MassMutual

Market Update
April 15, 2021

Last Thursday afternoon, I moved a couple of meetings, quietly closed my laptop, laced up my shoes, and drove to nearby New Haven, Connecticut, with a particularly fresh spring in my step. After a smooth check-in process, I entered a well-loved gymnasium that was no longer used for sports to receive a literal shot-in-the-arm. With my sole contribution being the act of sitting still, I then received a sticker declaring my accomplishment and, after being monitored for side-effects, I got back into my car to reflect on the marvel that had just occurred. I had just received an injection that didn't exist a year ago meant to help protect me from a virus that didn't exist until a little over a year ago. My vaccination was administered by a kind, competent nurse who hadn't been giving vaccinations until recently and who received them from a delivery process that didn't exist until several months ago.

The product of the largest, most comprehensive, and most successful sharing of research in the history of mankind, the vaccine was created against the backdrop of one of the fastest market contractions of all time, followed by the fastest rally of all time, which was, at least in part, a reaction to the unprecedented and remarkable government stimulus that occurred in very short order. In a word, this is risk: the idea that something occurs that is both unexpected and impactful.

For a short (and morbid) period, I developed a habit of re-reading economic and financial forecasts from year-end 2019 and then comparing the actual outcomes (with the benefit of hindsight) to the predictions of those market pundits. Not surprisingly, not a single one mentioned (or could have possibly contemplated) the impact of a worldwide pandemic. This is, of course, expected and a wonderful anecdote for why we, as investors, should approach markets with humility and caution.

What better way, then, to wrap up our discussion of cryptocurrencies: a fascinating, and very volatile, instrument that continues to garner interest and utility.

Today, we have two areas of focus. First, we'll review the latest COVID-19 case growth and vaccine deployment (short version – it continues to improve), and second, we'll present the various methods of accessing cryptocurrencies, followed by a summarization of what we have explored thus far.

With that, let us begin.

Section 1: COVID-19

Thankfully, I don't have much new news on the COVID front. In fact, my hope is that, over time, this section becomes so boring and uninteresting that we can quietly (and thankfully) remove it and move on to other events. The summary is that case growth rates have fallen rapidly and now remain stable, while the number of vaccinations continues to climb.

Chart 1: COVID–19 Daily Confirmed United States Cases[1]

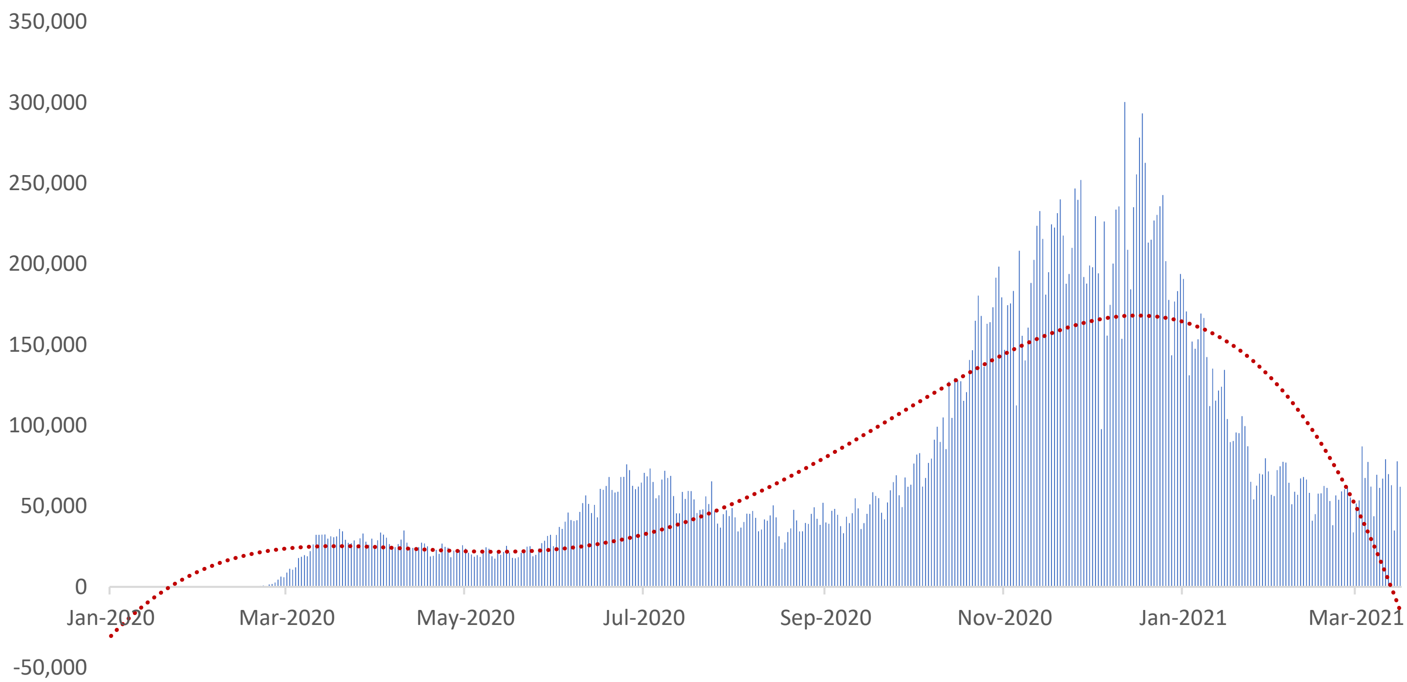


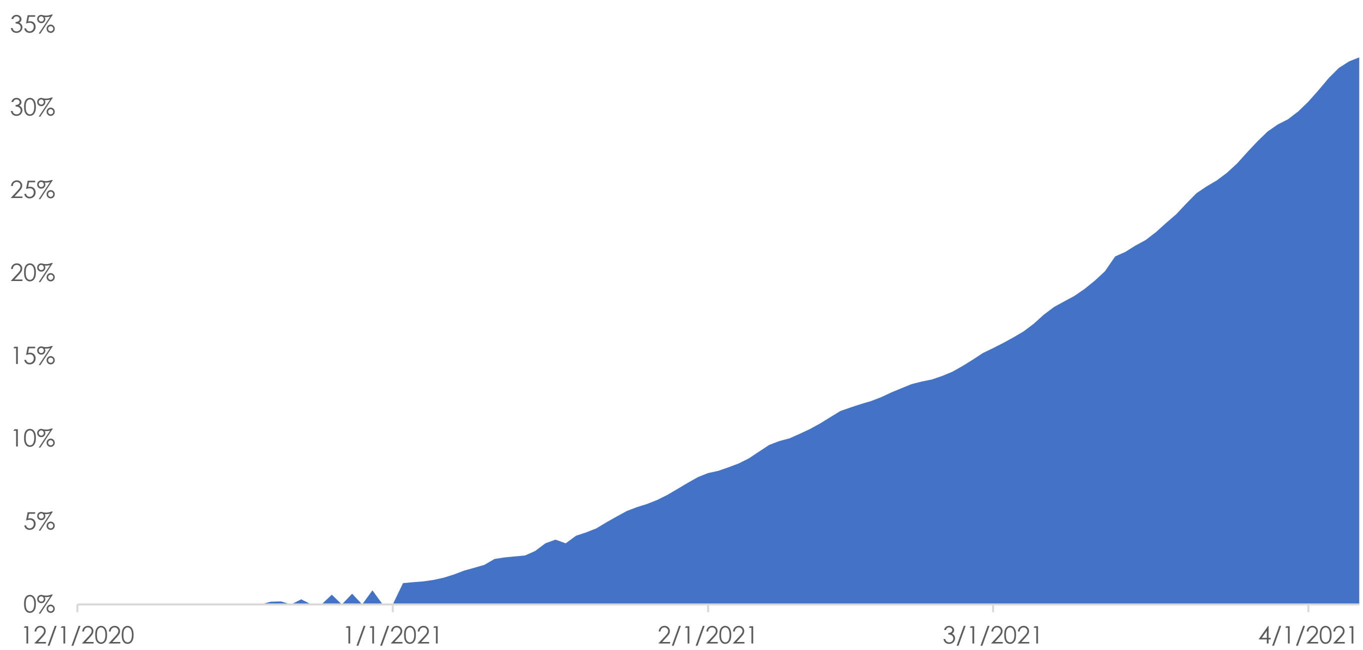
Chart 1 shows the total number of new confirmed COVID-19 cases per day in the United States. Clearly the picture demonstrates optimism since the awful numbers in November and December, but I would have liked to see the daily case counts continue to fall in March (whereas they stabilized and have remained stubbornly high).

We now average roughly 60,000 cases per day and, while that is a dramatic improvement compared with prior months, it has not fallen as quicky as hoped. Attribution is a more difficult question, and many point to the relaxation of restrictions (e.g., businesses opening, schools opening, less mask-wearing, and the like), while others point to continued expansion of variants of the original strain of COVID-19.

Perhaps more optimistically, Chart 2 points to the incredible progress we have made as a country.

[1] Sources: Bloomberg, World Health Organization as of April 14, 2021, dotted line represents seven-day moving average

Chart 2: COVID–19 % of Population with at least Single Dose Vaccination (United States)[2]



This means we have now provided vaccinations (at least one dose) to roughly 35% of the population, or more precisely 108 million Americans. This was accomplished in just over three months, and we are now administering more than 3 million vaccinations per day. The scale is staggering and, while we are clearly past the point of patience with this pandemic, I can't help but appreciate the remarkable coordination this required.

I would be remiss without cautioning that we are not out of the woods and much work needs to be done. While epidemiologists do not believe 100% of the population must be vaccinated to obtain herd immunity, we still have a long way to go. Nonetheless, the data gives us much to be optimistic about, and we continue to watch the daily gyrations and trends closely.

Section 2: Bitcoin and Cryptocurrencies

In this third and final installment of our analysis and exploration of cryptocurrencies, I must admit to needing to walk a delicate line. As we have explored in the last two market updates, cryptocurrencies are both potentially useful and wildly volatile. Further, they are not assets (they are mediums of exchange), and they are difficult to utilize in a pure, low cost, and transparent way.

So, while I do believe cryptocurrencies have some utility in some portfolios, the industry has not yet provided a medium of gaining exposure that is as easily accessible and inexpensive as, for example, gaining access to equities or bonds in a portfolio. It is worth noting that there are many organizations hard at work on precisely that problem, and we are following (and partially involved) closely.

[2] Sources: Bloomberg, World Health Organization as of April 14, 2021

Therefore, to follow is an exploration of what exists currently, which, as noted, is changing quite frequently and will continue to evolve rapidly.

First and foremost, let me make abundantly clear there is currently no ETF (exchange-traded fund) or mutual fund that provides direct exposure to cryptocurrencies. As it stands now, the Securities and Exchange Commission (SEC) does not recognize the two largest cryptocurrencies (Bitcoin and Ethereum) as securities, and therefore, as of yet, has not allowed an ETF or mutual fund to provide that direct exposure. It is also worth noting there are many who believe it will change within the next twenty-four months but, precisely how or when, is unclear.

In terms of what is available, there are several categories worth understanding:

The first category is what are known as **"Pink Sheet Trusts**." While the legal and compliance details are both material and confusing, these have gained in popularity largely because of an absence of other offerings. Not ETFs nor mutual funds, they are traded "over the counter" or differently than the instruments most portfolios are built from. These are technically an SEC reporting company, which again, just creates some differences when compared with what most investors are used to. A prime example of this category is the Grayscale Trust, which has gained notoriety in the last several months.

The watch items with this category are often:
(a) They can be much more expensive than more standard investment vehicles.
(b) They strive to match the performance of the stated cryptocurrency (for example, Bitcoin), but often trade at a large premium or discount, thus increasing the risk of significantly underperforming the cryptocurrency itself.
(c) They can be illiquid, or worse, unredeemable.

The second category is what are known as **"Indirect"** exposures. These are often proxies to the overall cryptocurrency space but, again, carry significant idiosyncratic risks that are often not well understood. Investors could gain the exposure through purchasing the stocks of those companies that ostensibly stand to benefit from the continued growth of the cryptocurrency market but should understand that these are not necessarily pure means of gaining cryptocurrency exposure.

One of the more notable examples of this category is Coinbase (COIN) which went public through a direct public offering (DPO) on April 14. Tesla (TSLA) also recently purchased a large amount of Bitcoin and plans to accept Bitcoin as a method of payment for its vehicles[3].

The watch items with this category are often:
(a) These are indirect, not direct, exposures, and therefore the performance difference between the desired cryptocurrency and the company can vary widely.
(b) These exposures have many other risks that can be completely unrelated to the industry itself. Examples would include the quality of management, ability to obtain financing, etc., etc., like any other company in many other industries.

The third category is what are known as **"Private Funds**." These are generally only available to accredited investors of a certain size and/or income and are often managed by companies or individuals. These funds are, by definition, private, which means they are outside the auspices of typical regulation and thus can often carry more risks than a fund which is scrutinized by federal regulators and oversight bodies.

[3] https://www.cnbc.com/2021/02/08/tesla-buys-1point5-billion-in-bitcoin.html

The watch items with this category are often:

(a) These private funds can carry high expense levels, including significant administrative fees that are often hard to detect or understand.
(b) The track record of these funds can be limited because many are newly launched.
(c) The liquidity can vary widely and can often be heavily restricted during periods of distress.
(d) These often have high minimum investments, thus, again, restricting accessibility.

The fourth category is **"direct ownership,"** which has become much more popular recently. This method simply involves visiting one of the many websites offering purchase, setting up an account, finding a way to transfer money into the website, and then purchasing the underlying cryptocurrency. While ostensibly this is quite straightforward, there are a number of items to keep in mind. First, it is very hard to perform due diligence on a website and for each investor to understand what protocols, security, information sharing, and the like exist. Second, there have been several examples in the past several years of unsavory characters gaining access to these websites and incurring significant theft and damage. Third, the ownership of the underlying cryptocurrency exists outside of a portfolio construct and is largely just an account holding another currency. Lastly, in order to protect that exposure, some knowledge and understanding is required, namely how to place the ownership in something called "cold storage." While none of these items is insurmountable, they do provide significant barriers to many who would like to access cryptocurrencies, although, again, there have material developments in this space just in the last several months alone.

Lastly, it is worth noting there are several **other** paths that continue to evolve daily. A recent example includes "Canadian ETFs," which has gained some attention in recent weeks.

With that section concluded, let us return to the prior takeaways and expand further. As we discussed last time:

- Cryptocurrencies are remarkable innovations that have seen rapid adoption and significant increases in market value in a very short period.
- Bitcoin, and its brethren, are not assets that provide a risk premium. That doesn't mean they aren't useful, but they are simply mediums of exchange (also known as currencies), and not assets.
- As such, while cryptocurrencies go up or down sometimes, there is no structural reason to believe they will increase in the way that equities, bonds, and real estate have done historically.
- Cryptocurrencies (Bitcoin in particular) have been remarkably strong performers over the past 10 years. There is no reason to believe they will, or will not, repeat that performance.
- Cryptocurrencies are wildly volatile. Since 2011, Bitcoin has been roughly nine times more volatile than the Standard & Poor's (S&P) 500 and roughly 30 times more volatile than bonds[4].

In addition, as provided above, cryptocurrencies are not readily accessible without some hurdles. While this is changing quickly, particularly when combined with the points above, this is a vehicle that requires significant caution.

In summary, cryptocurrencies are not for the faint of heart and appropriate only for those who clearly understand the risks and objectives, can tolerate the volatility, and are able to navigate the

[4] Sources: Bloomberg, cointelegraph.com as of April 14, 2021

difficulties of gaining the exposure.

In closing, stay safe, stay focused on controlling what you can control, and save more than you think necessary.

We remain at your service and watching closely. Please let us or your financial professional know how we can serve you.

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