

August 12, 2013

The Gordon Dilemma

Robert Gordon is a well-known economist who teaches at Northwestern University. He was a member of the Boskin Commission that assessed the accuracy of the CPI and is also a member of the National Bureau of Economic Research, the body that dates business cycles. Part of his research has focused on long-term economic and productivity growth.

In August 2012, he published a working paper suggesting that U.S. economic growth was “over.”¹ Gordon’s thesis is that the first two industrial revolutions, the first starting in 1750 in England and the second in 1870 in the U.S., were so remarkable that nothing else has had a similar impact. Although Gordon does acknowledge a third revolution, the computer and internet revolution which began around 1960, he suggests the impact pales in comparison to the earlier two revolutions.

From there, Gordon argues that the jump in growth that occurred from the first two revolutions will not likely be repeated, meaning that growth will slow down to the pre-revolutionary trend. That isn’t to say that growth will become non-existent. Instead, growth will slow to around 1.5% per year permanently.

The geopolitical impact of such a slowdown would be significant. The global superpower generally is dominant in both the military and economic spheres. It will be difficult for the U.S. to maintain such dominance with such slow growth. Not only will fiscal restraints develop because of this slow growth, which will make military budgets problematic, fulfilling the reserve currency role and the global importer of last resort function will become nearly impossible as well.

In this report, we will discuss Professor Gordon’s thesis, examine the geopolitical impact if he is correct and offer some criticisms of his thesis. We will conclude with potential market ramifications.

The Gordon Thesis

Gordon argues that the first two industrial revolutions had such a profound effect on living standards that it is almost hard to imagine anything following that would be as significant. The first industrial revolution was primarily the use of steam power. Until the steam engine, sailing ships and animal propulsion were the only ways that people could move. Simply put, other than human locomotion, one could only move as fast as a horse or a sailing ship. Although heavy objects could be sailed at relatively low cost, land transportation was very expensive. Pre-industrial revolution life had other difficulties as well. Illumination was expensive and dangerous; open flames were usually required, which could cause fires. Even if these were avoided, indoor air was polluted by soot and smoke.

¹ NBER Working Paper 18315, “Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds,” Aug 2012.

Horses, the primary means of power and individual transportation outside of waterways, produced 20 to 50 pounds of manure and a gallon of urine *daily*.

A survey by the North Carolina Farmer's Alliance in 1886 estimated that the average farm wife walked 148 miles per year while hauling 35 tons of water due to the lack of indoor plumbing. Although the second industrial revolution was underway by 1886, its effects had clearly not spread to rural areas.

Railroads had an enormous impact on the economy. This technology allowed large amounts of goods to be moved cheaply from anywhere a rail line was built. Large investments were made to expand rail lines in Europe and North America. Steamship increased the speed and efficacy of water-born shipping as well.

However, the second industrial revolution had an even larger impact. This revolution was driven by five developments—electricity, the internal combustion engine, plumbing, heating and cooling, industrial chemistry and communications.

Electricity allowed for the development of safe lighting, motors that transformed power, which created mechanized factories and household appliances, elevators that fostered new architecture and revolutionized urban transportation by subways and elevated trains.

The internal combustion engine created the automobile industry, which not only fostered industrial growth, it created the need for roads and new industries to support both cars and ancillary services. In addition, automobiles had a serious impact on social conditions. Now it was possible for farmers to travel to cities and urban dwellers to

travel to the country. Before, it was only the wealthy that could pay for a horse and carriage² and thus make similar trips. In addition, removing horses from transportation dramatically reduced pollution and improved public health. Indoor plumbing freed household workers (mostly women) from the drudgery of hauling water, and ended the unpleasant need to go outside (in the cold or rain) for bodily functions.

In houses before electric and natural gas heating, coal and wood burning caused interior pollution; in addition, heating was poorly distributed, warm around the heat source but cold everywhere else. There was little relief from the heat—even window screens were uncommon before 1870. Air conditioning, which was commercially developed in the 1930s, along with modern heating units, allowed interior spaces to have steady temperatures year round.

Industrial chemistry allowed for the development of synthetic fibers, petrochemicals (including gasoline, diesel fuel and kerosene), antibiotics and other drugs, along with fertilizers and pesticides. This development created fuels for internal combustion vehicles, improved health and crop production. New pharmaceuticals meant that infectious diseases were less likely to end in death. The widespread deployment of vaccines did the same thing.

Finally, the communication revolution moved from telegraph to telephone, radio and television. Not only could messages be sent nearly instantaneously, but new forms of sophisticated entertainment were developed. Communication created new

² Gordon estimates that the cost of maintaining a horse for a year equaled the cost of purchase. Automobiles dramatically lowered maintenance costs.

industries and, socially, it became a platform to unify societies. Citizens could talk over great distances and watched the same movies.

The sum of these changes was monumental. In terms of travel speeds, in 1860, a horse tram moved at three miles per hour. By 1904, the New York IRT commuter train was traveling at 40 mph, and by 1940 the Chicago North Shore Railroad hit 80 mph. By 1958, a Boeing 707 flew at 550 mph.³ In about a century, travel speeds had improved at a phenomenal pace, from three to 550 mph.

Medical advances show a similar pattern. In 1900, the average American's life expectancy at birth was 49 years. By 1950, it had increased to 68 years. By 2008, it had increased to 78 years. Although improving, the pace of improvement has clearly slowed. Another interesting fact—in 1900, a five-year-old had a life expectancy of 55 years. Essentially, living five years indicated that the person had survived childbirth and most of the childhood infectious diseases. By doing so, almost through a process of natural selection, they were likely to live longer. In 2008, a five-year-old has a life expectancy of 73.7 years, about five years less than at birth. The childbirth and infectious diseases that affected the very young at the turn of the last century have become less of an issue.

Gordon's premise is that the changes seen over the past 150 years simply may not be repeatable. In other words, the pace of development that began with the first industrial revolution and accelerated with the second one may simply be a "one-off." People living over the past 250 years may have experienced the best quarter millennia

³ In fact, most commercial flights today are slower as airlines are trying to conserve fuel.

in human history in terms of growth and improvement. In Gordon's estimation, the internet revolution is simply tweaking what we already have. Driverless cars may dramatically improve public safety and allow us to travel somewhat faster as traffic jams could be eliminated. But it won't match the dramatic improvement that the Model T brought to productivity and people's lives. Smart phones can clearly do things that even the Jetsons could not have fathomed but they don't change lives like the first telephones did.

Gordon's Concerns

Gordon has six near-term concerns that he feels will hamper America's ability to improve productivity. The same could be said for most of the developed world. These concerns are:

- The demographic dividend is reversing. The technology that reduced housework and allowed women to enter the workforce is now spent, and with an aging population, the workforce will decline in the future.
- Educational attainment appears to be peaking. From the 1900s forward, Americans tended to extend their educations, achieving a higher grade level than their parents. This pattern is slowing rapidly due to the escalating costs of college.
- Income inequality is reducing the wellbeing of the less well off, not only curtailing their consumption but undermining their ability to obtain a good education. This factor weakens growth.
- A closely related factor is the interconnection of technology and globalization. These factors support the

emerging economies at the expense of the developed economies.

- Energy and the environment are imposing costs on the economy, sort of a “payback” from the growth of the last century which was less sensitive to environmental issues. The investment made in the environment rarely boosts productivity, and rising energy costs force investment into conservation, which has a similar effect.
- Debt deleveraging and government deficits will continue to be a drag for the foreseeable future. The debt accumulated will constrain consumption and investment and the deficits will be difficult to address with the massive retirement of the baby boomers.

All of these issues are difficult to solve, although the energy situation has improved dramatically over the past five years. However, the more profound concern is innovation and growth. Gordon is concluding that the first and second industrial revolutions caused positive changes that simply cannot be repeated. The third revolution, the information and computer revolution, will simply pale in comparison. If so, the trendlines being drawn from 1800 to the present in terms of growth should instead be considered a “bump.” Instead, the 0.5% average annual growth that economists estimate the world enjoyed from the Romans into the 1750s is the norm. What the world has enjoyed since the 1750s is the anomaly and the future, in short order, will be one of very slow growth.

The Geopolitics of a Gordonian World

Although there have been global superpowers prior to the industrial revolution, the last two, Britain and the United States, benefited from economic

dominance. Britain was the world’s largest economy until 1870, when the U.S. became bigger. However, Britain was able to maintain its role because of its well developed financial system, and the U.S. was an insular power and more than happy to allow the British to carry the burden of hegemony. However, in the American superpower period, from 1945 to the present, the U.S. has had the largest economy. Slower growth would make maintaining the size advantage more difficult. In addition, slow growth would make it hard for the U.S. to fulfill the superpower role. Defense spending is hard to justify when growth is slow because it invariably reduces spending on other public goods. Consumption will tend to be weak, undermining the superpower’s duty to supply the global reserve currency and consequent task of being the global importer of last resort.

If Gordon is right, the emerging world will be the only areas where robust growth is found. The developed world will be tempted to resort to imperialism to capture this growth. Democracies will become difficult to manage. Often societal differences are smoothed over by allocating assets from one group to another. If growth is nearly non-existent, society becomes zero-sum—one group’s improvement can only come at the expense of another. Capitalist societies have tended to make a tradeoff; they allow some entrepreneurs to become fabulously wealthy. In return, society benefits from the growth the new businesses or industries bring. It is perhaps no accident that the father of economics, Adam Smith, wrote *The Wealth of Nations* in 1776, about a quarter-century after the first industrial revolution began. It is hard to fathom how capitalism would exist in a slow or no-growth world.

Gordon asks the rhetorical question, “Has the structure of society, including freedom, democracy and capitalism, fostered the industrial revolutions or did the direction of causality run the other way?” In other words, it is often thought that capitalism, freedom and democracy came first and fostered industrial growth; and so, if true, newly industrialized nations should change society and the rewards of economic growth should follow. In reality, in emerging Asia for example, the industrialization came first and liberalization followed.

If Gordon is right, perhaps a dystopian future awaits. Of course, Gordon could be wrong.

Is Gordon Correct?

Although there have been pessimistic economists in the past, perhaps the most famous is Thomas Malthus. He postulated that population growth would be exponential but food production would only have proportional growth. Thus, mankind would be doomed to subsistence because food production would always lag population growth. In fact, mechanized agriculture boosted food production and prevented Malthus’s prediction from coming true (at least so far).

Is Gordon simply underestimating the potential growth from information technology? After all, it took about three decades after the discovery of electricity to fully utilize its power. It is quite possible that Gordon is too pessimistic.

However, even optimists about future growth have serious concerns about distributional effects. Technology and globalization have been steadily squeezing profit margins in numerous industries, forcing efficiencies along the way. This compression is being expressed by falling

wages for semi-skilled middle class workers. Increasingly, semi-skilled jobs are being eliminated by either outsourcing them overseas or through technology.



This chart shows labor’s share of output. From the end of WWII until the early 1990s, the share generally held above 61%. However, over the past twenty years, the share has steadily declined and is now just above 58%. As technology and outsourcing eliminates semi-skilled work, the labor force is becoming bifurcated between highly skilled and unskilled workers. This has widened income gaps in virtually all of the developed world.

The previous industrial revolutions improved productivity which first allowed workers to exit the farms for industry and then benefit from expanding growth to enjoy greater education and higher incomes. The technology revolution seems to be greatly improving efficiency allowing for fewer, semi-skilled workers. The third industrial revolution appears to be qualitatively different from the prior two.

Ramifications

One of the problems humans face is the relevancy of time. Generally speaking, a person living today is concerned about the next two to five decades at the most. If a trend has been in place for a century, it is

reasonable to assume it will be in place during one's lifetime. And so, epoch-style events are almost impossible for humans to understand while they are underway.

What Professor Gordon is projecting is best described as an epoch-type event. If growth is going to slow in the manner he projects, nearly all the "certainties" that a normal person would expect become lost. A world without growth is not in the experience of the human race for over 250 years. There is no playbook for such a world. It's a world where the "American Dream" of each generation having a better lifestyle than its parents is almost impossible to achieve.

Now, it should be noted that Gordon is expecting growth, but it will be much slower

than in the recent two and a half centuries. In England, prior to 1750, it took 350 years for a family to double its standard of living; for most of the last century, at least in the U.S., it occurred every generation.

Thus, we continue to watch the current, stubbornly slow growth unfold. For the most part, we still believe the most plausible explanation for slow growth is deleveraging. However, if Professor Gordon proves to be correct, society will be forced to adapt to a whole new world.

Bill O'Grady
August 12, 2013

This report was prepared by Bill O'Grady of Confluence Investment Management LLC and reflects the current opinion of the author. It is based upon sources and data believed to be accurate and reliable. Opinions and forward looking statements expressed are subject to change without notice. This information does not constitute a solicitation or an offer to buy or sell any security.

Confluence Investment Management LLC

Confluence Investment Management LLC is an independent, SEC Registered Investment Advisor located in St. Louis, Missouri. The firm provides professional portfolio management and advisory services to institutional and individual clients. Confluence's investment philosophy is based upon independent, fundamental research that integrates the firm's evaluation of market cycles, macroeconomics and geopolitical analysis with a value-driven, fundamental company-specific approach. The firm's portfolio management philosophy begins by assessing risk, and follows through by positioning client portfolios to achieve stated income and growth objectives. The Confluence team is comprised of experienced investment professionals who are dedicated to an exceptional level of client service and communication.