



Maximum Containment, Social Distancing & the Economics of Stoppage

12 Unexpected Market and Economic Themes Defining 2020

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Being Productive While “Working from Home”



During the 15th and 16th centuries, Elizabethan theaters in London frequently closed for extended periods of time due to outbreaks of the bubonic plague. In his acclaimed work *The Year of Lear*, scholar James Shapiro notes that during one such outbreak in 1606, with theaters shut throughout London, William Shakespeare used his time to write three of the greatest plays in history: *King Lear*, *Macbeth* and *Antony & Cleopatra*.

Source: The Atlantic. *The Year of Lear* (James Shapiro).

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Converging Exogenous Shocks



An unexpected convergence of four exogenous forces in 2020 will likely lead to a severe global recession in the 1H 2020.

The Global Economy is Very Sick

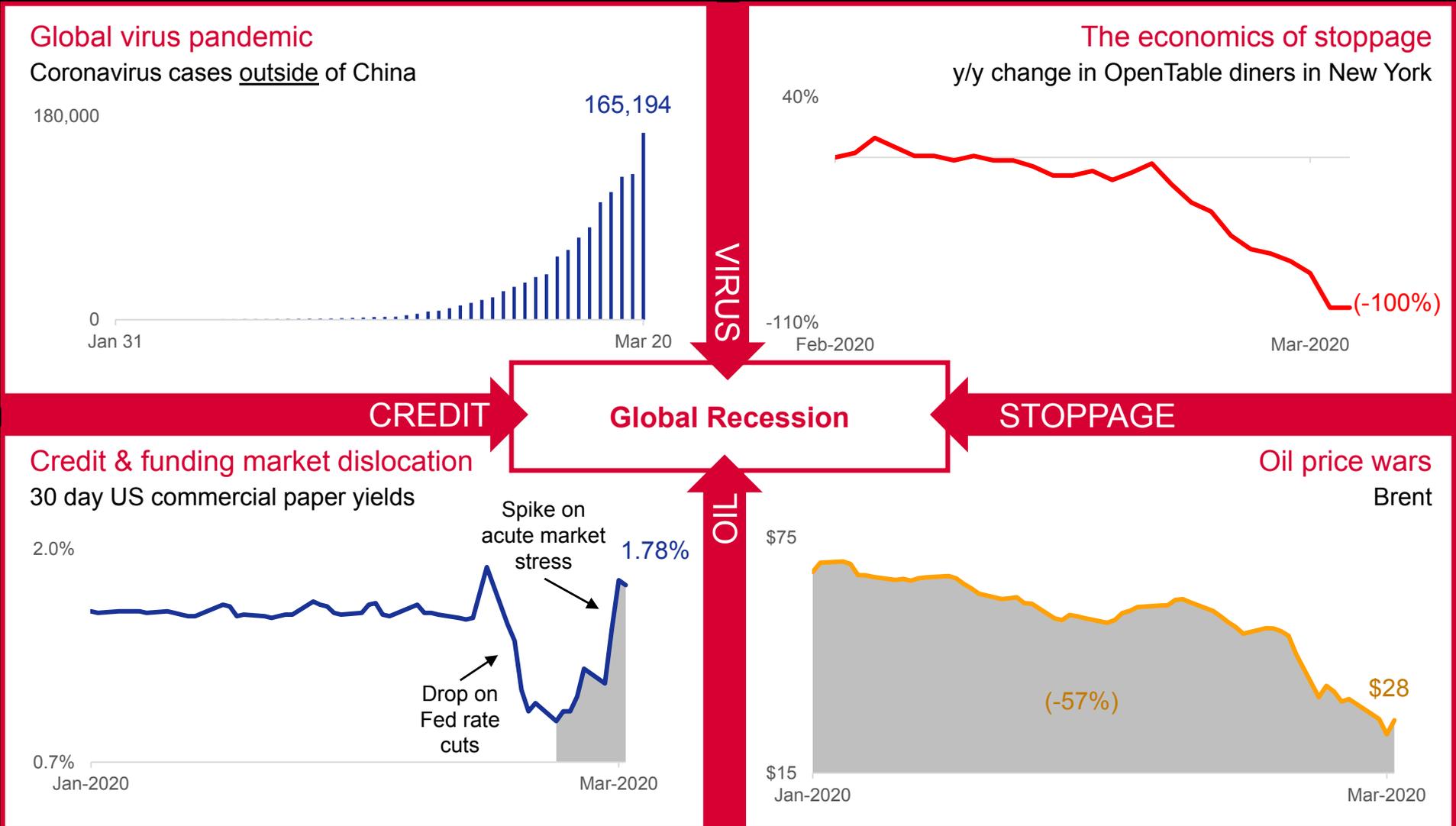


An unexpected convergence of multiple exogenous forces in 2020 will likely lead to a severe global recession in the 1H 2020. While the fiscal response underway is formidable, there are structural issues such as virus containment and small business fallout that will be very difficult to address. As we have emphasized in recent weeks, the virus data still matters most, with economic and market developments ultimately an extension of “flattening the contagion curve” globally.



Source: DB Capital Markets Strategy.

4 Global Forces Converging



Source: (1) Johns Hopkins University. Enodo Economics (Diana Choyleva). WHO. CEIC. Data as of March 20, 2020. (2) OpenTable Data. (3-4) Bloomberg. Data as of March 19, 2020.





COVID-19's Global Footprint

2

In less than two months, the footprint of the COVID-19 virus has expanded beyond China to more than 160 countries, and all 50 US states, quickly becoming the greatest global health pandemic since the Spanish flu in 1918.

COVID-19 Cases Surge Above 200K Globally



Total cases in Europe now exceed China



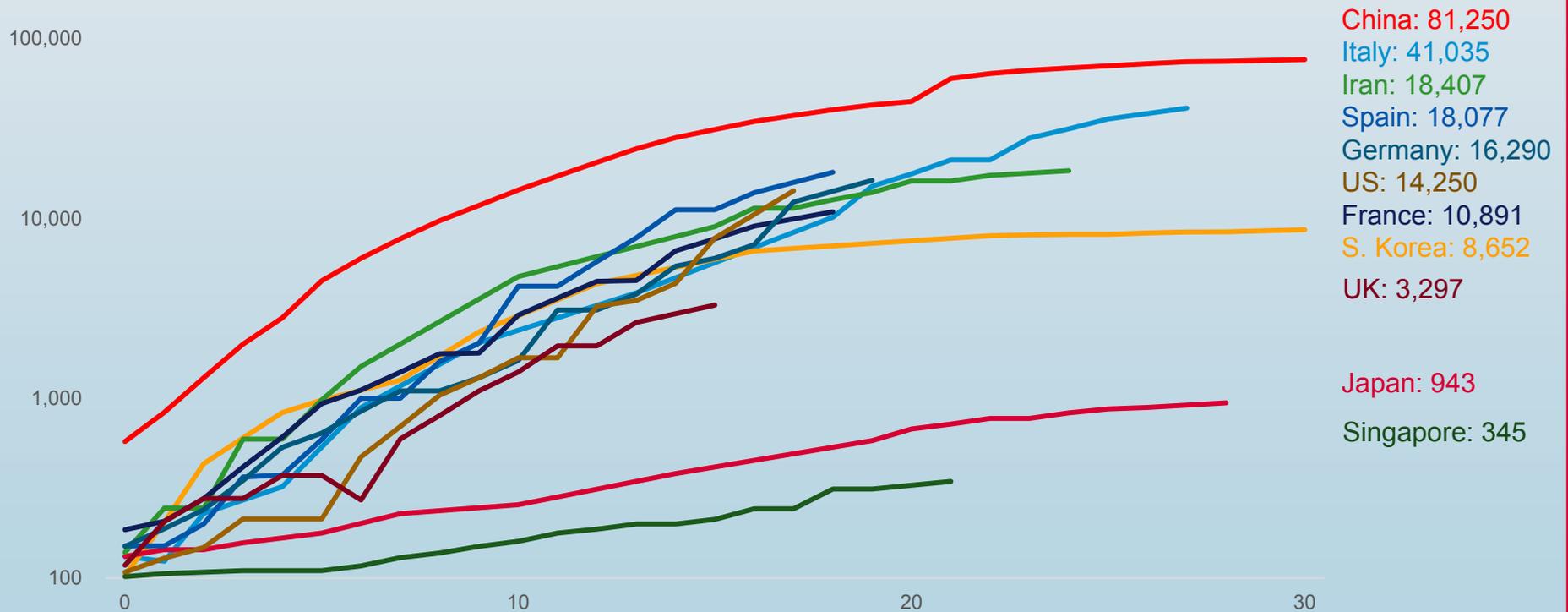
Source: Johns Hopkins CSSE, WHO, CDC, ECDC, NHC and DXY. As of 9:15am EST, March 20, 2020.

Flattening the Curve



The virus data matters the most, and ultimately, the forward path of the economy and markets are closely linked to “flattening the curve.” While China, Singapore, HK, Taiwan and South Korea flattened their curves through vigilant monitoring and early intervention, cases across Europe and the US are rising rapidly, with US data resembling that of Italy from one week ago. Western democracies are unlikely to be able to “quarantine like China.” The US is also clearly not able to “screen and test” with as much speed, scale and innovation as South Korea.

Growth in total cases over 30 days following 100 confirmed cases



Source: (1) Johns Hopkins University. Enodo Economics (Diana Choyleva). WHO. CEIC. Data as of March 20, 2020. Chart shows only first 30 days after first day of over 100 reported cases. Axis is on logarithmic scale.

The COVID-19 “Global Footprint”



In less than 2-3 months, the COVID-19 virus has spread to more than 160 countries and all 50 states in the US

Country	# of confirmed cases	# of deaths	Country	# of confirmed cases	# of deaths	Country	# of confirmed cases	# of deaths	Country	# of confirmed cases	# of deaths
China	81,250	3,253	Israel	677	0	Peru	234	1	Costa Rica	87	1
Italy	41,035	3,405	Brazil	621	6	Philippines	217	17	Latvia	86	0
Iran	18,407	1,284	Ireland	557	3	Russia	199	1	Vietnam	85	0
Spain	18,077	833	Greece	464	6	India	194	4	Brunei	75	0
Germany	16,290	44	Qatar	460	0	Iraq	192	13	Andorra	74	0
US	14,250	205	Pakistan	454	2	Lebanon	157	4	Hungary	73	1
France	10,891	371	Finland	400	0	South Africa	150	0	Jordan	69	0
South Korea	8,642	94	Turkey	359	4	Kuwait	148	0	Cyprus	67	0
Switzerland	4,164	43	Poland	355	5	San Marino	144	14	Albania	64	2
UK	3,297	145	Singapore	345	0	UAE	140	0	Bosnia & Herze.	63	0
Netherlands	2,468	77	Chile	342	0	Panama	137	1	Morocco	60	2
Austria	2,203	6	Luxembourg	335	4	Taiwan	135	2	Sri Lanka	60	0
Norway	1,802	7	Iceland	330	1	Argentina	128	3	Malta	53	0
Belgium	1,795	21	Slovenia	319	1	Slovakia	123	1	Belarus	51	0
Sweden	1,439	11	Indonesia	311	25	Armenia	122	0	Moldova	49	1
Denmark	1,225	6	Bahrain	278	1	Mexico	118	1	Lithuania	48	0
Japan	943	33	Romania	277	0	Croatia	110	1	Oman	48	0
Malaysia	900	2	Saudi Arabia	274	0	Bulgaria	107	3	N. Macedonia	48	0
Canada	872	12	Thailand	272	1	Serbia	103	0	Guadeloupe	45	0
Portugal	785	4	Estonia	267	0	Colombia	102	0	Azerbaijan	44	1
Czechia	694	0	Ecuador	260	3	Uruguay	94	0	Cruise Ship	712	7
Australia	681	6	Egypt	256	7	Algeria	90	9	Others	834	19

Source: (1) Data from Johns Hopkins University Center for Systems Science Engineering dashboard. Data as of March 20, 2020. Other data includes all countries that only have less than 44 cases.





Healthcare Not Built for Surge Capacity

Hospitals, intensive care units, medical equipment (ventilators, PPE) and available beds in China and Italy were overrun in less than 3-4 weeks. Similar vulnerabilities have become apparent in the US and many other countries. While many of our global healthcare systems are robust, they are not built for the speed and “surge capacity” that COVID-19 requires.

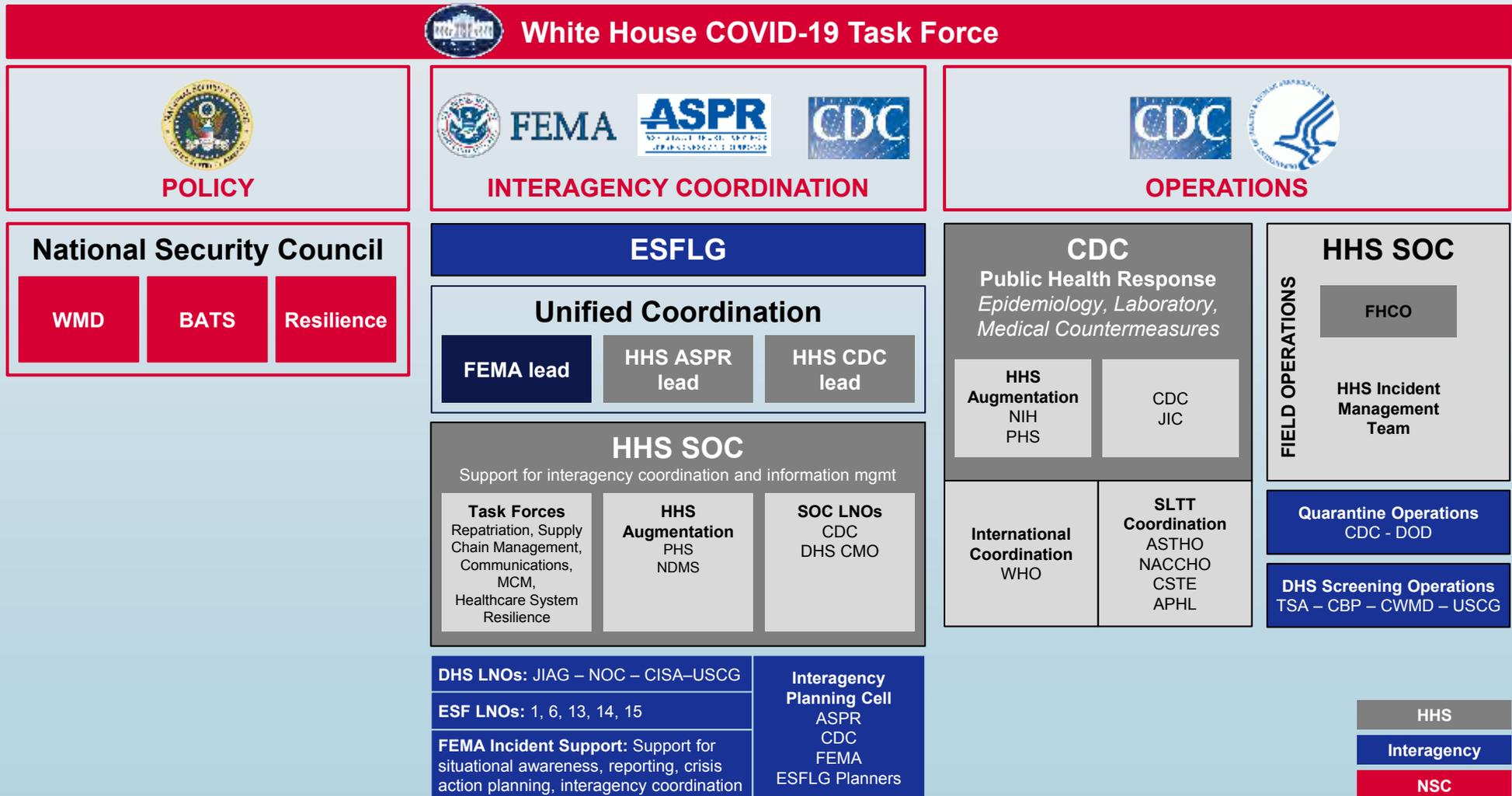


3

White House COVID-19 Task Force



While the US fiscal and monetary response has been formidable, the pace has been comparatively slow on the most important issue to public health, markets and the economy: virus testing and transmission containment. Though the US had the benefit of seeing China, South Korea and Italy in prior months, we still do not have broad based testing and screening, and are therefore “driving blind”.



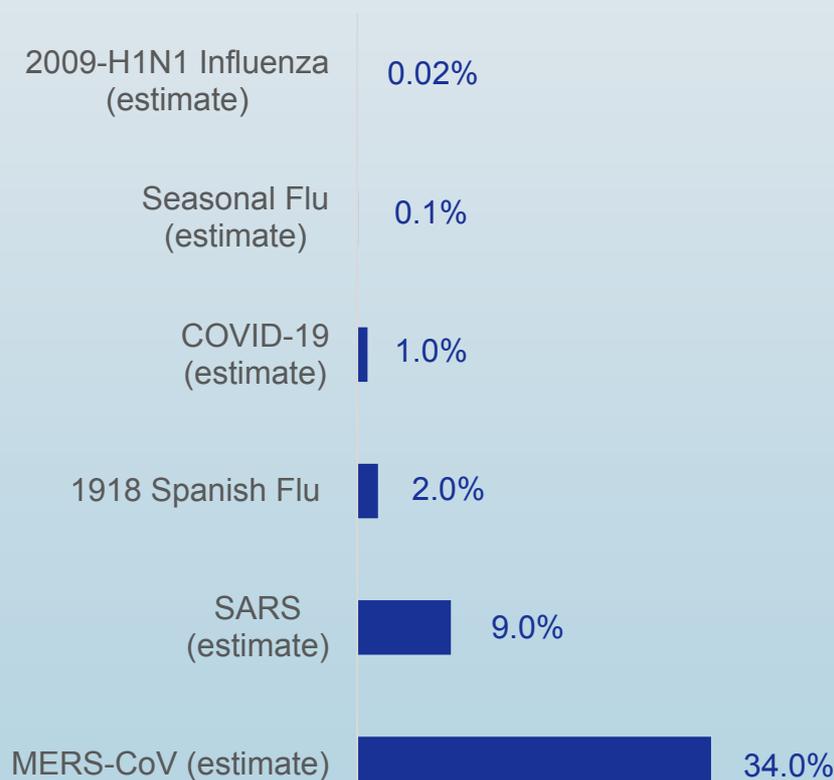
Source: PanCAP Adapted U.S. Government COVID - 19 Response Plan, March 13, 2020.

Comparative Mortality Rate Estimates

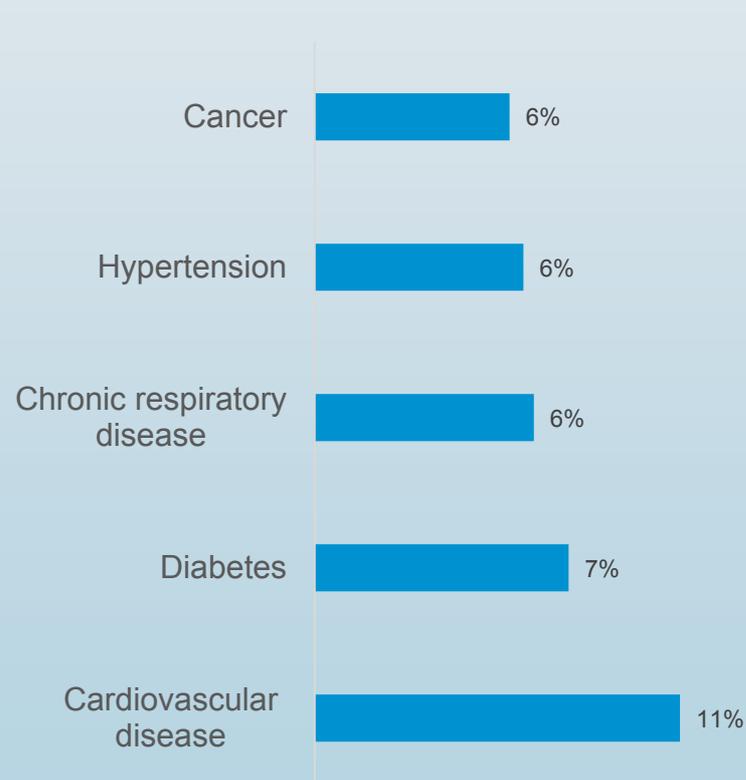


COVID-19 may be characterized as having a higher transmission rate, longer incubation period, and higher mortality rate than the “seasonal” flu. The novelty of the virus has also not allowed the population to develop stronger immunity over time.

Estimated mortality rates



COVID-19 mortality rates for pre-conditions



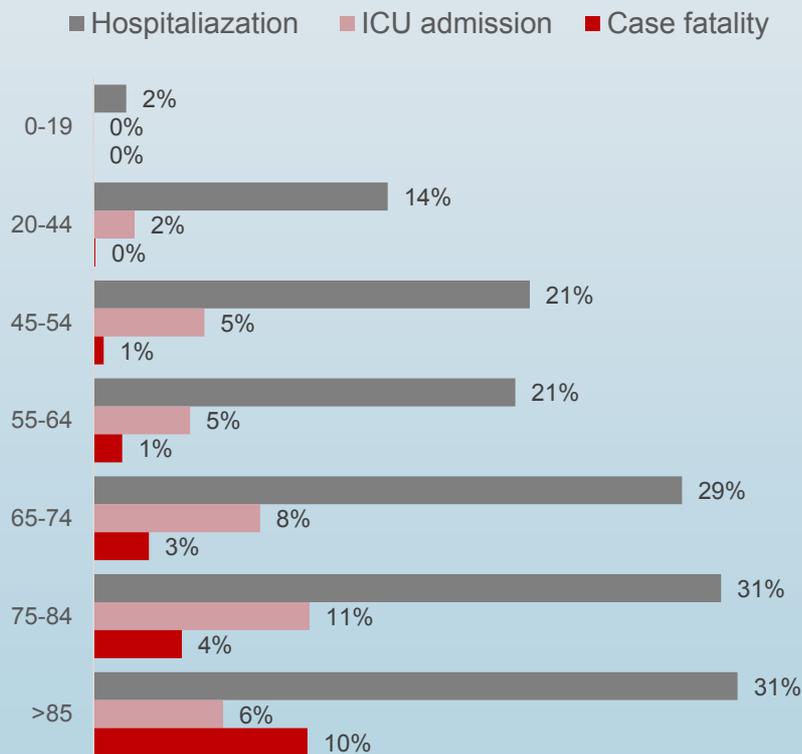
Source: (1-2) WHO; Dr. Michael Edelstein (Epidemiologist, Department of Immunization, Public Health England). COVID-19 mortality rate estimate according to Dr Anthony Fauci at the National Institute for Allergies and Infectious Diseases.

Testing, Hospitalizations, & Mortality Rates



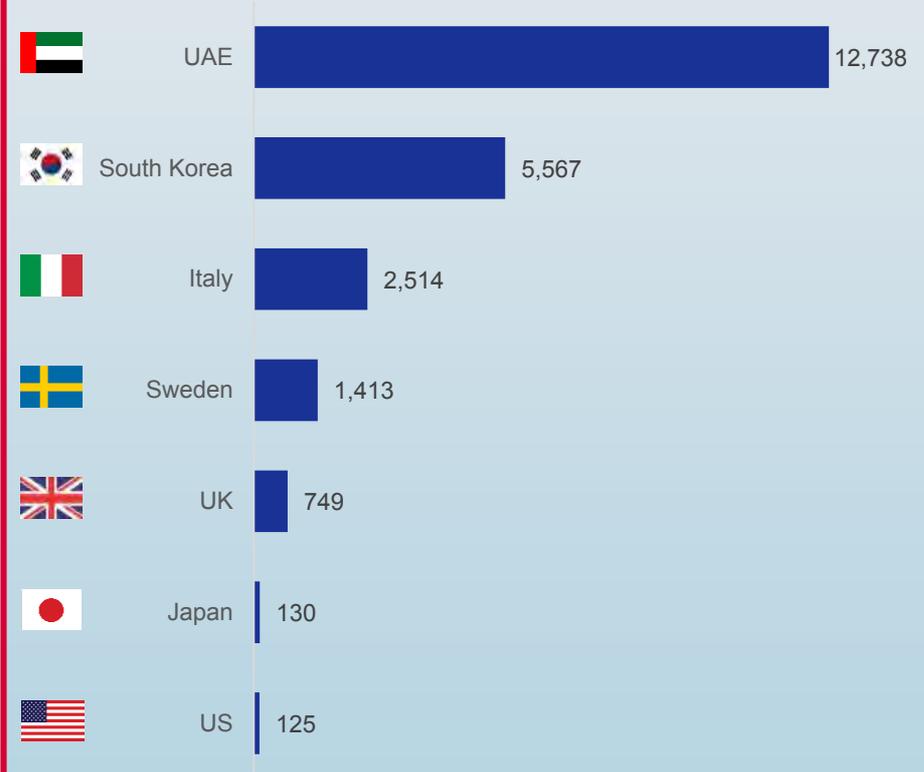
According to a recent study by the CDC, 31% of all US COVID-19 cases, 53% of ICU admissions and 80% of all fatalities from the virus occurred among adults aged 65+, with the highest percentage of severe outcomes happening among those aged 85+.

Hospitalization, ICU and case fatalities



Preliminary data suggests that the US lags significantly behind the rest of the world in testing for COVID-19

of COVID-19 tests performed per million of the population



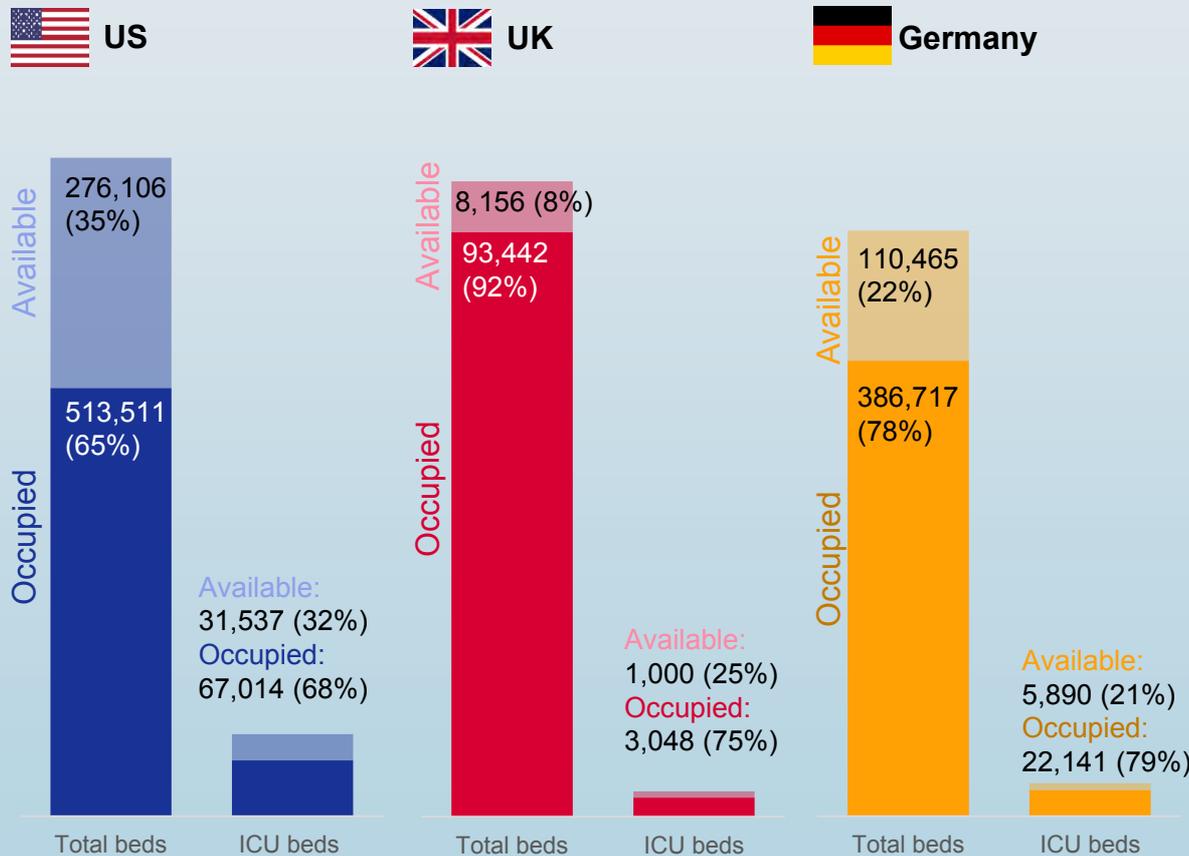
Source: (1) Statista. CDC. (2) Respective governments via Our World in Data.

Hospital Bed Capacity & Bottlenecks

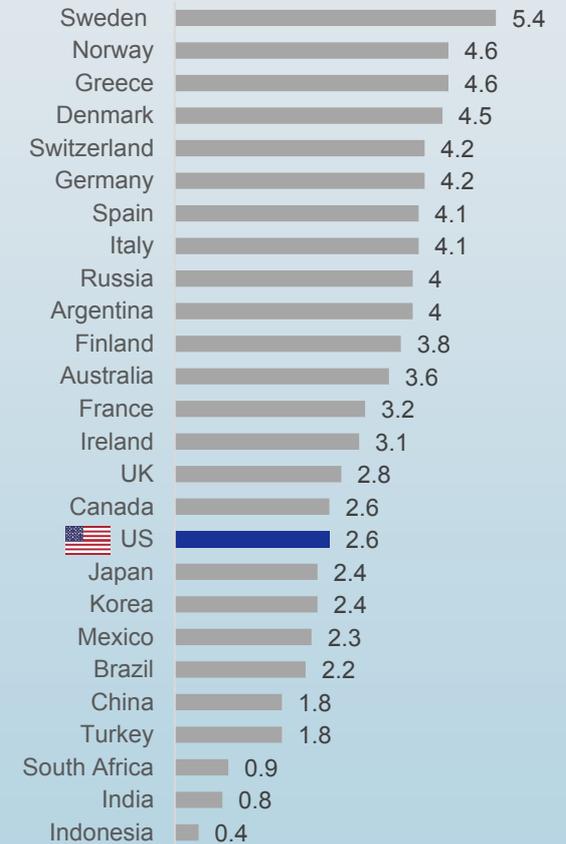


One of the lessons from China and Italy's early experience with COVID-19 is that "maximum containment" is important to preventing healthcare and hospitals from becoming overwhelmed within weeks

Hospital bed capacity



of physicians per 1,000 people



Source: (1-2) DB Global Markets Research (Slok).





Social Distancing



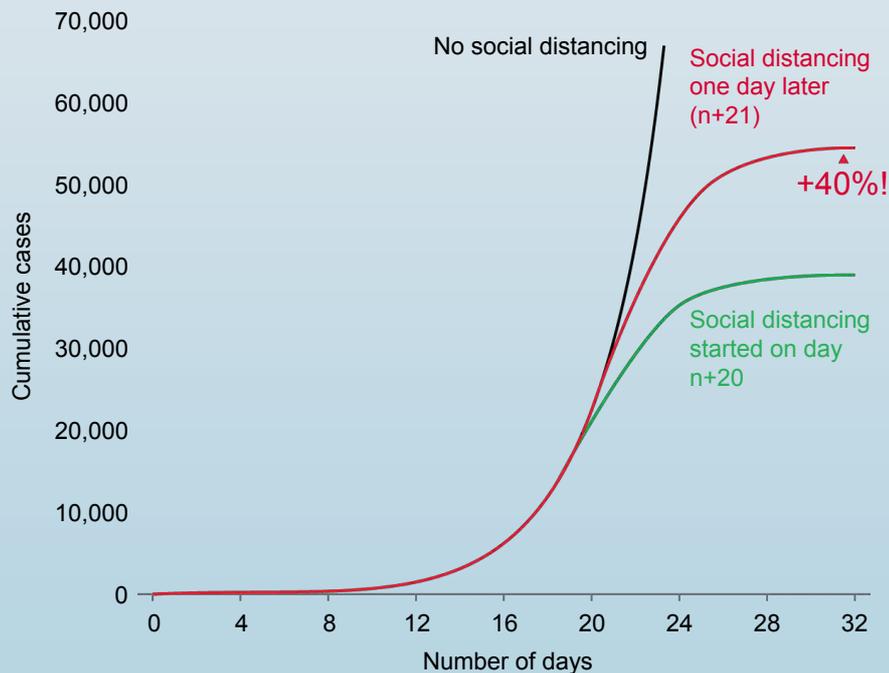
Given the unique attributes of COVID-19 (rapid transmission, high hospitalization rates), and as demonstrated in East Asian economies, vigilant monitoring, testing and social distancing become critical to an effective public policy response. For those countries that move late and slowly, national quarantines become a necessity, not an option.

The Impact of Social Distancing



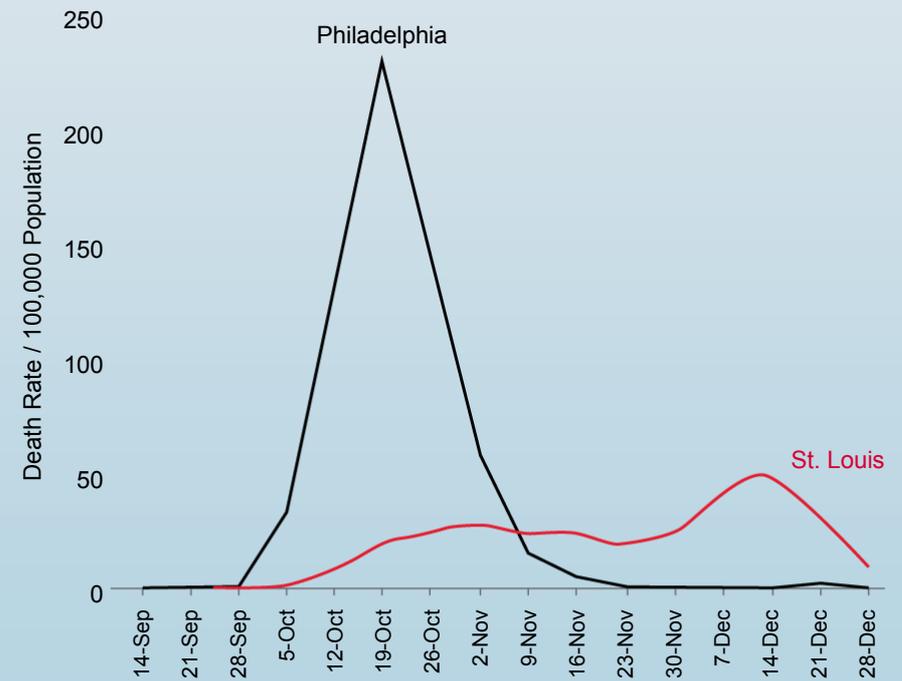
Numerous studies have shown that the impact of implementing social distancing, even by one day, can have a material impact on case transmissions.

Cumulative cases of coronavirus with social distancing measures taken one day apart



The East Coast of the US was hit especially hard by the 1918 Spanish Flu. Midwest cities such as St. Louis, however, banned social gatherings larger than 20 people and experienced significantly lower mortality rates.

Philadelphia vs. St. Louis death rates



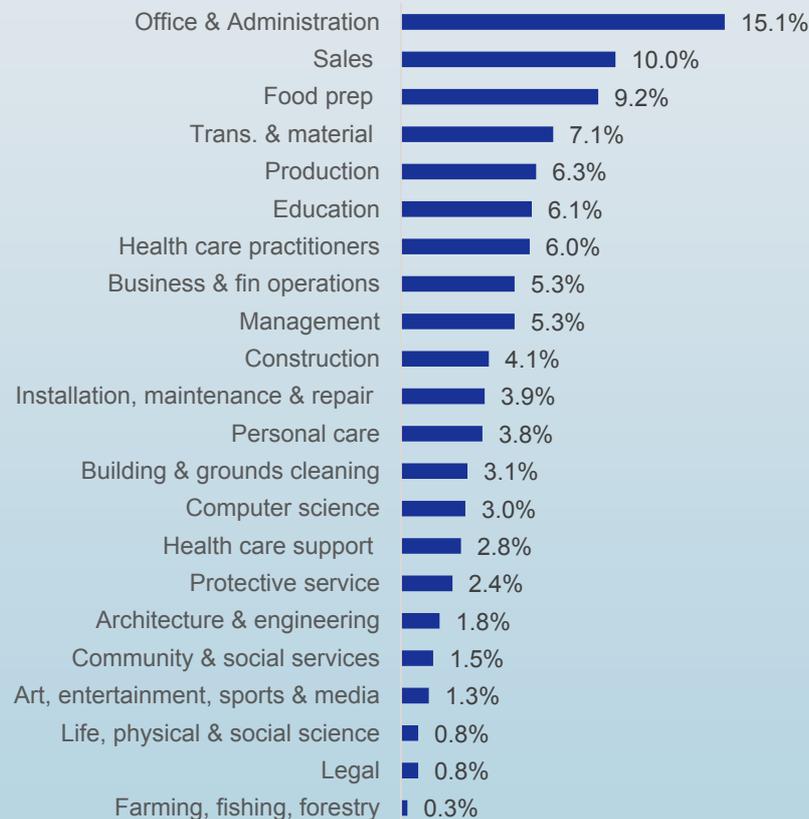
Source: (1) Tomas Pueyo. Github. (2) National Academy of Sciences.

Not Everyone Can Work From Home

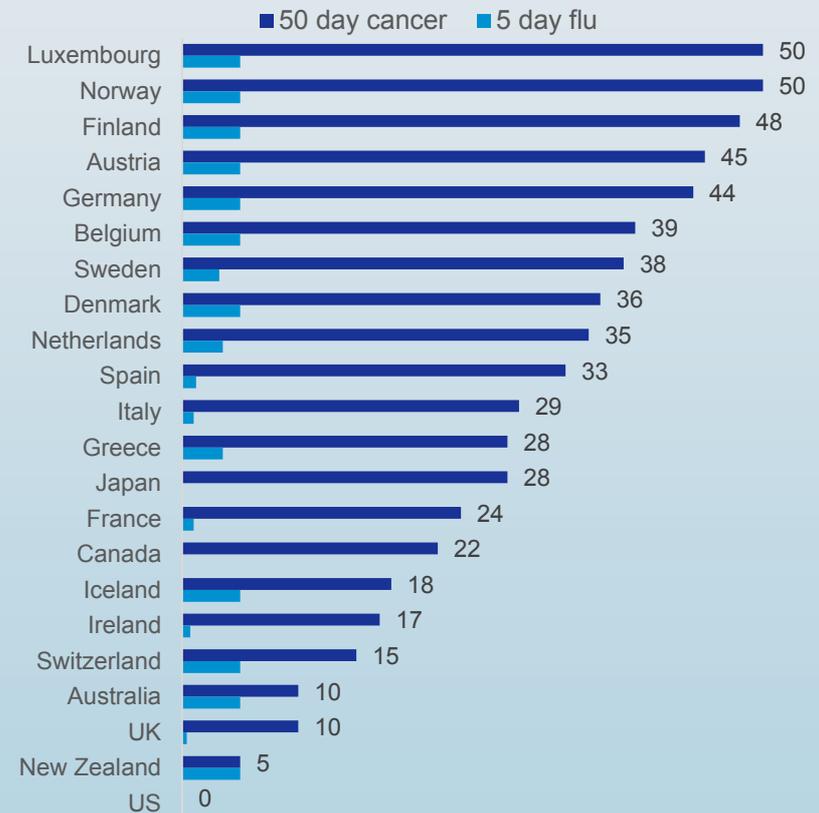


While thousands of schools are closing, and companies are implementing flexible work arrangements, DB's International Economist Torsten Slok has pointed out that "not all people can work from home", millions more hold multiple jobs, and many do not have paid sick leave arrangements

% share of US employment by occupation, 2018



Paid sick days and leave, worker at median earnings



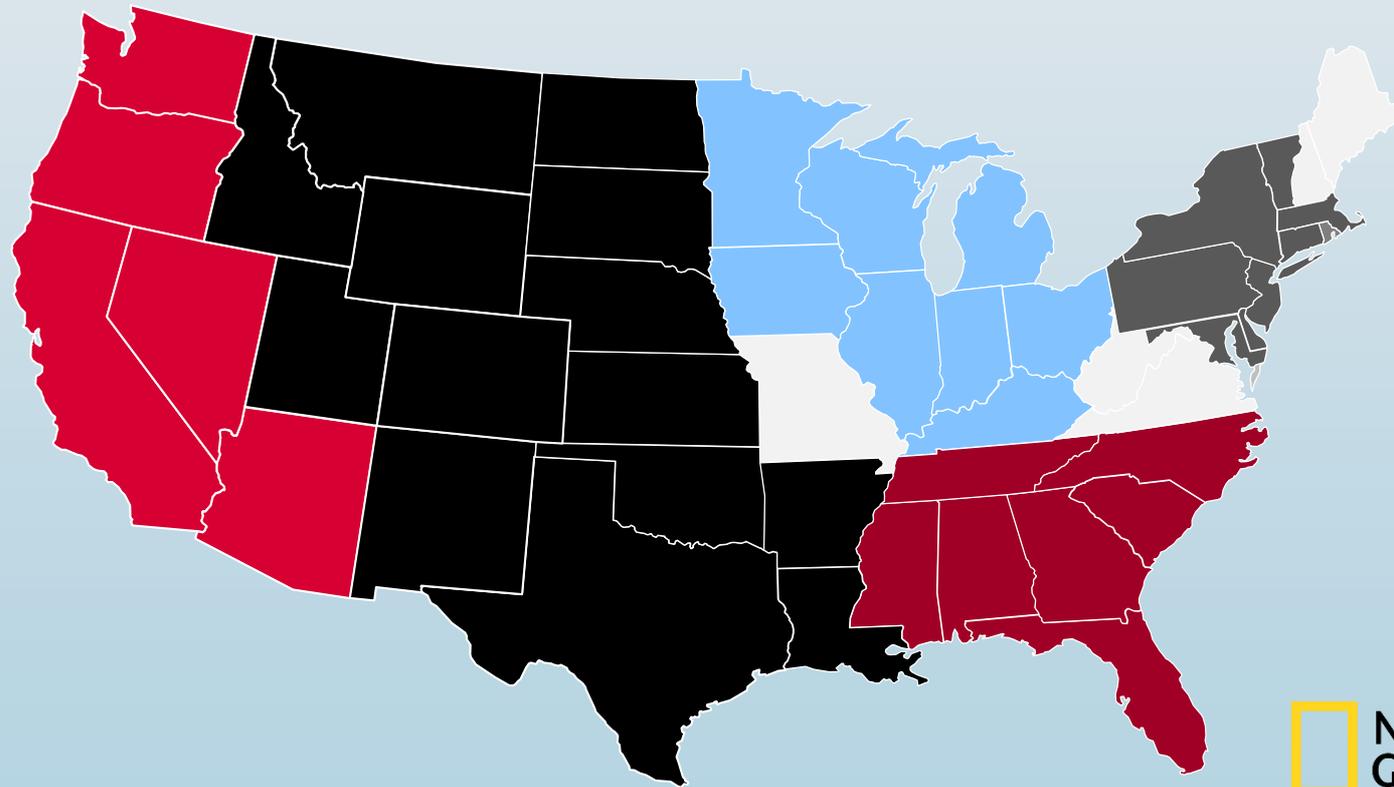
Source: (1-2) DB Global Markets Research (Slok). Center for Economic & Policy Research.

Potential National Quarantine in the US



If the number of US COVID-19 cases does not slow, and continues to double every 3 days, the US may have 100 million cases by May. While this is not likely, as cases surge in the weeks ahead, a national quarantine may become a necessity, not an option.

What would a 60 million person lockdown look like in the US? According to National Geographic, each of the colored areas in this US map represent regions similar in size to the 60 million person quarantine that both China (in Hubei province) and Italy (nation-wide) implemented in order to slow the national rate of transmission. To be sure, the task ahead is formidable.



Source: (1) National Geographic, Here's what a massive coronavirus lockdown would look like in the U.S.





The Economics of Stoppage

5

Social distancing and quarantines, though necessary, will be devastating for the millions of small businesses that form the backbone of the global and US economy. A wave of layoffs, missed rental payments and bankruptcies are likely to follow, even if governments move quickly to “bridge” this temporary but formidable disruption.

How to Calculate the Economics of Stoppage?



These statistics provide just a narrow numerical snapshot of impacted industries and jobs from COVID-19 in the United States only. The true impact, of course, entails 2nd and 3rd (and so on) derivative knock-on and multiplier effects.



4,723,000,000
global airline passengers annually

1,100,000,000
US hotel guest nights annually

129,400,000
live spectators at pro sports events
(MLB, NHL, NBA, NFL only)

30,000,000
US small businesses

10,600,000
US jobs generated by aviation industry

2,900,000
US waiters and waitresses

1,200,000
US airport employees

660,755
US restaurants

340,000
US certified personal trainers

132,853
US K-12 schools

130,000
US nail salons

116,000
US shopping malls

98,700
US flight attendants

62,602
US bars

54,200
US hotel properties

38,477
US fitness gyms

35,616
US coffee shops

34,563
US clothing stores

15,969
US live music venues

6,000
US yoga studios

5,833
US movie theaters

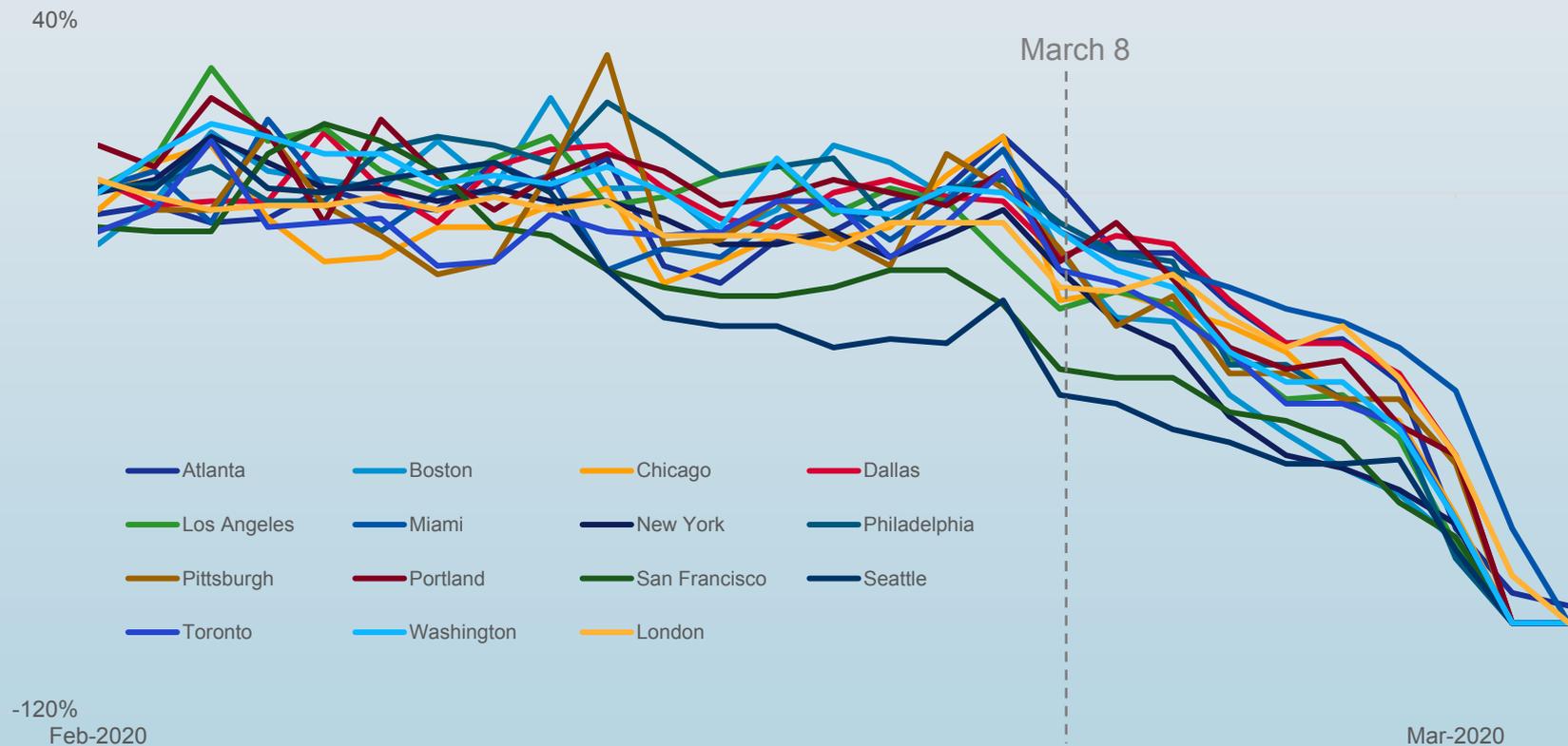
Source: Department of Education. Department of Commerce. Department of Transportation. Department of Labor. IBIS World. AHLA. FAA. Statista.

“Bridge” Required for Restaurants & Small Business



In a letter to the US Congress, the National Restaurant Association estimated a \$225bn decline in US restaurant revenue over the next 3 months, and a loss of 5-7 million jobs

y/y change in OpenTable diners



Source: (1) OpenTable Market Data. Jim Bianco Research. Data as of March 18, 2020.

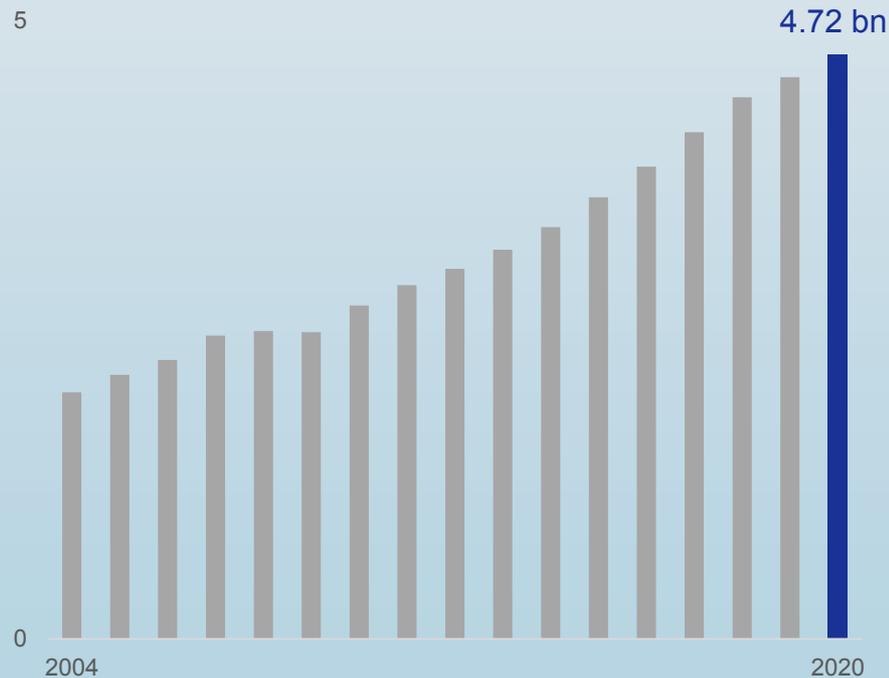
Transportation Industry Stoppage



The maximum containment policies, travel restrictions, social distancing practices and quarantines have also created a massive shock on transportation industries globally. For example, a significant economy has built up around the more than 1 billion airline passengers in the US each year, including the more than 10 million US jobs generated from aviation alone.

More than 4.7 bn passengers were expected to fly globally in 2020, prior to COVID-19

of passengers expected to fly globally, billions



Significant contraction is also underway across a broad range of private car, taxi and ride-sharing services

Weekly change in spending, nationwide

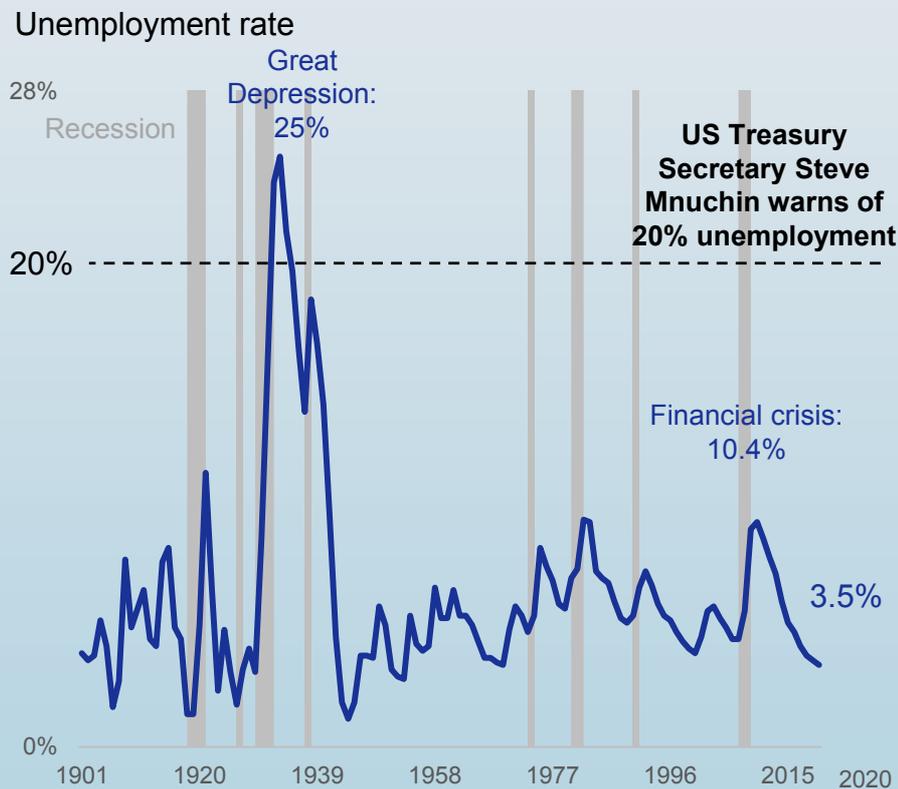


Source: (1) Statista. (2) Edison Trends.

Unemployment Could Rise to Historic Levels

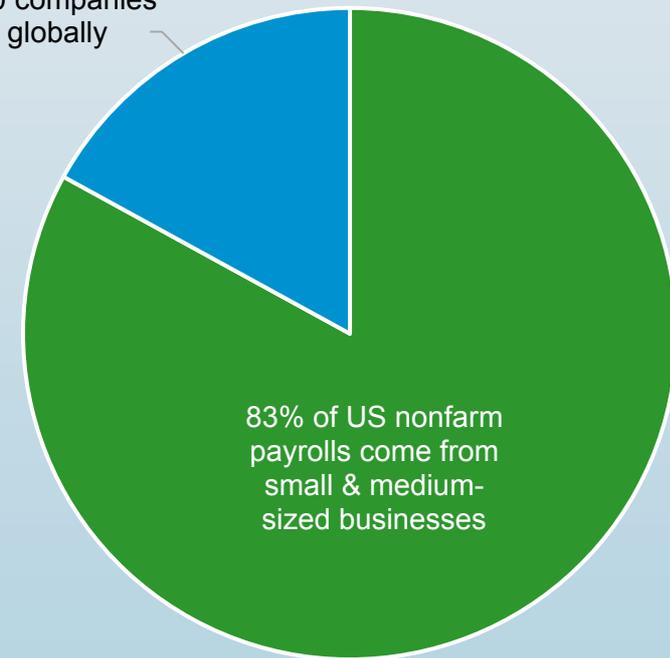


While US unemployment rose to 25% during the Great Depression in 1929, it has never risen above 11% in the post WW2 period (since 1948)



According to DB economist Torsten Slok, more than 83% of US employment comes from small and medium sized businesses

17% of US nonfarm payrolls come from S&P 500 companies globally



Source: (1) DB Global Markets Research (Ryan). BLS. Census. (2) DB Global Markets Research (Slok).





Severe Global Recession

6

DB's global economics research team is now forecasting a "severe global recession" as their baseline scenario for 2020, with contraction most acute in Asia in Q1, and across the US and Europe in Q2. The quarterly GDP declines anticipated exceed anything previously recorded going back to WWII, including the 2008 financial crisis.

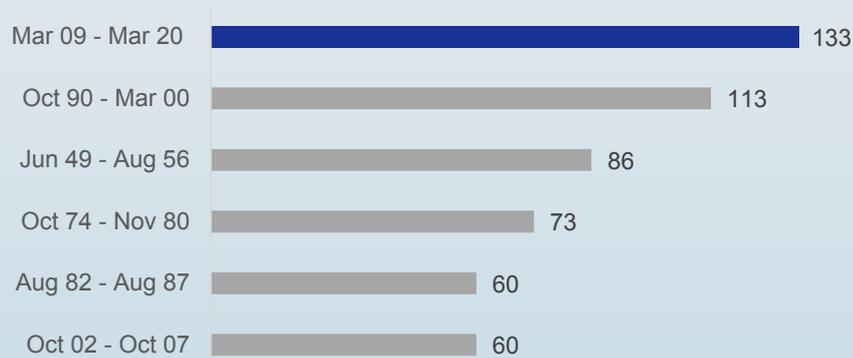
Longest US Cycle Ends in March 2020



The longest US business and economic cycle will end in March 2020. Defaults are rising quickly toward double digit levels, the equity bull market has ended, and the recession has begun.

The longest US equity bull market ever has ended

Longest US equity market cycles, # of months



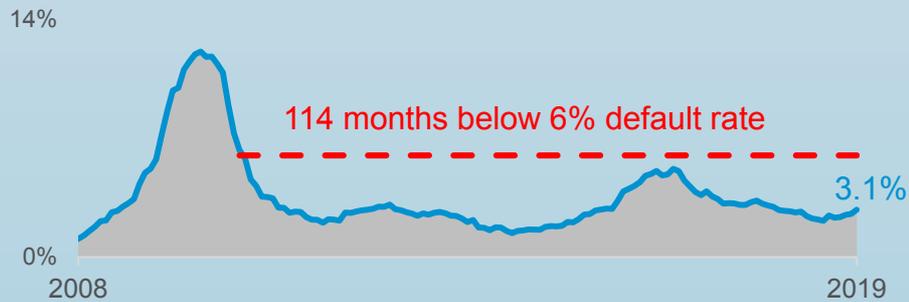
US recession has ended the longest economic cycle since 1850

34 US recoveries since 1854



The longest US credit cycle on record will also end in March, with HY defaults expected to rise above 10%

US default rates

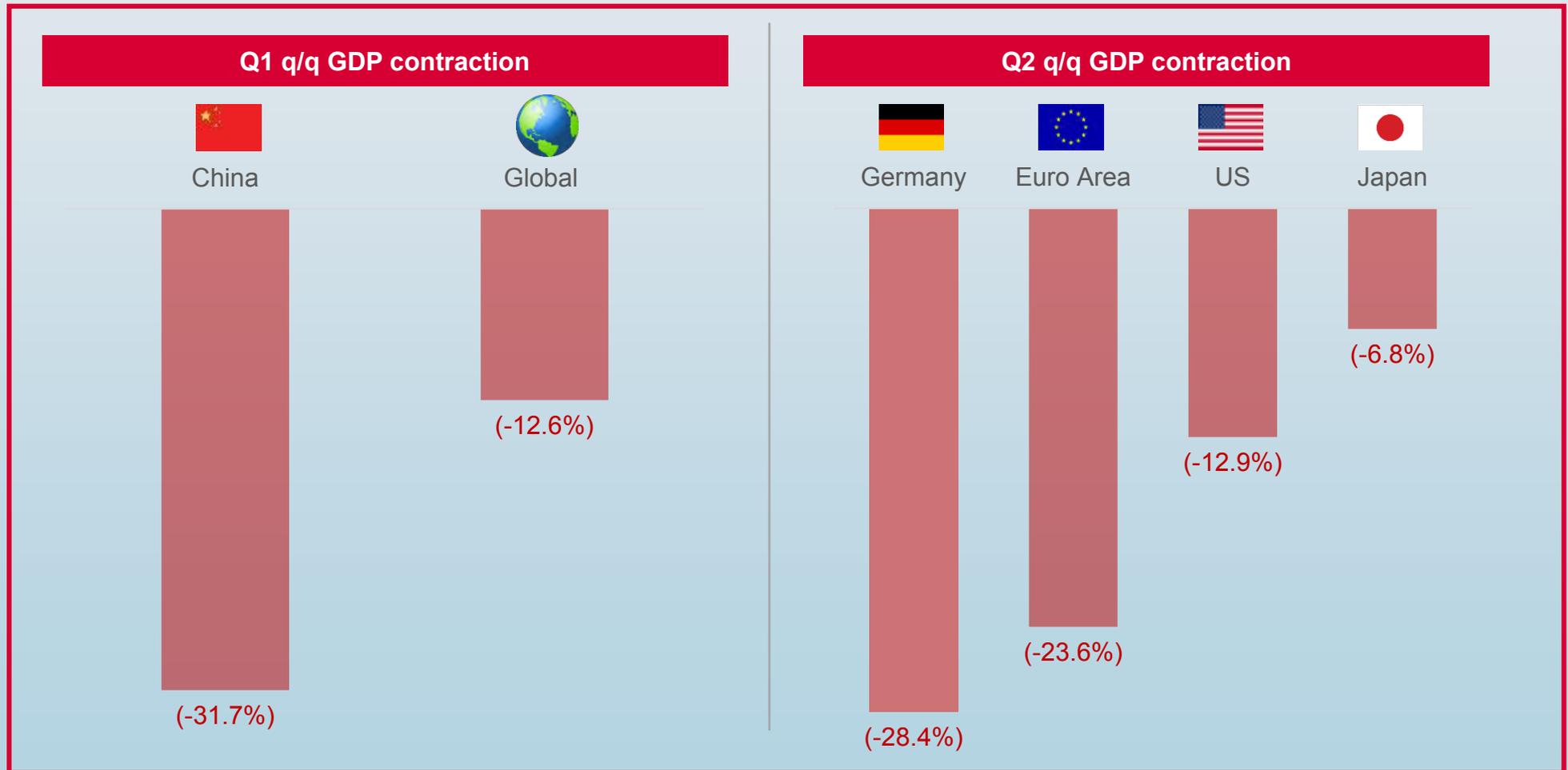


Source: (1) Bloomberg. Data as of March 20, 2020. (2) S&P Capital IQ. (3) NBER.

Historic Quarterly GDP Contraction



DB's global economics research team is now forecasting a "severe global recession" as their baseline scenario for 2020, with contraction most acute in Asia in Q1 and across the US and Europe in Q2. The quarterly GDP declines anticipated exceed anything previously recorded going back to WWII. In fact, the projected Q2 US decline is expected to be 50% larger than the (-8.4%) contraction during the financial crisis in Q4 2008.

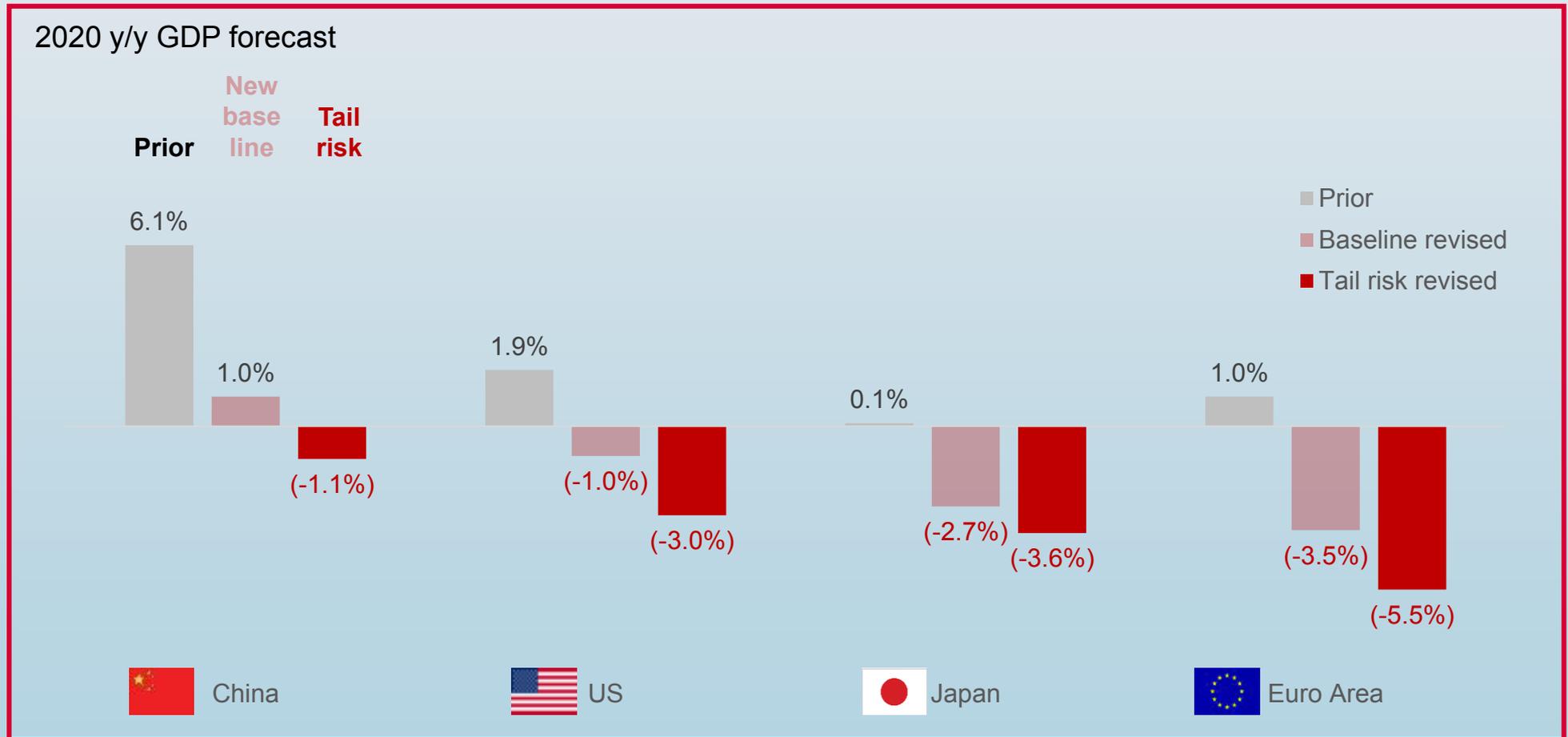


Source: (1) DB Global Markets Research (Economics) "Impact of COVID-19 on the global economy update 2: severe recession."

DB Forecasting Severe Global Recession



Given the large first half quarterly contractions, DB is now forecasting a substantial year over year recession in most major economies. This forecast, however, is predicated on an assumption that aggressive containment measures underway will “flatten the curve” and result in a “V-shaped” recovery in the 2H. The challenge, as DB’s Alan Ruskin notes, is that we may be too early in the descent of the “V” to accurately project what the recovery will look like.

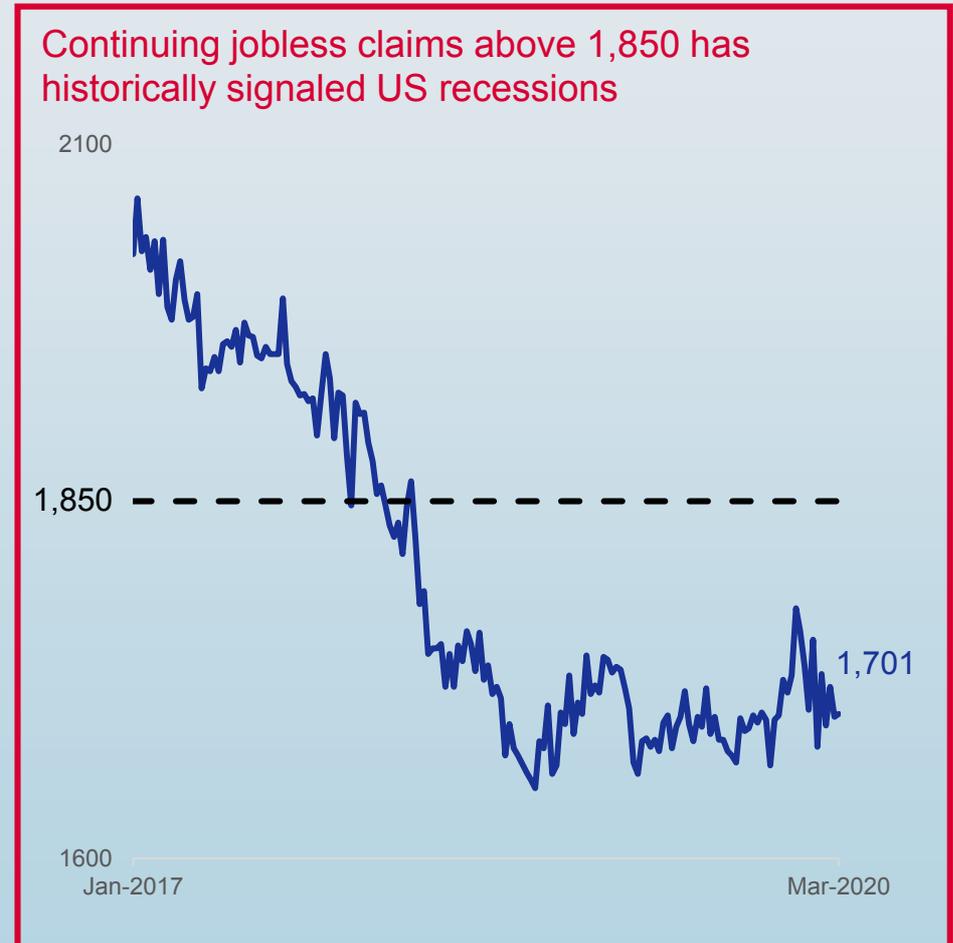


Source: (1) DB Global Markets Research (Economics).

High Frequency Recession Signals to Watch



 DB's US Economics team notes that weekly jobless claims are the single most reliable real time indicator of US recession. Jobless claims are now above recession thresholds, and are expected to surge in the weeks ahead.



Source: (1-4) DB Global Markets Research "US Econ monthly – A high frequency dashboard to track the COVID-19 impact" (Luzzetti, Weidner, Ryan). Bloomberg. Data as of March 19, 2020.





Dual Shock of “Oil Wars”

In yet another “black swan” event not anticipated just two months ago, Saudi Arabia and Russia delivered a concurrent “dual shock” to the global economy via “oil production wars” that have driven prices 50% lower. This, in turn, has precipitated a tightening of bank lending, reduced investor appetite, and high likelihood of an energy sector default cycle. DB has downgraded Brent forecasts to \$25 mid-year, with risks weighing more heavily to the downside. OPEC’s breakdown is likely to outlast the pandemic.



The Dual Shock of Oil Production Wars



While the current oil price decline is not as large as during the 2008 financial crisis, in terms of underlying fundamentals, the COVID-19 crisis has precipitated the largest oil “demand shock” in history, and if the Saudi-Russian stand-off continues, likely the largest “supply-shock” ever as well.

WTI

\$200



Source: (1) Bloomberg. Data as of March 19, 2020.

Dual Shock of “Oil Production Wars”

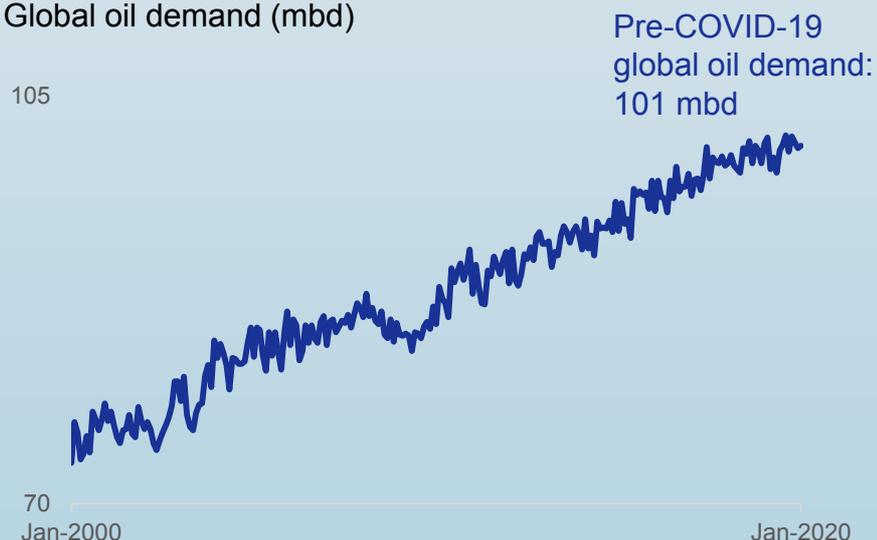


As noted by DB oil analyst Michael Hsueh, the simultaneous oil supply AND demand shock is both unprecedented and ill-timed for the global economy and markets. Hsueh is projecting a global surplus in Q2 of at least 6 mbd, a new record for oil markets in even the conservative scenario.

Oil Demand Shock

Following the shock of a 4 mbd reduction in oil demand from China in February, some analysts have warned of tail risk reduction for oil demand across Europe and the US combined at 10-12 mbd in April

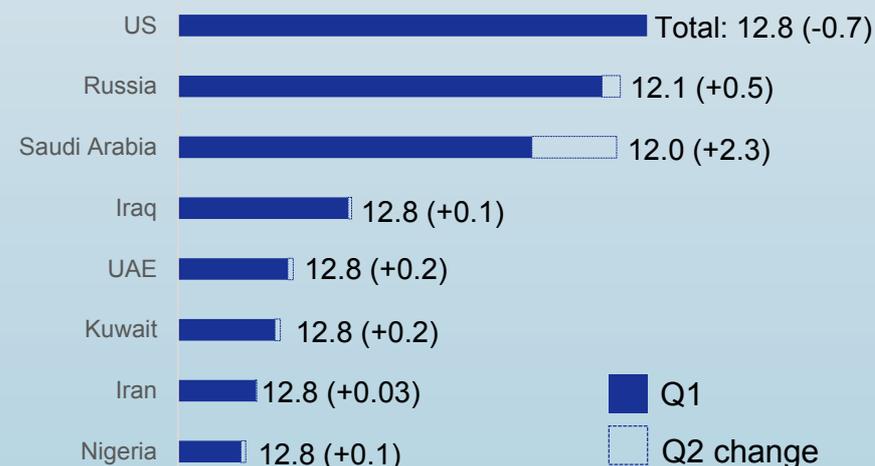
Global oil demand (mbd)



Oil Supply Shock

In contrast to Q4 2008 when OPEC cut production by 4.2 mbd, Saudi and other producers are poised to deliver in April the largest ever oil supply shock with an estimated 4.3 mbd of additional supply (2.6 mbd from Saudi alone)

Global crude production in Q1-Q2 2020, mbd



Source: (1-2) DB Global Markets Research (Hsueh). OPEC. IEA. Bloomberg. Data as of March 19, 2020.

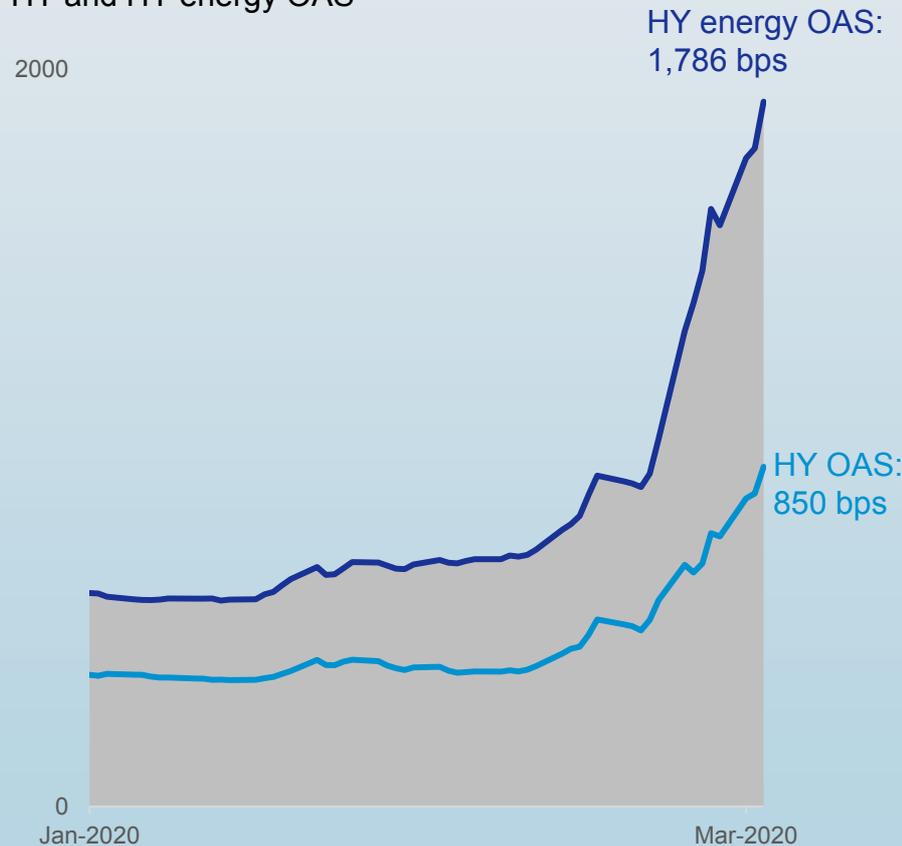
Energy Sector in Distress



The global energy sector is suffering from not only the COVID-19 induced demand shock, but also a supply glut from global energy wars. As a result, the HY Energy sector has reached all time record distress levels.

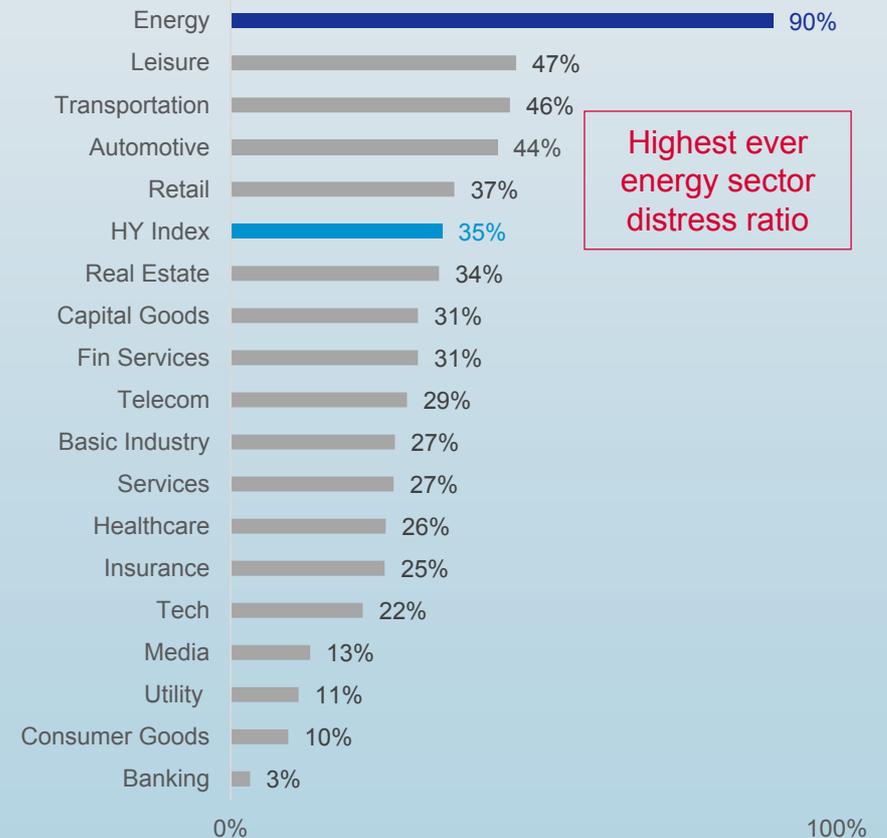
HY energy spreads have surpassed the 1,000 bps level common in recessionary periods

HY and HY energy OAS



Over \$155 bn dollars of high yield energy debt is trading at distressed levels (spread >1,000 bps)

% of HY index trading at distressed levels (% of face value)



Source: (1) Bloomberg. Data as of March 19, 2020. (2) CreditSights. Data as of March 19, 2020. DB Global Markets Research (Reid. Nicol).





Historic Risk Asset Volatility



8

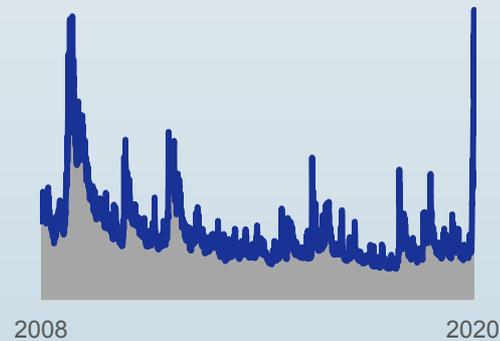
Global market volatility in March rose to levels seen only three times previously over the last century (2008, 1987, 1929).

Historic Surge in Volatility

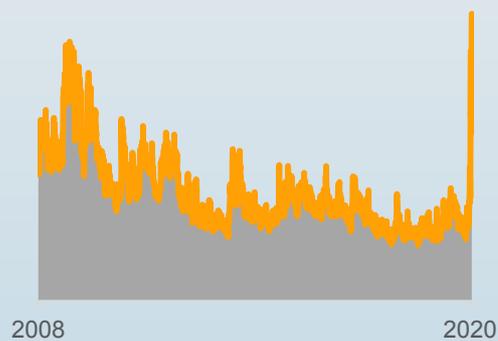


Over the last 100 years, there have only been 3 other occasions where volatility in global markets has spiked as quickly as in March 2020: the 2008 financial crisis, 1987 stock market crash, and the 1929 Great Depression

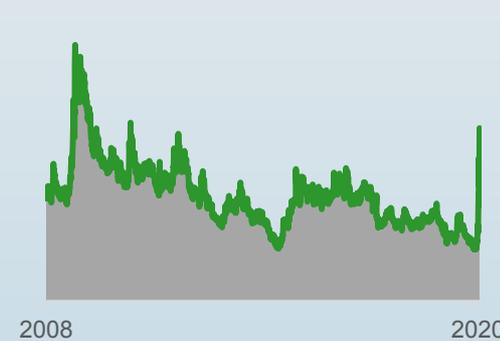
S&P 500 equity volatility (VIX)



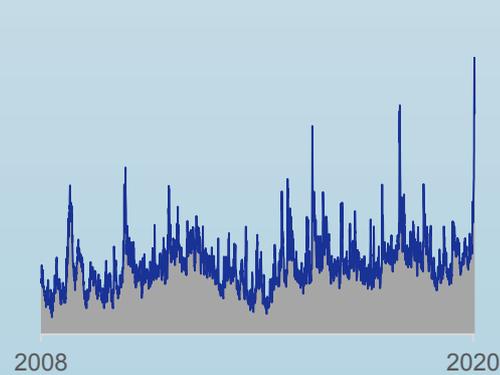
Treasury volatility (TYVIX)



Currency volatility (CVIX)



Volatility of Volatility (VVIX)



Rates volatility (MOVE)



Crude oil volatility (OVX)



Source: (1-6) Bloomberg. Data as of March 19, 2020.

Selloffs Triggering S&P 500 Circuit Breakers



The SEC mandated the creation of equity market circuit breakers after the 1987 crash. On March 18, the S&P 500 triggered a circuit breaker at the 7% decline threshold for the 4th time in 10 days. As of March 18, the Level 2 and Level 3 circuit breakers have never been tripped. For large single name stocks, a temporary trading pause is triggered if a 5% up or down swing occurs in less than 5 minutes. On Thursday, March 12, 781 such single name trading pauses occurred.

S&P 500 circuit breakers



Source: DB Capital Markets Strategy.

Fastest Equity Market Correction on Record



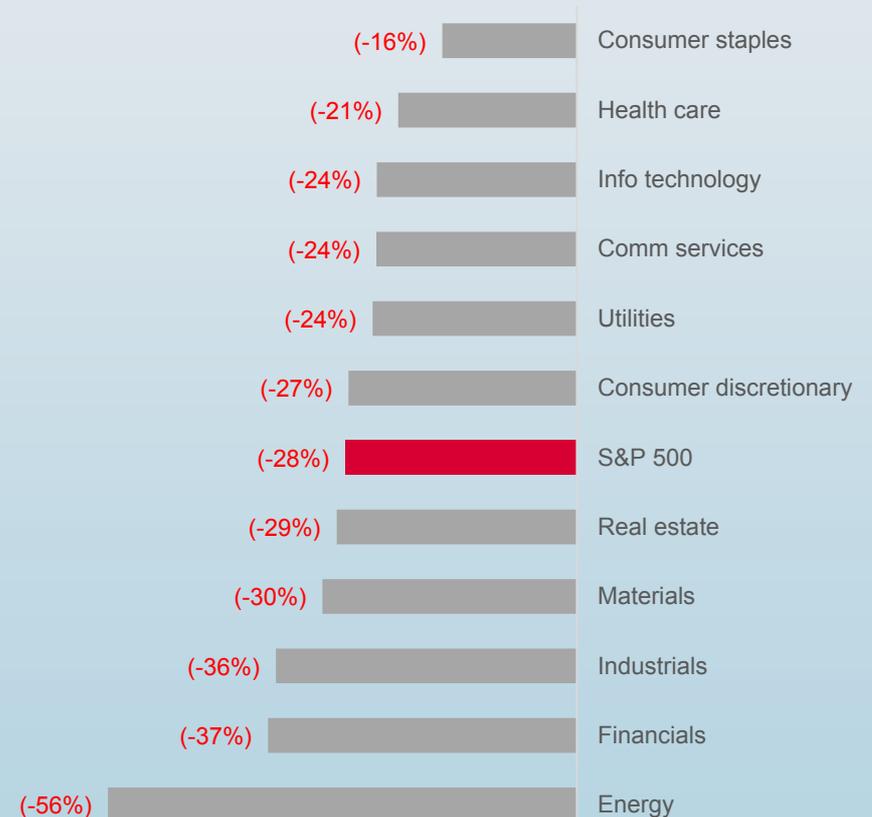
After trading to new record highs in January, the longest equity bull market in US history has ended, with a historic peak to trough decline of 30%

Global equities have declined \$25 trillion in the last 3 weeks

World equity market capitalization



S&P 500 performance, by sector since January 23rd



Source: (1-2) Bloomberg. Data as of March 19, 2020.

Corporate Credit Market Distress



March MTD ranks as the worst total return month for USD corporate credit since 1986

Worst monthly total returns since September 1986

	HY	Date	IG	Date
1.	(-17.0%)	Mar 2020	(-12.9%)	Mar 2020
2.	(-16.3%)	Oct 2008	(-7.4%)	Oct 2008
3.	(-8.4%)	Nov 2008	(-7.3%)	Sep 2008
4.	(-8.3%)	Sep 2008	(-4.2%)	Jul 2003
5.	(-7.7%)	Jun 2002	(-3.1%)	Apr 2004
6.	(-6.9%)	Sep 2001	(-3.1%)	Apr 1987
7.	(-5.0%)	Aug 1998	(-2.8%)	Jun 2013
8.	(-4.6%)	Aug 1990	(-2.7%)	Nov 2016
9.	(-4.1%)	Sep 1990	(-2.6%)	Feb 1999
10.	(-4.0%)	Aug 2011	(-2.5%)	Mar 1994
11.	(-3.9%)	Jul 2002	(-2.4%)	Sep 1987
12.	(-3.8%)	Nov 2000	(-2.3%)	Feb 1996
13.	(-3.6%)	Sep 2011	(-2.3%)	May 2013
14.	(-3.5%)	May 2010	(-2.3%)	Feb 1994
15.	(-3.5%)	Feb 2009	(-1.9%)	Nov 2011

3 of the 5 largest USD investment grade bond outflow weeks on record have occurred in March 2020

IG fund flows, USD bn

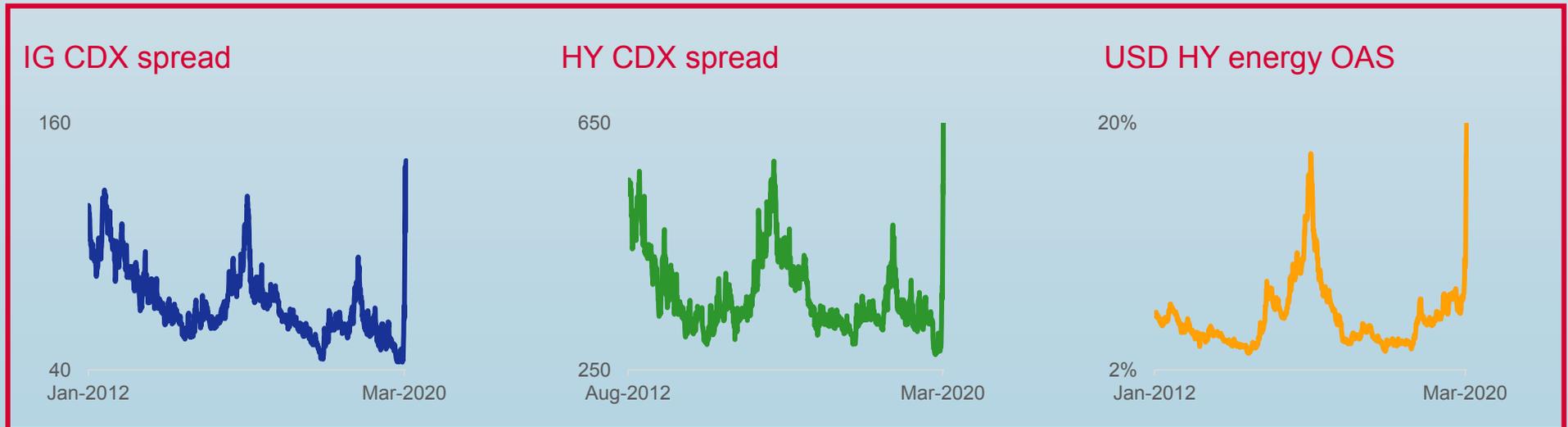
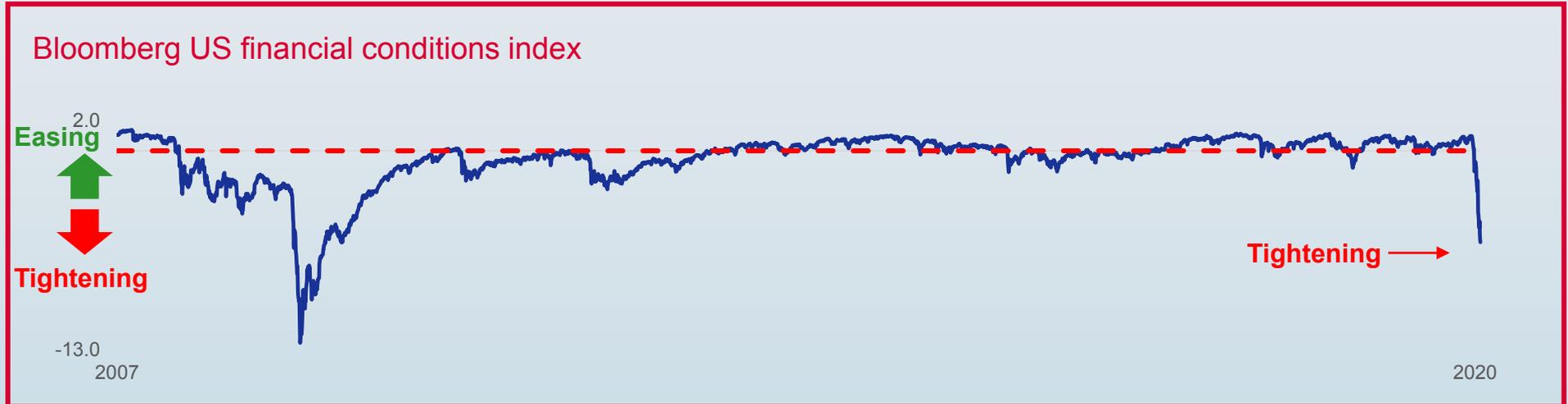


Source: (1) CreditSights. (2) Bloomberg. Data as of March 19, 2020.

Sharp Tightening of Financial Conditions



The sharp selloff in credit has been the primary driver of financial conditions tightening, as well as the primary channel of market distress transmission to the real economy.



Source: (1-4) Bloomberg. Data as of March 19, 2020.





Funding Market Dislocations



The scale of global de-risking and fear has led to broad-based selling across virtually all asset classes, including USTs and gold. With insufficient market liquidity and a USD funding squeeze creating acute stress in global markets, the Fed and other policy makers globally have reopened the crisis era playbook.

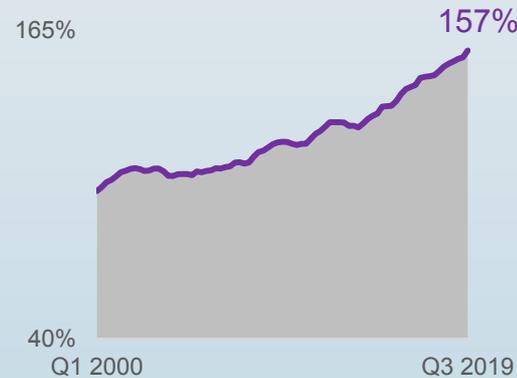
Rising Corporate Debt as Vulnerability



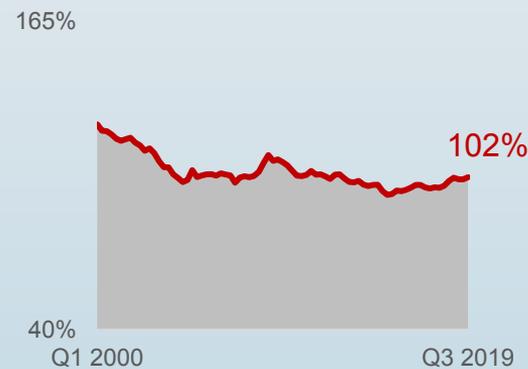
Sharply rising corporate (non-financial) debt, especially since the financial crisis, has created a backdrop of vulnerability to the magnitude of the economic and market shock of the COVID-19 crisis.

Non-financial debt to GDP, %

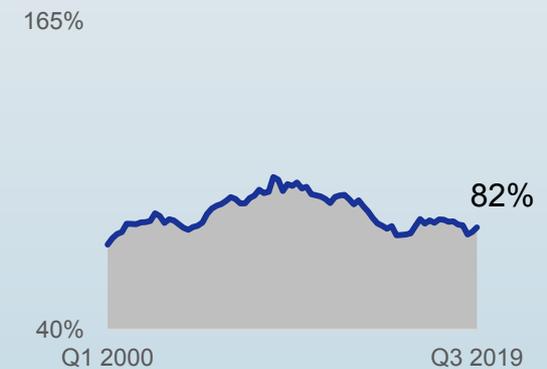
 **France**



 **Japan**



 **United Kingdom**



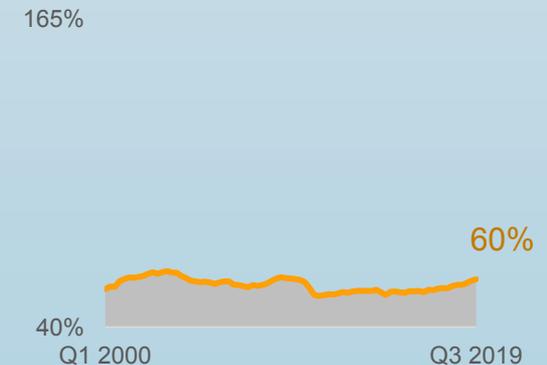
 **United States**



 **Italy**



 **Germany**

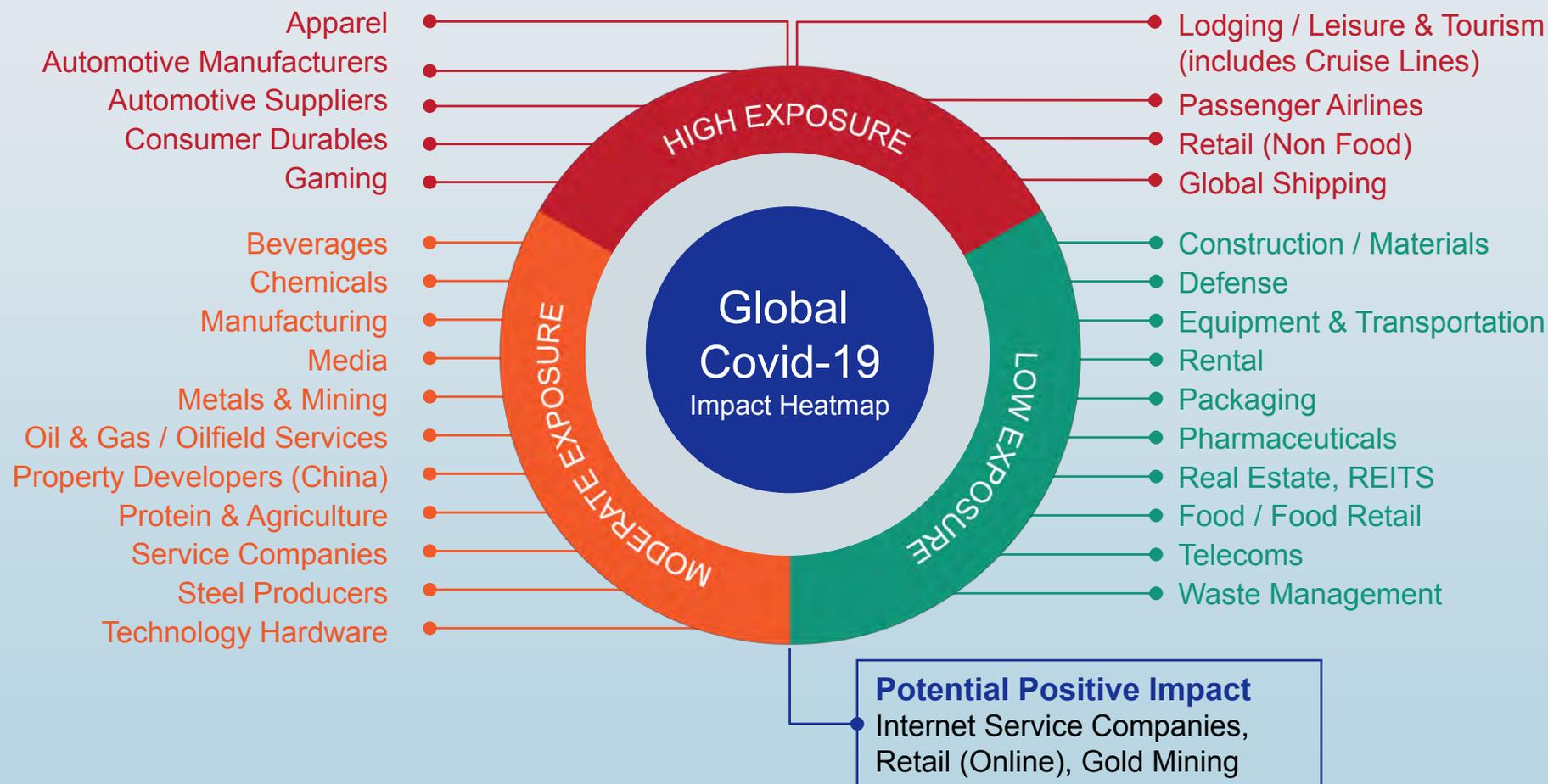


Source: (1-6) IIF.

The COVID-19 Heat Map



COVID-19 induced economic disruption will disproportionately impact some industry sectors more than others



Source: Moody's, Covid-19 Impact Heatmap, Coronavirus hurts travel-driven sectors, disrupts supply chains

MOODY'S

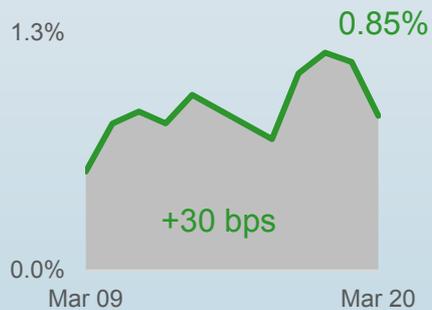
Liquidity & Rising Deficit Concerns



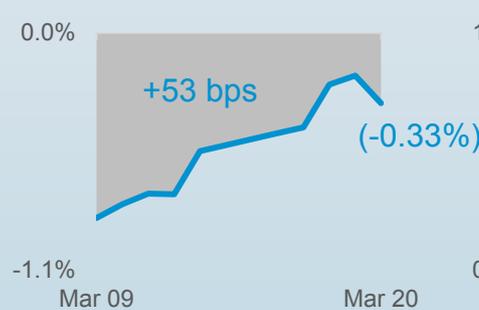
During the market dislocation, sovereign bond yields rose significantly as investors sold global assets indiscriminately, illiquidity became a problem, and larger fiscal deficits loomed large on the horizon. Fortunately, bond yields globally began a return to normalcy on Friday, March 20 as a result of the formidable global central bank policy response.



10 yr UST



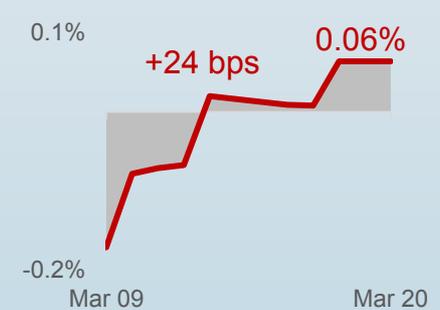
10 yr Eurozone gov't bond



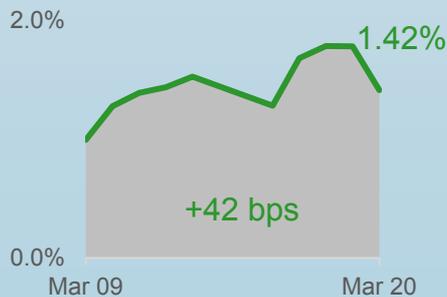
10 yr UK Gilt



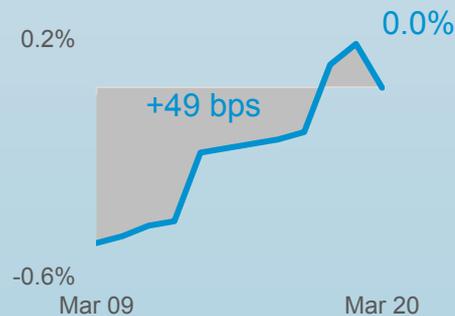
10 yr Japan gov't bond



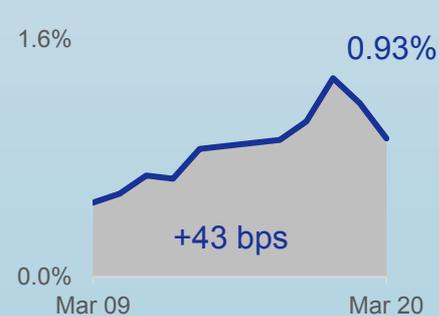
30 yr UST



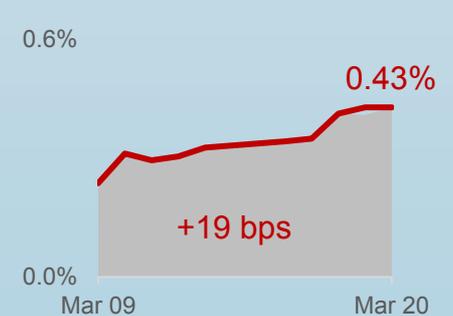
30 yr Eurozone gov't bond



30 yr UK Gilt



30 Japan gov't bond



Source: (1-8) Bloomberg. Data as of March 20, 2020.

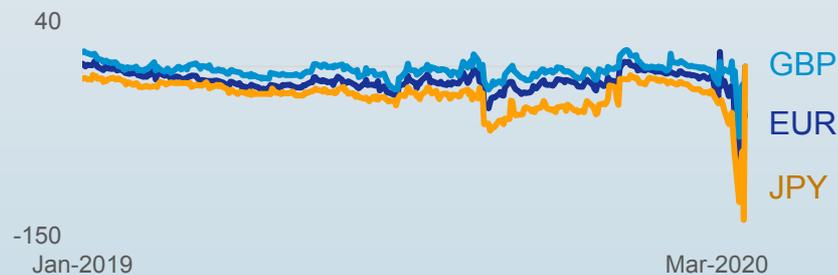
Addressing the USD Funding Shortage



DB FX Strategist George Saravelos notes that the shortage of USD in a dollar-based global financial system is structural in nature, a function of stress in the real economy. The global USD funding squeeze has continued despite Fed policy pivots to mitigate.

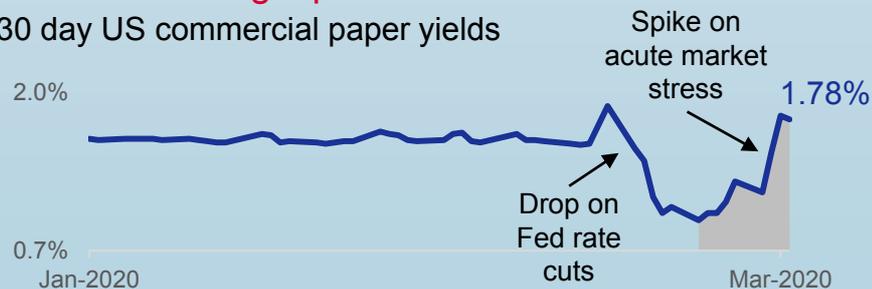
Cross currency swaps into USD have become significantly more expensive

3 month cross-currency basis



With its high percentage of non-US issuers, a spike in the 30 day US CP yields highlights the strength of the USD funding squeeze

30 day US commercial paper yields



Key considerations

The Challenge

- Caused by real economy stress and rising corporate default risk
- Banks, companies and market participants hoarding USDs
- USD disconnected from fundamentals, volatility extreme
- USD strength to continue until real economy stress declines

The Solution

- Fed now offering USD swap lines to 14 major Central Banks
- Fed backstopping CP market, widely used by non-US companies
- \$700bn QE and other programs to bring liquidity to the market
- Time required to stabilize liquidity and markets may take longer than during the 2008 GFC

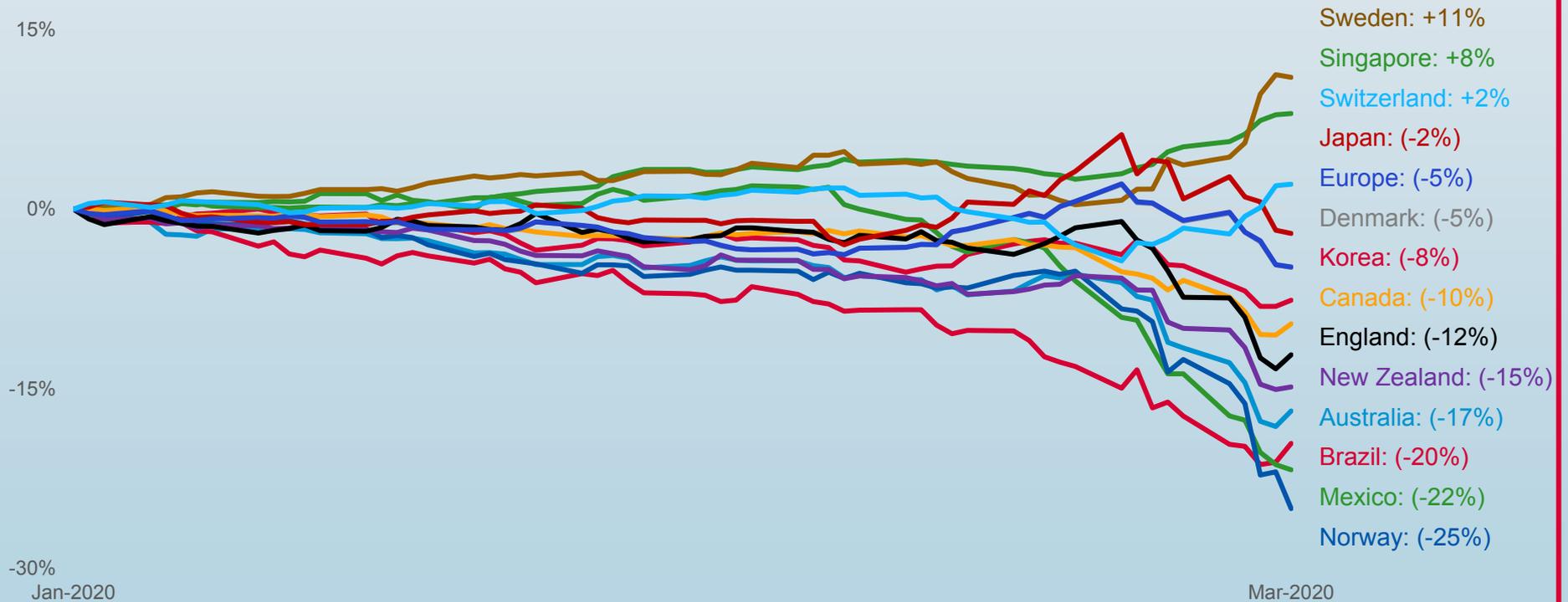
Source: (1-2) Bloomberg. Data as of March 19, 2020.

Dollar Strength Symptomatic of Stress



According to DB FX Strategist Alan Ruskin, US Dollar strength is symptomatic of stress, but it also causes stress by tightening US financial conditions and the pressure on EMFX. Dollar strength will continue so long as liquidity induced market dislocations and acute stress continue. As of March 20, the Fed has announced USD swap lines with 14 central banks globally. In addition, the Fed and 5 other large global central banks (ECB, BOJ, SNB, BOE and BOC) announced on March 20 an increase in frequency of 7 day swap lines from weekly to daily through the end of April.

Change this year in each country's currency against the dollar



Source: (1) Bloomberg. Data as of March 20, 2020.





Crisis Era Playbook

10

The severity of global market stress has to some degree overwhelmed the reintroduction of crisis era programs, many of which will take days and weeks to restore orderly functioning of markets.

The \$15 Trillion US Crisis Era Playbook (2008-9)



The Fed and US Treasury have begun tapping into many pieces of their 2008-2009 crisis era playbook to address COVID-19 related market dislocations

Breakdown of \$15 trillion US government initiatives by agency and program – as of March 2009

Being used again

Federal Reserve (\$7.4 trn)		
\$ (bn)	Max	Usage
CP Funding Facility (CPFF)	1,800.0	350.0
Term Auction Facility (TAF)	900.0	468.6
Term ABS Loan Facility (TALF)	1,000.0	200.0
Currency Swaps / Other Assets	602.0	377.8
Money Market Investor Funding Facility (MMIFF)	540.0	0.0
MBS Purchase Program	1,250.0	308.4
US Treasury Purchase Program	300.0	15.0
Term Securities Lending Facility (TSLF)	250.0	150.0
AIG Credit Extensions	103.3	89.3
GSE Debt Purchase Program	200.0	50.4
Primary Credit Discount	110.7	61.3
Primary Dealer and Others (PDCF)	147.0	150.0
Maiden Lane LLC (Bear Stearns)	29.5	27.6
ABCP Money Market Fund Liquidity (AMLF)	152.1	150.0
Securities Lending Overnight	10.0	4.6
Secondary Credit	0.2	0.0
Subtotal	7,394.8	2,403.0

Treasury (\$5.2 trn)		
\$ (bn)	Max	Usage
Money Market Mutual Funds	3,000.0	0.0
New Stimulus Package	787.0	787.0
Troubled Asset Relief Program (TARP)	700.0	565.5
Capital Assistance Program (CAP)	--	0.0
Fannie Mae / Freddie Mac Bailout	400.0	44.8
Prior Stimulus Package	168.0	168.0
Student Loan Purchases	60.0	0.0
Treasury Exchange Stabilization Fund (ESF)	50.0	50.0
Tax breaks for banks	29.0	29.0
Subtotal	5,194.0	1,644.3

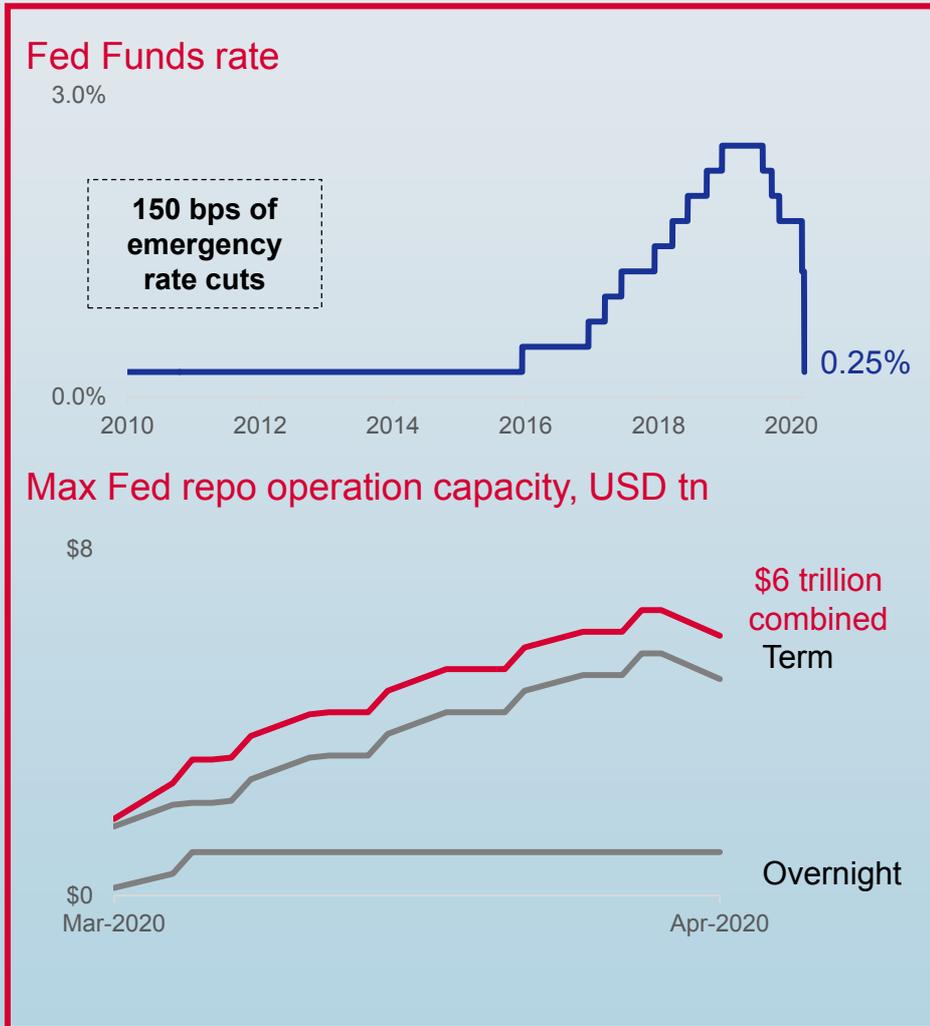
FDIC (\$2.3 trn)		
\$ (bn)	Max	Usage
Public-Private Investment Program (PPIP)	1,000.0	22.0
Debt Guarantees for TLG Program	940.0	226.0
Asset Guarantee to Citigroup / Bank of America	346.5	346.5
Subtotal	2,286.5	594.5

Source: Fed, FDIC and Treasury websites. Usage data a mix of peak and data as of March 2009.

Fed Re-Opens Crisis Era Playbook



While it is important that the Fed has reopened its crisis era playbook, it may take some time for these programs to begin working effectively. Thus far, the Fed crisis era programs have struggled to restore orderly markets given the speed of de-risking and magnitude of fear in the market.



Announced policy changes

- 1 150 bps of emergency rate cuts
- 2 Bank reserve requirements reduced to 0%
- 3 Discount window loan tenors extended to 90 days
- 4 \$700 bn of asset purchases (\$500bn UST, \$200bn MBS)
- 5 \$6.5 trillion of REPO facilities; tenor extended to 1 and 3 month tranches
- 6 Reopened CPFF for commercial paper
- 7 Reopened PDCF for primary dealers
- 8 Backstopping money markets with MMLF
- 9 USD swap lines opened with 14 Central Banks; maturities extended and costs reduced to OIS + 25bps
- 10 Support for US municipal bond market

What may be next?

- 1 Reopen TALF for ABS markets
- 2 Relaxing leverage limits and accounting rules to encourage lending
- 3 Purchases of corporate bonds (would require Congressional approval)

Source: (1) Bloomberg. Data as of March 19, 2020. (2) DB Global Markets Research (Zeng). Data as of March 20, 2020.



The Commercial Paper Market



In an effort to ease liquidity strains in the US financial markets, the Fed used its “unusual and exigent circumstances” powers to re-launch programs from the 2008 crisis era policy toolkit

Commercial Paper Financing Facility

2008 Facility	Announced Date	<ul style="list-style-type: none"> October 14, 2008
	Purpose	<ul style="list-style-type: none"> Alleviate liquidity pressure in CP market as a result of runs on money market mutual funds
	Mechanics	<ul style="list-style-type: none"> Federal Reserve establishes Special Purpose Vehicle (SPV) → SPV purchases three-month unsecured and asset back CP directly from CP issuers → Fed makes three-month loans to SPV matching terms of the CP acquired
	Eligible Users	<ul style="list-style-type: none"> Active US CP issuers (including US issuers with foreign parent) CP rated at least A-1/P-1/F-1
	Pricing	<ul style="list-style-type: none"> Three-month OIS + 100 bps + 100 bps credit enhancement fee Initial fee of 10 bps of the maximum amount of commercial paper that it could issue to the CPFF LLC
	Total Usage	<ul style="list-style-type: none"> \$738 bn in total lending
	Termination Date	<ul style="list-style-type: none"> February 1, 2010 (final maturity April 26, 2010)
2020 Facility	Re-Opening Announcement	<ul style="list-style-type: none"> March 17, 2020
	2020 Key Terms	<ul style="list-style-type: none"> Treasury to provide Fed with \$10 bn of credit protection via the Exchange Stabilization Fund Structure and eligible issuers mimics 2008 facility
	Pricing	<ul style="list-style-type: none"> 3-month OIS + 200 bps
	Purchase Limit	<ul style="list-style-type: none"> Max amount of issuer’s outstanding USD-denominated CP between March 16, 2019 and March 16, 2020
	Announced End Date	<ul style="list-style-type: none"> March 17, 2021

Source: Davis Polk. “Republication: 2009 Financial Crisis Manual: A Guide to the Laws, Regulations and Contracts of the Financial Crisis, with Updated 2020 Introduction” March 16, 2020. “Fed Moves to Shore Up Commercial Paper Markets” March 17, 2020



Primary Dealer Liquidity



Primary Dealer Credit Facility (PDCF)

2008 Facility	Announced Date	<ul style="list-style-type: none"> March 16, 2008
	Purpose	<ul style="list-style-type: none"> Provide temporary overnight liquidity via secured loans to primary dealers. Ease the severe strains in the triparty repo market and subsequent liquidity pressures for primary dealers
	Eligible Users	<ul style="list-style-type: none"> Initially US primary dealers, including large investment banks Extended to London-based broker-dealer subsidiaries of large US institutions
	Eligible Collateral	<ul style="list-style-type: none"> Initially restricted to all collateral eligible for pledge in open market and investment-grade corporate securities, Munis, MBS and ABS priced by clearing banks Expanded to include eligible collateral in tri-party repurchase agreement programs of the two major clearing banks
	Peak Usage	<ul style="list-style-type: none"> \$150 bn / day (in October 2008)
	Termination Date	<ul style="list-style-type: none"> Feb 1, 2010
2020 Facility	Re-Opening Announcement	<ul style="list-style-type: none"> March 17, 2020
	2020 Key Terms	<ul style="list-style-type: none"> Overnight and up to 90-day term funding Eligible collateral: investment-grade corporate debt, Commercial Paper, Munis MBS, ABS and equities
	Pricing	<ul style="list-style-type: none"> Applicable rate for discount window (0.25%)
	Announced End Date	<ul style="list-style-type: none"> “At least six months”, starting from March 20, 2020

Source: Davis Polk. "Republication: 2009 Financial Crisis Manual: A Guide to the Laws, Regulations and Contracts of the Financial Crisis, with Updated 2020 Introduction" March 16, 2020.



Money Market Mutual Funds



The Fed announced a new Money Market Mutual Fund Liquidity Facility (MMLF) in order to help funds meet redemption demands

Fed's MMLF Program

Program Mechanism Banks and primary dealers can buy CP from money market funds and take out a loan at the Fed for the equal term of the CP

Pricing Primary credit rate + 100 bps (1.25%)

Eligible Collateral US treasuries, agency securities, CP

Credit Protection Treasury provides \$10 billion in credit protection

Scheduled End Date September 30, 2020

Money Market Fund assets have grown to \$4 tn

Money Market Fund Net Assets (USD tn)



Source: DB Global Markets Research (Zeng). Federal

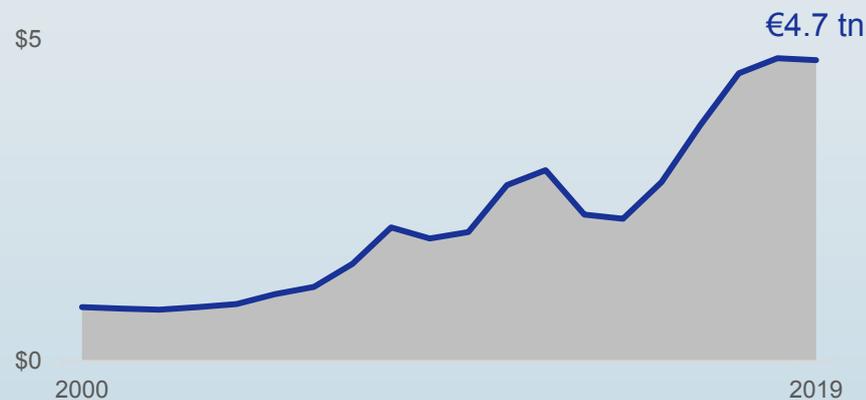


ECB Opens Euro Crisis Playbook

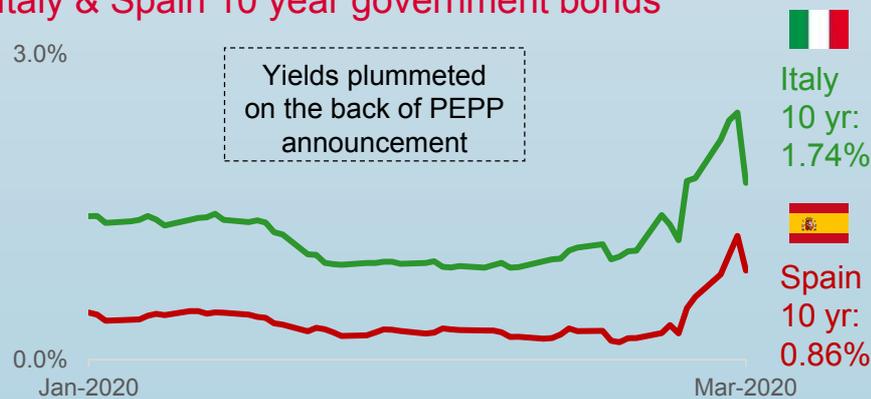


The ECB has commitment to do “everything necessary” to combat the impact of the COVID-19 crisis, including potentially upsizing announced purchase programs

ECB balance sheet, Euro tn



Italy & Spain 10 year government bonds



ECB crisis action in March 2020

- 1 **EUR 750 bn Pandemic Emergency Purchase Program (PEPP)**
 - Run through at least 2020
 - Implies increase in monthly bond purchases from EUR 30 bn to EUR 105 bn*
 - CP added as eligible asset for purchase program
 - Capital Key still benchmark for allocation but purchases to be done with “flexibility” and allowing for “fluctuations”
 - Waiver of eligibility requirements for Greek gov’t debt
- 2 **EUR 120 bn temporary increase to Asset Purchase Program**
 - Issuer limit constraints were unchanged
- 3 **Up to EUR 1.2 tn TLTRO III program announced**
 - Interest rate set 25 bps below refi operations between June 2020 and June 2021
- 4 **Opted not to cut the deposit rate further into negative territory**

Source: (1-2) ECB. Bloomberg. Data as of March 19, 2020. DB Global Markets Research (Yared. “Whatever it (finally) takes”. March 19, 2020). CreditSights (“ECB Copies Fed; Announces Its Own Bazooka”. March 19, 2020). *EUR 105 bn assumes PEPP program is in addition to existing framework. Monthly purchases would be closer to EUR 75 bn if PEPP replaces existing framework.





Global Policy Response



While the size of the monetary and fiscal response globally has been formidable, the more important “virus response” has lagged by comparison. Further, while the global fiscal stimulus announced is already the largest on record, the speed and precision required to “bridge” millions of SMEs globally will be very difficult to execute.

Global Policy Response to COVID-19



The world's largest economies have already announced stimulus in excess of 2% of GDP, larger than that pledged during the 2008 financial crisis

Country	Virus response	Monetary response	Fiscal response
 US	<ul style="list-style-type: none"> Global travel warning raised to Level 4 (highest level) Flight bans and Canadian & Mexican border closures 	<ul style="list-style-type: none"> 150 bps rate cut \$700 bn in asset purchases Various credit liquidity and funding facilities Up to \$6.5tn repo facility 	<ul style="list-style-type: none"> \$1.3-\$1.5 tn (>6% of GDP) stimulus package expected
 Europe	<ul style="list-style-type: none"> 30 day travel ban for non EU residents 	<ul style="list-style-type: none"> EUR 1.2 tn additional TLTRO III EUR 750 bn bond purchase program EUR 120 bn asset purchases 	<ul style="list-style-type: none"> Relaxed fiscal rules <ul style="list-style-type: none"> Germany: 1% of GDP package expected Italy: EUR 1.5 bn (1.5% of GDP) assigned to COVID-19 spending France: EUR 45 bn (1.9% of GDP) emergency fiscal spending Spain: EUR 17 bn (1.4% of GDP) spending & EUR 100 bn (8% of GDP) public guarantees
 China	<ul style="list-style-type: none"> Nearly 60 million person lockdown of Hubei province 	<ul style="list-style-type: none"> RRR rates cut by at least 100 bps MLF rate cut by 15 bps RMB 800 bn (USD 113 bn) refinancing for banks to lend to large corporations 	<ul style="list-style-type: none"> 3% of GDP fiscal response expected
 Japan	<ul style="list-style-type: none"> Restricted travel from corona-affected areas 	<ul style="list-style-type: none"> ETF, CP and corporate bond purchase programs extended 	<ul style="list-style-type: none"> JPY 10-15 tn (USD 91-137 bn) (1.8%-2.7% of GDP) supplementary budget expected
 UK	<ul style="list-style-type: none"> "Advising against" non-essential travel 	<ul style="list-style-type: none"> 65 bps rate cut GBP 200 bn corp bond purchases Numerous credit facilities 	<ul style="list-style-type: none"> GBP 330 bn (15% of GDP) loan guarantees for business GBP 30 bn (1.5% of GDP) fiscal support package
 Canada	<ul style="list-style-type: none"> Closed borders to non-essential travel 	<ul style="list-style-type: none"> 100 bps rate cut New Bankers' Acceptance Purchase Facility 	<ul style="list-style-type: none"> 3% of GDP fiscal package announced
 South Korea	<ul style="list-style-type: none"> Large scale virus testing Travel restrictions to / from China 	<ul style="list-style-type: none"> 7 day repo rate cut by 50 bps Bank Intermediated Lending Support Facility rate lowered from 0.50-0.70% to 0.25% 	<ul style="list-style-type: none"> KRW 11.7 tn (USD 14 bn) (0.6% of GDP) containment budget KRW 50 tn (USD 38 bn) (3%) of GDP small business assistance

Source: DB Global Markets Research (Hooper, Luzzetti, Spencer, Wall, Koyama, Lee, Schneider, Slok, Xiong, Dasgupta. "Impact of Covid-19 on the global economy Update 2: Severe recession" March 18, 2020. "COVID-19 List of monetary and fiscal policy responses by G20 economies". Wall, Sidorov, Reid, Allen, Bhattacharya. March 19, 2020).

Country Specific COVID-19 Policy Responses



China

Monetary Policy Response

- Multiple targeted RRR cuts (at least 100 bps) bringing effective rate to 11% for large banks and 9% for medium-sized banks (RMB 550 bn in liquidity)
- MLF rate cut by 15 bps
- RMB 800 bn in refinancing provided for banks to lend to large corporates
- PBoC instructed financial institutions to extend repayment period of loans for SMEs

Fiscal Policy Response

- Limited fiscal response thus far but forthcoming measures expected with total fiscal package expected to be around 3%
- RMB 80 bn “Epidemic Prevention Fund”

Lockdowns, Quarantines & Other

- Unprecedented lockdown of nearly 60 million people across Hubei province to contain spread of virus
- New arrivals to Beijing face 14 day quarantine in designated hotel
- Movement restrictions between provinces in China

Source: DB Global Markets Research (Hooper, Luzzetti, Spencer, Wall, Koyama, Lee, Schneider, Slok, Xiong, Dasgupta. “Impact of Covid-19 on the global economy Update 2: Severe recession” March 18, 2020. “COVID-19 List of monetary and fiscal policy responses by G20 economies”. Wall, Sidorov, Reid, Allen, Bhattacharya. March 19, 2020).

Country Specific COVID-19 Policy Responses



Japan

Monetary Policy Response

- BoJ to provide liquidity through CP and corporate bond purchases through end-September
- Low cost lending facility set up for corporates impacted by virus
- JPY 500 bn for bond purchases followed by additional JPY 200 bn bond purchase program
- Annual ETF purchase target raised to JPY 12 tn
- JREIT target increased to JPY 180 bn

Fiscal Policy Response

- Expect a supplementary budget of JPY 10-15 tn (USD 91-137 bn) (1.8%-2.7% of GDP) to include assistance for workers on leave due to school closures, expanded testing, loan programs to small firms and direct cash to citizens

Lockdowns, Quarantines & Other

- Banned entry for foreign travelers with Chinese passports from Hubei or Zhejiang provinces
- Banned entry for foreign travelers to had visited certain regions in China, South Korea, Iran or Italy within 14 days



South Korea

Monetary Policy Response

- Bank of Korea cut 7 day repo rate 50 bps to record low of 0.75%
- Interest rate on Bank Intermediated Lending Support Facility from 0.50 – 0.70% to 0.25%
- Broader open market collateral for open market operations

Fiscal Policy Response

- KRW 11.7 tn (USD 9.4 bn) in supplementary budget for COVID-19 containment measures
- Additional KRW 50 tn (USD 38 bn) package for small businesses

Lockdowns, Quarantines & Other

- Mass testing program for virus detection – focus on “flattening the curve”
- Schools and large gatherings closed / cancelled
- Restricted travel for those from Hubei provide or who had visited the region in past 14 days
- Cancellation of visa-free travel to Jeju island and passengers in transit to China

Source: DB Global Markets Research (Hooper, Luzzetti, Spencer, Wall, Koyama, Lee, Schneider, Slok, Xiong, Dasgupta. “Impact of Covid-19 on the global economy Update 2: Severe recession” March 18, 2020. “COVID-19 List of monetary and fiscal policy responses by G20 economies”. Wall, Sidorov, Reid, Allen, Bhattacharya. March 19, 2020).

Country Specific COVID-19 Policy Responses



EuroZone

Monetary Policy Response (ECB)

- Up to EUR 1.2 trn of additional TLTRO3 liquidity with discounted interest rate
- EUR 750 bn additional bond purchase program
- EUR 120 bn asset purchases
- Planned flexibility in implementing policy with option for emergency meetings and policy strengthening
- Call for joint action with fiscal policy

Fiscal Policy Response

- Stability and Growth Pact and the State Aid rules will not impede member state response to crisis
- Coronavirus declared “unusual event outside the control of government”, permits spending directly related to event to be excluded from calculation of the fiscal deficit in judging compliance with EU rules
- EUR 25 bn Coronavirus investment fund
- EUR 1 bn transferred to European Investment Fund
- Credit holidays for existing debtors affected by the virus
- EUR 37 bn Cohesion Policy resources to be freed up

Lockdowns, Quarantines & Other

- 30 day ban on travel into the EU for non residents
- EU Commission to coordinate medical resources and supply chain movement

Source: DB Global Markets Research (Wall, Sidorov. “COVID-19: Eurogroup and a “whatever is necessary” response”. March 16, 2020).

Country Specific COVID-19 Policy Responses



Germany

Fiscal Policy Response

- Expect a total response of approximately 1% of GDP
- EUR 25 bn to EU Commission's Corona Response Initiative
- EUR 460 bn of corporate liquidity support via state guarantees, bridge loans, and relaxation of conditions to access short-time allowances – possibility to upsized by another EUR 93 bn

Lockdowns, Quarantines & Other

- Closed borders with Austria, Denmark, France, Luxembourg and Switzerland



Italy

Fiscal Policy Response

- EUR 25 bn fiscal stimulus package announced

Lockdowns, Quarantines & Other

- Nation-wide lockdowns with 3 month prison sentences for those found in violation



France

Fiscal Policy Response

- EUR 45 bn funding package
- EUR 300 bn of guarantees for bank loans to businesses
- Potential to nationalize companies

Lockdowns, Quarantines & Other

- Closed all non-essential stores and restaurants
- Full lockdown with only outings for necessities such as buying food, seeking medical care or going to work (if work can not be done from home)



Spain

Fiscal Policy Response

- EUR 17 bn of direct public resources
- EUR 100 bn of state loan guarantees

Lockdowns, Quarantines & Other

- Borders closed to non-citizens or permanent residents
- Nationwide lockdown with people only allowed to leave their homes to buy essentials or to work
- Direct flights from Spain to Italy banned until March 25
- Banned short selling in markets for one month

Source: DB Global Markets Research (Hooper, Luzzetti, Spencer, Wall, Koyama, Lee, Schneider, Slok, Xiong, Dasgupta. "Impact of Covid-19 on the global economy Update 2: Severe recession" March 18, 2020. "COVID-19 List of monetary and fiscal policy responses by G20 economies". Wall, Sidorov, Reid, Allen, Bhattacharya. March 19, 2020).

Country Specific COVID-19 Policy Responses



United States

Monetary Policy Response

- Reduced rates 150 bps to zero lower bound
- Up to \$6.5 tn in repo operations
- “At least” \$700 bn in asset purchases
 - \$500 bn Treasuries
 - \$200 bn MBS
- Reinstated crisis era policy toolkit
- Lowered bank reserve requirements and lending costs
- Lowered dollar swap rates

Fiscal Policy Response

- \$1.3-\$1.5 tn (>6% of GDP) stimulus package expected
- Fannie Mae and Freddie Mac suspend foreclosures on mortgages for 60 days
- Federal student loan payments suspended for 60 days
- Extends tax filing deadline from April 15 to July 15
- \$105 bn Families First Coronavirus Response Act passed expected to signed by President Trump
 - Funding virus testing, creating and funding expanded emergency family & medical leave, business tax credits & employer-provided paid leave benefits
- \$50 bn in Federal Funds unlocked with President Trump’s declaration of a National Emergency
- President Trump to invoke the Defense Production Act to incentivize private production of emergency supplies
- \$8.3 bn Healthcare spending bill signed by President Trump
 - Funding for federal healthcare agencies, vaccine research, state & local healthcare preparedness

Lockdowns, Quarantines & Other

- State Department raised global travel warning to Level 4 (highest level)
- Ban on travel from any foreign national who had been in highly impacted countries (China, Iran, EU countries) in the last 14 days
 - Citizens returning from high-risk countries restricted to return travel through one of 13 airports
- Pentagon to provide 5 mn respirator masks and aid in virus testing
- City and state specific quarantine and lockdown measures

Source: DB Global Markets Research (Luzzetti, Ryan, Weidner, Hooper, Slok. “Fed goes all in”. March 15, 2020).

Country Specific COVID-19 Policy Responses



Canada

Monetary Policy Response

- Bank of Canada cut rates twice for total of 100 bps

Fiscal Policy Response

- Fiscal program worth 3% of GDP announced including funding for firms and households and, eased eligibility for sick pay, and deferred taxes

Lockdowns, Quarantines & Other

- Closed borders to non residents or immediate family
- Mutual decision to close US-Canada border to non-essential travel
- Only four Canadian airports to stay open to international flights



UK

Monetary Policy Response

- 65 bps rate cut to 0.1%
- Corporate bond purchase program expanded by GBP 200 bn
- Countercyclical capital buffer cut 100 bps to 0%
- Announced “Covid Corporate Financing Facility” to buy CP up to one-year in maturity
- Expanded TFSME lending program

Fiscal Policy Response

- GBP 330 bn in emergency loan guarantees to business
- GBP 20 bn in tax cuts & grants for businesses
- GBP 20 bn initial fiscal support package announced
- GBP 7 bn emergency spending package to support businesses, households and financial conditions
- GBP 5 bn for National Health Services in event of a bigger outbreak

Lockdowns, Quarantines & Other

- “Advising against” non-essential travel, particularly to hard hit regions and countries
- School closures

Source: DB Global Markets Research (Luzzetti, Ryan, Weidner, Hooper, Slok. “Fed goes all in”. March 15, 2020).

LatAm's Late COVID-19 Arrival



LatAm was the last among EM for COVID-19 contagion. While Chile, Columbia and Peru have moved early to flatten the curve as done in East Asia, the larger economies of Brazil and Mexico are moving late and slow to curtail virus transmission.

Country	Virus response	Monetary response	Fiscal response
 Brazil	<ul style="list-style-type: none"> Land borders closed State of emergency declared through Dec 31, 2020 	<ul style="list-style-type: none"> 10 bps cut expected BRL 637 bn (USD 127 bn) freed up for bank lending via FX intervention for liquidity and volatility 	<ul style="list-style-type: none"> BRL 147.3 bn (USD 29 bn) to be made available Direct vouchers for those in informal labor market
 Mexico	<ul style="list-style-type: none"> Recommendation (not requirement) to cancel large gatherings 	<ul style="list-style-type: none"> USD10 bn in additional FX intervention program to curb MXN volatility 	<ul style="list-style-type: none"> President López Obrador stated Coronavirus pandemic warrants no fiscal stimulus
 Argentina	<ul style="list-style-type: none"> Closed borders to foreigners National quarantine declaration expected 	<ul style="list-style-type: none"> Monetary conditions expected to ease 	<ul style="list-style-type: none"> 2% of GDP package reallocated to pandemic response including direct payment to some citizens, small business loans and price subsidies for basic goods
 Chile	<ul style="list-style-type: none"> Closed borders to foreigners State of catastrophe declared Closures of malls and cancelation of large events 	<ul style="list-style-type: none"> 75 bps rate cut Increase financial facilities for local banks 	<ul style="list-style-type: none"> USD 11.7 bn (4.7% of GDP) plan to support employment and protect small business liquidity
 Colombia	<ul style="list-style-type: none"> Borders closed and airports set to close Mandatory lockdown for those over 70 and some state curfews 	<ul style="list-style-type: none"> FX intervention Increased repo operations 	<ul style="list-style-type: none"> COP 14.8 tn (US 3.6 bn) spending package to support health sector, vulnerable families and small business loans Announced fiscal support can be extended to COP 48 (USD 11.6 bn) tn if needed
 Peru	<ul style="list-style-type: none"> Borders closed Mandatory quarantine and curfew 	<ul style="list-style-type: none"> FX intervention 100 bps rate cut 	<ul style="list-style-type: none"> 0.1% of GDP measures announced thus far (larger package expected) PEN 380 (USD 108) transfer to all vulnerable families PEN 300 mn (USD 85 mn) for low cost credit to SMEs Extraordinary measures adopted for banks and credit unions

Source: DB Global Markets Research (Brown, Ayala, Giacomelli, Labbe. "COVID-19: Policy responses in LatAM". March 19, 2020).





Global Travel Restrictions

12

The scale of global travel, cross-border and flight restrictions underway across dozens of countries globally are unprecedented.

Global Travel Restrictions



Countries globally have introduced a litany of travel restrictions in an effort to contain the spread of COVID-19

Largest Global Economies

	United States	<ul style="list-style-type: none">▪ State Department raises global travel warning to Level 4 (highest level)▪ Travel ban on all flights to and from Europe▪ Significant travel restrictions to other impacted countries (China, South Korea)▪ Closed border to non-essential travel with Canada and Mexico▪ Americans returning from high-risk areas restricted to fly through one of 13 airports
	European Union	<ul style="list-style-type: none">▪ Closed borders to 26 countries to nearly all visitors for at least 30 days
	China	<ul style="list-style-type: none">▪ 14 day quarantine for any new arrivals into Beijing▪ Mandatory quarantines for people entering the Anhui Province, the Inner Mongolia region and Hainan Island
	Japan	<ul style="list-style-type: none">▪ Banned entry for foreigners with Chinese passports from Hubei or Zhejiang provinces▪ Banned entry for foreigners who had visited certain regions in China, South Korea, Iran or Italy within 14 days
	Germany	<ul style="list-style-type: none">▪ Closed borders with Austria, Denmark, France, Luxembourg and Switzerland
	India	<ul style="list-style-type: none">▪ Suspended most travel and tourism visas until April 15
	United Kingdom	<ul style="list-style-type: none">▪ “Advising against” all but essential travel
	France	<ul style="list-style-type: none">▪ Nationwide lockdown
	Italy	<ul style="list-style-type: none">▪ Nationwide lockdown
	Brazil	<ul style="list-style-type: none">▪ Health ministry recommends all passengers arriving on international flights remain at home for at least 7 days and seek medical attention if they develop COVID-19 symptoms
	Canada	<ul style="list-style-type: none">▪ Blocking entry to all non-citizens or permanent residents, exceptions for airplane crews, diplomats, immediate family members of Canadian citizens▪ International flights limited to 4 Canadian airports▪ Closed border with the US

Source: New York Times. Corona Outbreak “Coronavirus Travel Restrictions, Across the Globe”

Global Travel Restrictions



Americas



Argentina

- Borders closed to foreigners
- Halted flights from US & Europe



Ecuador

- No entry for 21 days (includes citizens and foreigners)



Bolivia

- European flights halted
- Strict border controls



El Salvador

- Borders closed to foreigners (ex diplomats)



Chile

- Borders closed to foreigners
- Quarantine requirements for Chileans returning home



Guatemala

- Borders closed for 15 days



Colombia

- Closed some border with Venezuela
- Block entry to foreigners in Europe or Asia in past 14 days
- Quarantine requirements for Colombians returning home



Peru

- Borders closed for at least 15 days
- All international flights canceled
- Restricted movement of people across provinces



Costa Rica

- Borders closed to foreigners
- Quarantine requirements for citizens returning home



Uruguay

- Stopped flights from Europe
- Passengers from some countries subject to mandatory quarantine



Dominican Republic

- All flights from Milan canceled
- Passengers from China or Italy subject to quarantine at home



Venezuela

- Suspended flights from Colombia and European countries for at least a month

Source: New York Times. Corona Outbreak "Coronavirus Travel Restrictions, Across the Globe"

Global Travel Restrictions



Asia Pacific



Australia

- Self quarantine for int'l arrivals
- Cruises from foreign ports banned
- Foreigners denied entry after visiting China, Iran, South Korea or Italy



Philippines

- Shut down all travel into and out of Manila until April 14
- Curfews in parts of Manila



Cambodia

- Foreigners from the United States, France, Germany, Italy or Spain denied entry



Singapore

- No visitors from France, Germany, Italy or Spain
- Singaporean residents subject to self quarantine



Hong Kong

- Self quarantine required for all travelers



South Korea

- No travelers from Hubei Province
- Visa-free entry for Chinese nationals suspended



Malaysia

- Barred entry to all foreign nationals until at least March 31



Sri Lanka

- Restricted international flights until at least March 30
- No cruise passengers or crew
- No travelers from Iran, South Korea or Europe



Myanmar

- Restricted entry from provinces in China and South Korea
- Quarantine requirements for Myanmar nationals
- Health certification and quarantine required for some countries



Taiwan

- Travelers from the Schengen Area, the United Kingdom, Ireland and Dubai subject to quarantine at home for 14 days



Nepal

- Foreigners subject to self quarantine
- Visa restrictions and health certification requirements
- Flights from China restricted



Thailand

- Health certificate requirements for some countries
- United States subject to self-monitoring and reporting requirements



New Zealand

- All incoming travelers subject to self-quarantine for 14 days



Vietnam

- Refuse visitors from the Schengen Area and the UK

Source: New York Times. Corona Outbreak "Coronavirus Travel Restrictions, Across the Globe"

Global Travel Restrictions



Europe

 Austria	<ul style="list-style-type: none"> Medical certificates for any foreigner and EU citizens from Italy, Switzerland or Liechtenstein 	 Norway	<ul style="list-style-type: none"> Quarantine for all non travelers from non-Nordic countries
 Croatia	<ul style="list-style-type: none"> Travelers from hard-hit regions subject to gov't quarantine 	 Poland	<ul style="list-style-type: none"> Banned foreigners Suspended international air and rail Quarantine for returning
 Czech Republic	<ul style="list-style-type: none"> No entry from or travel to high risk countries 	 Russia	<ul style="list-style-type: none"> No entry from China, Iran, Italy Restricted travel by South Koreans Limited travel between Russia and the EU, Norway and Switzerland
 Denmark	<ul style="list-style-type: none"> Closed borders to most foreign travelers 	 Serbia	<ul style="list-style-type: none"> Foreigners restricted from entering Quarantine for anyone entering the country
 Greece	<ul style="list-style-type: none"> International travelers subject to 14-day quarantine Closed borders with Albania and North Macedonia Ferry service to Italy suspended 	 Slovakia	<ul style="list-style-type: none"> Closed international airports Quarantine for anyone entering the country
 Hungary	<ul style="list-style-type: none"> Citizens asked to avoid travel to infected areas 	 Spain	<ul style="list-style-type: none"> Closed land borders to foreigners
 Latvia	<ul style="list-style-type: none"> Closed borders to all foreigners 	 Switzerland	<ul style="list-style-type: none"> Closed border with Italy
 Lithuania	<ul style="list-style-type: none"> Two-week nationwide quarantine including closing borders to all foreigners 	 Turkey	<ul style="list-style-type: none"> Flight suspensions and border closings No foreigners from high risk countries
 Netherlands	<ul style="list-style-type: none"> Suspended flights from "risk countries" 	 Ukraine	<ul style="list-style-type: none"> Suspended commercial passenger travel
 North Macedonia	<ul style="list-style-type: none"> No foreigners from high / medium risk countries Quarantine for citizens from high risk countries 		

Source: New York Times. Corona Outbreak "Coronavirus Travel Restrictions, Across the Globe"

Global Travel Restrictions



The Middle East & Africa



Ghana

- No entry for foreigners who visited a country with >200 recorded COVID-19 cases in the last 14 days
- Mandatory self-quarantine for anyone entering the country



Israel

- Denied entry from foreign nationals



Kenya

- Blocked all travelers from countries that have reported COVID-19 cases



Jordan

- All non freight flights suspended
- Land and sea borders closed
- No visitors from high risk countries



Morocco

- No flights to Algeria, Belgium, China, France, Germany, Italy, the Netherlands, Portugal and Spain
- Shut down land borders with Ceuta and Melilla



Lebanon

- Suspended all flights to Italy, Iran, China and South Korea



Namibia

- Suspended inbound and outbound flights from Qatar, Ethiopia and Germany for 30 days



Saudi Arabia

- Suspended all inbound and outbound international flights for two weeks



South Africa

- Mandatory testing for travelers from high-risk countries
- Visa restrictions on foreigners from high-risk countries
- Closure of numerous land and sea ports

Source: New York Times. Corona Outbreak "Coronavirus Travel Restrictions, Across the Globe"

“ Concluding Thoughts



“This is not a Minneapolis blizzard that will blow through. This is a Minnesota winter that will be with us for many months.”

Dr. Michael Osterholm, University of Minnesota

“I’m seriously worried about what I see, which is that a number of companies and industries will have debt problems that will likely lead to restructurings.”

Ray Dalio, Founder & Co-Chairman of Bridgewater Associates

“Without testing, you are driving blind.”

Dr. David Ho, acclaimed HIV/AIDS researcher, Columbia University

“The flu has a mortality rate of 0.1%. This is 10 times that. That’s the reason I want to emphasize we have to stay ahead of the game.”

Dr. Anthony Fauci, Director of National Institute of Allergy and Infectious Diseases

“My overwhelming experience as the Ebola czar is that I was the czar of nothing, because we don’t have command-and-control health care in the United States.”

Ron Klain, Ebola Response coordinator under President Obama

“What we are seeing now is the exponential growth in the policy response to the exponential growth in the spread of the virus.”

Conor Sen, New River Investments

“Beauty is meaningless unless it is shared.”

George Orwell, English novelist and essayist

“We have no time to adapt. Our #s tell us we have a spike in infections, people in intensive care and deaths. Our habits must change right now.”

Giuseppe Conte, Italian Prime Minister

“Market makers can stop the panic, when policy makers start to panic.”

Jonathan Ferro, Anchor of “Bloomberg Markets”

“We will be, by mutual consent, temporarily closing our Northern border to Canada to non-essential traffic. Trade will not be affected. Details to follow.”

US President Donald Trump

“On risk, any optimistic vision needs to believe in some kind of ‘V’, and that is next to impossible when the real economy is only starting the downside of the V at an historic pace of descent. We are too soon into social distancing to start seeing its end, which is the core metric for risk recovery.”

Alan Ruskin, DB Co-Head of FX Strategy

“When all are fearful, there is cause for prices to rise.”

Monehisa Honmo, Acclaimed rice merchant & trader (1755)

Past Reports



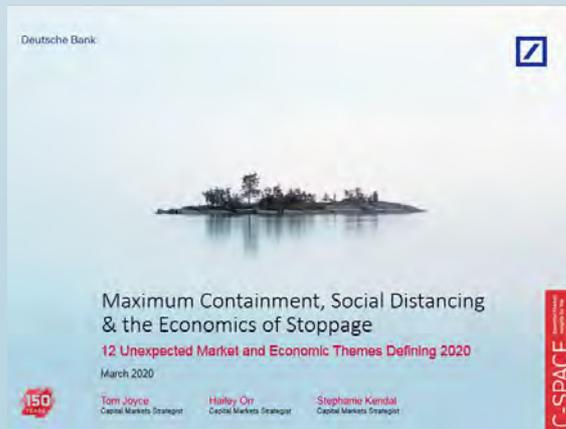
COVID-19 Reports



Mar 2020
Containing the Coronavirus



Mar 2020
Coronavirus Contagion



Mar 2020
Maximum Containment, Social Distancing
& the Economics of Stoppage



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The COVID-19 Corporate Checklist

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A November to Remember



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Feb 2017
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Jan 2017
The First 100 Days

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Reader's Notes



Reader's Notes

