A Bridge Past COVID-19

UPDATE: Charting the Economic Cliff

April 17, 2020

KPMG Economics

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The Economic Impact of COVID-19

COVID-19 Economic Cliff

- As COVID-19 spread across the globe, successive countries – 78% of the world’s population as of April 14th – have engaged in varying degrees of social distancing.1
- Mandated social distancing, combined with voluntary aversion behavior, will cause sharp falls in discretionary consumption and some declines in non-discretionary consumption as well as a fall in business and household investment.
- Job losses have already started and dwarf what was seen during the Global Financial Crisis; we expect job losses of at least 25 million in the second quarter.
- The sudden drop in economic activity has hurt indebted firms and firms with little cash flow the most. We expect permanent loss of some small and severely impacted businesses as well as restructuring in sectors such as Energy and Consumer Discretionary, two sectors that are heavily hit and heavily indebted.
- Government programs are an economic bridge to the future, which will prevent depression but not a recession.

COVID-19 Economic Climb

- The strength of the recovery is dependent on several things any one of which is beneficial; all of which are better when combined:
  - The ability to flatten the curve and return the healthcare system to normal functioning (via more effective treatment protocol, widely deployed)
  - Widespread testing and contact tracing (regular testing of symptomatic and asymptomatic populations)
  - Better knowledge and proven efficacy of serologic treatment (immunity passports)
  - A vaccine and the ability to administer it to all regardless of health insurance coverage status
- We assume the economy can reduce mandated lockdowns on or around June 15th (We are working on other scenarios.)
- We assume a slow restart via aversion behavior by households and firms unless all of the medical mitigation efforts are in effect
- The pace of climb back to a normal economy will be heavily impacted by the number of full-time employees separated from their firms; the more separations the slower the restart.

1 KPMG Economics analysis of University of Oxford Stringency Index

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A bridge is required to get past COVID-19’s economic impact

— This schematic shows the circular flow of different factors of the economy which all interact simultaneously.

— Each country in the world is experiencing the health and economic shocks from COVID-19.

— In order to prevent overwhelming the health system from an explosion of cases, many countries are temporarily taking drastic measures to flatten the case curve and reduce the long-term economic impact of the virus.

— Social distancing restrictions and behavioral shifts have led to sharp declines in business activity and consumer spending worldwide.

Source: KPMG Economics, Baldwin (2020)

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April 17th, 2020
The global economy was slowing into 2019

The global economy was slowing into 2019 due to a combination of factors, including:

- Slowing Chinese economy
- Escalating trade tensions
- Brexit uncertainty
- Tighter global liquidity conditions
- Labor shortages in the U.S.

The headwinds that the world faced in 2019 mean that many large economies confronted COVID-19 with slowing growth which will impact the degree of economic hardship they experience.

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### Top 10 Countries by GDP

<table>
<thead>
<tr>
<th>Country</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
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</thead>
<tbody>
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<td>2.4</td>
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<tr>
<td>China</td>
<td>6.9</td>
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<td>Japan</td>
<td>2.2</td>
<td>0.3</td>
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<td>Germany</td>
<td>2.8</td>
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<tr>
<td>Canada</td>
<td>3.2</td>
<td>2.0</td>
<td>1.6</td>
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</tbody>
</table>

Notes: Annual growth rate y/y%
Source: KPMG Economics, Respective Countries’ National Statistics Office, Haver Analytics
The IMF forecasts global GDP to fall by 3.0% this year in its Spring 2020 outlook.

The IMF has coined the phrase The Great Lockdown which aptly describes the experience in many countries.

Unlike the Global Financial Crisis, the 2020 downturn will also impact emerging market economies, we believe by possibly more than the IMF forecasts.

Advanced economies have thus far experienced more severe outbreaks and have responded with stricter social distancing and lockdown measures, causing record drops in output.

Source: KPMG Economics, IMF World Economic Outlook (April 2020), Gopinath (April 2020)
COVID-19 shows up in high frequency PMI data

The PMIs are the most comprehensive high-frequency data.

The virus outbreak has disrupted manufacturing supply chains and sharply curtailed energy and commodity demand.

Shown on the left is the services PMI data, which helps quantify the magnitude of the destruction of discretionary spending.

Sweden is engaged in a modified social distancing protocol which will be interesting to watch from both a health and economic perspective.

### Services PMI

<table>
<thead>
<tr>
<th></th>
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Source: KPMG Economics, IHS Markit, Haver Analytics (Mar 2020)

Note: The Purchasing Managers Index(PMI) is a monthly survey of industry that is a real-time snapshot of economic conditions. It is a diffusion index and a reading greater than 50 indicates expansion while a reading below 50 indicates contraction.
Elevated debt levels will impact economic outcomes

- The higher the debt levels the more costly and economically damaging social distancing is for an economy.
- Governments are taking measures to extend credit terms for businesses and households; this mitigates fallout but raises questions about moral hazard, i.e., a lack of incentive to guard against risk where one is protected from its consequences.
- U.S. debt capital markets have seen significant strain as the coronavirus spread to the U.S., reflecting the pernicious problem leverage can create when growth slows, or in this case falls off a cliff.

Private Nonfinancial Sector Credit (% of GDP)

- Canada: 102% Household Sector, 115% Corporate Sector
- France: 61% Household Sector, 155% Corporate Sector
- China: 54% Household Sector, 150% Corporate Sector
- U.K.: 84% Household Sector, 82% Corporate Sector
- Japan: 59% Household Sector, 103% Corporate Sector
- U.S.: 75% Household Sector, 75% Corporate Sector
- Germany: 54% Household Sector, 59% Corporate Sector
- Italy: 41% Household Sector, 69% Corporate Sector
- Brazil: 30% Household Sector, 43% Corporate Sector
- India: 12% Household Sector, 44% Corporate Sector

Source: KPMG Economics, BIS, Haver Analytics (2019Q3)
Excludes Luxembourg, Netherlands, Sweden and others with higher ratios due to smaller GDP size
In a growing economy debt amplifies growth, at first

Debt Amplifies Growth Through All Channels of Growth

- From Roman to modern times, expanding debt is a time-honored way to grow economies.
- Economies that expand debt either too quickly or too much eventually face increased risk premia; that is higher borrowing costs.
- Higher borrowing costs slow growth and can lead to a vicious circle of unwinding debt like the world experienced in the global financial crisis.
- Adverse shocks can also slow growth, which can be problematic because debt levels are no longer sustainable at a lower growth rate.
A shock turns the growth cycle into a debt spiral

Debt Amplifies Contraction Through All Channels of the Economy

- Sometimes debt expansions grow enough that no adverse impacts are felt.
- More often, debt grows too much and adverse consequences lead to an unwind of the debt.
- The unwind can be orderly or, as is more often the case, disorderly.
- The adverse shock of COVID-19 is a combination of supply shock, demand shock and financial markets shock.
- The Federal Reserve and U.S. Government are taking measures to lead to a more orderly unwind.
China PMIs indicate partial rebound in March activity

The Chinese economy is attempting to get back to normal. While one could easily see this graph and assume a “V” shaped recovery is likely, it is unclear the pace of rebound from the bottom will continue at this pace.

The services reading is still significantly below the 50 level indicating a fall in activity.

In February 2020, China saw lows of 40.3 for manufacturing and 26.5 for services, below the lows seen during the Global Financial Crisis which were 40.9 and 51.2, respectively.

China’s GDP for Q1 was -6.8% y/y and -33.8% q/q SAAR.

Source: KPMG Economics, Caixin, IHS Markit (March 2020), Haver Analytics
Passenger data indicates a slower path to recovery

When data is viewed on a year-over-year basis, one can see that the fall in economic activity is continuing.

While the data is off the lowest levels observed in late January and early February, it is still well below 2019 levels.

Daily Passenger Volumes in China Have Collapsed

- 2019 to 2020
- Source: KPMG Economics, China's Ministry of Transport, Haver Analytics (April 13, 2020)

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Most OECD countries report GDP on a q/q seasonally adjusted annualized (SAAR) basis in order to capture the trends in the growth rate.

A sudden shock such as COVID-19 is not a trending situation and therefore the annualized fall in GDP can obfuscate the path of growth firms experience in the economy.

For this reason, we show GDP q/q SAAR in the bars as well as on a year-over-year basis via the line on the graph.

While quarterly rebound is expected, on a SAAR basis in 2020, it will take until 2021 to show growth.

U.S. Real GDP Growth

Note: Forecasts are inherently time sensitive and projections are dated as of April 8, 2020.
Source: KPMG Economics, BEA, Macroeconomic Advisors by IHS Markit, Haver Analytics

April 17th, 2020
Before COVID-19, strong jobs growth in the U.S. drove the unemployment rate down to a 50-year low of 3.5% in February 2020.

During the expansion, it was the consumer, much more than business investment, that drove growth.

As more workers become employed, aggregate income levels rise, giving more spending power to consumers.

From October 2010 to February 2020, the U.S. experienced a historic 113 consecutive months of jobs growth, causing consumption to buttress economic growth.
An unprecedented decline in jobs to decimate demand

COVID-19 related job losses will completely overshadow anything we have seen in past recessions, in both speed and magnitude.

We expect March employment losses of 701k to be revised down 1.5 million and employment to fall by a record 20 million in April.

For comparison, during the Global Financial Crisis, it took 7 quarters to lose about 8.8 million jobs between 2008 and 2009.

U.S. Employment and Consumption

Note: Forecasts are inherently time sensitive and projections are dated as of April 7, 2020.
Source: KPMG Economics, BEA (Q4 2019), BLS (Mar 2020), Haver Analytics
Discretionary spending to collapse in the first half of the year

— While the economy is likely to reopen by the third quarter, based on experiences in other countries such as China, there is a risk that the recovery in discretionary spending is likely to be slow rather than rapid.

— We also anticipate that gaps between the SBA loans and other recovery provisions will mean that jobs lost during The Great Lockdown will take several quarters to fully return.

— This friction in the labor market could begin to cause especially hard hit households to cut back on non-discretionary spending as the rebound will not be instantaneous for everyone.

**Personal Consumption Expenditures**

**Contributions to Real GDP Growth**

<table>
<thead>
<tr>
<th>Year</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
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<tbody>
<tr>
<td>2019</td>
<td></td>
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<td>2020</td>
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<tr>
<td>2021</td>
<td></td>
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</tbody>
</table>

**Historical**

**Forecast**

- Discretionary includes motor vehicles and parts, other durable goods, other nondurable goods, and other services
- Nondiscretionary includes food, gasoline, housing, and health care

Source: KPMG Economics, Bureau of Economic Analysis, Haver Analytics

Note: Discretionary includes motor vehicles and parts, other durable goods, other nondurable goods, and other services. Nondiscretionary includes food, gasoline, housing, and health care.

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— We expect retail consumption for nonessential businesses in certain regions to fall again throughout April 2020.

— Bottlenecks with the SBA loan process could mean the retail sector is slower to recover than many others as 52% of firms are small, employing fewer than 50 workers.

— Smaller firms have fewer days cash flow on hand and are likely to have less access to credit than larger firms.

Foot Traffic by Sector Indexed to January 1, 2020
7-Day Moving Average

Source: KPMG Economics, Safegraph Customer Traffic

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COVID-19 creates uneven impact for retail

Webpage traffic data shows consumers have shifted consumption away from discretionary expenses (apparel, restaurants, home improvement) and toward nondiscretionary spending (food and general merchandise).

Online sales rose 3.1% m/m in March versus a decline of 8.7% m/m for retail sales as a whole. Online sales rose 9.7% y/y versus a decline of 3.8% for retail sales overall.

Source: KPMG Economics, Alexa Web Traffic
Details of March jobs data shows dislocation below the surface

- Although job losses only totaled 701k in March, millions of other workers were disrupted despite not being officially counted as “unemployed.”
- Based on the surge in movement out of the labor market, we expect some noise in the April jobs data.
- The number of people who have jobs but who were absent from work is unprecedented.

Source: KPMG Economics, @emitedeschi analysis of the Current Population Survey
Our model estimates that close to 25 million people will lose their jobs in Q2 due to businesses closing their doors and/or laying off workers.

For firms that must let workers go, the best case is for workers to be temporarily laid off because those workers receive health care benefits. It will also be easier to call them back to work once social distancing ends.

The speed and magnitude of the decline is truly unprecedented. These estimates compare to 8.8 million jobs lost over 25 months during the Global Financial Crisis.
Up to 40% of U.S. households will be financially strapped

Out-of-pocket expenses for COVID-19 treatment and hospital stays can be substantial, a hardship for 40% of U.S. adults, as can other unexpected expenses that may arise due to the Great Lockdown.

24% of U.S. workers do not have paid sick leave. This population is likely to be most economically vulnerable to social distancing requirements.

9.4% of Americans do not have health insurance. Not only will this population be adversely impacted but it could hamper efforts to reduce disease spread if ill people do not seek care or get tested.

How U.S. Adults Cover an Unexpected $400 Expense

- Nearly 40% of U.S. adults could not cover a $400 expense
- 27% would borrow or sell something
- 12% could not cover the expense

Source: KPMG Economics, Federal Reserve Board (2019)
Bridge to recovery may come too late for some sectors

Retail Trade and Leisure and Hospitality are the two sectors seeing the most severe impact.

While other industries are hard hit, these two sectors are dominated by small and medium sized firms with razor thin margins and low cash buffers.

Many small firms have already had to shut their doors, lay off workers, and hope they can re-open after the economy returns to normal.

Separating workers from firms makes restarting longer and more costly, but for many small firms the assistance to bridge them to the other side did not come quickly enough and they were forced to lay off workers.

<table>
<thead>
<tr>
<th>Establishment Size (Employees)</th>
<th>Leisure and Hospitality</th>
<th>Retail Trade Ex. Food, Beverage, and Drug Stores</th>
<th>Health Services</th>
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<tbody>
<tr>
<td></td>
<td>Total Employees (Thous)</td>
<td>Share of Employment (%)</td>
<td>Total Employees (Thous)</td>
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<tr>
<td>&lt;5</td>
<td>547</td>
<td>3%</td>
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<td>5-9</td>
<td>970</td>
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Source: KPMG Economics, Bureau of Labor Statistics (Q1-2019), Quarterly Census of Employment and Wages (QCEW), Haver Analytics
The CARES Act 1st round of relief will likely be added to

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<td>Direct Support for State and Local Governments</td>
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<td>One-Time Payment to Individuals</td>
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</tr>
<tr>
<td>Enhance Unemployment Benefits (April-July)</td>
<td>$260 bn</td>
</tr>
<tr>
<td>Direct Lending to Distressed Industries</td>
<td>$75 bn</td>
</tr>
<tr>
<td>Small Business Loans &amp; Grants (incl. PPP)</td>
<td>$380 bn</td>
</tr>
<tr>
<td>Other Spending: Education, Food Assistance, Tax Deferrals</td>
<td>$425 bn</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>$1,670 bn</strong></td>
</tr>
<tr>
<td>Funding for Fed 13(3) - Leveraged 10x by the Fed</td>
<td>$450 bn</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>$2,120 bn</strong></td>
</tr>
</tbody>
</table>

Source: KPMG Economics, MacroPolicyPerspectives, CARES Act
For research on multipliers see the following:
Leeper et al
CBO

— The CARES Act can be broken into five parts.
  - Support for healthcare and states
  - Support for households
  - Support for businesses
  - Support for markets
  - Other

— Economic multipliers for each category are impacted by the use of monetary and fiscal policy together. They can range from 0.12-3.5 depending on multiple factors including the modeling technique.

— Research by Correia, et al. of the 1918 flu shows that geographies that used aggressive social distancing early showed faster growth after the pandemic passed.
### Approved Loans

<table>
<thead>
<tr>
<th>Industry</th>
<th>Approved Loans</th>
<th>Approved Dollars</th>
<th>% of Amount</th>
<th>Share of GDP</th>
<th>Share of Nonfarm Employment</th>
<th>Share of March 2020 Nonfarm Job Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>114,838</td>
<td>$34.0 bn</td>
<td>13.73%</td>
<td>4.1%</td>
<td>5.0%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Professional, Scientific, and Technical Services</td>
<td>126,372</td>
<td>$30.3 bn</td>
<td>12.26%</td>
<td>7.7%</td>
<td>6.4%</td>
<td>-</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>72,728</td>
<td>$30.3 bn</td>
<td>12.25%</td>
<td>11.0%</td>
<td>8.5%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>114,236</td>
<td>$27.9 bn</td>
<td>11.27%</td>
<td>7.6%</td>
<td>13.6%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>108,179</td>
<td>$22.7 bn</td>
<td>9.18%</td>
<td>3.1%</td>
<td>9.2%</td>
<td>63.7%</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>105,796</td>
<td>$21.2 bn</td>
<td>8.57%</td>
<td>5.5%</td>
<td>10.3%</td>
<td>6.6%</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>42,280</td>
<td>$14.3 bn</td>
<td>5.79%</td>
<td>6.0%</td>
<td>3.9%</td>
<td>-</td>
</tr>
<tr>
<td>Other Services</td>
<td>93,538</td>
<td>$12.3 bn</td>
<td>4.97%</td>
<td>2.1%</td>
<td>3.9%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Administrative and Support</td>
<td>45,492</td>
<td>$10.6 bn</td>
<td>4.29%</td>
<td>3.2%</td>
<td>6.2%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Real Estate and Rental and Leasing</td>
<td>48,940</td>
<td>$8.0 bn</td>
<td>3.22%</td>
<td>13.4%</td>
<td>1.6%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>28,181</td>
<td>$7.8 bn</td>
<td>3.16%</td>
<td>3.2%</td>
<td>3.7%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Finance and Insurance</td>
<td>36,714</td>
<td>$5.8 bn</td>
<td>2.33%</td>
<td>7.6%</td>
<td>4.3%</td>
<td>-</td>
</tr>
<tr>
<td>Educational Services</td>
<td>15,213</td>
<td>$5.7 bn</td>
<td>2.29%</td>
<td>1.2%</td>
<td>2.5%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Information</td>
<td>13,693</td>
<td>$4.4 bn</td>
<td>1.80%</td>
<td>5.2%</td>
<td>1.9%</td>
<td>-</td>
</tr>
<tr>
<td>Arts, Entertainment, and Recreation</td>
<td>25,785</td>
<td>$3.7 bn</td>
<td>1.49%</td>
<td>1.1%</td>
<td>1.6%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Mining</td>
<td>8,133</td>
<td>$3.0 bn</td>
<td>1.22%</td>
<td>1.4%</td>
<td>0.4%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Agriculture, Forestry, Fishing and Hunting</td>
<td>27,428</td>
<td>$3.0 bn</td>
<td>1.20%</td>
<td>0.8%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Management of Companies and Enterprises</td>
<td>2,278</td>
<td>$0.9 bn</td>
<td>0.36%</td>
<td>2.0%</td>
<td>1.6%</td>
<td>-</td>
</tr>
<tr>
<td>Public Administration</td>
<td>3,058</td>
<td>$0.8 bn</td>
<td>0.33%</td>
<td>12.3%</td>
<td>15.0%</td>
<td>-</td>
</tr>
<tr>
<td>Utilities</td>
<td>2,056</td>
<td>$0.7 bn</td>
<td>0.28%</td>
<td>1.6%</td>
<td>0.4%</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,034,938</strong></td>
<td><strong>$247.5 bn</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>-</strong></td>
</tr>
</tbody>
</table>

Source: KPMG Economics, Department of Treasury, SBA, April 13, 2020 Report
Fiscal stimulus targets the bottom 80% of incomes

Distribution of Household Benefits Under the $2 trillion CARES Act

<table>
<thead>
<tr>
<th>Income group</th>
<th>Average benefit</th>
<th>Share receiving rebate</th>
<th>Share of benefit</th>
<th>Average Annual Income</th>
<th>Percent change in after tax income</th>
<th>Share of National Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottom quintile</td>
<td>$1,385</td>
<td>100.0%</td>
<td>24.1%</td>
<td>$21,000</td>
<td>46.2%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Second quintile</td>
<td>$1,665</td>
<td>100.0%</td>
<td>22.2%</td>
<td>$45,000</td>
<td>7.3%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Middle quintile</td>
<td>$1,765</td>
<td>100.0%</td>
<td>22.7%</td>
<td>$72,000</td>
<td>4.1%</td>
<td>14.7%</td>
</tr>
<tr>
<td>Fourth quintile</td>
<td>$1,945</td>
<td>92.3%</td>
<td>21.6%</td>
<td>$110,000</td>
<td>2.5%</td>
<td>20.3%</td>
</tr>
<tr>
<td>80-90%</td>
<td>$1,970</td>
<td>80.8%</td>
<td>8.9%</td>
<td>$160,000</td>
<td>1.6%</td>
<td></td>
</tr>
<tr>
<td>90-95%</td>
<td>$295</td>
<td>35.2%</td>
<td>0.6%</td>
<td>$218,000</td>
<td>0.2%</td>
<td></td>
</tr>
<tr>
<td>95-99%</td>
<td>$0</td>
<td>0.0%</td>
<td>0.0%</td>
<td>$360,000</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>99-99.9%</td>
<td>$0</td>
<td>0.0%</td>
<td>0.0%</td>
<td>$1,789,000</td>
<td>0.0%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Top 0.1%</td>
<td>$0</td>
<td>0.0%</td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: “Income” is defined as AGI plus: above-the-line deductions, nontaxable interest income, nontaxable Social Security benefits, nontaxable pensions and annuities, employer-side payroll taxes, and corporate liability. Note that this definition excludes transfer income and thus understates low-income tax units’ income.

Source: KPMG Economics, Penn-Wharton Budget Model

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— Because of the severe job losses expected for the bottom two quintiles, the CARES Act targets lower income quintiles.

— While pain will be felt economy-wide, safeguarding those with little discretionary income is key to preventing economic depression.

— This one-time payment will help families meet expenses, though there are concerns it will reach some too late to prevent missed payments.

— The Fed is encouraging banks to utilize their liquidity and capital buffers to be flexible with customers experiencing financial challenges related to COVID-19.
Bond rates suggest equity market rallies may be premature

U.S. Treasury markets experienced unusual liquidity constraints in mid-March causing high volatility and a spike in yields above 1.0% despite falling risk assets around the world.

Starting March 9, the Federal Reserve launched a series of actions to stabilize funding markets. The Fed increased daily offerings of overnight repos from $100bn to $1tn.

On March 15, the Fed lowered the primary credit rate by 150 basis points, to 0.25 percent, and announced that banks could borrow from the discount window for up to 90 days.

The Fed also undertook extensive purchases of Treasuries and MBS, totaling $1.6tn over four weeks from mid-March to mid-April to support market functioning.

Source: KPMG Economics, MoF, Bundesbank, US Treasury, BoE, Haver Analytics (April 14, 2020)
Bank capital buffers are a point of strength for the financial system

Liquidity of Largest U.S. Banks

<table>
<thead>
<tr>
<th>Bank</th>
<th>Potential Credit Drawdowns</th>
<th>Liquidity Pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citigroup</td>
<td>$159.5 billion</td>
<td>$438.0</td>
</tr>
<tr>
<td>Bank of America</td>
<td>$158.7</td>
<td>$464.0</td>
</tr>
<tr>
<td>JPMorgan</td>
<td>$151.8</td>
<td>$545.0</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>$139.5</td>
<td>$373.0</td>
</tr>
<tr>
<td>Goldman Sachs</td>
<td>$57.4</td>
<td>$170.0</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>$40.3</td>
<td>$178.0</td>
</tr>
</tbody>
</table>

— Capital buffers built up after the global financial crisis are necessary as firms draw down on credit lines provided by banks.
— Bloomberg estimates firms will draw down at least $700 billion in credit lines.
— Bloomberg estimates this will entail selling “liquid” assets; this will no doubt cause continued strain in the bond market, both treasuries and corporate fixed income.
— Assets assumed to be liquid are experiencing widening bid/offer spreads as liquidity dries up in some markets.
— The Fed’s liquidity support is essential to keep markets functioning.

Source: KPMG Economics, Bloomberg Economics, Company Filings
The Fed has announced numerous programs aimed at stemming liquidity bottlenecks in order to restore market functioning.

The size of the Fed’s balance sheet could rise to $12tn by the end of 2020 from $4.4tn before the onset of the programs.

On March 15, the Fed announced outright purchases of Treasury securities and MBS. We forecast total purchases of $4tn in 2020.

On April 9, the Fed announced additional actions to provide up to $2.3tn in loans via Special Purpose Vehicles (SPVs) to push out money to firms, totaling $2.5tn to date.

Other actions such as swap lines and repo operations could add another $1.5tn to the Fed’s balance sheet.

Note: Forecasts are inherently time sensitive and projections are dated as of April 14, 2020. Source: KPMG Economics, Federal Reserve Board (April 8, 2020)
Fed revives its financial crisis playbook….

The Federal Reserve was able to act expeditiously by reviving many of the tools it used during the Global Financial Crisis of 2008-2009 to help with market liquidity in both domestic and global markets.

<table>
<thead>
<tr>
<th>Policy Tools</th>
<th>Program Details</th>
<th>Balance Sheet Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interest Rates</strong></td>
<td>Federal funds rate target slashed to 0.0% to 0.25% in two emergency actions,</td>
<td>$25bn to $120bn</td>
</tr>
<tr>
<td></td>
<td>Primary credit rate at discount window reduced to 0.25%</td>
<td></td>
</tr>
<tr>
<td><strong>Emergency Liquidity</strong></td>
<td>Large scale repo operations over multiple days to smooth funding markets</td>
<td>$400bn to $1tn</td>
</tr>
<tr>
<td></td>
<td>Primary Dealer Credit Facility (PDCF) - offering O/N, term funding with maturities up to 90 days;</td>
<td>$25bn to $120bn</td>
</tr>
<tr>
<td></td>
<td>primary dealers can offer a broader range of collateral than government</td>
<td></td>
</tr>
<tr>
<td><strong>Swap Lines</strong></td>
<td>Enhanced U.S. dollar swap lines with Bank of Canada, the Bank of England, the Bank of Japan, the ECB, and the Swiss National Bank</td>
<td>$400bn to $900bn</td>
</tr>
<tr>
<td></td>
<td>Temporary U.S. dollar swap lines with Reserve Bank of Australia, the Banco Central do Brasil, the Danmarks Nationalbank, the Bank of Korea, Banco de Mexico, Norges Bank (Norway), the Reserve Bank of New Zealand, the Monetary Authority of Singapore, and the Sveriges Riksbank (Sweden)</td>
<td>$150bn to $450bn</td>
</tr>
<tr>
<td><strong>Asset Purchases</strong></td>
<td>Quantitative easing (QE) - purchases of Tsys, mortgage-backed securities (MBS); buy $500bn &amp; $200bn, respectively (3/15/2020); now open-ended amounts; A path to yield curve control</td>
<td>up to $4tn</td>
</tr>
<tr>
<td><strong>Money Market Liquidity</strong></td>
<td>Commercial Paper Funding Facility (CPFF) - purchase 3m corporate, asset-backed, municipal CP</td>
<td>$50bn to $100bn</td>
</tr>
<tr>
<td></td>
<td>Term Asset-Backed Securities Loan Facility (TALF) - facilitate issuance of asset-backed securities;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>eligible securities include auto loans and leases, student loans, credit card receivables (consumer and corporate), floorplan loans, insurance premium finance loans, certain small business loans guaranteed by the Small Business Administration</td>
<td>$50bn to $100bn</td>
</tr>
</tbody>
</table>

Source: KPMG Economics, Federal Reserve Board
…and expands its toolkit to swiftly aid markets and firms

<table>
<thead>
<tr>
<th>Policy Tools</th>
<th>Program Details</th>
<th>Balance Sheet Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Credit Facilities</strong></td>
<td>Expanded Primary &amp; Secondary Market Corporate Credit Facilities (PMCCF &amp; SMCCF) - for new bond and loan issuance and outstanding corporate bonds, respectively; eligibility now includes investment grade debt as of March 22 but subsequently downgraded to no lower than BB-</td>
<td>$25bn to $850bn</td>
</tr>
<tr>
<td></td>
<td>Municipal Liquidity Facility - lending to states and municipalities, purchase short-term notes with duration of 2 years</td>
<td>$30bn to $500bn</td>
</tr>
<tr>
<td><strong>SPVs to Assist Firms Directly</strong></td>
<td>Main Street New Loan &amp; Expanded Loan Facility (MSELF) - ensure credit to small and mid-sized firms; offer 4-year loans in which payments could be deferred by one year</td>
<td>up to $600bn</td>
</tr>
<tr>
<td></td>
<td>Paycheck Protection Program Liquidity Facility (PPPLF) - supply liquidity to financial institutions via term financing to small firms; all depository institutions that originate PPP loans are eligible to borrow under the facility; working to expand program to other lenders</td>
<td>up to $349bn</td>
</tr>
<tr>
<td><strong>Money Market Liquidity 2.0</strong></td>
<td>Money Market Mutual Fund Liquidity Facility (MMLF) - provide liquidity to MMMFs; make loans available to eligible financial institutions secured by high-quality assets purchased from MMMFs</td>
<td>$50bn to $100bn</td>
</tr>
<tr>
<td></td>
<td>Term Asset-Backed Securities Loan Facility (TALF) - Fed expands purchases to include CMBS, CLOs</td>
<td>$50bn to $100bn</td>
</tr>
</tbody>
</table>

Source: KPMG Economics, Federal Reserve Board
Baa corporate bonds at risk of downgrades in recession

— Over 50% of investment grade corporate bonds, a full $2.8tn, are rated Baa, which is the lowest rung on the investment grade ratings ladder.

— For a number of companies, not only do they have to be concerned about recession, they also have to worry about rollover risk in a time when capital markets may pull back in providing credit.

— In particular, energy firms face substantial downgrade risk due to the crash in oil prices below $30 per barrel.

— Financial companies, health care and communications comprise 48% of Baa bonds.

### U.S. Baa Corporate Bonds

- **Financials**: $624bn (22%)
- **Health Care**: $377bn (14%)
- **Communications**: $353bn (13%)
- **Energy**: $268bn (10%)
- **Industrials**: $246bn (9%)
- **Consumer Staples**: $212bn (7%)
- **Utilities**: $146bn (5%)
- **Technology**: $135bn (5%)
- **Consumer Discretionary**: $111bn (4%)
- **Materials**: $78bn (3%)
- **Energy**: $62bn (2%)

Source: KPMG Economics, Bloomberg (April 10, 2020), Total = $2.8tn
High yield corporate bonds at risk of default in a recession

— Communications and consumer discretionary represent the highest share of high yield (HY) corporate bonds.

— The consumer discretionary and energy sectors are at a particularly high risk of default from falling consumption and energy prices, putting $363 billion of corporate debt at risk of default.

— The size and scope of government assistance may ameliorate some of the worst impacts of the economic fallout from Covid-19.

Source: KPMG Economics, Bloomberg (April 10, 2020), Total = $1.2tn

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— High yield (HY) corporate bond yields have surged YTD, rising 419 basis points (bps) since January 1st, 2020.

— Rising HY spreads versus U.S. Treasury yields reflects market expectations of higher default risks as a result of the COVID-19 outbreak.

— Consumer discretionary, energy, and industrial companies carry the highest default risk relative to their peers, representing approximately $560 billion in outstanding HY debt.

— Plunging oil prices put the already highly leveraged energy sector at a particularly high risk of default, as evidenced by the 991 bps rise in HY energy spreads.
Consumer discretionary sector faces default risk

As job losses continue to mount, and with 22mn jobs lost in the last four weeks, consumers will aim to protect their household balance sheets, thereby reducing their spending on discretionary goods.

Restaurants and lodging are two industry sectors which are particularly vulnerable due to their high debt loads.

The top five industries with the highest net debt to EBITDA multiple include home and office furnishings manufacturing, lodging, automotive retailers, restaurants, and cruise lines.

Note: EBITDA = Earnings before interest, taxes, depreciation, and amortization; EV (Apr 7, 2020), Net Debt (Q4-2019); dotted lines = weighted avg;
Excludes Home & Office Furnishings Mfg (10.3x Net Debt to EBITDA, 21x EV to EBITDA).
Source: KPMG Economics, Bloomberg LLP, Haver Analytics

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April 17th, 2020
Sustained low oil prices to be an issue for the highly leveraged

Oil Producer Valuations vs. Leverage

- The firms with the highest leverage will experience the most long-term fallout from the combination of low prices and low demand.
- In particular, U.S. refiners and midstream firms, along with Canadian majors, are carrying a heavier debt load relative to their peers.
- Under normal circumstances low prices would cause some demand increase which would help raise prices, but with social distancing being practiced the world over, demand will remain suppressed at least until Q3.

Note: EBITDA = Earnings before interest, taxes, depreciation, and amortization; EV (Apr 15, 2020), Net Debt (Q4-2019)
Source: KPMG Economics, Bloomberg LLP, Haver Analytics
COVID-19 likely to be a drag on U.S. into 2021

- COVID-19 impact will likely extend beyond 2021 in terms of GDP level.
- In the aftermath of the Global Financial Crisis, it took around 7 years for U.S. GDP to recover back to trend levels.
- Similar to the past recession, we expect growth to remain below trend for several years even after a strong rebound in 2021.
- The extreme dislocation of jobs coupled with the likely impact on highly levered Baa and High Yield firms will cause long-lasting scars from COVID-19.
- The faster the medical solutions and widespread testing, the faster the recovery.

Note: Forecasts are inherently time sensitive and projections are dated as of April 7, 2020.
Source: KPMG Economics, BEA, CBO, Macroeconomic Advisors by IHS Markit, Haver Analytics
Full COVID-19 economic recovery could take 6-10 quarters

1. Fed restores market functioning
2. Cash Crunch Minimized
3. Some Workplaces Continue Paying Wages
4. Fiscal Stimulus
5. Relaxation of social distancing restrictions and behavior
6. Production Restarts
7. Relaxation of travel/trade restrictions
8. Domestic Demand Recovers
9. Global Demand Recovers

Trading Partners
- Payments for Imports
- Payments for Exports

Households
- Transfers
- 4. Fiscal Stimulus
- Taxes
- Wages, Salaries, etc.
- Continue Non-discretionary Spending
- Savings

Government
- Govt. Purchases
- 2. Cash Crunch Minimized
- Taxes
- Govt. Purchases
- International Supply Chains
- Domestic Supply Chains

Businesses
- 3. Some Workplaces Continue Paying Wages
- Non-discretionary Spending
- Investments

Financial Sector
- 1. Fed restores market functioning

Source: KPMG Economics, Baldwin (2020)

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- Economic repair will take time and will not happen all at once even if it begins in certain sectors.
- For example, the current stimulus is not set up to directly help large high-yield retailers that have temporarily laid off workers.
- Because many firms will fall through the cracks initially, we anticipate a longer recovery than some forecasters.
- The large sum of Federal Reserve assets deployed is showing signs of easing liquidity constraints in most markets.
- Additional stimulus is likely in the offing to bridge the economy past COVID-19.
Thank you

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