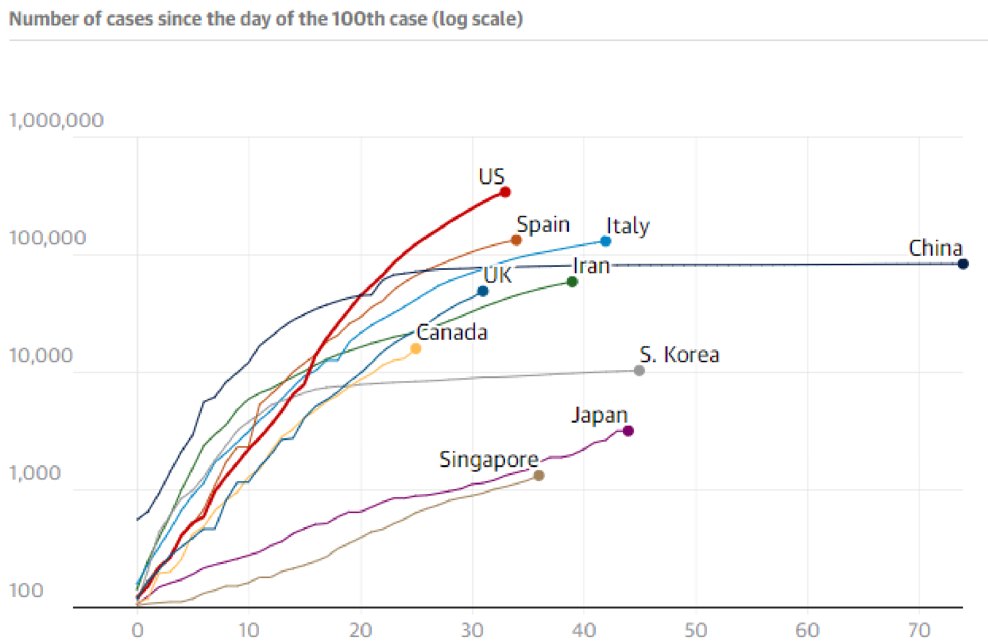
MEKETA
INVESTMENT GROUP

Economic and Market Update

Data as of April 3, 2020

Case Count by Select Country: Flattening the Curve[1]



- There are now close to 1.4 million cases globally across 184 countries with the death toll well over 75,000.
- What was originally a China-focused issue is now a global issue with the fastest spread of the virus in the US and Europe.
- Cases have leveled off in China and South Korea, with Europe and the United States experiencing the fastest growth rate of new cases.

[1] Source: Johns Hopkins CSSE via the Guardian UK. Virus data is as of April 5 2020. Non virus data throughout the rest of the document is through April 3, 2020.

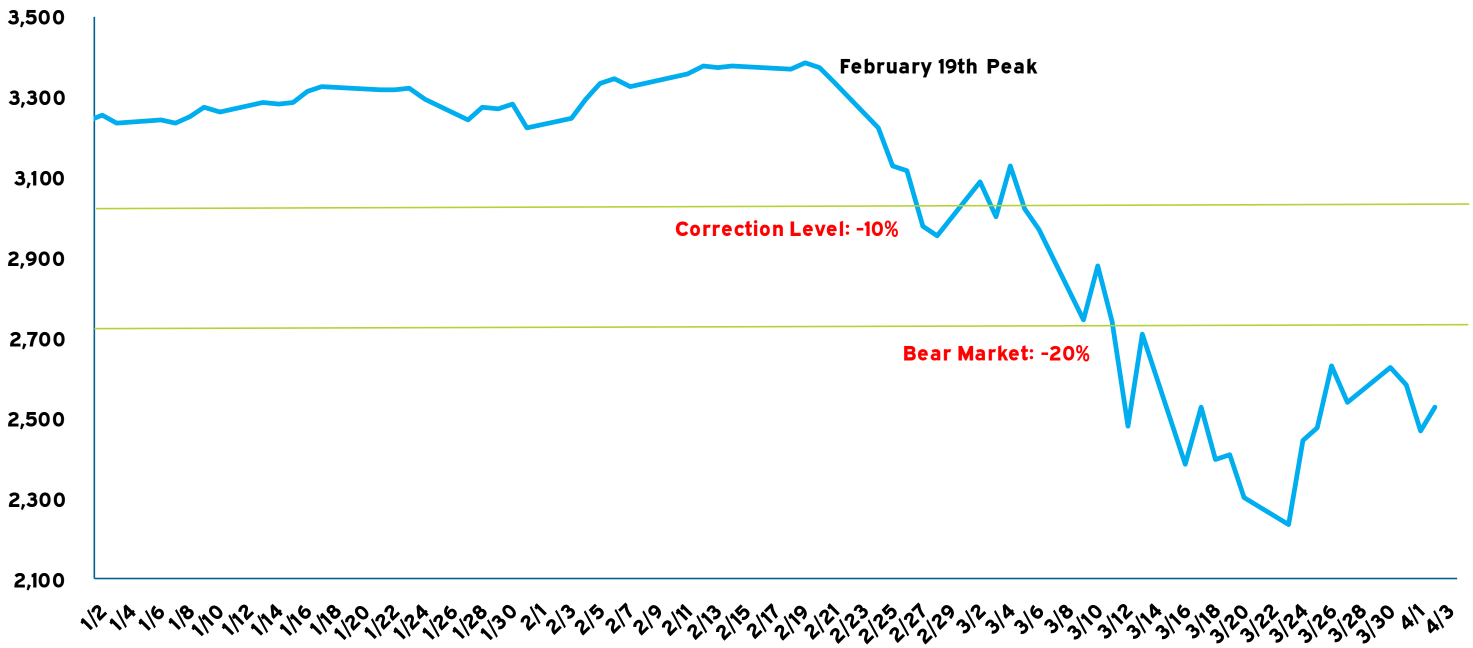
2020 Market Returns[1]

Indices	YTD
S&P 500	-22.6%
MSCI EAFE	-26.4%
MSCI Emerging Markets	-25.1%
MSCI China	-13.7%
KOSPI Index (South Korea)	-25.8%
MSCI Italy	-33.9%
Bloomberg Barclays Aggregate	3.4%
Bloomberg Barclays TIPS	3.8%
Bloomberg Barclays High Yield	-14.5%
10-year US Treasury	12.8%
30-year US Treasury	28.9%

- Given uncertainty related to the ultimate impact of the virus on economic growth, company profitability, and societal norms, investors have sought perceived safe haven assets like US Treasuries.
- Stocks have experienced large declines globally, particularly in areas like Europe where the virus is actively spreading, but fiscal and monetary authorities across the globe are deploying emergency measures to offset huge economic losses.

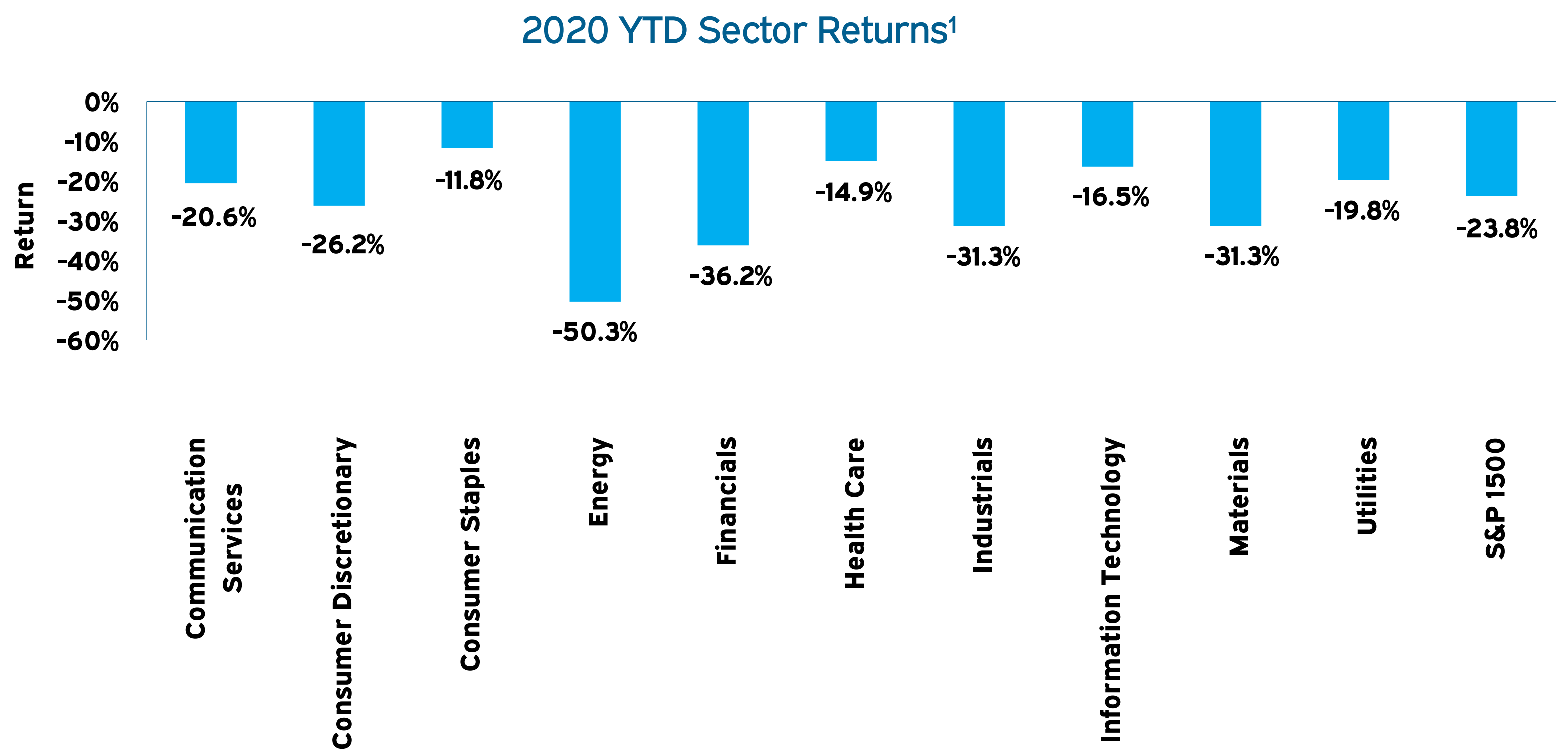
[1] Source: InvestorForce and Bloomberg. Data is as of April 3, 2020.

S&P 500 Reaches Bear Market Levels[1]



- Given all the uncertainty, US stocks declined from their recent peak into bear market (-20%) territory at the fastest pace in history.
- From the February 19 peak, the S&P 500 declined 34%, or 1,149 points, in a matter of 24 trading days.
- The index has recovered recently from its lows likely due to the unprecedented monetary and fiscal stimulus announced in the US.

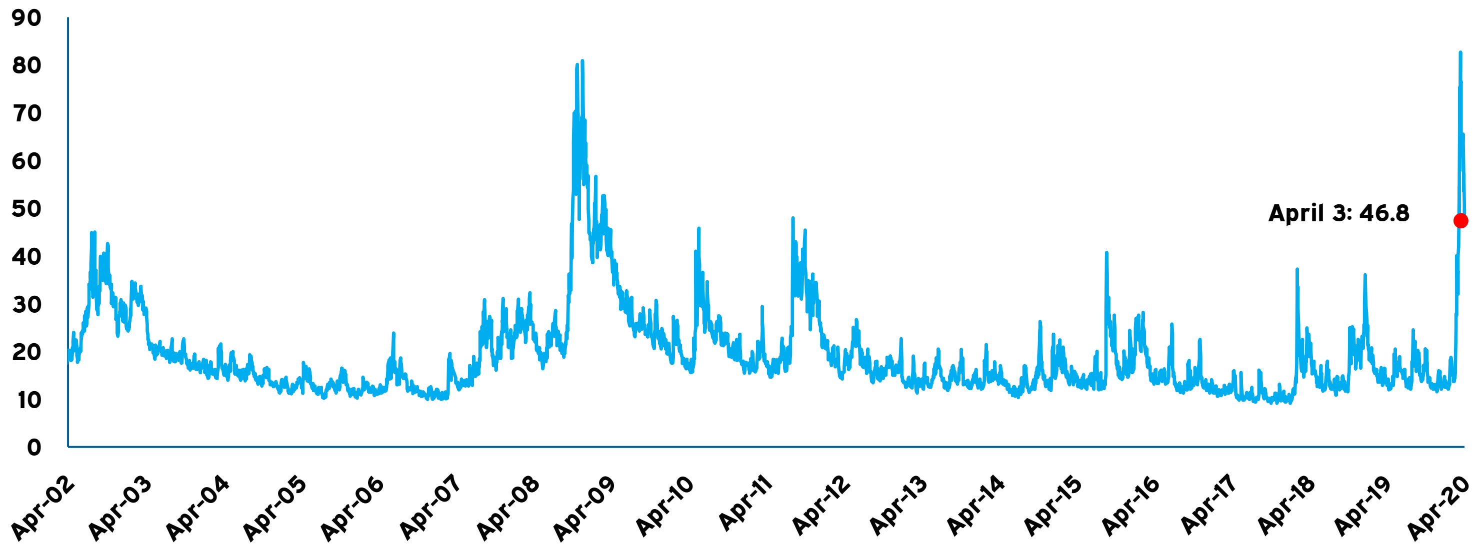
[1] Source: Bloomberg. Data is as of April 3, 2020.



- The energy sector has experienced the largest declines given the fall in oil prices.
- Financials (-36.2%), materials (-31.3%), and industrials (-31.3%) experienced the next largest declines, while defensive sectors like consumer staples and health care experienced the smallest declines.

[1] Source: Bloomberg. Data is as of April 3, 2020.

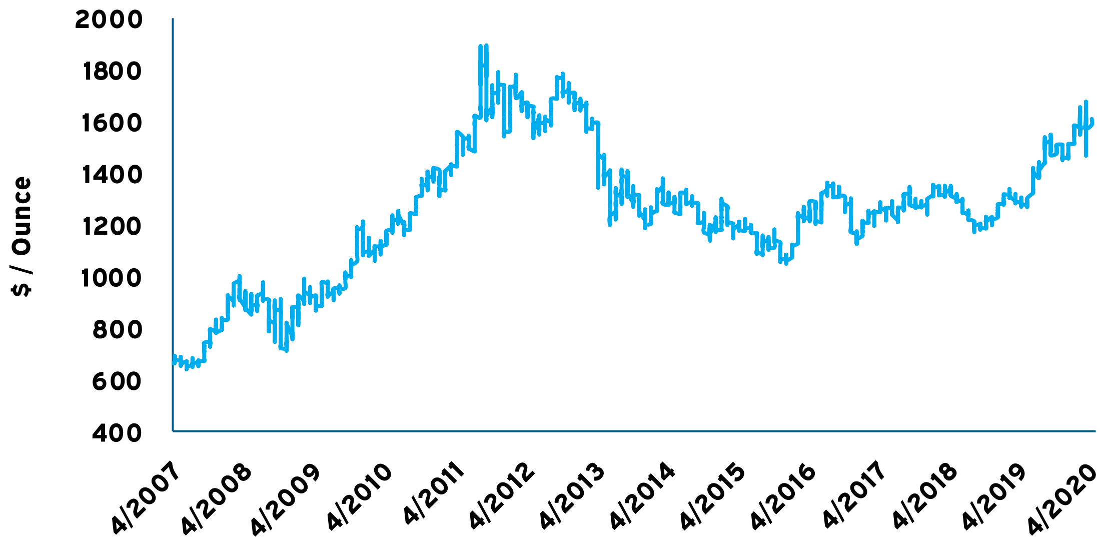
VIX Index[1]



- Given the recent fiscal and monetary support and cooresponding modest improvement in investor risk sentiment, expectations of short-term volatility, as measured by the VIX index, declined from record levels but still remains elevated.
- At the recent height, the VIX index reached 82.7, a level surpassing the pinnacle of volatility during the GFC, showing the magnitude of investor fear.
- As investors continue to process the impacts of COVID-19 and the effectiveness of the policy response, it is likely that volatility will remain high.

[1] Source: Chicago Board of Exchange. Data is as of April 3, 2020.

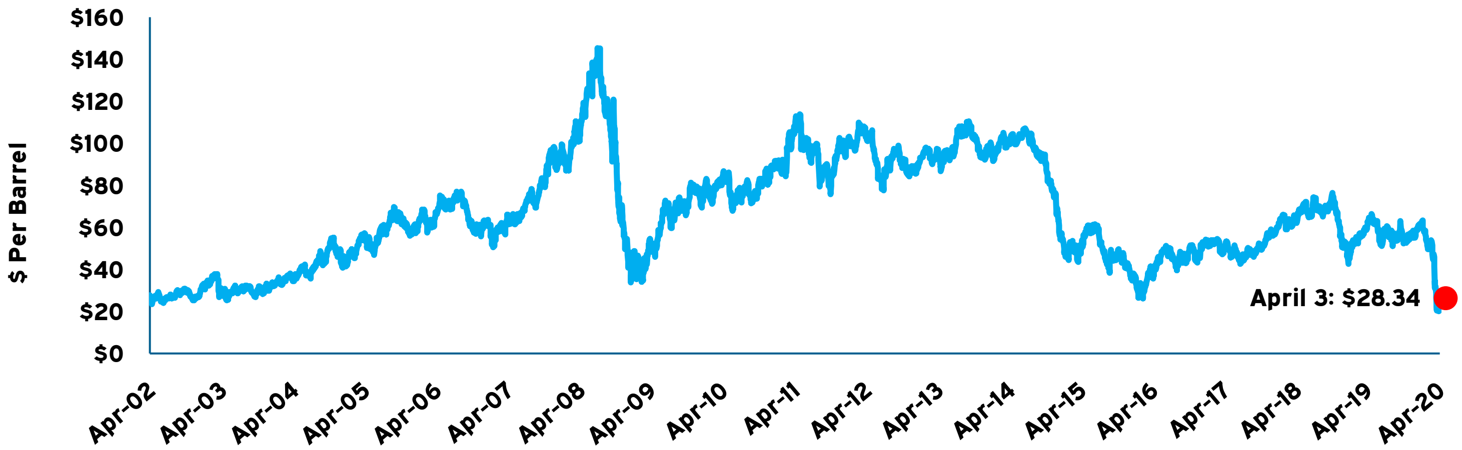
Gold Spot Price[1]



- The price of gold over the last few years has been heavily influenced by central bank demand, particularly from Russia, amidst heighted geopolitical and economic uncertainty; other emerging markets (central banks and private investors) have also been actively purchasing gold.
- However, as risk assets and oil markets declined over the last two months, and liquidity broadly deteriorated, demand for gold declined with its apparently increasing use as a source of funds, and then recovered modestly as markets stabilized.

[1] Source: Bloomberg. Data is as of April 3, 2020.

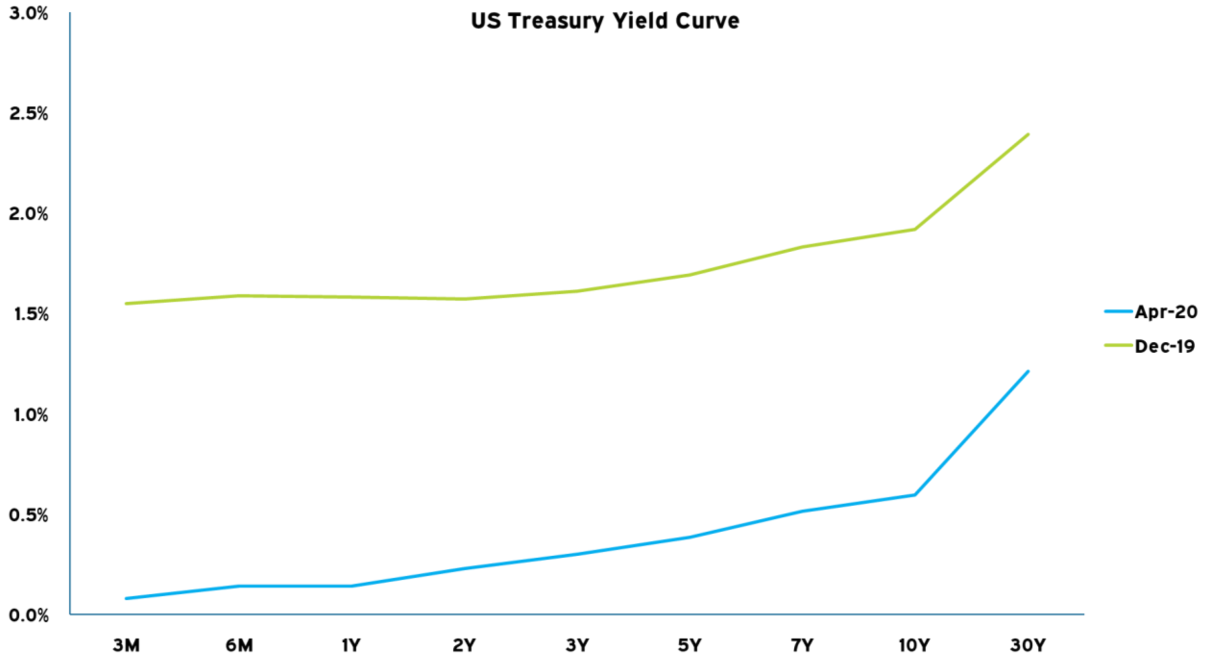
Oil Prices[1]



- Oil markets came under pressure as the virus started to lower global growth expectations, but prices deteriorated further when Saudi Arabia initiated a price war due to Russia's decision to not participate in the proposed OPEC+ supply cuts.
- President Trump announced that he intends to build US oil reserves in an attempt to support the domestic industry and capitalize on lower oil prices.
- During the volatility and aggressive supplier actions, oil prices (as measured by West Texas Intermediate) traded below $21 per barrel. This represented a decline of over 55% since February 19, to reach levels not seen since 2001. Subsequently, we have seen a modest recovery given the potential for a coordinated supply cut between Saudi Arabia and Russia.

[1] Source: Bloomberg. Represents first available futures contract. Data is as of April 3, 2020.

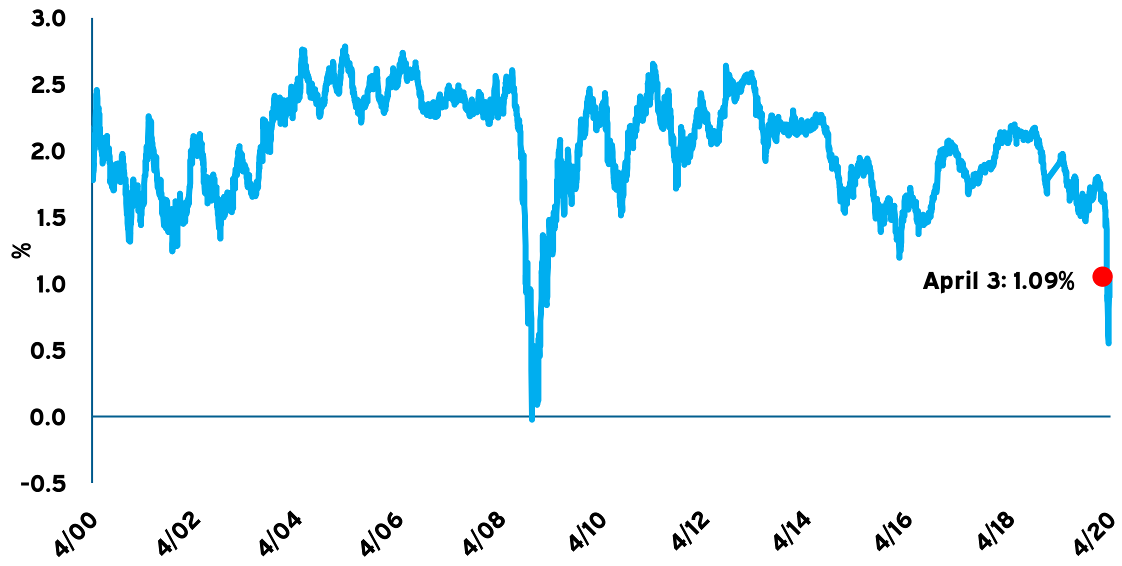
US Yield Curve Declines[1]



- The US Treasury yield curve has declined materially since last year, driven by notable cuts in monetary policy rates impacting the shorter-dated maturities, and flight-to-quality flows, low inflation, and declining growth expectations driving longer-dated maturities.

[1] Source: Bloomberg. Data is as of April 3, 2020.

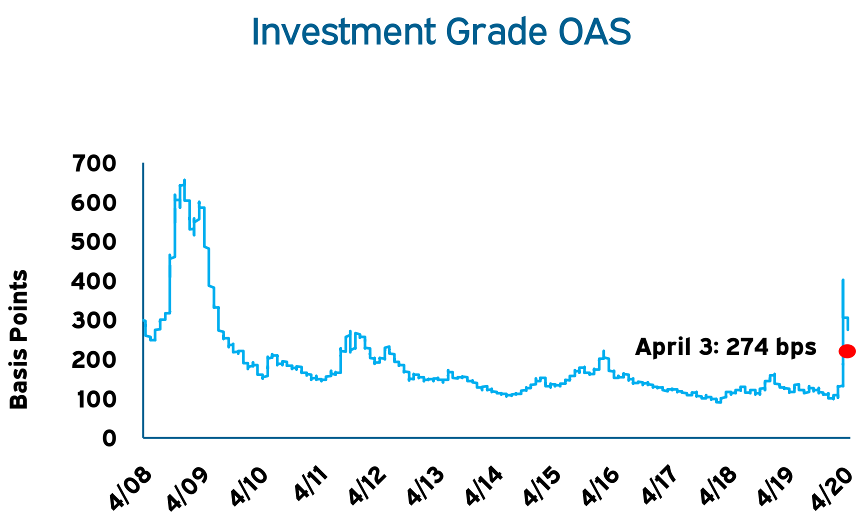
10-Year Breakeven Inflation[1]

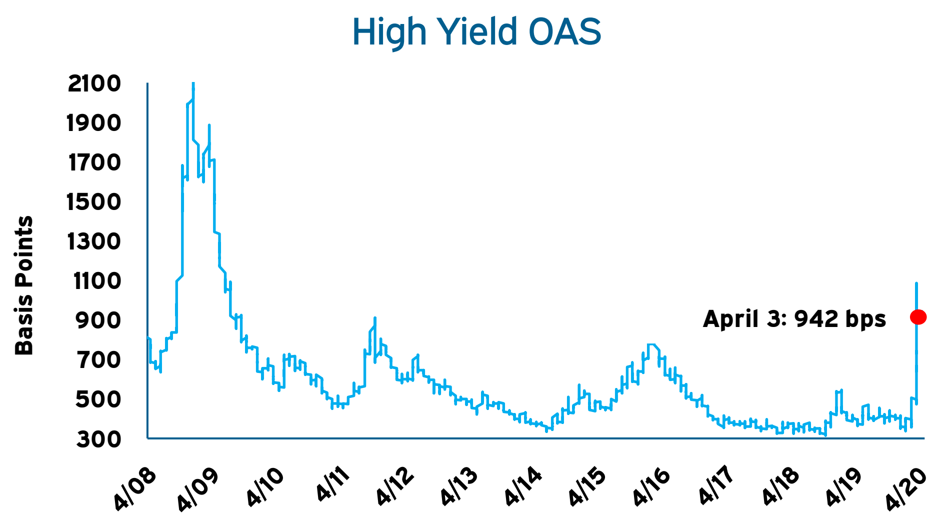


- Inflation breakeven rates declined sharply over the last two months, due to a combination of declines in inflation expectations and liquidity dynamics in TIPS during the height of rate volatility.
- Breakeven rates have not traded near these levels since the GFC, and when they did, the Federal Reserve responded with large-scale asset purchases; this is consistent with recent policy actions.
- Inflation expectation levels have come off of their recent lows as liquidity improved and given the potential inflationary impacts of the unprecedented US fiscal and monetary responses.

[1] Source: Bloomberg. Data is as of April 3, 2020.

Credit Spreads (High Yield & Investment Grade)[1]

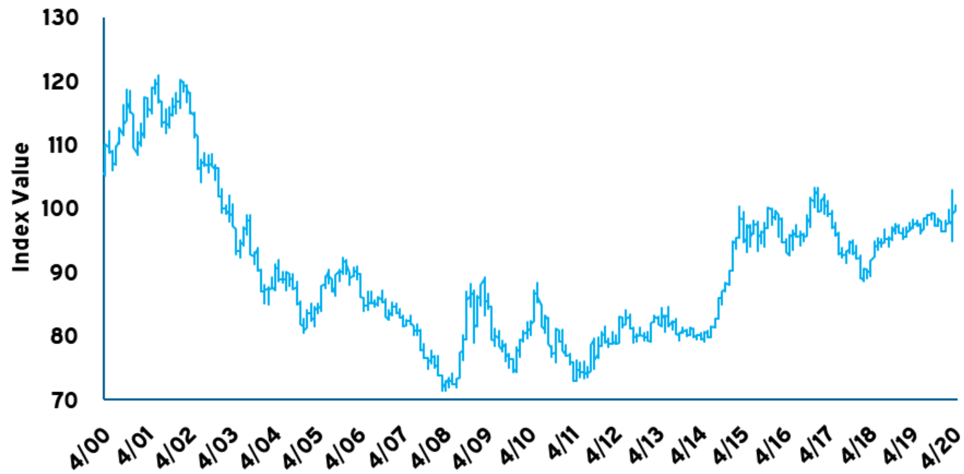




- Credit spreads (the spread between a comparable Treasury bond) for investment grade and high yield corporate debt expanded sharply as investors preferred perceived safe-haven bonds.
- Investment grade bonds have held up much better than high yield bonds, which have a far greater risk of default in this environment. The Federal Reserve's recently announced corporate debt purchase program for investment grade securities has also provided support.
- Corporate debt issuance has more than doubled since 2008, which magnifies the impact of deterioration in the corporate debt market. This is particularly true for the energy sector, which represents a large portion of the high yield bond market.

[1] Source: Federal Reserve Bank of St. Louis Economic Research. Data is as of April 3, 2020.

US Dollar versus Broad Currencies[1]

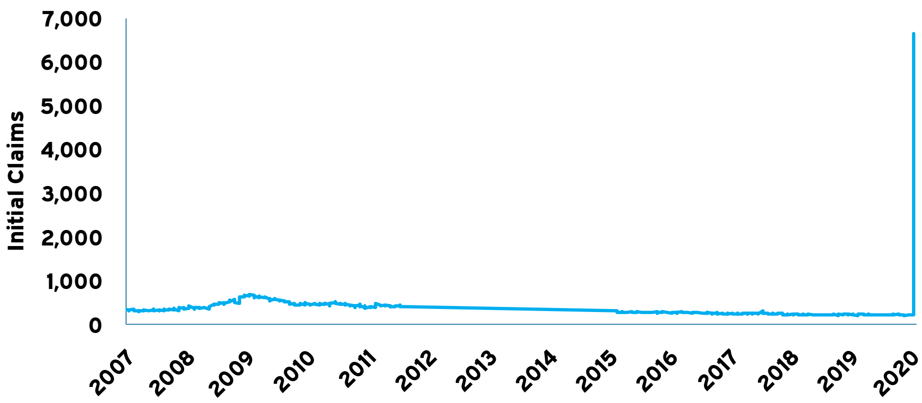


- When financial markets began aggressively reacting to COVID-19 developments, the US dollar came under selling pressure as investors sought safe-haven exposure in currencies like the Japanese yen.
- As the crisis grew into a pandemic, investors' preferences shifted to holding US dollars and highly liquid, short-term securities like US Treasury bills. This global demand for US dollars has resulted in an appreciation against most major currencies.
- A relatively strong US dollar makes US goods more expensive for overseas consumers and causes commodity prices outside the US to rise, negatively impacting foreign countries, and particularly emerging markets.
- To help ease global demand for US dollars, the Federal Reserve, working with a number of global central banks, re-established the US dollar swap program, providing some recent relief to other currencies.

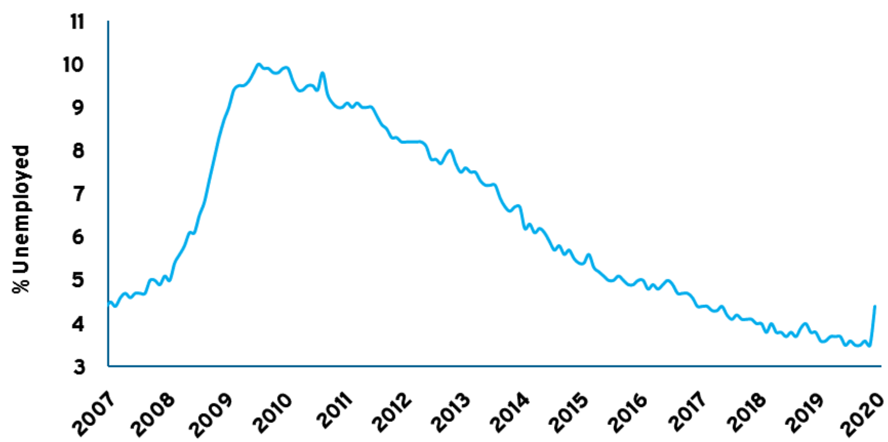
[1] Source: Bloomberg. Represents the DXY Index. Data is as of April 3, 2020.

US Jobs Data

US Initial Jobless Claims[1]



US Unemployment Rate[2]



- Layoffs have risen dramatically as businesses have been forced to close in an effort to stop the spread of the disease.
- In addition to the 3.3 million claims last week, an additional 6.6 million people filed claims for initial unemployment benefits, showing just how immediate and unprecedented the impact of the virus is.
- Last week data released showed over 700,000 jobs lost in March and an increase in the unemployment rate to 4.4% from 3.5%.

[1] Source: Bloomberg. First reading of seasonally adjusted initial jobless claims. Data is as of March 28, 2020.
[2] Source: Bloomberg. U-3 US Employment Rate, total in labor force, seasonally adjusted. Data is as of March 31, 2020.

Historic $2T US Fiscal Stimulus

Destination	Amount ($ Billion)
Individuals	$560
Large Corporations	$500
Small Business	$377
State & Local Governments	$340
Public Health	$154
Student Loans	$44
Safety Net	$26

- Recently, a historic $2 trillion fiscal package was approved in the US, representing close to 10% of GDP and including support across the economy.
- Individuals will receive a package of cash payments of up to $1,200 per adult and $500 per child, and extended and higher weekly unemployment benefits (+$600/week).
- The package also includes a $500 billion lending program for distressed industries, like airlines, and $377 billion in loans to small businesses.
- Other parts of the package include allocations to state and local governments, support for public health, student loan relief, and a safety net.
- The next round of fiscal stimulus is already under discussion in the US and could include money for infrastructure, healthcare equipment, and expanded paid leave.

Policy Responses

	Fiscal	Monetary
United States	$50 billion to states for virus related support, interest waived on student loans, flexibility on tax payments and filings, expanded COVID-19 testing, paid sick leave for hourly workers, $2 trillion package for individuals, businesses, and state/local governments.	Cut policy rates to zero, unlimited QE4, offering trillions in repo market funding, restarted CPFF, PDCF, MMMF programs to support lending and financing market, expanded US dollar swap lines with foreign central banks, announced IG corporate debt buying program, Main Street Lending program, repo facility with foreign central banks, and easing of some financial regulations for lenders.
Euro Area	Germany: Launched 750 billion euro stimulus package. France: 45 billion euro for workers, guaranteed up to 300 billion euro in corporate borrowing. Italy: 25 billion euro emergency decree, suspending mortgage payments for impacted workers. Spain: 200 billion euro and 700 million euro loan and aid package, respectively.	Targeted longer-term refinancing operations aimed at small and medium sized businesses, under more favorable pricing, and announced the 750 billion euro Pandemic Emergency Purchase Program.
Japan	$20 billion in small business loans, direct funding program to stop virus spread among nursing homes and those affected by school closures, discussion of additional relief in the coming months.	Increase in QE purchases (ETFs, corporate bonds, and CP), and 0% interest loans to businesses hurt by virus.
China	Tax cuts, low-interest business loans, extra payments to gov't benefit recipients.	Expanded repo facility, policy rate cuts, lowered reserve requirements.
Canada	$7.1 billion in loans to businesses to help with virus damage.	Cut policy rates, expanded bond-buying and repos, lowered bank reserve requirements.
UK (BOE)	Tax cut for retailers, small business cash grants, benefits for those infected with virus, expanded access to gov't benefits for self and un-employed.	Lowered policy rates and capital requirements for UK banks, restarts QE program.
Australia	$11.4 billion, subsidies for impacted industries like tourism, one-time payment to gov't benefit recipients.	Policy rate cut, started QE.

Coronavirus Comparison

	Flu in US[1]	SARS (Global)	Coronavirus (Global)[2]
Confirmed Cases	~32,000,000	8,098	1,407,123
Deaths	~18,000	774	79,091
Mortality Ratio	<0.1%	9.6%	5.6%
Infectivity Ratio[3]	1.3	3.0	2.2

- While confirmed cases are notably lower than reported cases of the flu, the number of reported COVID-19 infections continues to rise and infectious disease experts do not see that stopping over the near-term.
- The mortality rate of the COVID-19 virus is a focal point in assessing the severity of the illness versus other viruses, and while higher than the flu, it is expected that as nationwide testing becomes more readily available, the measured ratio should decline.

[1] Source: CDC. Reflects medians of estimates for flu season October 2019 – February 2020.
[2] Source: Johns Hopkins CSSE. As of April 7, 2020. Infectivity Ratio from WHO.
[3] Ratio represents the amount of people infected on average from one patient.

Potential Economic Impacts

Supply Chain Disruptions:

- Factories closing, increased cost of stagnant inventory, and disrupted supply agreements.
- Reduced travel, tourism, and separation policies including closed borders: Significant impact on service based economies.

Labor Force Impacts:

- Huge layoffs are extremely likely, across both service and manufacturing economies.
- Increased strains as workforce productivity declines throughout increased societal responsibilities (e.g., home schooling of children) and decreased functionality working from home.
- Illnesses from the disease will also reduce portions of the labor force temporarily.

Declines in Business and Consumer Sentiment:

- Sentiment drives investment and consumption, which leads to increased recessionary pressures if sentiment slips.

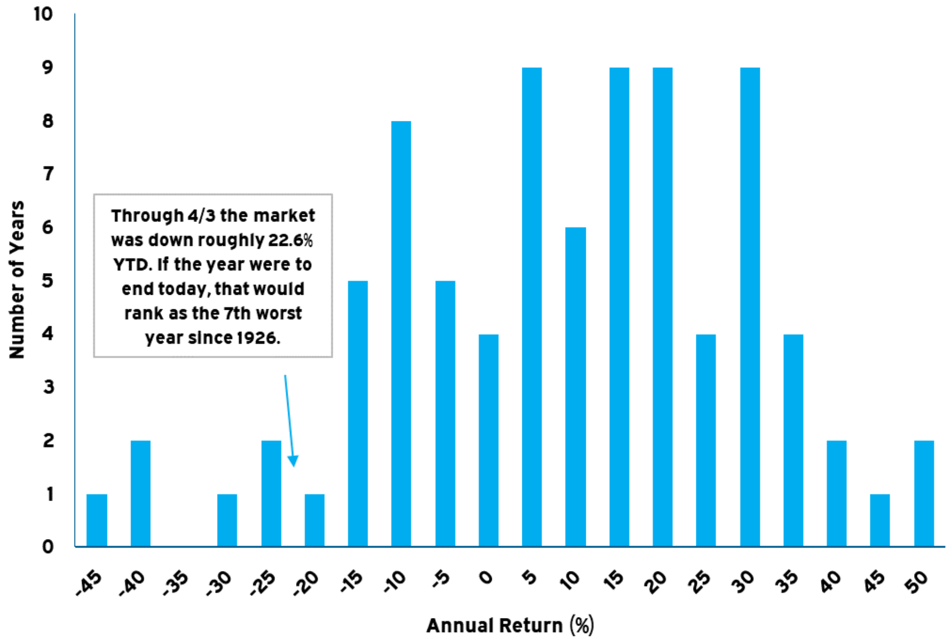
Wealth Effect:

- As financial markets decline and wealth deteriorates, consumer spending will be impacted.

Looking Forward…

- There will definitely be economic impacts, and likely a recession.
  - How deep it will be and how long it will last depend on a number of factors (below) that are unknowable at this time.
- The length of the virus and country responses will be key considerations.
  - As of now, it is not clear the end is in sight; however, impacted countries are attempting to lay the groundwork to support a recovery.
- Central banks and governments are pledging support, but will it be enough?
  - Based on initial market reactions to announced policies, the answer is no, until the virus gets better contained.
- Expect heightened market volatility given the virus and previous high valuations.
  - This has been a consistent theme over the last few weeks, and volatility is likely to remain elevated for some time.
- It is important to continue to have a long-term focus.
  - History supports the argument that maintaining a long-term focus will ultimately prove positive for diversified portfolios.

Distribution of Annual S&P 500 Returns[1]
(1926-2020)



- The 22.6% year-to-date decline (through 4/3) in the S&P 500 would be the seventh largest in history if it ended the year at this level.
- With around nine months remaining in 2020, and trillions of dollars in fiscal and monetary stimulus being deployed, we expect asset prices to experience notable volatility over the near term.

[1] Source: Bloomberg. Data is as of April 3, 2020.

Prior Drawdowns and Recoveries from 1929-2020[1]

Period	Peak-to-Trough Decline of the S&P 500	Approximate Time to Recovery
Sept 1929 to June 1932	-85%	266 months
February 1937 to April 1942	-57%	48 months
May 1946 to February 1948	-25%	27 months
August 1956 to October 1957	-22%	11 months
December 1961 to June 1962	-28%	14 months
February 1966 to October 1966	-22%	7 months
November 1968 to May 1970	-36%	21 months
January 1973 to October 1974	-48%	69 months
September 1976 to March 1978	-19%	17 months
November 1980 to August 1982	-27%	3 months
August 1987 to December 1987	-32%	19 months
July 1990 to October 1990	-20%	4 months
July 1998 to August 1998	-19%	3 months
March 2000 to October 2002	-49%	56 months
October 2007 to March 2009	-57%	49 months
February 2020 to April 2020	-27%	TBD
Average	**-36%**	**41 months**
Average ex. Great Depression	**-33%**	**25 months**

- Markets are continuing to reprice amidst the uncertain impact of the virus on markets and the global economy, which means this drawdown is still being defined in the context of history.
- That said, financial markets have experienced material declines with some frequency, and while certain declines took a meaningful time to recover, in all cases they eventually did.
- The current decline is severe, and it is still too early to tell how long a full recovery might take.

[1] Source: Goldman Sachs. Recent peak to trough declines are through April 3, 2020.

Implications for Clients

- Be prepared to rebalance and take advantage of the age-old wisdom "buy low, sell high".
  - Before rebalancing, consider changes in liquidity needs given the potential for inflows to decline in some cases.
  - Also, consider the cost of rebalancing as investment liquidity declines.
- Diversification works. The latest decline was an example of a flight to quality.

Performance YTD
(through April 3, 2020)

S&P 500	ACWI (ex. US)	Aggregate Bond Index	Balanced Portfolio[1]
- 22.6%	- 26.3%	3.4%	-14.9%

- Meketa will continue to monitor the situation and communicate frequently.
  - The situation is fluid and the economic impact is uncertain at this stage.
- Please feel free to reach out with any questions.
  - We would be glad to assist with performance estimates, memorandums, or phone calls.

[1] Source: InvestorForce. Balanced Portfolio represents 60% MSCI ACWI and 40% Bloomberg Barclays Global Aggregate.

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