement of GDP.

The relative size of open economies in the modern global economy is best measured using market exchange rates, perhaps smoothed over several years to iron out erratic short-term movements (not relevant in the case of China). That is the "price" at which cross-border investment takes place, at which goods are sold, and at which labor is indirectly sold via the goods and services that they produce. At market exchange rates, China's GDP was 47 percent that of the United States in 2011. Even with higher growth rates China will not reach US GDP until well into the next decade.