

Rethinking productivity growth

J. Bradford DeLong | University of California Berkeley | 06 March 2017

Today, the world's population is, on average, about 20 times richer than it was during the long Agrarian Age. Between 7000 BC and AD 1500, resources were scarce, technological progress was slow, and Malthusian pressures kept almost all human populations at a near-subsistence level, with per capita daily income of less than \$1.50 in today's terms.

In 2017, only around 7% of the world's population is that poor. Consider a scenario in which we took the total monetary value of what we currently produce and used it to purchase the types of goods and services that people living on \$1.50 per day consume. The average daily global-output value would be \$30 per person (at current prices). That is our roughly \$80 trillion of annual global income today. And, while the fruits of global productivity are not equally distributed by any stretch, our society's overall wealth today would leave our Agrarian Age predecessors dumbstruck.

Moreover, we do not produce and consume the same things that our near-subsistence ancestors did. In 2017, 40 kilocalories a day in basic grains wouldn't do anyone much good. Meanwhile, analogues to common goods and services that we now consume would have been absurdly expensive in the Agrarian Age. And in many cases, such analogues couldn't even be considered. Tiberius Claudius Nero could not have dined on strawberries and cream during the first century BC, because nobody thought to put those two items together until the Tudor courtier Cardinal Thomas Wolsey's cooks served it in the sixteenth century.

In 1606, there was only one person who could sit at home and watch a bloody audiovisual drama about witches. His name was James Stuart, the king of England and Scotland. He had William Shakespeare and the King's Men on retainer. Today, more than four billion people with smartphones, tablets, and televisions enjoy a form of on-demand entertainment that was once reserved for absolute monarchs.

To take one more example, the richest man in the early nineteenth century, Nathan Mayer Rothschild, died in his fifties from an infected abscess. Had he been given the option to hand over all his wealth for one dose of modern antibiotics, he probably would have.

So, it is actually misleading to say that a typical person today is 20 times richer than his or her Agrarian Age predecessor, because consumer choices now extend far beyond the goods and services that were broadly available back then. People today enjoy not just abundance, but an unprecedented variety of choices, which constitutes a significant boost to overall wealth.

But just how significant is that boost?

Statisticians at the US Department of Commerce's Bureau of Economic Analysis, and at its sister agencies in other countries, have struggled to measure the role of increased "variety" in productivity. According to standard estimates, annual labor productivity growth in the North Atlantic region averaged 1% from 1800 to 1870, 2% between 1870 and 1970, and 1.5% since then – with a possible slowdown in the past decade. But this is largely an estimate of how we have improved at making bare necessities for the world's poor – it does not measure how much our lives have been enriched by higher productivity.

We owe much of this enrichment to innovations that have fundamentally transformed human civilisation. These include flush toilets, automobiles, electric power, long-distance communications, modern information processing, and so forth.

Again, it would have been ludicrously expensive – or simply impossible – to have achieved similar capabilities in earlier periods of history. In the late Roman Empire, only a wealthy aristocrat could have purchased a nomenclator – a slave tasked with memorising names and faces, and reminding the aristocrat of them when social occasions demanded it. Today, having a basic smartphone is better than having an entourage of a dozen, or even thousands, of nomenclator-like assistants.

In thinking about the future of growth, and the opportunities that continued growth will open up for all of humanity, we should reflect on how far we have come. I have been stymied in my own attempts to measure the sheer scale of economic growth in the North Atlantic over the past 200 years, but I am confident that output has increased 30-fold or more.

How much more growth can we count on, and what will it mean for who we will become? If the past is any guide, we cannot possibly know. Tomorrow's strawberries and cream hasn't been invented yet.

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