SOM *Macro Strategies*

State Of the Markets: Updated Strategies For A Coronavirus World

March 20, 2020

Alan Brazil

SOM *Macro Strategies*
State of The Markets: Updated Current Strategies

Performance of Recommended Trades

| Positions | Number Trades | March 20, 2020 | | |
		Initial Investment (MM)	Current Investment (MM)	Total Return
Open	2	10	18	75.6%
Closed	51	255	723	183.4%
Total	53	265	740	179.4%

Current Recommended Trades

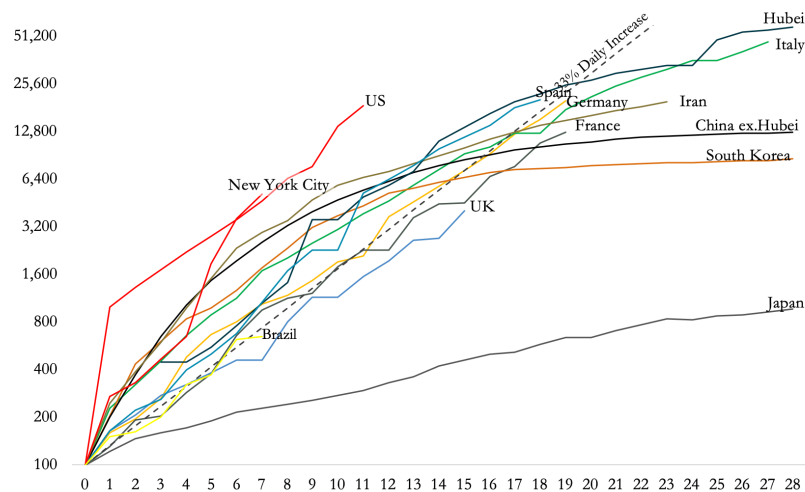| SOM Strategy | Trade | Initial Position | | | | Current Valuation | March 20, 2020 | | |
		Date	MM/ Shares	Price	Invest (MM)	Status	Price	Invest (MM)	Total Return
Strategies For The Coronavirus	Sell mainland Chinese equties with a 5% stop, keeping CNY exposure	20-Mar-20	195000	513	5.0	New	513	5.0	0%
Strategies For The Coronavirus	Buy Sept 2020 103 Stirke call on DXY (DXA) Futures	9-Mar-20	420	1.2	5.0	Updated	3.0	12.6	150%
Strategies For The Coronavirus	**Buy 2-year maturity 10-2-yr curve cap (strike of 45 bp)**	**3-Jun-19**	**3125**	**0.16**	**5.0**	**Closed 3/20/20**	**0.11**	**3.4**	**-31%**
South Africa Is The Next Turkey	*Buy 5-yr SA CDS protection at 165*	*20-Feb-20*	*500*	*1.0*	*5.0*	*Closed 3/18/20 (370 bp)*	*9.9*	*49.5*	*890%*
Move From Risk-off to Risk-On	*Buy Sept 2020 97 Stirke call on DXY Futures*	*9-Mar-20*	*1000*	*0.5*	*5.0*	*Closed 3/18/20*	*5.3*	*53.0*	*960%*
Move From Risk-off to Risk-On	*Buy S&P500 With A Stop Down 5%*	*9-Mar-20*	*36500*	*2746*	*5.0*	*Closed 3/11/20*	*2605*	*0.0*	*-100%*
Buy Local Currency Sovereign Debt From High Yield EM Countries	*Buy Basket of Local Currency Sovereign Debt (Russia, India and Mexico)*	*4-Feb-20*	*100*	*100.0*	*5.0*	*Closed 3/9/20*	*95.0*	*0.0*	*-100%*
Strategies For The Coronavirus	*Buy 1-yr maturity receiver on the 2-yr swap, 1% strike*	*20-Feb-20*	*1650*	*0.30*	*5.0*	*Closed 3/9/20*	*1.14*	*18.8*	*280%*
Corporates Are The New Subprime	*Buy Protection On the IG Index at 50 bp*	*20-Feb-20*	*710*	*0.8*	*5.0*	*Closed 3/9/20 (118 bps)*	*2.6*	*18.8*	*278%*

SOM *Macro Strategies*
State Of the Markets: Current Strategies For A Coronavirus World

Step 1: Macro Theme

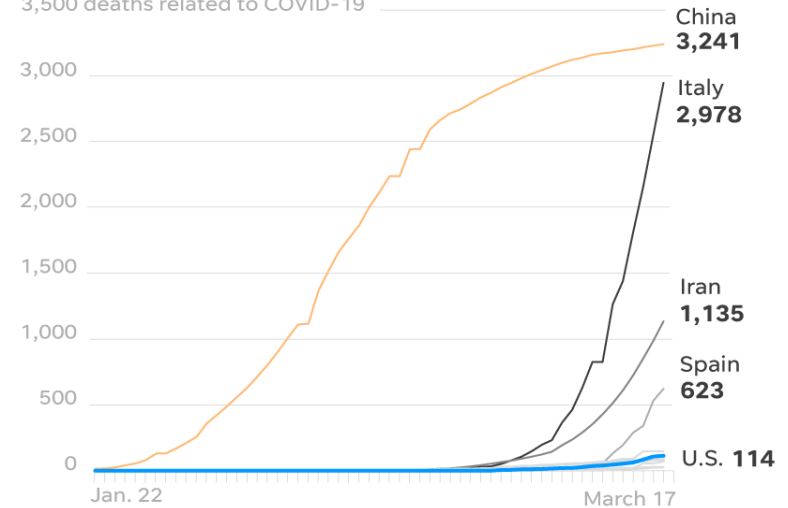## The Coronavirus (COVID-19)[1]

US Infection Rate Higher Than China Or Italy	Deaths Wil Likely Follow As Well

CONFIRMED CASES BY NUMBER OF DAYS SINCE 100TH CASE

SOURCE Johns Hopkins University as of 5 p.m. ET March 18

Step 2: Fundamental Economic Framework

An Introduction To Epidemic Models And Their Parameters That Policy Markers Use: Part I

The Basic SIR Model Of Epidemics[1]	Comparison of Covid-19 With Other Epidemics[2]

- The basic empirical model for epidemics is called SIR
  - Population is divided up into three groups
    - **S**: the population that is susceptible to the infection
    - **I**: the population that is already infected
    - **R**; the population that is recovered (or dead), AKA **: the" Herd Immunity", they are a barrier between the remaining susceptible from and the infected**
  - This model capture the typical "bell" curve of epidemics: exponential growth and then decay
- The key factor for modeling an epidemic is the number of infections each infected person causes per day. This number is called the **"Reproduction Number", R_0,** which is determined by three factors

$$R_0 = K * T * D$$

- **K:** The number of people that each infected person comes into contact with each day
    - **T:** Probability of that the contacts becomes infected
    - **D:** Days an infected person is infectious
- R_0 determines the course of the pandemic
  - Currently, R_0 around 2 for the coronavirus. This means that every infected person infects over two people each day, i.e. infections grow exponentially
  - But if $R_0 < 1$, the epidemic dies out exponentially
- Public policy strategies are focused on getting R_0 below 1
  - **Containment:** this reduces **K**, the number of contacts
  - **Vaccine:** this reduces **T**, the probability of infection

COVID-19 is more infectious than influenza.

Reproduction[1] and fatality[2] for selected human viruses
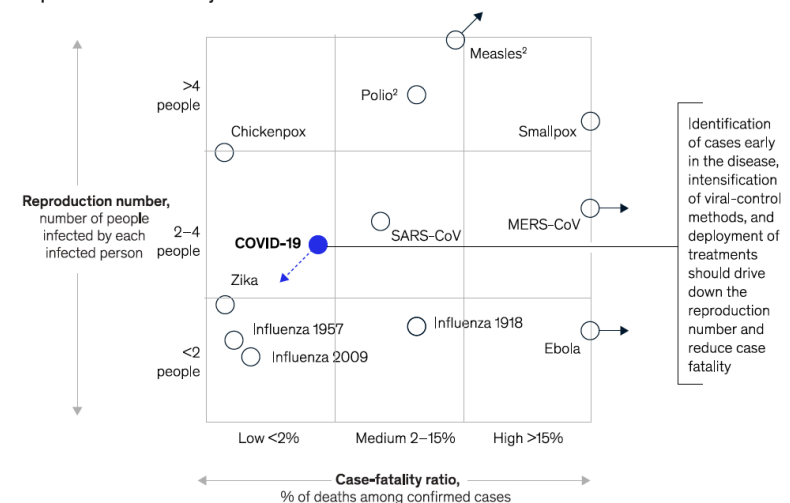
[1]As determined at the beginning of an outbreak; can be reduced by effective intervention.
[2]Case-fatality numbers are reflective of the outbreak setting and depend on a number of factors, including patient's age, community immunity, health-system capabilities, etc. This graphic aims to offer a broad comparison.
Source: World Health Organization; McKinsey analysis

1. Herbert W Hethcote. The mathematics of infectious diseases. SIAM review, 42(4):599–653, 2000.
2. McKinsey, "COVID-19: Implications for business", March 2020, Executive Briefing

SOM *Macro Strategies*
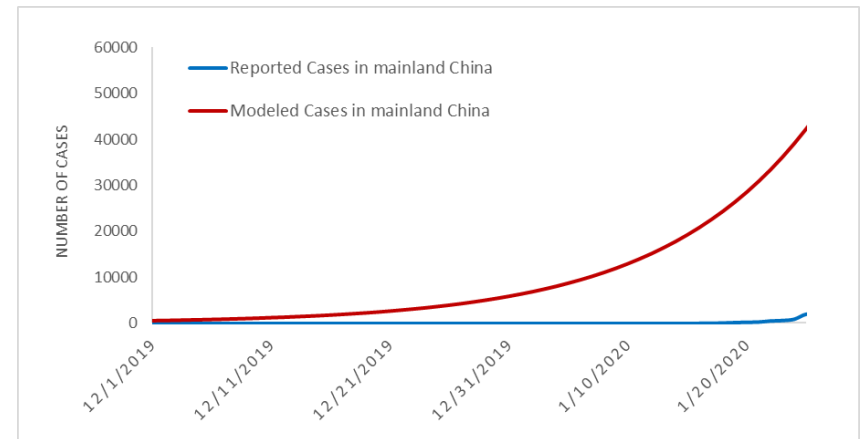## State Of the Markets: Current Strategies For A Coronavirus World

Step 2: Fundamental Economic Framework

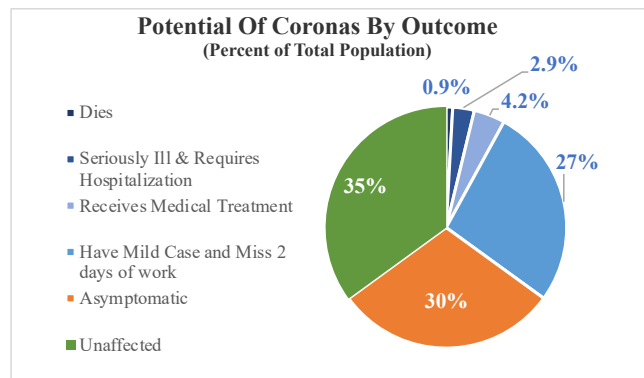## An Introduction To Epidemic Models And Their Parameters That Policy Markers Use: Part II

Two Key Parameters Of The Epidemic

- **Attack Rate**
  - This is the percentage of the population that will be infected and have some symptoms
    - Below this sums to 35% (add up all the blues)
    - The number of reported inflections are substantially lower because only those in a hospital have been confirmed.
  - However, about another half will likely be infected but not show symptoms
    - This is what Merkel was refereeing to when she said that as much as 70% of the German population could be infected
- **Case Mortality Rate or Case Fatality Rate**
  - This is the percentage of those infected with symptoms (cases) will die
  - For the Covid-19, this number has ranged from 0.6 to 4%
  - Below the 0.9% of mortality of the population is about 2.5% of those that are infected with symptoms will die

Likely Actual Number of Covid-19 Cases In China Vs Reported[2]

Potential Breakdown In A Population From The Covid-19[1]

Potential Of Coronas By Outcome
(Percent of Total Population)

- Dies — 0.9%
- Seriously Ill & Requires Hospitalization — 4.2%
- Receives Medical Treatment — 2.9%
- Have Mild Case and Miss 2 days of work — 27%
- Asymptomatic — 30%
- Unaffected — 35%

1. Burns, Mensbrugghe, Timmer, "Evaluating the Economic Consequences of Avian Influenza", World Bank's Global Development Finance, June 2006
2. Gardner, "Update January 31: Modeling the Spreading Risks of 2019=nCov", Johns Hopkins University, January 31, 2020
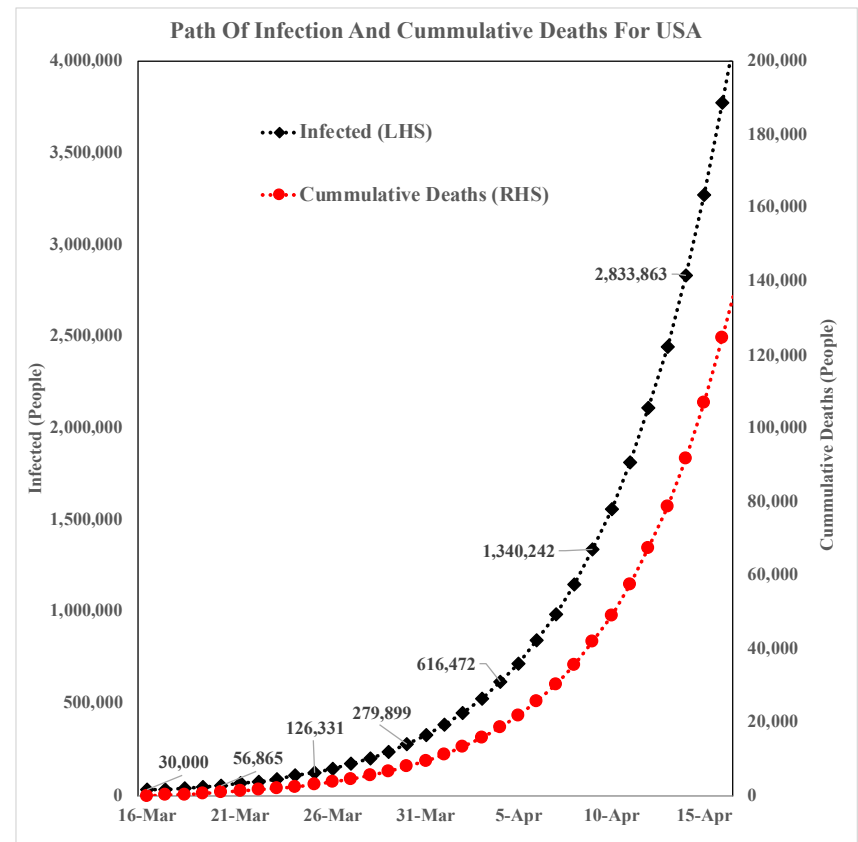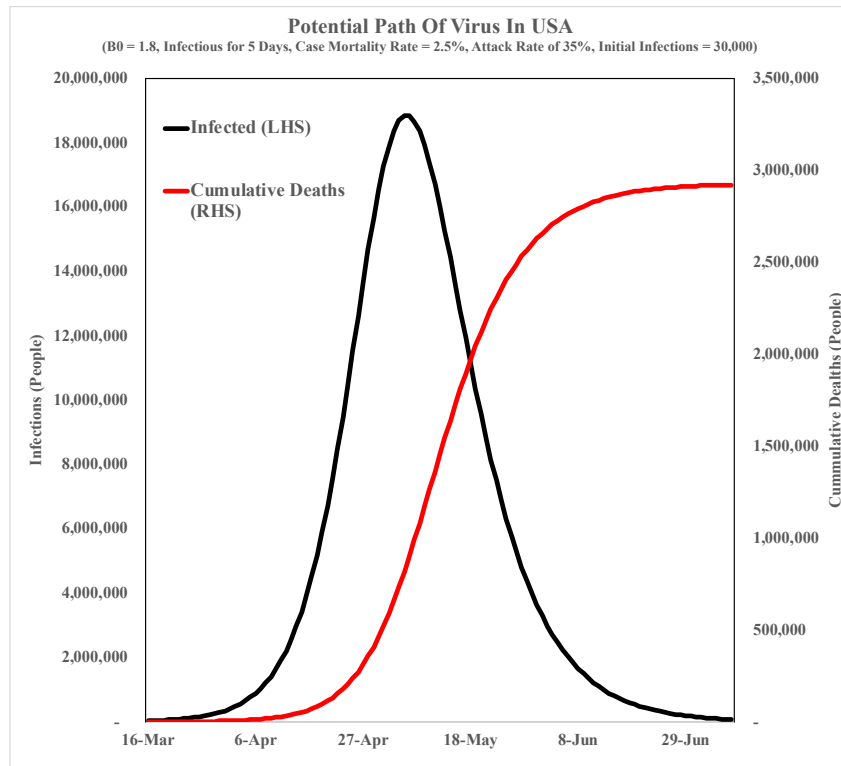
Step 2: *Fundamental Economic Framework*

The Epidemic Curve Of Infections And Deaths In The US Suggest The Worse Is Yet To Come[1]

Peak Infection Of People With Symptoms Could Peak At 19M	We Are Entering The Doubling Period Of Every 4 to 5 Days

Potential Path Of Virus In USA

(B0 = 1.8, Infectious for 5 Days, Case Mortality Rate = 2.5%, Attack Rate of 35%, Initial Infections = 30,000)

- Infected (LHS)
- Cumulative Deaths (RHS)

Path Of Infection And Cummulative Deaths For USA

- Infected (LHS)
- Cummulative Deaths (RHS)

2,833,863
1,340,242
616,472
279,899
126,331
56,865
30,000

Step 2: *Fundamental Economic Framework*

Without Interventions, Antivirals or Vaccines, The Medical System Could Collapse[1]

In the US 70,000 Deaths A Day, 2.1 MM A Month	In the UK Demand For ICU Beds Could Be 30 Times The Supply
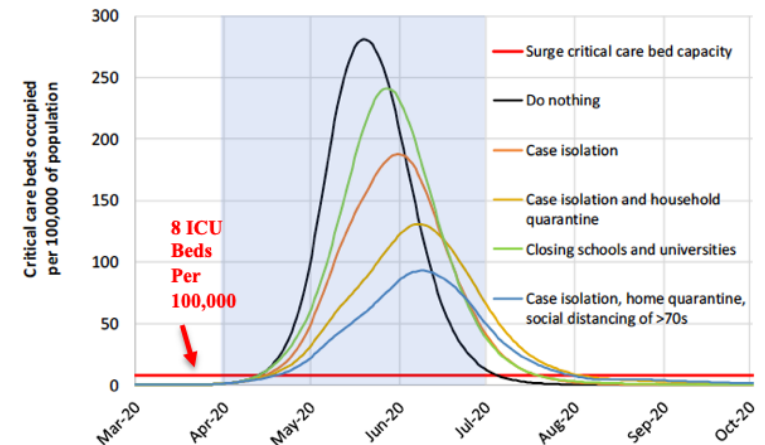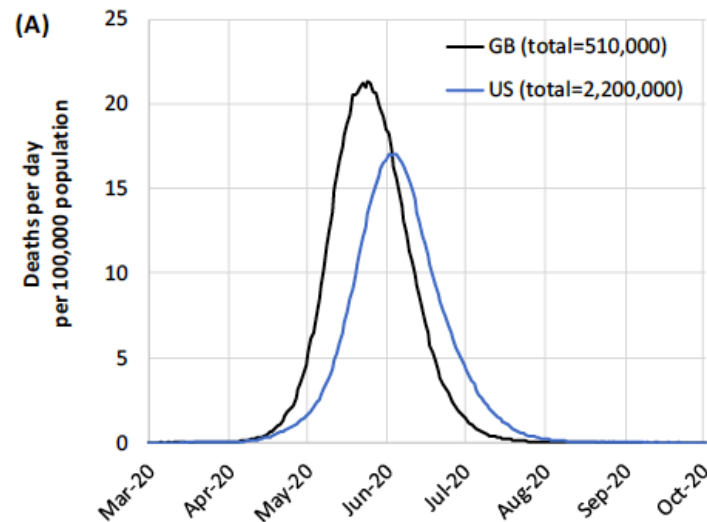
1. " **Impact of non-pharmaceutical interventions (NPIs) to reduce COVID-19 mortality and healthcare demand** ", Imperial College COVID-19, March 16, 2020
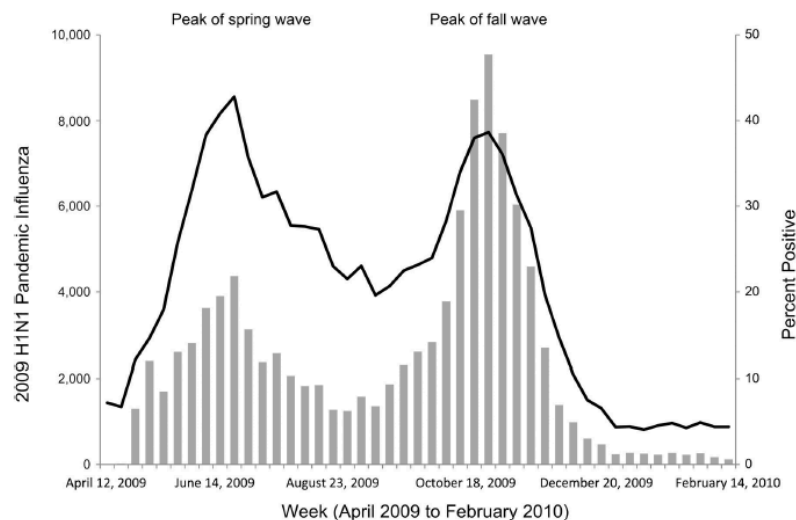
7

Step 2: Fundamental Economic Framework

Most Pandemics Have At Least Two Waves, With The Second Being The Worst

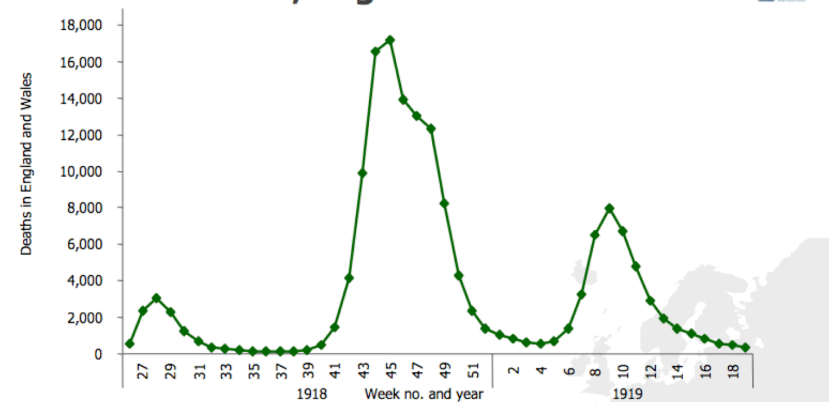| Every Pandemic Has Had A Second Wave: Case of The USA	Every Pandemic Has Had A Second Wave: Case of The UK[2]

Figure 9: Number of pandemic H1N1 viral isolates tested the United States from April 2009 through March 2010.

Peak of spring wave Peak of fall wave

2009 H1N1 Pandemic Influenza / Percent Positive

Week (April 2009 to February 2010)

1918/1919 pandemic: A(H1N1) influenza deaths, England and Wales

Deaths in England and Wales

1918 Week no. and year 1919

1918/19: 'Influenza deaths', England and Wales. The pandemic affected young adults, the very young and older age groups.

Transmissibility: estimated Basic Reproduction Number (R_o)
R_o = 2-3 (US) Mills, Robins, Lipsitch (Nature 2004)
R_o = 1.5-2 (UK) Gani et al (EID 2005)
R_o = 1.5-1.8 (UK) Hall et al (Epidemiol. Infect. 2006)
R_o = 1.5-3.7 (Geneva) Chowell et al (Vaccine 2006)

Courtesy of the Health Protection Agency, UK

1.   Swerdlow, Kniss, Biggerstaff, Reed, "Epidemiology of 2009 Pandemic Influenza A (H1H1) in the United States", Clinical Infectious Diseases, January 2011
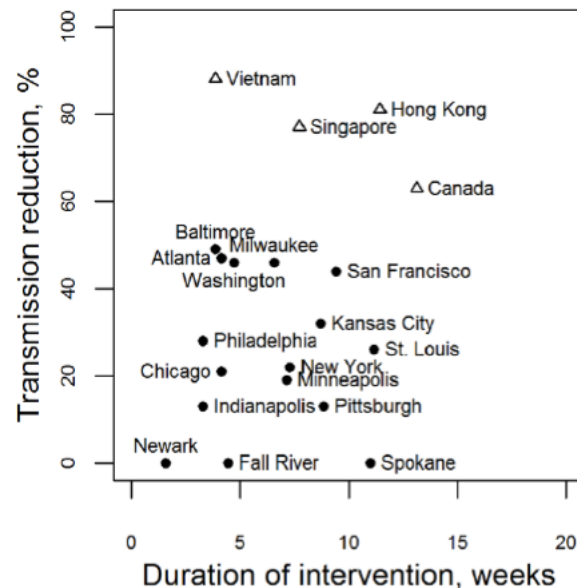2.   European Center for Disease Prevention and Control

Step 3: Identify Potential Repricing Event

Containment Works: The Only Near-Term Strategy For the Pandemic Is Containment

Containment Works[1]	The Chinese Strategy Of Containment Worked[2]

Figure 1. Magnitude and duration of responses to previous severe mortality outbreaks. Estimates of the reduction in the reproduction number and the duration of interventions during responses to the SARS outbreak in 2003 by country [18] (open triangles) and during the 1918 influenza pandemic in cities in the USA [22] (closed circles). A transmission reduction of 0% reflects an intervention which was estimated to have no effect on transmission. doi:10.1371/journal.pcbi.1001076.g001

Confirmed Cases Of Coronavirus In China

1. Hollingsworth TD, Klinkenberg D, Heesterbeek H, Anderson RM (2011) Mitigation Strategies for Pandemic Influenza A: Balancing Conflicting Policy Objectives. PLoS Comput Biol 7(2): e1001076. doi:10.1371/journal.pcbi.1001076
2 WHO

SOM Macro Strategies
State Of the Markets: Current Strategies For A Coronavirus World

Step 3: Identify Potential Repricing Events

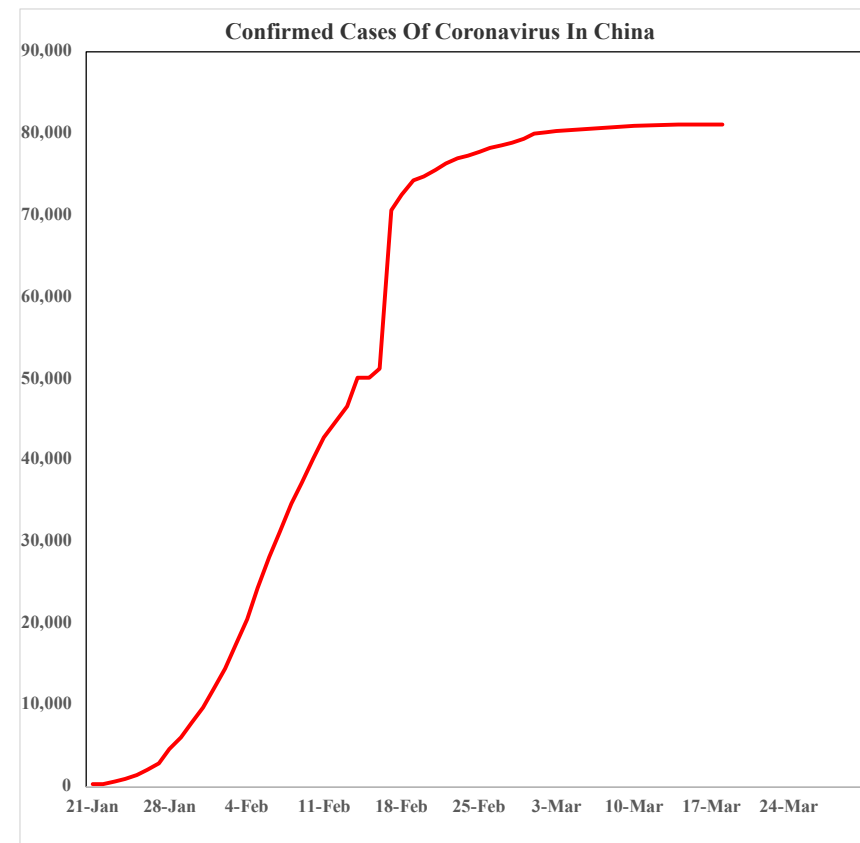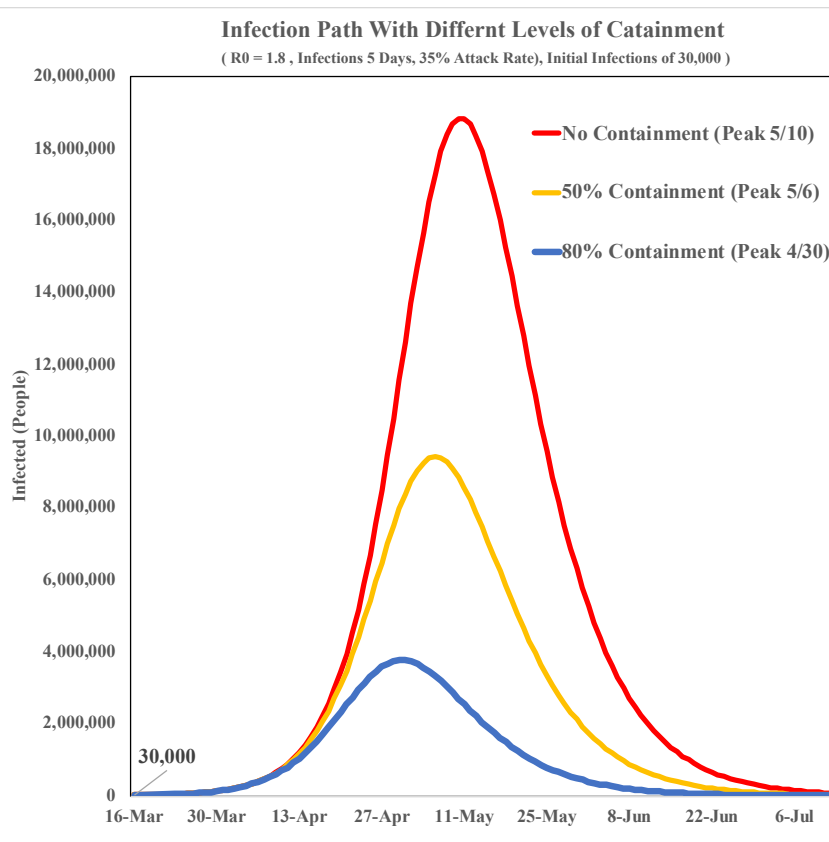**Containment Works: Could Substantially Reduce Infections Path And Deaths**

Containment Reduces Stress Infections…

And Deaths

Infection Path With Differnt Levels of Catainment
(R0 = 1.8 , Infections 5 Days, 35% Attack Rate), Initial Infections of 30,000)

Legend:
- No Containment (Peak 5/10)
- 50% Containment (Peak 5/6)
- 80% Containment (Peak 4/30)

		Deaths By Containment & Case Mortality Rate		
		None	50%	80%
Total Infected		117,000,000	58,500,000	23,500,000
Case Mortality Rate	2.5%	2,900,000	1,500,000	590,000
	0.6%	700,000	350,000	140,000

1. Author's analysis using a SIR model and the R mathematical package
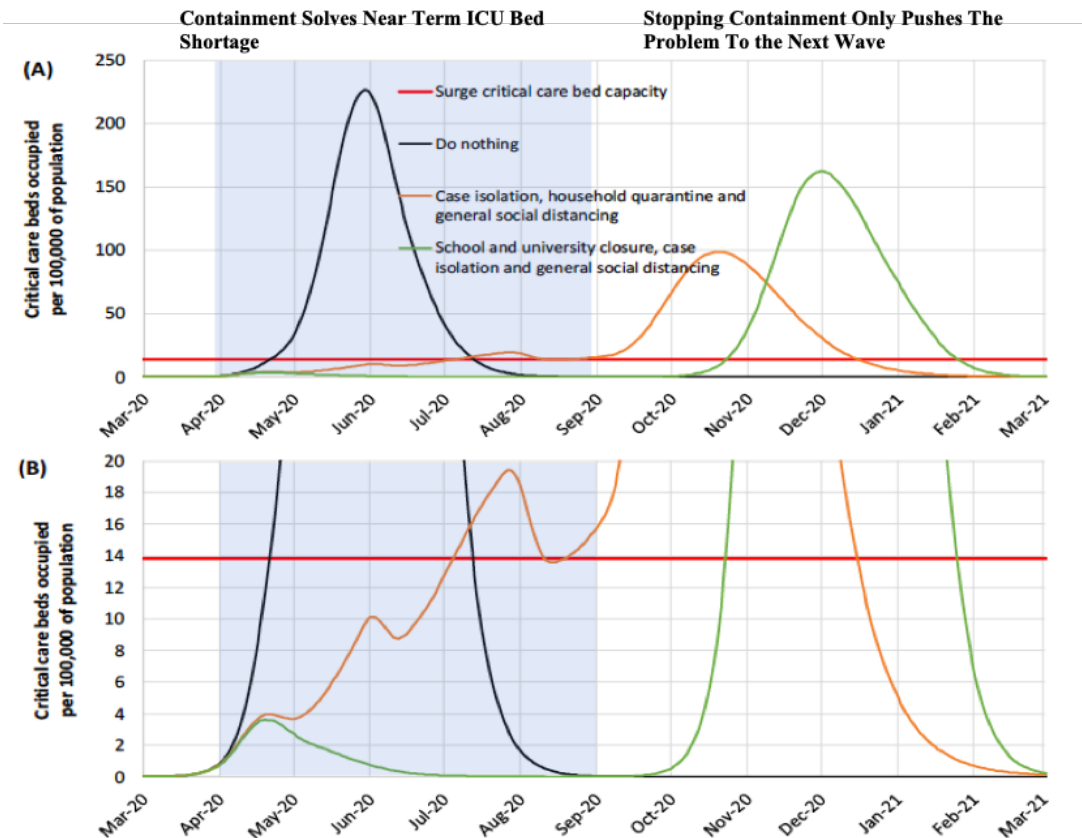
Step 3: Identify Potential Repricing Events

A Vaccine Is Developed: Containment Only Works If It Lasts Until A Vaccine Is Developed

Containment Strategies For The US

- **The Black line shows the unmitigated epidemic.**
- **The Green shows a suppression strategy incorporating closure of schools and universities, case isolation and population-wide social distancing beginning in late March 2020.**
- **The Orange line shows a containment strategy incorporating case isolation, household quarantine and population-wide social distancing.**
- **The Red line is the estimated surge ICU bed capacity in US. The blue shading shows the 5-month period in which these interventions are assumed to remain in place.**
- **Panel (B) shows the same data as in panel (A) but zoomed in on the lower levels of the graph.**

Impact Of A 5-Month Containment Strategies For The US And ICU Bed Demand

Step 3: Identify Potential Repricing Events

A Vaccine Is Developed: A Vaccine Could Dampened The Magnitude Of A Potential Second wave

Vaccine Could Stop The Epidemic, And ….[1]

Potentially Reduces the Severity Of A Second Wave[2]

Epidemic curves

No vaccine intervention
- Moderate influenza
- Strong influenza
- Catastrophic influenza

Vaccine intervention
- Moderate influenza
- Strong influenza
- Catastrophic influenza

Incidence — Days

Potential Impact Of A Vaccine: Actual Vs Simulated 2009 Swine Flu
Infections Path During the 2009 HIN1 Swine Influenza Pandemic

- Actual Path, Vaccine Intro 10/14
- Simulated Path, Vaccine Intro 8/14

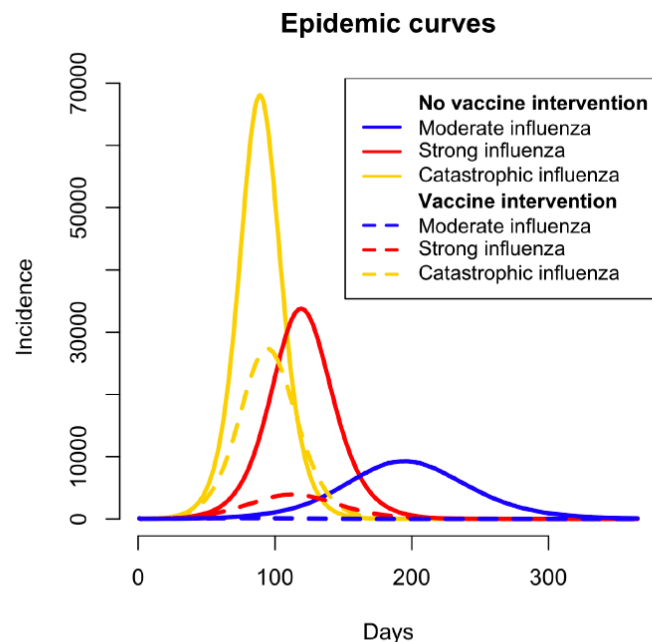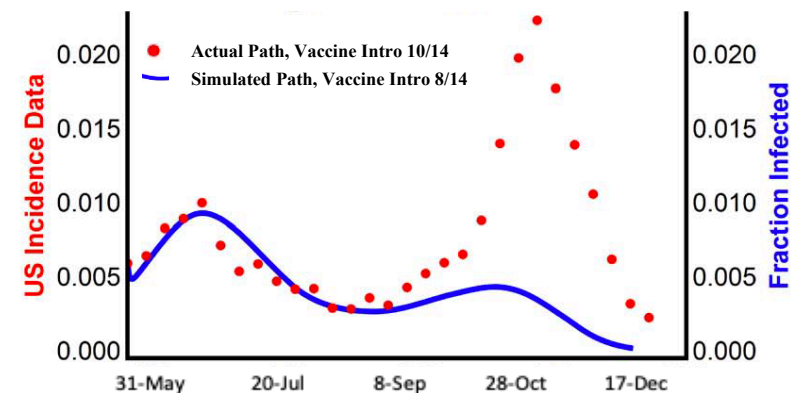US Incidence Data — Fraction Infected

Fig 2. Influenza incidence (average number of new cases per day) during the pandemic for no vaccine intervention and vaccine intervention scenarios. The epidemic curves illustrate influenza incidence without and with vaccination intervention for the catastrophic, strong and moderate influenza pandemic scenarios. The number of cases is the average of new cases over 25 simulations. Higher attack rates cause the earlier, more severe, and shorter pandemic duration, compared to the less severe but longer pandemics. The vaccination intervention is applied 15 days after the start of pandemic and implemented for 60 days. The vaccine intervention scenarios are simulated at 40% efficacy and 40% compliance for all age and risk groups in the dynamic agent-based model.

1. Dorratoltaj N, Marathe A, Lewis BL,Swarup S, Eubank SG, Abbas KM (2017) Epidemiological and economic impact of pandemic influenza in Chicago: Priorities for vaccine interventions. PLoS Comput Biol 13(6): e1005521.
2.Anna Mummert, Howard Weiss, Li-Ping Long, Jose Amigó, and Xiu-Feng Wan. A perspective on multiple waves of influenza pandemics. PLOS ONE, 8(4), 2013. (this Is the scenario where the second wave is driven by virus mutations.)
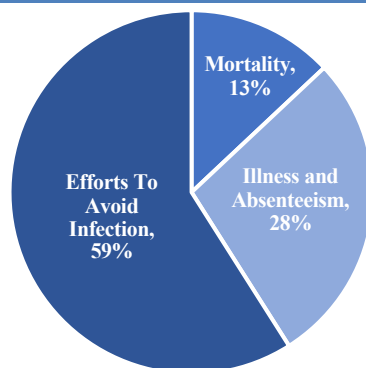
Step 3: Identify Potential Repricing Events

The Cost Of Containment Will Be Severe Recession

Recession Driven By Mostly Driven By Avoidances, i.e. Containment[1]

- Mortality, 13%
- Efforts To Avoid Infection, 59%
- Illness and Absenteeism, 28%

The World Banks Projections[3]

Potetnial Impact On Real GDP Of An Avian Type Influenza Pandemic			
Mild	Moderate	Severe	Ultra Severe
Hong Kong Flu 1968-9	Asian Flu 1958	Spanish Flu 1918-9	Spanish Flu But With Greater Impact on Elderly
World -0.7%	-2.0%	-4.8%	-8.6%
USA -0.6%	-1.4%	-3.0%	-5.5%
Japan -1.0%	-3.3%	-8.3%	-15.8%
Uk -0.7%	-2.4%	-5.8%	-11.1%
Europe -0.7%	-1.9%	-4.3%	-8.0%
China -0.7%	-2.2%	-4.8%	-9.1%
India -0.6%	-2.1%	-4.9%	-9.3%
Korea -0.9%	-3.2%	-7.8%	-15.1%
LDC -0.6%	-2.4%	-6.3%	-12.2%
Deaths As % of Total Population 0.02%	0.20%	1.70%	2.33%
Deaths (MM) 1.6	16.0	136.0	186.4

Historical Impact Of Pandemics On GDP[2]

Actual GDP Before And After Historical Influenza Pandemics

	Spanish Influenza 1918-9		Asian Infuenza 1957-8	
	Avg 1914-18	1919	Avg 1953-57	1958
Australia	0.9%	-1.8%	4.4%	4.8%
Canada	3.5%	-11.1%	1.7%	-3.5%
UK	3.0%	-13.9%	-0.2%	-3.3%
USA	6.1%	-5.2%	-0.5%	-3.1%

The US CBO Projections[4]
Potential Influenza Pandemic: Possible Macroeconomic Effects

	Mild	Severe
	1957 & 1968 Flus	1918 Spanish Flu
Infected Rate In Total Population (Attack Rate)	25%	30%
Case Fatality Rate	0.1%	2.5%
Death Rate Of Total Population	0.03%	0.67%
Number of Infected (MM)	70	90
Deaths	100,000	2,000,000
1st Year Impact on GDP	-1.0%	-4.1%

1. Angus Maddison, Monitoring the World Economy, 1820-1992. Washington, DC: Organization for Economic Cooperation and Development, 1995.
2. Burns, Mensbrugghe, Timmer, "Evaluating the Economic Consequences of Avian Influenza", World Bank's Global Development Finance, June 2006
3. 1. OECD Interim Economic Assessment:, "Coronavirus: The world economy at risk", 3/2/2020
4. "A potential Influenza Pandemic: Possible Macroeconomic Effects and Policy Issues", Congressional Budget Office Report, December 2005/Revised July 2006
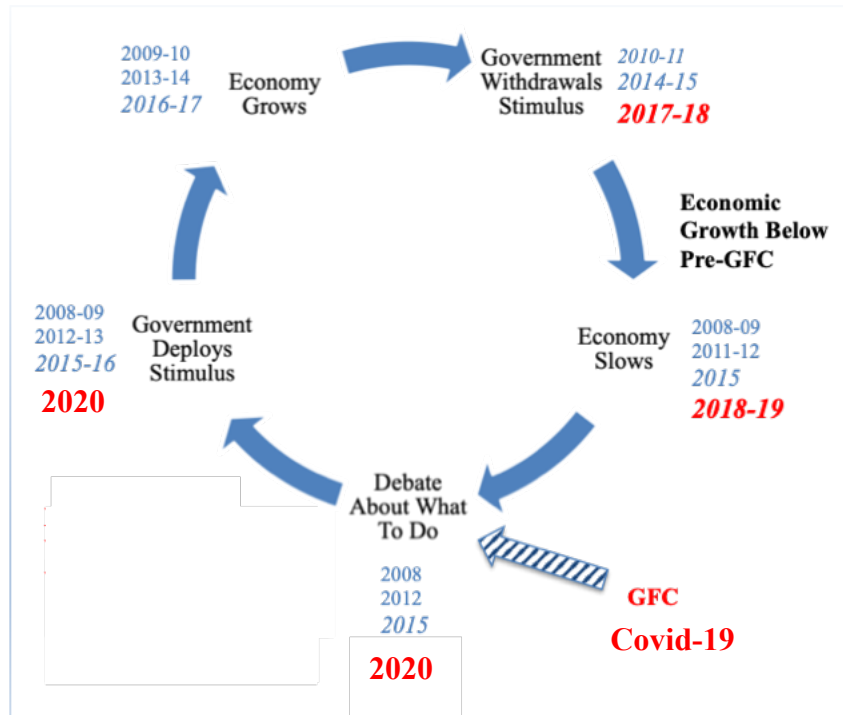
Step 3: Identify Potential Repricing Events

The Fed Responds To Rising Recession Risk By Cutting Rates And With QE

Covid-19 Recession Will Result In Anther Turn of The Policy Cycle

Current Fiscal And Monetary Covid-19 Stimulus

- USA
  - The Fed
    - Cuts rates to zero
    - Starts a $750 billion QE program
    - Provides a commercial paper facility
    - Offers USD swaps to other countries
    - Provides short term liquidity
  - Fiscal policy
    - $100 billion of funding for Covid-19
    - Proposal for a $1 trillion package of funding
      - $1,200 checks for each adult, 500 for children
      - $208 billion for loans business hit by the virus in exchange for equity positions
      - Delaying tax payments
      - Guaranteeing money market funds
      - $300 billion for forgivable small business loans
      - Delay student loan payments for 6 months
- Europe
  - Monetary policy
    - ECB
      - Lagarde "do what ever it takes" moment
      - 2.3 trillion Euro bank credit facility
      - 750 billion Euro QE program for both buying both corporates and government debt
  - Fiscal policy
    - EU 1% of GDP for Covid-19 support
    - Germany will deploy 4.5% of GDP and abandon the zero deficit constraints

SOM *Macro Strategies*
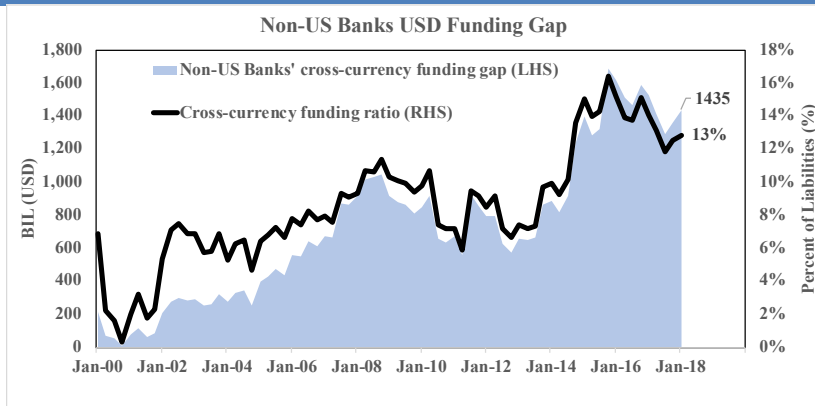## State Of the Markets: Current Strategies For A Coronavirus World

Step 4: Identify Asymmetric Trades

Trade 1: Buy Calls On US Dollar Index[1]

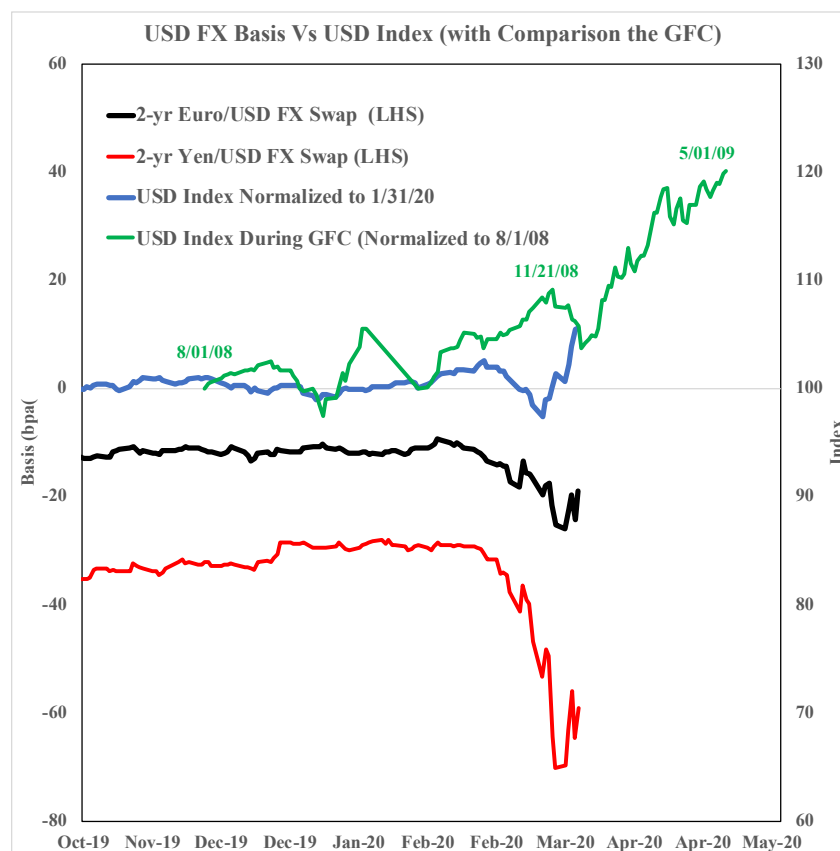| Trade Thesis |
| --- |

- The USD will continue to rally following the same path as during the GFC
- The virus crisis is creating the same surge in demand for dollar liquidity from non-US banks as occurred in the GFC
  - Dependency of non-US banks on dollar funding is even greater than it was in the GFC
- Supply of dollar funding is drying up much as it did in the GFC
  - The Bank commercial paper market in under duress
  - The Feds dollar swaps to other CBs may not be enough

USD FX Currency Swaps Reflect Growing USD Demand

USD FX Basis Vs USD Index (with Comparison the GFC)

- 2-yr Euro/USD FX Swap (LHS)
- 2-yr Yen/USD FX Swap (LHS)
- USD Index Normalized to 1/31/20
- USD Index During GFC (Normalized to 8/1/08

Non-US Bank Demand For Dollar Funding Has Grown Since GFC

Non-US Banks USD Funding Gap

- Non-US Banks' cross-currency funding gap (LHS)
- Cross-currency funding ratio (RHS)

Step 4: Identify Asymmetric Trades

## Trade 2: Sell Mainland China Equities[1]

Trade Thesis

- Chinese equities reflect A too optimistic view of there success at containing the virus and their ability to revive their economy
- The Chinese success in containing the virus could be short lived
  - Without a vaccine, another wave of infections could hit China
- The import demand shock from other countries efforts could swamp the Chinese efforts to revive their economy
  - Chinese manufacturing represents almost 30% of economic value added and almost 100% of exports
  - The demand shocks from the ROW containment efforts are only just starting
- Sell mainland Chinese equities with a 5% downside stop
  - Chinese equities could match the ROW equities with another sell-off

Chinese Exports Order Could Have Further To Fall

Demand Shock In China Exports

Are Chinese equities Pricing In A Too Optimistic View of China?

China Equity Performance(USD) vs USA, S.K Since Jan 21, 2020
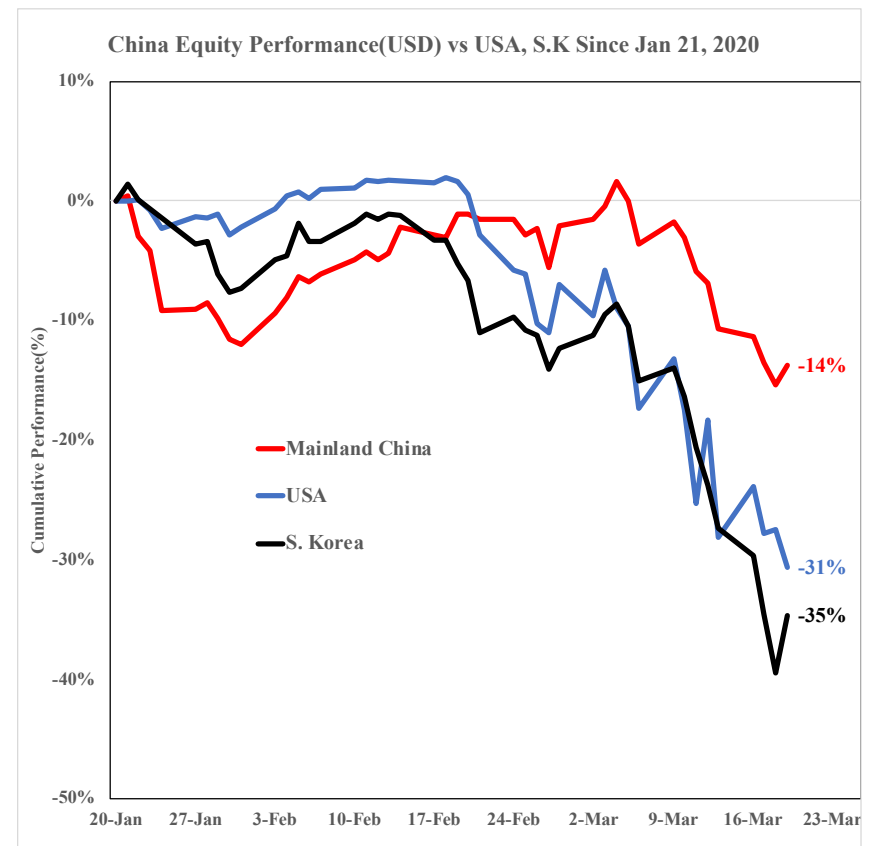
SOM *Macro Strategies*
Disclaimer