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Book Reviews: American Growth and Cycles of Doom

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The Rise and Fall of American Growth[1]

Author: Robert J. Gordon
Publisher: Princeton Press

I became aware of this book while working on a research project titled *Sustained Low Interest Rate Environment: Can it Continue? Why It Matters*[2]. My initial thoughts from reading Gordon's August 2012 NBER Working Paper that was 25 pages long titled *Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds*[3]and that reading it would be good enough. It summarized the book quite well, but as it turned out was not the same as reading the book. Professor Gordon shares details about the speed Americans adopted various items in the century following 1870 (right after the transcontinental railroad was completed) that made our lives more comfortable. Especially interesting were the differences between urban and rural, north and south.

After finishing the book I read a review by Bill Gates where he came to many of the same conclusions that I have.[4] I highly recommend the book, all 658 pages, but totally disagree with his conclusions.

Where I disagree comes from the title of the book. Gordon argues that we have enjoyed three centuries of rapid growth due to three industrial revolutions, but as those have completed the US will return to "normal" GDP growth of about 0.2% prevalent prior to the first industrial revolution.

I view this book, unlike the author, as one of hope. Soon after the Civil War a flurry of invention and change occurred that I find similar to today. We have gone from using a large tub in the kitchen where the entire family shared the water for their "regular" bath (after carrying in the water and heating it over a fire) to walk-in showers designed as entire rooms inside our temperature moderated homes, which don't get enough credit for extending lifespans.

Periods of technological growth lead to skills that are no longer needed. Buggy whip makers and others like them initially find it challenging to evolve into other jobs, but within a generation they have figured it out. In the early period of my career, when computers started to develop word processing and calendar applications, it became

[1] Gordon, Robert. The Rise and Fall of American Growth. Princeton University Press. 2016.
[2] https://www.soa.org/research-reports/2014/research-2014-sustained-low-interest/
[3] http://www.nber.org/papers/w18315
[4] https://www.gatesnotes.com/Books/The-Rise-and-Fall-of-American-Growth

obvious that eventually an efficient office would have a lot fewer secretaries. Some of the people in that job were receptive to taking on other responsibilities and were productive, while others were susceptible to cyclical cuts. I ran into one a few years later who had left to be a full time Mom. She recognized after the fact what I was trying to do and thanked me. Often it is as simple as adding some type of continuing education requirement in every job description. It doesn't matter what it is as long as it is something the employee is interested in. I believe this is what is meant by a lifelong learner.

Changes in the last century

We enter 2018 worried about the dangers of climate change. At the beginning of the 20th century, prior to antibiotics and antiseptics, there were concerns that cities were becoming unlivable due to a reliance on horses and lack of sanitation. Manure piled in the streets, mixing with urine and rain to make a goopy and disgusting mess. Cholera and other diseases were unwanted yet regular visitors. A quarter of agricultural land was devoted to crops to feed the horses, and humans were paid to clean up after them. The automobile provided a pivot that allowed society to quickly shift in another, more sustainable, direction. Public waterworks perhaps increased life expectancy the most by improving sanitation methods and reducing disease. Germ theory, combined with these public improvements, reduced infant mortality and the risk of childbirth.

Households spent 25 per cent of their earnings on food. Advances including the Mason jar, processed foods, and the ability to freeze food provided variety. They were combined with networking (electricity, gas, telephone, water, and sewer) to increase leisure time. The American system, manufacturing with interchangeable parts, led to scale and eventually to the assembly line and common replacement parts. Today we have additive manufacturing, known commonly as 3D printers, which take the next step.

Of course it was not all forward moving. The dust bowl era combined with the Great Depression to slow growth, followed by conflict in World War II and social programs developed by the New Deal. Earlier depressions led to the formation of the Federal Reserve Bank. During the war years, productivity gains were achieved due to patriotism and continuous learning techniques that may not have been possible at other times, and were retained after the war. Infrastructure was also built that supported growth in later years.

Changes that seem minor today added greatly to our standard of living. These included window screens that maintained air flow while keeping the bugs out, chain stores to buy groceries at reduced prices, and mail order catalogs that allowed rural patrons access to a wide variety of items.

Regulations have generally improved our standard of living but typically only came about after an unsavory practice was illuminated, like Upton Sinclair's 1906 *The Jungle* that exposed filthy conditions in Chicago's meat industry. Creation of the Food and Drug

Administration was “the most important piece of legislation ever passed by Congress” according to many publications at the time. Transparency through regulation and testing, such as the ramifications of cigarette smoking, enhances living standards, life expectancy, and quality of life. Other regulations improved work safety, travel, and financial institutions. Standardization of sizes, along with the assembly line, improved efficiency at little cost. Some regulations, like prohibition of alcohol, were later repealed due to public demand. Many regulations should be reviewed today as they no longer make sense, but often these discussions are politicized. Those that deal with public safety should not be based entirely on cost benefit analyses. This is an important role of government.

GDP – what it misses

Dual entry bookkeeping was developed in the last millennium. It does a nice job of truing up accounts; for every debit there is an equal and opposite credit. But it limits itself to financial records, so incents users to deplete resources and ignore secondary impacts like pollution and safety reductions. A carbon tax is a partial solution to this issue. Regulation is the balancing factor to unrestrained capitalism.

Another well-known problem with GDP is that it is hard to adjust for improvements. How much better off am I with the newest iPhone versus an earlier model, and how should GDP adjust when the new model is not only better/faster but also cheaper. Or when a “phone” replaces other items like cameras and CD players, or when the variety of food expands, or mail order catalogs bring goods to rural areas. I’m clearly better off but my cost was lower, and that’s what goes into the GDP calculation. Standard of living is hard to put a number on; for some more leisure time, or an air conditioned home with a personal bathroom, is preferred to having more money in the bank. For each person the balance is unique.

Comparing 1870 and 2010

Since 1870 population has grown by eight times, and now exceeds 300 million in the U.S. Household size has shrunk by 50%; we are older and more diverse.

Demographically there are similar percentages of blacks, but other groups have reduced the white population to 72%. Teenage males are much more likely now to be in school than working on a farm, females have entered the workforce in large numbers, and the concept of retirement was introduced. Immigration rates are much lower, as are birth and death rates. Fertility rates are near the sustainable level, just above 2. Higher prison rates have created an adult sub-population that is not adding to GDP.

Gordon provides an interesting example regarding the difference between the introduction of the train and the automobile as it related to the ultimate replacement of the horse. Trains increased the need for horses by expanding the country, while cars directly replaced the horse.

This was typical of the age, where incremental improvements were followed years later by revolutionary change. The telephone and elevator provide good examples, where the original invention led to secondary advancements in emergency response and urban living.

While many basic living costs have materially gone down during this period, others have replaced them. Health care has grown from 2.3% of GDP as late as 1929 to 16.6% in 2013. Many of today's treatments were unheard of 100 years ago, when potential infections led many to avoid surgeries. Antibiotics, helped by cleanliness and sterilization, have had major impacts on health care, but if they no longer work health care expenditures may reduce while quality of life suffers.

Some of the comforts we think of as personal improvements also boost business productivity. An example of this is air conditioning that was implemented in businesses prior to home installation and resulted in more comfortable work surroundings.

How today compares to the Gilded Age

The late 1800s has similarities to today. Robber barons became rich by taking advantage of workers, lobbyists bought legislation, and pollution was unchecked. But there was so much profit to go around that even as inequality increased, the standard of living improved for all (on average). Little effort was made to help those injured or sick, a pattern that some seek to repeat today.

The number of patents issued per million persons increased greatly over the period 1860-1880, a pattern we have seen repeated since 1990.

The farmer of the late 1800s reminds me of the gig worker today; they were their own boss but accepted all economic risks. Life was unpredictable. Coal miners and industrial workers did not have it easy either, and women had it worse. Many of these issues remain, in some form, today.

We take safety for granted. Many automobile improvements of the last 50 years are tied to safety and reliability. Professor Gordon claims that cars have not improved because they go about the same speed and look similar, but air bags, seat belts, and cars that run for 250,000 miles with normal maintenance procedures are all improvements that I value greatly.

Other changes encourage most to complete at least high school and technologies to build on each other. This is Gordon's great miss. He assumes that, while previous industrial revolutions had incremental and then revolutionary improvements, the ICT (information communication technology) revolution has completed with minimal commercial results. Anticipating disruptive technologies is a fool's errand, but artificial intelligence (including big data) and biomedical engineering techniques like DNA editing are likely to

move our standard of living forward in a discontinuous fashion (while there remain questions about inequality and ethics to deal with).

Legalized birth control was a primary factor allowing women to enter the work force in careers that can last their entire adult life. Health care could have similar ramifications if expanded to cover more of the working poor and unemployed. There are long-term benefits to proactively covering all children and pregnant women.

Peter Thiel may have noted, "We wanted flying cars, instead we got 140 characters," but what are drones with a passenger compartment but flying cars? Four categories are forecast by Gordon to show advances going forward. These are medical, small robots and 3D printing, big data, and driverless vehicles. There is an important distinction between the pace of innovation and the impact of innovation, with the timing of each not depending on the other. A flurry of activity should not be discouraged. Sometimes it takes time to figure it all out in a way that adds to GDP.

Demography is destiny

In 1870 an agrarian society lived in multi-generational homes. Today a third of retirees earn income solely from the Social Security program. Inequality becomes self-fulfilling as children grow up in split or single parent families.

Growth in output equals the change in labor productivity plus growth in hours worked per person in the population. Lower birth rates and earlier retirement dates reduce GDP growth.

Formula

H/N = H/E x E/L x L/N (hours per employee x employment rate as percentage of the labor force x labor force participation rate)

H, hours
N, population
E, employed
L, labor force

Headwinds

In Gordon's NBER paper he suggests there are six headwinds

1. Demographic dividend, where females entering the workforce allowed a one-time growth spurt in the last century

2. Plateau in educational attainment, as college graduation percentages fade from a peak about 20 years ago

3. Rising inequality as growth in real income has bifurcated between “haves” and “have-nots” – leads to lower 99% doing poorly and to median getting worse, also self-fulfilling as more “haves” marry each other and send their kids to the best schools

4. Interaction between outsourcing and technology, providing jobs to those who charge the least in a global marketplace

5. Energy and the environment (also described in the sustainability section) leads to catch ups and proactive costs

6. Consumer and government deficits, already high, have not historically led to happy endings as higher taxes and lower benefits and services must eventually reverse these imbalances. Student loans have added a new category to this drag on the economy, along with delaying family formation.

The last headwind has fascinating potential implications. Governments could default on their debt or can use inflation to effectively do the same thing. This would not be an absolute benefit, as entitlements are now indexed and some government bonds increase with inflation.

As was seen in headwind number five on Gordon’s list, there is overlap between these scenarios. Each of them could occur simultaneously, or you could see partial versions of these low growth scenarios. Some could exacerbate the other scenarios, especially if overpopulation and climate change reach a tipping point that accelerates the impact. This could occur through events such as spillover of a disease from the mammalian population to humans that results in massive fatalities, regional conflicts over fresh water and food, scarce minerals or energy, a warming climate that floods coastal areas and lowers monoculture crop yields, or a failure of the existing “just in time” science to adapt quickly enough to overcome evolving mutations of insects and diseases around pesticides and antibiotics (pollinating insects, in particular, are at risk today). A sudden climate cooling, especially if due to volcanic particles blocking the sun, would have severe impacts on food production. The earth evolves smoothly if conditions change slowly, but sudden changes have surprising and unintended consequences. The second order effects tend to be unanticipated and will change the game in unexpected ways.

Zero Hour[5]

Author: Harry S. Dent, Jr. with Andrew Pancholi
Publisher: Portfolio/Penguin 2017

[5] Dent, Harry S, Pancholi, Andrew. Zero Hour: Turn the Greatest Political and Financial Upheaval in Modern History to Your Advantage. Portfolio/Penguin. 2017.

Harry Dent is a demographer, using population statistics to forecast economic trends. In *Zero Hour* he looks at cycles, lots of cycles, which are social and political pivots that regularly occur in a complex environment. While *The Fourth Turning*, another book I read recently, focuses on a single 80-100 year cycle, Dent has so many cycles driven by so few data points that you wonder what it all means. And his cycles are so exact, often matching up exactly to the day and month. It's too much. Why don't the cycles adjust as lifespans lengthen? I believe that history repeats itself, and I buy in to the idea that a lifetime is how long it takes to forget previous events and their ramifications. But it is not an exact science.

Dent believes that a number of cycles are converging in late 2017, resulting in great turbulence for 5-10 years, and that a new period of prosperity will follow. The last major cycle led to the Great Depression and World War 2, so his research is worth being aware of. He times the publication of the book (fall 2017) to coincide with this prediction. He may be right, but his timing was not.

The Innovation cycle (45 years), Revolutionary cycle (250 years), and Populist cycle (84 years) are all converging at the same time. It is a time for deleveraging and upheaval, letting any subsidization clear. The Populist cycle also ties to globalization and wealth inequality, which are both current topics. A book that focused on this overlap would have been more powerful, but the endless adding of additional cycles, and side chapters (e.g., Social Security) takes away from the primary focus. The last time this convergence happened was the advent of democracy and capitalism. What will this time bring? He thinks the US is likely to split into red and blue political zones and Europe into north/south, Protestant/Catholic areas, each with common trade zones.

He believes that "black swans" are unexpected events that follow the longer cycles. Dent also talks about demographic trends, mainly the aging of developed countries and various immigration issues that will interact. Sunspots are another cycle, though less precise, that seems to impact the economy (perhaps through psychological cycles of happiness) and drive the time between recessions.

These cycles are informative, but the exact dates are distracting and not predictive. And what about cycles in other countries? It doesn't seem likely that they are aligned, and thus it would matter how they interact with the US cycles. Preparation for a variety of scenarios is very useful. Many strategies work only until they become popular. If cycles are tradeable they only work until the word gets out. In the meantime, watch for bubbles in real estate and illiquid collectibles.

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