

Global Macroeconomic Outlook

June 2020

Global Economic Outlook

The lock-down of the global economy to slow the spread of the COVID-19 pandemic led the IMF to materially alter expectations for economic growth.

- The IMF now forecasts a decline in global GDP of 4.9% in 2020, followed by a sharp recovery of 5.4% in 2021.
- In advanced economies, GDP is projected to decline by 8.0% for 2020, and recover by 4.8% in 2021, as economies reopen and progress is potentially made on a vaccine. The US is expected to fare similarly, declining 8.0% in 2020 and recovering by 4.5% in 2021.
- The euro-area is forecasted to take the greatest hit to growth, declining 10.2% in 2020 and recovering 6.0% in 2021. Expectations for Spain and Italy, which implemented some of the most stringent and aggressive quarantine and containment measures, are heavily influencing weakness across the broader region; both economies are anticipated to decline by 12.8% this year. The Japanese economy is expected to decline by 5.8% in 2020 but only recover by 2.4% in 2021.
- Growth projections are also weak for emerging economies, although China is expected to post positive growth of 1.0% for 2020, and a significant 8.2% in 2021. The growth expectations are due primarily to the Chinese government's ability to quickly impose aggressive distancing measures, largely isolate and contain the virus, and then quickly move to re-open their economy.
- Inflation is projected to decline, consistent with decreased economic activity, with inflation in most developed economies expected below 1.0%; in some countries, such as Japan, deflation is expected.

	Real GDP (%) ¹			Inflation (%) ¹		
	IMF 2020 Forecast	IMF 2021 Forecast	Actual 10 Year Average	IMF 2020 Forecast	IMF 2021 Forecast	Actual 10 Year Average
World	-4.9	5.4	3.7	2.5	3.4	3.5
Advanced Economies	-8.0	4.8	2.0	0.5	1.5	1.5
US	-8.0	4.5	2.3	0.6	2.2	1.8
Euro Area	-10.2	6.0	1.4	0.2	1.0	1.3
Japan	-5.8	2.4	1.4	-5.2	3.0	1.4
Emerging Economies	-3.0	5.9	5.1	4.6	4.5	5.2
China	1.0	8.2	7.6	1.0	3.0	2.5

¹ Source: IMF. World Economic Outlook. As of June 2020 Update. "Actual 10 Year Average" represents data from 2010 to 2019.

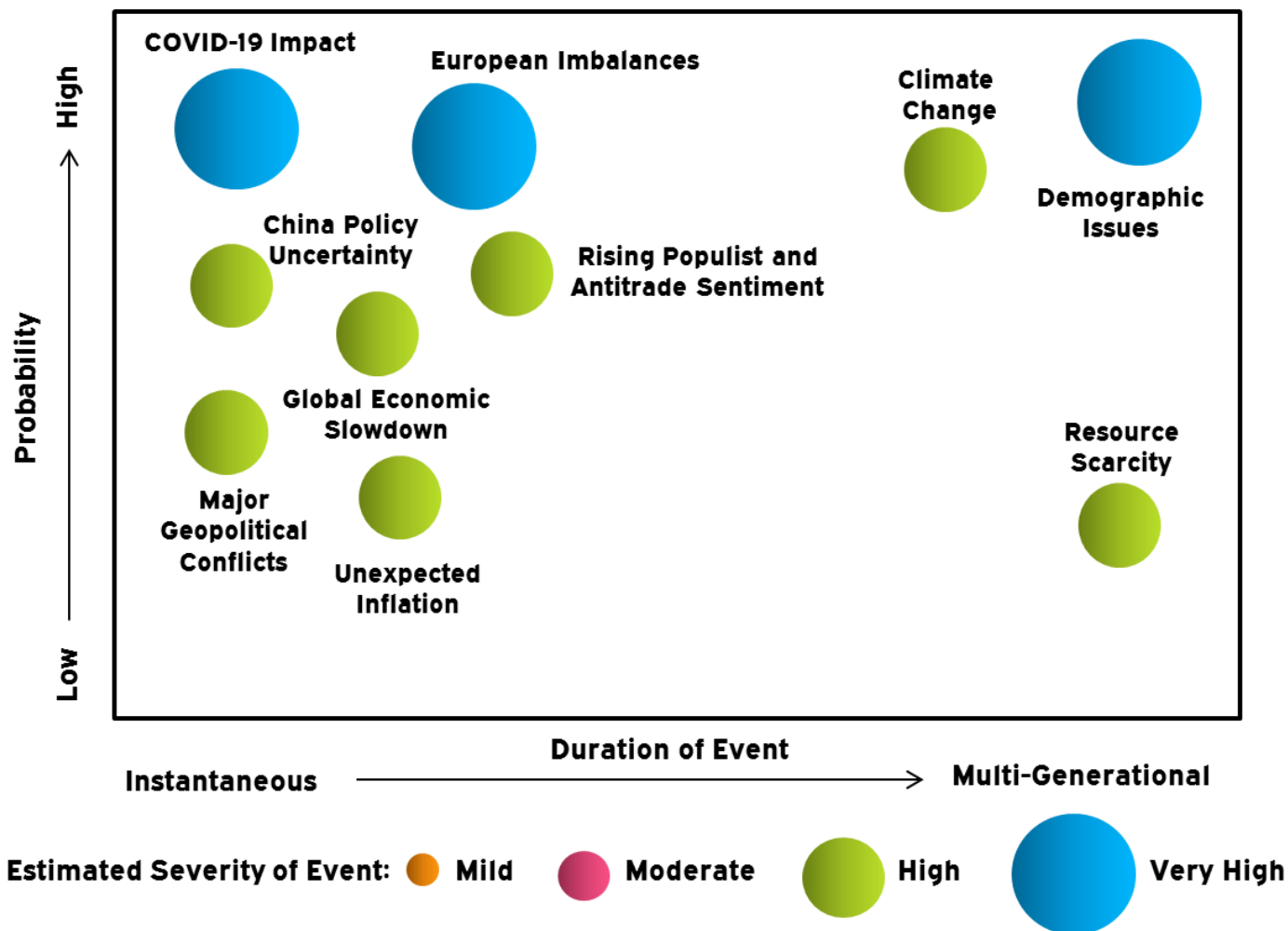
Global Economic Outlook (continued)

In an effort to stem the expected significant declines in economic activity, fiscal and monetary authorities across the globe responded with immediate and aggressive stimulus measures.

- US fiscal and monetary responses have been unprecedented. Fiscal authorities released over \$2.4 trillion in directed stimulus and are discussing the next round of support, while monetary authorities cut policy rates back effectively to zero, deployed trillions in stimulus measures, backstop liquidity, and funding programs to mitigate the economic deterioration. Monetary policy makers are also actively considering additional measures, including yield curve targeting and inflation targeting should conditions warrant.
- Japanese authorities took measures similar to US policies, directing fiscal stimulus where needed most, including loans to small businesses and direct stimulus to consumers, while the central bank continued, and expanded, their quantitative easing purchase program. The Bank of Japan also expanded collateral and liquidity requirements, and initiated 0% loans to businesses directly hit by the virus. They continue to keep short-term interest rates in negative territory (-0.1%) and target a 0% rate on the ten-year government bond.
- Countries in the euro-area launched stimulus packages targeting areas of their economies hit hardest by virus-related restrictions. The European Central Bank also took directed measures, with targeted long-term refinancing operations for small and medium sized business, keeping rates at historic lows, and a 750 billion euro emergency purchase program, which was subsequently expanded to include lower-quality corporate debt. The majority of funds from the 750 billion euro package will be distributed to the countries and sectors most impacted by the virus, and will take the form of grants and loans.
- Fiscal and monetary policy in China was already quite accommodative prior to the onset of the COVID-19 crisis, but as the pandemic developed, policy makers took further steps to support the economy. Additional tax cuts, low-interest rate loans, and extra government payments to qualifying citizens represented the bulk of the fiscal response. On the monetary side, policy rates were cut, repo facilities were expanded, and reserve requirements were lowered further.

We acknowledge the wide breadth of new issues being presented by the pandemic, and among those we are considering are the following: 1) Economies opening too soon from virus-related restrictions, and ultimately needing to re-deploy distancing policies; 2) Consumers permanently, or for an extended period of time, changing economic behaviors; 3) Persistently high unemployment due to a significant number of companies not surviving the economic downturn; 4) Virus-related fears negatively impacting the future of globalization, and; 5) An increase in sovereign debt risk due to the record issuance by governments.

Macroeconomic Risk Matrix



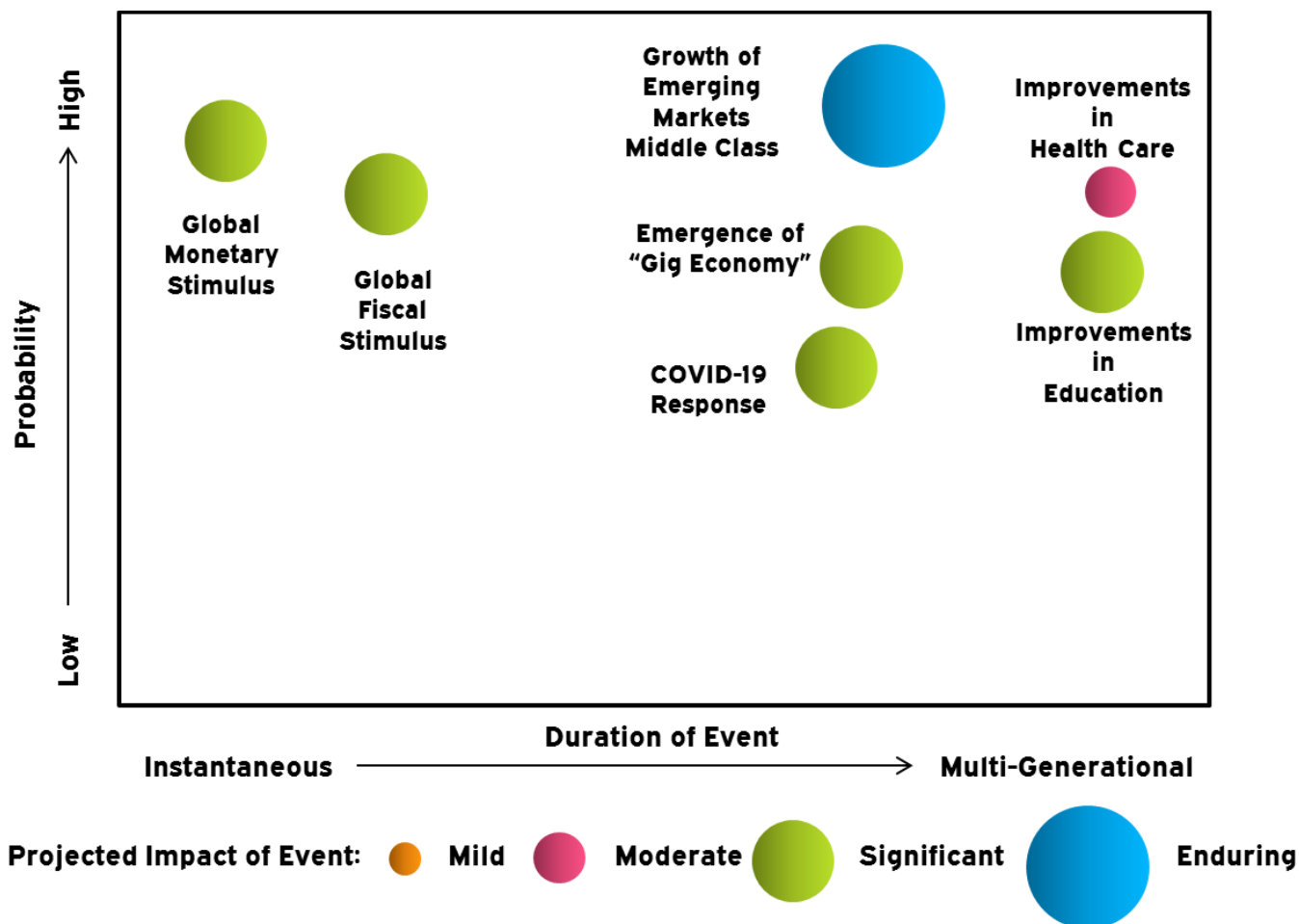
Macroeconomic Risk Overviews

China Fiscal and Monetary Policy Uncertainty	The process of transitioning from a growth model based on fixed asset investment by the government to a model of consumption-based growth will be difficult. Some progress was made on trade tensions with the US with the passing of a phase-one trade deal, but many issues still need to be resolved and tensions have increased recently. The management of capital outflows is another key issue in China with officials tightening regulations to stem outflows. As China tries to manage a smooth economic transition through fiscal and monetary policies, heightened financial risks exist. An increase in COVID-19 cases in China could further weigh on the economy, and others, going forward.
Climate Change	The earth's average temperature has been increasing since preindustrial times with the pace accelerating over the last 35 years. Increased levels of greenhouse gases like carbon dioxide have been the main cause of higher temperatures as they trap heat in the atmosphere. Warmer temperatures have led to the melting of glaciers and polar ice and increased precipitation in wet regions and reduced it in dry regions. The economic impacts of climate change are many, including declining crop yields, effects on livestock health, shifts in tourism, damage to infrastructure (rising sea levels and more extreme weather), and higher levels of disease and malnutrition.
COVID-19 Impact & Response Risks	Developments with the COVID-19 pandemic are of principal and immediate concern. Clarity on when a vaccine might be available for public distribution will be the greatest factor impacting when the global economy may re-open and begin to rebuild from the record job losses and the significant decline in global GDP. Relatedly, market participants are also discussing the potential risk across sovereign debt markets, particularly the US Treasury market, amidst the significant increase in debt issuance necessary to fund the stimulus measures. While current appetite for safe-haven assets remains robust, as markets begin to recover and demand for these assets wane, selling pressures on the back of the record issuance could push yields higher than expected and put pressure on government debt servicing requirements. Asset price inflation could also be a risk, as the record easing from monetary policy prompts increased (and potentially excessive) demand for risk assets.
Demographic Issues	In Japan and Europe, birth rates have declined for decades, resulting in populations becoming older and smaller relative to the rest of the world. In China, their so-called "one child" policy helped to reduce population growth, but has created other issues for the government. As life expectancy increases, the prior policy creates complications with a low working base left to support a relatively large and aging population. These demographic trends will have negative long-term impacts on GDP growth and fiscal budgets, amplifying debt problems. In the US, an increase in savings rates by age cohorts that are traditionally biased to spending is also impacting respective economic growth rates.
European Imbalances	Structural issues persist in the Eurozone, related to the combination of a single currency and monetary authority with 17 separate fiscal authorities. Within the European Union, tensions exist, as highlighted by political changes in Italy and the prior UK referendum, related to policies on immigration, laws, and budgetary issues. The UK officially left the EU in January 2020, and has now entered an 11-month transition period where the two parties are attempting to negotiate a trade deal.

Macroeconomic Risk Overviews (continued)

Global Economic Slowdown	The shutdown of the global economy has largely guaranteed recessions for many countries. The question now is the degree of economic deterioration and the duration of the recovery once it takes hold. Many economies have started to reopen, but with the rise in cases in some areas there could be a return to restrictions, or a slowing of the reopening process, further delaying recovery. Expectations for a vaccine are high, but measured in months, making it likely too early to reasonably assess when this risk declines.
Major Geopolitical Conflicts	<p>While a phase-one trade deal with China was agreed upon in 2019, the Trump administration continues to apply pressures on China to proceed with additional trade negotiations. However, with a recent increase in rhetoric from the US due to the administration's insistence that China be held more accountable for the spread of the COVID-19 virus, relationships are likely to remain strained (if not escalate) over the near-term.</p> <p>US elections are also a likely risk factor for financial markets, particularly if the results are close and the results of the election are contested by one of the parties. Regarding risk surrounding the ultimate outcome of the election, due to a lack of clarity at this point regarding all the respective policies that might be implemented, markets have been hesitant to price in any meaningful or directional expectations.</p>
Resource Scarcity	The growing world population, urbanization, and a growing middle class, particularly in emerging economies, could all lead to a scarcity of resources, including food, water, land, energy, and minerals. As natural resource demand continues to grow, rising commodity prices may hurt the living standards of many and increase the risk of geopolitical conflicts.
Rising Populist and Antitrade Sentiment	Tariffs started by the US against China and some of its allies, along with elections/votes in the US, Europe, UK, and Mexico highlight growing populist/antitrade sentiment. Stagnant wages, growing inequality, and the perception of jobs being lost abroad are key contributors to ongoing unrest. Reducing trade and imposing tariffs will likely lead to higher prices, reduced efficiencies, and heightened tensions between countries. As economies begin to recover from the COVID-19 crisis, the risk remains for certain areas to be blamed for the outbreak and the emergency measures taken disproportionately benefiting some, further increasing tensions.
Unexpected Inflation	Developed countries across the world are struggling to generate inflation despite record low (or negative) interest rates and monetary and fiscal stimulus. Most traditional measures of inflation remain near or below central bank targets. With expectations for a significant increase in inflation low, an unexpected rise could be disruptive, leading to higher interest rates and lower growth and valuations. Further, the inability of monetary authorities to meaningfully impact the direction of inflation could prove problematic should deflationary-forces take hold.

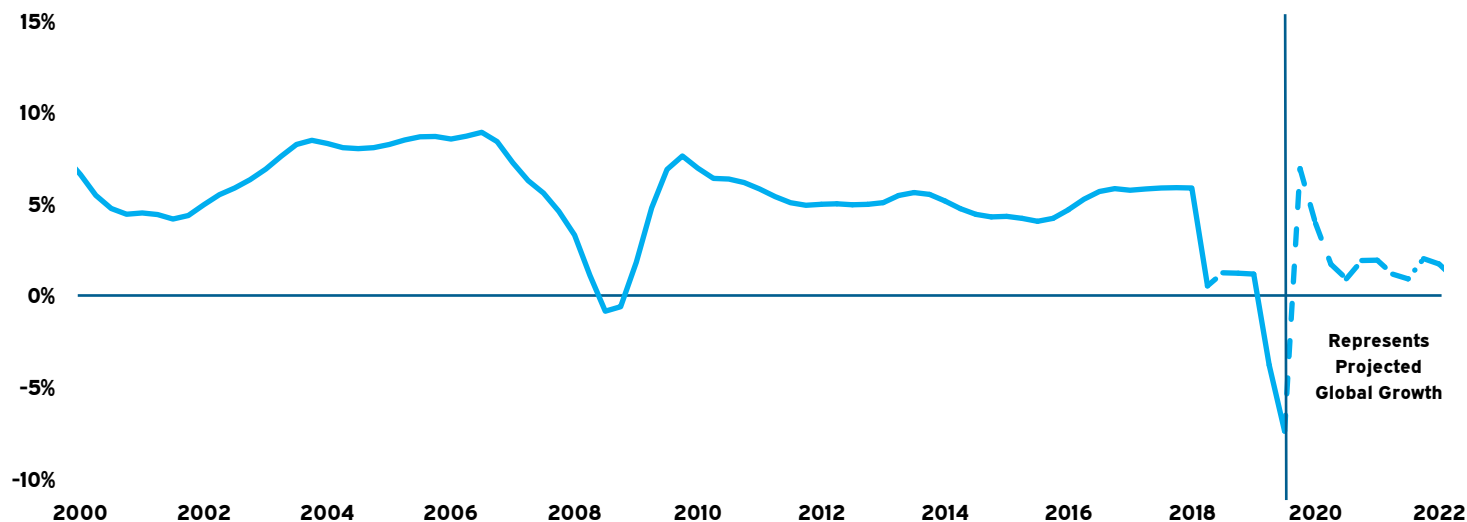
Positive Macroeconomic Trends Matrix



Positive Macroeconomic Trends Overviews

COVID-19 Response	Many public and private companies are aggressively working towards a vaccine, rebuilding personal protective equipment supplies and capabilities, and changing business operating frameworks to better support the immediate societal changes due to the pandemic. The collective efforts of the global community, and the lessons learned from the various measures taken, will provide valuable guidance for addressing pandemic-related risks in the future.
Emergence of "Gig Economy"	The "gig economy" will take a material hit due to the virus-related economic shut-down, but should ultimately continue to grow once the recovery is meaningfully underway. The new structure allows workers flexibility in the jobs they take, their schedules, and offers the ability to work outside of a traditional office. For companies, it has led to lower labor and overhead costs (more employees are working remotely), flexibility in hiring workers temporarily, and lower recruiting and training costs.
Global Monetary Stimulus	The record stimulus measures taken by global central banks have provided a meaningful support to financial markets. With policymakers openly stating their strategy is to keep policy extremely accommodative until the COVID-19 induced crisis has passed with a measured degree of confidence, easy financial conditions should provide support for riskier and higher-yielding assets, and support broad economic growth.
Global Fiscal Stimulus	Consistent with the emergency measures taken by monetary authorities, fiscal policy turned notably accommodative amidst the COVID-19 crisis. A number of countries, including the world's largest, have unleashed record levels of direct stimulus to support their respective economies. Measures have taken many forms, including direct cash disbursements to consumers, extension of unemployment benefits, and loans and grants to small- and mid-sized businesses. The recently announced EU stimulus measures, which represents a broadly positive development for the Union that has historically had challenges reaching coordinated agreements, could suggest a more positive and cordial relationship going forward which should help the overall economic picture for the area.
Growth of Emerging Markets Middle Class	In emerging economies, the middle class is projected to grow significantly over the next twenty years. This growing middle class should increase consumption globally, which in turn will drive GDP growth and create jobs.
Improvements in Education/Health Care	Literacy rates and average life spans have increased globally, particularly in emerging economies. Higher literacy rates will drive future growth, helping people learn new skills and improve existing skills. Longer lives increase incentives for long-term investments in education and training, resulting in a more productive work force and ultimately more growth.

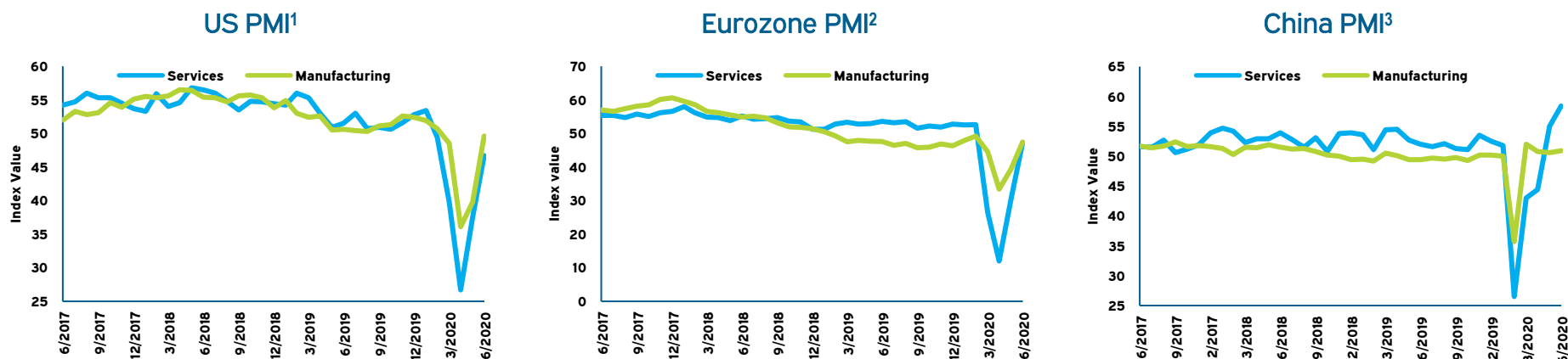
Global Nominal Gross Domestic Product (GDP) Growth¹



- Global GDP experienced a historic decline in the second quarter of 2020 due to the COVID-19 pandemic and the severe economic restrictions to stem the spread.
- Forecasts are for a notable recovery over the next year as economies open, and then economic growth to settle back to levels consistent with longer-term averages.
- That said, the notable recent rise in infections could increase the risk of economies needing to shut back down and subsequently drive GDP back to lower levels.

¹ Source: Oxford Economics. Updated July 2020. GDP data after Q2 2020 are estimates.

Global PMIs

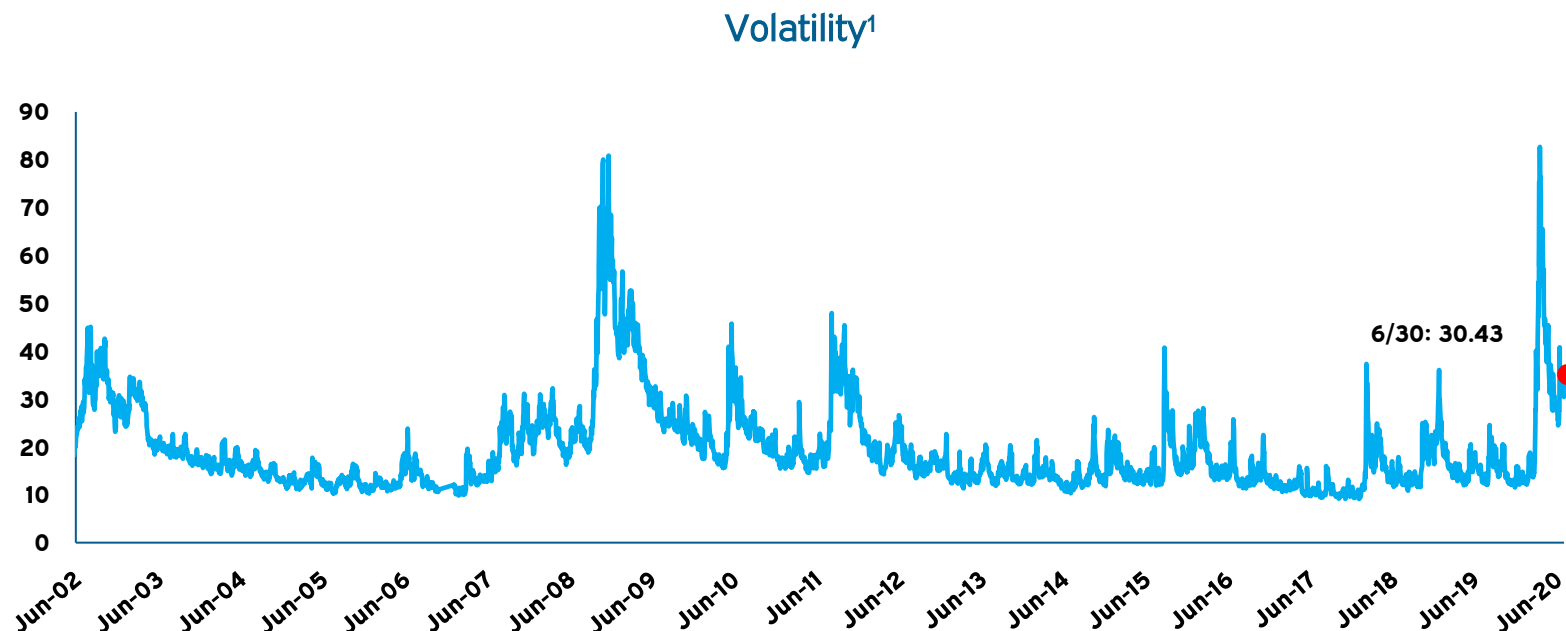


- Purchasing Managers Indices (PMI) based on surveys of private sector companies, initially collapsed across the world to record lows, as output, new orders, production, and employment were materially impacted by closed economies.
- Readings below 50 represent contractions across underlying components and act as a leading indicator of economic activity, including the future paths of GDP, employment, and industrial production.
- The services sector has been particularly hard hit by the stay-at-home restrictions in many places.
- As the Chinese economy reopened over the last few months, their PMI's, particularly in the service sector, recovered materially. In the US and Europe the indices have improved from their lows but remain below prior levels as they struggle to contain the spread of the virus.

¹ Source: Bloomberg. US Markit Services and Manufacturing PMI. Data is as of June 2020.

² Source: Bloomberg. Eurozone Markit Services and Manufacturing PMI. Data is as of June 2020.

³ Source: Bloomberg. Caixin Services and Manufacturing PMI. Data is as of June 2020.



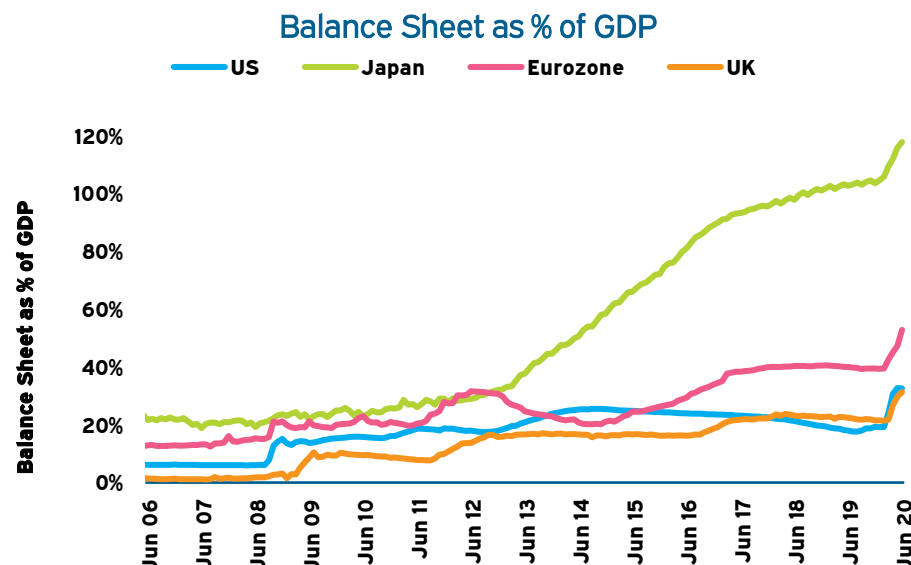
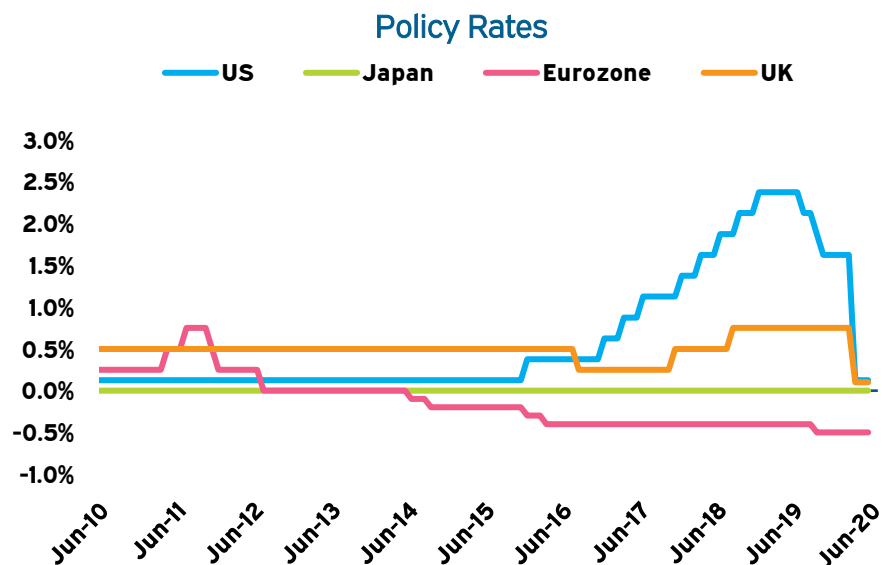
- With the fiscal and monetary support and corresponding improvement in investor risk sentiment, expectations of short-term volatility, as measured by the VIX index, declined relatively quickly from record levels.
- At the recent height, the VIX index reached 82.7, surpassing the pinnacle of volatility during the GFC, showing the magnitude of the crisis, and of investor fear.
- Going forward, there remains the risk of additional spikes in volatility (as seen in the continued elevated index level), as investors continue to process the impacts of COVID-19 and the effectiveness of the policy response.

¹ Bloomberg. Represents daily VIX data and is as of June 30, 2020.

Policy Responses

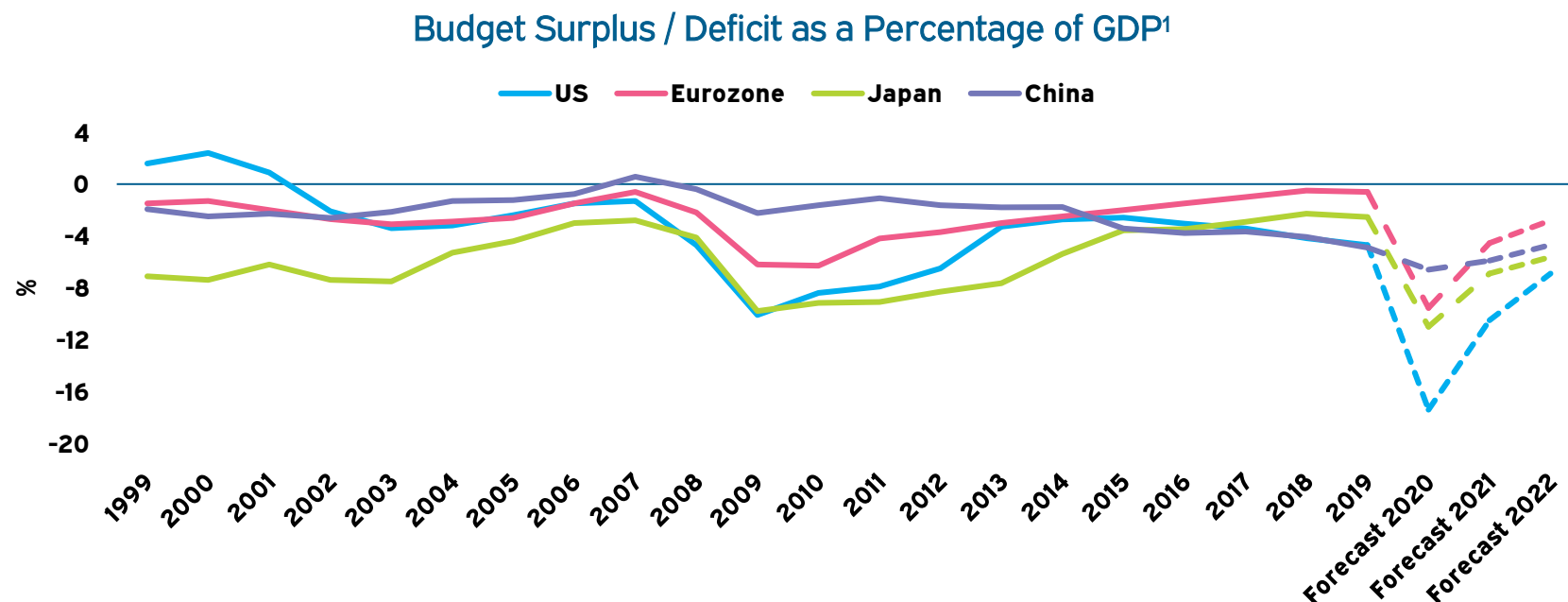
	Fiscal	Monetary
United States	<p>\$50 billion to states for virus-related support, interest waived on student loans, flexibility on tax payments and filings, expanded COVID-19 testing, paid sick leave for hourly workers, \$2 trillion package for individuals, businesses, and state/local governments. Additional \$484 billion package to replenish small business loans, provide funding to hospitals, and increase testing.</p>	<p>Cut policy rates to zero, forward guidance suggesting aggressively accommodative policy for the foreseeable future, unlimited QE4, offering trillions in repo market funding, restarted and extended CPFF, PDCF, MMTF programs to support lending and financing markets, expanded US dollar swap lines with foreign central banks, announced IG corporate debt buying program with subsequent amendment for certain HY securities, Main Street Lending program, Muni liquidity facility, repo facility with foreign central banks, and easing of some financial regulations for lenders.</p>
Euro Area	<p>European Union: Shared 750 billion euro stimulus package. German: 220 billion euro stimulus. France: 57 billion euro stimulus. Italy: 75 billion euro stimulus. Spain: 200 billion euro and 700 million euro loan and aid package, respectively.</p>	<p>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, and then expanded the purchases to include lower-quality corporate debt.</p>
Japan	<p>Hundreds of trillions in yen stimulus for citizens and businesses, including low interest loans, deferrals on taxes, and direct cash handouts.</p>	<p>Initially increased QE purchases (ETFs, corporate bonds, and CP) and then expanded to unlimited purchases and doubling of corporate debt and commercial paper, expanded collateral and liquidity requirements, and 0% interest loans to businesses hurt by virus.</p>
China	<p>Tax cuts, low-interest business loans, extra payments to gov't benefit recipients.</p>	<p>Expanded repo facility, policy rate cuts, lowered reserve requirements, loan-purchase scheme.</p>
Canada	<p>\$7.1 billion in loans to businesses to help with virus damage, C\$381 billion stimulus.</p>	<p>Cut policy rates, expanded bond-buying and repos, lowered bank reserve requirements.</p>
UK (BOE)	<p>190 billion pound stimulus, 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.</p>	<p>Lowered policy rates and capital requirements for UK banks, restarts QE program and subsequently increased the purchase amounts.</p>
Australia	<p>\$11.4 billion, subsidies for impacted industries like tourism, one-time payment to gov't benefit recipients.</p>	<p>Policy rate cut, started QE.</p>

Central Bank Response¹



- Global central banks took aggressive policy actions as signs of economic deterioration emerged due to the restrictions put in place to stop the spread of COVID-19.
- Measures include the cutting of policy rates, deploying emergency stimulus through expanded quantitative easing, liquidity programs to support funding markets, targeted refinancing operations, and forward guidance commitments to keep monetary policy accommodative until the pandemic is thoroughly under control.
- Uncertainties remain regarding the effectiveness of monetary policy supporting the economy through COVID-19, and their potential inflationary impacts and the ballooning of balance sheets.

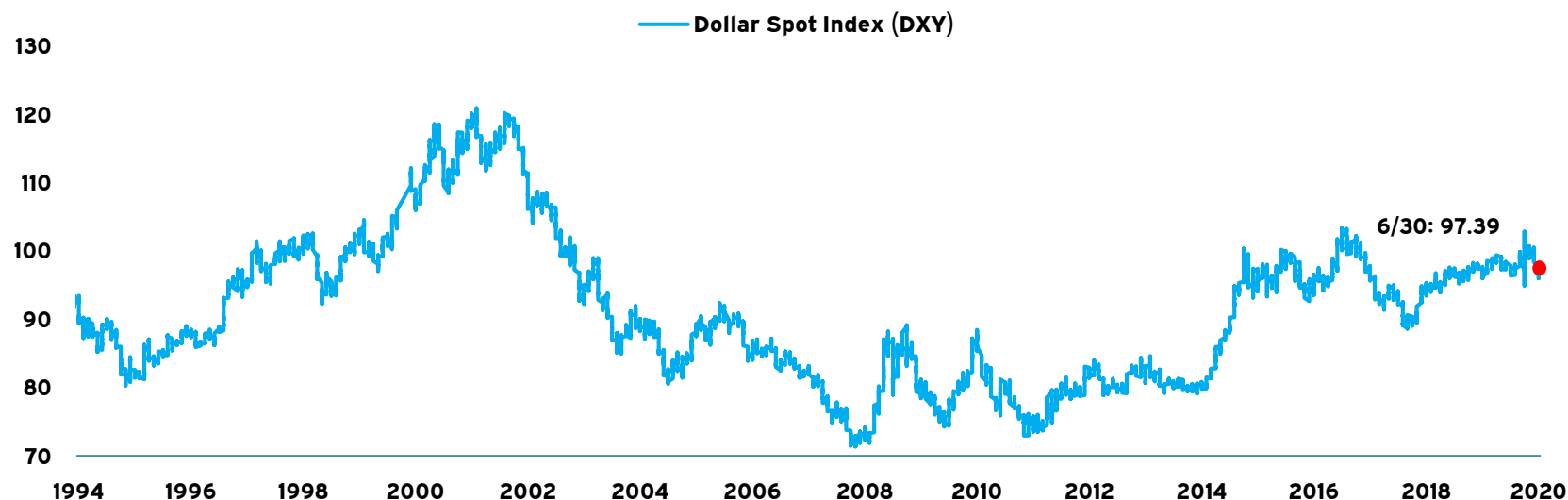
¹ Source: Bloomberg. Data is as of June 30, 2020.



- Budget deficits are deteriorating meaningfully for developed economies due to the massive fiscal support and the severe economic contraction's impact on tax revenue.
- If fiscal and monetary policy stimulus measures fail to meaningfully stimulate growth over the coming years, deficits could remain historically high and potentially require additional sovereign debt issuance to cover the shortfall, which increases default and interest rate risks.

¹ Source: Bloomberg. Data is as of December 31, 2019. Projections via Bloomberg Forecasts July 2020.

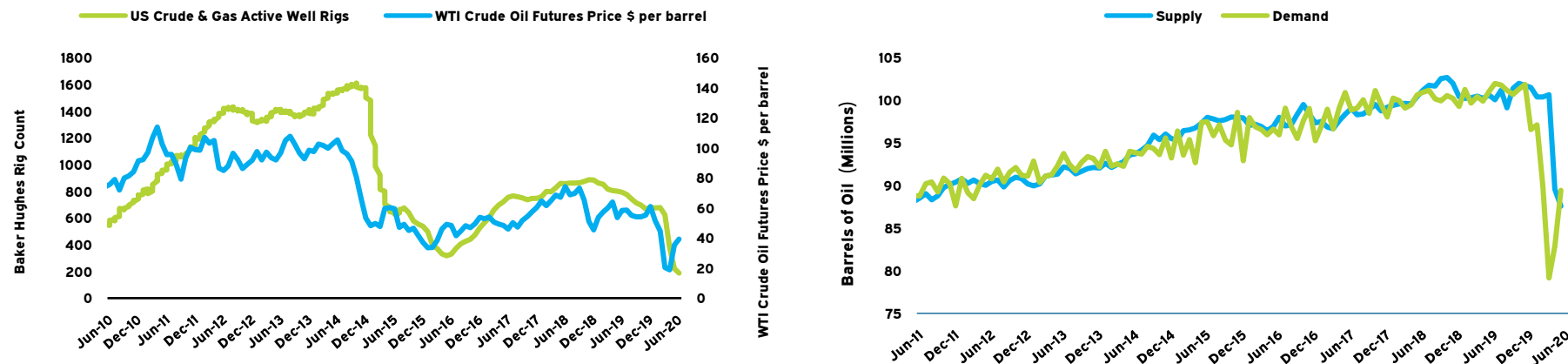
US Dollar versus Broad Currencies¹



- When financial markets began aggressively reacting to the COVID-19 developments, the US dollar experienced notable 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 led to appreciation versus most major currencies.
- To help ease the heightened demand for US dollars, the Federal Reserve, working with a number of global central banks, re-established the US dollar swap program, providing relief to other currencies.
- Recently we have seen some weakness in the dollar as interest rates declined and the US has particularly struggled with containing the virus. Going forward, the dollar's safe haven quality and the still higher rates in the US could provide support.

¹ Source: Bloomberg. Data is as of June 30, 2020.

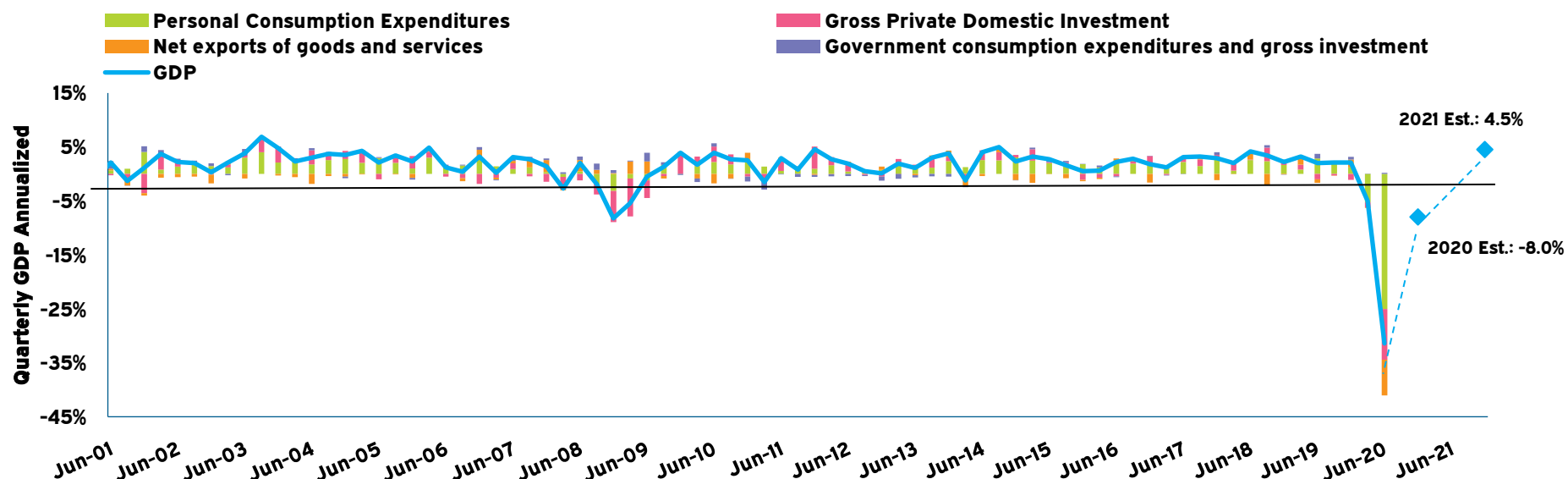
Oil Price and Rig Activity¹



- In an unprecedented move in April, oil prices plunged to negative levels on concerns over storage capacity in the US due to declines in demand, leading producers to pay to offload their oil for May delivery. Consistent with demand disruptions, active well rigs declined to multi-year lows as companies shuttered drilling operations.
- Oil prices were also heavily impacted during the first quarter by the Saudi Arabia-initiated price war after Russia decided not to participate in the proposed OPEC+ supply cuts.
- An agreement across the cartel was finally achieved, providing support to oil prices, and then expectations on building demand by reopening global economies pushed oil prices back to roughly \$40 by the end of the quarter.
- As OPEC+ considers rolling back production cuts, and the virus spread increases with the potential to weigh on demand, oil prices could experience renewed price pressure.

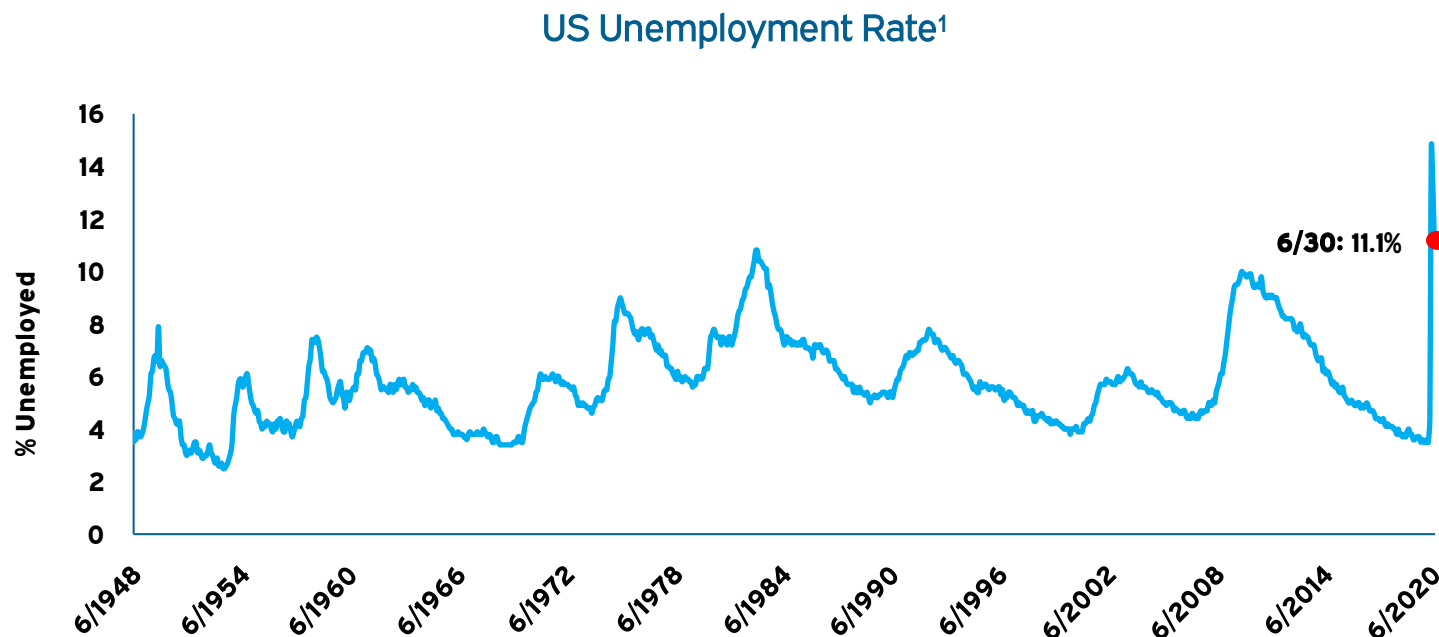
¹ Source: Monthly data via Bloomberg. Data is as of June 30, 2020.

US Real Gross Domestic Product (GDP) Growth¹



- The “third” estimate of US GDP came in at an annualized rate of -31.4%, slightly better than the prior estimate of -31.7%, and the initial estimate of -32.9%. The decline still represents a record decline and officially put the US economy into a recession.
- The weakness in GDP for Q2 was led by a significant decline in personal consumption and a decline in private domestic investment. Government spending helped mitigate the weakness, but not by enough to provide a meaningful counter to the overall disruption.
- US growth is forecasted to rebound by 4.5% in 2021, as the economy normalizes. The risk remains that a spike in cases may drive economies to consider shutting back down, and consumers to reconsider returning to their prior spending and consumption preferences.

¹ Source: US Bureau of Economic Analysis. Data is as of the second quarter of 2020 and represents the third estimate. Annual projections via IMF World Economic Outlook June 2020 thereafter.

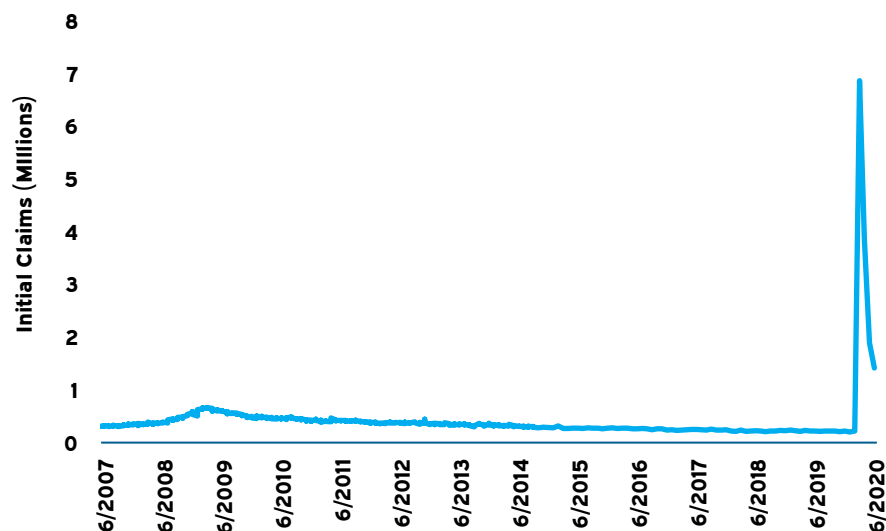


- The US labor picture improved over the quarter, as the economy slowly reopened, but unemployment levels remain historic. The jump in cases as the quarter ended prompted concerns about the sustainability of the recovery.
- The Bureau of Labor Statistics continues to include supplementary notes in monthly labor releases, cautioning about the overall reliability of the data due to collection challenges amidst the pandemic.
- Enhanced unemployment benefits has largely supported those without jobs. As of this writing, President Trump has signed an executive order to extend the benefits, albeit at a lesser amount.

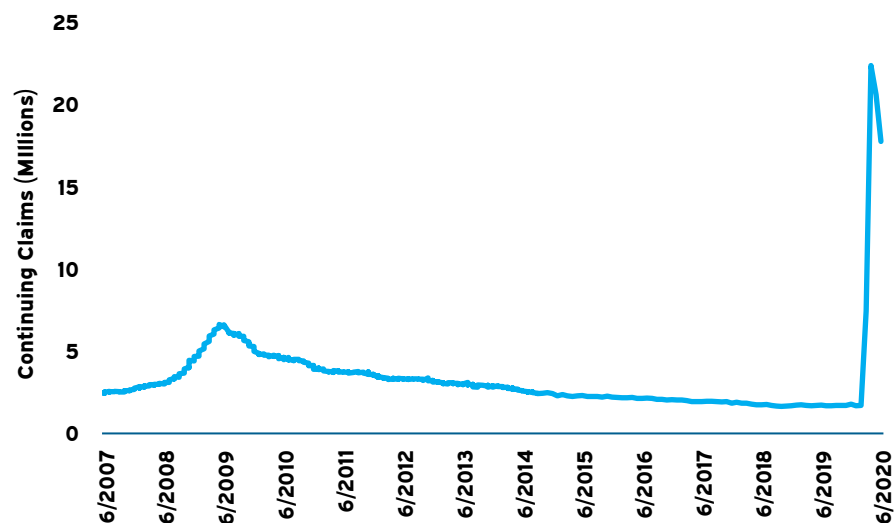
¹ Source: Bloomberg. Data is as of June 30, 2020.

US Jobless Claims

US Initial Jobless Claims¹



Continuing Claims²

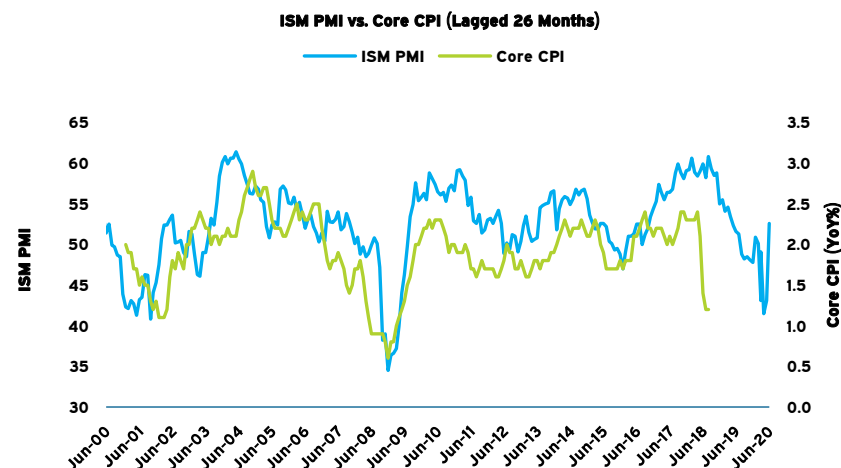
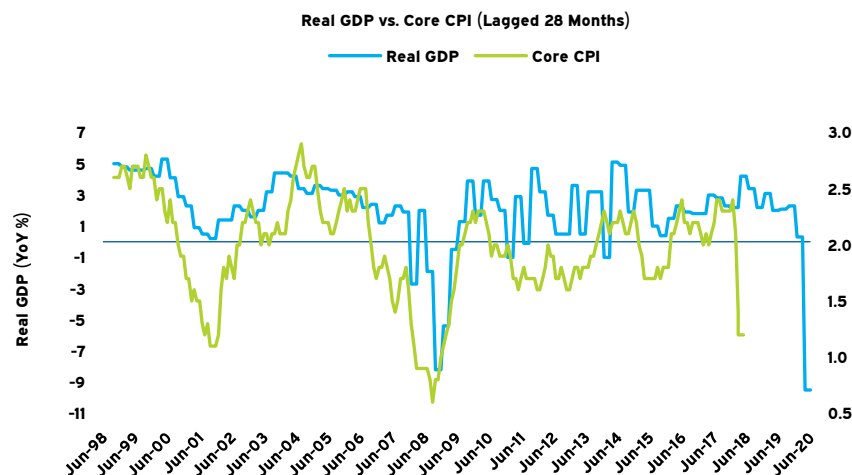


- Through June, nearly 50 million people have filed for initial unemployment benefits. This level exceeds the 22 million jobs added since the GFC, highlighting that this situation is without precedent. Despite the recent decline in initial claims, they remain many multiples above the peak of the GFC.
- Continuing jobless claims (i.e., those currently receiving benefits) declined from the record level of 22.6 million people, ending the quarter at 17.8 million people, but also remain at record levels.

¹ Source: Bloomberg. Seasonally adjusted initial jobless claims. Data is as of June 30, 2020.

² Source: Bloomberg. US Continuing Jobless Claims SA. Data is as of June 30, 2020.

US Inflation^{1, 2}



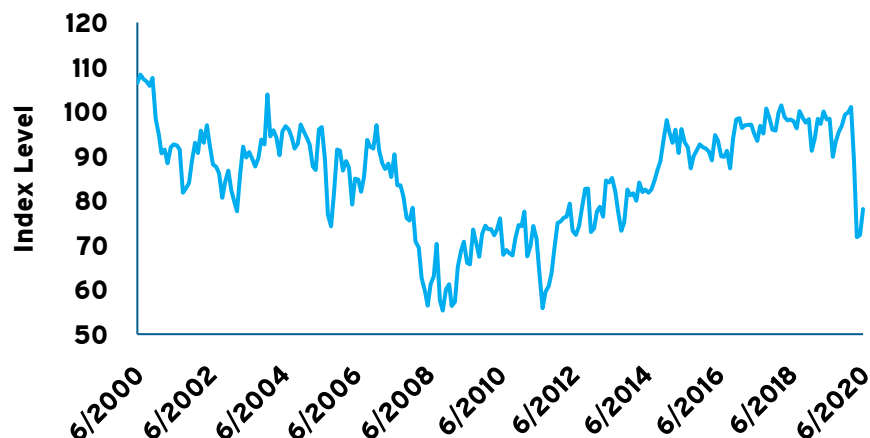
- Inflation is considered a lagging indicator, reflecting past economic conditions.
- This leads to economic conditions today being a means of forecasting future inflation levels.
- Real GDP and manufacturing indicators, like the ISM Purchasing Managers Index, have historically been useful indicators of future inflation.
- Recently, manufacturing data and GDP declined dramatically from their peaks, leading to aggressive fiscal and monetary responses in the US (and globally) to help mitigate the impact of the pandemic on the global economy.
- As fiscal and monetary policy measures stimulate the economy, we could ultimately see increases in growth and inflation but, in the short-term, deflationary risks are of a greater concern.

¹ Source: Bloomberg. Data is monthly and as of June 30, 2020 for Core CPI. Data for US Real GDP is annual and as of the second quarter (third estimate). It is compared to each monthly CPI data point for the respective quarter for illustrative purposes.

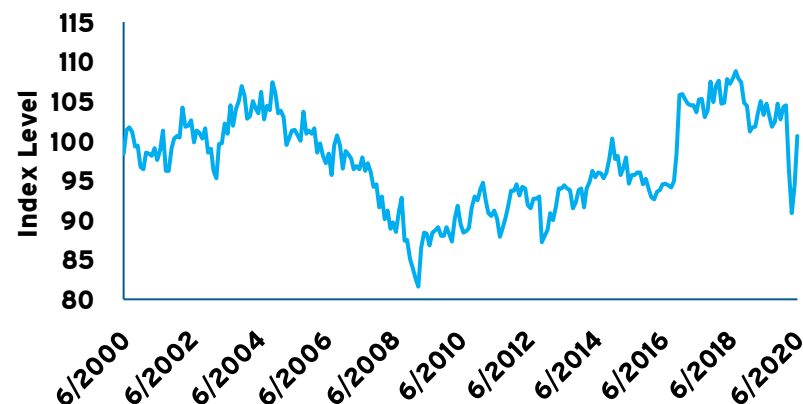
² The last data point for ISM PMI and Core CPI represents the June 30, 2020 value.

Sentiment Indicators

University of Michigan Consumer Sentiment¹



Small Business Confidence²



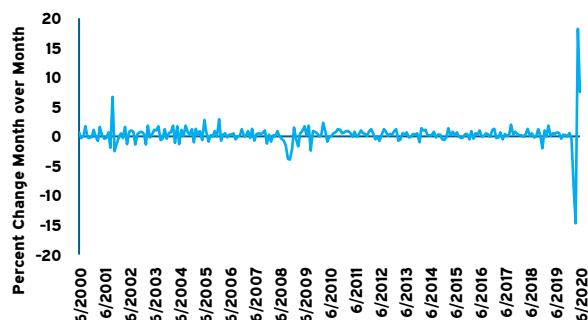
- The attitudes of businesses and consumers today are often a useful indicator of future economic activity.
- Consumer spending comprises close to 70% of US GDP, making the attitudes of consumers an important driver of economic growth. Additionally, small businesses comprise a majority of the economy, making sentiment in that segment important too.
- As restrictions caused many businesses to close and employees to be laid off, sentiment indicators saw corresponding declines.
- Recently, as the economy has begun reopening, sentiment measures improved, but they remain at multi-year lows and fragile going forward given the spike in virus cases.

¹ Source: Bloomberg. University of Michigan Consumer Sentiment Index. Data is as of June 30, 2020.

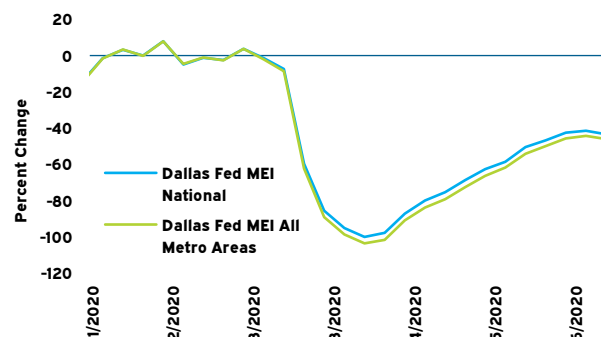
² Source: Bloomberg. NFIB Small Business Optimism Index. Data is as of June 30, 2020.

US High Frequency Data

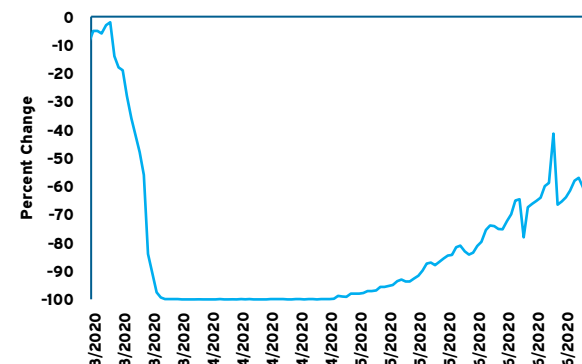
US Retail Sales¹



Dallas Fed Mobility and Engagement Index²



Restaurant Traffic³



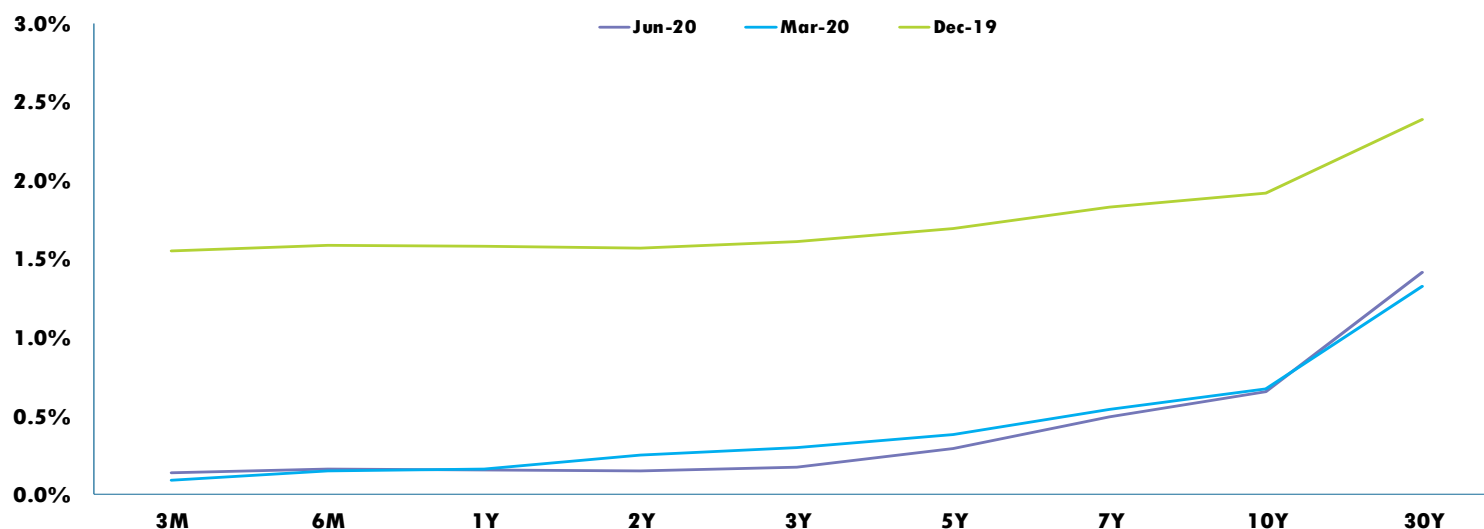
- Due to stay-at-home orders and forced business closures, many industries have seen revenues plummet, and in some cases, virtually vanish. As the economy reopens, some measures have improved significantly while others remain weak.
- Companies operating in the retail and restaurant industries, as well as other leisure and hospitality focused businesses, have been impacted dramatically and remain vulnerable going forward depending on the tracking of the virus.
- Looking forward, improvements in these indicators could offer early signs of a decline in the virus' economic impact.

¹ Source: Bloomberg. Data is as of June 30, 2020 and represents the adjusted Retail Sales SA Monthly % Change.

² Source: Bloomberg. Data is as of June 30, 2020 and represents the deviation from normal mobility behaviors induced by COVID-19 (formerly the "Social Distancing Index"). The index represents a weighted average of various lengths of time that a mobile device, like a cell phone, leaves its "home" or place of residence, and/or how long a device stays at home. A decline in this index represents a mobile device at home for a longer period of time than average.

³ Source: Bloomberg. This data shows year-over-year seated diners at restaurants on the OpenTable network across all channels: online reservations, phone reservations, and walk-ins. Only states or cities with 50+ restaurants in the sample are included. All such restaurants on the OpenTable network in either period are included. Data is as of June 30, 2020. Index start date 2/19/20.

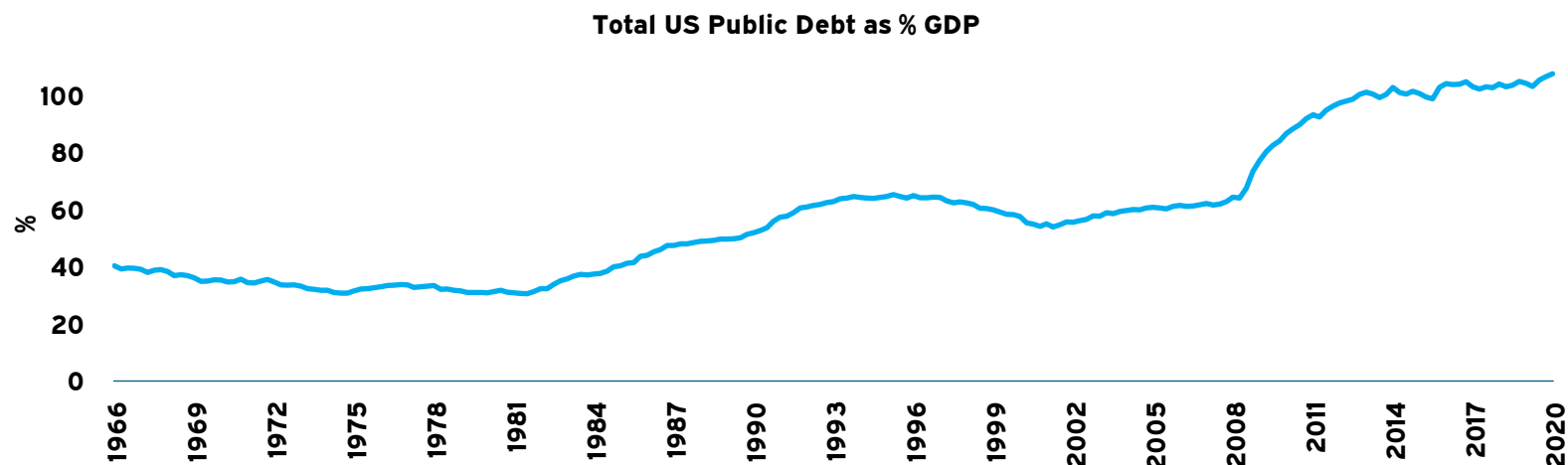
US Yield Curve¹



- The US Treasury yield curve declined materially since last year.
- Cuts in monetary policy rates and policy makers' open commitments to keep rates low for the foreseeable future drove yields down in shorter maturities, while flight-to-quality flows, low inflation, and economic growth uncertainty drove the changes in longer maturities.
- The Federal Reserve's unlimited quantitative easing purchase program provided further downward pressure on interest rates, particularly in the short- and medium-term sectors due to the purchases being focused on those segments.

¹ Source: Bloomberg. Data is as of June 30 2020. Numbers represent month-end values.

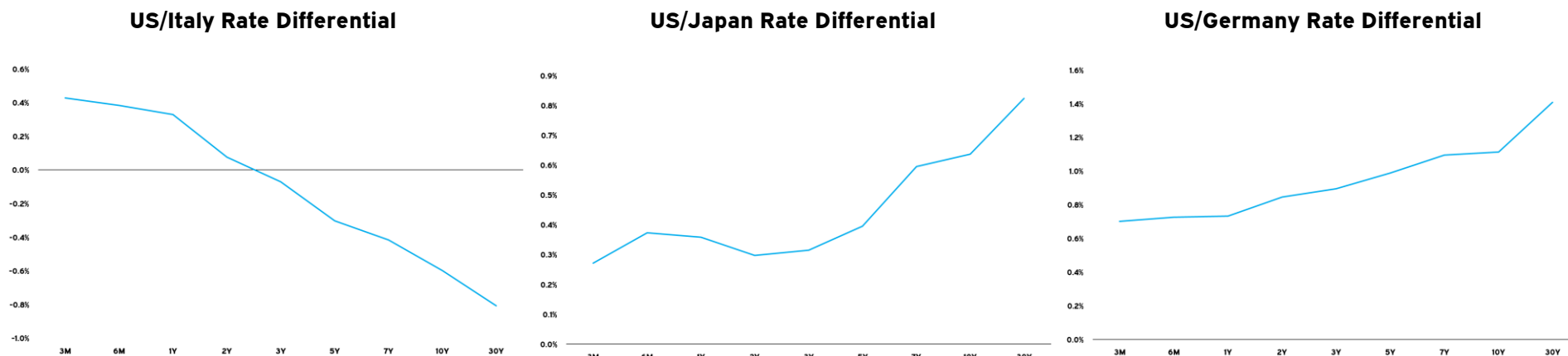
Treasury Issuance Continues to Increase¹



- Treasury issuance continues to increase as the government raises funds to pay for programs related to supporting the economy during the pandemic.
- Many market commentators are becoming more concerned about the rising debt service as the debt surpasses 100% of US GDP.
- However, the Federal Reserve's purchase program is acquiring a significant portion (almost 100%) of the outstanding issuance, and thus the government does not need to worry about those interest or principal payments (the Fed's interest payments go back to the Treasury). Also, for an advanced economy like the US with domestic denominated debt, high levels of debt can often be supported for some time (e.g., Japan).

¹ Source: Federal Reserve Bank of St. Louis. Q2 data is not yet available and is as of March 31, 2020.

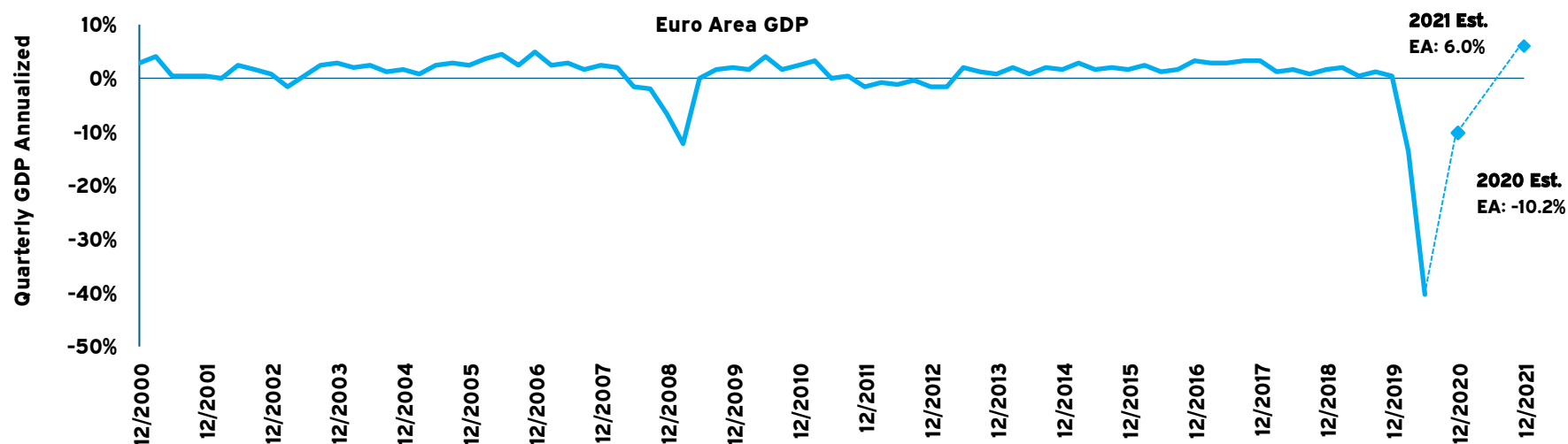
Government Sovereign Debt Curves¹



- Despite the US yield curve declining dramatically this year, interest rates in the US remain higher than many other countries.
- Compared to Japanese and German sovereign debt yields, US rates remain higher across the yield curve. However, the majority of the US yield curve is now lower than that of Italy, given greater risks to the Italian economy from the impact of COVID-19.

¹ Source: Bloomberg. Data is as of June 30, 2020. Rate differential data represents the differences in the yield for a US Treasury at each maturity versus the respective similar bond for each country.

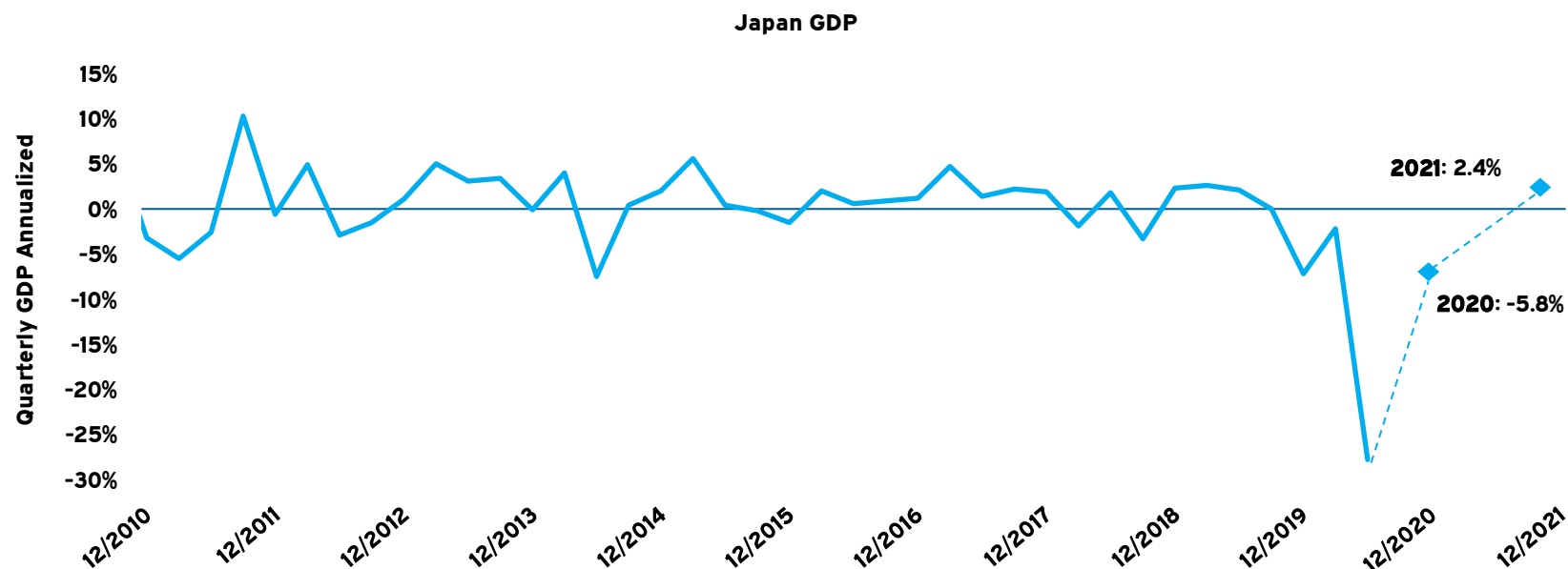
European Economic Conditions¹



- Euro area GDP fell at a historic annualized rate of 40.3% in the second quarter and officially entered a recession.
- Projections for the full year are for a decline of 10.2% in the broad euro-area, according to the IMF. Economic growth is then expected to be around 6.0% in 2021, but with the same risks as the US of potentially reopening economies too soon.
- Major economies such as France, Spain, and Italy have been materially impacted by distancing measures, and are expected to decline by as much as 10.0% (France), 10.0% (Spain), and 10.4% (Italy) for the year; recovery estimates for 2021 are around 6.0% for all three economies.

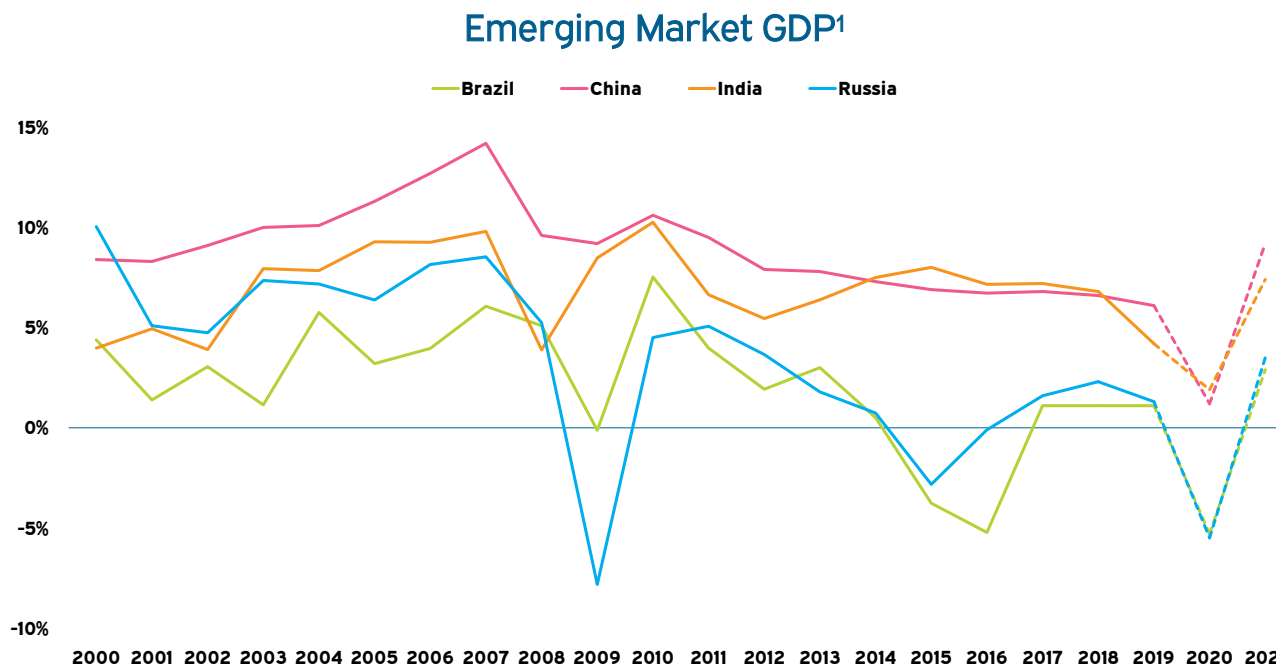
¹ Source: Bloomberg. Data is as of the second quarter of 2020. Annual projections via IMF World Economic Outlook June 2020 thereafter. Euro Area figures are annualized by Meketa.

Japanese Economic Conditions¹



- Before the spread of the COVID-19 virus, Japan's economy was already experiencing stress, with GDP declining 7.0% (annualized) in the fourth quarter of 2019, as consumption declined due to the October sales tax hike.
- After the first quarter decline of 2.5% (annualized), the Japanese economy declined a record 27.8% (annualized) in the second quarter driven by the COVID-19 impacts and pushing Japan further into a recession.
- Of all the major economies, Japan's central bank had the largest stimulus in place coming into the crisis that they, like others, expanded to offset the economic impact of restrictions.
- Similar to other major economies, the Japanese economy is expected to decline in 2020, but recover in 2021.

¹ Source: Bloomberg. Data is as of the second quarter of 2020. Annual projections via IMF World Economic Outlook June 2020 thereafter.



- Emerging markets, broadly, are expected to see economic deterioration and recoveries similar to developed economies.
- Behind the US, emerging economies like Brazil, India, Russia, and Mexico have become hotspots for the virus and with relatively weaker healthcare systems, often close living conditions, and generally poor populations, the potential exist for a real humanitarian crisis.
- However, some economies such as China, are expected to experience less impact, largely due to aggressive societal measures taken to mitigate the spread of the virus, which, in the case of China, has allowed authorities to re-open sooner than other economies.

¹ Source: IMF. World Economic Outlook. June 2020 update. Estimates start after 2019.



- Growth projections are also weak for emerging and developing economies, although China is expected to post positive growth of 1.0% for 2020, and a significant 8.2% in 2021.
- The positive growth expectations are largely due to the Chinese government's ability to quickly impose aggressive distancing measures, largely isolate and contain the virus, and then quickly move to re-open their economy.

¹ Source: Bloomberg. Data is as of the second quarter of 2020. Annual projections via IMF World Economic Outlook June 2020 thereafter.

Summary

Several issues are of primary concern going forward:

- 1) **Economies opening too soon from virus-related restrictions, and ultimately needing to re-deploy distancing policies.**
 - A number of countries, including the US, lifted or provided too much flexibility in social distancing restrictions too early, and are now seeing spikes in infections. This could move governments to re-impose distancing measures, or completely shutter economies, which would likely depress employment and economic growth.
- 2) **Consumers permanently, or for an extended period of time, changing economic behaviors.**
 - The COVID-19 pandemic resulted in an immediate change to societal norms that could last beyond the actual virus. Changing consumer spending and work-environment preferences could limit large events including concerts and sports, dining out, travel, and leisure activities. As consumers make up a large portion of developed economy GDPs, this could drive many companies to failure with lasting impacts on the economy.
- 3) **Persistently high unemployment due to a significant number of companies not surviving the downturn.**
 - Persistently high unemployment due to the failure of companies (and potentially entire sectors) could hurt the growth of economies and, subsequently, government spending on mandatory and discretionary services going forward.

Summary (continued)

4) Virus-related fears affecting globalization.

- Appetite for globalization was already waning before the pandemic, as seen in the increase in populist and anti-trade sentiment over the last few years. This has been perhaps most evident in the trade wars initiated by the current US administration against a number of its trading partners, including China and Europe. With an increase in rhetoric regarding certain countries not doing enough to limit the spread of the virus outside their borders, as well as restrictions on transportation and sanitation concerns, many countries could elect to advance policies that limit trade and globalization.

5) An increase in sovereign debt risk due to the record issuance by governments.

- Sovereign debt issuance needed to fund emergency fiscal stimulus measures for impacted countries has been record setting. Moreover, sovereign debt levels, particularly for the US, were already at record levels. With this increase in debt issuance comes an increase in risk of sovereign nations not being able to pay their debts in the future, if revenue fails to meet debt payment requirements. This is particularly critical for the world's largest economies, such as Japan with a debt to GDP ratio of over 200%, and the US at nearly 110%.

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