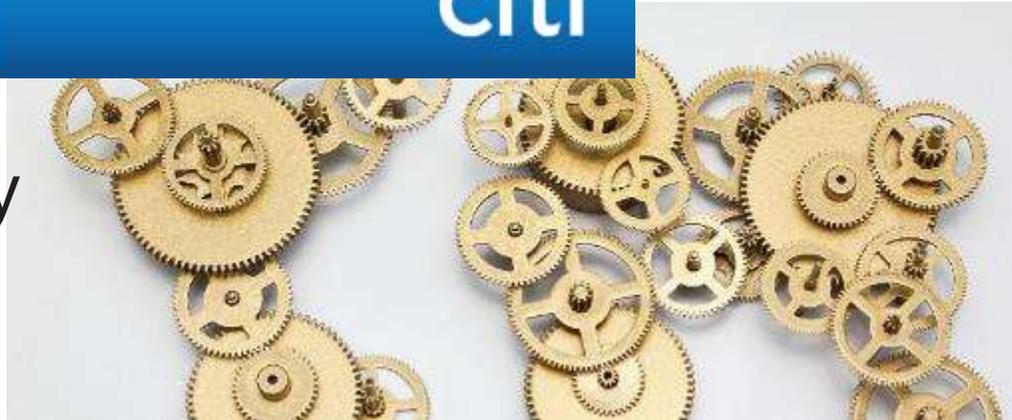


CIO Strategy Bulletin

November 1, 2020



An Election, Then an Injection

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Summary

- **Betting markets show the race between the President and former VP Joe Biden materially closer than the polls. The stock market exhibited volatility levels indicate acute stress this past week, with volatility reaching 40, a level seen on only nine occasions over the past decade.**
- **We are at an inflection point in the US stock market. The high prices of defensive shares reflect the expectation of a lot of future good news. We think that shortly after the election, a rotation in cyclical stocks and non-US equity markets may begin. If it does not immediately do so, the vaccine may provide the second of three catalysts for such a rotation.**
- **The fact that there are four late state Phase 3 testing programs underway for the Covid-19 vaccine is itself remarkable. This will be the fastest development and release of a vaccine in human history.**
- **We believe that markets will receive a “double booster shot” in Q12021, with large-scale distribution of one or more effective vaccines underway and the passage of a fiscal stimulus bill by the US Congress. Experts in epidemiology see a 70% efficacy rate for early vaccines as the center point for their expectations. These events would initiate a sharp “normalization” in most of the world economy in the second half of 2021.**

The Next Three Days

There is consensus on one thing. Everyone wants the US Presidential election to be over. Though we know voting will not end on November 3rd, as three swing states, Pennsylvania, Michigan and Wyoming will just begin counting their mail-in ballots that morning, the desire for a decisive outcome is palpable among Republicans and Democrats alike.

In the meantime, the stock market, election polls and the betting markets exhibit contradictory data. We saw the VIX (a measure of expected volatility in equity markets over the coming month), reach 40 on Wednesday. This is comparable to many periods of acute uncertainty aside from the all-time record 83-reading in March 2020 as COVID shuttered the world economy. Looking from 2009 to 2019, the average VIX reading was 18.2 and it only reached Wednesday's level on 9 occasions during the turbulent past decade.

Nate Silver's 538.com aggregation of state polling data implies an 87% chance for a Biden victory. In contrast, political betting markets see the race far tighter. They suggest about a 40% chance of a Trump win vs 60% for Biden (see Figures 1 and 2.) We believe worried investors are far less sure of the election outcome, with their trading actions this past week reflecting the probabilities implied in wager markets. With uncertainty high, only a clear election outcome will generate significant directional moves in financial markets.

Covid continues to run amok across the United States and its impact on the election is uncertain. New cases in the US have surpassed 100,000 per day for the first time (Figure 3) and more than 40 states have rapidly rising levels of disease. As Figure 4 illustrates, cases are on the rise across almost all swing states. Meanwhile there are record-breaking levels of early voting in the US with more than 80 million votes cast so far. That's 58% of everyone who voted in 2016, a year when just 47 million people voted early. It is, without a doubt, an unprecedented pandemic election.

Figure 1: Five-Thirty Eight US National General Election Polling Average

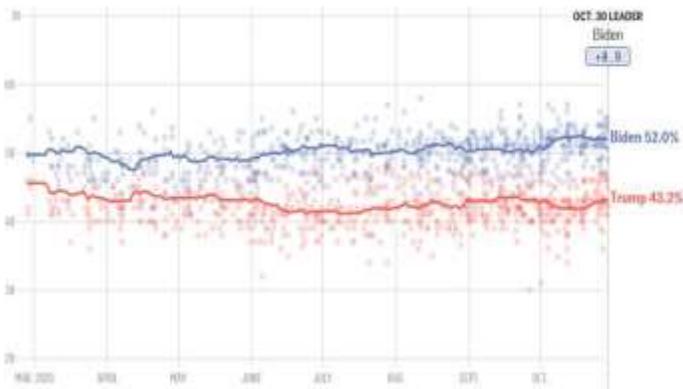


Figure 2: Predictit Betting Markets Margin of Victory: Biden vs Trump



Source: Bloomberg, 538.Com, and Citi Markets as of October 30, 2020.

Figure 3: US Daily new confirmed COVID-19 Cases

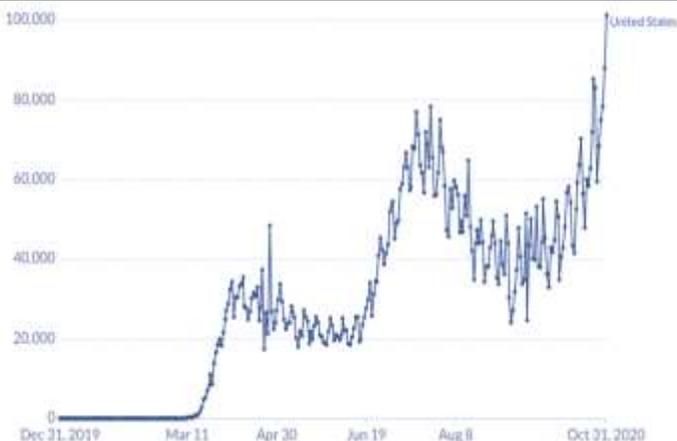
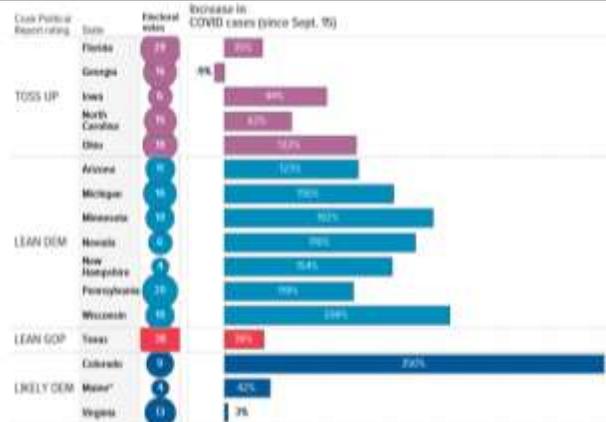


Figure 4: Swing state Covid Surge



Source: European CDC – Situation Update Worldwide as of October 31, 2020. Cook Political Report, Johns Hopkins University. *Maine's 2nd CD is rated a Tossup and the 1st CD is rated Solid Democrat. Note: The number of confirmed cases is lower than the number of actual cases: the main reason for that is limited testing.

In a Yahoo News/YouGov poll, just 22% of Americans believe the election will be “free and fair”, compared with 46% who say it will not be. Yes, there is a huge increase in mail and absentee ballots that take longer to process. It is likely that more than 60% of all votes may come in this way. Looking historically at election processes, we note that they are generally overseen by experienced staff across thousands of jurisdictions in the U.S. The rules about recounts and dealing with irregularities are codified. For example, candidates cannot demand recounts unless the vote is within a very narrow range. Add to that the fact that the polling looks nothing like 2016. For some important states, the polling difference between the President and Biden is wider than in 2016. And with a polarized electorate, the number of independent, undecided voters is likely far fewer. All of this suggests that the final tally will not be as close as 2016 in the States that matter. Thus, in our view, the current level of uncertainty reflects the fear for Democrats of a 2016 surprise and the fact that Covid is resurgent, not the data itself.

Let's assume that voting is closer than expected across the U.S. Then on election night, Michigan, Wisconsin and Pennsylvania are the states to watch. They all have Democratic governors and Republican legislatures and there have already been election court rulings affecting some of them. With so much early voting and stable polling over the last month, a surprise positive outcome for the President may first be indicated in the faster-counting states like Florida and Arizona. Wins for the President there makes the Rust Belt states highly relevant. But absent that outcome -- noting that Democrats are more likely to vote by mail -- “close” on election night may not end up being close at all.

Likely Near Term Market Action

When we look back at market action across prior election periods, we see that downdrafts often occur before November 2nd and for a short time afterwards as well (see Figure 5). There are fundamental differences driving markets in each case. However, the periods right around elections are generally periods of economic policy uncertainty. This past week is, therefore, consistent with the historical patterns.

Figure 5: US Equity Returns Before/After US Election Day

Election Day	Return 1 Month Before	Return 1 Week Before	Return 1 Week After	Return 1 Month After	Return into Year-End
11/6/1984	3.6%	1.0%	-1.5%	-3.7%	-1.4%
11/8/1988	-1.5%	-1.8%	-2.0%	1.1%	1.4%
11/3/1992	3.0%	1.0%	-1.0%	2.2%	3.8%
11/5/1996	0.8%	0.7%	3.2%	4.7%	6.7%
11/7/2000	1.6%	0.2%	-3.4%	-4.3%	-7.8%
11/2/2004	-0.1%	1.7%	3.0%	5.4%	7.3%
11/4/2008	-12.1%	2.7%	-7.0%	-9.3%	-7.8%
11/6/2012	-3.0%	0.4%	-3.0%	0.1%	-1.0%
11/8/2016	-1.0%	0.9%	2.3%	6.0%	5.0%
US Equities	Return 1 Month Before	Return 1 Week Before	Return 1 Week After	Return 1 Month After	Return into Year-End
Average	-1.0%	0.8%	-1.1%	0.2%	0.7%
Median	-0.1%	0.9%	-1.5%	1.1%	1.4%
Min	-12.1%	-1.8%	-7.0%	-9.3%	-7.8%
Max	3.6%	2.7%	3.2%	6.0%	7.3%

Non-US Equity Returns Before/After US Election Day

Election Day	Return 1 Month Before	Return 1 Week Before	Return 1 Week After	Return 1 Month After	Return into Year-End
11/6/1984	4%	4%	-2%	-4%	-3%
11/8/1988	7%	-1%	4%	7%	7%
11/3/1992	-4%	-2%	-1%	1%	2%
11/5/1996	-1%	0%	3%	1%	2%
11/7/2000	0%	2%	-3%	-4%	-3%
11/2/2004	3%	2%	3%	8%	10%
11/4/2008	-19%	13%	-4%	-14%	-2%
11/6/2012	-2%	0%	-2%	3%	5%
11/8/2016	-2%	-1%	-1%	2%	2%
Non-US Equities	Return 1 Month Before	Return 1 Week Before	Return 1 Week After	Return 1 Month After	Return into Year-End
Average	-1.5%	2.0%	-0.5%	-0.1%	2.3%
Median	-0.5%	0.1%	-1.4%	1.0%	1.7%
Min	-18.8%	-1.7%	-4.4%	-14.0%	-3.2%
Max	7.1%	13.1%	4.0%	7.5%	10.2%

Source: Haver Analytics as of October 16, 2020. Note: 2000 was a contested election with the US President on December 12, 2000. Past performance is not indicative of future returns. Real results may vary.

“Sector action” within markets is not historically similar. Given that Covid re-priced every asset on its way in and will do so on its way out, we have been looking at the winners and losers thus far. In Figure 6 below, we show key subcomponents of Covid-defensives and the Covid-cyclicals since the beginning of the year. As you can see, COVID has caused a plunge in the “socially close” industries such as air travel, shopping centers and hospitality. In contrast, plunging interest rates and a sharp shift in business activity to digital, “social distant” content caused related shares to surge.

The strongly growing Covid-defensive US information technology firms just reported earnings and they were somewhat better than expected reflecting their status and beneficiaries of the work and buy from home pandemic phenomenon. Yet their stock prices didn't go up. In fact, all but one of the largest cap US growth stocks fell sharply this week. This may indicate that peak positive Covid impact has been reached.

Interestingly, amid the gloom and uncertainty – including rising COVID infection rates and hospitalizations in the US - long-term government bond yields have risen 20 basis points this month. US high yield credit markets posted a positive return of 0.6% in October, while 10-year US Treasuries lost 1.9%. As Figure 7 shows, the benefits of lower rates may beginning to wane for growth stocks.

Figure 6: US “Stay at Home” vs “Leave Your Home” Baskets and S&P 500

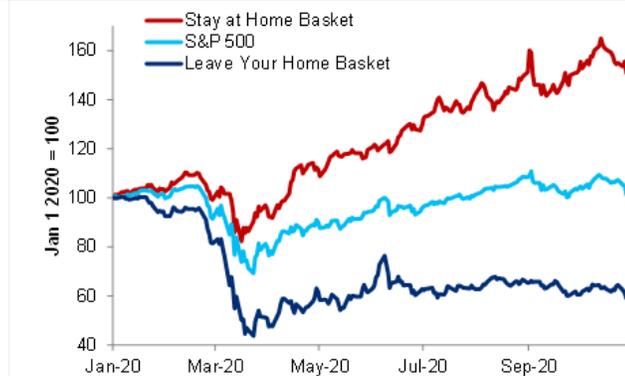


Figure 7: US 10-Year Treasury Yield, Growth Stocks and Gold



Source: Bloomberg through October 30, 2020 Note: “Stay at Home” basket includes names identified to benefit from COVID-related disruptions and a shift to working from home. “Leave Your Home” basket includes Citi Research Buy and Neutral Rated US names in the following sub-industries: Banks, Industrial Conglomerate, Machinery, Oil Gas & Consumable Fuel, Textiles Apparel & Luxury Goods, Energy Equipment & Services, Hotels Restaurants & Leisure, Building Products, Retail REITs, Construction & Engineering, Leisure Products, Airlines, Multiline Retail. These are shown for illustrative purposes only. This is not a recommendation to buy or solicitation to sell any of the names shown. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary

As we have said repeatedly, the high prices of defensive shares reflect the expectation of a lot of future good news. Thus, we think that shortly after the election, a rotation in cyclical stocks and non-US equity markets may begin. If it does not immediately do so, the vaccine may provide the second of three catalysts for such a rotation. **Please read on!**

The Vaccine and the End of the Pandemic in 2021

The trifecta for the global economy in 2021 is the successful conclusion of the US Presidential election, the announcement and launch of distribution for an approved Covid vaccine and the passage of a fiscal stimulus package by February 2021. As we contemplate the end of the election, it is important that we understand the status of vaccine development, with a focus on when there will be a clear line of sight to its distribution.

It is our view that two dates – the announcement of an efficacious treatment and the safe delivery of the initial 10 million doses – will cause a notable change in market sentiment. These events will mark the “end of the pandemic”. (While it may look like the stock market has looked further ahead than anyone expected since the pandemic struck, the composition and dispersion of share price performance shown in Figure 6 suggests otherwise.) We think that these two “dates” will be markers that kick start a two-part market transformation. The first is a rotation from Covid-Defensives to Covid-Cyclicals¹ – as markets begin to return to normal, relative valuations. The second is a robust global recovery based on fiscal tailwinds, the refilling of the world’s inventory supply lines, a snap-back in demand for leisure travel, social-close services such as entertainment, with the beginnings of a normalization in commercial real estate markets and business travel.

The Status of Vaccine Development

The rapid development of a Covid vaccine was made possible by huge federal funding provided by Operation Warp Speed in the US and similar government support elsewhere. When one or more vaccines are approved for use, this will be the fastest development and release of a vaccine in human history.

There are five, Phase 3 Covid-19 vaccine trails underway. This is very good news as it means there five viable vaccine candidates in their last stage of development in the US alone. In their Phase 1 and 2 trials, the five candidates triggered sufficient production of antibodies in people who had been immunized. However, none of the vaccines under study in the US has yet to be proven to prevent Covid-19. This is the purpose of the Phase 3 studies.

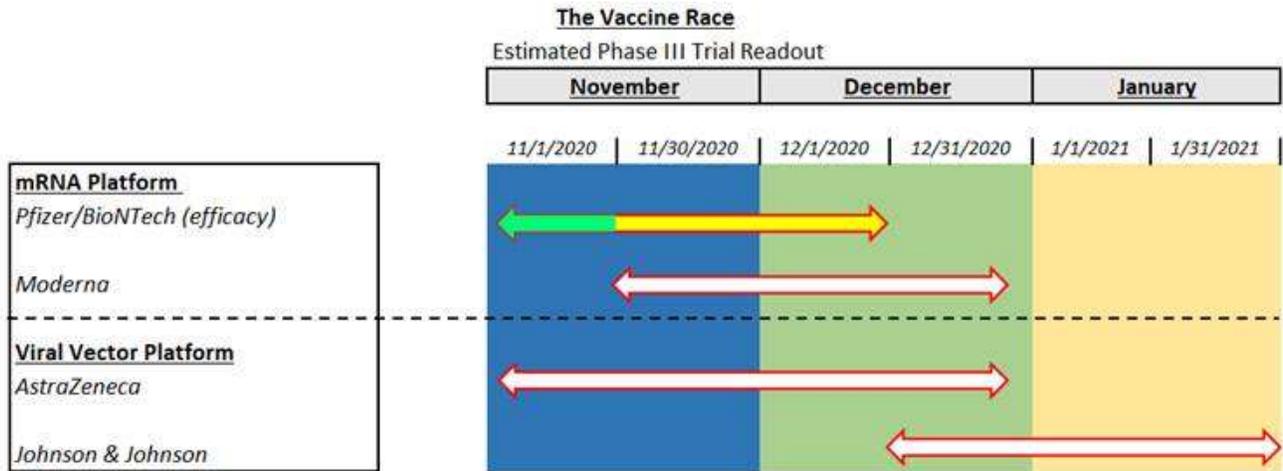
In order for a vaccine to be released broadly in the United States, the sponsor needs to complete a Phase 3 study and the FDA needs to grant an approval for use of the vaccine. A Phase 3 trial is large and randomized. A group of 30,000 or more volunteers is randomly split into two cohorts, one that receives the vaccine and the other that receives a placebo vaccine. These “trial participants” are then

¹ “COVID-defensive” includes information technology, health care, communications services, consumer staples, utilities and e-commerce sectors. The COVID-cyclicals entire sub-group include industrials, financials, consumer discretionary excluding e-commerce, real estate, energy, and materials sectors. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees or sales charges, which would lower performance. For illustrative purposes only. Past performance is no guarantee of future results. Real results may vary. All forecasts are expressions of opinion and are subject to change without notice and are not intended to be guarantees of future events.

exposed to the disease as it naturally exists in various communities.

In order for a trial to be successfully concluded, a sufficient number of participants must get Covid so that scientists can see if the trial participants randomly assigned to receive the actual vaccine were infected at a lower rate than people who were assigned a placebo injection. In addition, the trial has to ensure that the vaccine itself does not cause major side effects, illnesses and/or fatalities.

It is common for vaccine trials to be paused or stopped entirely due to unforeseen adverse patient reactions. Two of the Phase 3 Covid vaccine trials have already been halted thus far. AstraZeneca halted its Phase 3 trial in multiple countries in September when one trial participant experienced neurological symptoms consistent with transverse myelitis, a serious inflammatory disorder. Johnson & Johnson paused its Phase 3 trial in October when a young, male volunteer had a cerebral hemorrhage consistent with a stroke. Both trials resumed after five and two weeks, respectively. The resumption of both trials indicates that the FDA is currently comfortable with the safety profiles of the vaccines after further evaluation.



Source: Citi Private Bank as of October 30, 2020.

In addition to the aforementioned trials, Novavax has also started a Phase 3 trial in the UK, and their Phase 3 trial in the US is expected to start by the end of November. The company recently disclosed that interim data from their Phase 3 UK trial may be announced as early as the first quarter of 2021.

Efficacy and the End of the Pandemic

Once each Phase 3 trial is concluded, the FDA reviews the trial data independently. It reviews both the efficacy of the vaccine and its safety. These “Readouts” are publicly released.

The efficacy data will say a lot about the timing of the end of the pandemic. According to Evercore/ISI², “a 75% effective vaccine could return the population to normalcy in 6-7 months, whereas a 95% effective vaccine with 95% uptake should return population to normalcy in 2-3 months. On the other hand, a 50% effective vaccine with 40-50% uptake will take significantly longer to return population to normalcy.” Thus, we will need to see the data from each of the Phase 3 trials to determine just how fast the pandemic might end.

Marc Lipsitch, Professor of Epidemiology at Harvard University, noted on October 29 in a presentation to Citi, that while “nobody aims for 50% efficacy, even 50% efficacy will be a massive help” in the fight against the disease. When asked about his expectations for the trial efficacy rates, Lipsitch said, “I would be surprised if it was below 60% or above 80%.”

The FDA’s choice between speed of vaccine delivery and safety protocols will have a large impact on the public perception of the vaccine and its rate of uptake. Physicians, nurses, Managed Care Organizations and pharmacies are critical stakeholders. Their confidence will be needed to overcome a patient’s natural “vaccine hesitancy” that itself can slow down the “end of the pandemic” timeline. The FDA will be under pressure to issue an “Emergency Use Authorization” under which it can fast track the release of the vaccine for general use much more quickly than through its normal processes. However, the FDA has stated that it will likely follow the participants in Phase 3 studies for a short time to continue to accumulate safety data.

² Evercore/ISI Research Publication: Pfizer COVID Vaccine Phase 3 Interim, October 23, 2020

Watch for Antibodies and T-Cells

When the results of Phase 3 trials are released, an important quality of the vaccines will be their ability to stimulate the production of both antibodies and killer T-cells. “Antibodies protect against infections by binding to pathogens in order to prevent them from entering or damaging cells, and by coating pathogens to attract white blood cells to engulf and digest them. Longer-lasting killer T-cells work by finding and destroying infected cells in the body that have been turned into virus-making factories.” (see Reason, 7/17/20). This matters because patient antibody levels appear to decline swiftly in patients who have had Covid-19. So, if vaccines cause the immune system to create T-cells, the vaccines may provide some level of longer-term protection.

The Two Vaccine Platforms

Pfizer and Moderna are using mRNA platforms, which utilize mRNA that encodes for a specific antigen. AstraZeneca and J&J are using Viral Vector platforms. Rather than delivering DNA or mRNA directly to cells, Viral Vector vaccines use a harmless virus or bacterium as a vector, or carrier, to introduce genetic material into cells. By delivering genetic material into our cells, the body is able to produce antigens, which elicit an immune response.

The mRNA vaccines will be harder to distribute than the Viral Vector ones. First, patients will require two doses of the mRNA vaccines. Second, the mRNA vaccines require deep cold storage transportation as well as cold storage at point of distribution. The Viral Vector vaccines require less special cold delivery or storage systems, and some – like Johnson & Johnson’s vaccine candidate – only require one dose.

Given that the patient’s choice of vaccine will depend upon their respective efficacy and availability, the Phase 3 trial data will be of major consequence in determining demand for one versus another.

When Will The First Doses Be Administered?

At this point, Pfizer is likely to provide the first vaccine to market. It has been the most aggressive in rolling out an international Phase 3 testing program with 42,000 trial participants. And its Immune response was north of 50% based on earlier Phase 1 testing. However, in its most recent shareholder call, Pfizer indicated that it had not reached its “First Interim Analysis”, meaning that an insufficient number of trial participants had not yet been infected to reach the first of four pre-established testing checkpoints. Until that threshold is reached, Pfizer cannot extrapolate the effectiveness of the vaccine versus the placebo. And only then, assuming a high rate of effectiveness, can Pfizer file an Emergency Use Authorization (EUA) application with the FDA.

Based on the current state of the Phase 3 trials and assuming no further halts in Pfizer’s testing program, it is possible that the first vaccines can be made available to the public in late December or January 2021. When interviewed by JAMA editor Howard Bauchner, Anthony Fauci, the Director of the National Institute of Allergy and Infectious Diseases said, “Could be January, could be later.”

Anna Durbin, a vaccine researcher at Johns Hopkins Bloomberg School of Public Health was quoted on 10/29/2020 in StatNews written by Helen Branswell: “We may see efficacy in one or more trials by the end of 2020, but that doesn’t mean we’re going to have a vaccine available at the end of 2020. I think what people can take from this is that the process is not being rushed.... That’s a good thing.” She concluded, “And certainly, I think the other message that has to be heard loud and clear is that even when an [emergency use authorization] is issued, we’re not going to have enough vaccine for everybody [immediately].”

What this Means for Markets: Looking into 2021

The fact that there are four late state Phase 3 testing programs underway for the Covid-19 vaccine is itself remarkable. While it is unclear as to when the first vaccination will take place, it is reasonable to assume that in Q1/2021 we will see several of these companies distributing vaccines in the United States and elsewhere in significant amounts. That is because the companies are producing the vaccines in large quantities assuming that they will work, knowing that they may have to destroy the treatments if they do not.

According to an article in Reason (7/17/2020)³, “AstraZeneca announced in June that it planned to manufacture 2 billion doses of its vaccine, with 300 million slated for delivery to the United States and the United Kingdom by the end of this year. Moderna plans to deliver about 500 million doses per year, and potentially up to 1 billion annual doses starting in 2021.” Pfizer is aiming to produce approximately 1.3 billion doses by the end of 2021. In the near-term, Pfizer has committed to providing 100 million doses (for 50 million individuals) by March in the United States and is aiming to have 40 million of those doses available by year-end. Johnson & Johnson is aiming to produce one billion doses in 2021.

Given these facts, we believe that markets will receive a “double booster shot” in Q12021, with large scale distribution of one or more effective vaccines underway and the passage of a fiscal stimulus bill by the US Congress. And if this is the case, it is likely that the pandemic will officially end in the second half of 2021, although vaccine delivery and therefore infection rates will tumble in an accelerating fashion. Dr. Lipsitch noted that most of the US could be vaccinated by the end of 2021, effectively creating herd immunity

³ <https://reason.com/2020/07/17/good-news-covid-19-vaccines-stimulate-the-production-of-both-antibodies-and-t-cells/>

at an earlier point in the year.

Conclusion

Covid-19 is *NOT* an “unstoppable trend”. Its effects will distort the world economy in both 2020 and 2021. Yet the scientific data we see and historical precedent suggests we are **closer to an end than a beginning**. Experts in epidemiology see a possible 70% efficacy rate for early vaccines as the center point for their expectations. Combined with therapeutic treatments, this could create a sharp “normalization” in most of the world economy in the second half 2021.

Financial markets are always looking forward. This means they will react *before* world economic activity broadens and strengthens sharply. However, equities markets are not generally *long-term* leading indicators. Investors discount evidence of what is most probable within six months. Thus, the very near-term remains subject to downside risks and continued volatility in equities markets on pending US political developments, a lack of fiscal action for a period of 1-3 months, and the absence of healthcare solutions to COVID. However, this period of uncertainty may rapidly change. The election outcome and the first news of an efficacious vaccine, which could come in four to six weeks, may mark the market’s re-pricing as the New Economic Cycle begins to unfold.

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