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Article

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Research Summaries

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 a 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, Toro. He enjoys theater, music, and photography and invites readers to google “Photographs of Economists” for his 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 and, independently of the contribution of innovation. Taken together, these headwinds and a slowing pace of innovation lead me to predict that the economy’s long-run growth rate of per-capita real GDP over the next 25 years or so will be 0.9 percent, less than half of the historic pre-2007 rate of 2.1 percent. And that 0.9 percent will not be available to most of the population, as growing inequality will cause a disproportionate share of available output growth to accrue to those whose incomes fall in the top one percent of the income distribution. Growth of per-capita real income for the bottom 99 percent of the income distribution will be 0.5 percent per year or less. This research summary begins with a look at the factors involving innovation and the headwinds that are in the process of reducing long-run growth. A subsequent section describes a new technique to estimate the growth rate of the economy’s underlying potential output, an analysis which concludes that the economy’s potential growth rate falls well short of that currently assumed in the projections of the Congressional Budget Office (CBO).

The Pace of Innovation and the “One Big Wave”

Any treatment of U.S. long-run growth must distinguish between productivity and per-capita output. While these two measures of the growth process are sometimes treated as interchangeable, they are not. The growth rate of output per person equals the growth rate of output per hour plus the growth rate of hours per person. While per-person output growth was relatively steady over the entire period between 1890 and 2007, growth of output per hour and of hours per person were not. In particular, labor productivity experienced a half-century of rapid growth between 1920 and 1970; then slowed markedly after 1970. This productivity slowdown did not dampen the growth rate of per-person output because the growth of hours per person was bolstered by the entry to women into the labor force.

The basic measure of the pace of innovation in an economy is the growth rate of total factor productivity (TFP), which is calculated by subtracting from labor productivity the contribution of growth in the capital-labor ratio (capital deepening) and the effect of higher educational attainment. Because the capital-deepening and education effects were relatively constant between 1900 and 2007, TFP growth has been an even-more-pronounced peak during the first half of the 20th century—20.7 percent in total manufacturing value-added exhibited a similar sharp peak in 1998–2000 followed by much lower values after 2000, and the share of TFP in total value-added also reached its fastest pace of decline during the same narrow time span of 1998–2000.

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 basic headwind, by reducing hours per person, shrinks the growth rate of real per-person output per below the rate of productivity growth. The education headwind directly reduces growth in both productivity and in 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, which I argue is the dominant factor, 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-capita output, a continuation of the U.S. downward pressure on aggregate demand due to the declining need for net investment in residential housing as well as shop- ping centers and other types of nonresidential building, the second and more impor tant 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). Retirement of the baby-boom generation causes hours per person to decline at 0.6 percent per year. Since 2009, the LFPR has been declining at about 0.68 percent per year, reflecting declining participation rates in the labor force due to the baby-booms retirement phenomenon. Key groups exhibiting a declining LFPR are adult men in the 25–54 age group and youth of both sexes aged 16 to 24. Any future decline in the LFPR, including the inevitable further contribution of baby-boom retirement to slowing growth in labor hours, reduces the growth rate of output per person relative to output per hour.

The education headwind involves both educational attainment and educational performance. Rising educational attainment between 1910 and 1970, as the high-school completion rate increased from 10 to 80 percent, was an important source of pro ductivity growth during the “one big wave” period of 1920–70. The rate of high school completion has changed little in the past four decades. Even though the college completion rate continues to inch up, the U.S. remains the only nation in which the educa
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 by 2031 will be equal to the 1970s. This increase in that ratio, some combination of benefit reductions and tax increases will need to occur. This will reduce disposable income below the amount that otherwise would be available to fuel growth in per capita real income.

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 shift, hours per 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 prediction 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 overstated 2024 real GDP by $2 trillion. Because slower future output growth implies less economic growth, meaning sustained rises in living standards of those participating. Modern economic growth, meaning sustained rises in the standard of living, became the new norm. Social and political transformations in the economic 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; if this difference, roughly one-third is due to slower productivity growth and the other two-thirds to slower growth in aggregate hours of work. 1


New Perspectives on the First Wave of Globalization

Christopher M. Meissner

The first “Great Wave of Globalization,” during the late 19th and early 20th centuries, witnessed a historically unprecedented pattern of economic integration. Between 1850 and 1914, transportation costs plummeted, information flows accelerated, tariffs fell, trade treaties such as free trade agreements with unconditional most-favored-nation clauses and treaty ports proliferated, and empires expanded. In addition, a set of global financial inter- mediaries flourished, migrants flowed to previously unsettled regions in unprecedented numbers, and economic and political stability was largely the norm. Unsurprisingly, many commodity prices converged and the export share of total production increased dramatically, driving a remarkable growth in economies between 1850 and 1914. In addition, new markets opened up to international trade and previously unavailable varieties of goods became accessible. Patterns of specialization and production processes were transformed. All of these forces were an important part of the first globalization? Especially important.

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 colo- nial powers, since a large fraction of gov- ernment revenue came from taxes on inter- national trade. Moreover, as I will detail below, not only can we make use of aggregate bilateral trade data, but economic his- torians are now able to rely on bilateral, product-level trade flows which provide greater granularity and deeper insight into the mechanics of the first wave of global- ization. While research is only just begin- ning as regards the latter, these data will allow us to gain a greater understand- ing of forces driving globalization and its connections to economic growth, both in industrial leaders 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 emerges when we combine these data sets and analyze them with the help of trade theory and modern empiri- cal 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 bor- ders. 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 trade costs play in explaining the growth of international trade and the types of goods traded during the first globalization? Especially impor-