Is Growth Over?

krugman.blogs.nytimes.com/2012/12/26/is-growth-over/

Invalid Date

It's taken me a while to get around to Bob Gordon's stimulating essay suggesting that the great days of economic growth are behind us. It's not that different from things he's been saying before, and I have in the past had a lot of sympathy for that view. I now believe, however, that his technological pessimism is wrong — or if you prefer, it's the wrong kind of pessimism. But this is definitely a discussion worth having.

Gordon argues, rightly in my view, that we've really had three industrial revolutions so far, each based on a different cluster of technologies:

> *The analysis in my paper links periods of slow and rapid growth to the timing of the three 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 then argues that IR#2 was by far the most dramatic, which again seems right. Think of the America shown in *Lincoln*, which is a society shaped by industrial revolution 1 but not yet transformed by IR #2. It was a society in which you could travel much further and faster than ever before — but when you got to your destination, it was still a horse-drawn society in which most people still lived on farms and cities were cruder and dirtier than we can easily imagine. By the 1920s, however, urban America was already recognizably a modern society.

What Gordon then does is suggest that IR #3 has already mostly run its course, that all our mobile devices and all that are new and fun but not that fundamental. It's good to have someone questioning the tech euphoria; but I've been looking into technology issues a lot lately, and I'm pretty sure he's wrong, that the IT revolution has only begun to have its impact.

Consider for a moment a sort of fantasy technology scenario, in which we could produce intelligent robots able to do everything a person can do. Clearly, such a technology would remove all limits on per capita GDP, as long as you don't count robots among the capitas. All you need to do is keep raising the ratio of robots to humans, and you get whatever GDP you want.

Now, that's not happening — and in fact, as I understand it, not that much progress has been made in producing machines that think the way we do. But it turns out that there are other ways of producing very smart machines. In particular, Big Data — the use of huge databases of things like spoken conversations — apparently makes it possible for machines to perform tasks that even a few years ago were really only possible for people. Speech recognition is still imperfect, but vastly better than it was and improving rapidly, not because we've managed to emulate human understanding but because we've found data-intensive ways of interpreting speech in a very non-human way.

And this means that in a sense we are moving toward something like my intelligent-robots world; many, many tasks are becoming machine-friendly. This in turn means that Gordon is probably wrong about diminishing returns to technology.

Ah, you ask, but what about the people? Very good question. Smart machines may make higher GDP possible, but also reduce the demand for people — including smart people. So we could be looking at a society that grows

ever richer, but in which all the gains in wealth accrue to whoever owns the robots.

And then eventually Skynet decides to kill us all, but that’s another story.

Anyway, interesting stuff to speculate about — and not irrelevant to policy, either, since so much of the debate over entitlements is about what is supposed to happen decades from now.