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A "New Normal"? The Prospects for Long-Term Growth in the United States

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Economic growth in the United States following the Great Recession has been well below the post-World War II average. Some observers have called this the "new normal." They argue, among other things, that innovation has slowed and is unlikely to improve and that demographic trends pose serious problems for fiscal policy that will hinder the economy. Such issues are significant, but the "new normal" is not a given. Continued innovation, as well as good policy, could yield improvements in economic performance.[1]

From 1947 through 2007, the economy grew at roughly 3.4 percent annually. While growth is often expressed in terms of total economic output, a growing population will bring with it some amount of overall growth. To measure improvement in average standards of living, growth of GDP per capita is the standard yardstick. The post-war average of 3.4 percent overall growth translated to an average growth rate per capita of about 2.1 percent. During that period, the United States experienced a few significant recessions and several milder downturns. Such fluctuations can be acutely felt by many people when they occur, but against the longer-run performance, they look relatively insignificant.

Since the financial crisis and Great Recession, though, many people's perception of the strength of the U.S. economy and its prospects for the future have dimmed. These skeptics point to the slowed pace of growth: since 2010, the U.S. economy has grown at a rate of roughly 2.1 percent annually, which translates to an average growth rate per capita of about 1.3 percent, both well below the post-World War II rates prior to the Great Recession and, perhaps more notably, far below what has been seen in "catch-up" periods following previous significant downturns. For instance, following the 1981–82 recession, the U.S. economy rebounded sharply, growing 7.8 percent in 1983 and 5.7 percent in 1984. Some observers believe the United States has entered a period characterized by a "new normal" or even a "new mediocre."[2] Proponents of the new-normal hypothesis maintain that the United States is likely to grow at a substantially slower rate than it did prior to the Great Recession, with many predicting growth rates of roughly 1.5 percent to 2 percent.[3]

Some commentators who generally would place themselves in the skeptics camp argue that the new normal had already started, in a sense, prior to the Great Recession – that, the U.S. economy already was experiencing lower productivity and growth rates due to several important long-term trends. For instance, in a series of papers and his recently published book, *The Rise and Fall of American Growth*, Northwestern University economist Robert J. Gordon argues that the U.S. economy is likely to grow more slowly. He traces this deceleration to a slowdown of inno-

vation that began around 1970, particularly compared with the middle of the 20th century.

Gordon describes the century following the Civil War as the period of great economic liberation, when a large portion of the United States was freed from "an unremitting daily grind of painful manual labor, household drudgery, darkness, isolation, and early death." What is more, these stark changes in Americans' way of life were broadly enjoyed, with virtually every American benefiting from the development of public waterworks, electricity, and antibiotics, and most seeing their workweeks become shorter and less physically onerous while their take-home pay increased. Leisure time and retirement, once abstract concepts, became the norm. As a result, Gordon dubs the period 1920-70 as the "Second Industrial Revolution" or "IR #2."

There has been innovation since 1970, Gordon concedes, but it can hardly be compared to IR #2. He argues that the effects of the digital revolution, or "IR #3," which started with innovations that can be traced to the late 1970s and early 1980s but did not produce major changes in the way business was done until the mid-1990s, have been "felt in a limited sphere of human activity, in contrast to IR #2, which changed everything." Moreover, the productivity gains produced by IR #3 were felt most acutely for only about a decade, with advances coming much more slowly since 2004.[4]

In addition to a slowing rate of innovation, Gordon argues that the U.S. economy faces four big headwinds. First, there's rising income inequality, which has reduced the share of economic gains going to the middle and working classes. Second, growth in educational attainment as measured by years of schooling completed has slowed and, among some parts of the population, decreased since 1970. In addition, the quality of primary and secondary education has become more stratified and the costs of higher education have increased. Such trends in education are themselves a contributor to the first headwind, growing income inequality. Third, the United States is experiencing significant demographic changes, most significantly many baby boomers are reaching traditional retirement age. That has reduced the number of hours worked per person. In addition, labor force participation among people who have not yet reached retirement age has dropped. Fourth, federal, state, and local governments face mounting debt, in large measure due to the aging of the population, as spending on "entitlement" programs, such as Social Security and Medicare, increases and pension obligations to public-sector employees grow. Gordon identifies two additional headwinds, which he thinks could be barriers to growth, though they are hard to quantify: "globalization," which could add to growing income inequality, and global warming and other environmental issues, which could require significant resources to address.[5]

Accounting for Growth – The Neoclassical Model

During the 1950s, economist Robert M. Solow of the Massachusetts Institute of Technology (MIT) developed what came to be known as either the "neoclassical growth model" or the "Solow growth model."[6] His model was quite elegant in its simplicity. Output was determined by three factors: capital, labor, and technology. That measure of technology was later dubbed the "Solow residual" or "total factor productivity" (TFP) and includes a variety of things beyond technological progress, strictly speaking. And the evolution of labor and technology was taken as given.

The model has an important implication for long-run per-capita growth: since capital suffers from diminishing returns, capital accumulation can drive growth only in the short run, and, with no technological improvements, per-capita output stagnates in the long run. So long-run growth (in output per worker) is due only to technological progress, or TFP, and that progress is exogenous, meaning it comes from forces outside the economic system. Early measurements done by Solow and others suggested that a very large share of growth was not driven by capital accumulation but by TFP. Indeed, Solow concluded that during the first part of the 20th century in the United States, about 80 percent of nonfarm output growth was due to TFP.[7]

A line of the neoclassical growth literature in the late 1960s attempted to better understand and measure

the factors of production. As New York Fed economist Kevin J. Stiroh has put it, economists working in this period "sought to develop better measures of investment, capital, labor, and other omitted inputs in order to reduce the magnitude of the unexplained residual."[8] That area of research enriched the neoclassical growth model and pioneering work was done by Dale W. Jorgenson and Zvi Griliches, then of the University of California, Berkeley and the University of Chicago, respectively.[9]

Growth theorists in the 1980s and 1990s built on the neoclassical model but changed an important assumption: in their models, technological growth was endogenous rather than exogenous. Endogenous technical change is change that is determined within the economic system, meaning that it is the consequence of the decisions and actions of people in the economy. Still, it is important to note that both neoclassical growth theorists and endogenous growth theorists focus on technology as one of the factors – if not the principal factor – driving long-run economic growth. Indeed, Harvard University economist Elhanan Helpman, a major contributor to the endogenous growth literature, notes that "there is convincing evidence that total factor productivity plays a major role" in accounting for cross-country variations in per-capita income and patterns of economic growth. But while careful growth accounting can help us understand the relative "contribution of inputs and the contribution of total factor productivity, it does not unveil the causes of economic growth."[10]

Explaining Growth – The New Growth Theory

Among the implications of the neoclassical growth model is that economic convergence between countries would occur over time, with poorer countries catching up with richer countries. However, that is not observed in the data. While the cross-country variation in per-capita wealth has been shrinking somewhat in recent decades, as some of the poorest countries in the world have made significant relative gains, there can be no doubt that the gap between what is generally considered the developed world and the developing world remains very large. This observation motivated economists Paul M. Romer, now of New York University, and Robert E. Lucas Jr. of the University of Chicago to, as Romer has put it, "drop the two central assumptions of the neoclassical model: that technological change is exogenous and that the same technological opportunities are available in all countries in the world."[11]

Lucas argued that if the same technology were available everywhere, resources, such as human capital, would not tend to move from where they are scarce to where they are plentiful and substantial differences in the level and growth of income would not persist. Yet both things are true. Lucas' theory is that there are "external effects" of human capital. Economists had long argued that improvements in a worker's human capital had "internal effects" – meaning benefits from building human capital accrued to the worker (and perhaps his or her family). But Lucas, building on the work of sociologist and urban theorist Jane Jacobs, posited that there were spillover effects associated with human capital. As Lucas succinctly noted: "Most of what we know we learn from other people."[12]

Lucas' work was complementary to work being done by Romer in a series of papers at roughly the same time.[13] At the heart of Romer's work is the importance of ideas and their role in innovation and productivity improvements, which he argues is the prime driver of economic growth.

Romer focuses on the technological change that arises because of intentional actions of people responding to market incentives. That is, technology advances because people seek to profit from new ways of producing goods and services. To be sure, there are some people who come up with technological breakthroughs without any commercial applications in mind. But even in those cases, those innovations spur related innovations that do have market value. In this regard, a country's institutions are crucial to providing the proper incentives for innovation and thus growth.

Particularly importantly, ideas are inherently nonrivalrous, meaning they can be used and built upon by multiple people simultaneously. Commenting on Romer's work, Stanford University economist Charles I.

Jones provides a useful example: "If you add one computer, you make one worker more productive. If you add a new idea – think of the computer code for the first spreadsheet or word processor or even the Internet itself – you can make any number of workers more productive."[14] Moreover, in a world of relatively fast transmission of ideas across space, ideas are no longer country or region specific. They can be "imported" from any part of the world fairly easily and cheaply.

Thinking about the Future

Given what we know from both theory and evidence, how should we evaluate the "new normal" hypothesis regarding sluggish future U.S. growth? Gordon presents a plausible outlook. It is true that TFP growth associated with the digital revolution – or, as he puts it, IR #3 – appears to have been relatively short lived relative to TFP growth associated with IR #1 and IR #2. His interpretation for the rise from 1994 to 2004 and the drop thereafter is fairly straightforward: the introduction of the personal computer in the 1980s did not generate major productivity gains until the "invention of the Internet, web browsing, search engines, and e-commerce produced a pervasive change in every aspect of business practice." However, those changes have largely been exploited, and we are unlikely to see major additional changes from those technologies – and the prospect for new technological development that was as revolutionary as what we saw in the middle of the 20th century is unlikely. Yes, we will see more ingenuous apps for our mobile devices but, as he frequently quips in public lectures, "What would you rather have: your iPhone or indoor plumbing?"

Arguably the biggest problem with Gordon's analysis is that trying to predict the future is inevitably fraught with trouble. That is true in nearly every aspect of life. But it is perhaps particularly true when it comes to predicting innovation, which as we know comes in fits and starts.

Gordon's colleague at Northwestern, economic historian Joel Mokyr, argues that there are many areas of science in which significant discoveries seem promising, among them molecular microbiology, astronomy, nanochemistry, and genetic engineering. And while it is true that there is no guarantee that better science will generate improved technology, "there is one reason to believe that in the near future it will do so better and more efficiently than ever before. The reason is access." In other words, searching for vast amounts of information has become fast, easy, and nearly costless. Not only is the era of "Big Data" here but the ability to parse through the most arcane of data is no longer burdensome for people working on the frontiers of knowledge.

Similarly, MIT economist Daron Acemoglu writes: "[T]he macropicture is clear: there is little evidence we are running out of innovations. This is not only because there are literally millions of ideas that can be recombined into new ones to generate new processes and products, but also because every innovation poses new problems and opens the way for yet more innovations." In addition, he argues that in societies with good governance, market signals are sent to innovators to guide their work toward areas where societal benefits are large. As an example, he points to the U.S. pharmaceutical industry, where the production of drugs aimed to address problems faced by aging baby boomers has increased and the quality has improved.[15]

What's more, even if we accept Gordon's hypothesis that technological growth is slowing and is likely to remain sluggish, as measured by TFP, that doesn't necessarily mean that we should discount the importance of recent innovations to human well-being. Princeton University economist Angus Deaton has made this point in an elegant essay that is worth quoting at length:

> I … challenge the proposition that the information revolution and its associated devices do little for human well-being. Many have documented the importance of spending time and socializing with friends and family, but this is exactly the feature of everyday life that the new communication methods work to enhance. All of us can remain in touch with our children and friends throughout every day, videoconferencing is essentially free, and we can cultivate close relationships with people who live thousands of miles away. When my parents said good-bye to relatives and friends

> who left Scotland to look for better lives in Canada and Australia, they never expected to see or talk to them again, except perhaps for a brief and astronomically expensive phone call when someone died. Today, we often do not even know where people are physically located when we work with them, talk to them, or play with them. We can also enjoy the great human achievements of the past and the present, cheaply accessing literature, music, and movies at any time and in any place. That these joys are not captured in growth statistics tells us about the growth statistics, not about the technology. If they are belittled by those who do not use them, it tells us only to pay no attention to those who purport to use their own preference to pass judgments on the pleasures of others.[16]

On balance, there is reason to be sanguine about the prospects for future technological innovation. There is also reason to celebrate recent innovations that may not immediately appear as fundamentally transforming as, say, the development and widespread use of automobiles during the middle part of the 20th century, but that have nonetheless brought great gains to millions of Americans and billions of people worldwide, gains that arguably are not fully captured in many standard measures of well-being. It would be rash to attempt to predict with precision the pace at which future innovation will take place or how important those innovations will be, but it would also be premature to say that America's best days are behind us and that future generations will not live much better than we do today. In the next section, we raise several policy issues that might be addressed to help provide an environment in which innovation can continue to occur and economic growth can be robust. We acknowledge that some of these ideas may be difficult to achieve politically and that some could have adverse economic consequences for segments of the population. Insofar as the latter is true, policymakers may wish to consider ways to compensate those who are made worse off.

Implications for Policy

Perhaps the first thing that policymakers ought to acknowledge when confronting policy issues aimed at boosting innovation and economic growth is that there are factors related to long-term economic growth that are largely beyond their control. One of them is the domestic birth rate. A fact that seems to hold true across nearly all countries is that as they get richer, the fertility rate declines. In 2013, University of Chicago economist Gary S. Becker estimated that more than 80 countries have fewer births annually than are required to replace the number of individuals who die each year, including China, Japan, Russia, Canada, and every country in Western Europe.[17] In the United States, the fertility rate was only slightly above the replacement rate. The United Nations predicts that many of these countries will have smaller populations in 2050 than they do today.[18]

Such trends have significant economic implications. As noted earlier, Gordon argues that demographic trends are one of the four major "headwinds" that the U.S. economy faces. In particular, the declining fertility rate (accompanied by lower overall labor force participation) will make it more difficult to fund entitlement programs such as Social Security and Medicare, which depend on payroll taxes to distribute benefits.

In the neoclassical model, declining population has a very clear and direct effect on output. As the amount of labor falls, so does output. In endogenous growth models, population has the same direct effect on labor input, but many also feature an indirect effect. Growth in such models is largely a function of ideas and the more people in a country, the more ideas they will create. As Charles Jones argues:

> First, just as the total output of any good depends on the total number of workers producing the good, more researchers produce more ideas. A larger population means more Mozarts and Newtons, and more Wright brothers, Sam Waltons, and William Shockleys. Second, the nonrivalry of knowledge means that per capita output depends on the total stock of ideas, not on ideas per person. Each person in the economy benefits from the new ideas created by the Isaac Newtons and William Shockleys of the world, and this benefit is not degraded by the presence of a larger population.[19]

So how might policymakers address the issue of declining fertility rates in the United States? As noted above, this seems to be an issue that is largely out

of their control, at least directly. One could imagine schemes that would subsidize births but, as Becker, who viewed population growth as a net positive, argued, those programs could be expensive and hard to administer. An obvious alternative to domestic population growth is to look abroad and effectively import ideas through more liberalized immigration policies. Consistent with Lucas' theory of economic growth, people can be more productive when placed in close proximity to others, jointly working on projects, than in isolation, though arguably the importance of proximity has declined somewhat as long-distance communication has improved and become cheaper. Policies that would increase the level of skills by making it easier for workers to come to the United States would benefit the immigrants themselves and native-born Americans, on average.

Closely tied to the issue of immigration is that of trade. At least since Adam Smith published *The Wealth of Nations* in 1776, economists have been generally supportive of liberal trade policies. Such policies permit countries to specialize in the production of goods where they have a comparative advantage, as classical economist David Ricardo noted, leading to an increase in output per worker. But Romer points out that the benefits of trade extend beyond increasing the efficiency of the production of goods that already exist. Trade also introduces new or improved types of goods and services from abroad.[20]

Similarly, economists Gene Grossman of Princeton University and Elhanan Helpman of Harvard University posit a theory of integration and growth, where trade may help the process of technological dissemination if foreign exporters suggest ways that their goods can be used more productively or foreign importers indicate how local products can be made more attractive to consumers in their country. In addition, exposure to international competition may mitigate redundancy in industrial research. Thus, policymakers ought to be wary of imposing barriers that would impede such transactions and make most people worse off than they otherwise would be.[21]

Education is also clearly important to the future of economic growth in the United States. In particular, it appears that there are significant returns to early childhood education. Skills that are acquired early in life tend to build on each other over time.[22] Relatedly, we ought to take a broad view of what we mean by the term "skills." Some skills may not be easily measurable through standardized tests but seem to have important long-run effects. For instance, noncognitive skills such as following instructions, patience, and work ethic can lay the foundation for mastering more complex cognitive skills later in life.[23]

The cumulative effects of economic regulation appear to be exerting a drag on the U.S. economy. While some regulations – for instance, those that require firms to effectively internalize the costs they impose on others – arguably promote both efficiency and equity, many regulations serve little aggregate economic purpose but instead deliver concentrated benefits for certain groups, often by helping to protect them from competition. Gordon dubs these barriers to entry as "regressive regulation" and identifies excessive monopoly privileges granted under intellectual property law, protection of incumbent service providers through occupational licensing, and artificial scarcity through land-use regulation as areas ripe for reform.[24]

In sum, there can be little doubt that the U.S. economy does face some significant challenges. However, the "new normal" is far from a given. The prospects for continued innovation that improves measured as well as unmeasured standards of living remain stronger than the skeptics maintain. And there are policy areas that, if addressed thoughtfully, likely could yield improvement in economic performance and human welfare. It might be hard for many people to imagine the U.S. economy growing like it did in, say, the 1950s, but how many Americans in 1930 would have thought that the rest of the 20th century would have produced such massive gains for such a huge swath of the population? ■

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Endnotes

[1] This article is based on an essay that appeared in the Federal Reserve Bank of Richmond's 2015 Annual Report.

[2] See Mohamed A. El-Erian, "Navigating the New Normal in Industrial Countries," Per Jacobsson Foundation Lecture at the International Monetary Fund, Washington, D.C., October 10, 2010; and Christine Lagarde, "The Challenge Facing the Global Economy: New Momentum to Overcome a New Mediocre," Speech at the School of Foreign Service, Georgetown University, Washington, D.C., October 2, 2014.

[3] See Dale W. Jorgenson, Mun S. Ho, and Jon D. Samuels, "Long-Term Estimates of U.S. Productivity and Growth," Presented at the Third World KLEMS Conference, May 19–20, 2014, Tokyo.

[4] Robert J. Gordon, *The Rise and Fall of American Growth: The U.S. Standard of Living Since the Civil War*, Princeton, N.J.: Princeton University Press, 2016, pp. 566–579. The first chapter and a related TED talk are available online.

[5] Gordon, pp. 605–639.

[6] See, in particular, the following two papers by Robert M. Solow: "A Contribution to the Theory of Economic Growth," *Quarterly Journal of Economics*, February 1956, vol. 70, no. 1, pp. 65–94; and "Technical Change and the Aggregate Production Function," *Review of Economics and Statistics*, August 1957, vol. 39, no. 3, pp. 312–320.

[7] Solow, p. 314–316

[8] Kevin J. Stiroh, "What Drives Productivity Growth?" Federal Reserve Bank of New York *Economic Policy Review*, March 2001, vol. 7, no. 1, p 41.

[9] See Dale W. Jorgenson and Zvi Griliches, "The Explanation of Productivity Change," *Review of Economic Studies*, July 1967, vol. 34, no. 3, pp. 249–283.

[10] Elhanan Helpman, *The Mystery of Economic Growth*, Cambridge, Mass.: Harvard University Press, 2004, pp. 26–33.

[11] Paul M. Romer, "The Origins of Endogenous Growth," *Journal of Economic Perspectives*, Winter 1994, vol. 8, no. 1, p. 4.

[12] See Robert E. Lucas Jr., "On the Mechanics of Economic Development," *Journal of Monetary Economics*, July 1988, vol. 22, no. 1, pp. 3–42.

[13] See, in particular, the following three papers by Romer: "Increasing Returns and Long-Run Growth," *Journal of Political Economy*, October 1986, vol. 94, no. 5, pp 1002–1037; "Growth Based on Increasing Returns Due to Specialization," *American Economic Review Papers and Proceedings*, May 1987, vol 77, no. 2, pp 56–62; and "Endogenous Technical Change," *Journal of Political Economy*, vol. 98, no. 5, part 2, October 1990, pp. S71-S102. A working paper version is available online.

[14] Charles I. Jones, "On the 25th Anniversary of Romer (1990)," Manuscript, Stanford University, October 22, 2015.

[15] Daron Acemoglu, "The World Our Grandchildren Will Inherit," In *In 100 Years: Leading Economists Predict the Future*, edited by Ignacio Palacios-Huerta, Cambridge, Mass.: MIT Press, 2013, pp. 25–26.

[16] Angus Deaton, "Through the Darkness to a Brighter Future," In *In 100 Years: Leading Economists Predict the Future*, edited by Palacios-Huerta, p. 41.

[17] Gary S. Becker, "Low Birth Rates: Causes, Consequences, and Remedies," Becker-Posner Blog, August 18, 2013.

[18] United Nations, "World Population Prospects: 2015 Revision," New York, July 29, 2015.

[19] Charles I. Jones, "Growth and Ideas," In *Handbook of Economic Growth*, Volume 1B, edited by Philippe Aghion and Steven N. Durlauf, Amsterdam: Elsevier, 2005, p. 1073. A working paper version is available online.

[20] Paul M. Romer, "New Goods, Old Theory, and the Welfare Costs of Trade Restrictions," *Journal of Development Economics*, February 1994, vol. 43, no. 1, pp. 5–38. A working paper version is available online.

[21] It is true that liberal trade policies do produce some net losers. For instance, those people formerly employed in industries that are now partly or largely located in other countries may be worse off due to international trade. But rather than trying to restrict the free flow of ideas and goods – thereby blunting the substantial economic benefits that result – a more desirable alternative, insofar as any action is taken, would be to provide financial compensation for those who have been harmed economically. For an overview of the merits of different policies that would achieve that end, see Earl L. Grinols, "Pure and Mixed Price and Income Compensation Schemes: Breaking Political Roadblocks to Trade Reform," In *The Political Economy of Trade Policy: Papers in Honor of Jagdish Bhagwati*, edited by Robert C. Feenstra, Gene M. Grossman, and Douglas A. Irwin, Cambridge, Mass.: MIT Press, 1996, pp. 129–144.

[22] James J. Heckman, "Schools, Skills, and Synapses," *Economic Inquiry*, July 2008, vol. 46, no. 3, pp. 289–324. A working paper version is available online.

[23] Samuel Bowles, Herbert Gintis, and Melissa Osborne Groves, "Intergenerational Inequality Matters," In *Unequal Chances: Family Background and Economic Success*, edited by Samuel Bowles, Herbert Gintis, and Melissa Osborne Groves, Princeton, N.J.: Princeton University Press, 2008, pp 1–22.

[24] See Gordon, p. 649