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Article

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Slower U.S. Growth in the Long- and Medium-Run

Robert J. Gordon

Initially appointed in 1968, Robert J. Gordon is one of the NBER’s longest-serving research associates. His research program affiliations include Economic Fluctuations and Growth, International Finance and Macroeconomics, and Productivity, Innovation, and Entrepreneurship. He has served as a member of the NBER Business Cycle Dating Committee since 1978, and is the Stanley G. Harris Professor in the Social Sciences at Northwestern University.

Gordon’s research spans numerous aspects of supply-side macroeconomics. He helped to integrate the analysis of supply shocks into macroeconomics, and his dynamic inflation model explains why inflation can be both positively and negatively correlated with unemployment, depending on the sources of shocks. He has also carried out extensive research on measurement errors in price indices for durable goods, clothing, and housing.

Gordon received his B.A. from Harvard, an M.A. from Oxford and his Ph.D. from MIT. He is a Distinguished Fellow of the American Economic Association and a fellow of both the Econometric Society and the American Academy of Arts and Sciences.

Gordon lives in Evanston, Illinois, with his wife, Julie, and their dog, Toto. He enjoys theater, music, and photography and invites readers to google “Photos of Economists” for a web gallery of 325 photos of economists dating back to 1967.

The annual growth rate of U.S. per-capita real GDP remained remarkably steady at 2.1 percent between 1890 and 2007. Until recently, it was widely assumed that the Great Recession of 2007–09 and the slow recovery since 2009 represented only a temporary departure from that steady long-run growth path. Growth theory, which tends to take the economy’s underlying rate of technological change as exogenous, was consistent with the widespread expectation that in the long run the economy’s growth rate would soon return to the longstanding 2 percent annual rate.

In a series of research papers dating back 15 years, I have questioned the presumption of a constant pace of innovation and technological change. More recently, in several papers I have described a variety of “headwinds” that are in the process of slowing the economy’s growth rate independently of the contribution of innovation. Taken together, these headwinds and a slowing pace of innovation have led me to predict that the economy’s long-run growth rate is less than 2 percent per year, that the capital-deepening and TFP growth slowdown did not dampen the productivity growth during 2004–14 was even slower than during 1970–96. And that 0.9 percent per year, reflecting declining population growth due to declining fertility and immigration. The education headwind involves both the ongoing decline in the Labor-force participation rate (LFPR). Retirement of the baby-boom generation causes hours per person to decline at a rate of 0.8 percent per year. Since 2009, the LFPR has been declining at about 0.8 percent per year, reflecting declining population growth due to declining fertility and immigration. The education headwind involves both the ongoing decline in the LFPR. Retirement of the baby-boom generation causes hours per person to decline at a rate of 0.8 percent per year. Since 2009, the LFPR has been declining at about 0.8 percent per year, reflecting declining population growth due to declining fertility and immigration.

The “Headwinds” That Are Slowing the Pace of U.S. Economic Growth

The headwinds that are in the process of slowing U.S. economic growth include demography, education, inequality, and the federal debt. Each of these alters the growth of long-run real output per capita in a different way. The federal debt headwind, by reducing hours per person, shrinks the growth rate of real per-person output relative to the growth rate of productivity growth. The education headwind directly reduces growth in both productivity and real output per person. The inequality headwind reduces the growth rate of per-person income in the bottom 99 percent of the income distribution below the average for all income-earners. The federal debt headwind causes a decline in disposable income relative to total income as a result of cuts in benefits or increases in taxes needed to stabilize the federal debt-GDP ratio.

The first component of the demographic headwind is the slowing rate of population growth due to declining fertility and immigration. While a decline in the rate of population growth has no direct impact on per-person output, slowing population growth does put downward pressure on aggregate demand due to the declining need for net investment in residential housing as well as shopping centers and other types of nonresidential building. The second and more important demographic component is the ongoing shrinkage in aggregate work hours relative to the size of the population, and this in turn is due to the ongoing decline in the labor-force participation rate (LFPR).

The baby-boom generation causes hours per person to decline at a rate of 0.8 percent per year. Since 2009, the LFPR has been declining at about 0.8 percent per year, reflecting declining population growth due to declining fertility and immigration.

The education headwind involves both the ongoing decline in the LFPR. Retirement of the baby-boom generation causes hours per person to decline at a rate of 0.8 percent per year. Since 2009, the LFPR has been declining at about 0.8 percent per year, reflecting declining population growth due to declining fertility and immigration.
The reduced pace of growth-enhancing innovation after 1970, as well as the demographic and education headwinds, result in projected growth of U.S. real output per person over the next 25 years of 0.9 percent per annum as compared to 2.1 percent per annum during 1890–2007. This average rate of 0.9 percent does not apply to the great majority of American households because of the incalculable rise of inequality that has occurred since the late 1970s. The inequality data of Thomas Piketty and Emmanuel Saez can be used to calculate that for the 1993–2013 interval the growth rate of income for the bottom 99 percent of the income distribution lagged the overall average by 0.5 percent per annum. If this were to continue, it would reduce growth of real income per capita for the bottom 99 percent to 0.4 percent per year, 0.5 percentage points slower than the 0.9 percent average for all income earners. The forces leading to greater income inequality are many and differ for the top one percent and bottom 99 percent of the income distribution, and few of these forces are likely to lose relevance over the next few decades.3

The fourth headwind reflects CBO projections that the federal debt-GDP ratio will rise steadily after 2020 as a result of growth in entitlements, mainly Social Security and Medicare, and because of the slower than the 0.9 percent average for all workers of productivity growth after 1970, as well as the demographic environment. The 1.6 percent potential growth rate is almost exactly half of the realized growth rate of actual real GDP between 1972 and 2004; of this difference, roughly one-third is due to slower productivity growth, and the other two-thirds to slower growth in aggregate hours of work.

Output Growth in the Medium Run

When the U.S. unemployment rate fell below 6 percent in late 2014, attention began to shift from short-run demand factors that affected the labor market to longer-term considerations such as the economy’s potential output growth rate that would set a limit on the rate at which actual output could grow once the unemployment rate stabilized at a particular value. I proposed a simple method of calculating the growth rate of potential GDP based on estimates of each component of the “output identity,” a definition linking output to productivity, hours by employee, the employment rate, the LFP, and the size of the population. Based on alternative estimates of productivity growth and the change in the LFP, I calculated a range of three values for the potential output growth rate. The central projection of 1.6 percent per annum is much lower than the 2.2 percent annual growth rate currently assumed by the CBO, a difference that implies the CBO has overestimated GDP by nine percentage points (78 vs. 87 percent).4

Slow productivity growth contributes to slower real GDP growth. In contrast to the CBO, I have used primary measures of the labor force, including discouraged workers, the LFP, and the size of the population. The 1.6 percent potential growth rate is much lower than the 2.2 percent annual growth rate currently assumed by the CBO, and the central projection of 1.6 percent per annum is much lower than the 2.2 percent annual growth rate currently assumed by the CBO in its central projections.5

My research, in collaboration with Michael Huberman, David Jacks, David Liu, Dennis Noyy, and Kim Oosterlinck, seeks to shed further light on the causes and consequences of the international trade boom between 1870 and 1914. About how much did trade costs actually fall in this period of globalization? What fraction of the rise in trade flows can be explained by the decline in trade costs? What were the relative contributions of geography, policy, and technology in explaining the first wave of globalization? What impact did trade costs and trade integration have on welfare and then on institutional and policy outcomes such as labor standards or the level of democracy? To help answer these questions we have digitized and compiled a large amount of historical data from national data sources covering bilateral trade flows, GDP, gross production, and many other geographic and policy variables. Comprehensive bilateral trade data were recorded in the 19th century by national authorities and colonial powers, since a large fraction of government revenue came from taxes on international trade. Moreover, as I will detail below, not only can we make use of aggregate bilateral trade data, but economic historians are now able to rely on bilateral, product-level trade flows which provide greater granularity and deeper insight into the architecture of the first wave of globalization. While research is only just beginning as regards the latter, these data will allow us to gain a greater understanding of forces driving globalization and its connections to economic growth, both in domestic industries and their followers. Such questions potentially have great relevance today both to developing countries and to leading countries that are being strongly affected by globalization. This brief survey discusses what we can learn from these data sets and analyze them with the help of trade theory and modern empirical methods.

Trade Costs and the Determinants of Globalization

Trade costs can be broadly defined as the resource costs of shipping and trading commodities across international borders. When such trade is costly, foreign demand for domestic goods is assumed to be lower than it would be in the absence of such costs. What role did these costs play in explaining the growth of international trade and the types of goods traded during the first globalization? Especially important aspects of the 25–34 age cohort is little different than the 55–64 cohort. In all other industrialized countries attainment of the young is substantially greater. An additional issue that will subtract from future productivity growth is the poor quality of educational outcomes in high school. The OECD international Programme for International Student Assessment tests of 15-year-olds reveal that American scores in reading, math, and science rank in the bottom half of the nations tested. The NBER’s Program on the Determinants of Globalization, the determinants of international trade, and the impact of international trade on policies and institutions. Other research focuses on international capital flows in the first wave of globalization, the origins and consequences of foreign currency debt, and the determinants and consequences of financial crises. Meissner received his A.B. in economics from Washington University in St. Louis in 1996 and his Ph.D. in economics from the University of California, Berkeley, in 2001. Before joining UC Davis, Meissner was a lecturer in economics at Cambridge University and a fellow of King’s College, Cambridge. Meissner lives in Davis, California, with his wife and four children and also spends a good deal of time in the far north of France, near Lille. Science fiction, foreign films, eating and cooking spicy food, and endless home improvement projects keep him busy when time permits.

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