Waterfall Economics

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Last month's Armchair essay outlined the enormous economic benefits of growing natural resource production. As natural resource production grows, investment must be made in the infrastructure to process these natural resources into finished goods. Then once finished goods are produced, they must be transported and sold. No quantifiable numbers exist for the potential total investment that will be made to support the current oil and gas shale boom, but it could easily be trillions of dollars.

The capital for shale boom investment comes directly from the private sector. There is no government/taxpayer subsidy needed. These expenditures will create thousands of private sector natural resource extraction, infrastructure construction, transportation and processing jobs, as well as new industrial asset management and maintenance jobs.

All of these jobs pay very worthwhile wages. According to a recent study conducted by the Colorado Energy Commission, the fossil fuel energy jobs being created in Colorado pay almost twice the national median wage.

The wages these jobs earn trickle down to create a host of secondary jobs, including home building, autos, and all sorts of commercial and consumer goods and services. The buck starts with natural resource extraction, multiplying its way down through economy.

Adding to this story is the drop in natural resource costs. The more natural resources we produce, the more supply we have. As supply grows, prices fall. Lower fuel and material costs are economically stimulating. Lower costs put more capital in the pockets of consumers and commercial enterprises.

Expanded natural resource production creates a waterfall economic period. These rising-tide-lift-all-ships periods happen when some catalyst creates an enormous multiplier effect. This multiplier effect doesn't last forever, but its economic momentum can sustain a society for a good number of years, and in some cases, decades.

As outlined in last month's essay, early growth in the Great Lakes region followed a similar waterfall story. Iron ore discoveries around the Great Lakes in 1844 led to steel production that found its way into scores of commercial and consumer applications. Iron ore allowed the Upper Midwest to become America's industrial heartland and Detroit to become the car capital of the world.

But as we now know, that waterfall period eventually plateaued. Detroit has filed for bankruptcy and many of the communities that sprung up during the iron ore boom languish today.

The reality is, economy is more living ecosystem than perpetual motion machine, and ecosystems have a lifecycle. For the Great Lakes region, its growth plateaued as America's industrialization matured.

Are there other waterfall catalysts beyond growing natural resource production? Absolutely. Innovation has also been a very powerful waterfall catalyst, likely the most powerful of all.

Innovation is an economic catalyst because it increases productivity, which historically has put more capital in the hands of consumers and/or commercial enterprise. Just like expanded natural resource production, innovation creates more capital for investment and consumption.

Prior to the Industrial Revolution, virtually everything was produced with the use of a few tools and an enormous amount of labor. But once Guttenberg's printing press allowed creative minds greater access to information and collaboration, the tide began to turn as better and better tools increasingly replaced labor's role in production.

Most recently, the explosion of electronic devices and communication channels during the 1980s and 1990s created a waterfall period. As it became evident that these devices could increase productivity, demand for them exploded. Everyone and every business needed something they didn't previously possess - a personal computer, a cellular telephone and an Internet connection.

Because these technologies increased productivity, consumers and companies had to purchase them. The growing demand required enormous capital investments in new production facilities and infrastructure. All manner of ancillary products and services grew up around these primary technology innovations. With it grew employment and economy.

The trajectory of our economy in the 1980s and 1990s was similar to that of many economic waterfalls that came before it, courtesy of industrialization and innovation. The birth of distributed electricity created a waterfall in the late 1800s and early 1900s. The automobile and commercial truck inspired another huge infrastructure build and waterfall period. Proliferation of consumer appliances like the washing machine, oven, stove, telephone and television carried economy through the 1970s.

When everyone is buying something they never possessed before, it is obviously economically stimulating because it leads to increased investment in production and labor to make all those new things.

Adding to the force of an innovation waterfall is the efficiency many of these new tools enable. These innovations saved businesses money, allowing them to invest more, hire more and pay more. For individuals, it meant less time to prepare food, wash clothes, clean the house and get to work, school or the grocery store. By freeing up more time to work and by allowing workers to be more efficient on the job, individuals earned more wages. First, male heads of households increased wages, and then more wives and females entered the workforce as housework became less of a burden.

But even the innovation waterfall has a lifecycle, from birth, to explosive penetration, to saturation.

As outlined in a previous Armchair essay, initial investment and consumption that lifts productivity has a high economic multiplier effect. It puts more capital in the pockets of consumers and companies. But the capital used to replace or maintain those productivity-increasing items is of less economic value. The initial investment increases productivity, while replacement and maintenance only maintain productivity that has already been captured. The multiplier effect of capital decreases once productivity has been substantially captured.

Our challenge is that once these waterfall periods reach maturity, economy will plateau. Construction of infrastructure to support our growing production of oil and gas will eventually meet industry needs. Economy grows, so natural resource demand grows, which will cause prices to move higher. And once everyone possesses the new productivity-enhancing innovation, there is less of a multiplier effect. The second car, washing machine or cell phone doesn't increase productivity. They merely maintain it.

Modern economic theory suggests that government should come to the rescue during any economic plateau. The idea is that increased government stimulus can tide us over until a new waterfall period begins.

The current oil and gas boom may serve as the next waterfall catalyst, but only if our industrial policy allows it. Policy today seems more restrictive than accommodating to investment in natural resources and industrial production.

Our current government policy presents another challenge because it favors consumption over savings. Increasing the social safety net favors consumption while, forcing people to take personal responsibility increases savings. If we don't save during robust waterfall periods, then borrowing has to fill the gap once a plateau has been reached.

All is fine so long as we can continue borrowing, and so long as the next waterfall period produces enough growth to pay for previous stimulus. But this reduces economic policy to faith – faith that future waterfall periods will appear when needed and be prosperous enough to pay for the cost of previous government stimulus. These waterfall periods may have surfaced with pretty great frequency in the last 100 years or so. But as every investment prospectus will tell you, past returns are no guarantee of future results. As they say in the London underground, best to "mind the gap" more judiciously.