

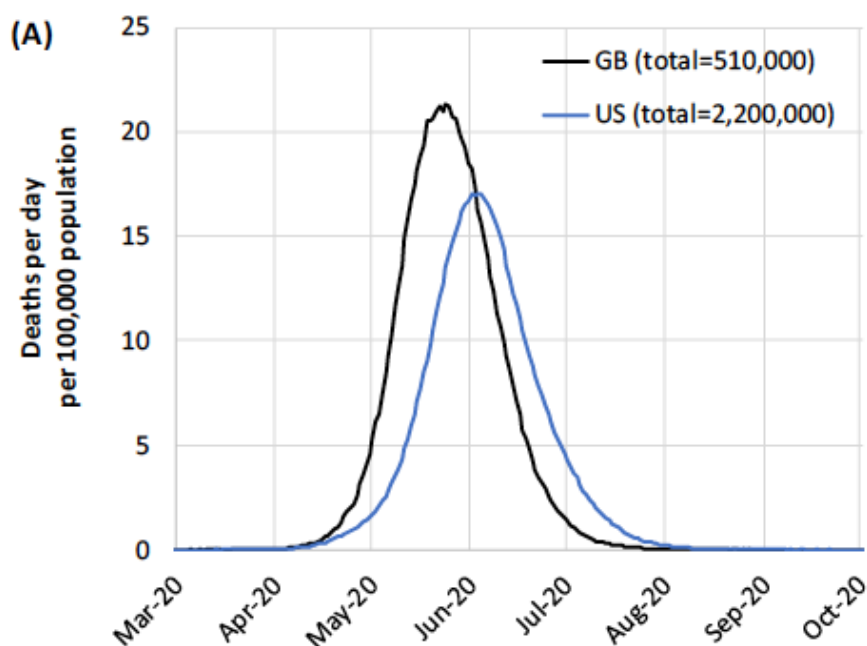
State Of the Markets: Macro Commentary

Hi. I hope all of you and your families are well and have found something to binge watch.

Update On Strategies For The Coronavirus World

Well, I was going to send this piece out a few days ago, but every time I was ready to send it, another academic study on the virus came out. I--given the geek I am-- had to read them. But if anything, these pieces reinforced my view that the Ferguson study is the correct framework for thinking about the pandemic. The Ferguson study was credible enough to change the course of the virus strategies in both the US and the UK, which is understandable given the projected deaths without containment, Figure 1 below. The issue I have with the other studies is that they focus too much on the modeling issues and too little if any focus on data quality issues: garbage in, garbage out. The goal of these studies is to project the progression of the virus in a country outside of China, e.g. UK, Italy, US, or India. Their first step is to calibrate a structural model (usually a version of the SIR model) using the data from the first couple of weeks of reported infections in that country. Their conclusions run the gamut of projecting too many infections or too few infections relative to current and likely future infection rates. I will highlight two studies that should give you a sense of what is out there.

Figure 1. Projections Of Deaths From The Virus In The US And The UK Without Containment



The first piece I want to highlight comes from Oxford University—I think Oxford is in the UK, yet they did not reference the Ferguson study from Imperial College of London, which is also in the UK, go figure. The Oxford piece was written about in the FT on March 24th and 27th. The link to the study is given below. The piece presented the case that the population in the UK likely had already acquired “herd” immunity from the Covid-19 even before they began their containment strategy. Herd immunity means that enough people in the population that had already been infected and recovered to provide a barrier against the virus for the uninfected part of the population. Their argument was that the virus had enough time in the UK to infect most of its susceptible population given its high infection rate ($R_0 > 2$) prior to containment. They came to this conclusion by assuming that less than 1% of the population was potentially at risk at being hospitalized from the infection, and from a model calibrated from data on early severe hospitalization rates of the first few weeks of the virus in the UK. They also looked at Italy and came up with the same conclusion: both the susceptible population in UK and Italy had already acquired herd immunity. That clearly came as a surprise to the people in northern Italy. There are many issues that were flagged on this piece, but in my view the biggest issue was that they came to their conclusion with a model calibration using early data in both the UK and Italy.

[The Oxford Piece On the UK and Italy](#)

The other piece I want to highlight was just released from the Center for the Precession Health Data Science at the University of Michigan. I read this piece because it was focused on projections of the infection in India. As was the case for the Oxford piece, this piece used early data on infections from India to calibrate their structural model to project the pandemic in these countries with and without any containment strategies. They did this with the US and Italy as well. Their conclusion was that without containment, roughly 58 mm people in the US would be infected and a “staggering” (their words) 1.8 mm would be infected in India, though they do give an upper range of an even greater number of 8.4 mm infected. Just as contrast, Ferguson study projection was roughly 250 mm in the US and roughly 56 mm in the UK. The link to the U of Michigan piece is given below.

[University of Michigan Piece On India](#)

I highlight these two pieces because they are representative of the studies coming out and most of them are flawed in pretty much the same way because they assume the data from each country is an accurate reflection of the underlying virus. My view is that data, particularly from the earlier days of the infection is pretty much garbage. The only reliable set of data on the virus comes from China. That data set, as well as some of the data from the cruise ships, has been thoroughly vetted by numerous studies. The China data is not perfect but at least researchers have identified its flaws and adjusted for them. Yes, that includes the Ferguson study. Read this piece below to see how others deal with the data issues in the thoughtful way.

[Study on the Severity Of The Covid-19 In China](#)

So, what are the flaws with the non-China data? The first problem is that data from the first few weeks of the infection understates the actual level of infections. Early on in the epidemic, positive infections were recorded when people came into a hospital with severe symptoms, as was the case in the US, China, and Italy, and clearly in India. Second, infections were also likely underreported early on in the epidemic even after coming to a hospital because the hospital staff would probably not know they were infected with covid-19. In India it would likely be substantially worse given their lack of a hospitals. Third infections identified at a hospital are only the tip of the actual number of infections. In Figure 2 below, I show the assumption used by Ferguson in their study which uses the data from China to calibrate their model. Fourth, testing only adds to the data problem. As testing grows these underreported infections start to show up in the data inflating the inflection rate versus earlier data. This is particularly an issue with the US data. Over 1 mm people have been tested in the US in the last 4 weeks. This could explain the high level the infection rate for the US in Figure 3 below. Fifth, more recent data on the infection is also dampened down impact of the containment strategies. How do most studies deal with these data issues... they ignore them. The other way is to incorporate the China data and deal directly with the issues of the data in other countries. Yes, again that is Ferguson.

Figure 2. Breakdown Of Infections In A Population

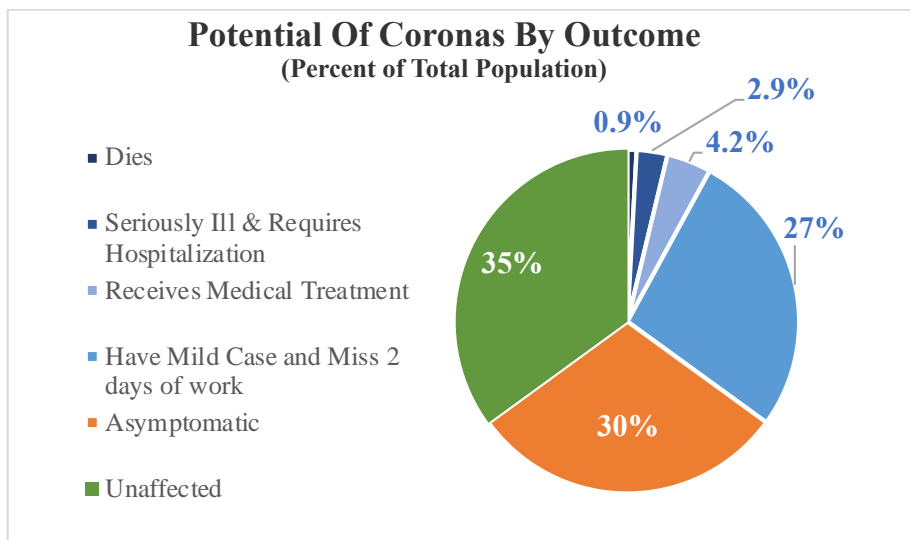
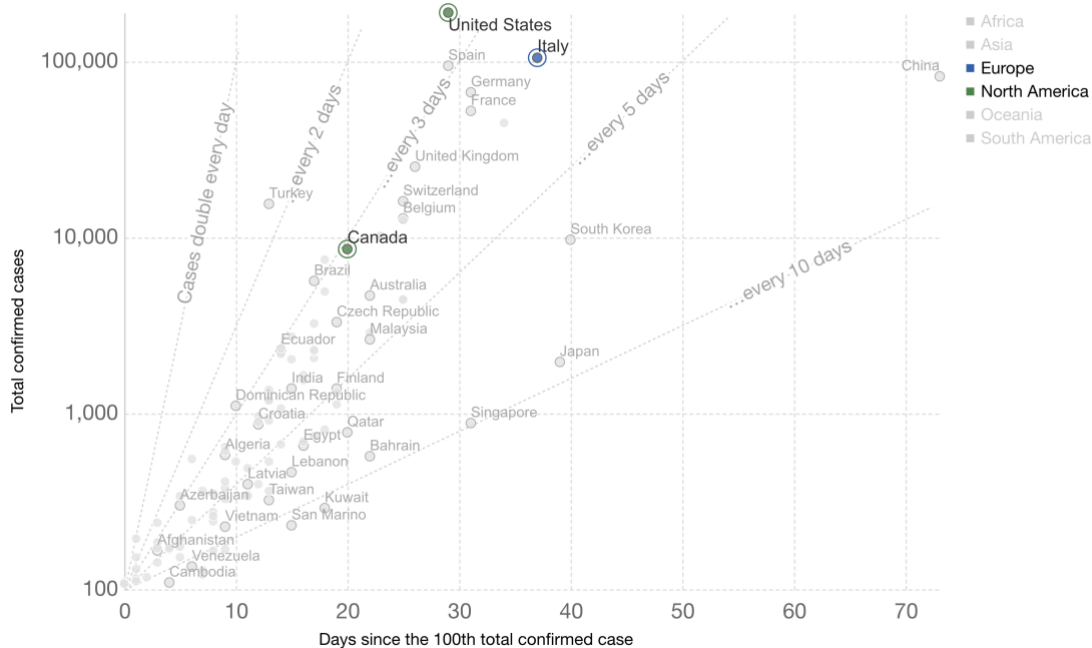


Figure 3. The US Is On An Even More Dire Infection Path Than Italy**Total confirmed cases of COVID-19**

The number of confirmed cases is lower than the number of total cases. The main reason for this is limited testing.

Our World
in Data

Source: European CDC – Situation Update Worldwide – Last updated 1st April, 12:30 (London time) OurWorldInData.org/coronavirus • CC BY

The Containment Strategy

Containment means some combination of social distancing, quarantine, shutting down work and schools, and closing borders. Pretty much what China and now the ROW are now doing—for the most part. The question becomes does it work? The answer is yes. It bent the curve in China, it is bending the curve in Italy and will likely do the same here in the US. That should come as no surprise given it worked in the pandemic in 1918 as well. The Institute of Health Metrics and Evaluation (IHME) at the University of Washington released a statistical study that supports this view as well. This is the study that Dr Brix used at the White House briefing on Tuesday. The link is given below as well as an interactive link with which to play. As shown in Figure 4 below, their analysis forecasts that deaths in the US will reach the mid-80,000 at the end of this first wave, with estimated range of between 50,000 and 150,000. The deaths per day will peak at roughly 2,500 people around April 15th. Even though these numbers are sobering, they could have been roughly 15 times greater without containment as projected in the Ferguson study. Figure 5 below shows the chart used in the same White House briefing that shows the impact of containment (the non-containment projections look to be from the Ferguson study)

[The University of Washington Statistical Projections On the US Pandemic](#)

[Interactive Tool Using The University Of Washington Study](#)

Figure 4. Daily Deaths And Cumulative Deaths In The US

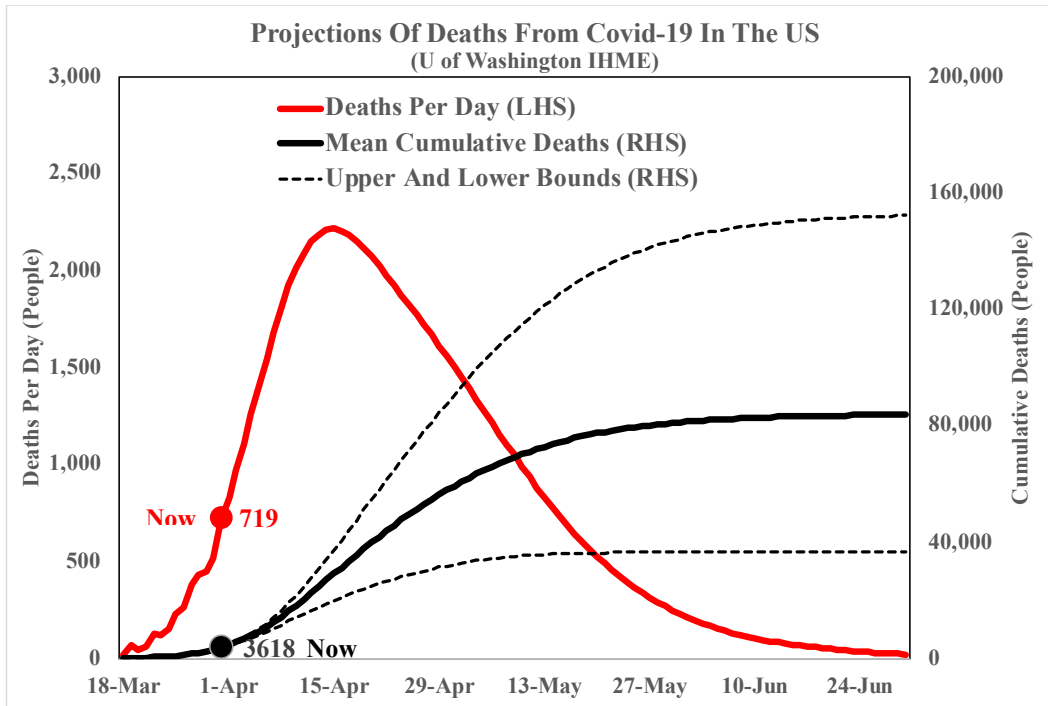
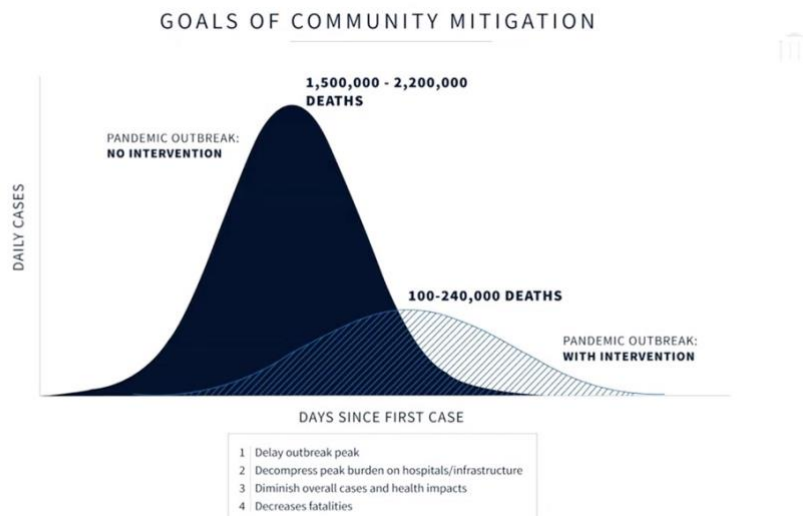


Figure 5. Containment Will Reduce The Severity Of The Virus On The US Population



The University Of Washington study was created to determine the need for hospital and ICU beds as well as ventilation machines. Their analysis is that peak demand for ventilators in the US will be

between 10,000 and 40,000 ventilation machines. Their estimates for NY state show a peak demand of between 2,500 and 11,000 ventilators. This should give some context to the current request from NY for 30,000 ventilators.

The Imperial College of London group has produced an updated analysis of the impact of containment strategies on deaths in Europe. Their results suggest that containment has reduced the deaths rates by about 60,000, and as many as 120,000 through March 31. That piece is given below.

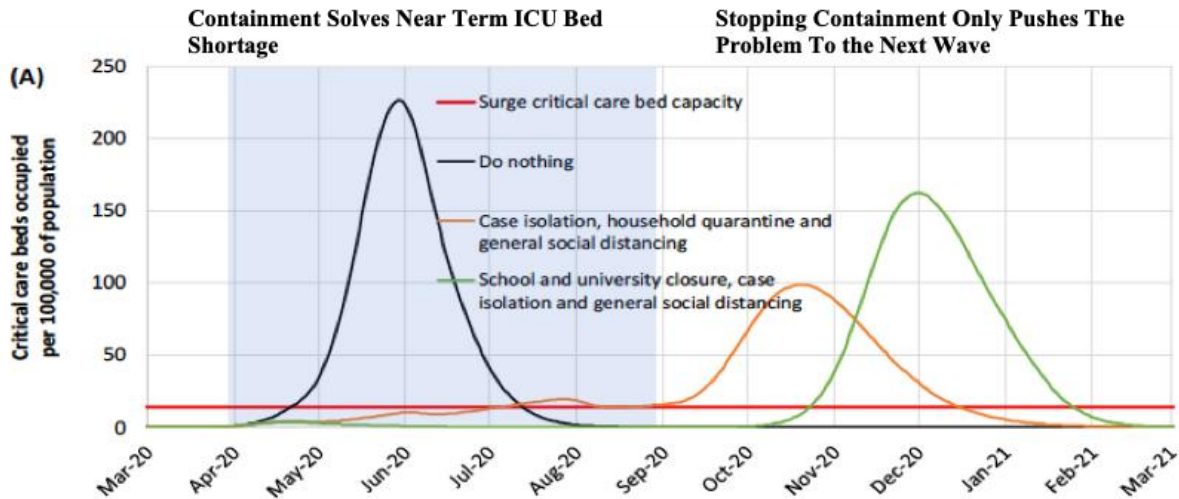
[The Imperial College Piece On Impact Of Containment](#)

What does all of this mean? Deaths will likely peak in Italy and Spain soon. New inflections are slowing but deaths will continue to rise reflecting the 6- to 14-day lags between going to a hospital and death. Other parts of Europe will see a spike in infections and deaths, though not as severe as in Italy and Spain. The US will see a bending of the curve in the northeast, while other parts of the US will still see an escalation of infections and death, but ultimately following the path of the northeast. EM will see a substantial spike in infections and a much higher IFR than in the developed world. The magnitude of the EM outbreak could be devastating.

What Happens Next

That brings me to the negative news about containment which is that it is not a cure. It does work to reduce infections and deaths over the near term, but it probably only pushes back the timing of the infections and deaths. Once containment is lifted the risk is that the people who were saved from the first wave will be infected and die in the second wave. That happened in the Spanish flu as well. That was one of the most important conclusion of the Fergusons study, as shown below in Figure 6. However, the time gained because of containment is crucial on many fronts. First, it saves the health system and gives them time to scale up to meet the potential demand of the second wave. The impact of 3% fatality in Wuhan at the peak of their infections while the rest of China the IFR was roughly 1% reflected this stress. Northern Italy are seeing this impact of a stress medical system as well with fatality rates close to that of Wuhan at the peak. Second, the time gained also gives drug companies time to develop effective anti-virals, and potentially develop a vaccine. Third, it gives governments the time to put into place a framework to deal with lifting containment and getting people back to work. The AIA study given below lays out such a plan. Clearly, the Chinese are following this type of plan to get their economy growing again.

[The AEI Piece on Reopening The US Economy](#)

Figure 6. Containment Is Not A Cure, A Second Wave Of Infection Could be Coming

Economic Consequences

Even with the bending of the infection curve, it is difficult to see the world economy getting back to normal anytime soon without a vaccine, and that includes China. The virus is still around and lifting of the containment other than in a controlled process would likely start the pandemic back up. When will we send our kids back to school, or be allowed to work in an office or factory without practicing 6 feet of separation-- which given the recent MIT study might not even be enough distance to protect someone from the virus; When will we let people fly into the US from China or the ROW without enduring 14 days of quarantine? When can we go into a restaurant to eat, to a mall to shop, or to a hotel to sleep? Consequently, lifting of containment will not be smooth. The framework will likely be close to what the Chinese have implemented or as suggested in the AEI framework. More Federal control, massive testing, and steps to track down and control clusters of infections that will likely occur. However, getting the US economy back to the level of pre-virus levels will take months, even with the amount monetary and fiscal stimulus already provided. Even in a command economy of China's will not be able to get back to pre-virus levels without their trade partners getting there as well.

As the bending of the epidemic curve become clear, the economic costs will start to emerge. The claims and PMI data are just the first shot, GDP could be down 20 to 30%. Delinquencies across all strata of our economy will shoot up and create concerns about credit losses on bank balance sheets. The moratorium on mortgages will protect borrowers but that pushes the problem to securities servicers that will default because they will not have the revenue to pay the coupon on the securities. Further, mortgage borrowers are more likely to continue to not pay even after the moratorium is lifted. The ABS sector such as autos, credit card and airplane leases could melt down. Commercial mortgage loans will be in limbo, will their tenants make lease payments if their stores, offices, and hotel rooms are empty, make rent payments if they have no job? The diversification benefit of CMBS will go away as mortgages backed by office buildings, hotels, retail and multi-family will all suffer for months from

missed lease or rent payments. Is there really going to be a V shape recovery in the 2nd half of the year without a vaccine?

The longer-term consequences of the virus on our economy will be substantial in ways we don't even contemplate today as we struggle with the mounting death rates. Forget about when, the real question is do we really need to go to offices to work, to malls to shop, or to hotels to stay in for work or pleasure? How many new hotels or office buildings will be constructed? When will people start buying cars again if their credit ratings are crushed after missing a couple of payments? How many F-150s will Ford sell in the next year?

Against all of these short- and long-term economic stresses, weigh the benefits of stimulus. Does one check for \$1,200 matter when someone is going to miss a couple of months of paychecks? What is the benefit of zero interest rates for companies or consumers that can't borrow, or forgivable loans for small business with little or no revenue? You can bail out the airlines and potentially cushion the downside for Boeing but when will people get on a plane or when will these airlines or EM airlines start buying any planes again, including those from Boeing?

So, a pretty bleak picture at least in the short run. The US equity market is clearly caught in the uncertainty between the positives and the negatives. The magnitude of the fiscal and monetary stimulus is a surprise and clearly positive. The death rate is still stunning but orders of magnitude better than what could have happened. There is a promise of antiviral therapies being developed, as well as shortages of ventilators and protective equipment being addressed. But again, containment is a strategy not a cure for the virus. The uncertainty of containment will continue to have a negative headwind in the short run for the economy, while the longer-term impact of the pandemic on the world economy will take month to become evident.

In my next piece I will discuss my strategies for the Covid-19 world on top of buying the USD and selling China equities. I promise not to read more studies before I do...well maybe only a few...

Stay safe

alan

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