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Journal of Policy Modeling xxx (2017) xxx–xxx

Journal of Policy Modeling

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The outlook for advanced economies☆

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Received 3 January 2017; received in revised form 20 February 2017; accepted 15 March 2017

Keywords: Economic growth; G7; Emerging Economies; Financial and economic crisis; Longer-term trend of slower economic growth

1. Introduction

In this paper we consider the outlook for economic growth of the advanced economies, focusing on the G7: Canada, France, Germany, Italy, Japan, the U.K., and the U.S. We compare the growth prospects for the G7 with the prospects for Developing Asia, the countries of Asia including China and India but excluding Japan. We find that the balance of world growth has shifted from the G7 economies to the emerging economies of Asia. We show that the advanced economies will recover from the financial and economic crisis of the past decade, but that a longer-term trend toward slower growth of these economies will be re-established.

In analyzing the growth prospects of the G7 we draw upon a new volume, *The World Economy: Growth or Stagnation?* edited by Jorgenson, Kyoji Fukao, and Marcel P. Timmer (2016)[1]:

☆ Dale W. Jorgenson is the Samuel W. Morris University Professor at Harvard University. Khuong Minh Vu is Associate Professor of Economics at the Lee Kwan Yew School of Public Policy, National University of Singapore. We would like to thank Dominick Salvatore for organizing the panel on "Are Advanced Economies Facing Stagnation?" at the Annual Meeting of the American Economic Association, Chicago, Illinois, January 7, 2017. We are grateful to our fellow panelists – Olivier Blanchard, Barry Eichengreen, Martin Feldstein, and Kenneth Rogoff – for their valuable contributions to the topic.

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[1] Dale W. Jorgenson, Kyoji Fukao, and Marcel P. Timmer (2016), eds, *The World Economy: Growth or Stagnation?* Cambridge, UK, Cambridge University Press.

http://dx.doi.org/10.1016/j.jpolmod.2017.05.013

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This book includes studies of the economic performance of more than forty countries, including the members of the G7, as well as China and India, by thirty-eight authors. These countries are members of the World KLEMS Initiative, established by Jorgenson, Timmer, and Bart van Ark. The purpose of this Initiative is to generate data on industry-level outputs and productivity, as well as inputs of capital (K), labor (L), energy (E), materials (M), and services (S), hence the acronym KLEMS.

The countries of the World KLEMS Initiative produce data in industry-level output, input, and productivity, using the standard methodology summarized by Jorgenson and Paul Schreyer (2013).[2] Details are provided by Schreyer (2001), *Measuring Productivity* and Schreyer (2009) *Measuring Capital*.[3] This methodology was originated by Jorgenson, Frank M. Gollop, and Barbara M. Fraumeni (1986) in their book, *Productivity and U.S. Economic Growth*.[4] The methodology for capital input was extended to information and communications equipment and services by Jorgenson, Mun S. Ho, and Kevin J. Stiroh in *Information Technology and the American Growth Resurgence*.[5]

Jorgenson and Schreyer (2013) have shown how to integrate industry-level data on growth and productivity from the World KLEMS Initiative into the United Nations (2009) *System of National Accounts 2008 (SNA 2008)*.[6] This methodology has been incorporated into the official statistics of more than a dozen countries, including four members of the G7: Canada, Italy, the U.K., and the U.S. The methodology of the World KLEMS Initiative has been proposed for incorporation into the new *System of Expanded and Integrated Global Accounts* (SEIGA) by the United Nations' Statistical Division, the institutional home of *SNA 2008*.[7]

Data for the World KLEMS Initiative have been developed by regional projects in Asia. Europe, and Latin America. The European project, denoted EU KLEMS, was supported by the European Commission through its Research Directorate-General, beginning in 2003. This project was included in the Sixth Framework Programme, Priority 8, Policy Support and Anticipating Scientific and Technological Needs. The results were published by Timmer, Robert Inklaar, Mary O'Mahony, and van Ark in their book, *Economic Growth in Europe: A Comparative Industry Perspective*.[8] Matilde Mas and Robert Stehrer (2012) edited a second report on EU KLEMS,

[2] Dale W. Jorgenson and Paul Schreyer (2013). Industry-Level Productivity Measurement and the System of National Accounts 2008. *Review of Income and Wealth*. Vol. 59, Issue 2, June, pp. 185–211. See: http://onlinelibrary.wiley.com/doi/10.1111/j.1475-4991.2012.00516.x/abstract.

[3] Paul Schreyer (2001). *Measuring Productivity*, Paris, Organisation for Economic Co-operation and Development. See: https://ideas.repec.org/a/sls/ipmsls/v2y20015.html. Paul Schreyer (2009), *Measuring Capital*, 2nd ed., Paris, Organisation for Economic Co-operation and Development. See: https://www.oecd.org/std/productivity-stats/43734711.pdf.

[4] Dale W. Jorgenson, Frank M. Gollop, and Barbara M., Fraumeni (1986), *Productivity and U.S. Economic Growth*, Cambridge, MA, Harvard University Press.

[5] Dale W. Jorgenson, Mun S. Ho, and Kevin J. Stiroh (2005), *Information Technology and the American Growth Resurgence*, Cambridge, MA, The MIT Press.

[6] United Nations (2009). *System of National Accounts 2008. United* Nations, NY. See: https://unstats.un.org/unsd/nationalaccount/sna2008.asp.

[7] U.S. Bureau of Economic Analysis (2016). Extended Productivity (KLEMS) Accounts, Ch. 4 in *Accounting for Global Value Chains: Extended National Accounts and Integrated Business Statistics*. New York: United Nations Statistical Division, November. See: https://unstats.un.org/unsd/trade/events/2016/nov-newyork/presentations/wed/Chapter%204%20-%20KLEMS_BEA.pdf.

[8] Marcel P. Timmer, Robert Inklaar, Mary O'Mahony, and Bart van Ark (2010). *Economic Growth in Europe: A Comparative Industry Perspective*. Cambridge, UK, Cambridge University Press.

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Industrial Productivity in Europe: Growth and Crisis.[9] This presented studies presenting international comparisons within Europe and between European countries and the advanced economies of Asia and North America.

A new phase of EU KLEMS was initiated by Kirsten Jager (2016), *EU KLEMS Productivity and Growth Accounts*.[10] This includes annual data for 1995–2014 for ten countries of the European Union, including the four European members of the G7: France, Germany, Italy, and the U.K. This dataset will be updated during the Summer of 2017 to include all 28 members of the European Union and, possibly, comparable data for Japan and the U.S. The new EU KLEMS project is supported by the Economic and Financial Affairs Council of the European Commission. The first of the new series of EU KLEMS reports includes a listing of EU KLEMS estimates from the original EU KLEMS project, conducted from 2003–2008, and subsequent updates prior to the 2016 data release.

The Latin American regional organization of the World KLEMS Initiative was established in 2009 at a conference at the Economic Commission for Latin America and the Caribbean (ECLAC) in Santiago, Chile. Mario Cimoli, Andre Hofman, and Nanno Mulder (2010), edited a report on the project, *Innovation and Economic Development: The Impact of Information and Communication Technologies in Latin America*.[11] A second phase of the project was recently established under the sponsorship of the Inter-American Development Bank in Washington, DC, in October 2016. This involves the Latin American countries of the original LA KLEMS project and a number of additional countries.[12]

Finally, Asia KLEMS was established at the Asian Development Bank Institute in Tokyo in 2010.[13] This includes the Japan Industrial Productivity (JIP) database, a collaboration between Hitotsubashi University and the Research Institute for Economy, Trade, and Industry (RIETI), beginning in 2006. Since 2011, the Asia KLEMS project includes the China Industrial Productivity (CIP) database, also a collaboration between Hitotsubashi and RIETI. The Korea Industrial Productivity (KIP) database is compiled by the Korea Productivity Center in Seoul with support from the Korea Ministry of Trade, Industry, and Energy. The India KLEMS database is supported by the Reserve Bank of India and is described by Deb Kusum Das, Abdul Azeez Erumban, and Suresh Aggarwal (2016), *Measuring Productivity at the Industry Level: The India KLEMS Database*.[14]

[9] Matilde Mas and Robert Stehrer (2012), eds. *Industrial Productivity in Europe: Growth and Crisis*. Northampton, MA: Edward Elgar.

[10] Kirsten Jager (2016) *EU KLEMS Productivity and Growth Accounts: Statistical Module, ESA 2010, and ISIC Rev. IV Industry Classification*. Brussels: The Conference Board, December. See: http://euklems.net/index.html.

[11] Mario Cimoli, Andre Hofman, and Nanno Mulder (2010), eds., *Innovation and Economic Development: The Impact of Information and Communications Technologies in Latin America*. Northampton, MA: Edward Elgar.

[12] Regional Integration Project. *LA KLEMS: Economic Growth and Productivity in Latin America. Washington, DC*, Inter-American Development Bank, October. See: http://www.iadb.org/en/topics/regional-integration/project-information,3072.html?id=RG-T2867.

[13] See: http://asiaklems.net/participants/participants.asp.

[14] Deb Kusum Das, Abdul Azeez Erumban, Suresh Aggarwal (2016). *Measuring Productivity at the Industry Level: The India KLEMS Database*. Mumbai, Reserve Bank of India. See: https://www.rbi.org.in/scripts/PublicationReportDetails.aspx?UrlPage=&ID=855.

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2. Major trends in the world economy

Throughout the last century a fundamental transformation of the world economy seemed a remote and unlikely prospect. However, the World Bank's (2008) *International Comparison Program 2008 (ICP 2005)* showed that China had overtaken Japan in terms of purchasing power more than a decade earlier.[15] By 2012 India overtook Japan and India became the world's most rapidly growing major economy in 2015.[16] The obvious question posed by these findings is, will China surpass the United States? The World Bank's (2014) *International Comparison Program 2011 (ICP 2011)* revealed that in 2014 China's output exceeded the output of the United States in terms of purchasing power.[17]

The purchasing power parities we use to compare China and the U.S. are based on relative prices for similar goods and services in China and the U.S. These prices enable us to express U.S. GDP in terms of Chinese prices and Chinese GDP in terms of U.S. prices. The U.S.–China purchasing power parities are index numbers for relative prices that combine price data for the two countries. Why does the financial press – newspapers like the *Financial Times* and the *Wall Street Journal* and magazines like *The Economist* – continue to report that China is the world's second-largest economy? This is based on the exchange rate between the U.S. dollar and the Chinese yuan. While exchange rate comparisons are appropriate for balance sheet data on assets and liabilities, purchasing power parities are the relative prices required for GDP comparisons. This is reflected in the statistical practice of international institutions like the International Monetary Fund, the OECD, and the World Bank.

Using purchasing power parities, we identify three major trends in the world economy. First, the growth of the world economy has accelerated since 1995 and has become much more turbulent. The period 1995–2015 includes the Great Recession that originated in the United States in 2007–2009 and quickly spread to other advanced economies. This recession was the most severe economic downturn since the Great Depression of the 1930's. The policy responses included zero policy rates for the major central banks. This Zero Interest Rate Bound (ZIRB) nullifies the impact of conventional monetary policy and leads to a "liquidity trap." The downturn was most severe for Japan. This was due to the failure of the Bank of Japan to respond to the downturn by rapid expansion of the Japanese money supply through unconventional monetary policy. As a consequence, the yen appreciated rapidly, relative to other currencies, and Japanese exports collapsed, leading to a sharp economic downturn.

The second major trend in the world economy is that the balance of growth in the world economy is shifting from the advanced economies of the G7 to the emerging economies of Asia, especially China and India. We have already observed that India overtook Japan in 2012 in terms of purchasing power parities and that China overtook the U.S. in 2014. These purchasing power comparisons are based on the *ICP 2011,* described by the World Bank as the largest economic study every undertaken. The *ICP 2011* provides detailed purchasing power parities for 199 countries.

The third major trend in the world economy is that the transformation of world economic growth has generated a new world order, led by China and the U.S. and followed by India and

[15] Purchasing power parities are discussed by the World Bank (2008), *2005 International Comparison Program*, February. See: http://siteresources.worldbank.org/ICPINT/Resources/ICP_final-results.pdf.

[16] See Jorgenson (2016), *Why Is India the Most Rapidly Growing Economy in the World?* New York, Columbia University. See: http://schola.harvard.edu/files/jorgenson/files/16_1202_columbia_kotak.pdf.

[17] World Bank (2014), *2011 International Comparison Program*, October. See: http://siteresources.worldbank.org/ICPEXT/Resources/ICP_2011.html.

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Japan. The U.S. and Japan are advanced economies and members of the G7, while China and India are the two largest emerging economies of Developing Asia. All four countries are members of the G20, an organization of advanced and emerging economies that superseded the G7 as the leading consultative group on international economic policies in 2009. The four countries are included in the World KLEMS Initiative.

3. The sources of world economic growth

To simplify the discussion of world economic growth we define world output as World GDP and world input as inputs of the primary factors of production, capital and labor. We define productivity, the ratio of world output to world input, as Total Factor Productivity (TFP), the ratio of World GDP to world inputs of the primary factors of production. We summarize the sources of economic growth in terms of productivity growth and the growth of capital (K) and labor input (L). The other growth sources are intermediate inputs – energy (E), materials (M), and services (S). Because of distinctive features of capital inputs from information technology hardware, software, and services, we divide world capital input between information technology (IT) and non-information technology (Non-IT) capital inputs.

In making projections of future world economic growth we find it useful to link labor input to trends in demography. For this purpose we define hours worked as the sum of hours worked for all members of the world labor force. We weight labor inputs by relative compensation per hour to obtain a quantity index of world labor input. Finally, we divide labor input by hours worked to obtain a measure of labor quality. Labor quality increases with education and experience of workers, while hours increase with the size of the labor force. The labor force is linked in turn to the working age population.[18]

In Fig. 1 we present the sources of world economic growth.

The vertical bars in this diagram represent average annual growth rates for five-year intervals, beginning with 1990–1995 and continuing through 2010–2015. The maximum growth rate during this period is slightly less than four percent per year. The color scheme represents the sources of economic growth. Yellow is productivity growth, while blue is the growth of capital input, divided between IT and Non-IT capital inputs, and red is the growth of labor input, divided between hours worked and labor quality.

The difference in heights of the bars in Fig. 1 for 1990–1995 and 1995–2000 shows the first major trend in the world economy, namely, the sharp acceleration in economic growth after 1995. The rate of world economic growth for the period 1990–1995 averaged 2.3% per year, while the rate of growth for 1995–2000 was nearly 4.0% per year. For the advanced economies, especially for the United States, this reflected a dramatic increase in the growth of IT capital input, resulting from the so-called Information Technology Investment Boom of the late 1990's. This accompanied a substantial acceleration in the rate of decline if prices of IT capital input, analyzed in detail by Jorgenson (2001) and Jorgenson, Ho, and Stiroh (2005).[19] The accelerated price decline can be traced to an increase in the rate of technical progress in the semi-conductor devices used in computing and communications equipment.

[18] We present more details on growth accounting in Jorgenson and Vu (2005). Information Technology and the World Economy. *Scandinavian Journal of Economics*, Vol. 107, No. 4, December, pp. 631–650. See: http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9442.2005.00430.x/abstract.

[19] Dale W. Jorgenson (2001), "Information Technology and the U.S. Economy," *American Economic Review*, Vol. 91, No. 1, March, pp. 1–32. See: http://www.jstor.org/stable/2677896?origin=JSTOR-pdf&seq=1#page_scan_tab_contents.

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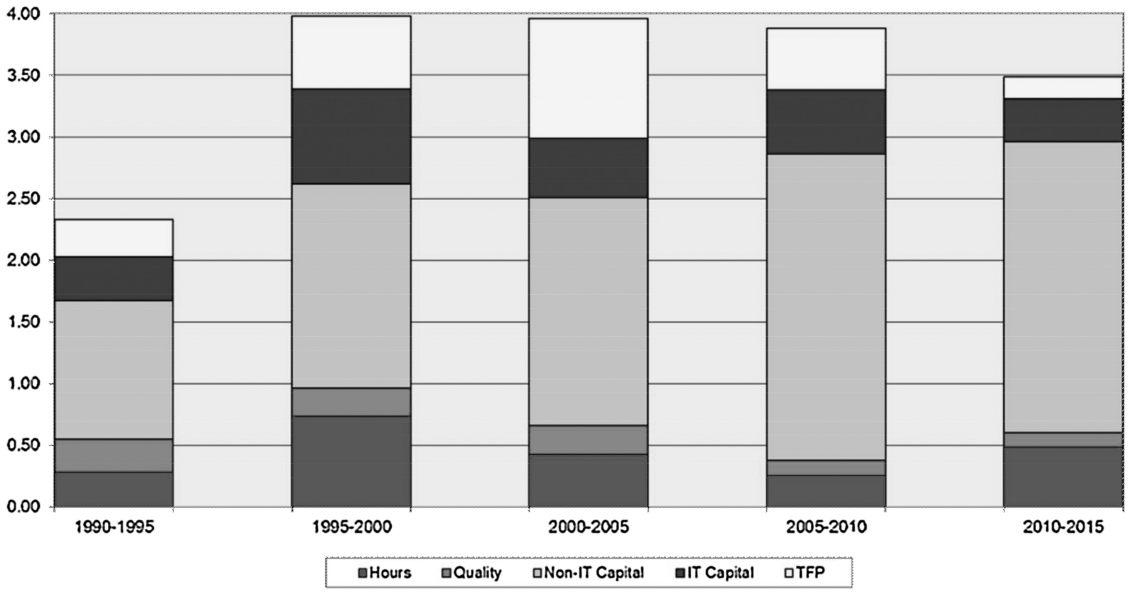

Fig. 1. Sources of world economic growth. (For interpretation of the references to color in the text, the reader is referred to the web version of this article.)

All three of the sources of world economic growth – productivity, capital input, and labor input – grew more rapidly after 1995. The most substantial increase was in the growth rate of capital input and IT capital input growth increased in the greatest proportion. However, total factor productivity growth also increased, as did the growth of labor input. After the IT Investment Boom, rates of growth of capital and labor inputs declined modestly during the period 2000–2005, while productivity growth increased. Surprisingly, world economic growth continued almost unabated during the period 2005–2010, which included the beginning of the Great Recession in the United States in 2007–2009.

World growth diminished from around four percent for the fifteen years preceding 2010 to 3.5% per year for the period 2010–2015. This reflects the substantial slowdown in productivity growth. For the quarter century 1990–2015 productivity accounted for about twenty percent of world economic growth, while capital and labor inputs accounted for eighty percent. This is the reverse of the findings of Robert Solow (1957) and Simon Kuznets (1971), who attributed twenty percent of economic growth to capital and labor inputs and the remaining eighty percent to productivity.[20] This striking reversal is a consequence of the introduction of the standard methodologies for measuring capital and labor inputs that we have described above.

Kuznets and Solow excluded labor quality from the sources of economic growth and used capital stock rather than capital services as a measure of capital input. Schreyer (2001) and Jorgenson, Ho, and Stiroh (2005), Chapter 6, discuss the measurement of labor input in great detail. They conclude that labor quality is an essential component of labor input. The contribution of each

[20] Robert M. Solow (1957). Technical Change and the Aggregate Production Function. *Review of Economics and Statistics*, Vol. 39, No. 3, August, pp. 312–320. See: http://www.jstor.org/stable/1926047?origin=JSTOR-pdf&seq=1#page_scan_tab_contents. Simon Kuznets (1971). *Economic Growth of Nations*. Cambridge, MA, Harvard University Press.

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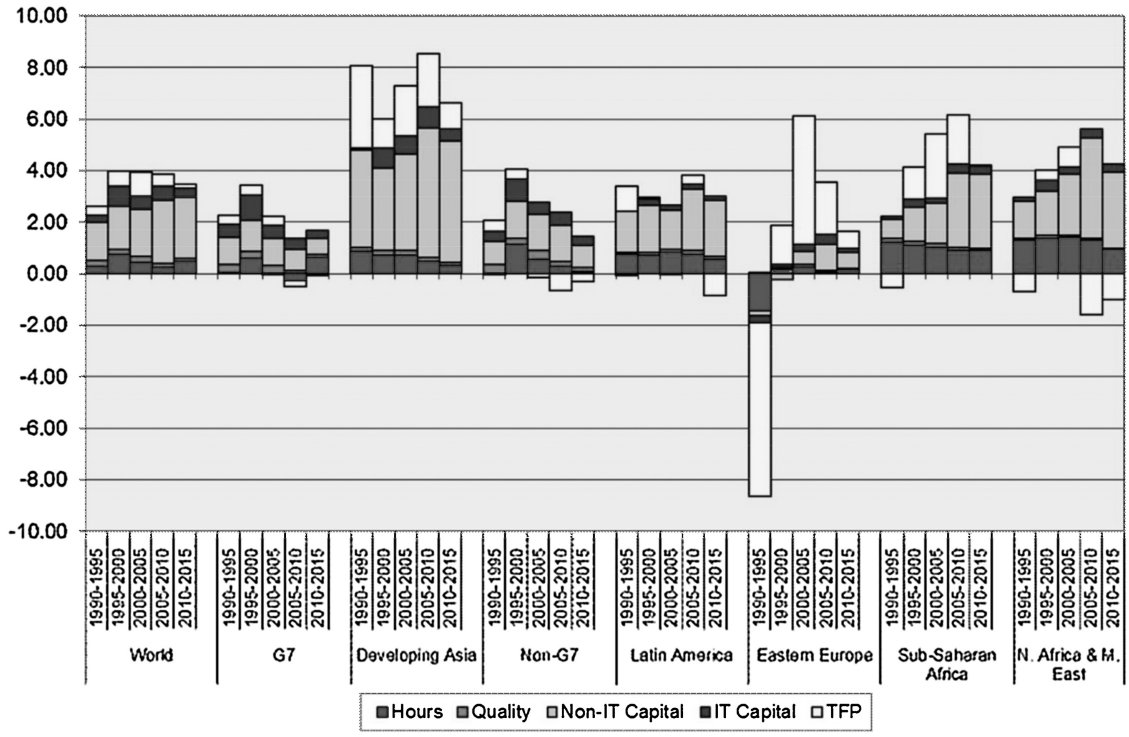

Fig. 2. Sources of economic growth in major regions of the world economy.

hour worked to economic growth reflects not only labor effort, but also the marginal productivity of the worker due to education and experience. Similarly, Kuznets and Solow used capital stock, the contribution of capital to asset values, rather than capital services, the contribution of capital to the capital input into production. Schreyer (2009) and Jorgenson, Ho, and Stiroh (2005), Chapter 5, discuss the measurement of capital input and conclude that capital services, rather than capital stock, reflect the contributions of capital to the sources of economic growth.

The debate that led to Schreyer's (2009) *OECD Capital Manual* established international standards for the measurement of capital and labor inputs and productivity. This standard has now been adopted by more than forty countries and has been incorporated into official statistics for more than a dozen of these countries. Productivity measurements using the standard framework have reversed the most important conclusion of the Kuznets–Solow approach to growth accounting. This conclusion changes the methodology for economic measurement and sets the future directions of development of the theory of economic growth.

Overturning the conclusions of Kuznets and Solow about the sources of economic growth is one of the most significant developments in empirical growth economics in the past several decades. We have shown how this affects the measurement and interpretation of the growth of the world economy. We turn next to the effects on the measurement and interpretation of the growth of the G7 advanced economics. In Fig. 2 we present the sources of economic growth for the world economy, as in Fig. 1, and the major regions of the world, including the G7 and Developing Asia. In Fig. 3 we present the sources of economic growth of the individual members of the G7: Canada, France, Germany, Japan, the U.K., and the U.S.

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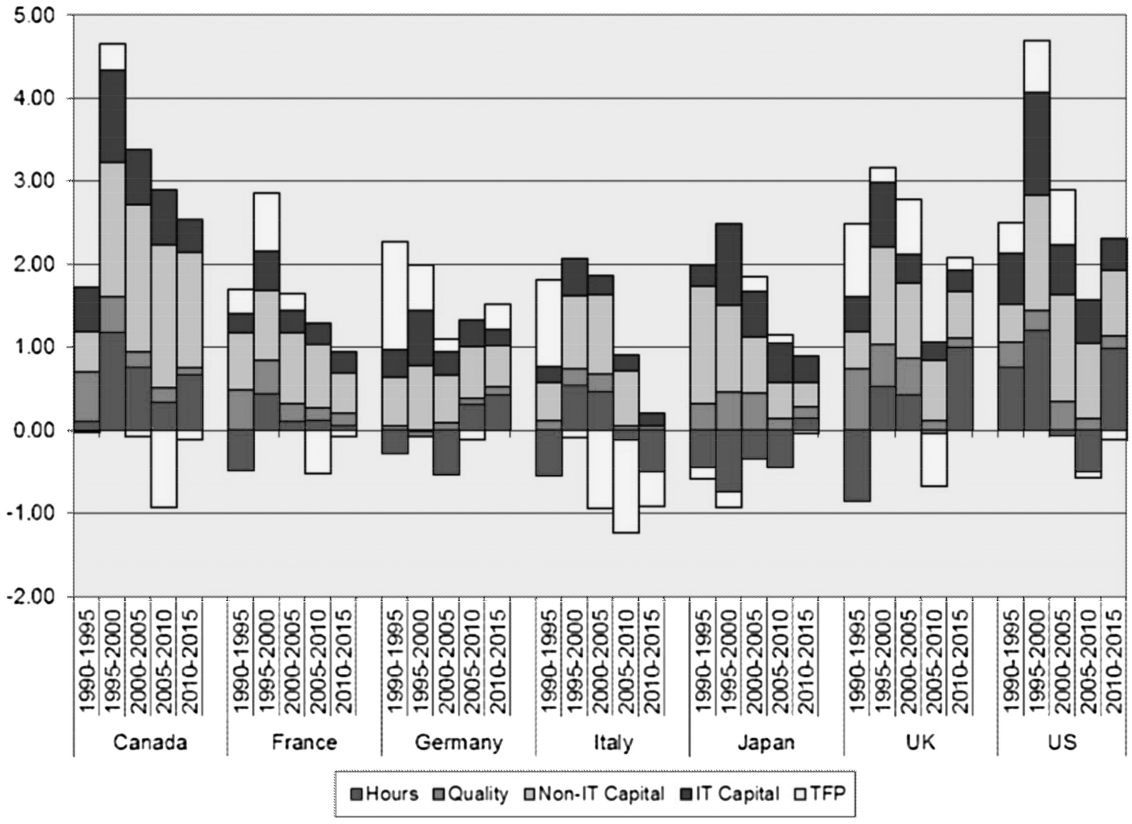

Fig. 3. Sources of G7 economic growth.

The first bar in Fig. 2 reflects the growth of the world economy in Fig. 1, including the acceleration in growth after 1995. We have analyzed trends in the growth of the emerging economies in our earlier paper, "The Outlook for Emerging Economies."[21] The growth of Developing Asia has been more than double that of the G7, except for the period dominated by the Asian Financial Crisis, 1995–2000. The Great Recession of the advanced economies is clearly reflected in the decline in economic growth of the G7 during the period 2005–2010. The growth in Developing Asia accelerated during this period and this was the period of most rapid growth for Developing Asia among the five sub-periods presented in Fig. 2.

Important differences among the sources of growth of the countries of the G7 are evident in the findings presented in Fig. 3. The Information Technology Investment Boom of 1995–2000 is most apparent for Canada and the United States. The Great Recession that began in the United States in 2007–2009 is reflected in the growth rates for 2005–2010 for every member of the G7, except Germany. The downturn is the most striking for Italy, Japan, and the U.K. The economic recovery for the period 2010–2015 is relatively weak for all three economies and for Japan and

[21] Dale W. Jorgenson and Khuong Minh Vu (2016). The Outlook for Emerging Economies. *Journal of Policy Modeling*, Vol. 38, Issue 4, July–August, pp. 436–447. See: http://www.sciencedirect.com/science/journal/01618938/33/5.

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the United States. Finally, there is a long-term trend toward slower growth after the year 2000 for all the G7 economies.

4. Projecting world economic growth

Finally, we project the future growth of the world economy. Our methodology is based on the neo-classical growth model of Solow (1956).[22] We derive projections of output and capital input from future trends in demography and productivity growth. Trends in demography are relatively slow to change, but productivity growth is highly variable. Future productivity growth is the main source of the substantial uncertainty in projections of future growth of the advanced economies.

To characterize future demographic trends we employ the population projections for the world economy from the United Nations' Population Division.[23] Population projections include the growth of the labor force and the composition of the population by age and gender. We add projections by the level of educational attainment by age and gender to the standard demographic projections. This provides the information required for projections of growth in hours worked and labor quality. We project future trends in productivity growth by extrapolation of trends from past productivity growth.

We derive projections of the growth of output and capital input from future trends in the growth of labor input and productivity. This is the core of the Solow neo-classical model of economic growth. A key assumption of our projections is that the rates of growth of output and capital input eventually converge to a common growth rate for the economy as a whole. In Fig. 4 we present the growth of hours worked and average labor productivity growth for the past decade, 2005–2015. Adding the two growth rates, we obtain the rate of growth of GDP for the world economy.

We next present a Base Case projection of hours worked and average labor productivity, defined as output per hour worked. Labor productivity growth is the sum of the growth of total factor productivity and the contributions of the rate of capital deepening, and labor quality growth. Capital deepening is defined as the growth of capital input per hour worked and the labor quality is labor input per hour worked, as before. Capital deepening is weighted by the share of capital in the nominal value of world GDP, while labor quality is weighted by the share of labor.

We use the Solow neo-classical model of economic growth to derive projections of World GDP and capital input from exogenous projections of population, hours worked, and labor quality and from projections of the growth of Total Factor Productivity for the world economy. Capital deepening is derived along with World GDP growth by assuming that the growth rates of output and capital input converge in the long run. We project the growth of productivity from trends for the twenty-five year period 1990–2015.

Future productivity growth is the main source of uncertainty about the future growth of the world economy. To capture this uncertainty, we construct two alternatives to our Base Case projection. First, we consider and Optimistic projection, where we project future productivity growth from growth rates during the two five-year periods of most rapid growth. Similarly, we consider a Pessimistic projection, where we project future productivity growth from the two five-year periods of slowest growth. The results for Base Case, Optimistic, and Pessimistic projections of the world economy are presented in Fig. 4.

[22] Robert M. Solow (1956), "A Contribution to the Theory of Economic Growth," *Quarterly Journal of Economics*, Vol. 70, No. 1, February, pp.65–94. See: https://www.econ.nyu.edu/user/debraj/Courses/Readings/Solow.pdf.

[23] United Nations Population Division. *World Population Prospects: 2015 Revision*. United Nations, NY: United Nations. See: http://www.un.org/en/development/desa/population/events/other/10/index.shtml.

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Fig. 4. World output projections.

We summarize our projections for world economic growth as follows: The growth of the world economy has accelerated since 1990 and this acceleration will continue for the coming decade, 2015–2025. Average labor productivity growth will slow during the period 2015–2015, relative to the most recent decade, 2005–2015. However, the growth rate of hours worked will accelerate sharply during the period 2015–2025, since our Base Case assumptions imply a substantial revival in job creation. World economic growth is subject to substantial uncertainty, mainly due to uncertainty about the rate of future productivity growth.

In Fig. 5 we present projections for the world economy and its major regions, including the G7 and Developing Asia. The methodology for our growth projections is the same as for the world economy in Fig. 4, above. Our Base Case projection of growth for the G7 is only slightly below the average growth rate for the past decade, 2005–2015. This reflects the failure of the advanced economies to recover fully from the Great Recession. However, our Base Case projection for Developing Asia is for a substantial slowdown relative to the growth of the past decade. This is a consequence of the stabilization of the ratio of investment to GDP and the convergence of the average growth rate toward its long-run equilibrium level, determined by growth of the labor force and productivity growth.

To characterize the uncertainty in projections of future economic growth we present Optimistic and Pessimistic projections for the world economy and the major regions. The upside potential for the advanced economies of the G7 is to overcome the stagnation of the past decade through a revival of average labor productivity growth. Since we take demographic changes to be exogenous, this would require more rapid capital deepening through a rise in the ratio of investment to the GDP and/or more rapid growth in total factor productivity. The upside potential for Developing Asia is to avoid a further decline in capital deepening and total factor productivity growth, while

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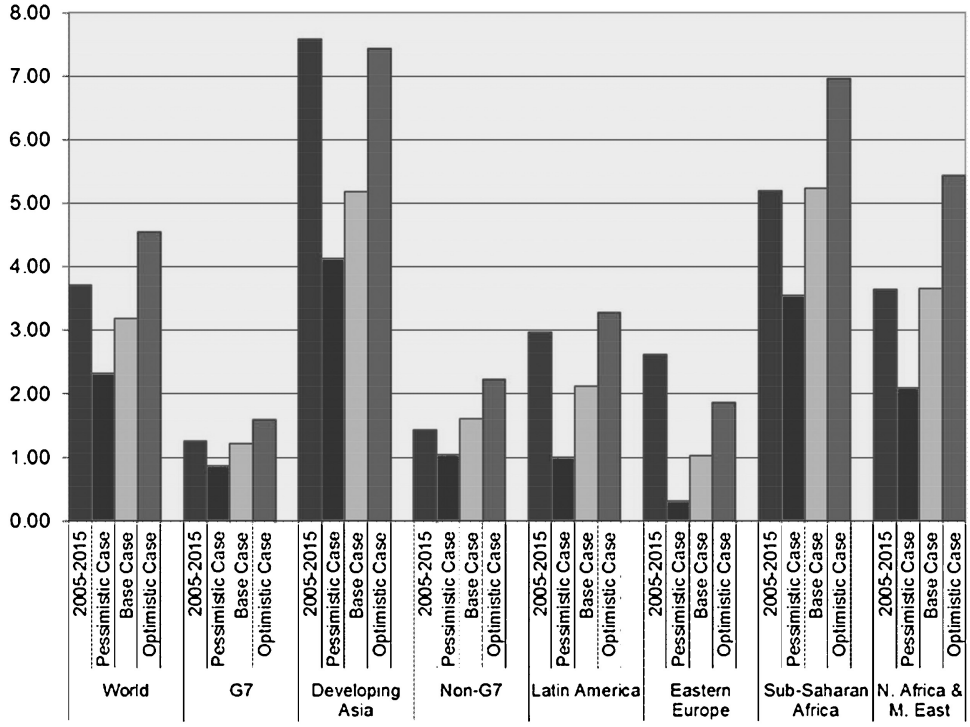

Fig. 5. Range of world output projections.

the downside potential is for a reduction in capital deepening and slower growth in total factor productivity.

In Fig. 6 we present growth projections for the individual economies of the G7. Growth for the U.S. will decline modestly from 1.6% per year for the past decade to 1.5%, but will remain higher than growth of the G7 as a whole. Growth in Japan will continue to decline from 0.75% per year to 0.5% per year. This is the consequence of stagnant productivity growth and a continuing decline in the size of the Japanese labor force. Growth in the U.K. and France will recover a bit of momentum, but growth for Germany will continue to slow and Italian growth will be improve, but remain negative. The overall picture is one of continued stagnation and the failure to recover from the Great Recession.

We can represent the uncertainty in growth projections for the individual economies of the G7 by means of Optimistic and Pessimistic Projections. We focus on the uncertainties associated with future growth of the U.S. and Japan. The downside risk for the U.S. economy is a continuing failure to develop a sustainable fiscal policy, while the upside potential arises for the stimulus to U.S. growth from a long overdue major tax reform. For Japan the major downside risk is the continuation of stagnant growth of total factor productivity over more than two Lost Decades, beginning in 1991. The upside potential for the Japanese economy is the development of a growth strategy centered on a revitalization of productivity growth through a reversal of industrial policies that restrict entry into the leading sectors of the Japanese economy.

Please cite this article in press as: Jorgenson, D. W., & Vu, K.M. The outlook for advanced economies. *Journal of Policy Modeling* (2017), http://dx.doi.org/10.1016/j.jpolmod.2017.05.013

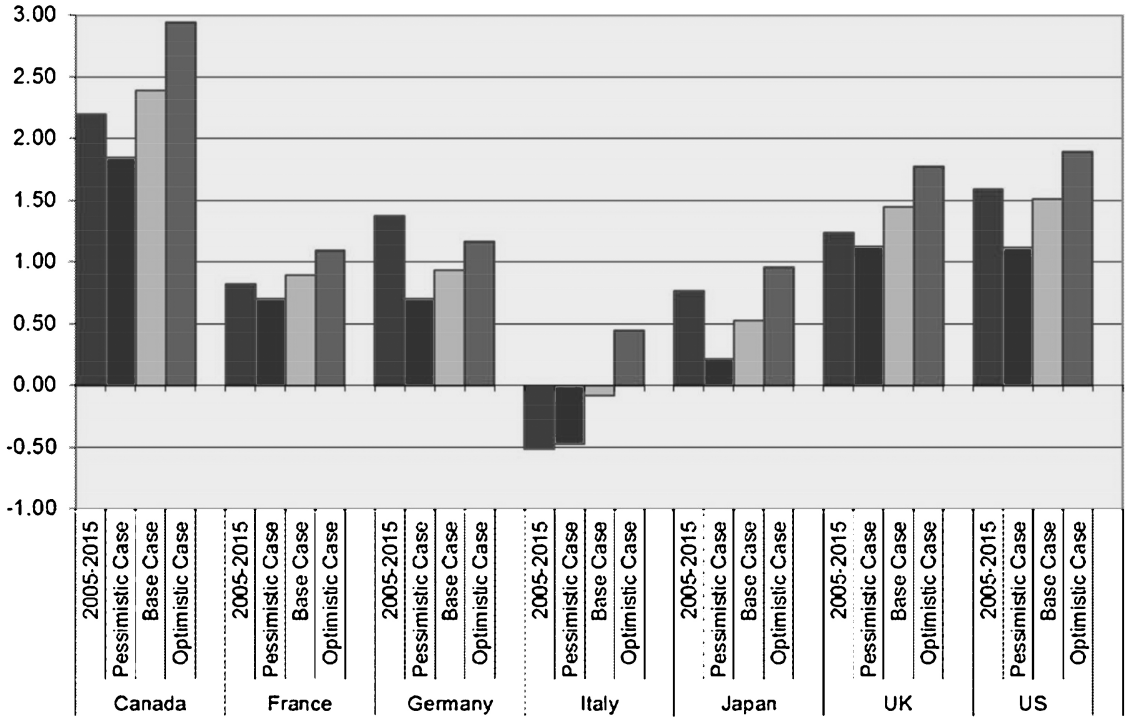

Fig. 6. Range of G7 output projections.

5. Conclusions

Growth projections for the individual countries of the world economy, including the G7, are prepared regularly by the International Monetary Fund.[24] Growth projections for emerging economies, including China and India, are also issued by the World Bank. For the advanced economies projections are published by the OECD.[25] Our projections, like those prepared by The Conference Board, rely on the Total Economy Database (TED).[26] This provides data on the sources of economic growth for 123 countries. The projections of the IMF and the World Bank rely more heavily on projections of trends in aggregate demand for individual countries.

We conclude that despite the economic turbulence of the past two decades, the world economy is entering a period of sustainable growth at a rate of 3.2% annually. This is considerably above the slow growth of the world economy prior to 1995 and only slightly below the average annual growth rate of the past quarter century of 3.3%. The relative importance of the major emerging economies, China and India, will continue to increase, even with much slower growth in China and a modest slowdown in India. The growth potential will decline for both Japan and the U.S.

[24] International Monetary Fund, *World Economic Outlook*, Washington D. C., International Monetary Fund, several issues per year.

[25] World Bank, *Global Economic Prospects*, Washington, D.C., The World Bank, several issues per year. OECD, *OECD Economic Outlook*, Paris, Organization for Economic Co-Operation and Development, several issues per year.

[26] The Conference Board, *Total Economy Database*, New York, The Conference Board, several issues per year.

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Our Base Case Projection for the growth of the world economy is for moderate but sustained growth with a continuing shift of growth from the advanced economies of the G7 to the major emerging economies. This has already established the new world order of the 21st century: China, the U.S., India, and Japan. The upside potential of the world economy remains substantial, but this would require the implementation of ambitious domestic reforms in economic policy in both advanced and emerging economies, but this appears to be unlikely. The downside risk for the world economy is for continued stagnation of productivity growth around the world.

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