February 15, 2022

Dear Client,

Have you ever heard of Enrico Fermi, Frank Drake, or James Webb?

Enrico Fermi was an Italian physicist who was awarded the Nobel Prize in Physics, created the first nuclear reactor, and was instrumental in the Manhattan Project.

Frank Drake is an American astronomer and astrophysicist who founded the SETI (Search for Extraterrestrial Intelligence) Institute.

James Webb was named Administrator of NASA in 1961 and was responsible for setting the course and the ultimate success of manned space missions and interplanetary communication.

**Fermi Paradox**

In 1950, during a visit to Los Alamos National Laboratory, Fermi and some colleagues were discussing extraterrestrials and interstellar travel over lunch, in conjunction with a cartoon from “The New Yorker” showing aliens stealing New York City trash cans (NYC trash cans had been disappearing en masse).

Fermi famously asked, “where is everybody?” He was specifically talking about interstellar travel: If aliens exist and can fly between the stars, then they should have visited us already.

**The Drake Equation**

In 1961, Drake presented a formula that could be used to estimate the number of intelligent civilizations capable of communication in our galaxy. The inputs for the equation are the formation rate of stars, the fractions of stars that have planets, of planets that can support life, of life that becomes intelligent, of intelligent life that develops communication technology, and the period that civilizations exist.

As you might imagine, this number of variables and the estimation or guesstimation required to complete the equation produce dramatically different outcomes ranging from twenty-nine to millions. That said, there are hundreds of millions of stars in the Milky Way, and most are believed to have at least one planet.

**Webb Telescope**

James Webb was given a directive to, “put a man on the moon,” but he also established the importance of science and discovery within NASA. In 1965, he introduced the idea of a large space telescope and was also responsible for the development of the Mariner and Pioneer space probes. Pioneer 10, the first man-made craft to leave our solar system, contained a plaque designed by Frank Drake that is our first attempt to communicate with extraterrestrials. The simple graphic depicts our location in the galaxy and a man and woman relative to the size of the spacecraft.

Last week, the freshly launched James Webb Telescope, one hundred times more powerful than the 30-year-old Hubble, produced its first images. Over the next few months, NASA will adjust and focus the mirrors to produce the best results. The Webb can see much further [distance and back in time] and in finer detail than we ever have, capable of seeing signs of life, or intelligent life, or the remnants of either.

So, Fermi asked the question, Drake estimated the possibility, and Webb tried to make contact.

Central to the Fermi Paradox is that Earth is relatively young, 4.5 billion years old, and most other solar systems in the galaxy have a few hundred million to a few billion years head start on us. So, where is the galactic empire? The bottom line, space travel over light years is hard, much more difficult than putting a big telescope into orbit. Therefore, it seems likely that another intelligent civilization with a significant head start could be looking back at us, with a thousand- or million-times more powerful telescope.

Quick reminder - Light-years are a measure of distance, the distance light can travel in a year. So, when we are looking at a star one thousand light-years away, we are seeing that star as it was 1000 years ago. A civilization looking back at us would see us as we were in the past.

Our closest galactic neighbors looking back at us at this moment would be seeing our history. They would likely note one of the most advanced societies, and wonder if we [The United States] will make it?

Planets with the potential for life…

TOI-1231 b - 90 light-years, Great Depression. We made it.

Tau Ceti e - 75 light-years, World War II. We made it.

L 98-59 b - 35 light-years, 1987 market crash. We made it.

HD 219134 b - 21 light-years, 9/11 terror attacks. We made it.

GJ 1061 d - 12 light-years, Global Financial Crisis. We made it.

Proxima Centauri b - 2 light-years, COVID-19. We… are making it.

In the moment, it is human nature for the negative events affecting us, the people around us, our livelihoods, and our economy to feel like they will go on forever or be “THE END.” Earthlings are a very resilient bunch; we find a way.

Investments and markets are affected by these events and our emotional reactions to them, but in hindsight, each one looks like an opportunity rather than the end. I am continually reminded that the most successful investors among us are those who can stay focused on longer-term goals rather than daily fluctuations and the sensationalism of current events.

Let me know if you would like to discuss alien civilizations, resilience, or anything else on your mind.

Thank you,

Financial Advisor