



# Missive

APRIL 4, 2023

## Tech is Bullish on Oil

The news of the shocking OPEC+ announcement of a supply cut is saturating the minds of investors and market prognosticators. We would like to remind our investors of the longer-term implications of what we are seeing around the economy and markets pertaining to the energy business. We normally understand this from purely looking at the energy business, but also want to look at it from a technology lens.

We have Mark Mills to thank for getting us past a cognitive disconnect over the last few years. His two books that we'd recommend are *The Bottomless Well*, that he co-authored with Peter Huber in 2005, and his newest title, *The Cloud Revolution*, which was published in 2021. His first publication was prophetic because it was accurate, and his second should be read by every tech CEO to understand where we are going in energy markets.

One falsehood believed by many smart people is that technology will reduce the use of energy (gas, oil, solar, etc.). Early in *The Cloud Revolution*, Mills introduces his readers to the Jevons paradox. The Jevons paradox was coined by William Stanley Jevons to allay Britain's fear of running out of coal from overuse. The Jevons paradox assumed the engines used to fire the coal would become more efficient. Policy makers assumed this would drive more scarcity, but instead it drove a far greater demand for coal.

Mills explains:

*Put differently: the purpose of improved efficiency in the real world, as opposed to the policy world, is to capture the benefits from a machine, or a process. So long as people and businesses want more of the benefits the machine or process provides, the declining cost of use increases demand and thus use. And then the growth in those demands, for nearly all things for all of history, in turn outstrips the efficiency gains, leading to a net gain in consumption.*

*If affordable steam engines had remained as inefficient as those first invented, they would never have proliferated, nor would the attendant economic gains and associated rise in coal demand have happened. The same could be said about more modern combustion engines. Today's aircraft, for example, are three times more energy efficient than the first commercial passenger jets. That efficiency didn't "save" fuel but instead propelled a four-fold rise in aviation energy use since then.*

Policy makers currently argue that technology will cause us to use less energy, just like the British thought they would run out of coal. The efficiencies will not drive lower consumption, but, as Mills points out, higher demand.

### Higher Demand

Very few people have tried to contemplate where our energy needs are going based on a shift to computing in the cloud. When it comes to food, you can only consume so much (despite many in the western world consuming more than our daily bread). There are limitations to how many physical things you can own. In the world of the cloud, there are fewer limits on the amount of information that can be stored. The limitless nature has only continued to improve over time.

Mills points out that a single iPhone at 1980 energy efficiency would require as much power as a Manhattan office building. At that rate, we would have had very few iPhones. In actuality, we had zero. Now that efficiencies have been gained, we have billions. Consuming far more energy than the Manhattan office building.

The cloud unlocks so many potentials and pitfalls on its way. These will grow at an exponential rate, pulling the inputs that underpin them along for the ride. The idea of "clean tech" isn't so clean. It requires the same inputs that are more efficiently produced every day. Other examples of clean tech that didn't produce less energy consumption would be the laser and the LED bulb. How can this be proven? Look at how many more lights are in a home today compared to 1980 and look at all the applications of the laser. Great technologies consume far more energy going forward.

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This brings us back to the OPEC+ announcement of the weekend. The supply cut isn't to hurt business, the economy or technology. Technology is going to provide an infinite number of possibilities to store information, run processes and make things more efficient. If we don't have prices high enough to incentivize the energy producers to grow their production, we will limit the potential of the technologies by the lack of their primary building block: energy. This is why if you are a tech executive in Silicon Valley, Seattle or a chipmaker building a factory in the Silicon Desert (Phoenix), you are excited about having ample energy to grow the exponential opportunities that come with the biggest opportunity in technology since the PC revolution: the cloud.

Fear stock market failure,



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