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Invention Is the Mother of Economic Growth: Myhrvold

By Nathan Myhrvold - Dec 19, 2011

One reason “dismal science” aptly describes economics is that it so often winds up in a zero-sum trade-off of diminishing returns. That gets depressing when the global economy is in a sorry state, as it is now.

Most economists gloomily advise us to just tough it out. No magical solution can save us.

I submit that the situation is not as bleak as it seems. Yes, Virginia, there is a magical engine for economic growth. It is invention -- the process by which the human mind creates new ideas with practical consequences. Invention is magical because the magnitude of the output can exceed by almost infinite measure the magnitude of the inputs. A single great idea can generate enormous transformations, economic and otherwise.

Unlike almost all other forms of human economic activity, inventing is not limited by a law of diminishing returns. It comes with no dismal trade-offs.

Invention and its weaker cousin, innovation, are ultimately the source of all wealth and luxuries. In the age of Kindles and smartphones, we are surrounded by obviously invented products. But “traditional” society, too, was built by the accumulation of past inventions. Earth now supports 7 billion humans only because our ancestors invented agriculture -- and subsequent inventors continually improved it century after century. We live far longer and better lives than our great-grandparents did because clever doctors invented medicines, therapies and public- health measures. The invention of steel and concrete built our world, and the invention of democracy governs it.

Economic Pulse

The economy of the world is not based on the simple interplay of capital and labor. Sure, these are involved. But they are secondary characteristics, not fundamental ones. Macroeconomists are often said to have their fingers on the pulse of the economy, and that’s an apt analogy. A pulse is a decent secondary indicator of life because blood flow is one prerequisite for the body’s survival. But the pulse is a weak and incomplete measure of life. A brain-dead patient, after all, may have a pulse even though the person’s life is over. Conversely, a machine can drive a pulse without giving life.

So while it's all well and good to measure the flow of capital and the markets for labor, don't mistake this data for the forces that really drive growth, which are inventions (or, if you prefer, ideas) and the ways that they are made real. In response to these forces, capital is deployed and labor is expended.

Physics is obsessed with conservation laws; mass and energy can be neither created nor destroyed. Economics, on the other hand, obsesses about growth and recession, in which economic value is explicitly created and destroyed. Invention is, directly or indirectly, a primary source of the value we call growth.

Yet economists give invention short shrift. That is partly because they are still hazy about the origin of inventions. I find talking to economists about invention's role in the economy a bit like talking to fourth graders about where children come from. A smart fourth grader can tell you all about how kids progress through elementary school. They can even tell you about infants, and that mommy's belly gets big before one appears. But how and why the spark of conception occurs may be a mystery.

Economists similarly expend great effort documenting the development of products. A few can tell you what inventions look like in their infancy, but even these experts don't yet understand the spark of inventive conception.

Invention is also frequently overlooked where its role is subtle. In some parts of the world, new ideas arrive slowly and mainly by importation, but they still have great impact. Subsistence farming in Africa, for example, may not seem to be an invention-related activity, but it is. Three key inventions - - corn in Mesoamerica; the process of cultivating and detoxifying cassava in South America; and pastoral cow herding in Central Asia -- feed much of Africa. Those inventions were imported and adapted long ago, and African subsistence farmers couldn't survive today without them.

Power of Invention

Moreover, that the poorer parts of the world have adopted so few new ideas isn't just a symptom of the economic problems there -- it is the root cause.

It's interesting to look back at 19th-century America to see the transformative power of invention. Back then, the U.S. was considered a lawless, developing country of subsistence farmers. Early in the century, the country became embroiled in war with the greatest power of the time, and half a century later it got tangled up in a brutal civil war. American government could be deeply corrupt (think of Tammany Hall in New York City), and its state of development ranged crazily from European-influenced Manhattan to the anarchic Wild West. Alexis de Tocqueville, who toured America at the time, shook his head at horrible urban slums, sweatshop child labor, slavery and persecution (or worse) of the indigenous population.

At its best, America in the 19th century was like Brazil today, although in many ways Brazil is far more civil and sophisticated. At its worst, 19th-century America was the heart of darkness.

And yet it was during this time that the U.S. became the world's greatest inventing nation. Samuel Morse helped create the telegraph; Eli Whitney, the cotton gin; and Thomas Edison, the light bulb, phonograph and movies. Europe remained the center of learning, culture, technology and industrial prowess, but within several generations, Europe found itself relying on the U.S. for high-tech inventions.

Talented inventors the world over flocked to the new hotbed of creativity -- Alexander Graham Bell from Canada, Nikola Tesla and Charles Steinmetz from Europe, among many others. It was a stunning transformation. Imagine Brazil suddenly becoming the world's leading source of new technology, and you get the idea.

If inventing is the driver of economic growth, then it follows that those regions fostering the creation and exploitation of new inventions will enjoy prosperity. The poster child for this phenomenon is Silicon Valley, where academic and commercial inventors, assisted by venture capitalists and other supporting players, nurture the most dynamic environment in the world for generating businesses.

Silicon Valley

What we now call Silicon Valley had origins as inauspicious as those of the U.S. more broadly. A sleepy agricultural area with no industrial or business base worth mentioning, its most notable asset was a university set up by Leland Stanford, a 19th- century robber baron. And even that wasn't unique: public universities grace every state, and private universities dot the landscape, yet none has fostered an invention engine like Silicon Valley.

So, why did this area, and America more broadly, succeed in creating invention-friendly climates when others failed? The secret remains maddeningly elusive. The track record of other places that have tried to set up their own versions of Silicon Valley -- and there are many -- is poor. Policy makers have pulled all the levers they have, from lower tax rates to favorable zoning laws to research-and-development support, but none of these really sparks invention. These incentives may attract big companies, startups and venture capital, all of which are ingredients in an invention-based ecosystem, but they're not sufficient to stimulate the magic.

I'd like to report that someone has figured out a formula for harnessing the power of invention. Alas, that is not the case. If someone can, it would be, in many respects, one of the most important inventions in history because it would allow us to craft the economy we want.

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