Sunday Night Insight
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The First Wave Crests

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The first wave of daily new COVID-19 infections and fatalities has crested in many of the heavily impacted countries, such as Spain, Italy, Germany and France as well as heavily hit US states, such as New York. On both a global basis and in the US, in aggregate, the pace of new infections has plateaued and the pace of daily fatalities has clearly crested. The weekly rate of laboratory-confirmed COVID-19 hospitalizations has also decreased in the US.

The decrease in daily new infections and fatalities has been due to the extensive non-pharmaceutical interventions (NPI) that were put in place, including all social-distancing measures that range from shelter-in-place to school closures, to banning of public gatherings, to closing select businesses, such as restaurants, bars, and theatres, and to individual NPIs, such as handwashing and wearing masks. As the first wave has started to crest and the economic cost of such NPIs continues to rise, the question of reopening economies has become the main focus of most policy makers.

The purpose of this *Sunday Night Insight* is to examine the next steps recommended by policy experts in a phased-in reopening of the US economy. We consider the following questions:

- What are the recommended triggers for re-opening and have they been met? We will review the list of key triggers but also note that not all triggers have been met across most countries and US states that have begun the process of re-opening.

- Are additional waves inevitable and are there any insights into the size and timing of the next waves? As Dr. Richard Hatchett, CEO of the Coalition for Epidemic Preparedness Innovations (CEPI) highlighted on our April 14th client call on therapies and vaccines, he "would anticipate continued waves of infection" and a larger second wave would be a certainty in the absence of careful isolation and containment of new infections. Dr. Mark McClellan, Director of the Duke-Margolis Center for Health Policy at Duke University and former Commissioner of the US Food and Drug Administration, echoed these concerns on our April 30th client call on re-opening the economy and managing the risks of additional waves, stating that a bigger wave in the fall "is definitely a real concern and one that we should prepare for."

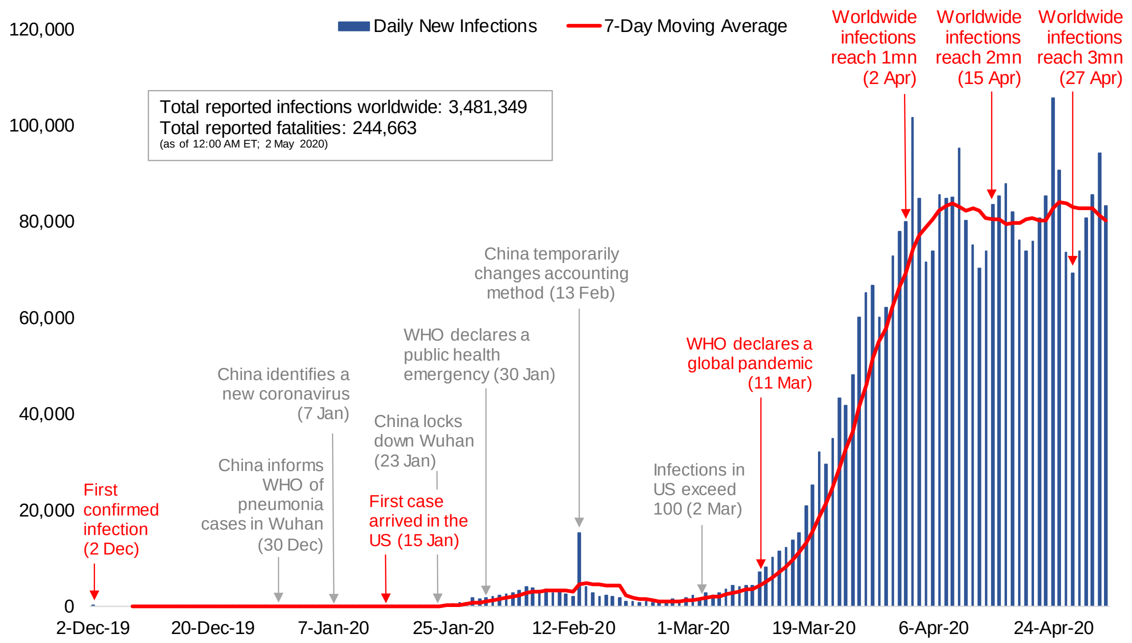
- Equity markets have rallied strongly from their March troughs: the S&P 500 is up 26.5%, the Euro Stoxx 50 gained 22.7%, Japan's Topix is up 15.8%, and the MSCI Emerging Markets Index advanced 20.9%. Do current market levels reflect only the good news about the first wave cresting or do they still reflect some of the uncertainties regarding additional smaller waves and the potential for a larger second wave in the fall? Similar to this pandemic, there are a lot of things we do not know with certainty. VIX, a measure of expected market volatility, stands at about 40, substantially below the March 18th high of 85 but still more than 2.7 times higher than the levels prior to the pandemic. Such a relatively high level indicates that financial market participants expect volatility to remain elevated and is thus consistent with some expectation for additional virus waves, in our view. However, we don't think a large second wave in the fall is priced in at this time, given that market participants expect some success on the development of therapies by the fall, some glimmers of hope with respect to a vaccine, and also anticipate that better tools to monitor and contain any emerging clusters of infections will be put in place.

Before discussing these issues in greater detail, we begin, as we have done in prior *Sunday Night Insights*, with a brief update on COVID-19 and a review of the latest economic data and fiscal and monetary policy measures.

COVID-19 Update

Worldwide infections continue to increase, reaching 3.48 million as of May 2nd, and fatalities now exceed 240,000, as shown in Exhibit 1. While the pace of daily infections has plateaued, infections will continue to increase as economies re-open and testing becomes more widespread in the US over the next month or so.

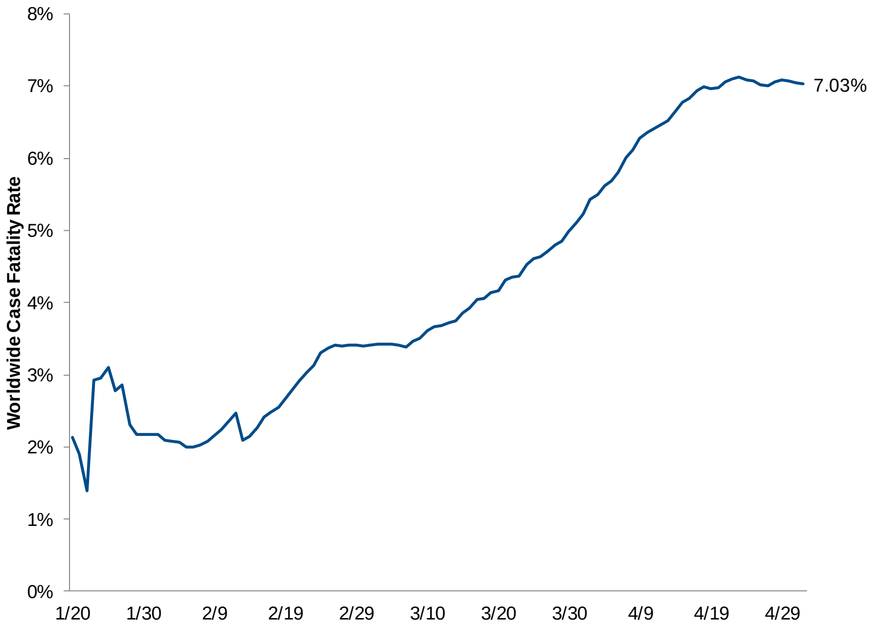
1. Daily New COVID-19 Cases Worldwide – Through May 2, 2020



Source: Investment Strategy Group, World Health Organization, Johns Hopkins University, Worldometers, US CDC, Korea CDC, National Health Commission of PRC.

The global case fatality rate (number of fatalities divided by number of diagnosed infections) has levelled off at 7.03%, as shown in Exhibit 2. This rate, however, is probably overstated. As Dr. Luciana Borio, Vice President at In-Q-Tel and former director for Medical Biodefense Preparedness Policy at the US National Security Council highlighted on our April 30 client call, more extensive testing is needed to know how many people have been infected. To date, most of the people who have been tested have come forth for medical care. While one cannot ascertain the true fatality rate during an evolving pandemic, a higher number of infected people identified through greater testing will lower the fatality rate. It is also noteworthy that in specific studies, the measured fatality rate has been below one, as shown in Exhibit 3.

2. Worldwide COVID-19 Case Fatality Rate – Through May 2, 2020



Source: Investment Strategy Group, World Health Organization, Johns Hopkins University, Worldometers, US CDC, Korea CDC, National Health Commission of PRC.

3. Fatalities in Settings with Robust or Anti-Body Testing

	N	Tested	Infected	Fatalities	CFR
USS Theodore Roosevelt	4,845	All	940	1	0.11%
USS Kidd	380	All	64	0	0%
Gangelt (Germany)*	12,529	1,000	- -	- -	0.37%
Iceland	364,134	46,377	1,792	10	0.56%
Charles de Gaulle (ship)	1,800	All	1,081	0	0%
New York State**	19.4mm	15,103	1,858	- -	0.8%

*For Gangelt, CFR was derived based on cluster study of 1,000 inhabitants.

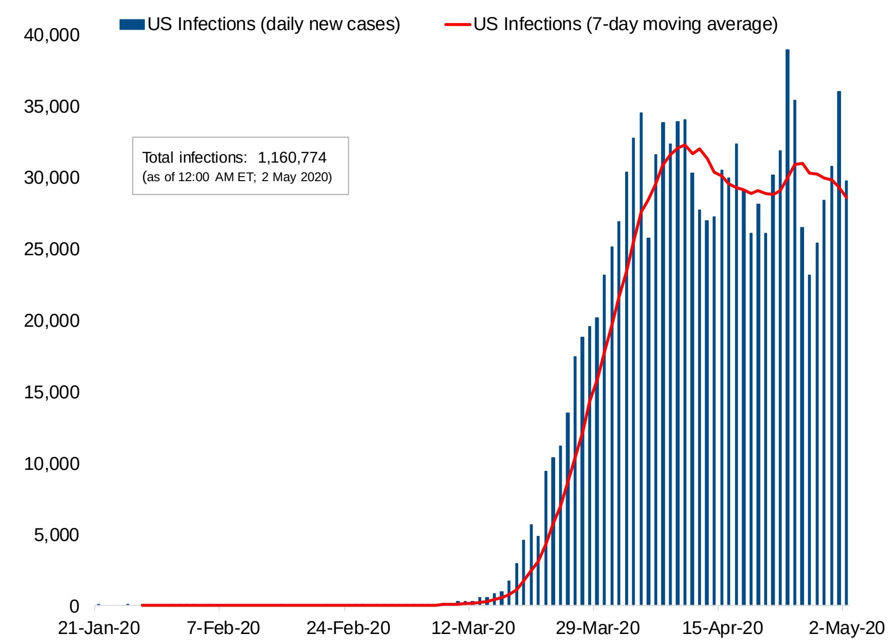
**For New York state, the number of tested only refers to those tested as part of Phase III antibody testing conducted by the state; CFR was derived based on these results as announced by Governor Cuomo on 2 May.

Source: Investment Strategy Group, *LA Times*, US Navy, University Hospital Bonn, Worldometers, Navy Times, and State of New York.

In the US, the total number of infections stands at 1.16 million as of May 2nd, with 67,444 fatalities. As shown in Exhibits 4 and 5, the 7-day moving average of new infections has plateaued while the same measure for new fatalities has crested. As testing becomes more widespread and the backlog of test results is cleared, the absolute number of infections will continue to increase.

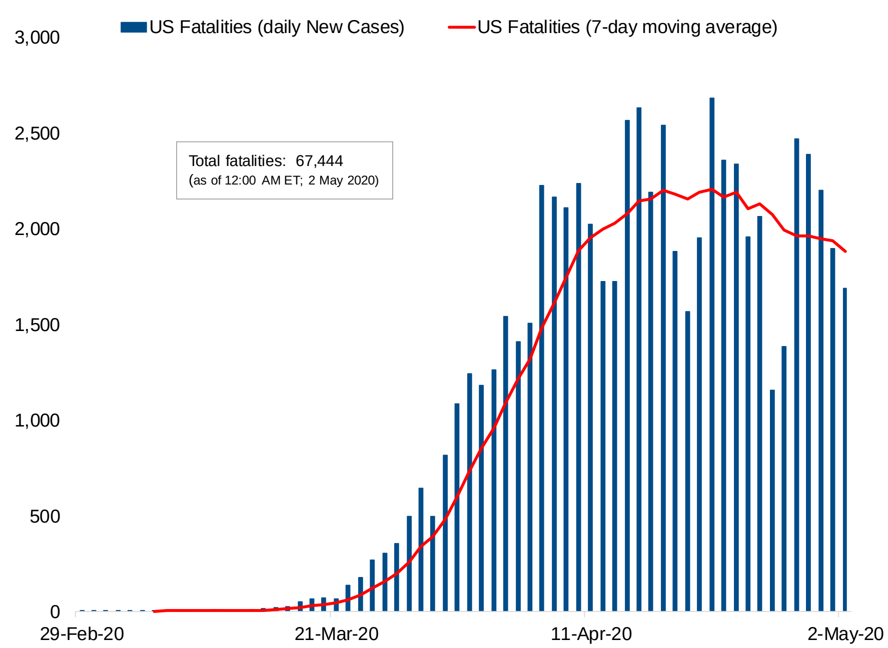
The rate of COVID-19 related hospitalizations has also started to decline, as shown in Exhibit 6.

4. Number of Daily COVID-19 Infections in the US – Through May 2, 2020



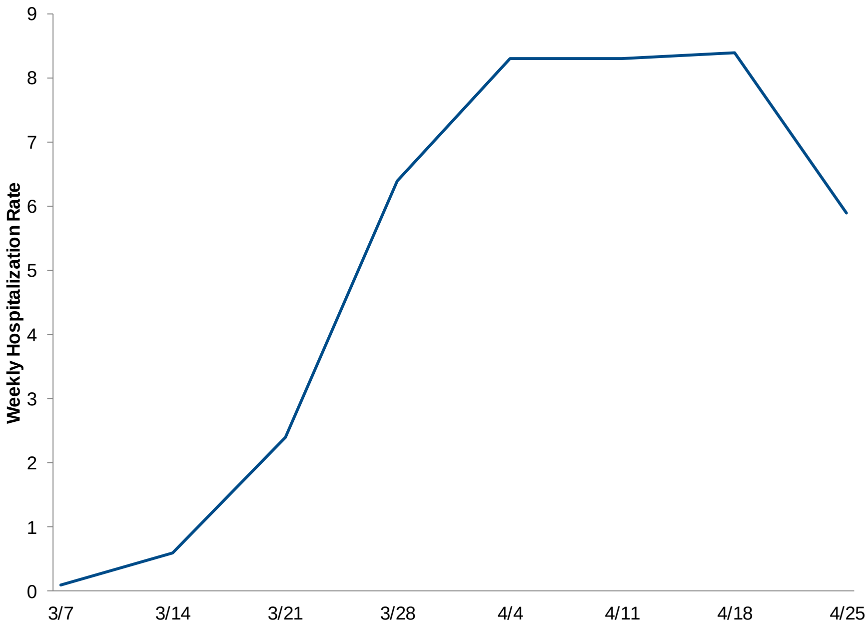
Source: Investment Strategy Group, CDC, Johns Hopkins University, Worldometers.

5. Number of Daily COVID-19 Fatalities in the US – Through May 2, 2020



Source: Investment Strategy Group, CDC, Johns Hopkins University, Worldometers.

6. Laboratory-Confirmed COVID-19-Associated Hospitalizations (per 100,000)



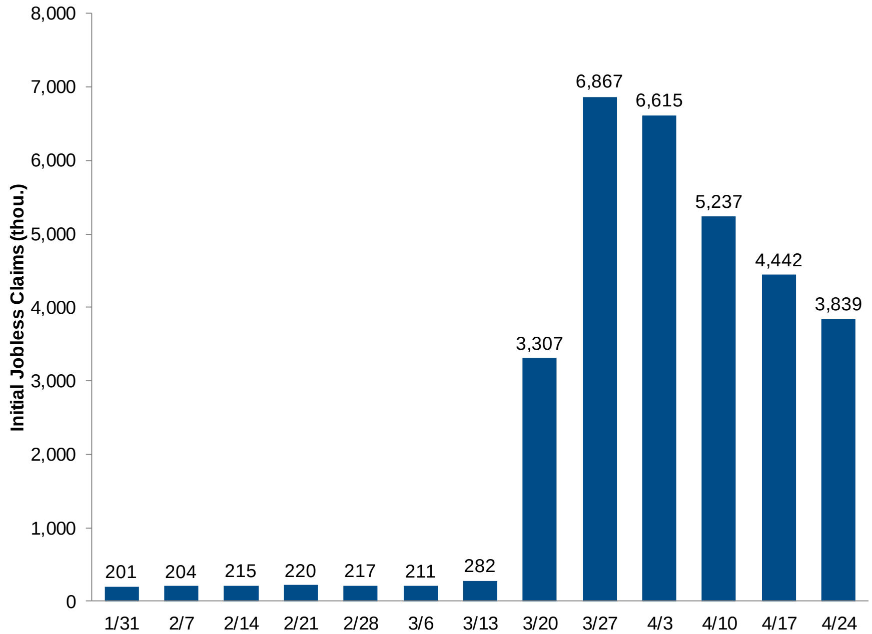
Source: Investment Strategy Group, CDC, COVID-NET.

Economic Update

There were four significant developments on the US economic and policy fronts.

First, new jobless claims have been steadily declining, implying the vast majority of employment terminations have already occurred. As shown in Exhibit 7, cumulative new jobless claims stand at over 30 million since the pandemic started to impact unemployment claims on March 13th. David Mericle, Goldman Sachs' Chief US economist, expects U3 unemployment to reach 15%; however, he points out that U3 does not reflect the true level of unemployment because many terminated workers will not be seeking work in this pandemic. He suggests also considering the broader U6 level, which he expects to reach 29%.

7. US Initial Jobless Claims (Thousands)

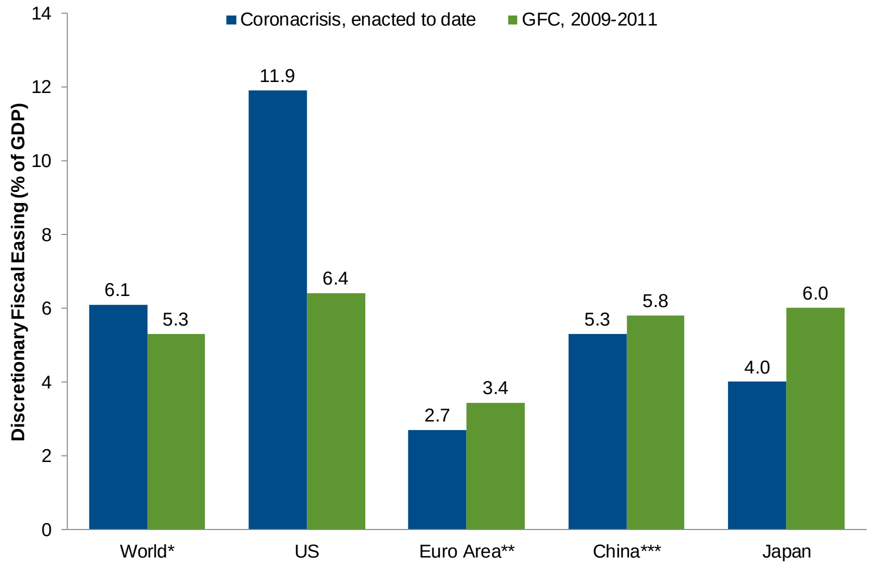


Source: Investment Strategy Group, Bloomberg.

Second, the Bureau of Economic Analysis released its advance estimate of the first-quarter 2020 GDP at -4.8%. The Goldman Sachs Economics Research team expects the final reported GDP change for the first quarter to be -7.7%, driven by a significant drop in consumption across areas ranging from non-COVID-19 healthcare services to travel and leisure, and to hospitality services. On our April 24th client call on real estate, Alan Kava—co-head of the Merchant Banking Division Real Estate Group in the Americas—highlighted hotels as one of the hardest-hit sectors of the real-estate market along with malls and shopping centers, as extensive NPIs have halted most non-e-commerce retail and most travel.

Third, on April 24th, Congress enacted an additional $484 billion in fiscal support—equivalent to 2.1% of GDP—for small-business lending and fiscal assistance for hospitals. The three and half phases of the fiscal stimulus packages to date total $2.5 trillion, or 12.1% of GDP. Alec Phillips, Goldman Sachs Chief Political Economist, expects another $550 billion—equivalent to 2.5% of GDP—before the end of 2020, of which about $200 billion will be allocated to state governments and the rest to an extension of expanded unemployment benefits. As shown in Exhibit 8, the US policy response as a percentage of GDP dwarfs that of other countries and regions (Euro area), even after adjusting for automatic stabilizers, which include unemployment insurance and other income-related benefits, particularly in Europe.

8. US Fiscal Stimulus Dwarfs Others' Fiscal Stimulus and GFC



* Estimate for G20 for GFC
** Weighted average of Germany, France, Italy, and Spain for Coronacrisis and Germany, France, Italy for GFC
*** Expected fiscal response

Source: Goldman Sachs Global Investment Research.

Fourth, on April 29th, the Federal Reserve issued a statement after the FOMC meeting and Chairman Powell hosted a virtual press conference. He confirmed that the federal funds rate target range would be held at zero to 0.25% until their dual objectives of full employment and price stability have been achieved. He also stated that the Federal Reserve is committed to using its full range of tools to support the economy: "use these powers forcefully, proactively, and aggressively until we are confident that we are solidly on the road to recovery."[1]

The Path to Re-Opening

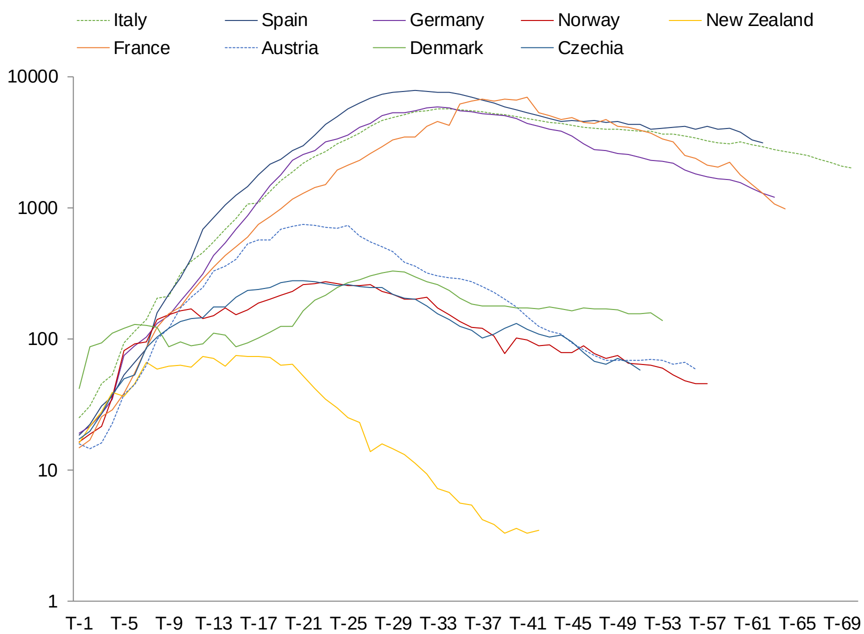
Several countries and a handful of US states have started to re-open their economies. As shown in Exhibit 9, all the non-US developed economies that are re-opening are doing so in phases and, as shown in Exhibit 10, the pace of daily new infections in all these countries is on the decline at this time.

9. Select Nations that Are Re-Opening their Economies

Country	Re-opening dates	Re-opening approach	Schools	Small stores	Dine-in Restaurants	Outdoor activities
Denmark	15 April - 10 May	Phased	√	√	X	√
Czechia	6 Apr - 8 Jun	Phased	√	√	X	√
Austria	12 Apr - 15 May	Phased	√	√	√	√
Spain	14 Apr -	Phased	X	√	X	√
Italy	14 April - 4 May	Phased	X	√	X	√
Norway	20-27 April	Phased	√	√	X	√
Germany	22 April - 4 May	Phased	√	√	X	√
France	11 May - 2 Jun	Phased	√	√	√	√
New Zealand	27 Apr - TBD	Phased	√	√	X	√

Source: Goldman Sachs Global Investment Research.

10. Daily New Infections (7-day Moving Average; T-1 = Day when country recorded first 100 cases; Log scale)



Source: Investment Strategy Group, WHO, CDC, National Health Commission of People's Republic of China, Johns Hopkins University, Worldometers.

In the US, at least six states have started re-opening their economies, as shown in Exhibit 11, and several others are developing plans for re-opening. The White House provided general guidelines for re-opening on April 16th and many institutions have developed similar guidelines.

11. The First US States to Re-open Are Starting with Retail Stores and Restaurants

State	Re-opening date	Schools	Retail	Dine-in Restaurants	Bars	Gyms	Salons, barbers, and spas	Performance venues	Movie theaters
Georgia	Apr 24-27	X	√	√	X	√	√	X	√
Colorado	Apr 27	X	√	√	X	X	√	X	X
Tennessee	Apr 27-May 6	X	√	√	X	√	√	X	X
Texas	May 1	X	√	√	X	X	X	X	√
Florida	May 4	X	√	√	X	X	X	X	X
Ohio	May 1-14	X	√	X	X	X	X	X	X

Source: Goldman Sachs Global Investment Research.

To better inform our clients about the guidelines required for a successful phased in re-opening of different economies across the US and to provide an assessment of where we are in meeting those guidelines, we hosted a call on April 30th with three COVID-19 medical experts: Dr. Borio and Dr. McLellan, referenced above, and Dr. Florian Krammer, Professor of Vaccinology at the Icahn School of Medicine at Mount Sinai, whose lab was the first in the US to develop a serological test to measure the presence and level of COVID-19 neutralizing antibodies.

Dr. McClellan and his co-authors published a report on March 29th for the American Enterprise Institute titled "National Coronavirus Response: A Road Map to Reopening."[2] The authors suggest 4 triggers to move from Phase 1 of the pandemic, which is slowing the spread, to Phase 2, which is state-by-state re-opening:

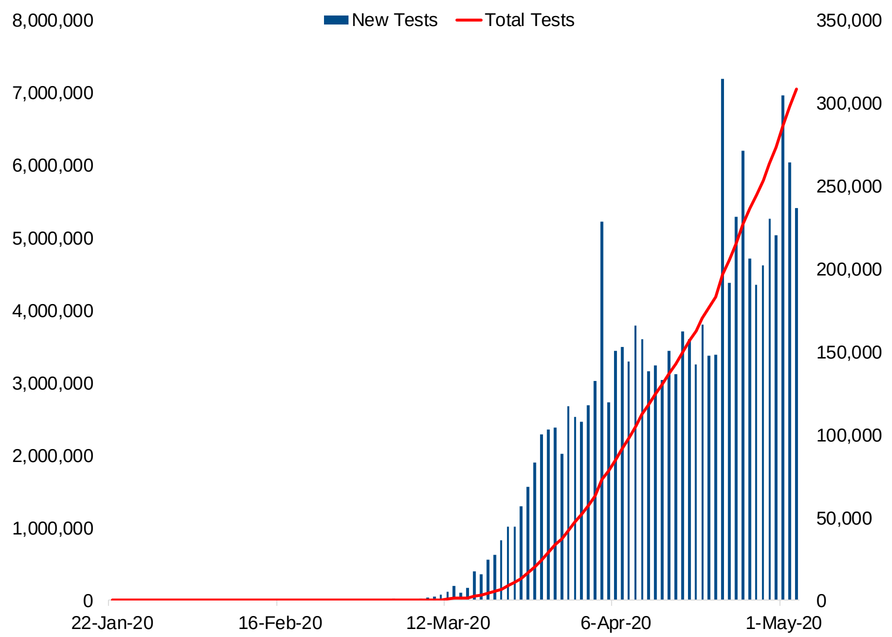
- Sustained reduction in cases for at least 14 days,
- Hospitals are safely able to treat all patients without resorting to crisis standards of care,
- Ability to test all people with COVID-19 symptoms,
- Active monitoring of confirmed cases and their contacts.

Of the six states listed above, Dr. McClellan stated that none meet all four criteria—some states meet some of the criteria such as having sufficient hospital capacity to accommodate an increase in COVID-19 cases.

Testing

The biggest shortcoming in meeting the triggers is testing. As shown in Exhibit 12, the US is currently conducting about 1.6 million tests per week. There has been a wide range of recommendations for the right level of testing as the US economy re-opens. Dr. McClellan suggested 4-5 million per week on our call. The Harvard Global Health Institute has suggested 3.8 million tests per week, and the Rockefeller Foundation has a range of 3 million to 30 million per week.

12. Diagnostic Testing in the United States (new and cumulative)



Source: Investment Strategy Group, COVID Tracking Project.

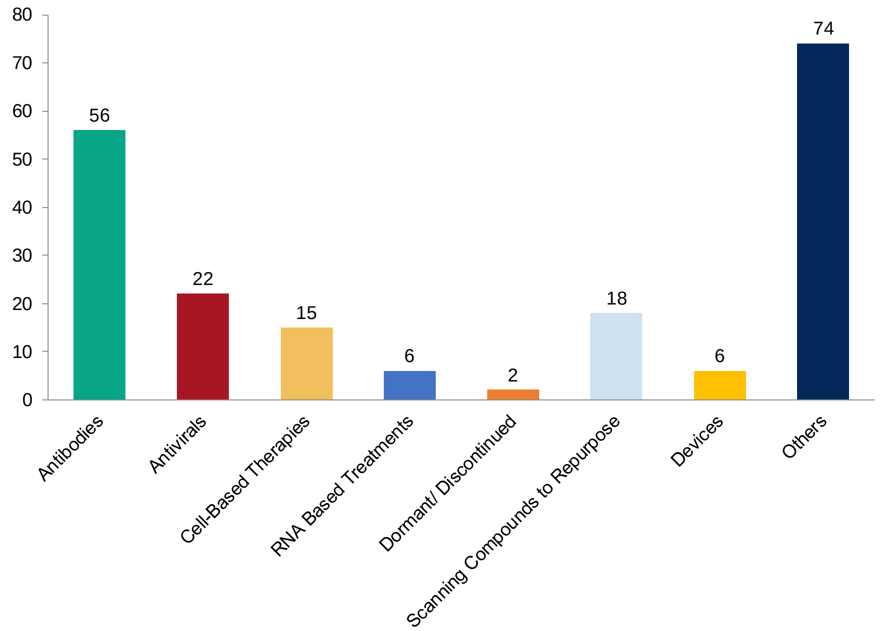
Testing is needed to quickly identify who may be infected so that they can be isolated and their contacts traced and also tested and self-quarantined as needed. According to Dr. McClellan, Massachusetts and Texas are training "contact tracers" and leveraging phone apps to monitor infected individuals and trace their contacts, but all states are not yet ready for the level of monitoring and contact tracing that is needed.

Therapies and Vaccines

One of the key concerns about re-opening economies too quickly is the absence of therapies and vaccines at this time. As Dr. Borio suggested, the most desirable outcome is developing herd immunity through a vaccine. It seems that the general consensus among infectious-disease specialists is that between 60% and 80% of the population has to be immune to stop the spread of the virus.

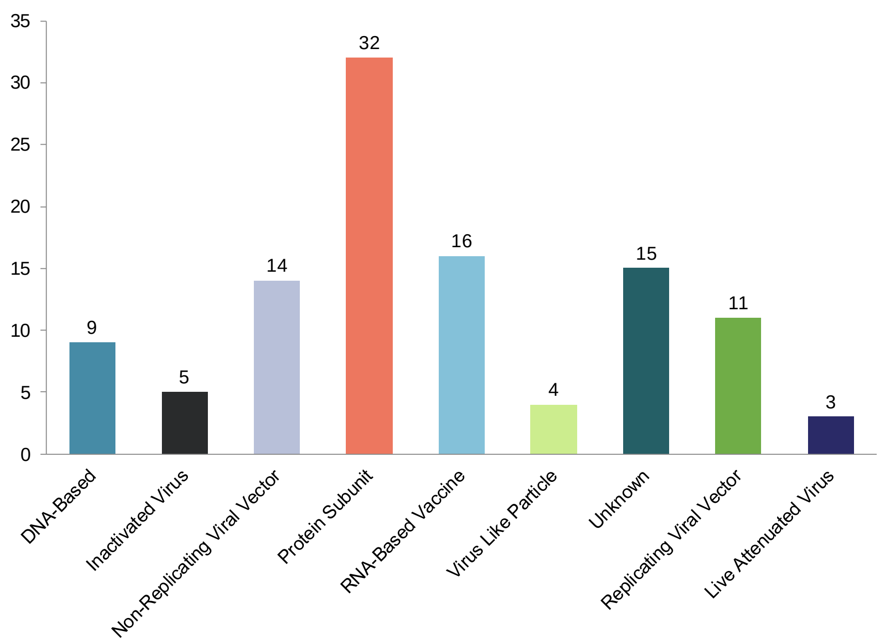
Over the last two months, we have reviewed a range of therapies and vaccines on our client calls. As shown in Exhibits 13 and 14, FasterCures of the Milken Institute is tracking 197 therapies and 111 vaccines.

13. COVID-19 Treatment Subcategories (Total = 197)



Source: Investment Strategy Group, Milken Institute.

14. COVID-19 Vaccine Candidates (Total = 111)



Source: Investment Strategy Group, Milken Institute.

The latest news on therapies has focused on remdesivir, which has shown to accelerate the time to recovery from 15 days to 11 days. As Dr. Borio highlighted, the drug showed some improvement in survival as well. However, she emphasized more treatments were necessary.

One large category of treatments under development is the use of antibodies to neutralize the virus. Some of you may recall that Leonard Schleifer, President and CEO of Regeneron Pharmaceutical, discussed using their Velocimmune mice to develop fully human antibodies on our March 22nd client call. They expect to start Phase 1 trials in June. Another approach is to use the antibodies from the plasma of newly recovered COVID-19 patients with high enough antibody levels. Mount Sinai is currently evaluating their convalescent plasma program based on Dr. Krammer's serological test to see if such a program will be effective in the recovery of patients.

The hope is that the treatments minimize hospital time, reduce mortality, and buy enough time to discover a vaccine.

On our April 14th client call, Dr. Hatchett highlighted some of the vaccines supported by CEPI. One such vaccine is the Moderna mRNA-based vaccine developed in collaboration with the Vaccine Research Center of the National Institute of Allergy and Infection Disease, which started its Phase 1 clinical trial on March 16th. Stephane Bancel, CEO of Moderna, shared his view that their vaccine, if effective, would be ready for healthcare workers by the fall of 2020.

Another CEPI-funded vaccine is a DNA-based one developed by Inovio Pharmaceuticals that is currently undergoing Phase 1 trials. CEPI has also funded the development of a non-replicating viral vector vaccine at Oxford University. Phase 1-2 trials began in April and the developers are somewhat optimistic and have begun the process of manufacturing the vaccine with an Indian drug manufacturer even before the first set of trials have concluded.

Finally, Johnson and Johnson, in partnership with Biomedical Advanced Research and Development Authority, is working on a non-replicating viral vector vaccine as well. The research and development is through collaboration between Janssen (a Johnson and Johnson company) and the Beth Israel Deaconess Medical Center. They expect to start Phase 1 trials in September and hope to have a vaccine available for emergency use authorization by early 2021.

Given the vast sums of expertise and resources devoted to therapies and vaccines, it seems that we can be optimistic that there will be some progress in developing more therapies and at least one vaccine in the near future. But we are not blindly optimistic. As Dr. Hatchett mentioned on the client call, CEPI's goal is to deliver a vaccine within 12 to 18 months, an "aspirational goal" that has never been achieved before. He has also warned that "most vaccinologists are smitten with their vaccine, and most of the time, their love is unrequited"!!

In the meantime, until more therapies have been developed, states have to maintain a level of social-distancing measures sufficient to avoid a resurgence of new cases and fatalities. According to a 2007 study by Howard Markel, et al., the timing, duration, and range of NPIs implemented by cities during the 1918-19 Spanish flu pandemic accounted for city-to-city variation in mortality.[3] In a recent article, two of the authors have written that the most important lesson they draw from the 1918-19 pandemic is that cities that abandoned social-distancing measures too soon as the pandemic appeared to peak and then ebb, faced a second, even deadlier wave.[4]

Investment Implications

With the S&P 500 26.5% above its March low and about 6% away from the mid-point of our year-end target range of 2950–3050, clients are asking several key questions:

1. For clients who are fully invested, does it still make sense to stay fully invested? We believe so.

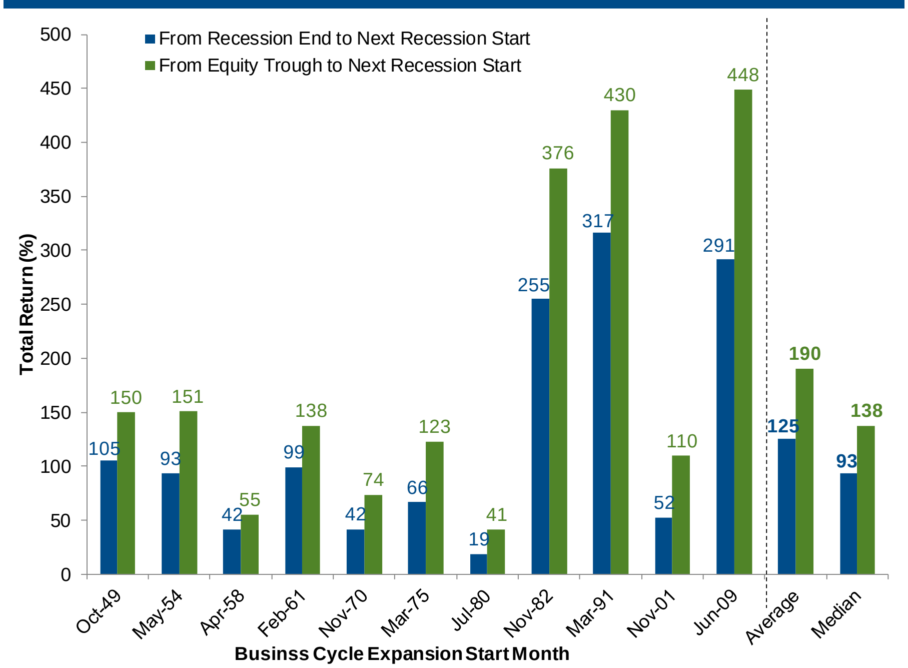
2. For clients who have un-invested cash and have not yet fully deployed that cash towards equities at their strategic allocation target, should they wait for a meaningful pull-back or follow our standard recommendation of averaging in over time? We suggest averaging in per our standard recommendation and accelerate the process if market pullbacks provide such an opportunity.

These questions are particularly pressing now as governments around the world plan to re-open their economies while managing the risks of additional waves.

While we no longer see the clear asymmetry to S&P 500 returns that justified our tactical overweight in March, there are several reasons why we continue to recommend that clients maintain, or build toward, their strategic allocation to equities:

Attractive Multi-Year Returns: The current recession is likely to be followed by a multi-year economic expansion. In fact, economic expansions have been getting longer in recent decades, with the last four averaging about 9 years. As seen in Exhibit 15, cumulative equity returns have benefited from these elongated periods of expanding GDP and rising corporate earnings.

15. S&P 500 Total Return During Post-WWII US Expansions



Note: The most recent business cycle expansion assumes March 2020 as the end month. The start date and end date of business cycle expansions are the first date of the NBER business cycle trough month and peak month.

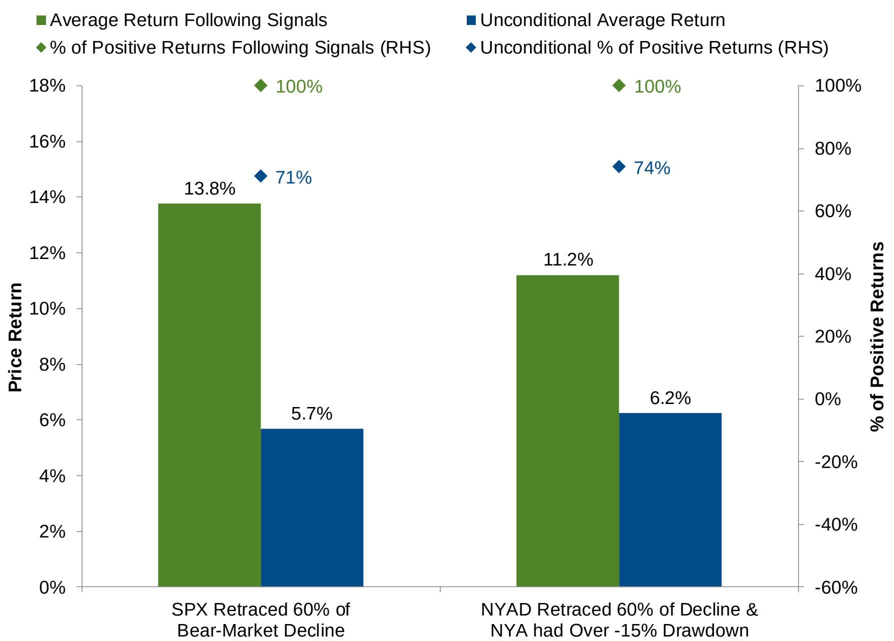
Source: Investment Strategy Group, Bloomberg, NBER.

Given the decline in equities year-to-date as well as the removal of the recession risk discount we had previously applied to our forecasts (since we are now in a recession), we estimate annualized S&P 500 returns of 6–8% over the next 5 years. This is materially better than the 3% we estimated at the outset of 2020 and likely to exceed the returns of cash and bonds, especially with current bond yields below 1%.

Scope for S&P 500 Upside: While investors are squarely focused on S&P 500 downside, there are some upside risks as well. Our year-end S&P 500 target range assumes 10-year Treasury yields—which are a proxy for the discount rate for future equity cash flows—double from their current 0.62% to 1.25% by the end of 2020. If they instead ended the year at 0.75%, where forward contracts are priced today, that would support an S&P 500 target closer to 3300.

Recent technical milestones support a similar upward bias. Both the S&P 500 and the NYSE cumulative advance/decline line—a breadth measure that accumulates the number of stocks advancing less those declining on the NYSE each day—retraced 60% of their bear market declines at last week's high. As seen in Exhibit 16, S&P 500 returns were significantly higher than unconditional after these triggers in the past. Taken at face value, these signals would imply S&P 500 levels between 3269 and 3344 at year-end.

16. S&P 500 Forward 8-Month Price Returns Following 60% Retracement in S&P 500 or in NYSE Cumulative Advance Decline Line



Note: Unconditional 8-month average returns are different for the two signals because the SPX and the NYAD indices do not have the same length of historical data.

Past performance is not indicative of future results.

Source: Investment Strategy Group, Bloomberg, StockCharts.com.

Of course, achieving even our base case year-end target is dependent on a recovery in corporate earnings. While the 38% profit growth we expect next year may seem optimistic, this would still leave earnings only 4% higher than their 2019 level. Such a quick recovery is consistent with past recessions, where the median episode saw earnings recapture their previous peak about four quarters after bottoming. Recall earnings grew 40% in 2010—just one year after the financial crisis ended—despite a still elevated 9–10% unemployment rate at the time.

Lower Odds of Undercutting the March Lows: In our March 22nd piece entitled “A Light at the End of the Tunnel,” we noted that the S&P 500 could trade as low as 1950–2234, but accorded much higher odds (two-thirds) to it reaching 3000 by year-end. On April 12th, we further raised the odds of reaching 3000 to 75–80%, implying only 20–25% likelihood of the downside scenario. Today, we think the odds of revisiting those levels are closer to 10%.

Several factors underpin this view.

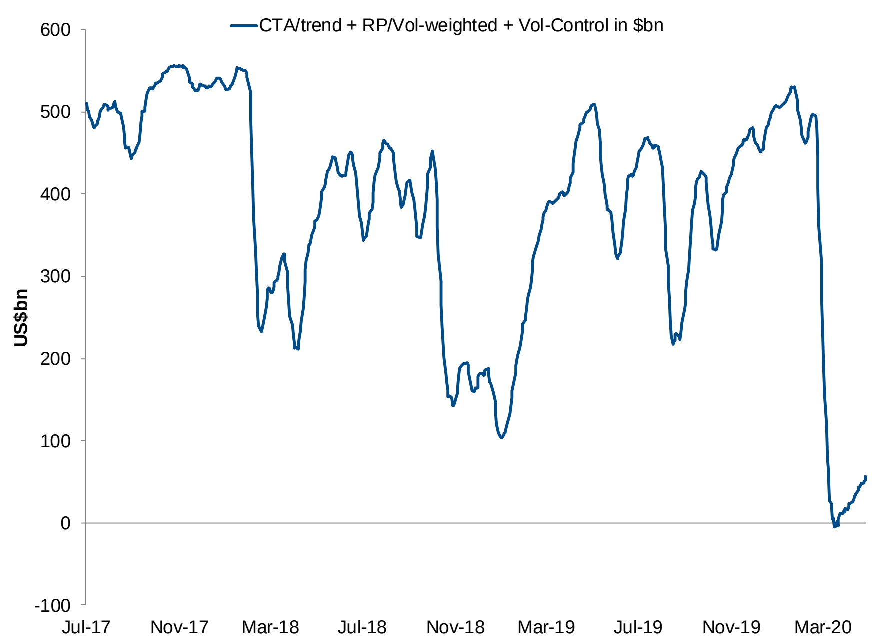
First, forward-looking equity markets have bottomed 1-2 months prior to the peak in unemployment claims in 6 of the last 7 recessions. The one exception, in 1970, saw the S&P 500 bottom a month after the peak in claims. As seen in Exhibit 7 above, it seems likely that weekly unemployment claims peaked about a month ago, on March 28th.

Second, the market had already seen its final low in all post-WWII bear markets by the time it had retraced 60% of its peak-to-trough decline, which the S&P 500 accomplished last week.

Third, the odds of the S&P 500 declining the 23% necessary to retest the lows between now and year-end have only been 6% over comparable time periods in the past.

Finally, the significant equity sales by institutional investors that exacerbated the March downdraft are highly unlikely to be repeated given today’s scant positioning (see Exhibit 17). For example, systematic CTA’s are now short more than $30 billion worth of global equities after having been long $200 billion at the start of the year, risk-parity funds have the lowest exposure in 3 years and volatility-control funds have their lowest exposure in 9 years.

17. Estimated Global Equity Position of Systematic Macro Investors (US$bn)



Source: Investment Strategy Group, CFTC, Goldman Sachs Securities Division.

Of course, lower odds of revisiting the March lows does not preclude continued volatility and thus periodic pullbacks of 5–10%, especially considering ongoing uncertainty about the impact of second virus waves as the economy is reopened. Yet such dips are typical even in strongly advancing markets and would not, on their own, undermine our view. As we highlighted earlier, the CBOE VIX Index still stands close to 40, a level consistent with the S&P 500 moving more than 2% per day.

However, there is one significant caveat to our investment views: if there is a much larger second wave of new daily infections and fatalities in the US and in other parts of the world in the fall of 2020, as a result of which comprehensive aggressive NPI's have to be reinstated, the odds of revisiting the March equity lows would increase.

As discussed above, we expect the combination of some progress on therapies beyond remdesivir, a better-prepared hospital system with adequate ICU beds, personal protective equipment, ventilators, and other necessary equipment, much more extensive effective testing and contact tracing, and a better informed public that maintains some level of social distancing and follows NPI's such as handwashing and use of masks will substantially reduce the likelihood of such a wave.

Endnotes:

(1) Federal Reserve, "Transcript of Chair Powell's Press Conference," April 20, 2020.

(2) Scott Gottlieb, Caitlin Rivers, Mark McClellan, Lauren Silvis and Crystal Watson, "National Coronavirus Response: A Road Map to Reopening," American Enterprise Institute, March 29, 2020.

(3) Howard Markel, Harvey B. Lipman, J. Alexander Navarro, Alexandra Sloan, Joseph R. Michalsen, Alexandra Minna Stern and Martin S. Cetron, "Nonpharmaceutical Interventions Implemented by US Cities During the 1918-1919 Influenza Pandemic," Journal of the American Medical Association, August 8, 2007.

(4) J. Alexander Navarro and Howard Markel, "To save lives, social distancing must continue longer than we expect," *Washington Post*, April 8, 2020.

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Methodology for Exhibit 16. The first green bar in the exhibit shows the average S&P 500 returns over the following 8 months after the index had retraced 60% of its peak-to-trough decline in past bear markets. The second green bar shows the average S&P 500 returns over the following 8 months after the advance-decline line had retraced 60% of its peak-to-trough decline, looking at declines of 15% or more. The blue bars show the unconditional returns over any 8-month window over the period for which we have data.

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