



VOL. 6, NO. 6
JUNE 2011

Economic Letter

Insights from the
FEDERAL RESERVE BANK OF DALLAS

Will China Ever Become as Rich as the U.S.?

by Mark A. Wynne

Many countries have expanded at a rapid pace for long periods. But as they get richer, their growth rates tend to slow and they can't attain the U.S. standard of living.

Twenty years ago, a visitor to Beijing would have been struck by the bicycle's popularity as a form of mass transportation. Today, auto congestion and pollution on the increasingly clogged roads of China's capital city are pervasive features. In a little more than three decades, China has transformed itself from a largely closed agrarian society to an urban exporting nation commonly viewed as the workshop of the world.

At current growth rates, China will be the world's largest economy sometime in the next decade. But will it ever be the richest? Though providing a definitive answer is difficult—at least in terms of standard of living—examining how China and other developing economies grow offers insight into how, with maturity, these nations may approach the technological leadership and, by extension, the standard of living of the U.S.

Gross domestic product (GDP), a measure of everything produced within a country's borders, is the most widely available means of calculating just how rich a country and its citizens are.¹ In 2010, China's GDP was 14.12 trillion yuan (measured in 1990 yuan to control for inflation), according to the nation's statistical office; U.S. GDP was \$13.25 trillion (measured in 2005 dollars to control for inflation).

Two adjustments are required to compare the two numbers and determine which economy is bigger. We set a common year for both price series and convert them to a common currency unit. The simplest approach is to measure GDP in U.S. dollars at 2005 prices and use 2005 exchange rates. Doing so results in estimated 2010 Chinese GDP of \$3.88 trillion in 2005 dollars, or just less than 30 percent of U.S. GDP. China's economy will exceed that of the U.S. in 2025 if it continues expanding at its past-decade rate of just more than 10 percent a year and the U.S. keeps



growing at the 1.7 percent annual rate it experienced during the period.

Per capita GDP allows us to compare the relative well-being of residents of the two nations. Based on the 2010 U.S. population of 309 million, per capita GDP was \$42,874 last year. China, with a 2010 population of 1.34 billion, had per capita GDP of \$2,893 last year, or 6.7 percent of the U.S. figure.

Making Cross-Country Comparisons

However, such comparisons are problematic, especially when comparing living standards across countries. For such questions economists prefer to use so-called purchasing power parity (PPP) exchange rates rather than market exchange rates. Purchasing power parity entails adjusting exchange rates so that each currency can purchase a like amount of goods. These rates take into account that many so-called nontraded goods (items exclusively produced for home-country consumption) are a lot cheaper in poorer countries and allow a more accurate comparison of living

standards across nations. The most recent estimates, compiled by researchers at the University of Pennsylvania for 2009, put China's per capita GDP in 2005 U.S. dollars at \$7,634, or about 18 percent of the U.S. sum of \$41,099 that year. That is up from 8 percent of the U.S. level in 2000.

So, is it likely that Chinese living standards will ever match those in the U.S.? To get a handle on this question, it is useful to look at other countries' experiences over a long period. Many nations underwent development miracles in the latter half of the 20th century. Reviewing data on the evolution of global living standards over the period reveals two interesting facts. First, there are several countries where per capita GDP exceeds that of the U.S., often by significant amounts. Almost all of these nations are oil exporters. For them, per capita GDP may not accurately measure living standards because a significant component of economic activity involves depleting the country's natural resources or wealth. Thus, we exclude those nations from the analysis.²

Second, other countries with per capita GDP significantly exceeding the U.S. level are generally small, with large, offshore financial centers. Given the well-known difficulties associated with determining financial-sector output, per capita GDP in such nations may not accurately measure living standards. So we also exclude them.³

Assessing an Initial Growth Spurt

Chart 1 is a scatter plot of the growth rate of real (inflation adjusted) per capita GDP against the level of per capita GDP for a large group of countries.⁴ Specifically, it shows the average growth rate over one decade against the level of real per capita GDP at the beginning of the decade.

Basic growth theory suggests that poor countries should grow more rapidly than rich countries. That is, the lower the level of per capita GDP at the beginning of a decade, the faster a country should expand over the following 10 years. And, indeed, this is generally what the chart shows. Note that some poor countries experienced growth disasters: Despite low levels of per capita GDP, living standards declined over 10 years or more. Excluding these observations from the sample, the tendency of growth to slow as countries get richer becomes more apparent.

Chart 2 shows how successful various countries have been at catching up to the U.S. Each point represents an observation for a single country for a single year.

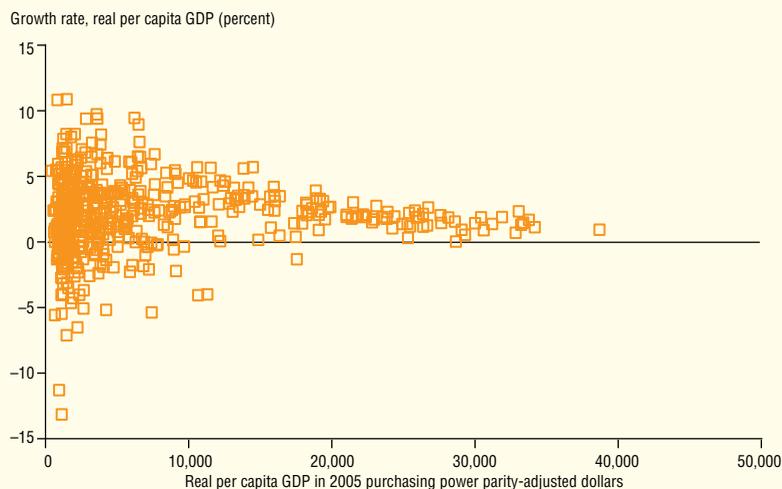
We measure real per capita GDP in PPP dollars on the horizontal axis, while on the vertical axis we show per capita GDP as a percentage of U.S. per capita GDP. What is striking about the figure is that many countries come close to achieving U.S. standards of living, but essentially none achieve parity.

This is even more apparent in Chart 3, which for comparison presents data for the wealthy, non-U.S. (G-7) countries and China. There was a period of rapid growth following the

Chart 1

Per Capita GDP Growth Slows as Countries Develop

(Ten-year average growth rate versus level of real per capita GDP, 1950–2009)



NOTE: Each square represents a single country over a decade.
SOURCES: Penn World Tables, version 7.0; author's calculations.



destruction of World War II when living standards rose in countries such as Japan, Italy and France. But none of them caught up with the U.S. The chart reveals just how far China has to go to match the standards of living currently enjoyed by the citizens of these countries.

Failing to Reach the U.S.

Why do countries fail to reach U.S. living standards? Therein lies something of a mystery. Economists speak of a middle-income transition, or middle-income trap, where previously rapidly growing economies slow down dramatically and never achieve the same standard of living as the technological leader. The reasons for this are unclear. It may be that policies appropriate for one stage of development are less effective at later stages and that the institutional structure lacks the agility to adjust as circumstances change.

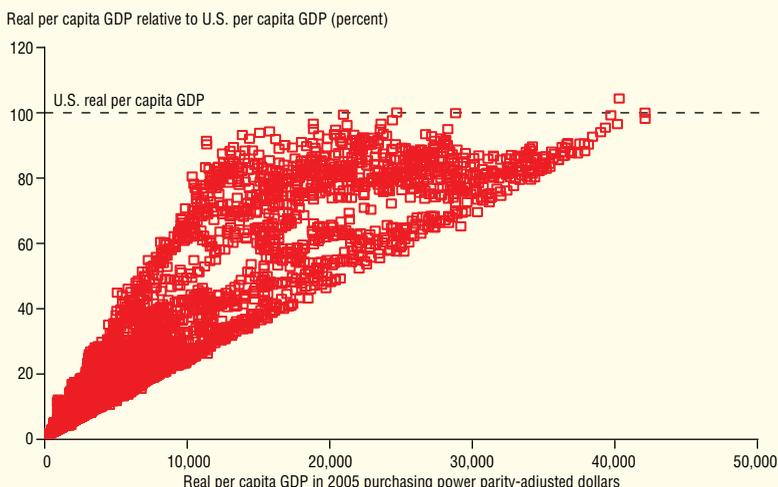
In a recent paper, economists Barry Eichengreen, Donghyun Park and Kwanho Shin examined a large number of growth slowdowns over the past 50 years (declines in per capita GDP growth rates of at least 2 percentage points from rates of at least 3.5 percent per annum).⁵

The economists looked for factors correlated with these declines. They found that the slowdowns tend to occur when per capita GDP reaches about \$17,000 in 2005 PPP-adjusted dollars and when per capita GDP reaches about 58 percent of per capita GDP in the lead country. Maintenance of an undervalued exchange rate also appeared correlated with the slowdowns.

Barring some major shock, it appears China's economy will inevitably become larger than that of the U.S. sometime in the next decade. In many ways, this simply reflects the sheer size of China's population, currently more than four times that of the U.S. population. Even so, a lot of uncertainty remains about whether individual Chinese citizens will ever be as rich as their American counterparts.

Chart 2

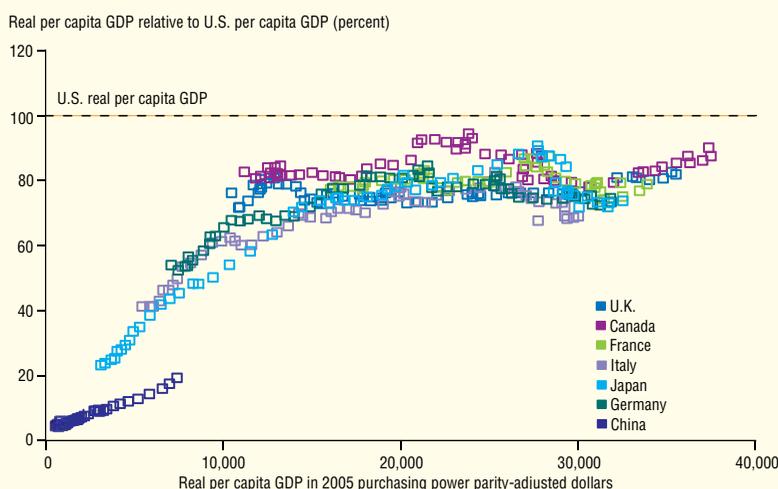
Countries Approach but Don't Surpass U.S. Per Capita GDP (Data for the period 1950–2009)



NOTE: Each square represents a single country over a one-year period.
SOURCES: Penn World Tables, version 7.0; author's calculations.

Chart 3

G-7 Members and China: Catching Up with the U.S.? (Data for the period 1950–2009)



NOTE: Each square represents the country over a one-year period.
SOURCES: Penn World Tables, version 7.0; author's calculations.

Considering the Future

As noted, many countries have expanded at a rapid pace for long periods. But as they get richer, their

growth rates tend to slow and they can't attain the U.S. standard of living. For most of the 20th century, the U.S. defined the technological frontier to

which other countries could aspire. That remains the case today, and absent any major policy errors in the U.S., it should continue.

In 1820, China was responsible for about one-third of global GDP, while the U.S. accounted for just 1.8 percent. So, the likely shift in relative size in the next decade is in some ways simply a return to what we previously experienced.⁶ Even then, U.S. living standards were twice those of China. If China were to become the first country to completely close the gap with the U.S., it would mark a significant break with development patterns observed over the past half-century.

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Notes

Special thanks to Payton Odom for research assistance.

¹ The ideal way to calculate wealth would involve computing the value of all assets owned by a country's citizens. This accounting would include the value of the country's natural resources, the accumulated stock of physical capital and the value of foreign investments. But such measures are hard to come by, and instead we often resort to more readily available proxies, such as the amount of income annually generated or produced.

² The countries specified as oil exporters are the same ones the International Monetary Fund so designates in its *World Economic Outlook* publication: Algeria, Angola, Azerbaijan, Bahrain, Republic of Congo, Ecuador, Equatorial Guinea, Gabon, Iran, Kazakhstan, Kuwait, Libya, Nigeria, Norway, Oman, Qatar, Russia, Saudi Arabia, Sudan, Syria, Trinidad and Tobago, United Arab Emirates, Venezuela and Yemen. We also exclude Brunei Darussalam because of the large size of its natural gas sector relative to GDP.

³ The countries excluded are those designated offshore financial centers by the Financial Stability Forum, namely Antigua and Barbuda, the Bahamas, Bahrain, Barbados, Belize, Bermuda, Costa Rica, Cyprus, Hong Kong SAR, Ireland, Lebanon, Luxembourg, Macao SAR, Malta, Marshall Islands, Mauritius, Panama, Samoa, Seychelles, Singapore, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Switzerland and Vanuatu.

⁴ See Penn World Table Version 7.0, by Alan Heston, Robert Summers and Bettina Aten, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, May 2011.

⁵ See "When Fast Growing Economies Slow Down: International Evidence and Implications for China," by Barry Eichengreen, Donghyun Park and Kwanho Shin, National Bureau of Economic Research Working Paper no. 16919, March 2011.

⁶ See *Chinese Economic Performance in the Long Run, Second Edition, Revised and Updated: 960-2030 AD*, by Angus Maddison, Paris: Organization for Economic Cooperation and Development, 2007.

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