MassMutual

Market Update
April 29, 2020

On April 20th, the "headline" price of oil fell to -$37.63. Yes, you read that right, it fell to a negative $36. That means if you were to buy that contract and show up in Cushing, Oklahoma to pick up your West Texas Intermediate (WTI) oil, you would not only pick up one thousand barrels of oil, you would also be handed a check for $37,630.

Financial pundits everywhere ran with the news, while mostly exaggerating the impact and generally ignoring the logic.

Given the importance, in the following letter, we try to unpack what has occurred to oil markets in the past two weeks. Additionally, we will update some of the data on the coronavirus (COVID-19) outbreak and offer a bit of perspective on the negative economic news (jobs data in particular) that is expected shortly.

For those looking for a summary: the COVID-19 case growth rate continues to slow, the oil move was both logical and not as dire as widely reported, and we should brace ourselves for what we expect will be additional volatility in the financial markets in the weeks and months to come.

With that said, let us begin…

As of the morning of April 28[1]:

1) The novel coronavirus (COVID-19) has infected a bit more than 3 million people and killed more than 212,000[2] people.
2) In the United States, there are now a bit more than 1 million confirmed cases along with a little more than 56,000 deaths[3], with 22,000 deaths occurring in New York alone.
3) Italy, Spain, the U.K. and France all now have more than 20,000 deaths[2].

Those statistics are both tragic and frightening. They grab our collective attention, and therefore, are focused on daily by the press.

And yet, states are reopening, and the world is gingerly considering the same[4]. Georgia and Alaska began easing restrictions earlier this week. Tennessee is opening restaurants on Monday. Oklahoma is currently in the first phase of reopening, and if all goes well, public gathering places will be open on May 1.

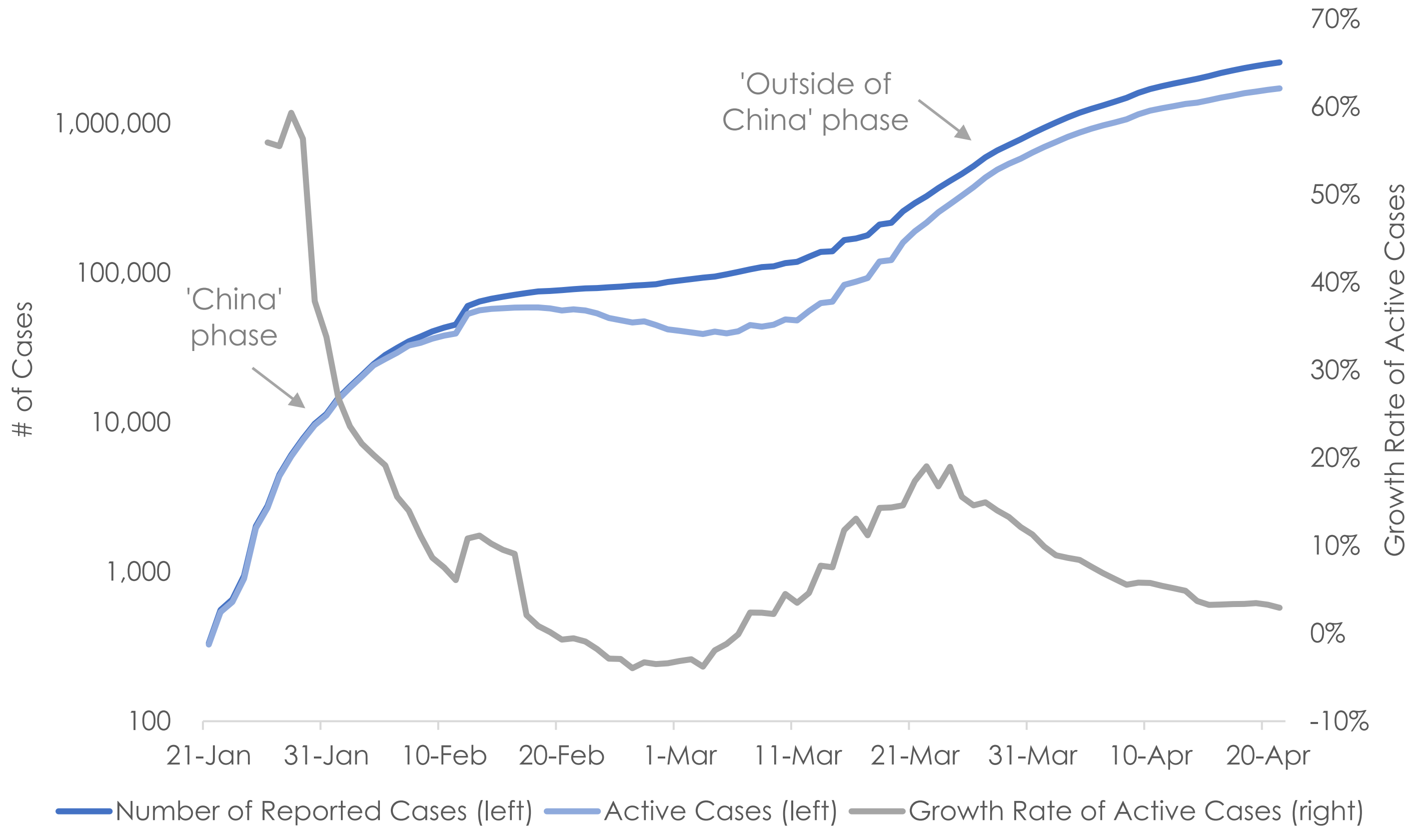
Given the dramatic case numbers quoted earlier…it is reasonable to wonder how states can be considering re-opening? The explanation comes down to the distinction between the "level" and the "change".

The level is how many cases exist (the primary focus by most news outlets), while the change is how those case numbers are growing (or shrinking). The level is scary (particularly without more context), while the change is currently showing a more optimistic picture.

Chart 1 helps to demonstrate two dynamics.

[1] https://worldometers.info/coronavirus, as of April 27, 2020
[2] Johns Hopkins University, as of April 27, 2020
[3] https://www.worldometers.info/coronavirus/; as of April 27, 2020
[4] https://www.cnn.com/interactive/2020/us/states-reopen-coronavirus-trnd/

Chart 1: COVID–19 Worldwide Outbreak[5]



The blue lines (the level) demonstrate the total number of cases around the world. The grey line (the change) demonstrate how the number of cases are growing. On March 22, the growth rates were roughly 20% per day. Today, those growth rates are now under 2% per day[6].

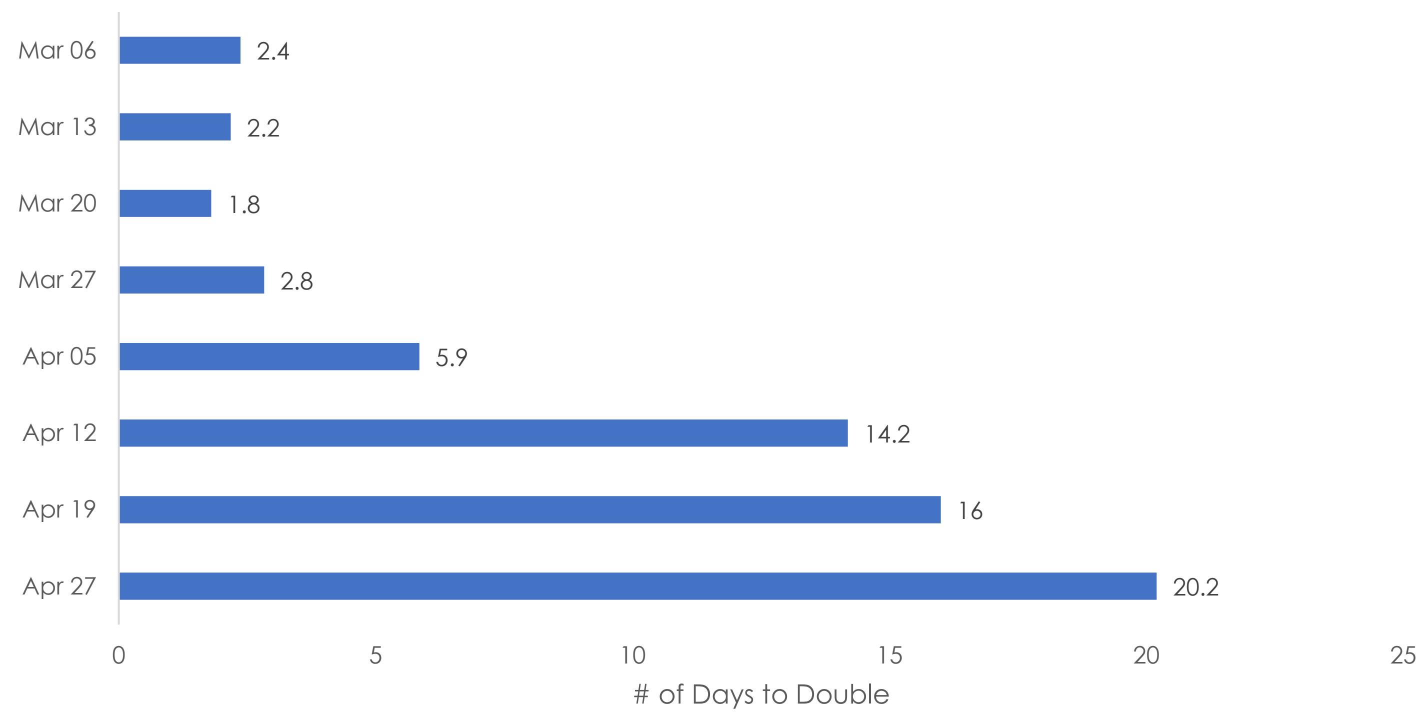
Within the United States, the slowdown in case growth rates has been similarly remarkable. On March 21, the U.S. growth rate was 40%. As of April 28, it is now less than 3%. One month ago, the number of cases doubled every 1.8 days; today, the number of cases doubles every 21 days.

These numbers are not quoted very often, yet they are contributing to why pressure is building for shelter-at-home orders to be eased. In its simplest form, policy makers are beginning to believe the cost of keeping the economy closed outweighs the benefits…at a minimum, they are beginning to stare at that question.

Chart 2 further demonstrates just how dramatic the reduction in growth rates has been.

[5] Sources: Bloomberg, World Health Organization
[6] https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6

Chart 2: United States: Number of Days to Double Confirmed Cases[7]



This is a more tangible way of viewing the same data by demonstrating how many days it takes to double the number of cases in the United States. On March 20, for example, the number of cases doubled in roughly 1.8 days. In other words, if you start with 100 cases today, in less than 2 days, you have 200 cases.

Fast forward to today, and the number of cases is doubling in a bit more than 20 days. Start with 100 cases today, and in 20 days, there are 200 cases. It is worth noting that Italy, initially a country that struggled with containing the growth, is now doubling its cases every 55 days[8].

This is a remarkable slowdown and clear reason to have hope. In short, the lockdown is working.

And yet, the costs of the lockdown have been, and will be, significant. Corporations are reporting rapid declines in earnings, workers are filing for unemployment benefits with unprecedented speed and scale, and municipalities are beginning to understand how quickly their revenues are declining.

This then brings us to oil. Thus far, I can't think of a better example of a market that has suffered the quintessence of the lockdown. What occurred was a logical result of three factors: fear, a decline in demand and supply, and exaggeration. We explore all three below.

First, let us review the facts:

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[7] Sources: Bloomberg, World Health Organization

[8] Source: https://www.worldometers.info/coronavirus/country/italy/ as of April 27, 2020

- There is a specific type of oil referred to as West Texas Intermediate oil (known as WTI) that is generally referenced when pundits speak of "oil". The details aren't that relevant, but it is primarily priced out of Cushing, Oklahoma.

- On April 20, the May futures contract for West Texas Intermediate oil went down to $-37.60[9].

- As strange as that is, this means the buyer of that contract was entitled to receive 1,000 barrels of oil in Cushing, Oklahoma on a specified date in May while ALSO receiving $37,630 at the same time.

Before we explore why, let me back up for a moment to explain a couple of market mechanics. Oil is a commodity (in fact it is useless without being refined), and commodities tend to trade through something known as "futures contracts". While there are details that matter, the concept is straightforward.

If I am growing corn, I benefit from knowing that I can sell my corn in the future. After all, my corn is in the ground right now, and I am incurring costs and risks waiting for that corn to grow. Additionally, my buyers benefit from knowing they can buy my corn at a specific time and date and will be able to utilize that corn for productive purposes (to produce cereal for example).

Hence, the futures market helps us both. A futures contract itself is just a standardized agreement for a transaction in the future that allows us both to plan for the future.

It is important to note that while many commodity markets were historically used for transacting the underlying commodity, the markets are now used for other purposes (primarily financial). Said another way, producers and buyers are still a material segment of the market, but so are market participants such as hedge funds, asset managers, and portfolio managers who oversee exchange traded funds (ETFs) and mutual funds.

This brings us back to the first important element of last week's sell-off: it only occurred in the expiring contract, and didn't necessarily reflect the overall market dynamic. There were many May contracts owned by individuals who didn't actually want delivery (or couldn't take delivery). Historically, they would sell the May contract, and buy the June (or other month) contract (thus neutralizing their exposure)…but as prices have gone down recently, a large number of holders waited until the end to "roll their contract".

Unfortunately, prices never stabilized (because of factors we will discuss in a moment), and then a significant portion of the market panicked on the last day when prices and liquidity failed to materialize.

Chart 3 demonstrates this dynamic.

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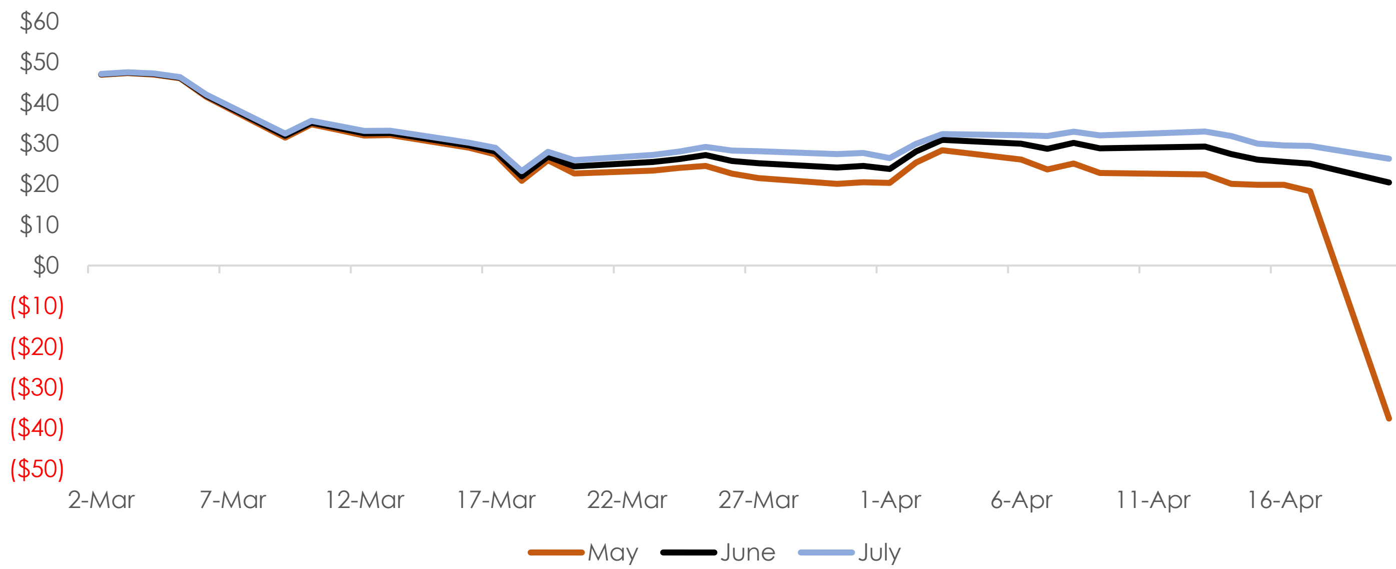
[9] Source: Bloomberg

Chart 3: West Texas Intermediate (WTI) Futures Prices[10]



West Texas Intermediate (WTI) is the primary benchmark for the price of oil consumed in the United States.

More clearly, the May contract went down, but the June and July contracts had minor moves. The May contract holders clearly feared receiving 1000 barrels of WTI oil (without anywhere to store the oil), which forced those owners to sell at very low prices. Unfortunately, that wasn't the story that hit financial headlines, and as such, further panic (or at least the perception of chaos) ensued.

The second dynamic was a storage (or supply) dynamic. As prices have come down over the past two months, participants in the oil market began storing their oil. They had nothing else to do with it (as there was declining demand), and so they decided to store it until prices returned to more reasonable levels. Unfortunately, storage capacity is finite. In Cushing, for example, the storage capacity is around 85 million barrels of oil[11]. Most of that capacity is leased, and as prices came down, the storage of oil increased, which, of course, left fewer places to store oil. Accordingly, the cost to store the oil went up, which means the value of the oil went down. This is logical. If I must pay $10 store a barrel of oil, I like it much less than if it costs $1 to store the barrel.

Lastly, the third dynamic (perhaps unsurprisingly) was declining demand. The chart below shows the change in industrial production over time compared with the change in oil prices over time. Definitionally, think of industrial production as the amount produced by the mining, manufacturing, and utility sectors.

As one would expect, when the world contracts, we mine less, we manufacture less, and we need less output from utilities. The chart below demonstrates how sharp that contraction has been.

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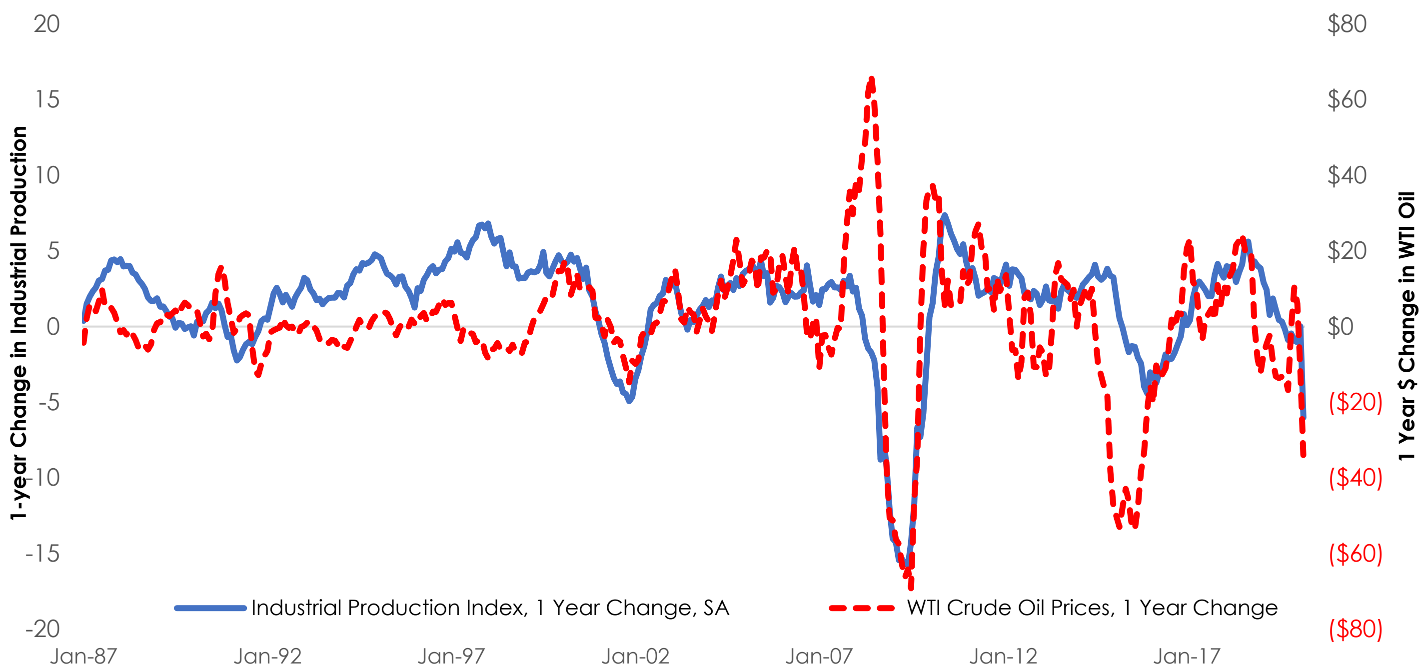
[10] Sources: Bloomberg as of April 24, 2020

[11] Source: https://www.eia.gov/petroleum/storagecapacity/

Chart 4: % Change in Industrial Production compared with Change in WTI Oil Prices[12]



Through this lens, the reduction in oil was typical, and generally logical. Global demand contracted quickly, industrial production followed suit (blue line), and oil prices (red line) are reflecting that reduction.

I find two important takeaways from this dynamic: (1) volatility will continue to remain high for the near future as demand and supply fluctuate, and (2) the world has not ended. The headlines dramatically over-estimated the broader market dynamic, and we expect many of the reasons to have driven oil prices down to potentially reverse when the economy returns to a growth path.

Stepping back, and more broadly, let's take stock of what we know:

(1) The equity market sell-off since mid-February has been unprecedented and was largely uncertainty and fear-driven. The downturn was fast, and the upturn was fast. Both the sell-off and the subsequent rally set records, and both were nearly impossible to time.
   a. Further, the oil sell-off was similarly fear driven, and at least partially fundamentally driven. I expect similar volatility in many markets in the near future.

(2) The growth of the number of cases around the world is slowing. The desire to get the economy back online also is growing as the world tries to trade off the costs vs. benefits of remaining closed.

[12] Source: Federal Reserve Bank of St. Louis

(3) The U.S. Federal Reserve has provided trillions of dollars of liquidity to ensure markets remain open, and the U.S. Government is providing trillions of dollars of stimulus to help mitigate the depth of the recession. Thus far, both have worked very well in allowing capitalism to continue to function.

(4) The economic impact is still unknown but surely will be great. We don't yet know how deep or how long this will be, and we are watching closely.

Capitalism, over time, efficiently transfers capital from those who own it, to those who need it for productive purposes. In exchange, the producers provide the owners of the capital with a portion of their profits.

As such, the only thing we can really do is to remain focused on the long term and benefit from that dynamic. Capitalism, and by extension, capital markets, are confusing, volatile, and unpredictable in the short term. Therefore, let's focus on the long term, and ignore the short term.

Let's stick to the plans that were put in place during calmer moments. If you don't have a plan, begin working on one that incorporates what was learned during this crisis. Control what can be controlled and please turn off the investment news channels.

We remain at your service and watching closely. Please let us or your investment professional know how we can serve you, and please stay safe.

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