

Global Insight

Weekly

Will the coronavirus infect markets and the economy?

Kelly Bogdanova – San Francisco & Joseph Wu, CFA – Toronto

A spasm of volatility has shot through markets in the wake of the outbreak. We look at the knock-on effects of the pandemic for the world economy, and what sort of market impact investors should brace for.

As Wuhan Coronavirus (2019-nCoV) spreads, capturing more public attention about the many uncertainties and risks associated with the virus, financial markets have reacted. The increases in infections and deaths have pressured equity markets worldwide and boosted safe-haven sovereign bond prices. The flight to safety, for example, briefly pushed the 10-year Treasury yield down to 1.53 percent, a six-month low.

The economic and market impacts stemming from the outbreak could be material, especially for China and global industries that are most affected, such as travel and segments of transportation. But ultimately the impact should be transitory, in our assessment.

Compared to the 2003 SARS outbreak, Chinese authorities and other countries appear better prepared to deal with public health crises, underscored by improved transparency, pre-emptive measures to restrict travel, and a worldwide push by scientists to develop treatments and vaccines.

At this stage, we don't think the outbreak warrants making major changes to investment portfolios for long-term investors. But we would refrain from putting new money to work in equities, particularly in emerging markets, until at least the number of new cases and fears surrounding the spread of the virus have peaked.

Where things stand

Thus far, the newly identified pathogen is largely concentrated in mainland China, but has reached other parts of the Asia-Pacific region, Europe, North America, and the Middle East.

Compared to SARS in 2003, this coronavirus seems to be more contagious, though less fatal, in these early days.

Fortunately, the convergence of DNA sequencing, machine learning, and gene editing may make these pathogens easier to identify, and possibly, to control. Unlike in 2002–03 when China suppressed information about SARS for three to four months, Chinese researchers sequenced 2019-nCoV within days of the outbreak, yielding key insights into the transmission and prevention of the disease. The Chinese government quickly provided the full genome of the pathogen to other governments, and to global health databases and organizations.

RBC Global Asset Management Inc. Chief Economist Eric Lascelles points out, "Most countries have better protocols in place today to screen, treat and limit the spread of serious outbreaks. Many of these protocols were inspired by the mishandling of SARS."

As of this writing, 2019-nCoV has killed 171 people (all in mainland China), or roughly two percent of the 8,236 cases identified, according to Johns Hopkins University, which is tracking the spread of the virus within its Center for Systems Science and Engineering (CSSE). This compares to the nine percent to 10 percent fatality rate in the roughly 8,000 SARS

Market pulse

- 3 Leaders emerging from the tech pack
- 3 How the Canadian housing market is shaping up for 2020
- 4 High-profile European firms post lackluster results
- 4 Asian stocks on track for worst week in over five months

Click [here](#) for authors' contact information. Priced (in USD) as of 1/30/20 market close, ET (unless otherwise stated). **For important disclosures and required non-U.S. analyst disclosures, see [page 6](#)**
Produced: Jan 30, 2020 16:32ET; Disseminated: Jan 30, 2020 17:04ET



**Wealth
Management**

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.

cases identified in 2003. Regularly updated Johns Hopkins CSSE data can be accessed [here](#).

However, the bulk of people who have been diagnosed with 2019-nCoV have yet to be officially categorized as having recovered, and scientists indicate the virus has a longer incubation period than SARS.

Economic diagnosis

The economic impact of SARS was largely concentrated in China, both on the mainland and in Hong Kong. China's GDP growth slowed by two percentage points on an annual basis during that time, according to Lascelles. Canada's economy briefly shrank during the SARS episode, as infection rates were higher than in many other developed countries, and because the U.S. was not firing on all cylinders at the time. These economies quickly rebounded soon after the worst of the epidemic passed.

"This episode will likely follow a similar trajectory—there will likely be a palpable hit to China's economy but this should prove short-lived, in part because China will likely deliver more economic stimulus, in part because conditions should almost immediately normalize as soon as the disease abates," Lascelles wrote. He added, "For the moment, we have not adjusted our global growth outlook. In fairness, whereas we had contemplated a growth upgrade for China, that may now be sidelined."

What's "different" this time is that China contributes a much greater share of global economic activity today than it did compared to 2003, as the charts show. So any temporary economic pain in China could be a greater headwind for global growth, in our view.

Tom Porcelli, RBC Capital Markets, LLC's chief U.S. economist, does not believe the SARS period is a useful analogue for the effects of the coronavirus on the U.S. economy. There were other issues holding back the U.S. in 2003, such as overall weakness stemming from the aftermath of the 2001 recession, and the temporary disruption caused by the U.S. and allied invasion of Iraq, both of which overlapped the SARS epidemic. He points out that this go-around, U.S. economic fundamentals are much sturdier.

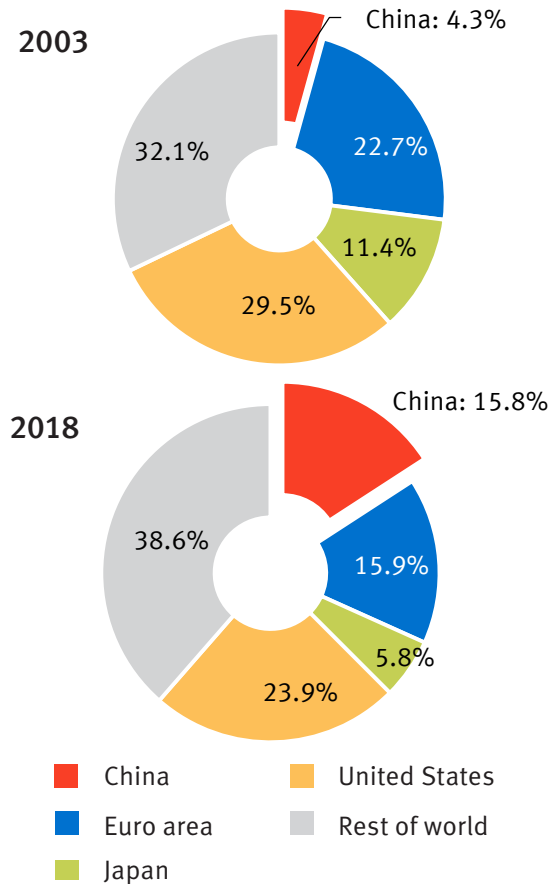
How exposed are markets?

Whether coronavirus will continue to pressure equity markets will depend on the pace at which the virus spreads and the associated death rates. Similar to the economic risks, we would expect that the markets in countries most impacted would continue to experience the greatest pullbacks.

Lascelles wrote, "To the extent the incubation period really is two weeks long and transmission truly is possible asymptotically, we flag the risk that the outbreak proves worse than currently imagined. But no less relevant is the

China's economic influence has increased considerably

Percentage of global gross domestic product (in U.S. dollars)



Source - RBC Wealth Management, World Bank

observation that in every prior episode, those lows have ultimately represented buying opportunities."

Regarding the U.S. equity market specifically, RBC Capital Markets, LLC Head of U.S. Equity Strategy Lori Calvasina said, "We think coronavirus fears could contribute further to U.S. equity market volatility in the short term if they continue to build, since this poses a risk to the modest improvement in corporate optimism that has resulted from the completion of the Phase 1 trade deal with China. The bigger issue here is that investors could at least temporarily start to doubt the 'hope trade' that has propelled U.S. equities higher since last fall. That market move was driven by the anticipation of a positive inflection in global economic conditions."

Let volatility run its course

While the prevailing period of heightened anxiety and risk aversion will eventually fade, if the number of new cases remains on the uptrend, we would expect to see further volatility and downside in equities in the near term, more concentrated in those markets and industries most affected by the disease. During past viral outbreaks, the inflection point for market sentiment typically arrives when the number of new cases has peaked.



United States

Alan Robinson – Seattle

- **December-quarter earnings season kicked into high gear during the week, with tech bellwethers leading the charge.**

Apple grew its quarterly revenues by 9% and EPS by 19% as iPhone sales continued to impress. Microsoft revenues and EPS were up 14% y/y and 40% y/y, respectively, thanks to strength in commercial sales. Facebook reported strong revenue growth of 25% y/y, but EPS was up only 8% y/y due to higher quarterly costs. In contrast to its hardware and product-focused peers, Facebook's stock fell as guidance implied an advertising revenue slowdown, impacted in part by new privacy regulations.

- With the FAANGM group of Facebook, Amazon, Apple, Netflix, Google, and Microsoft trading at a median P/E ratio near 29x consensus 2020 EPS estimates, we believe a lot of good news may be already priced into these stocks.
- **The U.S. economy grew at a respectable 2.1% clip in Q4 2019 and 2.3% for the full year**, despite trade disruptions over both periods. Although business investment edged lower for a third straight quarter, **consumer spending and residential investment continued to drive the economy.** January data from The Conference Board showed **consumer confidence in the U.S. remained solid**, with its index rising to 131.6 in January from 126.5 in December, as low interest rates and plentiful jobs supported consumer spending.
- **The Federal Reserve decided to keep interest rates steady** after its January 29 meeting, as expected. While there was little indication of a change in outlook in the Fed's press release, Chairman Jerome Powell addressed stock market valuations in passing. He sees "...asset valuations as being somewhat elevated" but suggested they are "...not at extremes" given the low level of underlying interest rates.
- **The U.S.-Mexico-Canada Agreement (USMCA) was signed** during the week, marking a further easing in global trade tensions. The agreement **adds climate change and labor safeguards** NAFTA lacked. New requirements for goods to qualify as North American will likely crimp the supply chains of multinational firms, including European auto manufacturers that build automobiles in North America.



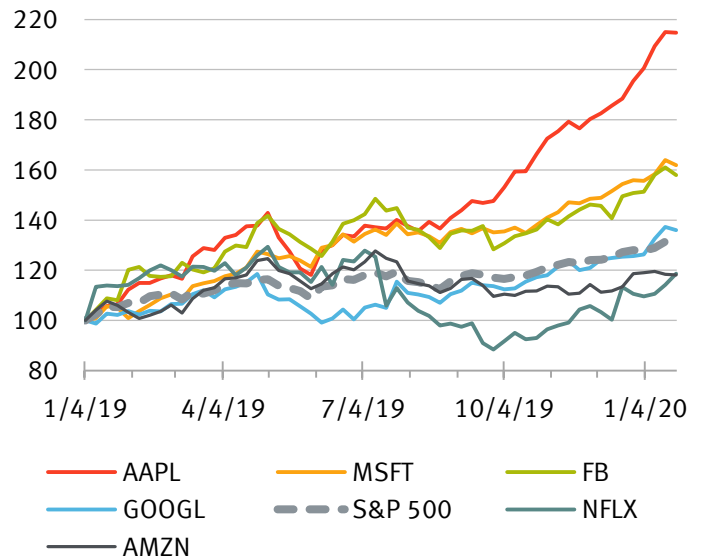
Canada

Arete Zafiriou & Richard Tan, CFA – Toronto

- **The S&P/TSX Composite is off to a strong start in 2020** with the index reaching a series of all-time highs throughout January. The Information Technology sector is the best

Leaders emerging from the tech pack

Relative performance of select tech stocks (Jan. 2019 = 100)



Source - RBC Wealth Management, Thomson Reuters; weekly data through 1/24/20

year-to-date performer, up over 10%, while Energy and Materials remain in the red, driven by falling commodity prices. With respect to the latter, we believe the recent **coronavirus outbreak has re-introduced a degree of fear into the market and caused a slight pullback** as talks of further economic deceleration in China has re-entered the conversation. China is a significant growth driver for future oil and copper demand; thus, concerns of a potential slowdown resulted in a **retacement in the commodity price environment.** We maintain our Market Weight stance on Canadian equities, but believe the 2020 setup is likely going to be challenging for the resources sectors and the Canadian Financials given our belief that we are in the late stages of the economic cycle. Upgrading the portfolio along the quality curve and tilting the portfolio towards companies with more stable cash flows continues to be the right call from our perspective.

- Following three years of slowdown in the Canadian housing and mortgage market, RBC Capital Markets believes the market is set for improvement this year. **Existing-home sales are on an upward trend**, increasing 11% y/y in Q3 2019 and 15% y/y in Q4 2019. On a national basis, **home prices have been steadily rising.** Toronto and Montreal are seeing price appreciation in both detached home and condo markets, while Vancouver prices are down year over year with signs of stabilizing. Fixed mortgage rates are around 5 basis points higher than they were five years ago, but have decreased close to 60 basis points in the past year.

The economic backdrop remains constructive. **Employment growth accelerated in 2019**, 2.1% y/y on average vs. 1.3% y/y on average in 2018. Although RBC Capital Markets is calling for gradual improvements in 2020, it notes that poor housing affordability in key markets and ongoing elevated household debt levels will likely keep the housing and mortgage market from growing at rates seen before the slowdown.



Europe

Frédérique Carrier & Thomas McGarrity, CFA – London

- **Both UK and European equities followed the general risk-off trend**, retreating during the week. The UK's relative large exposure to the Energy sector dragged the FTSE All-Share Index lower as oil prices retreated to a three-month low. **In Europe, the luxury goods sector, which is heavily exposed to the Chinese consumer, retreated** as the number of coronavirus infections climbed.
- Moreover, **a number of high-profile, large-cap companies in the UK and Europe released lackluster earnings reports that spurred investors to cut positions**. BT Group announced earnings came in slightly below consensus expectations; Diageo cut its organic sales outlook for 2020 to the lower end of its 4% to 6% range; Royal Dutch Shell reported that net income undershot the consensus estimate and announced a slower pace for share buybacks; meanwhile, Unilever posted its lowest quarterly organic sales growth in over a decade.
- **The Monetary Policy Committee met for the final time of outgoing Bank of England (BoE) Governor Mark Carney's tenure. Rates were maintained at 0.75%**, as economic data released after the Conservative electoral victory showed enough signs of some improvement, though it remains very much mixed. The 10-year Gilt yield perked up on the news, but at 0.55%, it has fallen substantially from the post-election highs. We continue to expect that **the BoE could become more hawkish later this year should the economy recover, underpinned by a large dose of fiscal stimulus**.



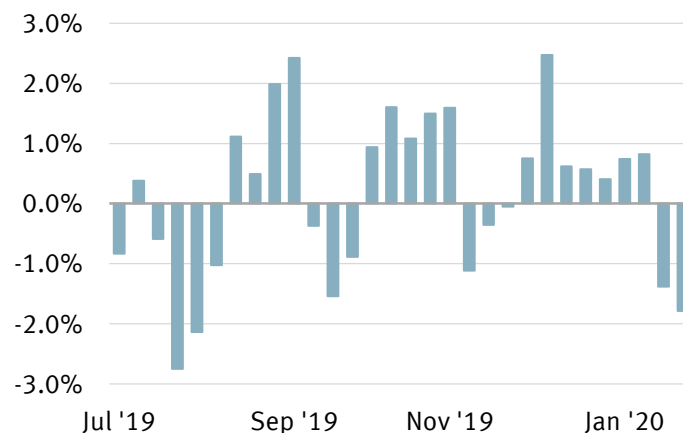
Asia Pacific

Jasmine Duan – Hong Kong & Nicholas Gwee, CFA – Singapore

- Asian equity markets traded lower this week, with the **MSCI Asia Pacific Index on track to post its biggest weekly decline in over five months**. The drop is led by Hong Kong and Japan, while China's markets remain closed for the extended Chinese New Year holiday.

Worst weekly return for Asian equities since August

MSCI Asia Pacific Index, weekly returns



Source - RBC Wealth Management, Bloomberg; data from the week of 7/5/19 through 1/29/20

- **Investors' risk appetite has been dampened by the outbreak of the coronavirus in Wuhan, China.** As of this writing, there are 8,236 confirmed cases worldwide, with 171 fatalities (only in China). The report of **38 new deaths marked the biggest single-day jump since the outbreak began**, and comes amid a massive quarantine that has effectively locked down more than 50 million people in and around Wuhan. The number of confirmed cases has also surpassed the 2003 SARS outbreak in mainland China (5,327). While some experts believe the new strain is less deadly than SARS, alarm has grown over its rapid spread and many unknown attributes, such as how lethal it is. Like other respiratory infections, the coronavirus jumps from person to person on the droplets from coughs and sneezes. Scientists indicate it has an incubation time between one and 14 days, and there are signs that it may spread before symptoms appear.
- **Global airlines are suspending or scaling back direct flights to China's major cities** amid an increase in travel warnings and a decline in passenger demand caused by the coronavirus scare. **Other multinational corporations have announced store/factory closures** in and around the affected areas.
- **We expect the outbreak to hurt China GDP growth in the near term**, with the services-related sectors hit the hardest. Extended factory shutdowns could also weigh on industrial output and trade. That said, we believe the drag on growth can be offset by stronger government policy support. With the number of new infections rising rapidly, **we maintain our view that we may not have seen the worst of the equity market pullback in Asia**.



MARKET SCORECARD

Data as of January 30, 2020

Equities (local currency)	Level	MTD	YTD	1 yr	2 yr
S&P 500	3,283.66	1.6%	1.6%	22.5%	16.3%
Dow Industrials (DJIA)	28,859.44	1.1%	1.1%	15.4%	10.7%
NASDAQ	9,298.93	3.6%	3.6%	29.5%	25.6%
Russell 2000	1,648.22	-1.2%	-1.2%	10.8%	4.1%
S&P/TSX Comp	17,490.56	2.5%	2.5%	13.0%	9.6%
FTSE All-Share	4,105.32	-2.2%	-2.2%	7.6%	-1.4%
STOXX Europe 600	415.16	-0.2%	-0.2%	15.8%	4.8%
EURO STOXX 50	3,690.78	-1.5%	-1.5%	16.7%	2.3%
Hang Seng	26,449.13	-6.2%	-6.2%	-4.3%	-18.9%
Shanghai Comp	2,976.53	-2.4%	-2.4%	15.6%	-14.7%
Nikkei 225	22,977.75	-2.9%	-2.9%	11.8%	-1.3%
India Sensex	40,913.82	-0.8%	-0.8%	15.0%	13.5%
Singapore Straits Times	3,170.68	-1.6%	-1.6%	-0.1%	-10.7%
Brazil Ibovespa	115,528.00	-0.1%	-0.1%	19.1%	36.7%
Mexican Bolsa IPC	44,862.76	3.0%	3.0%	2.8%	-11.0%
Commodities (USD)	Price	MTD	YTD	1 yr	2 yr
Gold (spot \$/oz)	1,573.58	3.7%	3.7%	19.2%	17.6%
Silver (spot \$/oz)	17.83	-0.1%	-0.1%	11.0%	4.0%
Copper (\$/metric ton)	5,612.75	-8.7%	-8.7%	-8.3%	-19.9%
Oil (WTI spot/bbl)	52.14	-14.6%	-14.6%	-3.9%	-19.2%
Oil (Brent spot/bbl)	59.21	-10.3%	-10.3%	-4.0%	-14.2%
Natural Gas (\$/mmBtu)	1.83	-16.4%	-16.4%	-35.9%	-42.7%

Govt bonds (bps chg)	Yield	MTD	YTD	1 yr	2 yr
U.S. 10-Yr Tsy	1.591%	-32.7	-32.7	-108.7	-112.9
Canada 10-Yr	1.333%	-36.9	-36.9	-58.1	-96.2
U.K. 10-Yr	0.542%	-28.0	-28.0	-71.3	-91.8
Germany 10-Yr	-0.406%	-22.1	-22.1	-59.4	-108.9

Fixed Income (returns)	Yield	MTD	YTD	1 yr	2 yr
U.S. Aggregate	2.08%	1.7%	1.7%	10.5%	11.9%
U.S. Invest Grade Corp	2.62%	2.2%	2.2%	16.6%	15.4%
U.S. High Yield Corp	5.40%	0.2%	0.2%	11.2%	11.6%

Currencies	Rate	MTD	YTD	1 yr	2 yr
U.S. Dollar Index	97.8570	1.5%	1.5%	2.6%	9.8%
CAD/USD	0.7578	-1.6%	-1.6%	-0.3%	-6.5%
USD/CAD	1.3196	1.6%	1.6%	0.4%	7.0%
EUR/USD	1.1032	-1.6%	-1.6%	-3.9%	-11.0%
GBP/USD	1.3093	-1.2%	-1.2%	-0.2%	-7.5%
AUD/USD	0.6723	-4.2%	-4.2%	-7.2%	-16.8%
USD/JPY	108.9900	0.3%	0.3%	0.0%	0.2%
EUR/JPY	120.2400	-1.3%	-1.3%	-3.9%	-10.9%
EUR/GBP	0.8426	-0.4%	-0.4%	-3.7%	-3.9%
EUR/CHF	1.0699	-1.4%	-1.4%	-6.3%	-7.7%
USD/SGD	1.3615	1.2%	1.2%	1.1%	3.8%
USD/CNY	6.9426	-0.3%	-0.3%	3.4%	9.8%
USD/MXN	18.7735	-0.8%	-0.8%	-1.9%	0.1%
USD/BRL	4.2472	5.4%	5.4%	15.4%	33.5%

Source - Bloomberg. Note: 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. Data as of 9:35 pm GMT 1/30/20.

Examples of how to interpret currency data: CAD/USD 0.75 means 1 Canadian dollar will buy 0.75 U.S. dollar. CAD/USD -1.6% return means the Canadian dollar fell 1.6% vs. the U.S. dollar year to date. USD/JPY 108.99 means 1 U.S. dollar will buy 108.99 yen. USD/JPY 0.3% return means the U.S. dollar rose 0.3% vs. the yen year to date.

Authors

Kelly Bogdanova – San Francisco, United States

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

Joseph Wu, CFA – Toronto, Canada

joseph.wu@rbc.com; RBC Dominion Securities Inc.

Alan Robinson – Seattle, United States

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

Arete Zafiriou – Toronto, Canada

arete.zafiriou@rbc.com; RBC Dominion Securities Inc.

Richard Tan, CFA – Toronto, Canada

richard.tan@rbc.com; RBC Dominion Securities Inc.

Frédérique Carrier – London, United Kingdom

frederique.carrier@rbc.com; RBC Europe Limited

Thomas McGarrity, CFA – London, United Kingdom

thomas.mcgarritty@rbc.com; RBC Europe Limited

Jasmine Duan – Hong Kong, China

jasmine.duan@rbc.com; RBC Investment Services (Asia) 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: Arete Zafiriou, Richard Tan, and Joseph Wu, employees of RBC Wealth Management USA's foreign affiliate RBC Dominion Securities Inc.; Frédérique Carrier and Thomas McGarrity, employees of RBC Wealth Management USA's foreign affiliate RBC Europe Limited; Jasmine Duan, an employee of RBC Investment Services (Asia) Limited; and Nicholas Gwee, an employee of Royal Bank of Canada, Singapore Branch contributed to the preparation of this publication. These individuals are not registered with or qualified as research analysts with the U.S. Financial Industry Regulatory Authority ("FINRA") and, since they are not associated persons of RBC Wealth Management, they may not be subject to FINRA Rule 2241 governing communications with subject companies, the making of public appearances, and the trading of securities in accounts held by research analysts.

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, 60 South Sixth St, Minneapolis, MN 55402.

References to a Recommended List in the recommendation history chart may include one or more recommended lists or model portfolios maintained by RBC Wealth Management or one of its affiliates. RBC Wealth Management recommended lists include the Guided Portfolio: Prime Income (RL 6), the Guided Portfolio: Dividend Growth (RL 8), the Guided Portfolio: ADR (RL 10), and the Guided Portfolio: All Cap Growth (RL 12). RBC Capital Markets recommended lists include the Strategy Focus List and the Fundamental Equity Weightings (FEW) portfolios. The abbreviation 'RL On' means the date a security was placed on a Recommended List. The abbreviation 'RL Off' means the date a security was removed from a Recommended List.

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, LLC ratings of Top Pick/Outperform, Sector Perform, and Underperform most closely correspond to Buy, Hold/Neutral and Sell, respectively, the meanings are not the same because our ratings are determined on a relative basis.

Explanation of RBC Capital Markets, LLC 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.

Rating	Count	Percent	Investment Banking Services Provided During Past 12 Months	
			Count	Percent
Buy [Top Pick & Outperform]	765	51.97	225	29.41
Hold [Sector Perform]	625	42.46	127	20.32
Sell [Underperform]	82	5.57	5	6.10

Ratings:

Top Pick (TP): Represents analyst's best idea in the sector; expected to provide significant absolute total return over 12 months with a favorable risk-reward ratio. **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.

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 Wealth Management 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, LLC, and its affiliates, a portion of which are or have been generated by investment banking activities of RBC Capital Markets, LLC 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?EntityID=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.

References herein to "LIBOR", "LIBO Rate", "L" or other LIBOR abbreviations means the London interbank offered rate as administered by ICE Benchmark Administration (or any other person that takes over the administration of such rate).

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 RBC Investment Solutions (CI) 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: Riverbank House, 2 Swan Lane, London, EC4R 3BF, UK. RBC Investment Solutions (CI) 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, registered company number 119162.

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.

© RBC Capital Markets, LLC 2020 – Member NYSE/FINRA/SIPC

© RBC Dominion Securities Inc. 2020 – Member Canadian Investor Protection Fund

© RBC Europe Limited 2020

© Royal Bank of Canada 2020

All rights reserved

RBC1253