We recently released Vantage Point (view here) which sets out how the global economy and markets might evolve over the next 12 months, mapping out a V-shaped, U-shaped, and an L-shaped recovery. In this note, we address the following question:

What type of recovery is the equity market pricing in?

We look at three methods:

1. a valuation of global equities based on global GDP forecasts;
2. a simple valuation of the S&P 500;
3. the market for dividend futures.

EXECUTIVE SUMMARY

As currently priced, the market is expecting a sharp recovery in growth in 2021. However, our message is to remain cautious. Ultimately the impact on the economy and markets will be primarily determined by the course of the disease, and uncertainty around this remains elevated. A strategy of gradual and opportunistic buying back into the market, coupled with running relatively low levels of risk (or with hedges for a still highly probable downside) appears to be appropriate in this context, particularly for investments with a long-term horizon that are able to withstand possible drawdowns in the near term. Investors are urged to examine balance sheets for sustainable business models and cash flow.

First, we compare the expected loss in world GDP and earnings with the fall in global market capitalization to assess what level of economic shock the equity market is pricing in. Based on this method, the current value of global equities is broadly in line with what is implied by a V-shaped economic recovery.

Second, we assess the valuation of the S&P 500 and conclude that US equity markets are being supported by a reduction in extreme left tail outcomes and rock-bottom interest rates. Therefore, stock prices will depend on growth to further move upward. But downside risks to growth are high.

Third, dividend futures markets are pricing in a significantly sharp fall in growth in the short term and a slow recovery further out. This is consistent with an L-shaped economic recovery with a significant and prolonged cut in dividends. The latter is in line with a “sudden stop” in activity, as corporates fight to preserve cash, meet debt payments and comply with conditionality attached to the support packages from governments.
The unprecedented global market sell-off caused by COVID-19 amounts to more than 20% on a total return basis since the market peak on February 19 (as of April 21). Comparing the expected loss in world GDP and earnings to the fall in global market capitalization is a simple way to assess what level of economic shock the equity market is pricing in.

Assuming that corporate profits account for around 10% of global GDP, and given the expected size of the losses in global GDP derived from recent International Monetary Fund (IMF) projections (Chart 1), the implied loss in present-discounted corporate earnings may be around $10tr. Under the additional assumption that the number of public equity shares outstanding remains unchanged, this would imply a ~$10tr loss in global market cap. This figure is less than, but close to, the ~$16tr actual decline in global market cap from the peak in equity markets in February (as of April 21), suggesting that equity markets are pricing in — on average — a shock not much larger than IMF expectations. However, there is a substantial risk that growth will be significantly worse than expected.

Method 2 expands on this point for the US. The appendix contains more details on assumptions and calculations.

**METHOD 1**

**Expected loss in GDP and global market capitalization**

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**CHART 1**

**Quarterly World GDP**

<table>
<thead>
<tr>
<th>IMF Estimates in January 2020 for:</th>
<th>IMF Estimates in April 2020 for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Economies</td>
<td>Advanced Economies</td>
</tr>
<tr>
<td>Emerging Market and Developing Economies</td>
<td>Emerging Market and Developing Economies</td>
</tr>
</tbody>
</table>

Index: 2019 Q1 = 100

Source: IMF and BNY Mellon Investment Management calculations.
**METHOD 2**

**A simple valuation of the S&P 500**

**Baseline IMF projections** for US GDP growth imply EPS on the S&P 500 of $125 in 2020 and $145 in 2021, down 22% and 10% relative to 2019 respectively. At ~2800, the S&P 500, however, is trading at a level only last seen less than one year ago, when consensus EPS expectations stood at $185 for 2020 and $207 for 2021.

This can imply two things. Either that EPS over the next two years is expected to be much higher than our estimates, but we think this is unlikely. Or that the S&P 500 is trading at a 22–23x multiple on 2020 EPS (many investors appear to be willing to look through a short-lived, albeit large, downturn) and 19–20x on 2021 EPS, above February 2020’s 19x valuation of an extended market.

These forward-looking multiples appear high compared to history; they are not far from levels last seen during the equity market bubble of the early 2000s. However, given the exceptionally low levels of interest rates across the whole US yield curve and with the Fed effectively backstopping a number of securities markets, such multiples are less extreme than they appear at a first glance. The appendix contains more details on assumptions and calculations.

**CHART 2**

**S&P 500 EPS scenarios**

- **Baseline**
- **Scenario with longer lockdown**
- **Scenario with a second, but milder, virus outbreak**
- **Scenario with a longer lockdown and second, but milder, virus outbreak**

![Chart showing S&P 500 EPS scenarios](chart2.png)

Source: IMF and BNY Mellon Investment Management calculations. In the baseline scenario, the pandemic is assumed to fade in the second half of 2020, allowing for a gradual lifting of containment measures, with policy actions being effective in preventing widespread firm bankruptcies, extended job losses, and system-wide financial strains. The first alternative estimates the impact of the fight against the spread of the virus in 2020 taking roughly 50 percent longer than assumed in the baseline. The second alternative considers the impact of a second, but milder, outbreak occurring in 2021. The third alternative estimates the potential impact of both the outbreak taking longer to contain in 2020 and a second outbreak occurring in 2021. All three scenarios contain four common elements: the direct impact of measures to contain the spread of the virus; tightening in financial conditions; discretionary policy measures to support incomes and ease financial conditions; and scarring resulting from the economic dislocation that policy measures are unable to fully offset.

Ultimately, while a reduction in extreme left tail outcomes and rock-bottom interest rates have provided a major support to equity valuations, stock prices will depend on growth to further move upward. But downside risks to growth are high. Assuming an EPS growth in line with more pessimistic projections from the IMF (Chart 2) and unchanged PE ratios from current stretched levels (an overly optimistic assumption given a likely rise in risk premia if growth were to surprise to the downside), the S&P 500 could drop to 2400, and as far as 1800 in the worst case scenario. This is between -13% and -35% from current levels.

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1 To produce projections for earnings, we regress S&P 500 earnings growth on a constant, US GDP growth and a dummy for US recessions. We then use the projections for GDP growth to calculate a fitted value for future S&P 500 earnings growth.
There are important caveats to this method:
First, this is not the most liquid market at the best of times, and the illiquidity premium has undoubtedly risen in current market conditions, depressing dividend futures prices (and, by implication, growth expectations in the short and medium term). Second, one may think of dividend futures prices as composed by two underlying components: dividend expectations and a risk premium related to the level of uncertainty around such expectations. The market sell-off will have led to an increase in the dividend risk premium, pushing down on dividend futures prices. Despite these caveats, we still feel these prices can give a rough idea about the market’s expectations of the overall trajectory of the economic recovery. Source for this method: “Coronavirus: Impact on Stock Prices and Growth Expectations,” NBER Working Paper by Niels Gormsen and Ralph Koijen of Chicago University, April 2020.

Dividend futures markets appear to be pricing in a sharp fall in growth and slow recovery which is consistent with an L-shaped economic recovery with catch-up growth in years 3 to 10. The significant fall in dividend futures is shown in Chart 3, plotting the term structure of S&P 500 dividend futures as of April 20 and February 21, just before the sharp market sell-off.

The drop in dividend futures is also consistent with the market expecting significant cuts in dividends, as corporates facing a “sudden stop” in activity fight to preserve cash, meet debt payments and comply with conditionality attached to the support packages from governments. Indeed, this is confirmed by the underperformance of high dividend-paying firms relative to the market observed in recent weeks. The futures market is pricing in a return to baseline pre-crisis dividend level only in ten years from today. This is in line with historical crises such as World War I, Spanish Flu and the Great Depression when dividend growth recovery took seven and 14 years respectively. The recovery in dividends after the Great Financial Crisis was faster, as it took three years instead.
Three different methodologies suggest that, on balance, the equity market is pricing a trajectory for the economy close to a V-shaped recovery. This is particularly evident for US equities, which appear to be supported also by low interest rates and an improvement in sentiment. While we hope that the market is right in pricing in a sharp rebound in economic activity, our message is to remain cautious from these levels. Ultimately the impact on the economy and markets will be primarily determined by the course of the disease, and uncertainty around this remains elevated. While markets are keying off of recent better medical news, the road ahead remains bumpy as science has not yet caught up to allowing full re-opening of the global economy. Any re-boot will be rolling, fitful, and subject to second waves of infection as seen in Asia.

As long as a rapid recovery in growth in 2021 (V-shaped scenario) is the single most likely outcome for the economy, there is value in equities. However, given U-shaped and L-shaped scenarios still have a high probability of materializing in our view, risks remain to the downside.

Equity option prices show a higher probability of downside for equity prices in the near term (~1–3 months), then more balanced risks further out, e.g., in one year. Additionally, equity option prices are indicating that if sharp moves were to happen (e.g., 20–30% from today’s levels), it’s more likely that they will be on the downside than on the upside.

Further, the sectors which perform better in a risk-off environment — such as the high-growth tech names, healthcare and consumer staples — have had notable outperformance. Our view is consistent with this market pricing.

We think the US is best placed to come off the crisis given the strength going into it as well as the policy measures taken so far and possibly to come. A sub-optimal policy response on the health front is a risk.

While countries in the EU seem to have a better approach for managing the health crisis and re-opening economies (e.g., Germany), they are burdened by a slow and less-effective common fiscal policy response and a lack of policy space in some member states. Absent a significant stepping up in a common response at the EU level, we see sovereign debt stress in some member countries as a key risk. Asia looks to be an interesting area for opportunities as the economies have better-learned how to handle pandemics and will probably recover faster. Emerging markets ex-Asia are likely at the beginning of their downturn, and, coupled with the sharply higher USD, are at risk. We would be very cautious here.

A strategy of gradual and opportunistic buying back into the market, coupled with running relatively low levels of risk (or with hedges for a still highly probable downside) appears to be appropriate in this context, particularly for investments with a long-term horizon that are able to withstand possible drawdowns in the near term.

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3 We look at equity market skew, the difference between the implied volatility on an out-of-the-money equity call option and the implied volatility on an out-of-the-money equity put option. The more negative is this difference, the higher is the probability of a downside move in equity prices, as implied by option prices.
This is an economy which will change the pattern of consumer behavior over the next few years, and possibly sharply.

For instance, we’re likely to see an acceleration in the shift to digital and online. There will be an increased focus on health care and prevention of a next epidemic. We think these trends will continue until the duration of the crisis, and likely for longer. Given possible short-term liquidity strains for some businesses, investors are urged to examine balance sheets for sustainable business models and cash flow. We continue to favor technology, communications and healthcare as relative winners from the crisis. These sectors are seeing market size increasing and business model strengthening coming out of the lockdowns. The threat of increased government regulation, however, has all but evaporated. There will be relative winners in the consumer (staple and discretionary) space, although to some extent this is already being reflected in price (e.g., Amazon). Partnering with the government for a bailout has never been a terrific growth or multiple model and while we can fully appreciate the stability it provides to the overall market, we are reluctant to pursue bottom-fishing of those industries as an investment strategy over the long term. Financials, even with loan loss provisions, look somewhat over-sold and are tempting for long-term investors.

We end with a note of hope and the promise of human ingenuity. Markets will bottom before the real economy does. Any indication of treatment efficacy will immediately put a floor under valuations, even if the economy continues to sputter until a treatment is widely available for the population. The pharmaceutical and biotech companies are running several hundred trials for treatment options and tests on at least 70 vaccine candidates. Early news about the possible efficacy of some of the most promising vaccines and treatments are expected to be released between end of April and June.

Investment conclusions continued…
We compare expected loss in world GDP and the fall in global market capitalization to assess what level of economic shock the equity market is pricing in.

The IMF forecast released in mid-April suggests that World GDP is expected to grow by -3% yoy in 2020, and 5.8% in 2021, a revision of -6.4 percentage points for 2020 and 2.2 percentage points for 2021, compared to what expected by the IMF at the end of 2019. This is equivalent to a drop of ~$9tr in the expected level of GDP by the end of 2021 alone.

Under the condition that corporate profits represent a relatively constant fraction of GDP, and given equity prices can be thought of as the present-discounted value of future profits, the decline in the value of stock prices should be proportionally related to the decline in the present-discounted value of total output.\(^4\)

To derive the present-discounted value of the total loss in expected GDP and earnings, we follow the steps below:

1. We take expected global earnings, as implied by end-2019 IMF GDP projections up to year 2024, and calculate their present-discounted value. In this calculation, we include the present-discounted terminal value of global earnings from 2024 onwards, assuming a constant nominal growth rate of 5%. Each year’s earnings are discounted by the appropriate forward rate and an equity risk premium. Values are then cumulated, as shown in the formula below.

2. We repeat the same steps, but with GDP and implied earning expectations as of April 2020.

3. We then take the difference between what was expected in 2019 and April 2020.

\[
\text{Total present-discounted value of expected earnings} = \frac{Earnings_{2020}}{(1+r_{t+1}+ERP)} + \frac{Earnings_{2021}}{(1+r_{t+2}+ERP)²} + \frac{Earnings_{2022}}{(1+r_{t+3}+ERP)³} + \frac{Earnings_{2023}}{(1+r_{t+4}+ERP)⁴} + \frac{Earnings_{2024}*(1+g)}{(1+r_{t+5}+ERP)⁵} \times \frac{1}{(r_{t+5}+ERP)⁵}
\]

\(^4\) We abstract here from differences in the composition of global GDP and global equity indices; however, they are significant. \(^5\) In reality, corporate profits are more volatile than GDP given operating and financial leverage. This implies that profits are likely to fall more than by what is implied by this simple calculation.
Appendix

METHOD 2

A simple model-based analysis of S&P 500 multiples

The extremely low level of US interest rates up to very long-term maturities sustains valuation multiples that are higher than the historical average.

The table below shows a matrix of different 2020 PE multiples based on the different assumptions for the equity risk premia (ERP) and earnings growth, given the current value of 10-year US Treasury yields.

The blue cells highlight the 22–23x multiple we think the market may be pricing in for 2020, as explained in the main text.

Within the green box in the table, we show PE multiples resulting from past values for the ERP and earnings growth. At an interest rate of 2% — a level we have seen not long ago for US Treasury bonds — the same combinations of ERP and earnings growth would have resulted in valuation multiples much more in line with the historical average.

Deriving PE multiples from a simple equity valuation model

1. We use a Gordon growth model to derive different levels of earnings yields:

   \[ EY = E(r) - E(g) + ERP \]

   EY is the earnings yield, E(r) is a risk-free rate, ERP is the equity risk premium, and E(g) is the expected long-term average annual earnings growth.

2. We derive the PE multiple:

   \[ PE \text{ multiple} = \frac{1}{EY} \]

### TABLE 1

<table>
<thead>
<tr>
<th>Equity Risk Premia</th>
<th>Long-Term Average Annual Earnings Growth</th>
<th>PE multiples applying a 2% interest rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2%</td>
<td>29 42 71 250 -167 -63 -38</td>
<td>20 25</td>
</tr>
<tr>
<td>3%</td>
<td>23 29 42 71 250 -167 -63</td>
<td>17 20</td>
</tr>
<tr>
<td>4%</td>
<td>19 23 29 42 71 250 -167</td>
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<tr>
<td>8%</td>
<td>11 12 14 16 19 23</td>
<td></td>
</tr>
<tr>
<td>9%</td>
<td>10 11 12 14 16 19</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 2

<table>
<thead>
<tr>
<th>S&amp;P 500</th>
<th>Long-Term Average Annual Earnings Growth</th>
<th>S&amp;P 500 levels assuming $125 2020 EPS and PE multiples as in table 1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2%</td>
<td>3,625 5,250 8,875</td>
<td>2,875 3,625 5,250 8,875 - - - - - -</td>
</tr>
<tr>
<td>3%</td>
<td>2,875 3,625 5,250 8,875</td>
<td>2,875 3,625 5,250 8,875 - - - - - -</td>
</tr>
<tr>
<td>4%</td>
<td>2,375 2,875 3,625 5,250 8,875</td>
<td>2,875 3,625 5,250 8,875 - - - - - -</td>
</tr>
<tr>
<td>5%</td>
<td>2,000 2,375 2,875 3,625 5,250 8,875</td>
<td>2,875 3,625 5,250 8,875 - - - - - -</td>
</tr>
<tr>
<td>6%</td>
<td>1,750 2,000 2,375 2,875 3,625 5,250</td>
<td>2,875 3,625 5,250 8,875 - - - - - -</td>
</tr>
<tr>
<td>7%</td>
<td>1,500 1,750 2,000 2,375 2,875 3,625</td>
<td>2,875 3,625 5,250 8,875 - - - - - -</td>
</tr>
<tr>
<td>8%</td>
<td>1,375 1,500 1,750 2,000 2,375 2,875</td>
<td>2,875 3,625 5,250 8,875 - - - - - -</td>
</tr>
<tr>
<td>9%</td>
<td>1,250 1,375 1,500 1,750 2,000</td>
<td>2,875 3,625 5,250 8,875 - - - - - -</td>
</tr>
</tbody>
</table>

Some cells are left intentionally black because PE multiples, and thus values for the S&P 500, become implausibly large (negative) when earnings growth rates are equal to (greater than) the ERP.
BNY Mellon Global Investment Strategy

Definitions

The **price-to-earnings ratio** (P/E ratio) is the ratio for valuing a company that measures its current share price relative to its per-share earnings.

**Earnings per share** (EPS) is a company’s net profit divided by the number of common shares it has outstanding.

**Earnings yield** (EY) refers to the earnings per share for the most recent 12-month period divided by the current market price per share.

**Equity risk premium** (ERP) refers to the excess return that investing in the stock market provides over a risk-free rate. This excess return compensates investors for taking on the relatively higher risk of equity investing.

**EU**: European Union.

**IMF**: International Monetary Fund.

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