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Today’s Speakers

**Dan Doonan**
*Executive Director,*
*National Institute on Retirement Security*

**Jim McDonald**
*Chief Investment Strategist*

**Erick Noensie, Ph.D.**
*Senior Healthcare Analyst*
THE PROGRESSION OF CORONAVIRUS
# COVID-19 vs. Other Outbreaks

<table>
<thead>
<tr>
<th>Year</th>
<th>Mortality Rate</th>
<th>Global # Infected</th>
<th>Global # Deaths</th>
<th>U.S. # Infected</th>
<th>U.S. # Deaths</th>
<th># of U.S. Hospitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>COVID-19</td>
<td>0.6-2.3%</td>
<td>&gt;2 million*</td>
<td>&gt;125,000</td>
<td>&gt;600,000*</td>
<td>&gt;26,000</td>
<td>Est. 300K** (15% rate)</td>
</tr>
</tbody>
</table>

**Relevant Outbreak References**

<table>
<thead>
<tr>
<th>Outbreak</th>
<th>Year</th>
<th>Mortality Rate</th>
<th>Global # Infected</th>
<th>Global # Deaths</th>
<th>U.S. # Infected</th>
<th>U.S. # Deaths</th>
<th># of U.S. Hospitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>SARS (Severe Acute Respiratory Syndrome)</td>
<td>2002-03</td>
<td>10%</td>
<td>~8,000</td>
<td>774</td>
<td>8</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>MERS (Middle East Respiratory Syndrome)</td>
<td>2012</td>
<td>30%</td>
<td>2,494</td>
<td>858</td>
<td>2</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Swine Flu (H1N1)</td>
<td>2009</td>
<td>0.02%</td>
<td>11-21% population</td>
<td>151,700-575,400</td>
<td>60.8 million</td>
<td>12,469</td>
<td>&gt;274,000 (0.4%)</td>
</tr>
<tr>
<td>Seasonal Flu (all numbers annual)</td>
<td>Annual</td>
<td>0.1-0.2% (U.S.)</td>
<td>5-10% of Adults</td>
<td>250K-500K</td>
<td>9-45 million</td>
<td>12,000-61,000</td>
<td>140K-810K (1.2-2.0%)</td>
</tr>
</tbody>
</table>

*Actual infected likely significantly higher as testing has been backlogged.

**Assumes 300K hospitalized patients is threshold of U.S. capacity, ~10% more than H1N1 cases. Uses 15% hospitalization rate to calculate 2 million infected.

Current COVID-19 Trajectories in Three Zones

COVID-19 MORTALITY PER DAY (LOG SCALE, 5-DAY MOVING AVERAGE)

**Estimated Requirements and Timeline for Containment**

**TESTING**
Swab tests are key for containment while antibody tests are not yet proven.
- We estimate the U.S. needs to perform ~200,000 swab tests per day and 3.6M total
- Antibody tests still require proof but could accelerate recovery

**TIMELINES**
We estimate U.S. mortality rates could decline into May/June.
- Case rates could be low enough to begin a first phase of containment in May or June
- If community spread can be eliminated, second containment phase could occur in July to August

**CONTAINMENT**
Key variables for containment:
- Effectiveness of social distancing by region
- Sufficient PPE
- Contact-tracing mobile apps
- Herd immunity

Source: Northern Trust Asset Management
Potential Treatments and Vaccines

We believe public health measures are more likely to contain COVID-19 over the next 12-18 months than a new drug or vaccine.

Source: Northern Trust Asset Management
POSITIONING PORTFOLIOS TO WEATHER THE STORM
Bear Market Analysis

AVERAGE DURATION OF BEAR MARKETS (MONTHS)

- Peak-to-Trough
- Recovery to Prior Peak

Event-Driven Bear Markets Are Short, But Still Pack a Punch

MAGNITUDE OF DRAWDOWN AND RECOVERY (%)

- Drawdown
- Next 12-Month Return

<table>
<thead>
<tr>
<th>Category</th>
<th>Drawdown</th>
<th>Next 12-Month Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>-42</td>
<td>48</td>
</tr>
<tr>
<td>Structural</td>
<td>-60</td>
<td>63</td>
</tr>
<tr>
<td>Cyclical</td>
<td>-31</td>
<td>48</td>
</tr>
<tr>
<td>Event Driven</td>
<td>-27</td>
<td>30</td>
</tr>
</tbody>
</table>

Fiscal Policy Response

IMF: ready to mobilize $1T lending capacity

Canada: $54B emergency response funding

Germany: €150B in debt spending

U.S.: “Phase Three” $2T stimulus package

March 14th
March 16th
March 17th
March 18th
March 19th
March 21st
March 20th
March 25th
April 9th

Euro Commission: Coronavirus Response Investment Initiative

France: emergency budget (€45B spending & €300B loan guarantees)

Spain: €200B to offset coronavirus impact

U.S.: paid sick leave, unemployment insurance & free testing

Japan: spending of $137B

Eurogroup finance ministers agrees to €540B emergency rescue package

Source: Northern Trust Asset Management
Monetary Policy Response

- China cuts policy rate by 50bps
- BOJ provides ample liquidity to financial firms
- U.S. $500 billion increase in reverse repo operations
- BOE offers unlimited QE for large company financing
- ECB €750B bond purchase program
- U.S. Primary & Secondary Corp. Credit Facilities
- U.S. Money Markey Fund Liquidity Facility

March 12th
- ECB €120B bond purchase program
- U.S. $1.5 trillion increase of reverse repo operations

13th
- Central banks lower price of U.S. dollar liquidity swaps

15th
- Fed cuts rates by 100bps

16th
- U.S. Commercial Paper Funding Facility

17th
- U.S. Primary Dealer Credit Facility

19th
- ECB €750B bond purchase program

20th
- U.S. Primary Dealer Credit Facility

23rd
- U.S. Municipal Liquidity Facility

April 9th
- U.S. Paycheck Protection Program & Main Street Business Lending Program

Source: Northern Trust Asset Management
The Rate of Change in Confirmed Cases is Key for Markets

NEW DAILY CONFIRMED COVID-19 CASES

Earnings Rebounds Have Inevitably Followed Drawdowns

Watching Market Signals

Expect The Highest Number of Fallen Angels in 10 Years

PERCENT OF HIGH GRADE MARKET INDEX DEBT DOWNGRADED TO HIGH YIELD

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>PERCENT</td>
<td>1.5%</td>
<td>2.9%</td>
<td>1.7%</td>
<td>2.1%</td>
<td>1.6%</td>
<td>2.4%</td>
<td>4.2%</td>
<td>3.7%</td>
<td>1.3%</td>
<td>0.8%</td>
<td>0.8%</td>
<td>1.1%</td>
<td>0.6%</td>
<td>1.0%</td>
<td>1.6%</td>
<td>0.2%</td>
<td>0.4%</td>
<td>0.6%</td>
<td></td>
<td></td>
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</tbody>
</table>

Source: Northern Trust Asset Management, JP Morgan. Data is ex-EM issuers. Forecasts of financial market trends that are based on current market conditions constitute CMAWG judgment and are subject to change without notice.
**Tactical Positioning: Focusing on U.S. Assets**

<table>
<thead>
<tr>
<th>ASSET CLASS</th>
<th>STRATEGIC (%)</th>
<th>TACTICAL OVER/UNDERWEIGHT (%)</th>
<th>TACTICAL (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>2</td>
<td>-2</td>
<td>0</td>
</tr>
<tr>
<td>U.S. Investment Grade</td>
<td>29</td>
<td>-4</td>
<td>25</td>
</tr>
<tr>
<td>Inflation-Linked</td>
<td>5</td>
<td>-5</td>
<td>0</td>
</tr>
<tr>
<td>High Yield</td>
<td>3</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>U.S. Equity</td>
<td>16</td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>Dev. Ex-U.S. Equity</td>
<td>10</td>
<td>-1</td>
<td>9</td>
</tr>
<tr>
<td>Emerging Market Equity</td>
<td>4</td>
<td>-4</td>
<td>0</td>
</tr>
<tr>
<td>Global Natural Resources</td>
<td>3</td>
<td>-1</td>
<td>2</td>
</tr>
<tr>
<td>Global Real Estate</td>
<td>1</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Global Listed Infrastructure</td>
<td>1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Hedge Funds*</td>
<td>14</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Private Equity*</td>
<td>12</td>
<td>0</td>
<td>12</td>
</tr>
</tbody>
</table>

*Note: Due to the illiquid nature of Alternative asset classes, Northern Trust does not make tactical recommendations.

QUESTIONS

Please type your question(s) into the “Question” field in your control panel. We will read aloud and reply.

Follow Up Questions: Dan Doonan: dan@nirsonline.org | 202.457.8190
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