



Perspectives from the Global Portfolio Advisory Committee

July 7, 2022

Mixed signals

Kelly Bogdanova – San Francisco

The risks of a U.S. recession appear to be rising. For equity market performance, the more important consideration is the degree to which the market has already factored in these risks. We weigh the data from several indicators and discuss why there's no "one-size-fits-all" market response to recessions.

Four events should set the tone for the U.S. equity market over the near term, in our view, and will likely determine whether the S&P 500's next move will be to consolidate, bounce, or decline further. The upcoming events are:

- The U.S. consumer inflation report on July 13;
- Q2 corporate earnings reporting season, starting in mid-July and running through much of August;
- The two-day Fed meeting, which will produce an interest rate decision on July 27; and
- The U.S. Q2 GDP report on July 28.

As these key dates approach, U.S. recession risks have risen further in just the past week. We provide perspective on this below.

We also address the bigger question for investors: Is a recession already largely factored into the U.S. market, especially in light of the significant selloff of the past six months? With the major indexes down roughly 20 percent to 30 percent, we think much of the weakness is likely priced in. But there are a number of important caveats to consider, as this is a unique business cycle with no analogues.

Recession risks are accelerating

Heightened recession risks are captured by the latest Atlanta Fed GDPNow estimate, which is pointing to a second straight quarter of negative U.S. GDP growth in Q2. (An important note: Two consecutive quarters of GDP declines is not the "official" definition of a recession according to the National Bureau of Economic Research [NBER], but it's one that many market participants embrace. Therefore, should another negative GDP quarter transpire, we think press headlines would shout "recession" regardless of whether the state of the economy matches the official definition.)

The GDPNow model is currently forecasting a 1.9 percent decline in Q2 GDP, although this estimate is subject to change as more data arrive. This forecast deteriorated significantly late last week following negative revisions to Q2 consumer spending and private domestic investment data. We view GDPNow as a useful running estimate of U.S. GDP because it incorporates the most relevant data released thus far during the quarter.

Complicating matters, the Bloomberg consensus of Wall Street economists is forecasting 2.6 percent GDP growth

For perspectives on the week from our regional analysts, please see <u>pages 4-5</u>.

Investment and insurance products offered through RBC Wealth Management are not insured by the FDIC or any other federal government agency, are not deposits or other obligations of, or guaranteed by, a bank or any bank affiliate, and are subject to investment risks, including possible loss of the principal amount invested.

Priced (in USD) as of 7/6/22 market close (unless otherwise stated). Produced: 7/7/22 4:27 pm ET; Disseminated: 7/7/22 5:30 pm ET For important disclosures, required non-U.S. analyst disclosures, and authors' contact information, see page 7

in Q2—the opposite of what the Atlanta Fed's model is signaling. The consensus estimate has been near this level since mid-May; we think some economists may be slow to update their forecasts despite the fact that rhetoric about the economy has become more pessimistic. We can't remember such a wide gap between the GDPNow estimate and the consensus forecast (see chart).

What is our take on this mismatch and recession risks overall?

RBC Capital Markets, LLC Chief U.S. Economist Tom Porcelli points out there are indeed signs of material, broad-based economic slowing. He says this downturn will feel like a recession to most people, whether or not it is officially deemed one by the NBER. He does not believe the consumer segment will be spared; it represents the largest share of the economy. While Porcelli's base case forecast is still for a mid-cycle slowdown similar to the one that occurred from 1994 to 1995—a painful period that felt like a recession but wasn't accorded the official designation—he notes that an official recession is looking increasingly likely this cycle. If this turns out to be the case, Porcelli thinks it will be mild unless the Fed overtightens.

RBC Wealth Management's U.S. recession scorecard, which tracks seven important leading indicators of recession, has recorded some deterioration in just the past week. The all-important yield curve indicator has shifted to the yellow zone along with another indicator, and the manufacturing indicator has flipped from yellow to red. As a group, the seven indicators are still not signaling acute risks that a recession is imminent, but the trend has shifted notably since early June. Recession risks are now higher than before, as our most recent recession scorecard report explains.

One size does not fit all

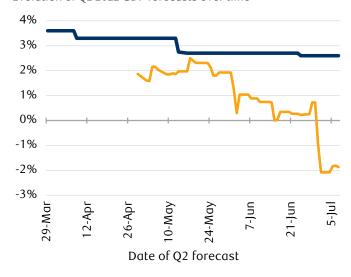
Regardless of whether a recession is already upon us, right around the corner, or could materialize within the next year or two, the bigger question for investors is: To what degree has the U.S. equity market already factored in a recession?

With the S&P 500 down almost 20 percent from its peak and some widely owned stocks within the index down much more, while the Nasdaq Composite and the small-cap Russell 2000 are both down almost 30 percent, we think much of the weakness has been priced in—as long as the Fed doesn't slam on the brakes too hard by raising interest rates much higher than is warranted, and as long as inflation doesn't linger at an elevated level for a long time.

An important point to consider when thinking about equity market behavior surrounding recessionary periods is that there is no single template—there is no "typical" recession, and there isn't much that can be considered

There is an unusually wide gap between GDP forecasts

Evolution of Q2 2022 GDP forecasts over time



Bloomberg consensus forecast of economistsAtlanta Fed GDPNow forecast

Source - Bloomberg, Federal Reserve Bank of Atlanta; data through 7/7/22

typical market behavior associated with them. This is illustrated by the table on the following page and by other data:

- Market performance can vary widely during recessions.
 While the S&P 500's average decline was 32 percent surrounding the previous 13 recessions, magnitudes ranged from just 15 percent to 57 percent.
- Historically, there has not been a strong correlation between the duration of recessions and S&P 500 declines. One notably long recession was accompanied by a smaller-than-average market decline (1981); some recessions of roughly average length featured wellbelow-average declines (1948, 1953, 1960); and on other occasions, recessions of below-average length ushered in big market declines (2001, 2020).
- Likewise, the depth of recessions (in terms of peak-totrough GDP losses) has not consistently correlated with the magnitude of market declines.
- There is one very visible pattern in the historical data, however. In all but one of the previous recessions since 1937, the equity market troughed <u>before</u> the recession officially ended. This reinforces a point we make repeatedly: Attempting to time the market bottom is usually a fruitless exercise. The market typically bottoms well before the economic clouds part, often when headlines and investor sentiment are still rather negative.
- Corporate profit declines and valuation trends during recession periods have often played roles in shaping market performance. These are important aspects of

S&P 500 corrections surrounding recessions

	Decline details			Recession-related details			
Recession dates	Market peak date	Days to bottom	Decline %	Recession length (months)	Did the market bottom before the recession ended?	No. of months from market bottom to end of recession	
May 1937 – June 1938	3/10/37	386	-54%	14	Yes	3.0	
Nov. 1948 – Oct. 1949	6/15/48	363	-21%	12	Yes	5.1	
July 1953 – May 1954	1/5/53	252	-15%	11	Yes	9.1	
Aug. 1957 – April 1958	7/15/57	99	-21%	9	Yes	5.0	
April 1960 – Feb. 1961	8/3/59	449	-14%	11	Yes	4.0	
Dec. 1969 – Nov. 1970	11/29/68	543	-36%	12	Yes	6.1	
Nov. 1973 – March 1975	1/11/73	630	-48%	17	Yes	6.1	
Jan. 1980 – July 1980	2/13/80	43	-17%	7	Yes	4.1	
July 1981 – Nov. 1982	11/28/80	622	-27%	17	Yes	4.1	
July 1990 – March 1991	7/16/90	87	-20%	9	Yes	6.1	
March 2001 - Nov. 2001	3/24/00	929*	-49%	9	No	N/A**	
Dec. 2007 – June 2009	10/9/07	517	-57%	19	Yes	4.1	
Feb. 2020 – April 2020	2/19/20	33	-34%	3	Yes	1.0	
Average		381	-31.8%	11.5	_	4.8	

Notes: The 1945 recession is excluded as there was no clear stock market pullback around it. *Surrounding the recession in March 2001 – Nov. 2001, the pullback statistics are based on a March 2000 peak and Oct. 2002 low; the market hit an initial low in Nov. 2001, which was retested and surpassed in 2002. **The market didn't bottom until 10 months after the recession ended; this data is not included in the average calculated for this column.

Source - RBC Capital Markets U.S. Equity Strategy, Haver Analytics, RBC Wealth Management

the economic cycle that we plan to address in coming weeks as we approach corporate earnings season.

Stay tuned for updates

The slew of important economic, corporate, and monetary policy events that will occur in the near term will likely determine the U.S. equity market's next move, in our view.

If some of these events prove to be disappointing and recession probabilities rise further, we think there could be a longer bout of volatility and some more downside for equities.

Conversely, if the preponderance of news is at least "less bad" than it has been lately and signals that some of the worst aspects of the current down-cycle may be passing, the market could get a much-needed reprieve and even bounce noticeably over the near term.

For additional thoughts on the market's potential path beyond the upcoming events—including a discussion of two specific scenarios tied to inflation and Fed policy—see the recent article on prospects for equity markets, part of our 2022 Midyear Outlook report.

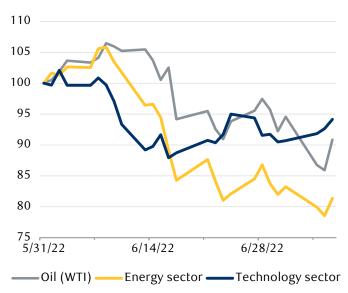
UNITED STATES

Alan Robinson – Seattle

- U.S. stocks have pulled away from their recent lows during the holiday-shortened week as traders weighed whether the year-to-date declines in the market already reflected peak bearishness surrounding this year's likely economic slowdown. Trading volumes were relatively light as is typical at the start of July in the pre-earnings season summer Jull.
- Banks will open earnings season, and they may provide a roadmap to the direction of the broad market as analysts hone their earnings forecasts. RBC Capital Markets, LLC Large Cap Bank Analyst Gerard Cassidy highlighted two potential positive developments in his earnings preview for the sector. He expects net interest income to strengthen from prior quarters as interest rates rise, and he expects loan growth for his coverage universe to hit 9.2% y/y with credit quality remaining robust. However, he thinks earnings from capital markets and investment banking businesses may be down sharply.
- Results for the Energy sector are also likely to be closely monitored this earnings season. Since the price of oil closed at a peak on June 8, Energy stocks have fallen more quickly than the commodity. This may be a reflection of longer-term concerns over oil company earnings as high current oil prices encourage a switch to alternative energy sources. It may also reflect concerns that a global recession may further reduce demand for oil. But the

Oil stocks have underperformed the commodity as global growth concerns build

Relative performance



Source - RBC Wealth Management, FactSet; daily data as of 12:00 pm ET 7/7/22

fact that other cyclical sectors such as Technology have performed relatively well since that peak (see chart) suggests to us that Energy stock weakness may be a passing phase. A few global oil companies have previewed their results already, and none of the commentaries appear unduly alarming so far.

■ Ahead of the monthly jobs report due tomorrow, U.S. trade data released today offered hope for a positive Q2 2022 GDP print. The trade deficit, which had contributed to negative GDP growth in Q1 2022, bounced back sharply in May, as exports outpaced imports thanks, partly, to foreign ports reopening.

CANADA

Luis Castillo & Simon Jones - Toronto

- Canada's GDP grew 0.3% m/m in April, led by robust growth in high-contact service industries and the oil & gas extraction sector. However, there are signs that growth may be slowing, with Statistics Canada's preliminary estimate for May showing the economy likely contracted 0.2% m/m. With inflation, labour shortages, and rising interest rates beginning to take a toll on economic growth, RBC Economics revised its economic forecasts and now expects a moderate contraction in the Canadian economy in 2023. The Bank of Canada (BoC) has so far shown no intention of slowing its current monetary tightening pace and appears willing to endure the economic pain necessary to tame elevated levels of inflation. Since peaking in mid-June, Canadian short-tomid-term rates have fallen by 30–50 basis points (bps), as the bond market's focus shifts towards a potential economic slowdown.
- The BoC's Business Outlook Survey showed firms remain optimistic about future sales growth, but an increasing number of businesses expect growth to decelerate over the next 12 months as demand normalizes. As has been the case for many months, labour shortages and supply chain disruptions continue to act as a constraint on firms' ability to meet demand. To contend with these challenges, many companies plan to increase spending on equipment to improve productivity, and hiring intentions also remain widespread. However, the tightness in the labour market has meant employers have to pay higher wages to attract and retain talent, costs they expect to pass along to consumers in the form of higher prices. These signs of excess demand, coupled with the recent rise in consumer inflation expectations, likely means that an aggressive policy stance remains appropriate for the BoC and we expect the central bank will increase the policy rate by at least 50 bps at next week's meeting.

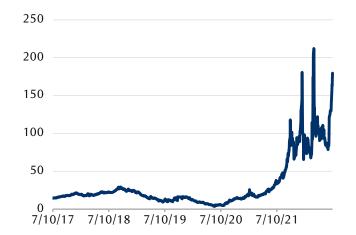
EUROPE

Frédérique Carrier – London

- The energy crisis in Europe has intensified as gas flows from Russia are down by close to two-thirds so far this year. Over the past few months, the continent has been working to reduce its dependence on Russian gas, and is now receiving close to one-third of all worldwide exports of liquefied natural gas (LNG). Moreover, coal-fired power plants are restarting and the planned closure of some nuclear reactors has been postponed.
- Despite these efforts, it is looking increasingly likely that Europe will have to ration gas in the autumn. Gas storage, currently at 60% capacity, according to IntelliNews, is likely to struggle to reach the target of 85% in October.
- If supply cannot be increased, demand will have to adjust. There is evidence that **high prices are already causing demand destruction**. Rationing for large users, such as chemical, glass, steel, and construction companies, appears increasingly likely.
- How drastic the rationing may be and whether it is extended to households will likely depend on two factors out of Europe's hands: winter temperatures and the extent to which China bounces back from COVID-19 lockdowns and diverts LNG shipments away from Europe. An extraordinary meeting of EU27 energy ministers will convene on July 26 to discuss how the bloc will cope with the energy crisis in the winter months.
- The consensus estimate of 2023 European GDP has been falling steadily since the Russia-Ukraine war broke out, but the current consensus still foresees relatively sprightly growth of 1.85%. It is likely to be revised down further as a recession in Europe in the winter months appears increasingly difficult to avoid.
- The UK, meanwhile, faces a political crisis. A widespread loss of confidence in Prime Minister Boris Johnson led to more than 50 ministerial resignations

European natural gas prices spike again

Netherlands TTF natural gas forward one month (EUR/MWh)



Source - RBC Wealth Management, Bloomberg; data through 7/7/22

- within 36 hours, the most in Britain's political history, and Johnson reluctantly resigned. There is no clear frontrunner to replace him. Most potential candidates would likely usher in a period of flexible fiscal policy, with the Bank of England having to increase interest rates, in our view—which would likely underpin the pound. By contrast, should fiscally conservative former Chancellor of the Exchequer Rishi Sunak become prime minister, we would expect more fiscal austerity.
- Other risks could impact the pound, in our view, including the relationship with the EU and the yawning current account deficit now at 8% of GDP, the prospect of a Scottish independence referendum, and a possible general election.

ASIA PACIFIC

Nicholas Gwee, CFA - Singapore

- Asia Pacific equity markets have been mixed this week, with most ASEAN countries trading lower and Japan, India, and New Zealand at the other end of the spectrum.
- According to a Bloomberg report, the Bank of Japan will likely raise its inflation forecasts and lower its GDP growth forecasts for the year on the back of rising costs and the heavy impact on Japan's manufacturing sector from China's pandemic lockdowns. We think these potential adjustments will likely reinforce the central bank's commitment to its easy monetary policy to support the economy.
- The White House is reviewing its tariff policies on Chinese imports, with options including cutting some of the existing tariffs, according to a Reuters report. The review comes as the first tranche of Section 301 tariffs on US\$34 billion of goods expired on July 6. Another tranche on US\$16 billion of goods will expire on Aug. 23, and a third, on approximately US\$100 billion of goods, will expire on Sept. 4. Politicians supporting a cut argue that lowering the levies could help to lower record high inflation. However, U.S. Trade Representative Katherine Tai, an opponent of a cut said, "The China tariffs are, in my view, a significant piece of leverage—and a trade negotiator never walks away from leverage."
- Samsung Electronics Co. (005930 KS) reported better-than-feared revenue growth (+21% y/y). Revenue expectations were low heading into reporting season as investors were concerned about the impact of weakening consumer demand and rising materials costs for chipmakers, especially after the grim outlook by U.S. rival Micron Technology (MU US) last week. The stronger numbers also helped lift the share prices of other Asia chipmakers today. That said, operating profit came in softer than anticipated, reflecting margin pressures from rising inflation. According to Samsung, operating profit growth slowed to its lowest level in more than two years, with 14 trillion won (US\$10.7 billion) for the three months ended June 30.

MARKET Scorecard

Data as of July 6, 2022

Equity returns do not include dividends, except for the Brazilian Ibovespa. Bond yields in local currencies. Copper Index data and U.S. fixed income returns as of Wednesday's close. Dollar Index measures USD vs. six major currencies. Currency rates reflect market convention (CAD/USD is the exception). Currency returns quoted in terms of the first currency in each pairing.

Examples of how to interpret currency data: CAD/USD 0.76 means 1 Canadian dollar will buy 0.76 U.S. dollar. CAD/USD -3.1% return means the Canadian dollar fell 3.1% vs. the U.S. dollar year to date. USD/JPY 135.92 means 1 U.S. dollar will buy 135.92 yen. USD/JPY 18.1% return means the U.S. dollar rose 18.1% vs. the yen year to date.

Source - Bloomberg; data as of 7/6/22 market close

Equities (local currency)	Level	MTD	YTD	1 уг	2 yr
S&P 500	3,845.08	1.6%	-19.3%	-11.5%	20.9%
Dow Industrials (DJIA)	31,037.68	0.9%	-14.6%	-10.2%	18.1%
Nasdaq	11,361.85	3.0%	-27.4%	-22.5%	8.9%
Russell 2000	1,727.55	1.1%	-23.1%	-24.0%	19.7%
S&P/TSX Comp	18,729.66	-0.7%	-11.7%	-7.7%	19.5%
FTSE All-Share	3,910.80	-0.8%	-7.1%	-3.7%	12.4%
STOXX Europe 600	407.34	0.0%	-16.5%	-10.7%	9.7%
EURO STOXX 50	3,421.84	-1.0%	-20.4%	-15.6%	2.1%
Hang Seng	21,586.66	-1.2%	-7.7%	-23.1%	-18.0%
Shanghai Comp	3,355.35	-1.3%	-7.8%	-5.0%	0.7%
Nikkei 225	26,107.65	-1.1%	-9.3%	-8.9%	14.9%
India Sensex	53,750.97	1.4%	-7.7%	1.7%	47.3%
Singapore Straits Times	3,103.66	0.0%	-0.6%	-2.7%	15.4%
Brazil Ibovespa	98,718.98	0.2%	-5.8%	-21.1%	-0.2%
Mexican Bolsa IPC	47,722.29	0.4%	-10.4%	-4.6%	26.0%
Gov't bonds (bps change)	Yield	MTD	YTD	1 yr	2 yr
U.S. 10-Yr Treasury	2.930%	-8.3	142.0	158.2	225.4
Canada 10-Yr	3.189%	-3.4	176.3	187.3	264.1
UK 10-Yr	2.092%	-13.7	112.1	145.8	189.1
Germany 10-Yr	1.206%	-13.0	138.3	147.4	163.7
Fixed income (returns)	Yield	MTD	YTD	1 yr	2 yr
U.S. Aggregate	3.57%	1.0%	-9.5%	-9.8%	-9.9%
U.S. Investment-Grade Corp	4.58%	0.9%	-13.6%	-14.0%	-11.3%
U.S. High-Yield Corp	8.87%	0.2%	-14.0%	-12.9%	-0.4%
Commodities (USD)	Price	MTD	YTD	1 уг	2 yr
Gold (spot \$/oz)	1,738.68	-3.8%	-4.9%	-3.2%	-2.6%
Silver (spot \$/oz)	19.20	-5.3%	-17.6%	-26.6%	5.1%
Copper (\$/metric ton)	7,657.75	-7.2%	-21.4%	-17.5%	24.8%
Oil (WTI spot/bbl)	98.53	-6.8%	28.0%	34.3%	142.5%
Oil (Brent spot/bbl)	99.98	-12.9%	28.5%	34.1%	132.0%
Natural Gas (\$/mmBtu)	5.56	2.4%	49.0%	52.8%	203.6%
Currencies	Rate	MTD	YTD	1 yr	2 yr
U.S. Dollar Index	107.0710	2.3%	11.9%	15.7%	10.7%
CAD/USD	0.7667	-1.3%	-3.1%	-4.5%	3.8%
USD/CAD	1.3042	1.3%	3.2%	4.7%	-3.7%
EUR/USD	1.0185	-2.9%	-10.4%	-13.9%	-9.9%
GBP/USD	1.1920	-2.1%	-11.9%	-13.6%	-4.6%
AUD/USD	0.6779	-1.8%	-6.7%	-9.6%	-2.8%
USD/JPY	135.9200	0.1%	18.1%	22.9%	26.6%
EUR/JPY	138.4300	-2.7%	5.8%	5.8%	14.0%
EUR/GBP	0.8544	-0.8%	1.6%	-0.3%	-5.6%
EUR/CHF	0.9887	-1.2%	-4.7%	-9.5%	-7.2%
USD/SGD	1.4049	1.0%	4.1%	4.3%	0.9%
USD/CNY	6.7080	0.1%	5.5%	3.5%	-4.4%
USD/MXN	20.6590	2.7%	0.6%	3.1%	-7.6%
USD/BRL	5.4265	3.2%	-2.7%	4.4%	1.3%

Authors

Kelly Bogdanova - San Francisco, United States

kelly.bogdanova@rbc.com; RBC Capital Markets, LLC

Alan Robinson – Seattle, United States

alan.robinson@rbc.com; RBC Capital Markets, LLC

Luis Castillo - Toronto, Canada

luis.castillo@rbccm.com; RBC Dominion Securities Inc.

Simon Jones - Toronto, Canada

simon.jones@rbccm.com; RBC Dominion Securities Inc.

Frédérique Carrier – London, United Kingdom

frederique.carrier@rbc.com; RBC Europe Limited

Nicholas Gwee, CFA - Singapore

nicholas.gwee@rbc.com; Royal Bank of Canada, Singapore Branch

Disclosures and Disclaimer

Analyst Certification

All of the views expressed in this report accurately reflect the personal views of the responsible analyst(s) about any and all of the subject securities or issuers. No part of the compensation of the responsible analyst(s) named herein is, or will be, directly or indirectly, related to the specific recommendations or views expressed by the responsible analyst(s) in this report.

Important Disclosures

In the U.S., RBC Wealth Management operates as a division of RBC Capital Markets, LLC. In Canada, RBC Wealth Management includes, without limitation, RBC Dominion Securities Inc., which is a foreign affiliate of RBC Capital Markets, LLC. This report has been prepared by RBC Capital Markets, LLC which is an indirect wholly-owned subsidiary of the Royal Bank of Canada and, as such, is a related issuer of Royal Bank of Canada.

Non-U.S. Analyst Disclosure

One or more research analysts involved in the preparation of this report (i) may not be registered/qualified as research analysts with the NYSE and/or FINRA and (ii) may not be associated persons of the RBC Wealth Management and therefore may not be subject to FINRA Rule 2241 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account.

In the event that this is a compendium report (covers six or more companies), RBC Wealth Management may choose to provide important disclosure information by reference. To access current disclosures, clients should refer to https://www.rbccm.com/GLDisclosure/PublicWeb/DisclosureLookup.aspx?EntityID=2 to view disclosures regarding RBC Wealth Management and its affiliated firms. Such information is also available upon request to RBC Wealth Management Publishing, 250 Nicollet Mall, Suite 1800, Minneapolis, MN 55401-1931.

RBC Capital Markets Distribution of Ratings

For the purpose of ratings distributions, regulatory rules require member firms to assign ratings to one of three rating categories – Buy, Hold/Neutral, or Sell – regardless of a firm's own rating categories. Although RBC Capital Markets' ratings of Outperform (O), Sector Perform (SP), and Underperform (U) most closely correspond to Buy, Hold/Neutral and Sell, respectively, the meanings are not the same because RBC Capital Markets ratings are determined on a relative basis.

Distribution of ratings – RBC Capital Markets Equity Research

As of June 30, 2022

			Investmen Services During Mor	Past 12
Rating	Count	Percent	Count	Percent
Buy [Outperform]	851	58.41	290	34.08
Hold [Sector Perform]	560	38.44	169	30.18
Sell [Underperform]	46	3.16	6	13.04

Explanation of RBC Capital Markets Equity Rating System

An analyst's "sector" is the universe of companies for which the analyst provides research coverage. Accordingly, the rating assigned to a particular stock represents solely the analyst's view of how that stock will perform over the next 12 months relative to the analyst's sector average.

Ratings: Outperform (O): Expected to materially outperform sector average over 12 months. Sector Perform (SP): Returns expected to be in line with sector average over 12 months. Underperform (U): Returns expected to be materially below sector average over 12 months. Restricted (R): RBC policy precludes certain types of communications, including an investment recommendation, when RBC is acting as an advisor in certain merger or other strategic transactions and in certain other circumstances. Not Rated (NR): The rating, price targets and estimates have been removed due to applicable legal, regulatory or policy constraints which may include when RBC Capital Markets is acting in an advisory capacity involving the company.

As of March 31, 2020, RBC Capital Markets discontinued its Top Pick rating. Top Pick rated securities represented an analyst's best idea in the sector; expected to provide significant absolute returns over 12 months with a favorable risk-reward ratio. Top Pick rated securities have been reassigned to RBC Capital Markets' Outperform rated securities category, which are securities expected to materially outperform sector average over 12 months.

Risk Rating: The **Speculative** risk rating reflects a security's lower level of financial or operating predictability, illiquid share trading volumes, high balance sheet leverage, or limited operating history that result in a higher expectation of financial and/or stock price volatility.

Valuation and Risks to Rating and Price Target

When RBC Capital Markets assigns a value to a company in a research report, FINRA Rules and NYSE Rules (as incorporated into the FINRA Rulebook) require that the

basis for the valuation and the impediments to obtaining that valuation be described. Where applicable, this information is included in the text of our research in the sections entitled "Valuation" and "Risks to Rating and Price Target", respectively.

The analyst(s) responsible for preparing this research report have received (or will receive) compensation that is based upon various factors, including total revenues of RBC Capital Markets, and its affiliates, a portion of which are or have been generated by investment banking activities of RBC Capital Markets and its affiliates.

Other Disclosures

Prepared with the assistance of our national research sources. RBC Wealth Management prepared this report and takes sole responsibility for its content and distribution. The content may have been based, at least in part, on material provided by our third-party correspondent research services. Our third-party correspondent has given RBC Wealth Management general permission to use its research reports as source materials, but has not reviewed or approved this report, nor has it been informed of its publication. Our third-party correspondent may from time to time have long or short positions in, effect transactions in, and make markets in securities referred to herein. Our third-party correspondent may from time to time perform investment banking or other services for, or solicit investment banking or other business from, any company mentioned in this report.

RBC Wealth Management endeavors to make all reasonable efforts to provide research simultaneously to all eligible clients, having regard to local time zones in overseas jurisdictions. In certain investment advisory accounts, RBC Wealth Management or a designated third party will act as overlay manager for our clients and will initiate transactions in the securities referenced herein for those accounts upon receipt of this report. These transactions may occur before or after your receipt of this report and may have a short-term impact on the market price of the securities in which transactions occur. RBC Wealth Management research is posted to our proprietary Web sites to ensure eligible clients receive coverage initiations and changes in rating, targets, and opinions in a timely manner. Additional distribution may be done by sales personnel via e-mail, fax, or regular mail. Clients may also receive our research via third-party vendors. Please contact your RBC Wealth Management Financial Advisor for more information regarding RBC Wealth Management research.

Conflicts Disclosure: RBC Wealth Management is registered with the Securities and Exchange Commission as a broker/dealer and an investment adviser, offering both brokerage and investment advisory services. RBC Wealth Management's Policy for Managing Conflicts of Interest in Relation to Investment Research is available from us on our website at https://www.rbccm.com/GLDisclosure/PublicWeb/DisclosureLookup.aspx?EntitylD=2. Conflicts of interests related to our investment advisory business can be found in Part 2A Appendix 1 of the Firm's Form ADV or the RBC Advisory Programs Disclosure Document. Copies of any of these documents are available upon request through your Financial Advisor. We reserve the right to amend or

supplement this policy, Part 2A Appendix 1 of the Form ADV, or the RBC Advisory Programs Disclosure Document at any time.

The authors are employed by one of the following entities: RBC Wealth Management USA, a division of RBC Capital Markets, LLC, a securities broker-dealer with principal offices located in Minnesota and New York, USA; by RBC Dominion Securities Inc., a securities broker-dealer with principal offices located in Toronto, Canada; by RBC Investment Services (Asia) Limited, a subsidiary of RBC Dominion Securities Inc., a securities broker-dealer with principal offices located in Hong Kong, China; by Royal Bank of Canada, Singapore Branch, a licensed wholesale bank with its principal office located in Singapore; and by RBC Europe Limited, a licensed bank with principal offices located in London, United Kingdom.

Research Resources

This document is produced by the Global Portfolio Advisory Committee within RBC Wealth Management's Portfolio Advisory Group. The RBC WM Portfolio Advisory Group provides support related to asset allocation and portfolio construction for the firm's Investment Advisors / Financial Advisors who are engaged in assembling portfolios incorporating individual marketable securities. The Committee leverages the broad market outlook as developed by the RBC Investment Strategy Committee, providing additional tactical and thematic support utilizing research from the RBC Investment Strategy Committee, RBC Capital Markets, and third-party resources.

Third-party Disclaimers

The Global Industry Classification Standard ("GICS") was developed by and is the exclusive property and a service mark of MSCI Inc. ("MSCI") and Standard & Poor's Financial Services LLC ("S&P") and is licensed for use by RBC. Neither MSCI, S&P, nor any other party involved in making or compiling the GICS or any GICS classifications makes any express or implied warranties or representations with respect to such standard or classification (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability and fitness for a particular purpose with respect to any of such standard or classification. Without limiting any of the foregoing, in no event shall MSCI, S&P, any of their affiliates or any third party involved in making or compiling the GICS or any GICS classifications have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

Disclaimer

The information contained in this report has been compiled by RBC Wealth Management, a division of RBC Capital Markets, LLC, from sources believed to be reliable, but no representation or warranty, express or implied, is made by Royal Bank of Canada, RBC Wealth Management, its affiliates or any other person as to its accuracy, completeness or correctness. All opinions and estimates contained in this report constitute RBC Wealth Management's judgment as of the date of this report, are subject to change without notice and are provided in good faith but without legal responsibility. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Every province in Canada, state in the U.S., and most countries throughout the world have their own laws regulating the types of securities and other investment products which may be offered to

their residents, as well as the process for doing so. As a result, the securities discussed in this report may not be eligible for sale in some jurisdictions. This report is not, and under no circumstances should be construed as, a solicitation to act as securities broker or dealer in any jurisdiction by any person or company that is not legally permitted to carry on the business of a securities broker or dealer in that jurisdiction. Nothing in this report constitutes legal, accounting or tax advice or individually tailored investment advice. This material is prepared for general circulation to clients, including clients who are affiliates of Royal Bank of Canada, and does not have regard to the particular circumstances or needs of any specific person who may read it. The investments or services contained in this report may not be suitable for you and it is recommended that you consult an independent investment advisor if you are in doubt about the suitability of such investments or services. To the full extent permitted by law neither Royal Bank of Canada nor any of its affiliates, nor any other person, accepts any liability whatsoever for any direct, indirect or consequential loss arising from, or in connection with, any use of this report or the information contained herein. No matter contained in this document may be reproduced or copied by any means without the prior written consent of Royal Bank of Canada in each instance. Additional information is available upon request.

To U.S. Residents: This publication has been approved by RBC Capital Markets, LLC, Member NYSE/FINRA/SIPC, which is a U.S. registered broker-dealer and which accepts responsibility for this report and its dissemination in the United States. RBC Capital Markets, LLC, is an indirect wholly-owned subsidiary of the Royal Bank of Canada and, as such, is a related issuer of Royal Bank of Canada. Any U.S. recipient of this report that is not a registered broker-dealer or a bank acting in a broker or dealer capacity and that wishes further information regarding, or to effect any transaction in, any of the securities discussed in this report, should contact and place orders with RBC Capital Markets, LLC. International investing involves risks not typically associated with U.S. investing, including currency fluctuation, foreign taxation, political instability and different accounting standards.

To Canadian Residents: This publication has been approved by RBC Dominion Securities Inc. RBC Dominion Securities Inc.* and Royal Bank of Canada are separate corporate entities which are affiliated. * Member-Canadian Investor Protection Fund.

® Registered trademark of Royal Bank of Canada. Used under license. RBC Wealth Management is a registered trademark of Royal Bank of Canada. Used under license.

RBC Wealth Management (British Isles): This publication is distributed by RBC Europe Limited and Royal Bank of Canada (Channel Islands) Limited. RBC Europe Limited is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority (FCA registration number: 124543). Registered office: 100 Bishopsgate, London, EC2N 4AA, UK. Royal Bank of Canada (Channel Islands) Limited is regulated by the Jersey Financial Services Commission in the conduct of investment business in Jersey. Registered office: Gaspé House, 66-72 Esplanade, St Helier, Jersey JE2 3QT, Channel Islands.

To Hong Kong Residents: This publication is distributed in Hong Kong by Royal Bank of Canada, Hong Kong Branch which is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission ('SFC'), and RBC Investment Services (Asia) Limited, which is regulated by the SFC.

To Singapore Residents: This publication is distributed in Singapore by the Royal Bank of Canada, Singapore Branch, a registered entity licensed by the Monetary Authority of Singapore. This material has been prepared for general circulation and does not take into account the objectives, financial situation, or needs of any recipient. You are advised to seek independent advice from a financial adviser before purchasing any product. If you do not obtain independent advice, you should consider whether the product is suitable for you. Past performance is not indicative of future performance. If you have any questions related to this publication, please contact the Royal Bank of Canada, Singapore Branch. Royal Bank of Canada, Singapore Branch accepts responsibility for this report and its dissemination in Singapore.

© 2022 RBC Capital Markets, LLC – Member NYSE/FINRA/SIPC © 2022 RBC Dominion Securities Inc. – Member Canadian Investor Protection Fund © 2022 RBC Europe Limited © 2022 Royal Bank of Canada All rights reserved RBC1253

