

*Cetera Investment Management's*

# Guide to the Galaxy



Cetera® Investment Management LLC

# Always a New Frontier

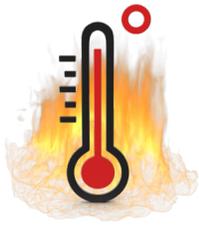
The first images from the James Webb telescope were released in July, revealing some of the most breathtaking views of the cosmos. The images showed previously unseen parts of our vast universe in full color. As technological innovation improves and our understanding of the cosmos grows, the scientific community identifies new questions for previously unknown problems. The more we know, the more we realize how much we still don't know...or even understand. There is always a new frontier.

This is also true for markets and the economy. Investing and making economic predictions can be a humbling experience. The global economy is a complex system impacted by a myriad of variables. Stock and bond markets are in a constant state of fluidity. And like the universe, financial and economic markets have cycles, as well as randomness and chaos.

In this commentary, we will explore parallels between the cosmos and financial and economic markets and discuss their key differences.

## Here Comes the Sun

The sun is approximately 4.6 billion years old, and its life expectancy is another five billion years. The Sun has converted nearly half of its hydrogen into helium through nuclear fusion. When it uses up all its hydrogen in five billion years, it will leave its stable phase and transition to a red giant. At that point, it will expand in size and engulf Earth and the other inner planets. No need for a personal spaceship now, but that day will come.



### That's Hot

The surface of the Sun is roughly 10,000 degrees Fahrenheit. It gets WAY hotter at the core, where temperatures reach 27 million degrees.

### At the Speed of Light

Traveling at a speed of 186,000 miles per second, it takes 8 minutes and 20 seconds for light to make the 93-million-mile journey from the Sun to Earth.



### Harnessing the Sun's Energy

The amount of solar energy that reaches Earth at any moment is about 10,000 times the total amount of energy used worldwide.<sup>1</sup> In 2021, more than 10% of the world's electricity came from renewables for the first time ever.<sup>2</sup> The majority of renewable energy currently comes from wind, but solar energy use increased 23% last year.<sup>2</sup>



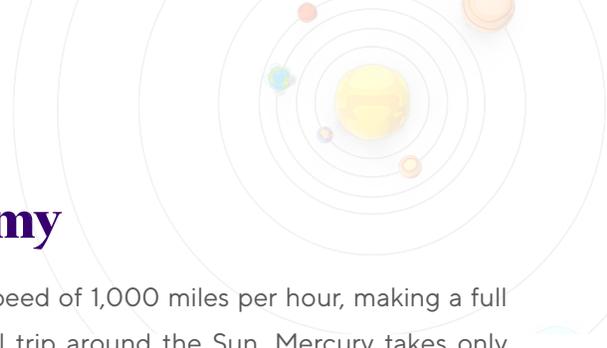
### Truly Astronomical

The Sun's circumference is roughly 2.7 million miles, and its volume is large enough to fit 1.3 million Earths.

### Solar Has a Bright Future

The growth rate of solar power is high, and falling costs are a big factor. The cost per megawatt-hour for solar dropped from \$367.20 in December 2009 to \$42.80 this year, a decline of 88%.<sup>3</sup> As solar technology improves and costs fall further, solar will be a long-term driver of renewable energy growth. According to projections from the U.S. Energy Information Administration (EIA), solar will account for 14% of total U.S. electricity generation by 2035 and 20% by 2050 from 3% in 2020.<sup>4</sup>





# Cycling through Space and the Economy

With a circumference of over 24,000 miles, Earth spins on its axis at a speed of 1,000 miles per hour, making a full rotation every 24 hours. It takes 365.25 days for Earth to make one full trip around the Sun. Mercury takes only 88 days to travel around it. Neptune takes 165 years to complete a trip around the Sun due to it being the farthest planet from it (sorry Pluto\*). As you can see, there is a cyclicity to planetary motion.

While not as precise, the economy also has cycles. Business cycles have four phases. The first phase is an expansion, then it peaks, a contraction (recession) follows, and the cycle ends with a trough. Basically, the economy is either in an expansion or a recession. We are in the 13th business cycle since the end of World War II. The average length of an expansion is over 60 months. In the 12 recessions of the post-WWII era, the average duration has been 10 months. These are just the averages. Recessions in the post-war era have been as short as two months (2020 pandemic) and as long as 18 months (2008–09 financial crisis).

While there is cyclicity, an economic expansion is more comparable to the life cycle of a star than planetary motion. For example, red dwarf stars are smaller and have less hydrogen for fuel. They burn energy at a slower rate but live longer, potentially for hundreds of billions of years. Supergiant stars, on the other hand, have a tremendous amount of mass. They are significantly hotter than red dwarf stars, burning hydrogen at a much faster rate, resulting in a lifespan of a few hundred million years or less. Economic expansions are similar in that regard.

Economic expansions with high growth can burn out and end up in a recession faster than expansions with slow economic growth. A slow growth expansion has the potential to last longer, delaying the inevitable recession. The prior expansion is a good example. Lasting from June 2009 to February 2020, it was the longest economic expansion on record, but growth was the slowest of the post-war era. There was stable growth, stable inflation, and stable labor market expansion. The economy didn't overheat, and inflation remained subdued, so the Federal Reserve (Fed) didn't intervene with aggressive tightening. The economy also never slowed down long enough to hit stall speed. There is no telling how much longer it would have lasted if the asteroid called the pandemic didn't strike. The current expansion is another story.

The pandemic recession lasted only two months because the Fed and Congress both stepped in and provided a backstop to the economy with historic monetary and fiscal support. The pace of economic growth from the trough was very high. Last year's gross domestic product (GDP) growth was the strongest since 1984. When adjusted for inflation, the pace of growth stalled out this year because inflation accelerated to the highest pace since the early 1980s. The Fed has intervened with the most aggressive path of rate hikes in 40 years. The current expansion is on life support and a recession could be around the corner. This expansion burned bright but may have burned most of its energy. Only time will tell, though economic cycles do not operate on precise timeframes.

\*Pluto was reclassified in 2006 as a dwarf planet in the Kuiper Belt.

## It's Written in the Stars

Our ancestors have looked to the sky for as long as humans have roamed Earth. Stars have guided sailors and explorers as the original GPS. Whether crossing oceans for the first time or trekking to previously uncharted territory, stars have been used as a navigational guide. We are also pattern seekers and story tellers. Stargazing has been going on well before the invention of the telescope, and our pattern-seeking brains have identified a whole host of constellations from the stars visible to us in the night sky. Ursa Major, Ursa Minor, Orion, Centaurus, Aries, and Gemini, just to name a few. From these constellations, we have created mythology and passed on stories for generations.

There are parallels for how investors analyze markets. Our pattern-seeking brains look for clues, real or perceived, through the plethora of market data and stock charts. Market technicians, for example, look at price movement on a chart to find patterns with names like head and shoulders, pennants, bear flags, wedges, cup and handles, and double bottoms. From these price patterns on a chart, a technician will look for trends or potential turning points in the direction of an individual stock or market index. While there is plenty of open interpretation over technical analysis, there is a large following of individuals that use technicals as part of their investment decision making. Technical analysis can be a useful tool when combined with fundamental analysis. In the long run, earnings and valuations will have the biggest impact on stock returns, though technical analysis is often used to identify trends and turning points in markets and individual stock prices.

## Coming Back Down to Earth

The stock market was launched into the stratosphere last year. A new record high was reached 70 times for the S&P 500, second to only 1995 (77). Markets eventually ran out of fuel and gravity took over in 2022. The S&P 500, Dow Jones Industrial Average, and Nasdaq all fell into a bear market (decline of 20% or more). Looking at the data, the S&P 500 had a decline of 25.4% from the January 3 record closing high to the low on October 12. The average bear market decline has been 32% in the post-WWII era, but the average peak-to-trough decline has increased to 36% if there has been a recession. Where markets go from here might not be written in the stars, but we can find clues in the data. If the economy weakens further, a recession is more likely to occur, resulting in potentially more declines in the stock market. A recession would drive corporate earnings lower, putting additional downward pressure on stock prices. If we avoid a recession, the worst might be behind us. Corporate earnings would be under less pressure and stock prices could rise again.



## Physics Can Only Go So Far

At a distance of only 367 million miles, Earth and Jupiter were at their nearest distance since 1963 in late September. Stargazers around the world looked to the sky to see Jupiter appear brighter and larger than normal, with Jupiter's rings and a few of its moons visible with a pair of decent binoculars. Things weren't so clear in capital markets at that moment. The Fed had recently hiked interest rates to the highest level since before the financial crisis, and the S&P 500 was on its way to record the worst September in 20 years. While markets work in cycles, navigating a bear market can be chaotic. Market and economic cycles lack the precision and order of planetary cycles that are grounded in physics. Within the perceived chaos and randomness of markets, we may seek patterns in market behavior to look for clues about what will happen next. While physics drives the activity of our moons, stars, and planets, it is psychology that impacts the way humans behave in capital markets.

Sir Isaac Newton was one of the greatest scientists in history, making some of the most important observations in mathematics, physics, and astronomy. But he had the following to say about investing in the stock market: "I can calculate the motions of the heavenly bodies, but not the madness of the people." With that said, we will defer to Newton as to why it's so important to seek guidance from your financial professional when it comes to investing and making asset allocation decisions. While no one has a telescope that discerns the future, it is important to balance investment objectives with risk levels. Your trusted financial professional should be relied upon for guidance through this volatile period in markets.



<sup>1</sup>Chandler, D.L. (October 2011). Shining Brightly. MIT News. <https://news.mit.edu/2011/energy-scale-part3-1026>.

<sup>2</sup>Masterson, V. (April 2022). Wind and solar generated 10% of global electricity in 2021 – a world first. World Economic Forum. <https://www.weforum.org/agenda/2022/04/wind-solar-electricity-global-energy/>.

<sup>3</sup>Bullard, N. (July 2022). Solar Growth Estimates for 2050 Are Aggressive, But Not Unrealistic. Bloomberg. <https://www.bloomberg.com/news/articles/2022-07-07/solar-growth-estimates-for-2050-are-aggressive-but-not-unrealistic>

<sup>4</sup>U.S. Energy Information Administration. <https://www.eia.gov/todayinenergy/detail.php?id=50357>.

This report is created by Cetera Investment Management LLC. For more insights and information from the team, follow [@CeteraIM](#) on Twitter.

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