THE EMERGENCE OF THE NEW ECONOMIC ORDER:

Growth in the G7 and the G20[1]

by

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and

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Abstract

The massive reconfiguration of the world economy over the next decade will lead to a New Economic Order by 2020. China will displace the U.S. as the world's leading economy and India will overtake Japan. This will shift the balance of the G20 from the leading industrialized economies of the G7 to the emerging economies, especially China and India. The rise of the Asian model of economic growth will underscore the importance of globalization and will shift the balance of the theory of economic growth from innovation to investment in human and nonhuman capital. The transformation of official statistical systems to reflect these changes is already underway around the world.

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Introduction.

Recovery from the Great Recession of 2007-2009 by the U.S., Japan, Canada and the four European economies of the G7 has been slow and fitful. The most important impact of the recession on the emerging economies of the G20 was the collapse of global trade in late 2008 and 2009, but this was quickly reversed. These economies have continued to grow much more rapidly than the world economy as a whole. While fiscal consolidations have become more pressing in the G7, both economically and politically, the international imbalances in the emerging economies of the G20 have been substantially reduced.

An obvious threat to the restoration of economic growth in the G7 is the financial and fiscal debt crisis in Europe and the inability of international institutions to cope with a financial crisis in large countries like Spain and Italy. Among the emerging economies of the G20 the challenges are different but equally daunting. Can China successfully cope with inflationary pressures following the vast expansion of lending in response to the financial crisis without a substantial slowdown? Will India be able to undertake a fiscal consolidation and deal with a more rapid inflation rate?

In this paper we shift attention from short-term threats to the world economy, as formidable as these may be, to growth potential over the next decade. The fundamentals of the world economy are strong. Moreover, it is time to recognize the trends that have developed since the watershed reforms of China and India more than two decades ago. Our theme will be that a massive reconfiguration of the world economy is gradually unfolding and will be completed in the next ten years. This will shift the balance within

the G20 away from the industrialized economies of the G7 and toward emerging economies, especially China and India, creating a New Economic Order.

The first major trend is that *during the next decade, 2010-2020, world economic growth will accelerate, relative to the past two decades, 1990-2010.* The recovery of the U.S. has recently slowed, but policy-makers have avoided the much-discussed "fiscal cliff". Europe is already in recession and may slow further, but the financial and fiscal crisis seems to be abating. While labor productivity growth in the G7 economies will nearly equal the pace of the past two decades, economic growth in these economies will encounter the formidable headwind of a decline of the labor force in Japan and much of Europe.

During 2010-2020 Chinese growth will slow relative to the rapid rate of the past two decades. However, growth in India will slightly accelerate and both economies will continue to grow much more rapidly than the world economy. As these economies increase in relative importance, the growth rate of the world economy will rise substantially, relative to the growth rate of 1990-2010. Overall, the growth rates of the G20 economies will be almost equal to that of the world economy, so that the decade of 2010-2020 will begin and end with the G20 accounting for about eighty percent of world GDP.

The second of the major trends in the world economy over the next decade is that *China will overtake the U.S. and India will overtake Japan*. One of the most heralded economic developments of 2010 was that China overtook Japan as the world's second largest economy. In terms of *purchasing power parities* this was no longer news. According to the World Bank's scorecard, China overtook Japan more than five years

earlier.[2] In 2010 China overtook Japan in terms of *exchange rates* rather than purchasing power parities. In 2012 India overtook Japan in terms of purchasing power parity and will continue to grow much more rapidly.

According to the authoritative estimates of the late Angus Maddison,[3] the U.S. has been the world's No. 1 economy for more than a century. However, China is growing much more rapidly than the U.S. and will continue to do so. When will China become No. 1? The International Monetary Fund's *World Economic Outlook* for October 2012 calls for parity between the two economies in 2017 in terms of purchasing power and our projections agree.[4] However, the U.S. and China made up more than a third of the world economy in 2010 and this proportion will increase by 2020, consolidating the rise of the G2, China and the U.S., as the world's leading economies.

The final long-term developments are that Russia will overtake Germany and Brazil will overtake the U.K., leading to a *New Economic Order in 2020: China, the U.S., India, Japan, Russia, Germany, and Brazil.* The emergence of Brazil, Russia, India, and China is hardly news. In 2001 Jim O'Neill, then a Goldman-Sachs economist, originated the terminology "BRIC economies". Ten years later he published a book documenting the progress of these economies.[5] The BRICs themselves have organized a sub-group that meets regularly before G20 meetings and recently added South Africa, a member of the G20 but not one of the larger emerging economies.

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[2] World Bank (2008), *2005 International Comparison Program*, February. See: http://siteresources.worldbank.org/ICPINT/Resources/ICP_final-results.pdf.

[3] Angus Maddison (2001), http://siteresources.worldbank.org/ICPINT/Resources/ICP_final-results.pdf Paris, Organisation for Economic Co-Operation and Development.

[4] International Monetary Fund (2012), *World Economic Outlook*, October. See: http://www.imf.org/external/pubs/ft/weo/2012/02/index.htm

[5] Jim O'Neill (2011), *The Growth Map: Economic Opportunity in the BRICs and Beyond*, New York, Penguin.

Sources of Economic Growth, 1990-2010

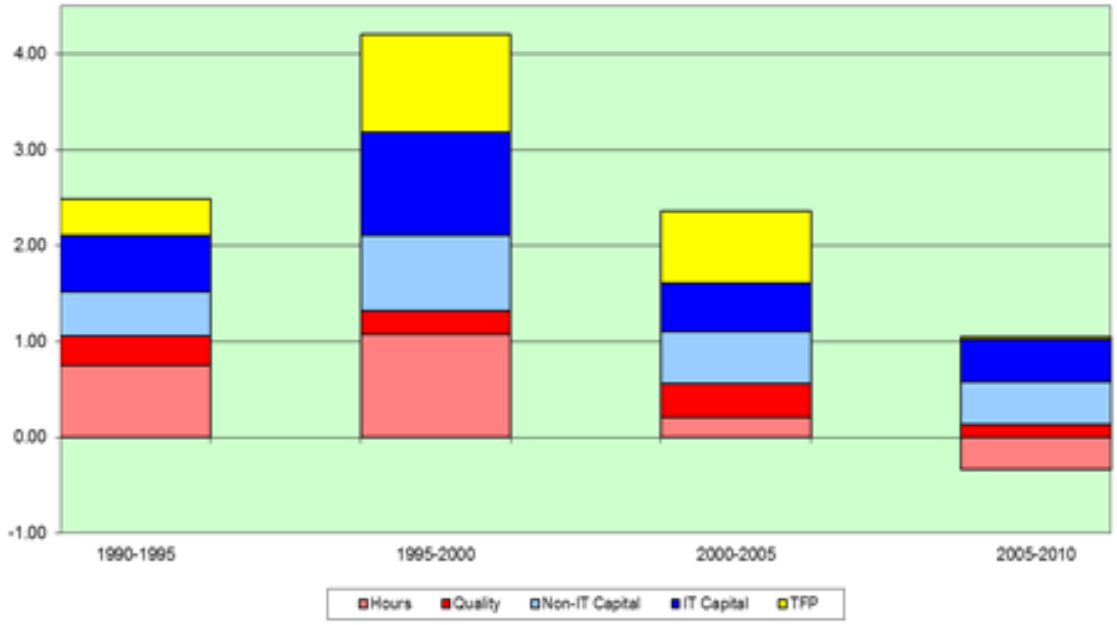
To prepare for our projections we first analyze the sources of economic growth for the G7, the G20, and the world economy. We consider fourteen major economies – the G7 economies, including the U.S., and seven emerging economies of the G20, including India and China. We have sub-divided the period 1990-2010 in 1995, 2000, and 2005 in order to capture major changes in the growth rate of the world economy. The period 1995-2000 witnessed a major acceleration in world economic growth. World growth further accelerated during 2000-2005. The period after 2005 was dominated by the economic and financial crisis of 2007-2009 in the advanced economies that still comprise a major proportion of the world economy. World economic growth continued at a rapid pace, but slowed relative to 2000-2005.

In measuring capital input, we distinguish between information technology equipment and software, which we call IT capital, and non-IT capital, including all the rest. Secondly, we divide the contribution of labor input between hours worked and labor quality. Hours worked reflects the mobilization of labor by increased labor force participation and higher rates of utilization of labor. Labor quality captures the contribution of human capital, accumulated through education and experience. For the world economy the growth of labor quality exceeded growth of hours worked in 1990-1995, but hours worked have grown more rapidly than labor quality since 1995.

Economic growth occurs through two different processes. The first is *replication* of existing technologies by hiring more workers and investing more capital. Growth of output increases in proportion to the growth of input, so that there is no contribution of growth in total factor productivity, the ratio of output to input. The second process is

Figure 1: Sources of U.S. Economic Growth

Annual percentage growth rates



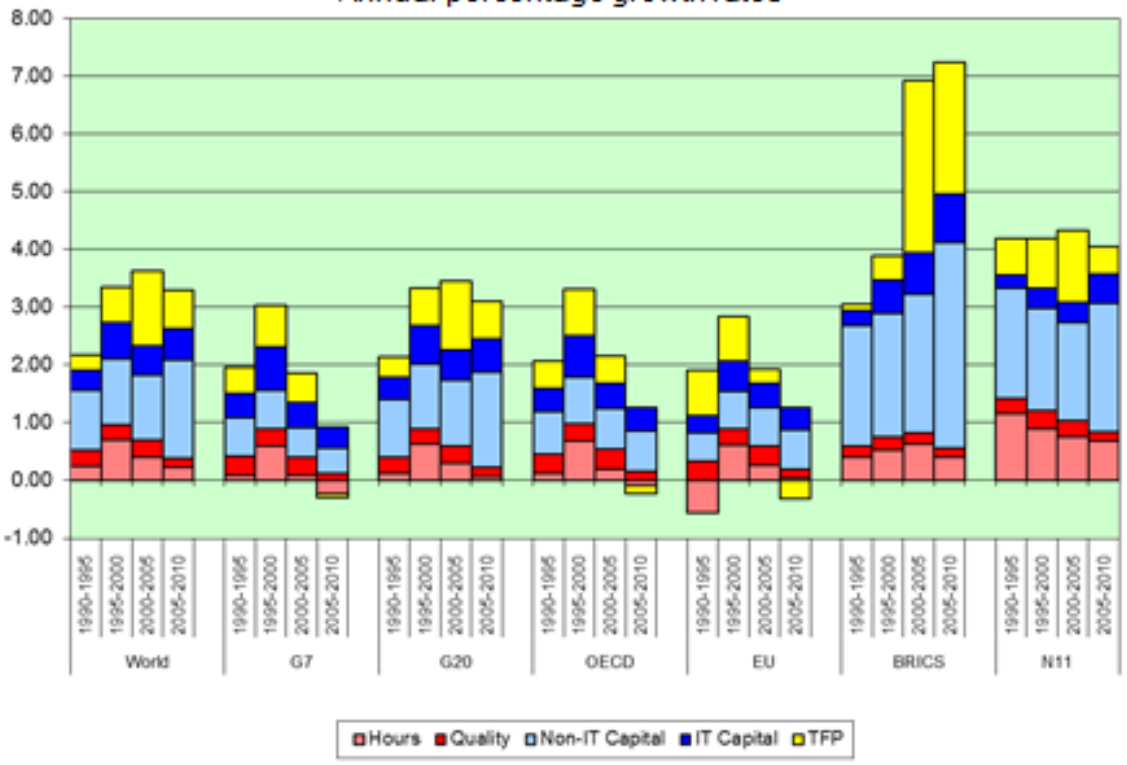
innovation through changes in technology. Obviously, this is far more difficult and much more risky. However, innovation holds out the promise of achieving increases in output that exceed the growth of inputs, so that total factor productivity rises. For the world economy, the G7, the G20 and the other groups of economies we consider, replication far outstrips innovation as a source of economic growth, as shown in Figure 1.

Total factor productivity growth for the U.S. and the advanced economies of the G7 was negative for 2005-2010, except for Germany and Japan. This poses a paradox: How could innovation, reflecting changes in technology, be negative? The world-wide financial and economic crisis of 2007-2009 opened a wide gap between actual output for the U.S. and other G7 economies and potential output, determined by supplies of capital and labor inputs and productivity. The actual level of output reflects the deficiency of aggregate demand that accompanied the crisis. Negative total factor productivity growth

is the difference between the positive effects of advances in technology and the negative effects of the widening output gap.

Figure 2: Sources of World Economic Growth

Annual percentage growth rates



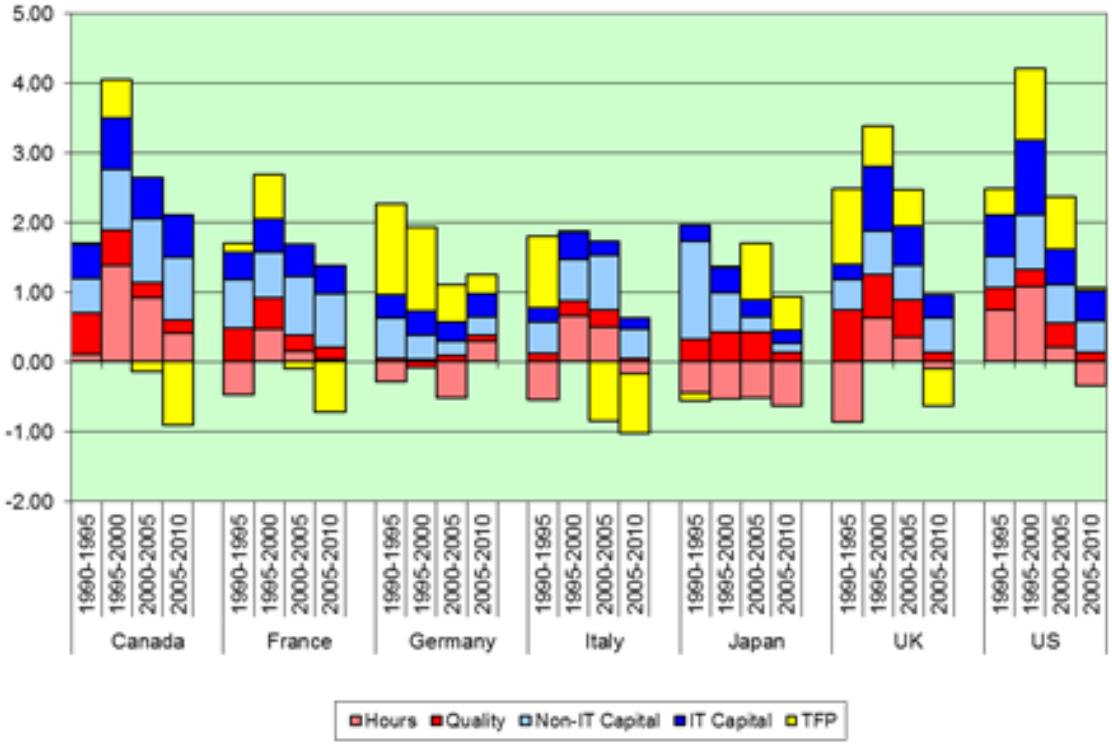
World economic growth has undergone a powerful revival since 1995, as depicted in Figure 2. The GDP growth rate jumped more than a full percentage point from 2.20 percent during 1990-1995 to 3.35 percent in 1995-2000 and then to 3.63 percent in 2000-2005. In 2005-2010 growth of GDP in the advanced countries of the G7 was slowed considerably by the financial and economic crisis of 2007-2009. The growth of world GDP decelerated to 3.30 percent. It is easy to appreciate the significance of more rapid growth by observing that GDP growth of 2.20 percent doubles world output every 32 years, while 3.63 percent growth doubles world output in less than 19 years.

Figure 2 summarizes the growth of the G7 advanced economies and the G20 (nineteen countries and the EU). We also consider the thirty-five economies of the OECD, the twenty-seven economies of the EU, the seven leading emerging economies, include the BRICs -- Brazil, Russia, India, and China -- but also Mexico, Indonesia, and South Korea. In the interest of brevity we refer to this group as the expanded BRICS. Finally, we also summarize growth of the N11, the next eleven economies in Jim O'Neill's classification. This group consists mainly of emerging economies, including Bangladesh, Indonesia, Pakistan, The Philippines, and Vietnam in Asia.

During the period 1990-2010 U.S. economic growth has been strong, relative to other advanced economies. This is due to capital deepening, increases in capital input per hour worked, especially during the information technology boom of 1995-2000. Growth

Figure 3: Sources of G7 Economic Growth

Annual percentage growth rates

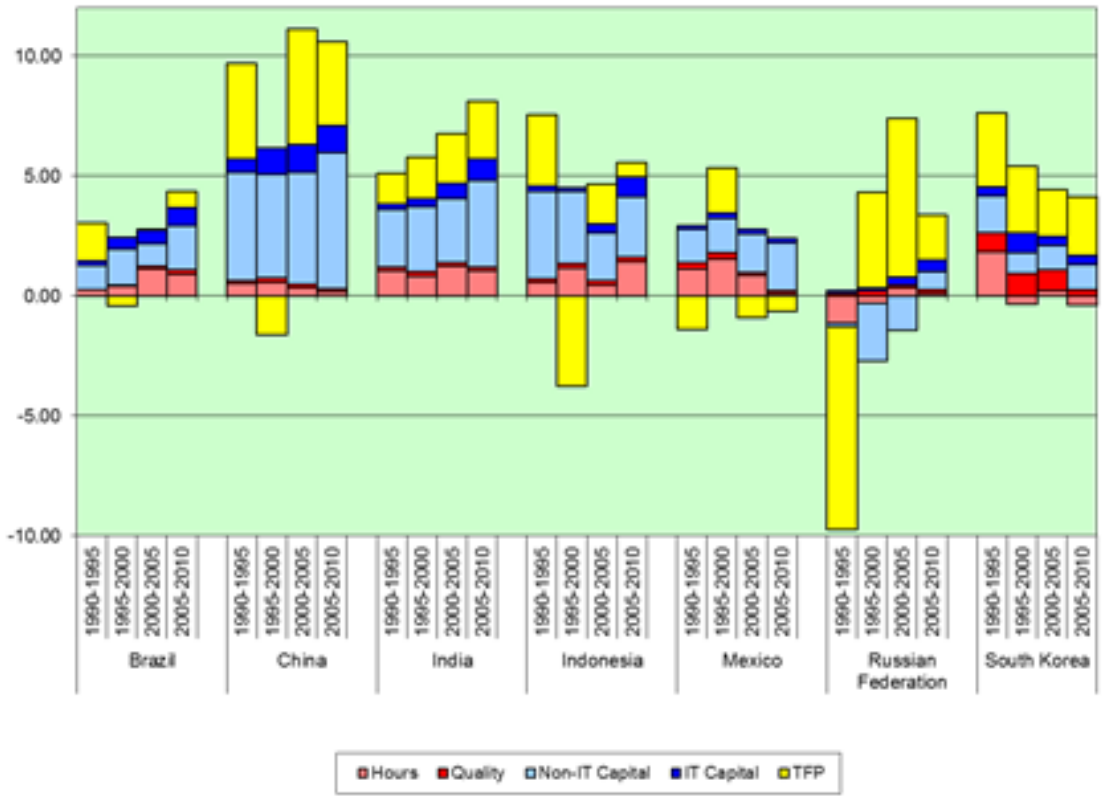


in total factor productivity revived during the boom and continued at a brisk pace in the "jobless recovery" of 2000-2005. The growth of U.S. GDP has been more rapid than that of any other economy in the G7 with only Canada close behind. However, U.S. economic growth collapsed during the period 2005-2010, largely due to the emergence of a gap between potential and actual GDP during the Great Recession.

Like the U.S., the advanced economies of the G7 were strongly impacted by the Great Recession of 2007-2009. In Figure 3 we analyze the sources of economic growth of the G7 during 1990-2010. Among the members of the G7 Germany had the strongest economic performance during the Great Recession with positive growth in total factor productivity and hours worked. Japan's productivity growth revived during the period 2000-2005 and this continued during 2005-2010. The revival of productivity growth was

Figure 4: Sources of BRICS Economic Growth

Annual percentage growth rates



largely offset by a declining labor force throughout the period 1990-2010. Italy had the weakest performance during the Great Recession and was unable to maintain positive economic growth.

China sustained double-digit economic growth throughout the decade 2000-2010 with only a slight deceleration during the Great Recession, as shown in Figure 4. India's growth rate rose steadily during the two decades 1990-2010. For both China and India capital input contributed more to economic growth than total factor productivity growth during these decades. Russia's economic growth during this period was dominated by the collapse of the former Soviet Union and the gradual recovery of 1995-2005. The decline in growth of Non-IT capital input from 1990 to 2005 is an unusual feature of Russia economic growth that was finally reversed after 2005.

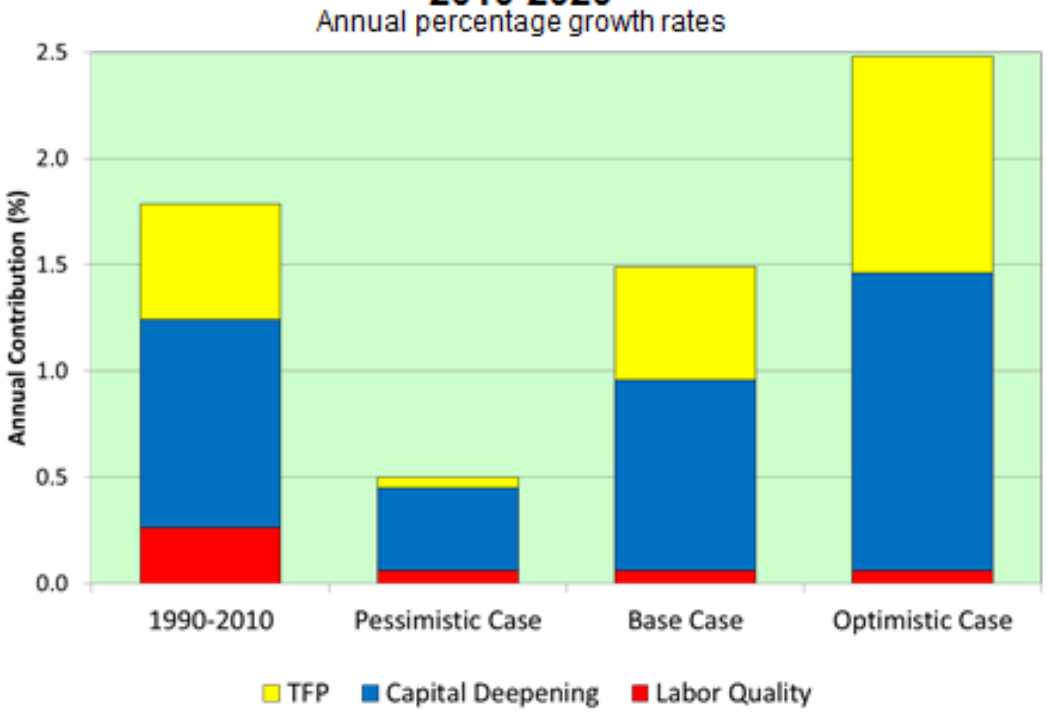
Projecting Economic Growth, 2010-2020

We have described our detailed methodology for projecting the growth of labor productivity and GDP in an earlier paper.[6] The driving forces in future economic growth are demography and technology. The contributions of hours worked and labor quality to potential economic growth can be projected with only a modest degree of uncertainty and are common to our alternative scenarios. Projections of the variables that describe technology are far more challenging. We consider three scenarios – Base Case, Pessimistic, and Optimistic – and label these the alternative assumptions.

We limit our projections to potential economic growth, leaving projections of actual growth to forecasters like the IMF with more country-specific information. We

[6] Dale W. Jorgenson and Khuong Minh Vu (2011), "The Rise of Asia and the New World Order," *Journal of Policy Modeling*, Vol. 33, Issue 5, September-October, pp. 698-751.

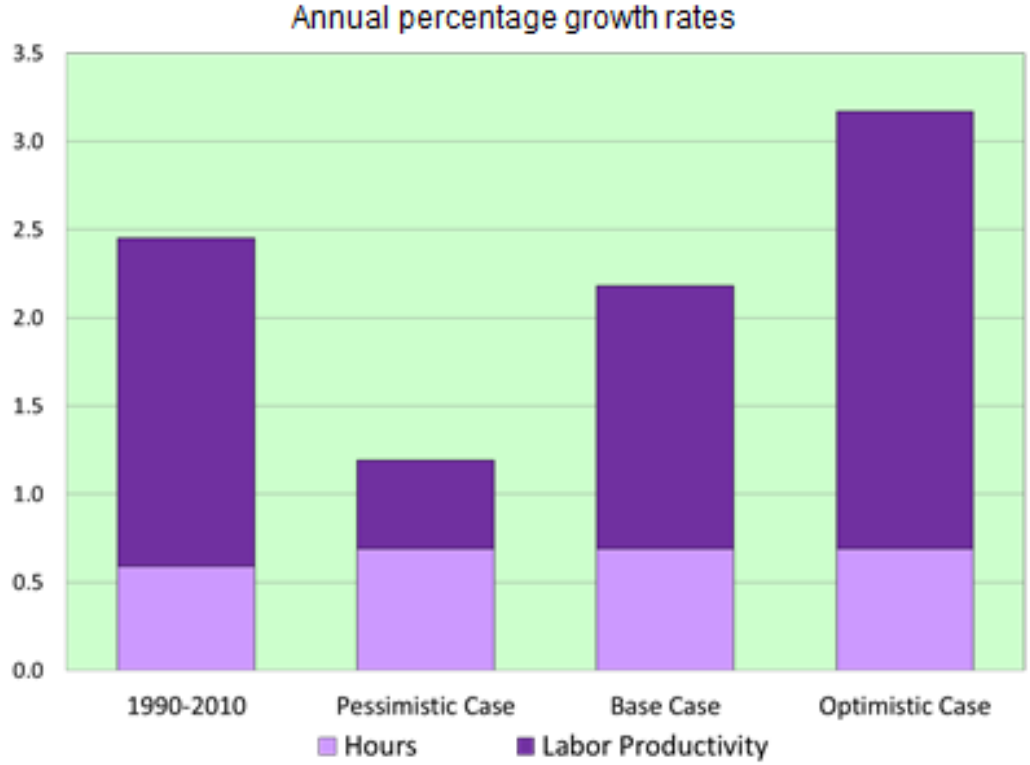
Figure 5: Range of U.S. Labor Productivity Projections, 2010-2020



have incorporated trends in demography and technology in the major countries. For example, the growth of the Japanese population and labor force will continue to be negative and France, Germany, Italy, Russia and South Korea will also began to experience negative labor force growth. The growth of the Chinese labor force will decline substantially and India's population will grow much more rapidly than China's.

We have tried to capture the uncertainty in the projections for the U.S. for 2010-2020 in Figures 5 and 6. Our Base Case projection of U.S. economic growth is 2.2 percent per year. This corresponds to labor productivity growth of 1.5 percent per year and growth of hours worked of 0.7 percent. The Pessimistic projection of U.S. growth of 1.2 percent per year is for a modest recovery from the slowdown of 2005-2010, due to more rapid growth of hours worked. By contrast the Optimistic projection for U.S.

Figure 6: Range of U.S. Potential Output Projections, 2010-2020

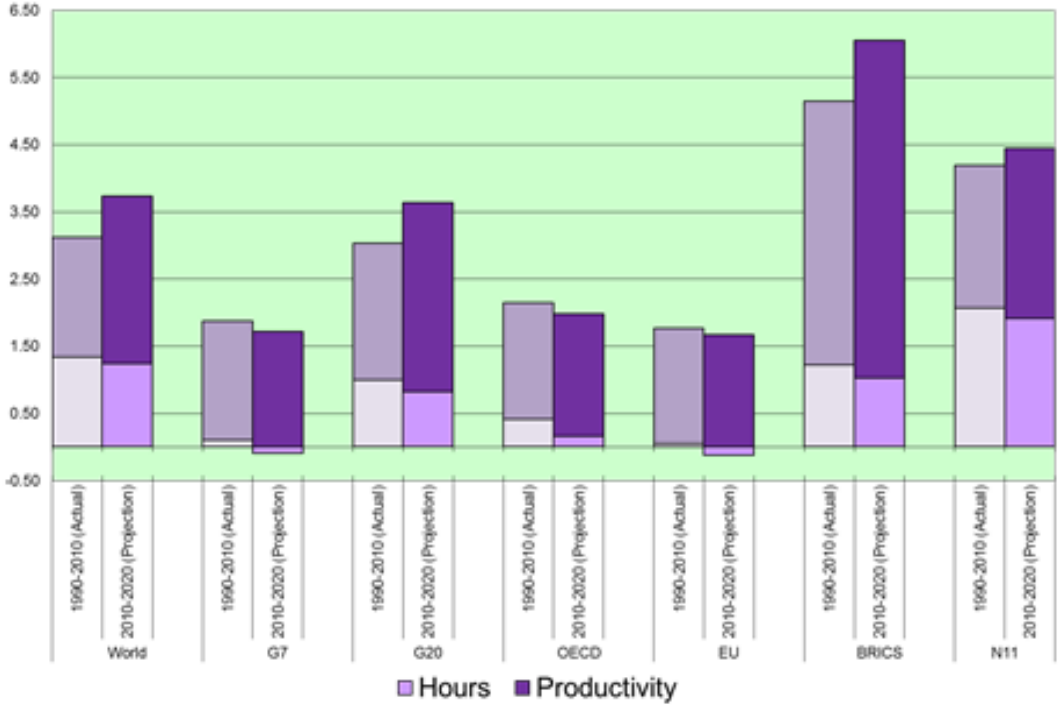


economic growth is 3.2 percent. This would require elimination of the gap between potential and actual GDP of around four percent over 2010-2020, as projected by the IMF's *World Economic Outlook*.

Growth of the world economy will accelerate during 2010-2020, as shown in Figure 7, even relative to the robust growth of the past two decades. Space limitations prevent us from indicating the substantial uncertainty associated with these projections. Growth in the G7 will decelerate slightly, due mainly to the shift from slightly positive growth to negative growth in hours worked. Despite a similar downturn in the rate of growth of hours worked, economic growth in the G20 will accelerate substantially due to an even greater acceleration in the growth of the expanded BRICS.

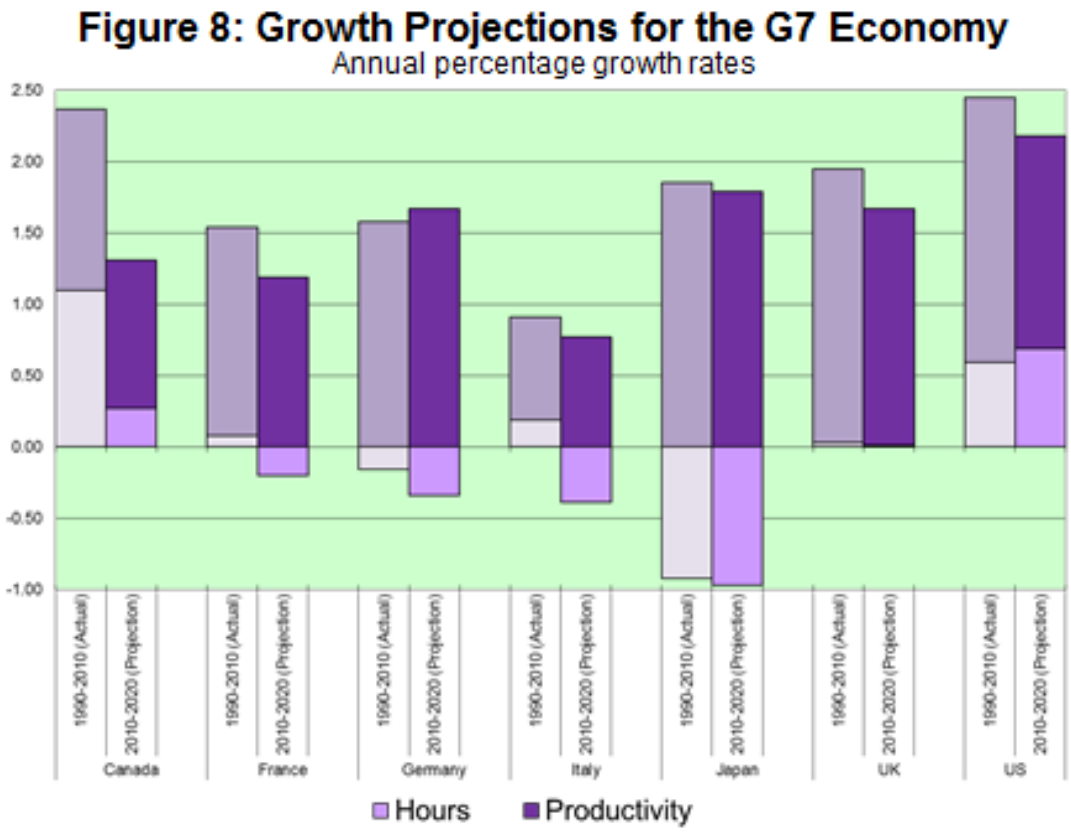
Figure 7: Growth Projections for the World Economy

Annual percentage growth rates



Our projections for the individual economies in the G7 are given in Figure 8. The U.S. will continue to outperform the other members of the G7 due to expansion of the labor force and growth of hours worked. Labor productivity growth in Germany, Japan, and the U.K. will be stronger than in the U.S., but the rate of decline in the Japanese labor force will reach almost one percent per year. The German labor force will also decline, but less rapidly, while the U.K. labor force will be essentially unchanged. Italy will continue to lag in economic growth among the G7 economies, but Italian growth will be positive for 2010-2020.

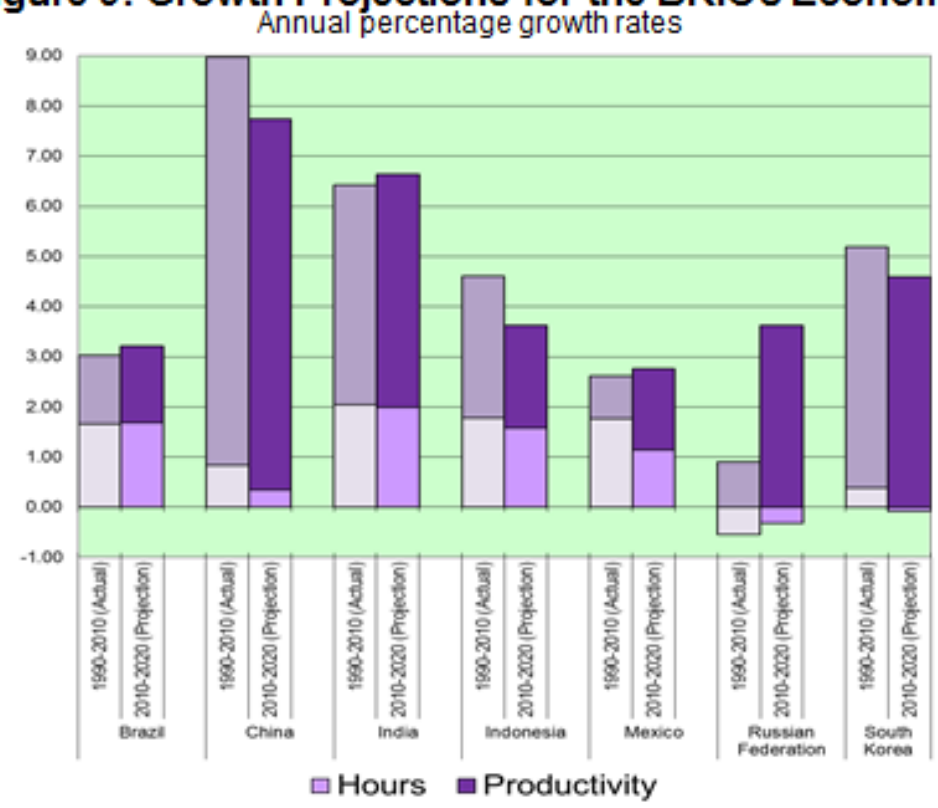
The outlook for China and India continues to be very sanguine, but quite different, as shown in Figure 9. Growth rates in China will fall, relative to the blistering pace of the past decade, while remaining in the neighborhood of 7.5 percent per year.



This is well above the pace needed to overtake the U.S. by 2020. India's growth rate will rise to 6.5 percent, which is insufficient to avoid a considerable fiscal consolidation. The size of the Russian economy will nearly double within two decades and Russia will overtake Germany by 2015. Brazil will grow less rapidly than the world economy, but will overtake the U.K. in 2012.

We have quantified the substantial uncertainty in our projections for the U.S., but it is important to emphasize that there are similar uncertainties for each of the leading economies. For example, China's double-digit growth for the past three decades has produced sizeable imbalances, both internal and external. The ratio of investment to GDP has risen to historic highs, but is leveling off or even falling. External imbalances leading

Figure 9: Growth Projections for the BRICS Economy



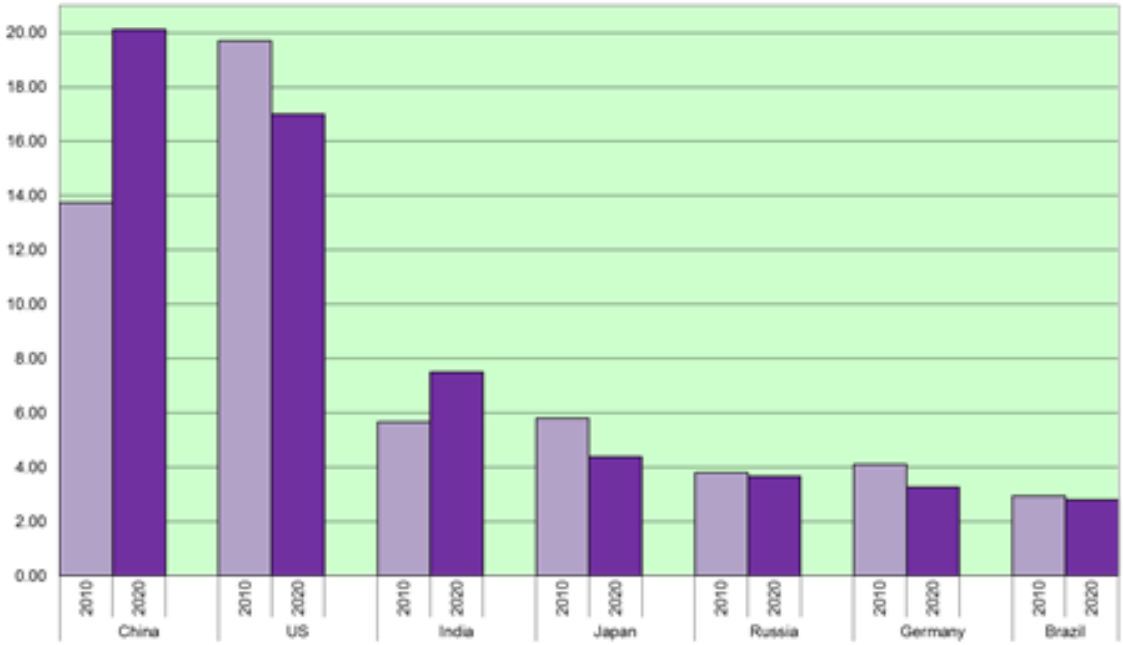
to China's continuing accumulation of foreign exchange to preserve the dollar exchange rate of the Chinese currency are also reaching a plateau. The real exchange rate of the yuan is rising due to a modest revaluation and a very substantial increase in production costs in China. All of this is helping to moderate the imbalances that have attracted international attention. China is moving toward slower, but more sustainable growth.

New Economic Order 2020

Figure 10 summarizes the New Economic Order that will emerge by 2020. China will displace the U.S. as the world's leading economy, but the G2, China and the U.S., will increase in relative importance in the world economy. India will also rise in relative

Figure 10: New Economic Order 2020

Percentage shares of world GDP



importance in the world economy, but will remain substantially behind the two leading economies. Japan, Russia, Germany and Brazil, which round out the leading seven economies, will all decline in size relative to the world economy. The Rise of Asia will continue with continued rapid growth in Indonesia, South Korea, and other leading Asian economies.

The emergence of Asia from the underdevelopment that persisted until the middle of the last century is the great economic achievement of our time. This has created a new model for economic growth built on globalization and the patient accumulation of human and nonhuman capital over decades. The new growth paradigm places a premium on skillful management by public and private authorities. The performance of the leading countries in developing this paradigm – first Japan, then the Asian Tigers, and now China

and India – has changed the course of economic development in Asia and around the world.

Japan, the United States, and other industrialized countries will remain far in advance of China and India in terms of per capita GDP. But the experience of Japan and the four Asian Tigers tells us the advanced economies can emerge outside Europe and North America. It is only a matter of time until these developments spread to China, India, and the other major countries of Developing Asia, but this will be measured in decades rather than years. The world economy now has the opportunity to accelerate the process of adjustment to the New Economic Order. This process is at the very early stages and will require rethinking business, the economy, and the international political system.

The theory of economic growth has put enormous weight on innovation, which plays a relatively modest role in world economic growth. This view has neglected investment in human and nonhuman capital, which is more important for advanced economies as well as emerging economies. The New Economic Order will focus much more attention to the Asian model of economic growth and will restore a more appropriate intellectual balance.

Finally, a thorough renovation of our national accounts is now underway. This incorporates detailed growth accounts for the U.S. like those employed in this paper. For example, in November of last year the Bureau of Economic Analysis, which maintains our national accounts, and the Bureau of Labor Statistics, which compiles our productivity statistics, released the Integrated BEA/BLS Industry-Level Production

Account. This provides a KLEMS data set for the U.S. for 1998-2009[7] that provides data on inputs of capital (K), labor (L), energy (E), materials (M), and services (S), together with output and productivity for 65 sectors of the U.S. economy.

The BEA/BLS prototype industry-level production account has been extended back to 1947 by Jorgenson, Ho, and Samuels.[8] This is anchored in the U.S. industry accounts that begin in 1947. Benchmark input-output tables, also beginning in 1947, provide the underpinning of the data on inter-industry flows of energy, materials and services. Similar extensions of official statistical systems are taking place around the world. The World KLEMS Initiative, established at Harvard University in August 2010, will generate similar industry-level production accounts for more than forty countries, including all the members of the G7 and most of the countries of the G20.[9]

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[7] Susan Fleck, Steven Rosenthal, Matthew Russell, Erich H. Strassner, and Lisa Usher (2012), "A Prototype BEA/BLS Industry-Level Production Account," presented at the Second World KLEMS Conference, Harvard University, Cambridge, MA, August. See: http://www.bea.gov/industry/index.htm#integrated

[8] Dale W. Jorgenson, Mun S. Ho, and Jon D. Samuels (2012), "A Prototype Industry-Level Production Account for the United States, 1947-2010," presented at the Second World KLEMS Conference, Harvard University, Cambridge, MA, August. See: http://www.economics.harvard.edu/faculty/jorgenson/files/0809_0330_mun_ho.pdf

[9] See Dale W. Jorgenson (2012), "The World KLEMS Initiative," *International Productivity Monitor*, Fall. See: http://www.csls.ca/ipm/24/IPM-24-Jorgenson.pdf