

Lost in space

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When man first landed on the moon in 1969 it was widely believed that the event heralded an era of scientific and technological advancement. But we have become less ambitious and more pessimistic, writes Daniel Ben-Ami.



An influential alternative to the well-worn explanation of the economic malaise of recent years has attracted much attention. It contends that the banks were perhaps not the main culprits after all. Maybe the era of rapid economic growth, particularly the improvements associated with technological progress, had already come to an end. From this perspective a prolonged period of economic stagnation could lie ahead.

This may seem an odd case to make in the age of the iPad and the smartphone. The internet and related mobile technology have become ubiquitous in western societies. At first sight such devices seem to refute the suggestion that the world has entered a period of slow innovation and atrophied growth.

But not so fast. In some respects the overwhelming focus on the internet supports the argument rather than contradicts it. There is much less excitement about technological advances outside the online world. Many important areas of technology have seen only incremental improvements in recent years.

Moreover, much of the recent spurt in internet-based technology is aimed at consumers. It makes it easier for individuals to communicate and to gather information. That is fine in principle but technological breakthroughs that could pave the way for growth by transforming the production process are rarer.

For instance, in the past the harnessing of electricity did not just benefit people in their homes. It meant that factories could be automated. As a result a range of other goods could be produced more efficiently.

What is more the iconic companies of the online world employ relatively few people. According to recent estimates Google only has about 20,000 employees, Facebook 1,700 and Twitter 300. In contrast some of the largest car companies employ more than 300,000 each.

The main figure behind the new theory of technologically-driven slowdown is Tyler Cowen, a professor of economics at George Mason University in Virginia. His argument is summarised in the title of his influential book first published in Kindle format last year: [*The Great Stagnation: How America Ate All The Low-Hanging Fruit of Modern History, Got Sick, and Will \(Eventually\) Feel Better.*](#)

Essentially his thesis is that the easy gains from economic growth were made long ago. That accounts for the slowdown in American growth and innovation since 1973. The challenge now, from Cowen's perspective, is to promote a new round of expansion. In some respects his theory resembles the idea that the developed world has entered a "new normal" of slow economic growth (see box, below).

This article will first outline Cowen's theory of the low hanging fruit in more detail. It will then examine some of the reactions to his argument. Finally, it will assess the strengths and weaknesses of his case.

Low hanging fruit

Cowen marshals a range of evidence to support his contention that America entered a period of economic stagnation as far back as the 1970s. It can be broadly divided into anecdotal, indirect and direct arguments. He also has had support from other influential authorities.

To illustrate his case Cowen gives the example of his grandmother who was born in rural Wisconsin in 1900. Back then most Americans lived on farms and only about 6% graduated from high school. Cars were uncommon while many did not have flushing toilets or electricity in their homes.

By the 1950s a recognisably modern America was already in existence. Cars, flushing toilets and electricity were ubiquitous while most children went to high school. A kitchen from that era did not look fundamentally different from a contemporary one.

The new normal revisited

In many ways the notion of the low hanging fruit parallels the argument that the global economy has entered a "new normal" of poor growth. In both cases the idea is that the economic future is likely to be less rosy than the past.

The notion of the new normal has several high-profile proponents. Mohamed El-Erian and Bill Gross of Pimco both used the term while George Soros talked of a "new paradigm". Robert Peston, the BBC's business editor, preferred to label the same idea "new capitalism" while Anatole Kaletsky, an economics commentator for the Times (London) referred to Capitalism 4.0.

Although there were differences in emphasis between each of them in broad terms they identified five key features of the new era:

- Slow economic growth or even stagnation in the developed world.
- Deleveraging. Companies will focus more on reducing their debt than promoting future growth.
- High instability. Financial volatility is likely to be greater than in the past.
- Reregulation. Financial regulation is likely to be tightened up.
- A more pragmatic form of politics.

Although the idea of the new normal covers a broader range of factors than that of the low hanging fruit it is also shallower. There are two ways in which Tyler Cowen's theory is more substantial. First, it traces the declining growth trend back to 1973 rather than seeing it as a response to the latest crisis. Second, it gives a plausible explanation, focused on technology, why growth has slowed.

However, despite some optimistic flourishes, both sets of ideas are fairly pessimistic about the prospects for growth in the West.

For more on the new normal argument see "Paradigm lost", my *Fund Strategy* cover story <http://www.fundweb.co.uk/features/cover-stories/paradigm-lost/1017534.article> from August 30, 2010.

In contrast Cowen himself, who was born in 1962, has seen less change over a comparable period. Apart from the internet most change has been incremental rather than transformative.

Cowen also points to the thwarted dreams of his 1960s youth. Early in that decade the flying cars featured in such cartoons as the Jetsons were widely seen as feasible in the not too distant future. The first moon landing in 1969 also seemed at the time to be a harbinger of an exciting future of space exploration. With hindsight it can be seen as the high point of a space programme that was dramatically scaled back in subsequent years.

As indirect statistical evidence to support his case Cowen points to stagnating income growth in America (see graphic one, below). He points out that if median family income would have continued to grow at the same rate as it did during the post-war boom it would have been substantially higher. Cowen acknowledges alternative explanations for this growth slowdown, including political failures and mismeasurement, but argues that technological slowdown provides a better explanation (for more on the measurement debate [see Daniel Ben-Ami "Average incomes 'did not stagnate'" *Fund Strategy*, April 30, 2012](#)).

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Cowen also points to direct measures of innovation and technological development. For example, a study by Jonathan Huebner, a former Pentagon physicist, shows the rate of innovation peaking as far back as 1873 (see graphic two, below). The calculation was made by taking the number of technological breakthroughs per year and dividing it by the global population.

Technology is the main form of low hanging fruit Cowen identifies but it is not the only one. He also points to free land that in America was there for the taking until the late 19th century. More recently the ability of America to tap into new reserves of bright, uneducated children has also reached its limits. For example, the proportion of Americans graduating from high school peaked at about 80% in the late 1960s and has fallen by about six percentage points since. There are arguably social benefits from ensuring everyone completes high school but there are diminishing returns in economic terms.

Overall Cowen’s thesis might suggest pessimistic conclusions but he gives several reasons for guarded optimism. First, the strong interest in science in places such as China and India could have global benefits. Although American may have picked its low hanging fruit not everyone has. Second, the internet might bring more opportunities for revenue generation in the future. Third, although most Americans enjoy a high school education there is still a lot of room to improve its quality.

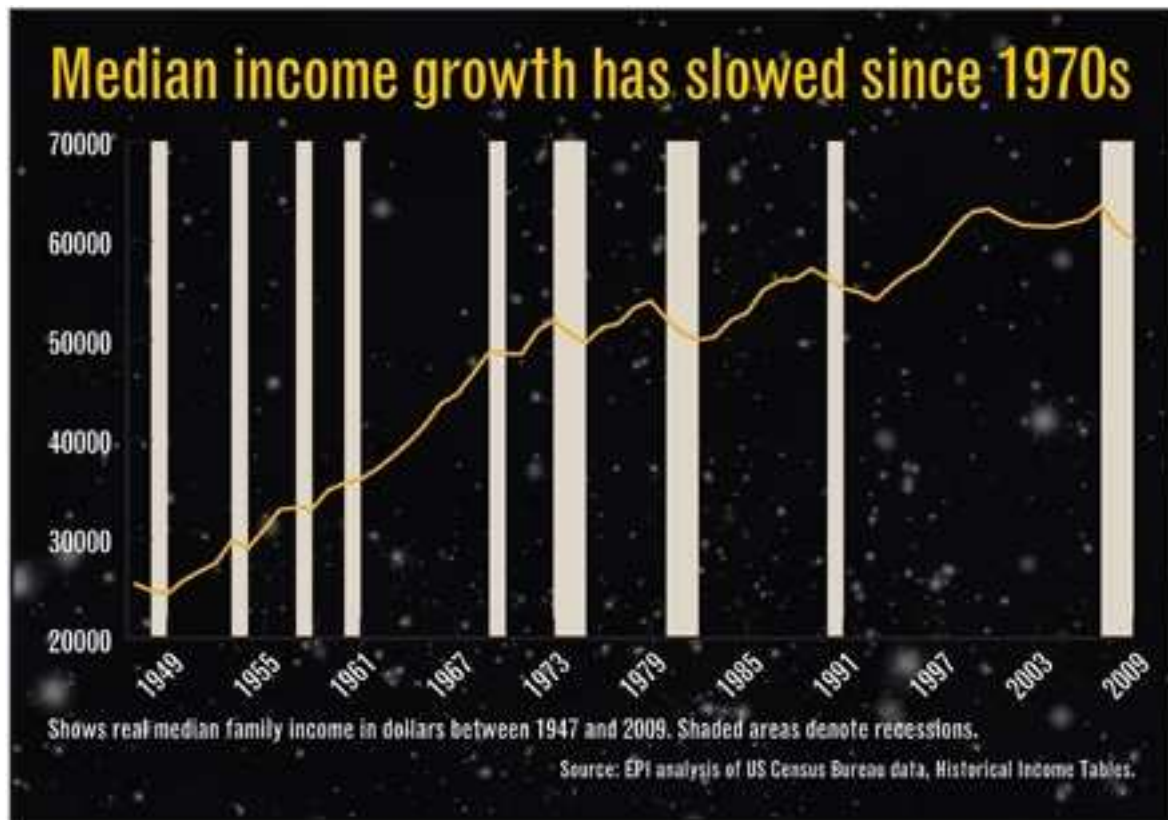
His main policy proposal is to improve the social status of scientists. By doing so, he argues, it should be possible to raise the level of technological innovation in the future.

Reaction

The Great Stagnation was widely and largely positively reviewed in high profile publications such as the *Financial Times* (by Martin Wolf), the *New York Times* (by David Brooks) and the *Wall Street Journal*. The *Economist* even named it one of the best books of 2011.

In broad terms the criticisms can be divided into several types. One set of critics questioned the factual premises of Cowen’s case while others proposed alternative explanations for the economic slowdown. Others have, at least implicitly, argued that Cowen is focusing on the wrong problem.

On a factual level some commentators, particularly the more pro-market ones, have complained about his characterisation of a “great stagnation”. At its most basic they have pointed out America has grown and innovated since 1973 so it is inaccurate to talk of “stagnation”. While this is true in a literal sense it is a mundane criticism. Cowen makes clear that he is pointing to a secular slowdown of growth rather than its complete cessation.



More interesting is the criticism that Cowen uses the wrong metrics to make his case. If he had used better ones, so the argument goes, the stagnation thesis does not look so convincing.

For instance, Brink Lindsey, the vice president for research at the Cato Institute in Washington DC, has argued that Cowen does not use the best metric to gauge growth. If he would have used GDP per head rather than median household income the pattern looks different. Lindsey's preferred measure suggests that the post-1973 slowdown looks like a return to normality while the post-war era, with its rapid growth, was the aberration (see graphic, below).

Lindsey also points to figures from productivity growth from the Bureau for Labor Statistics showing more rapid growth from 1995-2007 than from 1973-95. Cowen does refer to this apparent improvement, arguing that the official statistics are misleading, but does not examine it in what is only a short book.

However, research by Robert Gordon, a professor of Northwestern university in Chicago, comes down on Cowen's side. He has carefully re-examined the official data to show that the apparent surge in productivity growth from 1995-99 was illusory ("*Does the 'new economy' measure up to the great inventions of the past?*", Working Paper 7833, National Bureau of Economic Research).

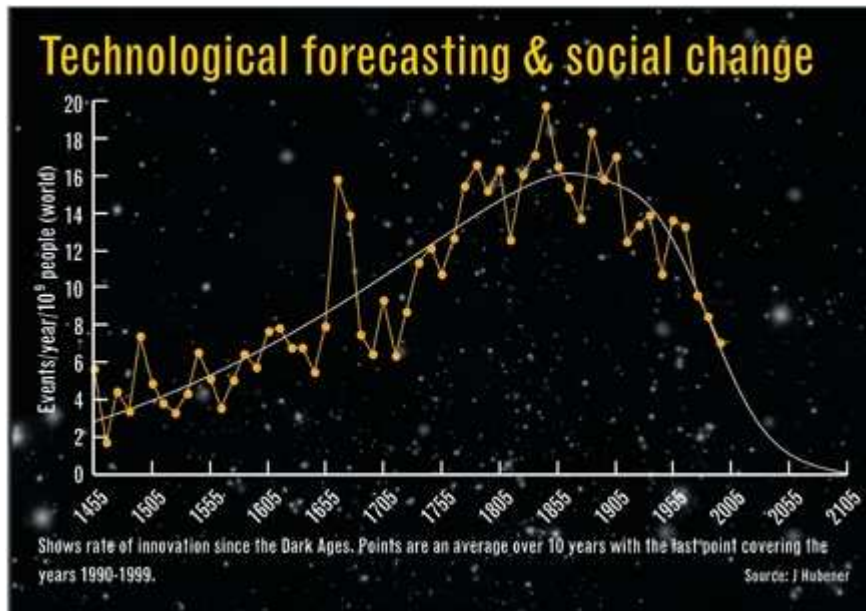
"The flying cars featured in such cartoons as the Jetsons were widely seen as feasible in the not too distant future"

Gordon argues that the entire productivity surge over that period can be attributed to the 12% of America's private economy that consisted of computers, peripherals, telecommunications and other types of durables. In other words it was focused on that sector of the economy producing computers and related items. The rest of the economy, if anything, showed a declining trend in productivity growth. If anything, he argues, the contribution of computing power is likely to be even less pronounced in the future. "The rapid decline in the cost of computer power means that the marginal utility of computer characteristics like speed and memory has fallen rapidly as well, implying that the greatest contributions of computers lie in the past," he writes.

Critics of Cowen have also questioned the data on innovation he gleaned from Jonathan Huebner. For instance, Huebner measures innovations per head of global population at a time when the world's population was rising sharply. Therefore, so the argument goes, his data says more about a growing population than a falling level of innovation. It would certainly be worthwhile to do more detailed research in this area.

Others have accepted that growth rates have declined but have sought to find alternative explanations for the trend. Indeed Paul Krugman, subsequently to win the Nobel prize for economics in 2008, has a book on the same theme, the *Age of Diminished Expectations*, first published in 1990. Clearly the trend has advanced since then but it is worth noting that it was possible to identify a secular slowdown so far back.

David Brooks, a prominent conservative columnist on the *New York Times*, has argued that the economic slowdown is itself a reflection of a cultural shift. He contends that earlier generations emphasised economic growth, whereas the most recent generations have shifted to post-material values. For the new generation of adults, he argues, there is much less emphasis on material gains and much more on happiness. Brooks' argument appears to draw on the work of Ronald Inglehart, a sociologist at the University of Michigan, who in the 1970s developed a theory of post-materialism.

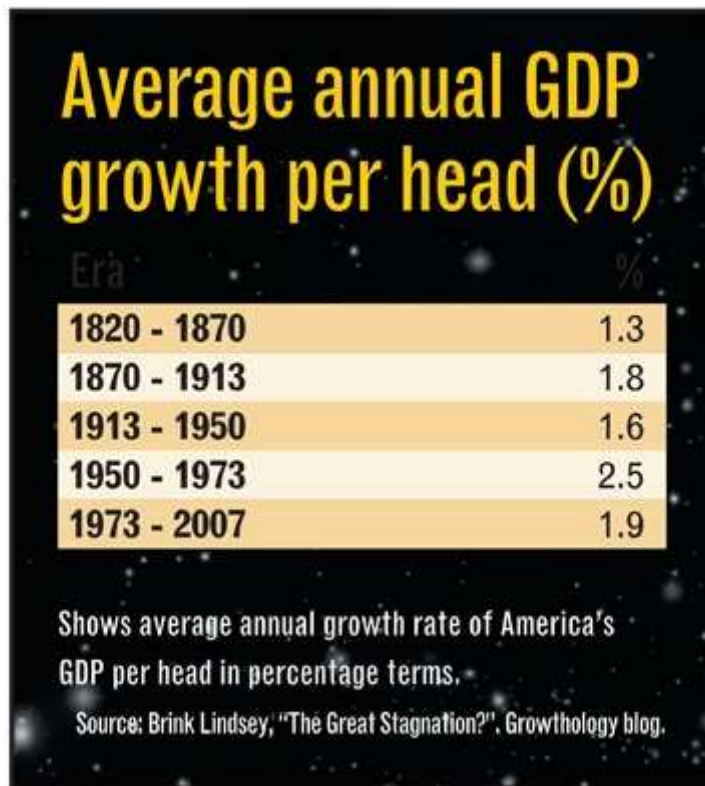


But while it is true that values have shifted since the 1970s it is not clear that this is the cause of the slowdown. It could be that economic stagnation itself caused the cultural shift or, more likely in this case, several factors were involved. In *Ferraris for All*, my book on economic progress, I argue that the driving force behind the shift towards green, post-material, ideas include slower economic growth, deindustrialisation, social atomisation and the defeat of the idea of progress. It is the combination of these factors that explains the cultural shift.

On the economic front Joseph Stiglitz, another Nobel laureate, along with Bruce Greenwald, a professor at Columbia university in New York, have also developed an alternative theory. For the two of them the stagnation is the result of a shift from a manufacturing-based economy to a service-based one. In their view this parallels the way the transition from a rural to a manufacturing based economy caused the Great Depression in the 1930s.

Stiglitz summed up their argument [in an article in Vanity Fair \("The Book of Jobs", January 2012\)](#). His starting point is to identify what he argues are the real drivers of the crisis of the 1930s. A sharp increase in agricultural productivity from 1900 onwards meant that by the late 1920s many farms were no longer viable. The consequent shakeout of rural jobs led to a decline in farm incomes that then had a knock-on effect on the cities. Eventually it ended up in causing the financial implosion that today is often wrongly seen as the root of the crisis.

He then goes on to make a comparison with the current situation: "The parallels between the story of the origin of the Great Depression and that of our Long Slump are strong. Back then we were moving from agriculture to manufacturing. Today we are moving from manufacturing to a service economy. The decline in manufacturing jobs has been dramatic - from about a third of the workforce 60 years ago to less than a tenth of it today. The pace has quickened markedly during the past decade". He identifies two factors behind this decline in manufacturing: rising productivity and globalisation.



However, there are at least as many problems with Stiglitz's arguments as there are with Cowen's. For instance, why should higher productivity necessarily mean there are fewer jobs available? This may be true in agriculture, where there is a fixed area of land, but it does not necessarily apply to manufacturing. Why not raise productivity and maintain a large manufacturing base at the same time?

Nor is it clear why wages and consumer spending should be the main driver of economic growth. Arguably it works the other way round with a dynamic economy making it possible to employ more people and allowing them to spend more. In contrast an atrophied productive base tends to lead to more unemployment and declining incomes.

Before coming to a conclusion it is worth noting one final reaction, or perhaps non-reaction, coming from those who identify themselves as on the left. That is to argue that the key trend is not the slowing of growth from the 1970s but the widening of inequality. In other words the focus should be on a great divergence rather than a great stagnation.

Even if it is conceded that inequality is a key problem the counter-position does not hold up. From the perspective of individual living standards both the overall level of output and distribution play a part. In any case the main focus of Cowen's argument is to explain why the slowdown has occurred. His thesis first of all needs to be considered on that level: whether it really does account for America's current economic plight.

Fundamental flaws

The Great Stagnation should be welcomed overall because it shifts the economic debate from a narrow obsession with banks. As a result it opens the way for a sensible discussion of the fundamental causes of the crisis. This is an important step as it helps create the basis for an informed debate about how to escape from the morass. Banking reform, however necessary it may be, will not rejuvenate the economy as a whole.

The weakness of Cowen's book is precisely in what most commentators consider its strength: the idea of "low hanging fruit". It is not clear why some sets of technologies should be inherently so much easier to develop than others.

From today's perspective an iPhone might seem like a much more challenging piece of technology than, say, a car, or electricity. But that is with the benefit of hindsight. It took a huge amount of science and engineering to develop all of those technologies. Cars, for instance, may seem straightforward now but an immense effort was needed to invent them in the first place. They did not appear like low hanging fruit to many earlier generations.

"Why should higher productivity necessarily mean there are fewer jobs available?"

In many respects all inventions can be seen as the result of thousands of years of cumulative human endeavour. Humans have existed as a species for tens of thousands of years while much technology we take for granted has only existed for a fraction of that time.

Cowen makes things even murkier when he says that some fruit can become low hanging. "It is just not low hanging yet," he says (original emphasis). This concession undermines Cowen's entire analogy. Either technology is intrinsically low hanging or it is not. If the ability to pick fruit, to use his metaphor, depends on other factors then those are the variables that need to be examined.

It would be far better if the focus was social - in the broadest sense of the term - rather than technological. The key driver needed to explain the great stagnation is low capital investment rather than intrinsic technical limits. Insufficient investment had meant there has not been a basis for new rounds of durable growth.

Politicians and government officials can take much, although not all, of the blame for this predicament. Rather than encourage economic restructuring they have simply prevaricated. They have extended credit to give a temporary boost to consumption rather than focusing on the productive side of the economy.

Paradoxically though the focus on investment provides a more upbeat assessment of possibilities than Cowen's technological determinism. If the intrinsic character of technology is the key constraint on growth there is not much that can be done about it. If, in contrast, the key is to increase investment there are many positive measures that can be taken.

The challenge is to develop a culture that is less fearful of taking risks and more open to experimentation.

