Advantage in Adversity

06 October 2020
COVID-19
BCG Perspectives

Objectives of this document

**COVID-19 is a global societal crisis**

We at BCG believe that the COVID-19 outbreak is first and foremost a societal crisis, threatening lives and the well-being of our global community. Society now, more than ever, needs to collaborate to protect people’s lives and health, manage mid-term implications, and search for lasting solutions.

**Leaders need to drive an integrated response to navigate the crisis**

It is the duty of health, political, societal, and business leaders to navigate through this crisis. A complex interplay of epidemic progression, medical response, government action, sector impact, and company action is playing out. This document intends to help leaders find answers and shape opinions to navigate the crisis in their own environments. It encourages thinking across the multiple time horizons over which we see the crisis manifesting itself.
The COVID-19 recovery will be driven by disease progression, de-averaged economic impact, government policies, and business and public responses.

**Flatten**

Typically in the initial phase after a pandemic outbreak, the goal is to urgently limit the number of new cases, especially critical care.

Social distancing (lockdown) and partial business closures lead to economic recession with a large employment impact.

**Fight**

Finding paths to collectively fight the virus, restart the economy, and support society in balancing lives and livelihood.

Increasing economic activity with recovering GDP, some business reopenings, and social distancing on a sustainable level.

**Future**

Disease controlled through vaccine/cure/herd immunity and treatment within sustainable medical capacities possible.

Reactivated economy with strong business rebound and job growth, social restrictions limited or completely suspended.

1. Disease progression, healthcare system capacity, and response
2. Government policies and economic stimulus
3. Economic scenarios
4. Business engagement and response
5. Public engagement and response

All of the above five factors result in specific economic and social outcomes in each phase.

Source: BCG
Epidemic Progression

### Global epidemic snapshot

<table>
<thead>
<tr>
<th>Region</th>
<th># of cases</th>
<th># of daily cases</th>
<th># of active cases</th>
<th># of fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Americas</td>
<td>35M</td>
<td>1.6x</td>
<td>1.7x</td>
<td>1.0x</td>
</tr>
<tr>
<td>Europe</td>
<td>295K</td>
<td>0.8x</td>
<td>1.0x</td>
<td>1.7x</td>
</tr>
<tr>
<td>Asia</td>
<td>9.6M</td>
<td>2.0x</td>
<td>1.7x</td>
<td>1.4x</td>
</tr>
</tbody>
</table>

Month-on-month growth of new cases:
- Americas: 1.6x
- Europe: 0.8x
- Asia: 2.0x

Consumer Activity

### Mobility

<table>
<thead>
<tr>
<th>Region</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>-19%</td>
<td>-19%</td>
<td>-19%</td>
</tr>
<tr>
<td>Europe</td>
<td>-17%</td>
<td>-17%</td>
<td>-13%</td>
</tr>
<tr>
<td>Japan</td>
<td>-13%</td>
<td>-13%</td>
<td>-12%</td>
</tr>
</tbody>
</table>

### Domestic air travel tickets booking (YoY)

<table>
<thead>
<tr>
<th>Region</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>-76%</td>
<td>-69%</td>
<td>-67%</td>
</tr>
<tr>
<td>UK</td>
<td>-86%</td>
<td>-85%</td>
<td>-84%</td>
</tr>
<tr>
<td>China</td>
<td>-27%</td>
<td>-2%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Business Impact

Stock market performance

<table>
<thead>
<tr>
<th>Stock Index</th>
<th>Month end vs. 02 Jan '20</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P500</td>
<td></td>
<td>0%</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>FTSE100</td>
<td></td>
<td>-22%</td>
<td>-22%</td>
<td>-23%</td>
</tr>
<tr>
<td>CHN SSE</td>
<td></td>
<td>7%</td>
<td>10%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Volatility Index (S&P500)

- August 2020: 2.0x
- September 2020: 2.1x

International trade

<table>
<thead>
<tr>
<th>Country</th>
<th>Trade value (YoY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>-11%</td>
</tr>
<tr>
<td>UK</td>
<td>-19%</td>
</tr>
<tr>
<td>China</td>
<td>3%</td>
</tr>
</tbody>
</table>

Industrial production

<table>
<thead>
<tr>
<th>Country</th>
<th>Purchasing manager's index (base = 50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>51</td>
</tr>
<tr>
<td>EU</td>
<td>52</td>
</tr>
<tr>
<td>China</td>
<td>51</td>
</tr>
</tbody>
</table>

Steel production (YoY)

- August 2020: 3%
Executive Summary | COVID-19 BCG Perspectives

Despite global uncertainty and forecasts for slow economic recovery, several companies have begun to shift gear towards winning in the future

- Market rebounds globally are masking an uneven recovery; only a few big winners are driving the rebound
- High global uncertainty and forecasts for slow economic recoveries point toward continued adversity in the near-term
- Company responses are characterized by a shift to strategic actions, with a particular emphasis on reimagining offerings for the new reality
- Evidence from past crises highlights opportunity available now to create long term advantage: 14% of companies grow sales and margin in downturns
- Business leaders should consider six strategic actions now: (i) employ ‘always on’ strategic planning; (ii) over-communicate; (iii) de-average portfolio, allocate capital smartly; (iv) disrupt and re-invent business models; (v) accelerate digital transformation; (vi) use targeted divestments and M&A

While severe global economic downturn expected for 2020; some green shoots on recovery visible

- Early signs of slowing global COVID case growth visible in September 2020; however, some countries (e.g., in Europe) experiencing substantial case resurgence
- 10 vaccine candidates already in Phase III; some may get emergency use authorization (EUA) starting in Q4 2020; multiple promising therapeutics in trials
- For most leading economies, forecasts indicate a rebound to 2019 GDP levels only by end of 2021
- Business activity across many sectors has recovered to 2019 levels; Transportation & Logistics, and Energy continue to be hit
- Consistent improvement in consumer sentiment and purchasing managers’ index (PMI) across multiple geographies
- 4 (out of 24) sectors are currently above pre-crisis TSR levels; 7 sectors have a significant share of companies with >15% default risk

We believe during this crisis leaders need to think along two dimensions:

- Taking an integrated perspective on health/medical progression, governmental responses, societal reactions, and economic implications to understand business/sector impacts
- Thinking multi-timescale in a Flatten-Fight-Future logic

1. Initial data observed in the early stages of phase 3 trials may lead to restricted approvals starting in Q4 2020; 2. Semiconductors, Retailing, Household products and Materials; 3. TSR: Total Shareholder Return; 4. Retailing, Materials, Auto, Transport, Hospitality, Real estate and Energy are sectors with > 10% of companies with probability of default > 15%;
Guide for Leaders

Companies’ post-crisis outlook and current actions

Moves to drive advantage in adversity

Updated Analyses and Impact

Epidemic progression and virus monitoring

Economic and business impact
Market rebounds globally are masking an uneven recovery in underlying stocks

As of 02 Oct 2020

Several markets have rebounded

Performance of key global indices as compared to 02 Jan 2020¹

- SSE (CH)
- S&P 500 (US)
- Nikkei 225 (JP)
- S&P Europe 350
- IBOVESPA (BR)

Non-exhaustive

But only a few big winners are driving the rebound

S&P 500 (US) example | Change in market cap. (in USD T)
for groups² of 10 companies as compared to 02 Jan 2020

<table>
<thead>
<tr>
<th>Top 10</th>
<th>Other 490</th>
</tr>
</thead>
<tbody>
<tr>
<td>+1.1</td>
<td>-1.3</td>
</tr>
</tbody>
</table>

Change in market cap. (in USD T)

Top 10 companies by market cap. change (majority technology)
Amazon, Apple, Microsoft, Nvidia, Facebook, PayPal, Salesforce, Netflix, T-Mobile, Adobe

Note: Market index includes dividends (Total Return indexes); 1. Weekly smoothed data represented; 2. Grouped by descending order of change in market capitalization between 2 Jan 2020 and 02 Oct 2020; analysis performed on companies comprising the S&P 500 as of 02 Oct 2020; Source: S&P Capital IQ; Bloomberg; BCG
In many cases, valuation rebound not supported by fundamentals; instead driven by deterioration in attractiveness of alternative investments

As of 02 Oct 2020

Declining fundamentals
-15%
Decrease in 12-month forward earnings estimates¹

Earnings fundamentals have declined since the onset of COVID-19, making equities less attractive

Worsening alternatives
-0.9%
Real return² on U.S. 10-year treasuries

Alternatives to equities are generating negative returns, increasing relative attractiveness of equities

Growing multiples
+22%
Increase in 12-month forward P/E multiples³

Earnings multiples have inflated more than the decline in fundamentals, pushing markets up

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1. Earnings estimates are net profit forecasts for rolling 12-month forward for the S&P 500 index
2. Real return = Interest rate – Expected inflation
3. Price earnings multiples, where earnings are the net profit forecast for rolling 12-month forward for the S&P 500 index; Source: S&P Capital IQ; BCG ValueScience Center
High global uncertainty and forecasts for slow economic recoveries point toward continued adversity in the near term

As of 02 Oct 2020

Global uncertainty is holding at record-high levels

Economic Policy Uncertainty | Global Policy Uncertainty Index
Historical mean = 100

Slow recovery expected in most economies

Oxford Economics | Quarterly real GDP¹ (local currency unit)
Indexed 100 = Q3 2019

Note: The Global Policy Uncertainty Index measures media reporting on economic and policy uncertainty, expiring policy, and economic forecaster disagreement.
1. Seasonally adjusted; Source: Economic Policy Uncertainty, BCG Henderson Institute: Center for Macroeconomics; Oxford Economics
While pressured and vulnerable companies continue to fight for sustenance, several companies have begun to shift gear toward winning in the future.

As of 30 Sep 2020

- **Bloomberg**  
  As companies burn through loans tapped in March, New York sees 40% bankruptcy surge, with cos. struggling

- **The Guardian**  
  Leading restaurant chain reopens stores but continues to cut costs, working hours to minimize job losses

- **The Wall Street Journal**  
  Companies shift from survival mode to strategic moves: takeovers, leadership changes & restored financial targets

- **Reuters**  
  Boards are going on a pandemic M&A deal spree; leading to a record third quarter with $1T+ worth of transactions

- **Financial Express**  
  Micro firms bear maximum COVID brunt; labour, credit, NPA issues more severe than SME, large units

- **mint**  
  To navigate the ongoing uncertainty, 'flexibility' is the new survival watchword for Asia Pacific's airlines

- **The Economic Times**  
  Covid-19 pandemic's 'great reset' makes energy companies step-up investments in renewables

- **Business Standard**  
  90% of firms have maintained or increased their digital transformation budget amid COVID-19, finds survey
Companies are expressing optimism for a return to growth but significant uncertainty around the shape of the return.

Distribution of views on post-COVID-19 future mentioned in Q2'20 earnings transcripts of 903 S&P Global 1200 companies

- **Growth will return** but the near-term path to recovery is uncertain (41%)
- **Return to strong financial position** in future due to measures being taken today (28%)
- **Acceleration of structural industry shifts** that were already underway (15%)
- **Increased emphasis on clean energy and putting people first** (4%)
- **Competitive advantage will come from resilient and digital business models** (12%)

Note: ~11.7K paragraphs of future-looking commentary sourced from Q2-2020 earnings call transcripts of 903 top global companies from S&P 1200 with English language transcripts were analyzed/clustered in Quid. 12% of data could not be analyzed/clustered in Quid and is not considered in the analysis.

1. Only select clusters are shown in network visualization; remaining are hidden; Source: ThomsonOne; Quid; BCG Center for Growth & Innovation Analytics
Company responses are characterized by a shift to strategic actions, with a particular emphasis on reimagining offerings for the new reality.

### Distribution of Key Actions Mentioned in Earnings Transcripts in Q2'20 of 903 S&P Global 1200 Companies

<table>
<thead>
<tr>
<th>Action</th>
<th>Q2'20</th>
<th>Q4'19</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovate</td>
<td>32%</td>
<td>25%</td>
<td>+7 pp</td>
</tr>
<tr>
<td>Cut costs</td>
<td>17%</td>
<td>12%</td>
<td>+5 pp</td>
</tr>
<tr>
<td>Increase agility</td>
<td>16%</td>
<td>12%</td>
<td>+4 pp</td>
</tr>
<tr>
<td>Boost ESG</td>
<td>7%</td>
<td>3%</td>
<td>+4 pp</td>
</tr>
<tr>
<td>Focus on core</td>
<td>23%</td>
<td>18%</td>
<td>-5 pp</td>
</tr>
<tr>
<td>Embrace change</td>
<td>5%</td>
<td>10%</td>
<td>-15 pp</td>
</tr>
</tbody>
</table>

**Note:** ~9K sentences of strategic moves commentary sourced from Q2-2020 earnings call transcripts of 903 top global companies from S&P 1200 with English language transcripts and ~8.4K sentences of strategic moves commentary sourced from Q4-2019 earnings call transcripts of 875 top global companies were analyzed/clustered in Quid. 12% of data could not be analyzed/clustered in Quid and is not considered in the analysis; 1. Percentage of mentions in Q2 2020 earnings call transcripts, percentage change from Q4 2019 in parentheses, 2. Environmental, Social & Corporate Governance; 3. Includes other category (4%); Source: ThomsonOne; Quid, BCG Center for Growth & Innovation Analytics.
Evidence from past crises highlights the opportunity available now to create long-term advantage

14% of companies improve growth and margin in downturns
(Performance¹ averaged across last four U.S. downturns since 1986 as compared to 3-year pre-downturn)

Companies created or re-imagined in past downturns

Select examples

### Alibaba
Accelerated into B2C e-commerce as the SARS outbreak led to a shift in consumer buying patterns from offline to online

### Leading chemical player
Developed innovative materials for the consumer market by leveraging synthetic chemicals invented as part of WWII

### Amazon
Shifted focus toward third-party seller ecosystem rather than direct sales; outpaced other retailers during Global Financial Crisis ’08-09

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¹ For U.S. companies with at least $50M sales
Source: S&P Compustat and Capital IQ; BCG Henderson Institute

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Further reading

Advantage in Adversity: Winning the Next Downturn
Six strategic actions that leaders should consider now to build long-term advantage out of current adversity

**PERFORM**
Prosper in an environment of elevated uncertainty and volatility

1. Employ 'always on' strategic planning to enable decision making with real-time data
2. Over-communicate to ensure a common strategic context and align actions
3. De-average your portfolio and allocate capital smartly

**THRIVE**
Pursue opportunities for growth and competitive advantage

4. Disrupt and reinvent business models to reposition and/or capture new opportunities
5. Accelerate digital transformation with an emphasis on growth
6. Use targeted divestments and M&A to accelerate focus on core and growth
Employ 'always on' strategic planning to enable decision making with real-time data

Build a common context with an aligned fact base, frequently updated

Use scenarios to broaden organization planning horizon

Make strategic planning 'always on' by untangling from annual cycle

Example | Global fashion retailer set up dynamic scenario planning to respond to COVID-19 crisis

<table>
<thead>
<tr>
<th>Signals</th>
<th>Drivers</th>
<th>Scenarios</th>
<th>Company response</th>
</tr>
</thead>
<tbody>
<tr>
<td>On / offline traffic</td>
<td>% of clients willing to shop</td>
<td>Recovery level by horizon</td>
<td>Changes in business environment rapidly translated into actions</td>
</tr>
<tr>
<td>Epidemiological models</td>
<td>% of stores opened</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social media trends</td>
<td>Change in average basket</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Impact | Improved agility and strategic focus of planning cycle

- Rapid tailoring of product mix based on regional indicators
- Dynamic decisions on store closures
- Continuous optimization of advertisement & promotion spend

75%

Reduction in budgeting cycle time\(^1\) (from 2 months to 2 weeks)

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1. In Q2’20 as compared to Q1’20; Source: BCG
Example | A healthcare services company with 50,000+ employees, using communication to align actions in response to a new customer-centric strategic vision

**Over-communicate to ensure a common strategic context and align actions**

Communicate purpose regularly to give context to organization

Create alignment on outcomes but let organization define activities

Set incentives that reward outcomes and results, not activities and inputs

**Targeted Impact | Improve cross-functional collaboration and reduce customer friction**

<table>
<thead>
<tr>
<th>30%</th>
<th>15-20%</th>
<th>10+ pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in speed to market</td>
<td>Reduction in member(^1) attrition</td>
<td>Increase in Net Promoter Score, moving to best in class</td>
</tr>
</tbody>
</table>

Note: Impact to be realized over the span of 2 years

1. Customers who are members as part of Health Maintenance Organization (HMO) or Preferred Provider Organization (PPO); Source: BCG
De-average your portfolio and allocate capital smartly

Leverage scenarios to tackle uncertainty & build in flexibility

Look beyond financial return measures

Conduct detailed project-level COVID-19 delta assessment

Approach it as a means to accelerate growth, not just cost cutting

Example | International airport operator reshaped portfolio through smart capital allocation to accelerate growth

Cut & hibernate low priority projects to free up capital for growth

Total spend incl. related GTM (€Mn)

ACCELERATE

HIBERNATE

CUT

Fuel growth by shifting resources

€1Bn
freed up for growth
(20% of total)

Approach | De-average portfolio and assess impact on each project

Scenario-based review through three lenses

Strategic importance

Financial return

Innovation upside

De-average your portfolio and assess impact on each project

Projects

1. Desirability, Feasibility and Viability; 2. During aviation sector downturn of 2003; 3. €1Bn freed over the span of 2 years

Source: BCG
Disrupt and reinvent business models to reposition and/or capture new opportunities

Don’t just focus on product innovation – business model innovation is equally important

Leverage the crises to build an innovation advantage over competitors

Leading innovators stand out through their emphasis on business model innovation

% difference in emphasis between leading innovators and a randomly sampled control group on type of innovation as a top 1 or 2 mention1

+30%

18%
8%
2%

Business model
New product or service
Internal process
Go-to-market

Business model includes target customer segment(s), revenue model, business structure (including operations), cost structure, etc.; targeting objectives of shareholder value creation & societal impact

Top business model innovators show higher total shareholder return (TSR)

4.3%

TSR outperformance per year

of 30 companies leading in business model innovation (BCG BMI 30) compared to MSCI2 World between 2015-20193

Further reading

The Most Innovative Companies 2020

1. Analysis based on ~3.5k innovation related news articles published in top tier news sources for top 50 MIC companies in 2019 (The Most Innovative Companies 2020) and control group, Feb-Aug’20. Control group is the top 50 non-MIC companies that are covered in the media at the same frequency as the 50 MIC companies. ESG innovation cluster not included. 2. Morgan Stanley Capital International; 3. BCG BMI 30 are the firms on BCG’s MIC list that are seen as pursuing BMI most successfully (BCG assessment), average yearly TSR from 31.12.2014 to 31.12.2019; Source: Quid; BCG Center for Growth & Innovation Analytics; BCG Innovation Journey Analytics Database; Capital IQ
Accelerate digital transformation with an emphasis on growth

Accelerate digital initiatives that deliver growth in a post-COVID-19 world

Factor digital into strategic planning - it is now key for competitive advantage

Digital leaders are recovering faster from the COVID-19 crisis

Market capitalization indexed to 01 Sep'19

BCG Digital Acceleration Index (DAI)

Digital leaders (≥67 DAI score)

Digital leaders are recovering faster from the COVID-19 crisis

Laggards (≤43 DAI score)

1.8x

Increase in earnings growth per year² for digital leaders vs. laggards

2x

Performance³ of digital leaders vs. laggards in key metrics like cost efficiency, product quality, customer satisfaction, time-to-market

Further reading

1. The Evolving State of Digital Transformation
2. The Digital Path to Business Resilience

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1. An index score that measures a company’s digital maturity based on 36 dimensions across 8 blocks: strategy & purpose; digital in operations; personalized customer experiences; new offers, services & business models; dynamic platform organizations; digital talent; modular tech; data & AI; 2. BCG DAI global study 2019 that looked at earnings from the period of 2016 through 2018, n=224. Digital companies see on average 7.2% EBITDA growth, whereas less digital companies see 4.1% EBITDA growth; 3. Global DAI study 2019/20; Source: Capital IQ; BCG DAI Global Database
Now is the time to reposition your portfolio:
Activity levels for M&A and divestments quickly returning to normal

<table>
<thead>
<tr>
<th>Monthly M&amp;A &gt;100$M</th>
<th>Avg. value $M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of deals</td>
<td>Average deal value</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Typical historical range</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Monthly Divestments</th>
<th>Avg. value $M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of deals</td>
<td>Average deal value</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Typical historical range</td>
<td></td>
</tr>
</tbody>
</table>

71% of investors believe healthy companies should actively pursue acquisitions to strengthen the business.

73% of investors believe healthy companies should actively divest to strengthen the company.

1. M&A transactions comprise pending, partly completed, completed, unconditional, and withdrawn deals announced between January 1, 2000 and August 31, 2020, with a transaction-size threshold of $100 million. Self-tenders, recapitalizations, exchange offers, repurchases, acquisitions of remaining interest, minority stake purchases, privatizations, and spinoffs were excluded. Deal value includes assumed liabilities; 2. Lag in deal registration means not all deals included; 3. Original text: 71% Investors that believe healthy companies should actively pursue acquisitions to strengthen the business at today’s current valuations; 4. Global divestments comprise pending, partly completed, completed, unconditional, and withdrawn deals announced between January 1, 2000 and August 31, 2020. Only transactions with publicly listed sellers were included. Deal value includes assumed liabilities; 5. Original text: 73% Investors that believe healthy companies should actively consider exiting or divesting lines of business to strengthen the overall company given current market conditions.

Source: Refinitiv; BCG 2019 M&A Report; BCG’s COVID-19 Investor Pulse Check, August 9, 2020; n = 150
Questions for CEO reflection

Leaders who embrace challenges will be better prepared to create new, powerful opportunities in the new reality.

14% of companies are able to improve both growth and margins during downturns

4.2 pp.
Higher revenue growth by companies that had long-term focus in Global Financial Crisis 2008-09

2x
More likely to score high on purpose if company is in top half of total shareholder return (TSR) performance

3-19%
Valuation premium for top-performing companies on total societal impact

Where are the new opportunities to create competitive advantage coming out of COVID-19 crisis?

What are the long-term implications for your strategy and what can you do now to react?

How can you leverage your purpose to inspire employees and create an empowering culture?

How can you build back better to engrain care for all stakeholders into your strategy and actions?

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1. Average across last four US downturns pre-COVID-19 since 1985; based on performance compared with three-year pre-downturn baseline for US companies with at least $50 million in sales
2. Long-term orientation score determined by BHI proprietary NLP analysis of mgmt. discussion in companies’ 10-K SEC filings
3. BCG and BrightHouse purpose & performance analysis based on 10-year average TSR performance & purpose score calculated based on survey of leaders, employees & customers across 50 US companies in technology, media & telecom, financial, consumer & services sectors, 2017
4. Average valuation premium of top versus median TSI performers (October 2017); Source: BCG
Guide for Leaders

Companies’ post-crisis outlook and current actions

Moves to drive advantage in adversity

Updated Analyses and Impact

Epidemic progression and virus monitoring

Economic and business impact
Epidemic progression | Daily case growth slowing globally; Asia continues to grow

As of 04 Oct 2020

Daily new cases (7-day rolling average)

<table>
<thead>
<tr>
<th>Month</th>
<th>North America</th>
<th>South America</th>
<th>Asia¹</th>
<th>Africa</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar</td>
<td>50,000</td>
<td>20,000</td>
<td>10,000</td>
<td>1,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Apr</td>
<td>75,000</td>
<td>30,000</td>
<td>15,000</td>
<td>1,500</td>
<td>15,000</td>
</tr>
<tr>
<td>May</td>
<td>100,000</td>
<td>40,000</td>
<td>20,000</td>
<td>2,000</td>
<td>20,000</td>
</tr>
<tr>
<td>June</td>
<td>150,000</td>
<td>60,000</td>
<td>30,000</td>
<td>3,000</td>
<td>30,000</td>
</tr>
<tr>
<td>July</td>
<td>225,000</td>
<td>90,000</td>
<td>45,000</td>
<td>4,500</td>
<td>45,000</td>
</tr>
<tr>
<td>Aug</td>
<td>300,000</td>
<td>120,000</td>
<td>60,000</td>
<td>6,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Sep</td>
<td>375,000</td>
<td>180,000</td>
<td>90,000</td>
<td>9,000</td>
<td>90,000</td>
</tr>
<tr>
<td>04 Oct</td>
<td>450,000</td>
<td>210,000</td>
<td>135,000</td>
<td>13,500</td>
<td>135,000</td>
</tr>
</tbody>
</table>

Key observations

35.0M # of confirmed cases
9.6M (27%) # of active cases (% of confirmed cases)
1.0M # of fatalities

1. Includes Oceania (Australia, New Zealand, Papua New Guinea and surrounding island nations of the Pacific ocean); 2. Calculated as growth in monthly average of daily cases as compared to previous month;

Source: Johns Hopkins CSSE; Our World in Data; BCG
De-averaged view | Several European countries witnessing resurgence

As of 04 Oct 2020
Data shown only for top 20 countries (by GDP) with >30 daily new cases per million

Europe: Several countries witnessing resurgence, with some exceeding previous case peaks

Brazil and US showing decline compared to peak case levels

Note: Page shows de-averaged view of top 20 countries (by GDP), of which 12 have daily cases/M >30; other 8 countries have <30 daily cases/M (Germany (26), Turkey (17), Indonesia (15), Saudi Arabia (13), Japan (4), South Korea (1), Australia (1), China (0))
1. Calculated as a 7-day rolling average; Source: Our World in Data; BCG
**Vaccines & Therapeutics | Summary snapshot**

**Best-case timelines as of 02 Oct 2020**

### Vaccines
- **42** candidates currently in clinical trials
- **10** candidates currently in Phase III; in race for EUA\(^1,2\) starting Q4'20, contingent on safety and efficacy profiles
- **Q2'21** expected start of broader distribution (beyond targeted population segments)\(^3\) in the best-case scenario\(^4\)

### Therapeutics
- **254** candidates currently in clinical trials
- **4** key candidates currently under EUA\(^1,5\) in select countries; ensuring broad clinical trials, safety, and efficacy key for further approvals
- **Q4'20** expected broader availability\(^6\)

---

1. Emergency Use Authorization; nomenclature may differ across geographies; 2. Estimated timelines for grant of EUA: BioNTech/Pfizer, Moderna, Sinopharm/BIPB and Sinopharm/WIPB by Q4'20, Oxford University/AstraZeneca between Q4'20 & Q1'21; Janssen (J&J), Novavax, Sinovac and CanSino by Q1'21; Gamaleya Research Institute to be ascertained; 3. Healthy adults (beyond initial target population segments) able to access vaccine; 4. Estimated for the US, will be subject to a set of preconditions including phase 3 results, manufacturing & distribution setup and scale-up, etc.; 5. EUA for Remdesivir in the US, Japan, Australia (non-exhaustive), Convalescent plasma therapy in the US (non-exhaustive), Dexamethasone in UK, Japan (non-exhaustive), Favipiravir in India, Russia, China (non-exhaustive); 6. First few million doses; Gilead to ramp up availability of Remdesivir to 2M by Dec 2020; the US has secured 500k already and pre-booked 50% of September 2020 month’s capacity; Additionally, availability basis prescription has started in select geographies like India, Japan, European Union, etc; Gilead has also signed non-exclusive voluntary licensing agreements with generic pharmaceutical manufacturers based in Egypt, India and Pakistan; Dexamethasone widely available but used generally in severe patients requiring supplemental oxygen support; Source: FDA, WHO, Milken Institute; Biocentury; Company websites, BCG
Vaccine fast movers | 10 vaccine candidates already in Phase III

As of 02 Oct 2020

Potential timelines for candidates currently in Phase III

<table>
<thead>
<tr>
<th>Vaccine candidate</th>
<th>Targeted Ph III enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>BioNTech (Germany), Pfizer (US)</td>
<td>~44,000</td>
</tr>
<tr>
<td>Moderna, NIH (US)</td>
<td>~30,000</td>
</tr>
<tr>
<td>Oxford Uni., AstraZeneca (UK)</td>
<td>~50,000</td>
</tr>
<tr>
<td>Janssen (J&amp;J) (US)</td>
<td>~60,000</td>
</tr>
<tr>
<td>Novavax (US)</td>
<td>~10,000</td>
</tr>
<tr>
<td>Sinovac (China)</td>
<td>~9,000</td>
</tr>
<tr>
<td>BIPB &amp; Sinopharm (China)</td>
<td>~15,000</td>
</tr>
<tr>
<td>WIPB &amp; Sinopharm (China)</td>
<td>~15,000</td>
</tr>
<tr>
<td>CanSino Biologics (China)</td>
<td>~40,000</td>
</tr>
<tr>
<td>Gamaleya - Sputnik V (Russia)</td>
<td>~40,000</td>
</tr>
</tbody>
</table>

Note: The timeline represented is highly dependent on Phase III vaccine results including safety and efficacy data and, hence, is subject to change; 1. Ph III trials involve large number of volunteers (e.g., 10s of 1000s) to test efficacy & safety of vaccine; 2. Phase II studies involve small number of volunteers (e.g., 100-1000) & intended to provide preliminary information about vaccine’s ability to produce desired effect; 3. Phase I clinical studies involve initial testing in very small number of volunteers (e.g., 20-100) to test safety profile; 4. Emergency Use Authorization; 5. Oxford University/AstraZeneca voluntarily paused Ph. III trials to review safety event on a UK patient; trials resumed in UK, India but suspended in other countries, including US; 6. Beijing Institute of Biological Products; 7. EUA granted for high-risk groups in China & UAE, conditional regulatory approval for general public use expected by end of year; 8. Wuhan Institute of Biological Products; 9. Gamaleya Research Institute; 10. Trials expected to continue till 2021 & 2022 for different candidates, per WHO, clinicaltrials.gov. Companies expected to start approval applications with initial phase III results. Source: Guggenheim, Wells Fargo, Bloomberg, FT, Cowen, NYT, Milken Institute, Morgan Stanley, NIH, clinicaltrials.gov, WHO, Press Search, BCG
Therapeutics | Multiple therapeutic candidates at various stages of clinical trials

As of 02 Oct 2020

| 3 therapeutic candidates currently approved\(^1\) in the US for potential COVID-19 treatment |
|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| **Interim report view** | **Authorization status** | **US example** |
| Remdesivir (antivirals) | Broader EUA\(^4\,5\) granted allowing treatment of suspected or confirmed COVID-19 patients | EAU\(^4\) granted\(^6\); rigorous randomized trials underway |
| ~30% drop in recovery time | | |
| >50% patients discharged in 2 weeks | | |
| **Dexamethasone** (corticosteroid) | Widely available as anti-inflammatory drug | |
| Mortality risk reduction in severe patients\(^2\) | | |
| Reduced 28-day mortality rate by 17% | | |
| **Plasma Therapy** (convalescent plasma) | | |
| 8.7% mortality rate\(^3\) for patients transfused within 3 days of diagnosis versus 11.9% in patients transfused after 3 days | | |

Example candidates in Phase III clinical trials

<table>
<thead>
<tr>
<th><strong>Trial phase</strong></th>
<th><strong>Interim report view</strong></th>
<th><strong>US example</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>LY-CoV555 (Eli Lilly) (monoclonal antibodies)</td>
<td>72% reduction in hospitalization for patients who received antibody vs. those who received a placebo</td>
<td>Reduced viral load by 50-90% and time to alleviate symptoms by 5-7 days vs. those who received a placebo</td>
</tr>
<tr>
<td>Phase III</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actemra (Roche) (monoclonal antibodies)</td>
<td>Patients were 44% less likely to progress to mechanical ventilation or death</td>
<td></td>
</tr>
<tr>
<td>Phase III</td>
<td></td>
<td></td>
</tr>
<tr>
<td>REGN-COV2 (Regeneron) (antibody cocktail)</td>
<td></td>
<td>Non-exhaustive</td>
</tr>
<tr>
<td>Phase III</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1. Remdesivir and plasma therapy granted Emergency Use Authorization; US Health and Human Services included dexamethasone in COVID-19 treatment guideline; 2. Patients requiring supplemental oxygen support; 3. 7-day mortality rate; 4. Emergency Use Authorization; 5. Initial EUA restricted use to patients with severe conditions (e.g., patients requiring supplemental oxygen support); 6. EUA granted despite no to limited randomized clinical trial involving a placebo group to estimate actual impact of the plasma treatment.
Economic forecasts point toward a severe downturn in 2020; most countries expected to rebound to 2019 GDP only by end of 2021

As of 02 Oct 2020

GDP forecast levels indexed to 2019 value (Base: 100)

US      Europe    China      Japan      India¹

<table>
<thead>
<tr>
<th>Year</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India¹</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2021 forecast vs 2019

- **US**: 96-103%
- **Europe**: 95-100%
- **China**: 104-111%
- **Japan**: 93-98%
- **India¹**: 97-101%

Note: As of reports dated 29 May 2020 to 02 Oct 2020, YoY forecasts; 1. For India, forecast is for financial year; for other countries, the forecast is for calendar year; 2. Range from forecasts (where available) of JPMorgan Chase; Morgan Stanley; Bank of America; Fitch Solutions; Credit Suisse; Danske Bank; ING Group; HSBC; Source: Bloomberg; World Bank; IMF; BCG
In the US, business activity across all sectors, except energy, has currently rebounded to previous year levels.

As of 20 Sep 2020
Data for US

BCG Economic Recovery Pulse Check (ERPC): US example

Aggregate activity across time (YoY)

Healthcare witnessed stronger rebound due to increased demand during current crisis

AM, EPI, MPI, FI, TMT, & TL saw steady, moderate recovery; currently above previous year levels

Energy continues to remain below pre-crisis levels

Note: Index value of 100 indicates normal activity compared to previous year’s period; 1. Sector level activity based on 100+ data sources, e.g. financial index, macro economic data, employment, sector confidence, specific data source by sector etc.; 2. Refers to US lockdown start and easing dates 3. Medical Tech, Biopharma, Consumer Health (excluding Hospitals); 4. Aerospace & Defense, Infrastructure, Machinery & Industrial Automation; 5. Chemicals, Metals and Mining, Building Materials, Forest Products, Paper and Packaging; 6. Oil & Gas, Energy & Utilities. Source: BCG
In Europe, business activity\(^1\) across many sectors has exceeded or is close to previous year levels.

As of 20 Sep 2020

*Aggregated for Europe (GER, FR, UK, ITA, SPA)*

**BCG Economic Recovery Pulse Check (ERPC): Europe example**

Aggregate activity\(^2\) across time (YoY)

- **Automotive & Mobility (AM)**
- **Materials & Process Industry\(^3\) (MPI)**
- **Healthcare\(^4\)**
- **Technology, Media & Telecom (TMT)**
- **Financial Institutions (FI)**
- **Engineered Products & Infrastructure\(^5\) (EPI)**
- **Energy\(^6\)**
- **Transportation & Logistics (TL)**

---

**Note:** Index value of 100 indicates normal activity compared to previous year’s period; 1. Sector level activity based on 100+ data sources, e.g. financial index, macro economic data, employment, sector confidence, specific data source by sector etc.; 2. Refers to average lockdown start and easing dates across countries; 3. Chemicals, Metals and Mining, Building Materials, Forest Products, Paper and Packaging; 4. Medical Tech, Biopharma, Consumer Health (excluding Hospitals); 5. Aerospace & Defense, Infrastructure, Machinery & Industrial Automation; 6. Oil & Gas, Energy & Utilities; Source: BCG

**AM, MPI, and Healthcare currently above previous year levels:** AM has seen strong recovery since the low activity during broader lockdown phase.

**TMT, FI, EPI, TL, & Energy remain below pre-crisis levels:** TMT sees continued rebound, close to previous year levels.
Manufacturing PMI recovery globally indicates positive momentum

As of 02 Oct 2020

Manufacturing PMI before, during, and after the crisis

US

Neutral level = 50

Jan Feb Mar Apr May Jun July Aug Sep

-29% to -15%
-14% to 0%
> 0%

-30%

Lockdown started

Lockdown easing

Germany

Neutral level = 50

Jan Feb Mar Apr May Jun July Aug Sep

-5 -2 -5 -16 -13 -5

Italy

Neutral level = 50

Jan Feb Mar Apr May Jun July Aug Sep

-1 -1 -10 -19 -3 -3

Sweden

Neutral level = 50

Jan Feb Mar Apr May Jun July Aug Sep

-7 -13 -9 -2

China

Neutral level = 50

Jan Feb Mar Apr May Jun July Aug Sep

-14

South Korea

Neutral level = 50

Jan Feb Mar Apr May Jun July Aug Sep

0 -6 -8 -9 -7 -3 -2 -0

Japan

Neutral level = 50

Jan Feb Mar Apr May Jun July Aug Sep

-1 -2 -5 -8 -12 -10 -5 -3 -2

Note: PMI (Purchasing Manager’s Index) is a diffusion index that summarizes whether market conditions, as viewed by purchasing managers, are expanding, staying the same, or contracting. 50 is neutral, >50 is considered to be positive sentiment and <50 is considered to be negative sentiment. 1. Lockdown dates are only pertaining to Hubei province; Source: Markit South Korea Manufacturing PMI SA; Jibun Bank Japan Manufacturing PMI SA; China Manufacturing PMI SA; Swedbank Sweden PMI SA; Markit/BME Germany Manufacturing PMI SA; Markit Italy Manufacturing PMI SA; Markit US Manufacturing PMI SA; Bloomberg
Retail and recreation mobility recovered fastest; lower recovery of workplace mobility indicates continued adoption of work from home

As of 11 Sep 2020

Workplace\(^1\), public transit\(^2\) and retail & recreation\(^3\) mobility compared to baseline of January to mid-February 2020

1. Tracked as changes in visits to workplaces; 2. Tracked as changes in visits to public transport hubs, such as underground, bus and train stations; 3. Tracked as changes for restaurants, cafés, shopping centers, theme parks, museums, libraries and cinemas; 4. Refers to average lockdown start and easing dates; Note: Data taken as weekly average compared with baseline (average of all daily values of respective weeks during Feb 15–Sep 11, 2020); Source: Google LLC “Google COVID-19 Community Mobility Reports”. https://www.google.com/covid19/mobility/ Accessed: 21 Sep 2020; Press search; BCG
4 sectors currently above pre-crisis TSR levels; 7 sectors with significant share\(^1\) of companies with >15% default risk

As of 02 Oct 2020

**Categories based on TSR and net debt/enterprise value\(^2\)**

<table>
<thead>
<tr>
<th>Healthier sectors</th>
<th>Pressured sectors</th>
<th>Vulnerable sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSR performance(^3)</td>
<td>Companies with probability of default &gt;15%(^4)</td>
<td></td>
</tr>
<tr>
<td>Semiconductors</td>
<td>-30%</td>
<td>13%</td>
</tr>
<tr>
<td>Retailing</td>
<td>-40%</td>
<td>9%</td>
</tr>
<tr>
<td>Household Products</td>
<td>-16%</td>
<td>4%</td>
</tr>
<tr>
<td>Materials</td>
<td>-32%</td>
<td>1%</td>
</tr>
<tr>
<td>Prof. Services</td>
<td>-30%</td>
<td>0%</td>
</tr>
<tr>
<td>Pharma</td>
<td>-20%</td>
<td>-1%</td>
</tr>
<tr>
<td>Software</td>
<td>-30%</td>
<td>-1%</td>
</tr>
<tr>
<td>Media</td>
<td>-36%</td>
<td>-2%</td>
</tr>
<tr>
<td>Capital Goods</td>
<td>-35%</td>
<td>-4%</td>
</tr>
<tr>
<td>Tech Hardware</td>
<td>-26%</td>
<td>-5%</td>
</tr>
<tr>
<td>Food/staples Retail</td>
<td>-10%</td>
<td>-6%</td>
</tr>
<tr>
<td>Durable Goods</td>
<td>-39%</td>
<td>-6%</td>
</tr>
<tr>
<td>Health Equipment</td>
<td>-31%</td>
<td>-6%</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>-23%</td>
<td>-11%</td>
</tr>
<tr>
<td>Utilities</td>
<td>-30%</td>
<td>-12%</td>
</tr>
<tr>
<td>Auto</td>
<td>-41%</td>
<td>-13%</td>
</tr>
<tr>
<td>Financials</td>
<td>-35%</td>
<td>-14%</td>
</tr>
<tr>
<td>Telecom</td>
<td>-17%</td>
<td>-16%</td>
</tr>
<tr>
<td>Transport</td>
<td>-34%</td>
<td>-20%</td>
</tr>
<tr>
<td>Hospitality</td>
<td>-44%</td>
<td>-22%</td>
</tr>
<tr>
<td>Insurance</td>
<td>-39%</td>
<td>-24%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>-39%</td>
<td>-26%</td>
</tr>
<tr>
<td>Banks</td>
<td>-39%</td>
<td>-29%</td>
</tr>
<tr>
<td>Energy</td>
<td>-52%</td>
<td>-44%</td>
</tr>
</tbody>
</table>

**Note:**
1. Retailing, Materials, Auto, Transport, Hospitality, Real estate and Energy are sectors with >10% of companies with a probability of default > 15%; 2. Net debt & enterprise value from latest available balance sheet; Categories defined based on comparison with S&P Global 1200 median: healthy = TSR & debt/EV > median, pressured = TSR or debt/EV < median, vulnerable = TSR & debt/EV < median; 3. Performance is tracked for two periods, first from 21 February 2020 (before international acceleration of outbreak) to 20 March 2020 (trough of the market) and from 21 February 2020 through 02 Oct 2020 based on median; 4. Implied by 5-year credit default swap based on median; Source: S&P Capital IQ; BCG ValueScience Center; BCG
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