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OUT WITH THE BRICS, TIME FOR THE TIMBIS

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THE LAST DECADE has seen the arrival of emerging markets, and investors and pundits alike have shown unbounded excitement about the BRICs—Brazil, Russia, India, and China—as the new sources of the world's economic growth.

However, a focus on the BRICs is already out of date. In half of these countries, demographic patterns have shifted, and the future of the world's growth now looks set to come from a different set of emerging economies, the TIMBIs: Turkey, Indonesia, Mexico, Brazil, and India.

China, which many Americans see as surging ahead of America, holds center stage among the BRICs. A simple extrapolation of current growth trends shows China's economy overtaking that of the U.S. within a decade or two. Moreover, recent purchasing power parity adjustments and currency adjustments to take account of rural prices have led some analysts, such as Arvind Subramanian of the Peterson Institute for International Economics, to suggest that China's real output is already comparable to that of the U.S.

But while these adjustments are useful in judging levels of consumption or poverty in China, they do not address the real issue in regard to the global economy—how much of the world's oil, minerals, manufactures, and services can China buy using the value of its output on world markets. For that, we need to focus on output measured at current market exchange rates. By that measure, the GDP of the United States is still over two and a half times that of China.

Even by that measure, however, extrapolating the trends of the past decade, with China's economy growing at 10 percent per annum and the U.S. growing at 2 percent, China's economy would push ahead of America's in 15 years. Yet simple extrapolation is an economists' poorest guide to the future. What is needed to map out the future is to understand what factors have caused China's rapid growth, and then ask whether those factors will continue has they have in the past.

China's growth has been propelled by several factors—rapid expansion of the labor force, a huge increase in the productivity of that labor force stemming from increases in urbanization and education, an enormous construction boom in infrastructure and urban growth, and rapid expansion of exports fueled by a combination of cheap domestic energy resources and rapid consumption growth in China's major export markets. Yet every single one of these factors will be incapable of sustaining the growth over the next 30 years that they have shown in the last 30.

From 1980 to 2010, as a result of the pro-natalist policy pursued by Mao Zedong prior to 1980, China's labor force was among the fastest growing in the world. China's population aged

15–59 grew by 64 percent in these three decades, an average of 1.7 percent per year, contributing by itself almost one-fifth of China's annual economic growth. Urbanization—a key source of the increase in the productivity of China's labor force, as shifting workers from rural pursuits to urban manufacturing and services brought huge increases in output per worker—grew at a rate of 4.3 percent per year, as urban population went from 20 percent to 45 percent of China's total population. Education—yet another key element in increasing productivity—similarly underwent a rapid boom. From 1998 to 2004, undergraduate enrollment increased from 3.4 to 13.3 million, an annual increase of 25 percent per year! In 2009, China's colleges and universities produced over 6 million new graduates. Western-style PhDs awarded increased from just 19 (!) in 1985 to 50,000 in 2006. These trends helped underwrite annual growth rates of 10 percent per year.

Yet these trends cannot continue at this rate, and indeed have already begun to reverse. Labor-force growth ceased in 2010 (a recent legacy of Deng Xiaoping's one-child policy), and China's working-age population will *decline* by over 9 percent by 2040. This shift from 1.7 percent annual growth to *minus* 0.33 percent annual growth will, by itself, assuming all else remains equal, knock two percentage points off China's annual growth potential. Moreover, urbanization—perhaps the main driver of productivity increase—will decline even more. The United Nations Population Division projects that China's urbanization will continue, going from 45 percent of China's population today to 67 percent by 2040, as an additional 360 million people move to the cities. Yet as an annual rate of urban growth, this is only a 1.5 percent annual increase—a slowdown of about two-thirds from the rate of 1980–2010. And as for educational growth, that has clearly reached a limit. Twenty percent of China's college-age youngsters are in colleges and universities, a remarkable number for what is still a predominantly agrarian and blue-collar economy. China this year announced it will limit the growth of doctoral programs, and the biggest concern of college graduates in China is that their numbers have increased much faster than the economy can employ them, as white-collar jobs are proving extremely hard to find.

With urbanization slowing, the labor force going into decline, and college education levels probably at a peak for the near future, the demographic drivers of China's recent productivity increase will be lacking in the future. While the parallels are not exact, a warning comes from Japan, which previously brandished the specter of coming economic domination. From 1950 to 1990, Japan's workforce grew rapidly, nearly doubling in that period. While not growing as fast as today's developing countries, this was still faster than the growth of the workforce in the United States during the same period. A rapidly growing generation of young workers with better education, new skills, and great geographic and social mobility propelled Japan forward. Yet in 1990, Japan's labor force ceased growing, and has since been aging and declining. The last 20 years have seen first a decade of stagnation and then a 10 percent decline in Japan's labor force; exactly the trajectory that China faces from 2010 to 2020 (stagnation of the labor force) and then from 2020 to 2040 (a 10 percent decline). From 1990 to 2010, Japan's median age rose by 8 years from 37 to 45, and the number of young people entering the labor force and college age (aged 15–24) fell sharply from 19 million to 12 million, or from 18.7

percent to 11.4 percent of the over-15 adult population. In China, between 2010 and 2030, median age is projected to increase by 7 years, from 34 to 41, while the number of those aged 15–24 is projected to decline by over 50 million, from 21 percent to 14.6 percent of the adult population—changes in magnitude very similar to those experienced by Japan in the last two decades. In fact, the fraction of China's population that is elderly—over age 60—will nearly double from 12 percent of the population in 2010 to 23 percent in 2030. This is an even greater proportional increase than that experienced by Japan from 1990 to 2010, when the fraction of population 60 and older rose by two-thirds, from 17 percent to 30 percent.

Of course, China's population in 2030 will still be somewhat younger, have a smaller overall fraction of elderly, and will still be more actively urbanizing and industrializing, than Japan in 2010. So while Japan's demographic slowdown was associated with a complete end to growth and two decades of stagnation, China's similar demographic slowdown will most likely not lead to a complete halt in growth. But it almost certainly will lead to a relative slowdown compared to the period of demographic boom from 1980 to 2010.

With demographic trends no longer so favorable to growth, China's productivity gains will have to come primarily from increasing capital per worker and innovation in technology. China's leaders understand this all too well, but the prognosis is not good. A recent report by IBM on international use of the latest business technologies placed China at 83rd out of 134 countries—as against 43rd for India and 58th for Brazil.[1] Authoritarian countries have never been a flourishing base for innovation; new ideas come from free thinkers who question authorities and existing ways of doing things—hardly a welcome sight in China. The treatment of Nobel Laureate Liu Xiaobo indicates that freedom of expression is not on the agenda for China's leaders.

China faces other obstacles as well. Its past growth has relied on fast-rising exports to richer countries—merchandise exports rose in value by 14 percent per year from 1980 to 2000 and by 25 percent per year from 2000 to 2008; at the latter date the value of China's merchandise exports were 30 percent of total GDP. Yet this growth pace cannot be sustained as the economies of Europe, South Korea, and Japan undergo what will likely be sustained slowdowns with their own aging and stagnating populations, while the U.S. must focus on reducing its debt and trade deficit. Shifting to domestic consumption-driven growth, while already underway, will be a slower process that is unlikely to sustain double-digit growth, since today's Chinese are—relative to their western counterparts—much more vigorous savers than consumers. Barring a massive and highly unlikely increase in government programs to finance education, housing, health care, and pensions, Chinese will continue to save a large portion of their income for precisely these needs.

In addition, the raw materials to fuel China's growth will undoubtedly grow more expensive, and will increasingly have to be imported. According to the U.S. Energy Information Administration, China was self-sufficient in oil up to 1990, and even in 1999 its net imports were

[1] Susanne Dirks and Mary Keeling, IBM Institute for Business Value, *Russia's Productivity Imperative* (Somers, NY: IBM Global Services, 2009), p. 6.

only 1 million barrels/day. Yet in the next ten years, net imports more than quadrupled to over 4 million barrels/day; as of 2009, China had become the world's second-largest net importer of oil, while its own major oil fields are mature and production has peaked. To fuel its future growth, China will have to rely ever more heavily on expensive imported oil—and at $100 per barrel, even today's level of imports would cost China 3 percent of its current GDP.

Together, urbanization and labor-force growth likely contributed about one-third to one-half of China's recent economic growth; higher education perhaps another point or so. So China's future economic growth will depend mainly on increasing productivity in manufacturing and services through increased capital investment and technological innovation, and for goods and services aimed mainly at its own internal markets rather than for richer countries abroad. But while there are certainly opportunities there (commercial banking and other services are woefully underdeveloped), as long as China remains fundamentally authoritarian, technological innovation is likely to remain sluggish. Even if technology-driven productivity growth in manufacturing and services is maintained at a fairly robust 3 percent per year, with only slight augmentation from further urbanization, slower growth in export markets, and facing the headwind of an aging population and shrinking labor force, it would be surprising if China's economic growth from 2010 to 2030 exceeded 5 percent per year.

Russia, another of the BRICs, faces demographic problems even greater than those of China. High mortality from its crisis in public health, plus Russia's participation in the general European trend to lower fertility, means that its labor force will also start shrinking after 2010—indeed the UN Demographic Division projects Russia's 15–59 age population to fall by one-quarter by 2040. With that projected labor-force decline, for Russia to sustain a 5 percent rate of annual growth in the economy would require that productivity per worker increase by 6 percent per year—as opposed to the 2007 level of productivity growth, which was 1 percent.

Other drivers of growth are weak. Russia is not a diversified economy. Although it is a leader in global arms exports and is making progress in software, its other products are not internationally competitive. Fully 25 percent of GDP comes from oil and gas revenues. The slowdown in global oil and gas consumption in 2008–2009 had a disastrous impact on the Russian economy, and worse consequences were only averted by Russia's wise provision of a stabilization fund accumulated from 2004 to 2007.

The rapid rise of oil prices from under $20 per barrel in the 1990s to an average of $65 per barrel in 2004–2008 (with a peak of $132 per barrel in 2007) provided not only a huge increase in income but a one-time windfall available for investment in other sectors of the economy. Even if oil prices remain high, that sudden leap in oil revenues will not be repeated; and moreover Russia's oil output has been stagnant in recent years. Moreover, Russia's dominant position in the European market for natural gas is now projected to have competition from large domestic reserves of shale gas found in Europe.

Russia already has a well-educated labor force; improvements in productivity will have to come mainly from new technology and effective capital investments. But both are lacking in Russia today. The IBM report on use of business technologies cited above ranks Russia 42nd out

of 70 countries in 2009 in e-business development, and 98th out of 134 countries in its use of the latest technologies by its companies—like China, far behind India and Brazil. Attracting foreign capital, and the efforts of domestic innovators and entrepreneurs, will require that investors be able to control their corporations and their profits and operate under a state-enforced rule of law. However, Russia is drifting toward a condition of endemic corruption and state predation that is the opposite of the required conditions for productivity improvement. The conduct of the recent trial and sentencing of former oligarch Mikhail Khodorkovsky will likely reinforce belief that Russia is not a nation of laws, but of state *dictat*; that is fatal for generating innovative entrepreneurship.

Russia's government and economy will likely be kept afloat as long as oil and gas prices remain high—and the booming market in emerging economies for those resources, competing with the world's rich nations, should provide high prices for some time to come. Yet that merely makes Russia a Saudi Arabia with snow. And while oil and gas prices are likely to stay high and may even climb, a tripling of prices—as occurred from 2000 to 2007—is not in the cards. Without that windfall, investment funds to drive growth in other sectors of the economy will be much scarcer. The good news for the Kremlin is that with one-quarter fewer people to keep pacified by 2040, their natural resource revenues will go even further in the future. But none of this will make Russia a center for future economic growth.

Both China and Russia have plans to pour resources into technology parks and efforts to force-feed innovation in order to ramp up their productivity. But the historical record of such efforts is not promising. Although China is rapidly boosting the number of patents it can claim, its patents are like its engineers—good at making incremental improvements, not at breakthroughs. Russia remains a country that can make good tanks and military fighters, but not good cars or televisions. India—with its advances in software, its world-beating steel industry, and innovative small cars—and Brazil—with its advanced ethanol flex-fuel technology, its leadership in deep sea drilling, and its successful commercial short-haul jets—look far more capable of innovating for market success.

In contrast to China and Russia, the potential for growth in Turkey, India, Mexico, Brazil, and Indonesia (the TIMBI nations) looks far stronger. All of these countries are democratic, have developed strong entrepreneurial cultures, and perhaps most significant, all will have continued strong growth in their labor forces in the coming decades.

If we consider the leading manufacturing nations in the G-20, the following countries will have *negative* labor force growth in the next 20 years: Germany, –20 percent; all of Europe (excluding Russia), –10 percent; Russia, –8 percent; Japan, –17 percent; South Korea, –15 percent; China, –9 percent. All of these countries will have to adjust to reduced demand for new housing, lower school enrollments, pension and health care costs rising steeply as a percent of GDP, and shortages of entry-level workers. By contrast, the TIMBI countries will have labor forces that are growing strongly from 2010 to 2030: Turkey, a gain of 18 percent; India, +28 percent; Mexico, +14 percent; Brazil, +10 percent; and Indonesia, +16 percent. As these countries upgrade their workforce, they will enjoy a multiplier or "demographic dividend"

similar to the one that Asian countries enjoyed in the last few decades, with new and larger cohorts of better-educated workers boosting productivity and output.

Of course, these countries face obstacles as well. Turkey risks running aground over internal conflicts regarding the role of Islam in society and the role of its large Kurdish minority (about 20 percent of the population). India faces threats of Hindu-Muslim strife, widespread rural uprisings in the northeast and vast inequalities among regions, as well as entrenched local corruption. Brazil faces daunting inequality, both between its poorer north and more developed south and within its vast cities. Indonesia has still-simmering regional conflicts, and parts of Mexico are near to being overwhelmed by drug violence.

Despite these problems, however, these countries have all turned in strong growth performances over the last decade. And unlike China and Russia, they have democracy and freedom—a powerful combination—on their side.

The United States will have that combination on its side as well. Its labor force is projected to increase by 7 percent over the next two decades (although much of that is from anticipated immigration). While that is a big drop from its labor-force growth in the past two decades (a 25 percent increase from 1990 to 2010), it is still positive, while China's will be negative. This suggests that the current obsession with how soon China's economy will overtake that of the United States is greatly overdrawn. In 2010, according to the IMF, China's economy was the 2nd-largest in the world, measured in current U.S. dollars, at $5.745 trillion to $14.624 trillion in the U.S. However, if China's growth rate slows down to an average of 5 percent per year from 2010 to 2030, as seems highly likely given the demographic and other obstacles it faces, and the U.S. economy grows at 2.5 percent per year, then in real terms China's economy will only grow from slightly more than one-third as large as the U.S. today to just under two-thirds as large in 2030. Note that the U.S. economy grew by 3.3 percent per year during the 1990s, then slowed to 2.5 percent per year in 2000–2007, so postulating a 2.5 percent growth rate for the U.S. going forward is a historically modest growth rate for America, and unlike China, the U.S. will still have a growing labor force and advantages in innovation. On these trajectories, the U.S. will still have a very comfortable margin in 2030 with a GDP of $24 trillion (in real 2000 U.S. dollars) to China's GDP of $15 trillion. Since after 2030, China's workforce will continue to plunge and age at a rapid rate, while that of the U.S. will continue to grow, there is no reason to expect China's relative gains to continue after that date, but even if those growth rates continue, China's economy would not draw equal that of the U.S. until almost 2050.

Of course, the United States could fail to return to even a 2.5 percent growth rate. If austerity leads to foolish cuts in public and private spending on research, higher education, and infrastructure; if America's university system—the crown jewel of its international competitiveness and a major source of its productivity and innovation advantages—is undermined by state budget shortfalls; if tax and regulatory reforms distort economic incentives and sap business instead of energize it; and if America turns its back on immigration and fails to attract the workers, innovators, and entrepreneurs of all faiths and regions that have flocked here in the past, then America's growth rate could falter. If America makes major strategic mistakes,

China could still overtake it.

None of this is to suggest that China will not be a strong competitor and an important global economic power. Even at 5 percent annual growth, China would remain the world's second-largest economy by a considerable margin, and after 2030 China would be producing slightly more annual net growth than the U.S., if from a smaller base. But the total economy of the United States would remain considerably larger.

While China will not overtake the U.S., the real story of emerging market growth over the next two decades will occur in the TIMBI countries, which will markedly shift their positions in the world economy. We can see this by projecting the growth in the TIMBI countries compared to other leading economies between 2010 and 2030, assuming growth rates of 5 percent per annum in real terms (measured in 2000 U.S. dollars) in the TIMBI countries—approximately their performance in the last decade, which will likely continue—and 1.5 percent per annum for the U.K., France, Germany, Italy, Russia, and Spain—all countries where the labor force will be rapidly aging and stagnating or shrinking after 2010. From 1995 to 2005, the rate of productivity growth in western European countries averaged 1.4 percent, and these countries now face substantial austerity and demographic reversals in the immediate future, so projecting even a real growth rate of 1.5 percent may be optimistic.

The big event will likely be Brazil overtaking Germany just after 2025 to become the world's fourth-largest economy (after the U.S., China, and Japan). India will overtake Italy in 2020, and surpass France and the UK by 2030, to become the sixth-largest economy. Mexico will overtake Spain and Russia by 2025, and Indonesia and Turkey will essentially catch up to Russia and Spain, going from less than half their size in 2010 to near equality in 2030.

The prognosis for the TIMBI countries is strengthened by the fact that all of them have diversified economies, with manufacturing, agriculture, and services all growing. Oil exports, which loom so large for Russia and were once crucial to Mexico and Indonesia, no longer play that role. Mexico's economy grew by 5.1 percent per year from 1995 to 2002, even as oil dropped from 62 percent of exports in 1980 to 7 percent of exports in 2000. Indonesia, whose economy grew by 6.5 percent per year from 2005 to 2009, became a very slight net oil importer (about 200 thousand barrels per day) during this period, due to surging domestic consumption to fuel its own growth.

Turkey is poised to benefit from its position at the fulcrum of Europe, the Middle East, and Africa, resuming its historic central role in Eurasian trade, while also being a huge supplier of goods and services to Central Asia, the Middle East, and Africa. Brazil not only has growing technological skills, but a huge lead in global energy competitiveness through its early adoption of sugar-cane ethanol for fuel, and still has vast reserves of arable land. India's leap directly to services and economic growth led by white-collar jobs in information technology positions it far better than China to ward off competition from other low-wage countries moving into manufacturing, such as Vietnam, Bangladesh, and Indonesia.

In sum, China and Russia are very differently positioned for the future, facing fundamentally different demographic trajectories and technical and trade opportunities, than the

TIMBIs. China's growth over the last three decades has propelled it to second place in the global economy, and it will continue to be a major player for some time to come, but its days of double-digit growth are numbered, and it will not overtake the United States in economic output for many decades to come. Russia will have to struggle enormously simply to maintain growth rates of 5 percent per year, and with stagnant oil output, new competition for European natural gas markets, a sharply declining work force, and few other dynamic sectors in its economy, even slower growth seems likely. For the next two or three decades, the major shifts in the world's economic rankings are liable to come from sustained growth in the democratic and entrepreneurial economies of Turkey, India, Mexico, Brazil and Indonesia. These are the countries now following the path of rapid industrialization combined with a demographic dividend that brought China, and before them Japan and South Korea, sustained rapid growth. Though smaller, they should collectively outpace China in economic output and growth in the near future. Thus the BRICs are out—look to the TIMBIs to lead the next major surge in global economic growth.

Data Sources:

Population, current and projections, in 15–59 age group from online World Population Prospects, 2008 revision, UN Population Division, http://esa.un.org/UNPP/index.asp?panel=2.

Urban population and growth projections from online World Urbanization Prospects, 2007 revision, UN Population Division, http://esa.un.org/unup/.

GDP in 2010 for various nations in 2000 U.S. dollars from IMF:

http://www.imf.org/external/pubs/ft/weo/2010/02/weodata/weorept.aspx?sy=2010&ey=2010&scsm=1&ssd=1&sort=country&ds=.&br=1&pr1.x=42&pr1.y=13&c=273%2C223%2C924%2C922%2C184%2C132%2C134%2C534%2C536%2C186%2C136%2C112%2C158%2C111%2C542&s=NGDPD&grp=0&a=

Chinese college enrollments from Wang Haiyan and Zhou Yuan, "The Evolving Role of Universities in the Chinese National System ofInnovation," paper presented at Universidad 2006, 5th International Congress on Higher Education, citing Chinese Official Ministry of Education data in Table 13.
http://docs.google.com/viewer?a=v&q=cache:69yK6emfxW0J:www.fpi.lu.se/_media/en/research/universidad06-china.pdf
and a Xinhua (Chinese News Agency) report http://news.xinhuanet.com/english/2008-05/01/content_8085708.htm.

Oil output for various nations from EIA (U.S. Energy Information Administration) website, http://www.eia.doe.gov/country/country_energy_data.cfm?fips=CH, and others.