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No More Industrial Revolutions?

By THOMAS B. EDSALL

The American economy is running on empty. That's the hypothesis put forward by Robert J. Gordon, an economist at Northwestern University. Let's assume for a moment that he's right. The political consequences would be enormous.

In his widely discussed National Bureau of Economic Research paper, "Is U.S. Economic Growth Over?" Gordon predicts a dark future of "epochal decline in growth from the U.S. record of the last 150 years." The greatest innovations, Gordon argues, are behind us, with little prospect for transformative change along the lines of the three previous industrial revolutions:

IR #1 (steam, railroads) from 1750 to 1830; IR #2 (electricity, internal combustion engine, running water, indoor toilets, communications, entertainment, chemicals, petroleum) from 1870 to 1900; and IR #3 (computers, the web, mobile phones) from 1960 to present.

Gordon argues that each of these revolutions was followed by a period of economic expansion, particularly industrial revolution number two, which saw "80 years of relatively rapid productivity growth between 1890 and 1972." According to Gordon, once "the spin-off inventions from IR #2 (airplanes, air conditioning, interstate highways) had run their course, productivity growth during 1972-96 was much slower than before." Industrial revolution number 3, he writes:

> created only a short-lived growth revival between 1996 and 2004. Many of the original and spin-off inventions of IR #2 could happen only once – urbanization, transportation speed, the freedom of females from the drudgery of carrying tons of water per year, and the role of central heating and air conditioning in achieving a year-round constant temperature.

Over most of human history, in Gordon's view, the world had minimal economic growth, if it had any at all — and "there is no guarantee that growth will continue indefinitely." Gordon's paper suggests instead that "the rapid progress made over the past 250 years could well turn out to be a unique episode in human history."

The United States faces "headwinds" that could cut annual growth in Gross Domestic Product to as little as 0.2 percent annually, which is one tenth the rate of growth from 1860 to 2007.

The headwinds Gordon cites include:

*The reversal of the "demographic dividend." The huge one-time-only surge of women into the workforce between 1965 and 1990 raised hours per capita and "allowed real per capita real G.D.P. to grow faster than output per hour." Now the number of workers who are retiring is growing, reducing the average number of hours worked for the entire population. "By definition, whenever hours per capita decline, then output per capita must grow more slowly than productivity."

*Rising inequality means that the majority of the population will get a smaller fraction of the benefits of economic growth.

*America is losing the competitive advantage it long enjoyed based on the educational achievement of its workforce. Gordon cites O.E.C.D. data showing that out of 37 countries surveyed, the United States recently ranked 21st in reading, 31st in math, and 34th in science. Higher education cost inflation, Gordon adds, “leads to mounting student debt, which is increasingly distorting career choices and deterring low-income people from going to college at all.”

*Globalization and rapid advances in information technology encourage outsourcing and automation, which inevitably have “a damaging effect on the nations with the highest wage level, i.e., the United States.”

Taken in full, Gordon’s controversial N.B.E.R. paper challenges our belief that innovation and invention will continue to drive sustained expansion in the United States.

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Daron Acemoglu, an economist at M.I.T and co-author of the book “Why Nations Fail: Origins of Power, Poverty and Prosperity,” wrote in response to an email I sent him asking about Gordon’s hypothesis:

Bob has been a good corrective to people who think that the innovations of today are transforming the world in a way that those of yesteryear never did. This is a very important corrective. But I think he misses the major engine of innovation: the market tends to find whatever is profitable, even if we cannot see what that is today.

Lawrence Katz, an economist at Harvard, wrote to me that the Gordon essay “is a wise and thoughtful piece but a very, very speculative one. The historical evidence presented is quite reasonable.” Katz noted that projections of “what new ideas will be discovered and their potential impacts on economic growth” are “highly uncertain.” In the end, he said, “I am probably a bit more optimistic on the potential for innovation but I share Gordon’s worries about inequality and education and environmental issues.”

David Autor, who is also an economist at M.I.T., has written extensively about problems with employment and job growth, but he holds a more optimistic view than Gordon:

My guess is that the big gains in the next couple of decades are likely to come from the medical arena — prolonging life, tackling disease, correcting genetic deficiencies, regrowing limbs, reversing the course of Alzheimer’s.

Autor had another thought:

It’s my hope — but here I’m less confident — that advances in energy generation (solar, wind power, efficiency itself) will contribute to stemming global warming by reducing carbon emissions. That would be a major improvement to the expected trajectory of G.D.P.

Martin Wolf, an economic columnist for the Financial Times, has opened up a discussion of the political implications of Gordon’s bleak assessment of the American future, writing:

For almost two centuries, today’s high-income countries enjoyed waves of innovation that made them both far more prosperous than before and far more powerful than everybody else. This was the world of the American dream and American exceptionalism. Now innovation is slow and economic catch-up fast. The elites of the high-income countries quite like this new world. The rest of their population like it vastly less. Get used to this. It will not change.

If Gordon is even modestly on target, the current presidential campaign begins to ring hollow. Listen to the rhetoric. “Mitt Romney’s plan for a stronger middle class is a five-part proposal for turning around the economy and delivering more jobs and more take-home pay for American families,” the Romney campaign declares on its web site. “His plan will end the middle class squeeze of declining incomes and rising prices, bring back prosperity, and create 12 million jobs during his first term.”

Over at the Obama web site, you find: “President Obama is fighting to grow the economy from the middle class out, not the top down. This election presents a choice between two fundamentally different visions of how to grow our economy and create good middle-class jobs.”

Juxtapose these campaign claims with Gordon’s chart describing the growth of G.D.P. per capita over the last 810 years. The blue line represents G.D.P. growth in England, which benefitted from the industrial revolution first. The point on the chart where the line shifts to the color red (the early 20th century) is the moment when the United States replaced England as the global leader in productivity growth.
Courtesy of Robert J. Gordon

Gordon’s chart demonstrates that there was a sustained lack of productivity growth from 1300 to 1700, which supports his argument that economic expansion is a relatively recent phenomenon and by no means inevitable. The chart also illustrates the decidedly downward turn that American growth rates have taken since the mid-1970s.

Gordon goes on to raise the stakes, extending his projections into the future. The green line in the second Gordon graph charts his view of the hypothetical path of real G.D.P. per capita growth over the next 88 years. It is a grim image. Gordon describes a steadily diminishing rate of growth in the United States:

Doubling the standard of living took five centuries between 1300 and 1800. Doubling accelerated to one century between 1800 and 1900. Doubling peaked at a mere 28 years between 1929 and 1957 and 31 years between 1957 and 1988. But then doubling is predicted to slow back to a century again between 2007 and 2100. Of course the latter is a forecast.

In essence, Gordon is saying that there won’t be a fourth industrial revolution:
Courtesy of Robert J. Gordon

Why is this related to inequality? Because the burden of this decline will fall on the bulk of the population. The continuing prosperity of the wealthiest, on the other hand, will be magnified.

Using detailed income data compiled by Emmanuel Saez, a Berkeley economist, Gordon calculated that from

> 1993 to 2008, the average growth in real household income was 1.3 percent per year. But for the bottom 99 percent, growth was only 0.75, a gap of 0.55 percent per year. The top one percent of the income distribution captured fully 52% of the income gains during that 15-year period.

In supplementary material emailed to The Times, Gordon acknowledged that

> Globalization will add to U. S. growth in the same sense that economists have always argued that free trade creates more winners than losers. But the losers from globalization are those not only whose jobs are lost to imports and outsourcing, but those whose incomes are beaten down as foreign investment flocks to southern states with lower wages, and as corporations

> like Caterpillar are successful in extracting concessions on wages and benefits from their employees. And the winners are C.E.O.s of multinational companies like Caterpillar who see their profits and stock prices rise as they build factories abroad, whether or not any jobs are created at home.

Intellectually, both the Obama and Romney campaigns are undoubtedly aware of the general line of thinking that lies behind Gordon's analysis, and of related findings in books like "The Great Stagnation" by Tyler Cowen of George Mason University. Cowen argues that innovation has reached a "technological plateau" that rules out a return to the growth of the 20th century.

For Obama, the argument that America has run out of string is politically untouchable. In the case of Romney and the Republican Party, something very different appears to be taking place.

There are two parallel realizations driving policy thinking on the right. The first is the growing consciousness of the threat to the conservative coalition as its core constituency – white voters, and particularly married white Protestants — decreases as a share of the electorate. Similarly, the conservative political class recognizes that the halcyon days of shared growth, with the United States leading the world economy, may be over.

While Gordon projects a future of exacerbating inequality (as an ever-increasing share of declining productivity growth goes to the top), the wealthy are acutely aware that the political threat to their status and comfort would come from rising popular demand for policies of income redistribution.

It is for this reason that the Republican Party is determined to protect the Bush tax cuts; to prevent tax hikes; to further cut domestic social spending; and, more broadly, to take a machete to the welfare state.

Insofar as Republicans prevail in their twin aims of cutting – or even eliminating – social spending, and maintaining or lowering tax rates, they will have succeeded in obstructing the restoration of social insurance programs in the future.

Affluent Republicans – the donor and policy base of the conservative movement — are on red alert. They want to protect and enhance their position in a future of diminished resources. What really provokes the ferocity with which the right currently fights for regressive tax and spending policies is a deeply pessimistic vision premised on a future of hard times. This vision has prompted the Republican Party to adopt a preemptive strategy that anticipates the end of growth and the onset of sustained austerity – a strategy to make sure that the size of their slice of the pie doesn't get smaller as the pie shrinks.

This is the underlying and inadequately explored theme of the 2012 election.

Thomas B. Edsall, a professor of journalism at Columbia University, is the author of the book "The Age of Austerity: How Scarcity Will Remake American Politics," which was published earlier this year.