GLOBAL Insight

Perspectives from the Global Portfolio Advisory Committee

June 2021

HealthTech: Healing health care's ailments

Health care is plagued by the chronic conditions of bloated costs and gaps in access. But the intersection of health care and tech can offer a remedy.

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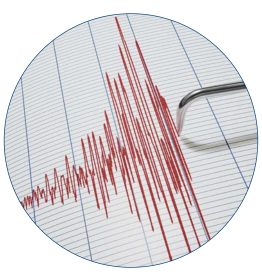

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GLOBAL

Insight

June 2021

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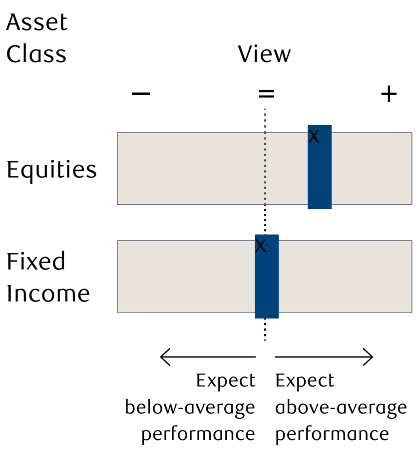

(+/=/–) represents the Global Portfolio Advisory Committee's (GPAC) view over a 12-month investment time horizon.

+ Overweight implies the potential for better-than-average performance for the asset class or for the region relative to other asset classes or regions.

= Market Weight implies the potential for average performance for the asset class or for the region relative to other asset classes or regions.

– Underweight implies the potential for below-average performance for the asset class or for the region relative to other asset classes or regions.

Source - RBC Wealth Management

EQUITIES

- The COVID-19 pandemic may not be entirely over, but the accelerated pace of vaccination rollouts in most countries should ensure at least partial economic reopenings, though those could be vulnerable to any resurgence of the virus, as has been seen in some Asian countries.
- We would continue to maintain an above-benchmark position in global equities. While the reopening of economies may be rocky and uneven at times, we think it will nonetheless lend support to corporate earnings, which should continue to recover. We expect most central banks to tread carefully and either message very adroitly any upcoming reduction in monetary support or remain dovish.
- With economic growth above average in 2021, we would maintain a bias toward value stocks. Moreover, we have upgraded European equities to an Overweight position as that economy has proved surprisingly resilient, and we believe valuations appear attractive.

FIXED INCOME

- Global yields have yet to break out of recent trading ranges as global central banks broadly continue to push back against the idea that near-term inflation pressures or economic reopening optimism may force them to withdraw policy accommodation sooner than expected. However, while the tapering of asset purchases seems to be on hold for the time being, bankers may only be delaying the inevitable as the next phase of monetary policy is seen coming into focus over the course of the summer. We favor shorter maturities in government debt as we continue to position for modestly higher yields in the back half of the year as central banks approach the point of reducing bond buying programs. In credit markets, valuations are historically rich and corporate bond yields remain near record lows, but we still expect credit to outperform government debt in 2021.
- We maintain our Market Weight in global fixed income, but continue to reduce interest rate risk exposure as global yields rise on a continued repricing of a strong economic recovery. We maintain a modest Overweight to corporate credit, primarily via preferred shares.

MONTHLY
Focus

HealthTech: Healing health care's ailments

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With bloated costs and gaps in access to quality services, the traditional health care model is plagued by its own chronic conditions. But at the intersection of health care and technology, we're seeing the development of a remedy for what ails health care. We look at the change that is afoot and what it means for the investment landscape.

Rising health care costs and unequal access to care are widespread, chronic challenges, even more so now as populations are becoming greyer throughout the world and have ever greater medical needs. Demand for health care solutions is growing apace and seems unlikely to slow down. This compounding burden on the world's health care systems is not sustainable.

HealthTech, the convergence of health care and technology, has the potential to meaningfully reduce costs and improve efficiencies. We believe both will be needed in large measure to ensure a more sustainable health care spending path and to improve the quality of health care services delivered.

Resisting change

While many industries, such as autos and entertainment, have embraced the digital age, swiftly transforming in the process, health care has been a glaring exception. Several barriers have conspired to slow the adoption of new technologies, blocking consequential change: Stringent regulatory requirements; the need for a secure, personal connection between physician and patients; the natural tendency of health care organizations to resist change, perhaps due to the relatively advanced average age of doctors; and a track record of failing to implement ambitious information technology (IT) projects.

Japan is a case in point. Despite its high-tech reputation, the country ranks last for management and use of data in health care within the Organization for Economic Cooperation and Development (OECD), a group of mostly rich countries. There has been opposition from the medical profession on privacy concerns, while an aging population—with more than a quarter of the population older than 65 (vs. 15 percent in the U.S.)—has also proved to be a hurdle. Yet forces are increasingly in place for digitization to finally take root in that country and elsewhere.

Change is needed

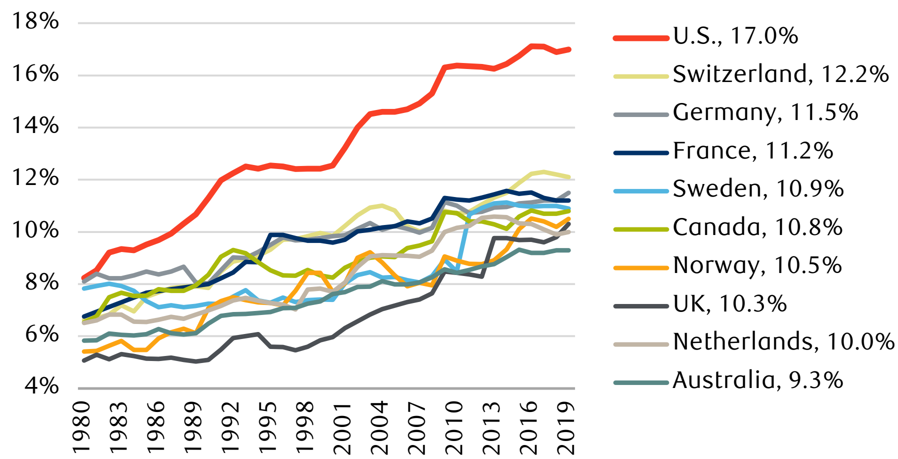
Swelling health care costs are one reason to look to improve the efficiency of health care delivery. Moreover, according to the OECD, as much as one-fifth of health care spending is wasted, and it surmises that the same services could be provided with fewer resources. With most governments in OECD countries footing the bill for as much as three-quarters of health care costs, such waste undermines the financial sustainability of health care systems. Plainly, the incentive to improve is high.

In the U.S., the government contribution to health care costs is less, according to the Centers for Medicare & Medicaid Services (CMS), with both federal and state governments financing a lower 37 percent of the annual health care spend. But private health insurance companies, which finance 34 percent, and those who pay out of pocket (10 percent) are all equally keen to see their bills shrink, along with an improvement in health outcomes.

The U.S. also stands out with health care expenditures that are a high 17 percent of GDP, compared to an average for other advanced economies that is closer to 10 percent. This would be easier to accept if the health outcomes achieved were commensurately better. But the table on the next page reveals that on a number of measures the U.S. scores at the bottom of the OECD peer group.

U.S. health care spending is far above other nations, and rising

Health care spending as a percentage of GDP, 1980–2019



Source - OECD Health Data, OECD.Stat; 2019 data are provisional or estimated

This creates an interesting dynamic: the U.S. has the most to gain on both fronts—bringing costs down and improving outcomes. The U.S. is also home to the deepest, most diverse corporate health care sector. Properly incentivized, it should be the source of much of the HealthTech innovation in the coming decade with a potential customer base that could include all the developed economies.

Change is afoot

A new model is emerging in which patients are the central health care decision-maker, replacing the traditional model where doctors and pharmaceutical companies are in the driver's seat. This has been made possible by recent advances in big data and artificial intelligence (AI). Big Tech and surprisingly well-funded start-ups are now challenging the incumbents. RBC Capital Markets' health care analysts note that the former benefits from an aggregate $500 billion in balance sheet cash, or more than twice that of the combined top-20 global health care companies;

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HealthTech: Healing health care's ailments

the latter is backed by private investment which is accelerating at record levels, with over $9 billion raised in just the first nine months of 2020 amidst the pandemic.

This new model was gaining traction when the COVID-19 pandemic struck. With hospitals turning away patients requiring other treatments, and lockdowns forcing lifestyle changes, the trends became entrenched. As the world returns to normal, we believe some of the changes implemented by the medical professions during the pandemic are here to stay, particularly for routine outpatient visits and treatment of infectious diseases such as the flu. Thanks to remote care, those suffering from the flu will pose less of a risk to other patients or medical staff. Moreover, the way consumers shop for care and wellness is changing for good.

The evolving landscape has caught the eye of regulators, who are becoming increasingly supportive. Last year, spurred by the ravages of COVID-19, the CMS announced that the U.S.'s Medicare program, which serves more than 60 million elderly, would allow online patient visits. Canada's single-payer system moved to allow family physicians to be reimbursed for telephone consultations.

In September 2020, the U.S. Food and Drug Administration announced the launch of the Digital Health Center of Excellence. The initiative is geared toward digital health products, such as smartphone apps, wearable devices, and software-based treatments, and is part of an effort to modernize digital health policies, regulatory approaches, and tools.

U.S. outcomes surprisingly poor given the high cost of health care

Selected health care outcomes in OECD countries

	Health outcomes	Best	Worst	U.S.
Poor U.S. health outcomes	Life expectancy at birth (years)	Switzerland: 83.6	U.S.: 78.6	–
	Suicide rates (deaths per 100,000), 2016	UK: 7.3	U.S.: 13.9	–
	Adults with multiple chronic conditions*(%), 2016	Netherlands: 14%	U.S.: 28%	–
	Obesity rate (%)	Switzerland: 11.3%	U.S.: 40%	–
	Practicing physicians per 1,000 population, 2018	Norway: 4.8	U.S.: 2.6	–
	Survival rate for cervical cancer (%)	Norway: 73.3%	U.S.: 62.6%	–
	Avoidable mortality** (deaths per 100,000), 2017	Israel: 127	Hungary: 387	262
Good U.S. health outcomes	Adults age 65 and older immunized (%)	UK: 73%	Norway: 34%	68%
	Women age 50–69 screened for breast cancer (%)	Sweden: 90%	Switzerland: 49%	80%
	Survival rate for breast cancer (%)	U.S.: 90.2%	UK: 85.6%	–

* "Multiple chronic conditions" is defined as two or more of: joint pain or arthritis; asthma; diabetes; heart disease; hypertension/ high blood pressure. ** "Avoidable mortality" refers to deaths which would be either preventable or treatable with timely access to effective and quality health care.

Source - OECD Health Statistics 2019

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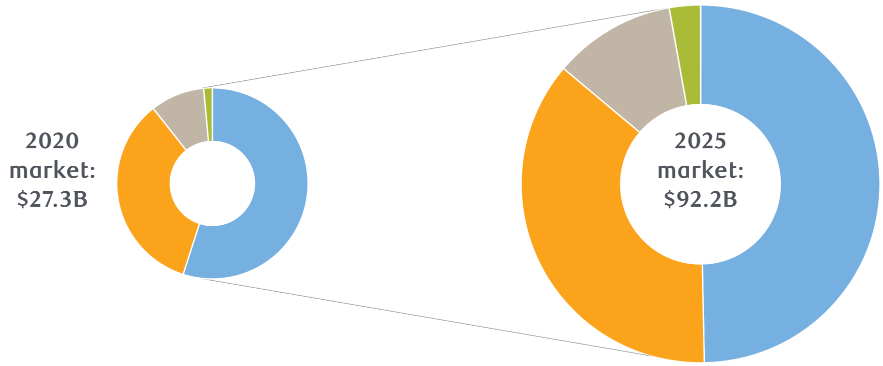
HealthTech: Healing health care's ailments

Strong growth expected in all segments over the next five years

Digital health segments market opportunity, 2020 and 2025



Digital health segment	2020	2025E
Prescription digital therapeutics (PDTs)	$2.5B	$10.2B
AI-enabled drug discovery	$0.4B	$2.6B
Telehealth	$15.0B	$45.8B
Wearables	$9.4B	$33.6B

Source - RBC Capital Markets, RBC Wealth Management

The new face of health care

In its report Digital Health—Hitting Fast Forward, part of the "Imagine 2025" series, RBC Capital Markets identifies key opportunities for HealthTech. Taken together, RBC Capital Markets sees these markets at some $27 billion as of 2020, and growing to about $92 billion by 2025, or by more than 25 percent each year.

Telehealth

The use of telecommunications technologies, such as the telephone, video links, and the internet, to deliver telemedicine (e.g., clinical services such as doctor-patient visits as well as remote patient care) and non-clinical services (e.g., administration and training)

Telehealth is perhaps the biggest opportunity in the health care industry. It aims to improve the quality, convenience, and effectiveness of care, and to lower its cost.

An example of telemedicine is the video conferencing technology which became part of the daily routine for many of us during the pandemic. This approach is more time-efficient than traditional in-person service and requires less staff, freeing up resources.

Clearly, not all doctor visits will, can, nor should be replaced by video. Virtual contact cannot completely replicate in-person interactions during which invaluable non-verbal cues can be observed, empathy expressed, and trust built. But telemedicine does have an important role to play.

A study by McKinsey in April 2020 estimated that more than 20 percent of outpatient visits could be performed virtually. Embedded in this are assumptions that 20 percent of all emergency room visits, 24 percent of health care office visits, and 35 percent of home health visits could be replaced with a virtual alternative. RBC Capital Markets believes 35 percent to 40 percent of medical care and 75 percent to 80 percent of behavioral/mental health visits could eventually be done virtually.

As for non-clinical services, by using AI and integrating disparate sources of data, telehealth can help in a variety of areas such as:

- **Triaging** or assessing patients and directing them to the most appropriate level of care
- **Simplifying administrative tasks** by integrating appointments into scheduling systems and connecting into electronic health records, e-prescribing networks, and billing systems, thus automating a number of manual processes
- **Delivering care** by integrating electronic health records, thereby providing a more comprehensive picture of a patient's condition, and enabling physicians to control devices on the patient's end (e.g., digital stethoscopes, remote cameras, and other diagnostic devices); this can broaden the range of physiological data that can be collected and assessed in a shorter time frame, and without necessitating travel/transport
- **Accessing deeper pools of health care providers** by creating wide networks of medical experts, potentially elevating the quality of care by facilitating patient interactions with specialists in practically any part of the world

Telehealth's competitive landscape is evolving quickly. Over the past 18 months several notable new entrants have emerged, such as Amazon and its Amazon Care offering, a pilot program offering a combination of virtual health and in-person care. In addition, many vendors are striving to broaden and increase their scale. The $18.5 billion merger in late 2020 between Teladoc, a U.S. virtual health care company, and Livongo, a digital disease management company focused on diabetes and hypertension, is a case in point. Meanwhile, some major insurance companies are taking steps to internalize more of these functions. For example, in February 2021 Cigna announced it entered into an agreement to buy MDLIVE, a provider of online health care delivery services and software for patients, hospitals, employers, and insurance companies.

Telehealth is more than telemedicine

Telehealth	
Clinical services	**Non-clinical services**
• Telemedicine: Remote patient care	• Triaging • Integrating health records • Enabling physicians to control at-home devices • Creating large networks of specialists • Training nurses and physicians

Source - RBC Wealth Management

Wearables

Devices that enable more detailed and frequent real-time data gathering from patients in-between physician office visits, or potentially in lieu of actual visits

Once a consultation with a doctor has taken place, the patient often has to manage their condition by themselves. According to the RAND Corporation, a U.S. think tank, this happens all too often given that as many as 60 percent of Americans now live with at least one chronic condition, i.e., an ailment that lasts at least one year and requires ongoing monitoring or treatment.

Patients are becoming empowered as consumers and are finding new, more effective ways to manage their condition. The emergence of wearables is being fueled by recent advances in device technology. Coupled with progress in data processing and AI, wearables provide patients with proactive interventions to detect early signs of illness, as well as to help prevent or minimize conditions becoming more acute.

This technology includes not only the devices used to capture the data but also the tools that enable the aggregation of all relevant data, as well as the software that analyzes it and determines an optimal course of action.

Wearables themselves range from mass market items to more specialized devices, though both have the same objective of gathering and assessing data.

For example, in certain countries, the Apple Watch is becoming one of the first mass consumer medical devices as it can perform a mobile electrocardiogram (ECG). The watch can notify wearers of an irregular heartbeat that might lead to heart failure and can even place a call to emergency services if it detects a sudden fall and the wearer doesn't dismiss the alert in a certain time frame. Another function monitors blood oxygen saturation levels, and others are under development.

As for specialized devices, several examples come to mind. The Zio patch is a monitor that sticks to a patient's chest like an adhesive bandage. Designed by medical devices company iRhythm, the patch can collect data for up to 14 days, gathering millions of heartbeats per patient. iRhythm uses machine learning algorithms to translate the data into a 10-page report, which can help cardiologists make diagnoses.

Private company TytoCare has developed connected diagnostic devices, including stethoscopes, tongue depressors, and thermometers, which enable health care providers to perform thorough virtual medical exams. The devices are designed for in-home use and can help doctors remotely examine a patient's heart, lungs, throat, skin, and body temperature.

Smartphone components, such as the screen, microphone, or the accelerometer (the sensor which tracks different motions including shaking, tilting, and swinging), can also be used to capture and analyze patient data, assisting physicians' decision-making. For instance, a smartphone's microphone can be used to perform remote self-exams and analyze bodily functions such as coughs to detect signs of pneumonia.

Prescription digital therapeutics (PDTs)

Software-driven, evidence-based interventions that are intended to prevent, manage, or treat a medical condition, not simply assess or monitor a condition, or transmit data to the physician

These devices are considered to be Class II medical devices in the U.S. and require regulatory approval to support the makers' claims of risk and efficacy. Their costs may be reimbursed by health insurance or Medicare/ Medicaid in the U.S. and thus differ from wellness tracking or lifestyle applications, which typically require a paid subscription from consumers.

An example is Propeller Health's device, which is attached to a patient's existing asthma inhaler. The Propeller sensors track medication use and send the data to an app on the user's smartphone. According to the company, over time, the app can learn about the pattern of flare-ups and medication use, helping the patient to manage symptoms and identify triggers. Propeller also produces reports which physicians can use to adjust treatment plans.

PDTs can address a wide range of conditions and help prevent, manage, or treat a medical condition

Prescription Digital Therapeutics (PDTs)

Software and hardware to improve **asthma and COPD** (chronic obstructive pulmonary disease)

ADHD: adaptive sensory stimulus software through video game experience

Sleep disorders: through cognitive behavioral therapy* (CBT) techniques

Pediatric behavioral health: AI-based digital diagnostics

Chronic pain: digital delivery of exercise, therapy, and education

Concussion: intervention tool to train cognition in patients

Type 2 diabetes: insulin dose calculation

Personalized programs to prevent diabetes and other **chronic diseases**

Therapy for **cognitive dysfunction** caused by neurological disease

Self-management for diabetes, hypertension, and obesity

Outpatient treatment for **substance abuse**

*Cognitive behavioral therapy attempts to help people develop alternative ways of thinking and behaving in order to reduce psychological distress

Source - DTx Alliance, RBC Capital Markets, RBC Wealth Management

AI-enabled drug discovery

AI that helps develop innovative medicines faster and at a lower cost while improving success rates

Traditional drug development costs between $500 million and $3 billion due to the high rate of failure, and with a timeline often stretching beyond 10 years, making drug development a risky affair. As a result, only the most promising avenues are pursued, while abandoning research on other projects for which there may be demand, but not enough to justify the development costs.

AI is particularly well suited for the task, given the iterative nature of drug development. When AI and other digital tools are applied to clinical trials, the potential benefits can include more efficient trial designs, quicker enrollment, and increased patient engagement and retention, contributing to lower costs and improved success rates.

While there have been a number of early success stories, the use of AI in drug development is still largely in its infancy. The meeting of Big Pharma and Big Tech in this area has helped provide conceptual validation, but many of the emerging AI-enabled platforms still have much to prove. RBC Capital Markets expects capital to continue flowing to the category as the current R&D spend and return on investment are unsustainable.

Long-term fairway of growth

While society now seems to appreciate the crucial role technology can play in the delivery of health care services, HealthTech still faces hurdles to truly becoming a global force to lower costs and improve outcomes. Many health care systems are not digitized, and concerns about security, privacy, and hacking should not be brushed away. Additionally, digitization needs well-functioning broadband networks—still elusive in many regions, even in the developed world. Many developed countries are putting digitization at the center of their investment plans, including Japan and Italy, but many emerging economies today simply do not have the financial means to do so. Moreover, these tech-fuelled devices typically carry a hefty price tag, keeping them out of reach for many, and they may be ill-suited for the less tech savvy.

Nevertheless, the traditional system appears to be coming apart at the seams, and this will likely only worsen as the world's population grows greyer. While the adoption of these technologies may not be immediately universal, they will continue to gain traction, in our view, led by the U.S. where the payoff is likely to be the greatest. According to RBC Capital Markets, health care companies that increasingly offer digital services are likely to see their valuations expand over time, reducing the gap with tech companies' valuations.

We would build strategic positions in HealthTech in portfolios, as the secular growth trends in this area should be well underpinned by both demand and technological innovations for the foreseeable future.

Appendix: Big Tech's big push into health care

Company	Notable health initiatives	Category
Alphabet	**Verily Life Sciences:** Stand-alone life sciences company spun out of Google X in 2015. It offers a variety of data-driven solutions across research, care, and innovation. Projects range from broad data collection efforts to disease-specific research and development.	R&D
	Calico: A research and development company focused on the diseases associated with the aging process. Calico has a portfolio of more than 20 early- and late-stage preclinical compounds in cancer, neurological diseases, and tissue homeostasis and repair.	R&D
	Google Health: Somewhat loosely defined group within Alphabet that is focused on research and clinical tools to improve patient care, often with the help of AI.	—
	Other: Alphabet has a number of other products and services that either indirectly or directly relate to health care including Google's online search ("Dr. Google"), Google Cloud, and Fitbit.	Diagnostics & wearables, chronic disease management
Amazon	**PillPack:** Acquired in 2008 for c. $750M, PillPack, a full-service online pharmacy, gives Amazon a foothold in the industry while avoiding the operational and regulatory hurdles associated with building a mail pharmacy from scratch.	Online pharmacy
	Amazon Care: Launched in 2019 as a pilot health care service available to Amazon employees in the Greater Seattle area. It is described as a "first stop" for health care with both virtual and in-person services. While peers offer similar programs, Amazon Care is more external-facing, which suggests it could ultimately be expanded.	Telehealth, delivery of care
	Haven Healthcare: It is a non-profit joint venture between Amazon, Berkshire Hathaway, and JPMorgan Chase tasked with improving employee satisfaction and reducing health care costs for their U.S. employees.	Providers and payers models
Apple	**Apple Watch** enables Apple to collect a vast amount of data, a considerable competitive advantage. The smartwatch device can check for heart rates by detecting the amount of blood flowing through the user's wrist and its digital crown can measure the electrical signals across the user's heart, which can be used with the ECG app. Apple, along with partners such as Stanford Medicine and Johnson & Johnson, is researching areas including women's health and hearing.	R&D
	The **ResearchKit** framework allows researchers and developers to create apps for medical research covering areas such as identifying autism in children and providing screening tools for parents to use at home, or melanoma where participants can take photos of their mole over time and track changes—after tens of thousands of images are collected, an algorithm can screen for melanomas in early stages.	Apps
Facebook	The **Preventive Health tool** connects people to health resources and offers checkup recommendations from leading health organizations such as the American Cancer Society. The tool itself is based on a user's age and gender and provides a personalized list of recommended health checkups. For each recommendation, the user can view additional information; mark it as "done"; set a reminder; and find locations.	Telehealth
	The **Oculus division** produces virtual reality (VR) headsets. Primarily used in digital gaming, they have potential applications in health care such as medical training (e.g., surgical simulations). For example, Oculus is partnered with Children's Hospital Los Angeles to build VR simulations that place medical students and staff in high-risk pediatric trauma situations.	Telehealth
Microsoft	**Microsoft Cloud for Healthcare** is an industry-specific cloud offering which helps support the end-to-end security, compliance, accessibility, and interoperability of health data. It aims principally to (1) enhance patient engagement by creating individualized care plans; (2) improve health team collaboration by leveraging the Microsoft Teams platform, including its Bookings app to help health care providers schedule, manage, and conduct virtual visits in Teams; (3) improve clinical and operation data insights by using automated workflows to analyze data (for instance, Swedish Health Services used Microsoft Power Apps to build a solution to track critical hospital supplies); and (4) provide a highly secure, cloud-based tool to share patient information.	Telehealth

Source - RBC Capital Markets, RBC Wealth Management

MONTHLY

Focus

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Inflation aftershock

The COVID-19 earthquake has had a seismic effect on the U.S. economy. With businesses now reopening, aftershocks are being felt. Inflation has surfaced for the first time in years. This report takes a look at the risks associated with rising consumer prices, including how inflation could impact the equity market.

U.S. equities are grappling with their first real challenge since the bull market began over a year ago—inflation.

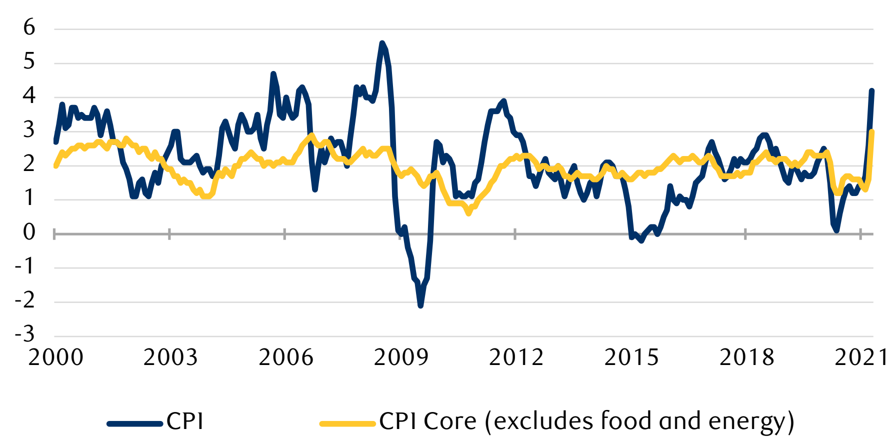
The combination of shutting down and then restarting the world's largest economy amid waves of stimulus from Washington and the Fed has created unusual distortions, which helped push consumer prices up 4.2 percent in April compared to one year ago, the highest year-over-year level since 2008.

Essentially, this is an aftershock from the COVID-19 earthquake. The year-over-year inflation rate plunged to almost zero percent at this time last year when the economy was shut down—prices actually fell for three months running last spring—and has rebounded sharply this year as businesses have reopened. We don't think it is the start of runaway inflation or a longer-term shift into a high-inflation regime for the U.S. and other developed countries. But it will likely take financial markets and investors some quarters to convincingly sort out.

This process could provoke market volatility and create pullbacks along the way. Uncertainties about how long elevated inflation will last—and, importantly, how the Fed will handle it—have implications for equity markets as a whole, and should be taken into account for portfolio positioning.

Highest inflation reading since 2008

U.S. Consumer Price Indexes (CPI) in year-over-year percentage change



Source - RBC Wealth Management, Bloomberg; monthly data through 4/30/21

MONTHLY FOCUS

Inflation aftershock

Price increases and supply shortages

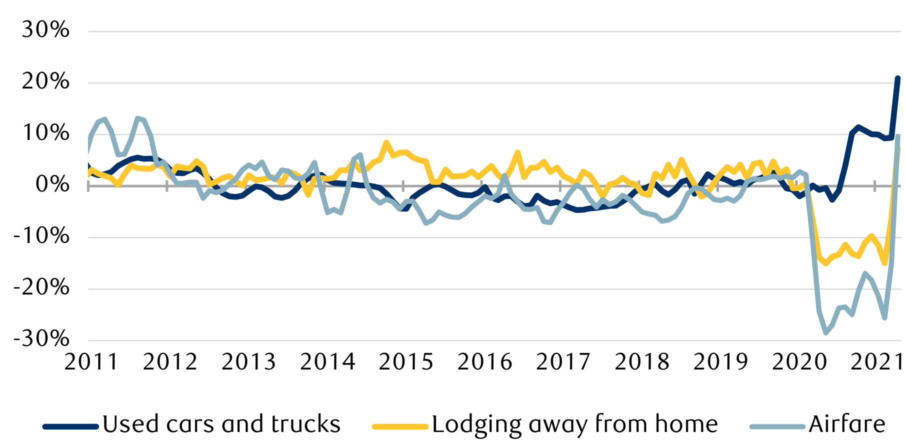
Much of the recent U.S. inflation surge occurred in a narrow group of categories: auto sales, auto rentals, lodging, airline fares, recreation, furniture and bedding, and education and communication services. For example, in just one month, airline fares and used car and truck prices jumped 10 percent and lodging rose 7.6 percent. The monthly inflation increases for each of the seven categories were extreme statistical anomalies coming in at 3.5 to 8.5 standard deviations above their long-term averages.

Inflation could rise further over the near term if supply chain disruptions and brisk household spending persist as we anticipate. Production in many industries and the distribution of goods have yet to catch up with new, reopening demand. Shortages in semiconductor supplies, for example, are constraining auto production and pushing auto prices higher worldwide, boosting demand (and increasing prices) for used autos. Disruptions along the supply chains of many industries and bottlenecks in global shipping (shortage of containers) are unlikely to be rectified right away.

Prices of the outlier categories could pop up again, on and off during the year, or other areas of the economy could experience price spikes as businesses struggle to normalize operations and as demand for certain products and services remains outsized due to the effects of the pandemic.

Prices of these items plunged during the worst of the COVID-19 crisis and then surged recently

Select components of U.S. Consumer Price Index (year-over-year % change)



Source - RBC Wealth Management, Bloomberg; monthly data through 4/30/21

Will inflation stick?

For U.S. inflation to rise at a high rate for a number of months and then become sticky and entrenched at an elevated level for years, we think two things would need to happen:

1. Meaningful increases in domestic wages across a wide range of industries, and
2. Sustained, outsized inflation in other major economies, particularly in China, the latter of which has a significant impact on global commodity prices.

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Inflation aftershock

RBC Global Asset Management Inc. Chief Economist Eric Lascelles points out, "Historically, inflation problems become chronic when a wage-price spiral occurs. Product prices (or wages) rise, and then the other responds—repeatedly."

There are signs of wage pressures in specific industries, especially within the service sector. Labor supply is tighter than usual, partly due to COVID-19 nuances and generous federal and state stimulus checks and unemployment compensation. A survey conducted by the nation's largest small business advocacy group, the National Federation of Independent Businesses, indicates 44 percent of firms are having difficulty filling job openings, the highest level in the survey's history going back to 1974. Some of these business owners may end up increasing compensation to attract new employees.

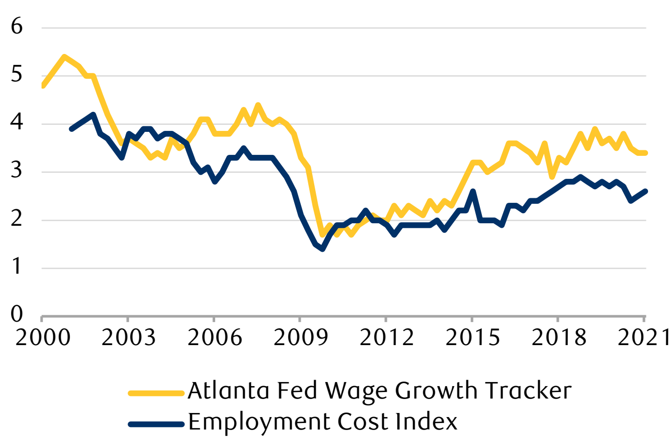
Despite these pressures, compensation levels are not rising at an outsized rate. The closely-watched Employment Cost Index is up by 2.6 percent year over year while the Atlanta Fed's Wage Growth Tracker is pacing at 3.2 percent, both within recent ranges.

Lascelles doubts that wage growth in select industries will lead to sustained high rates of consumer inflation: "The bottom line is that a wage-price spiral is quite unlikely and businesses are ultimately unlikely to jam through significantly above-cost price increases … One would struggle to anticipate more than around 3.0 percent wage growth."

Relatively lower inflation rates in China and other major economies are also unlikely to add to U.S. price pressures. China is attempting to slowly dial back stimulus and reduce leverage in its economy in order to avoid a harsh boom/bust cycle. This could relieve pressure on commodity prices over time, as China typically consumes the highest levels of most industrial commodities and some agriculture commodities.

Overall U.S. wage inflation remains tame

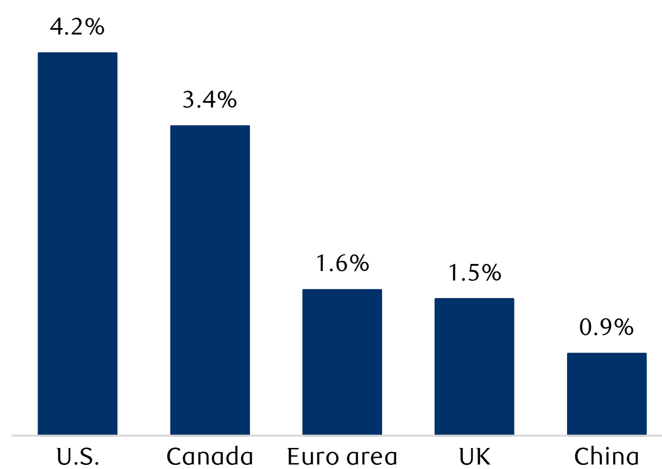
Broad measures of U.S. wage inflation (year-over-year % change)



Source - RBC Wealth Management, Bloomberg; quarterly data through 3/31/21, ECI data begins in 2001

U.S. inflation is loftier than in other key economies

Consumer inflation rates in April (year-over-year % change)



Source - RBC Wealth Management, Bloomberg

MONTHLY FOCUS

Inflation aftershock

The case for "transitory"

Despite the record-breaking amount of liquidity the Fed has thrown into the financial system, there has not been a corresponding increase in the velocity of money. In other words, money is not turning over within the economy at a rapid clip that would sustain high inflation—its velocity remains depressed. For economists who argue that inflation depends on both money growth and the velocity of money, the second requirement just isn't there.

The unwinding of the unique COVID-19-related income and savings trends could also ease pricing pressures. We think the surge in household spending caused by multiple factors—pent-up demand due to the COVID-19 shutdowns, high savings rates during the crisis, and generous stimulus checks and unemployment benefits—will moderate as the demand gets worked down over time and government benefits expire.

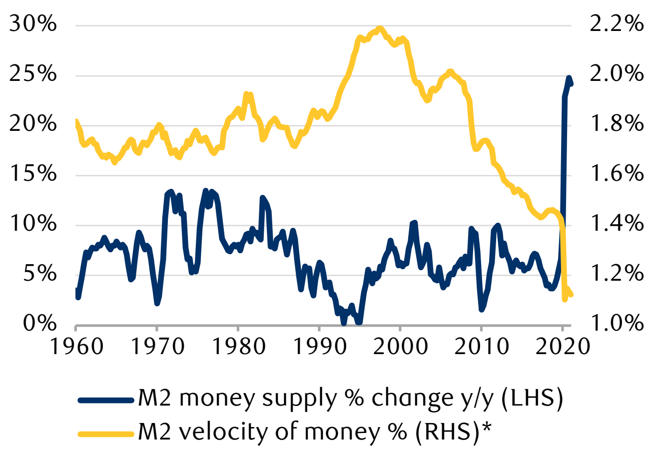
Fed uncertainty

Even if this inflation burst proves to be transitory, the threat of it potentially lingering above the Fed's 2.0 percent target into next year raises uncertainties about when and how the Fed will back off of its ultra-loose policies.

The Fed has already signaled that the hot April inflation data will not in and of itself change the course of its highly accommodative stance. But financial markets are beginning to prepare for the Fed to start easing off of the gas pedal. The possibility that elevated inflation might advance the Fed's timetable for tapering asset purchases and eventually raising rates has generated some equity market volatility recently.

RBC Wealth Management Senior U.S. Fixed Income Portfolio Strategist Tom Garretson wrote, "While [tapering] discussions are likely to pick up at the

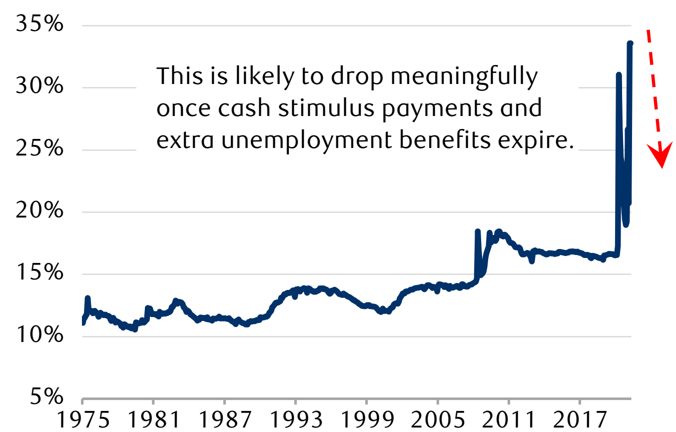
Money has flooded into the financial system (blue line has surged), but it is circulating at very low levels (yellow line has plunged)



* M2 velocity of money is the average number of times a unit of money turns over during a specified period of time. Data calculated by the Federal Reserve Bank of St. Louis. When the number of turns is low (like now), it indicates a preference of saving over spending.
Source - RBC Wealth Management, Bloomberg; quarterly data through 3/31/21

Government payments to individuals skyrocketed during the COVID-19 pandemic

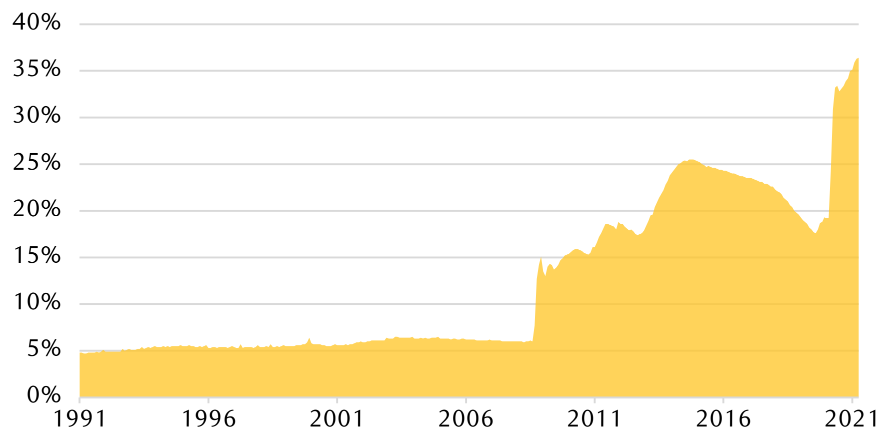
U.S. government transfer payments as a % of personal income



Source - RBC Wealth Management, Bloomberg; monthly data through 4/30/21 central bank's June 15–16 meeting, we don't expect any formal announcement until later in the summer ... Even if the Fed does wind down its asset purchases by the end of next year, the central bank will very likely continue to reinvest interest earned and maturing bonds, keeping its balance sheet flat as it did from 2015 through 2017. We don't anticipate the outright sale of bond holdings."

The Fed's balance sheet has ballooned to a record level

Federal Reserve Balance Sheet as a % of U.S. GDP



Source - RBC Wealth Management, Bloomberg; monthly data through 4/30/21

The actions of other major central banks also will be closely monitored and could influence the debate about Fed tapering and gyrations in risk assets. The Bank of England and Bank of Canada have already announced plans to pare back their asset purchase programs, which were instituted during the onset of the COVID-19 crisis. The European Central Bank's June 10 meeting will be closely watched for similar signals, particularly since the region's vaccine rollout and economic indicators have improved.

As Garretson pointed out in this report, "The last time U.S. markets had to contend with fears around the Fed ceasing its asset purchases was at the end of 2014, and while many feared at the time this would put the market rally in jeopardy, the S&P 500 went on to deliver returns greater than 30% from 2015 through 2018. The same was true at the end of 2017, when the Fed's balance sheet actually began to contract while risk assets continued to perform strongly, broadly speaking."

The unequal inflation effect

For equity investors, inflation deserves attention not only because it can affect Fed policy and the market as a whole, but due to the fact it can also impact various sectors within the market, which shapes portfolio performance.

S&P 500 profit margins usually rise when inflation and expectations of future inflation push up from a low level—as long as wages aren't the major factor for the inflation boost. Generally in the post-WWII era, the equity market and other risk assets have been able to cope when inflation has been caused by shortages in supply, known as demand-pull inflation. But the market has struggled when inflation has increased due to higher wage and production costs, known as cost-push inflation.

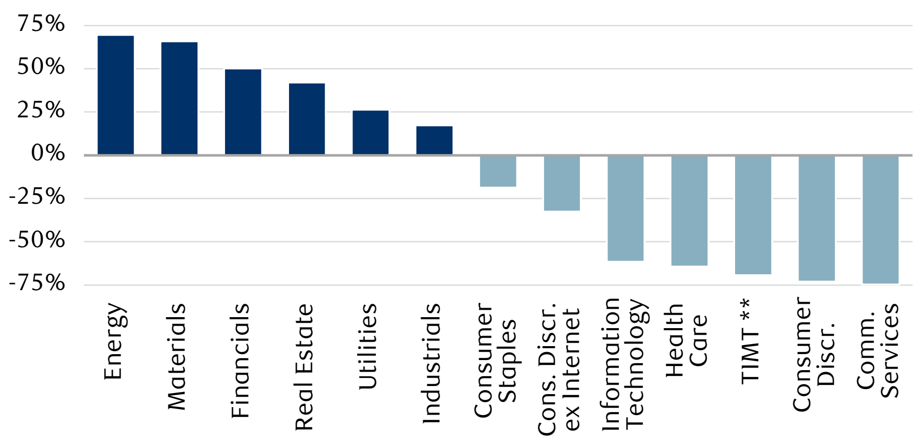
During periods of demand-pull inflation, similar to what the economy has been experiencing so far during the current COVID-19-induced inflation scare, companies have pricing power. They are typically able to pass some or all of the inflation in input costs to their customers, maintaining or increasing profit margins. We saw this pattern in Q1 earnings reports, and expect to see it again during the Q2 reporting season. Furthermore, when commodity prices rise, this often provides a broad range of industries with added pricing power—even some non-commodity producers.

Inflation expectations—how the population perceives inflation will trend in the future—also have a historical relationship with the stock market. Throughout this expansion period and in others in recent decades, the public's expectations about the direction of future inflation and the broader stock market have been positively correlated. As households' inflation expectations have risen, the market has worked its way higher.

But when it comes to sectors within the market, inflation doesn't necessarily treat them equally. According to an RBC Capital Markets study going back to 2004, some of the most economically-sensitive "value" sectors (those that are highly cyclical), such as Energy, Materials, and Financials, outperformed when inflation expectations rose. In contrast, the Technology, Health Care, and Communication Services sectors were underperformers. This track record supports our ongoing recommendation to tilt U.S. equity holdings toward "value" stocks rather than "growth" stocks, at least for 2021.

Energy, Materials, and Financials tend to outperform the S&P 500 the most when inflation expectations rise

Correlations of relative S&P 500 sector performance with inflation expectations since 2004*



* The S&P 500 sector performances are measured relative to the S&P 500 Index as a whole. Inflation expectations are measured by the University of Michigan Inflation Expectations Surveys of Consumers, which presents the median expected growth of prices of goods and services over the next five years.
** TIMT stands for Technology, Internet, Media, and Telecommunications
Source - RBC Capital Markets U.S. Equity Strategy, Haver Analytics, S&P Capital IQ/ClariFi; data from 2004 through 3/31/21

We think this sector phenomenon could end up pulling the valuations of "growth" stocks down. And because Tech and tech-related segments now represent a bigger share of the S&P 500, this could be a headwind for the overall market's price-to-earnings ratio.

The inflation-vulnerable and valuation-stretched Tech sector currently represents 26 percent of the S&P 500 vs. 17 percent in 2010. The broader Technology, Internet, Media, and Telecommunications (TIMT) category represents 41 percent of the S&P 500 today compared to just 25 percent in 2010.

As long as inflation jitters are front and center, institutional investors may be inclined to ratchet down their exposure to the Tech sector and broader TIMT segment, at least temporarily. To us, this means more adjustment time for the market as a whole, which could include additional volatility and rotation between sectors along with constraints on the market's valuation.

A manageable aftershock

We think inflation trends will remain uncomfortably elevated over the near term, but should gradually subside. Lascelles wrote, "Overall, we would argue that the inflation risk isn't quite as high as it seems right now, though the annual figure will get worse (with the May data) before it starts to get better into the second half of the year."

While Lascelles anticipates inflation will be "slightly higher than normal" over the next few years, he believes it will shift back to below-normal in the long run due to disinflationary forces such as demographic headwinds, deflation in key segments of the economy (including technology), declining labor unionization, and maturing emerging market economies.

We think long-term investors should look past the latest inflation disruption and continue to moderately Overweight equities in portfolios. It's still early in the business cycle, and the tight credit conditions necessary to produce the next recession, an accompanying decline in corporate profits, and an equity bear market appear to be a long way off.

But we think heightened inflation risks underscore the need to tilt U.S. exposure more toward "value" stocks than "growth" stocks.

GLOBAL
Equity

Jim Allworth
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Equity views

Region	Prior	Current
Global	+	+
United States	+	+
Canada	=	=
Continental Europe	=	+
United Kingdom	=	=
Asia (ex Japan)	+	+
Japan	=	=

+ Overweight; = Market Weight; – Underweight
Source - RBC Wealth Management

Constructive, but not complacent

The global economy is gathering some powerful forward momentum. This is stemming from: massive stimulus programmes implemented by most governments; the very large excess savings built up in consumer bank accounts; the need to replenish deeply depleted business inventories; and now, the revival of business capital spending plans, which are rising sharply in response to strongly growing profits and internally generated cash flows, persistently low interest rates, and rising consumer demand.

This economic momentum is likely to carry through 2022 and into 2023 at least. That's especially true for the U.S., in our view, where an added boost will come from an eventual infrastructure bill, which should see "shovels in the ground" by 2022.

Strong momentum means no U.S. recession in sight, a view confirmed by our Recession Scorecard where all six of our leading indicators of recession are giving the economy a green light for the foreseeable future. This "all clear" for the economy is good news for equity investors since every bear market in most developed economy stock markets has been associated with a U.S. recession.

While there appears to be no bear market in sight, corrections are another matter. Since 1980, the S&P 500's average intra-year drop is 14.3%. That means about half the time it was something worse.

We see at least three risks (among many) that could induce unsettling volatility in equity markets. One is the course the pandemic takes from here. Recent months have provided several reminders that COVID-19 remains capable of tossing nasty curve balls. New, more challenging variants, vaccine production/delivery issues, vaccine hesitancy delaying the arrival of herd immunity, the possibility the passage of time reveals some vaccine shortcomings—the road to convincingly vanquishing the pandemic could be, is likely to be, a bumpy one.

Another is inflation and the effect it can have on monetary policy and price-to-earnings (P/E) multiples (see article). We are now encountering some larger-than-usual increases in consumer price indexes. In large part that is because of comparisons with a year ago when consumer prices were falling in April and May. In addition, gasoline prices have moved steadily higher.

The Fed has made it clear it has seen these inflation increases coming but expects them to be transitory, subsiding later in the year and further in 2022. However, the prices of many industrial commodities are also on the rise, suggesting finished goods inflation is likely to be somewhat stronger in the coming 12 months. Agricultural commodity prices are also climbing, portending higher food prices down the road.

If these inflation increases look as if they are becoming persistent rather than transitory, then investors will likely start to worry that Fed rate hikes could begin sooner than the late 2023 currently priced into debt markets. Inflation expectations are also an important component of the equity valuation equation—a dollar of earnings earned 10 years from now is worth approximately 13% less today than it otherwise would if inflation runs over that interval at 3% per annum instead of the rate of 1.5% that had prevailed until last month.

A third risk to the stock market is the coming downshift from "supercharged" recovery/reopening growth to sustainable growth. That is likely to begin in Q3 this year. The quarter we are in now (Q2) is expected to mark the peak year-over-year growth rate for the cycle. On a calendar-year basis our forecast for 2021 is 6.5% GDP growth for the U.S., with a more subdued but still above-average 4.0% expected in 2022. No one is as yet forecasting 2023 growth with the notable exception of the Congressional Budget Office, which has the U.S. economy settling back to a much slower 1.5%–1.8% pace for the rest of the decade from 2023 on.

Any slowdown in the second half from the current very high growth rates will likely provoke debate/worries over whether "something worse" is happening that might put the economic expansion at risk. That will be all the more likely if over the same period (as we expect) 10-year Treasury yields are moving up closer to 2%. This may be all the market needs to correct/consolidate after the almost 100% advance in the S&P 500 off the March 2020 COVID shock low or the less spectacular 24% gain from the peak of the last cycle in February 2020.

While such a correction would not be unusual, in the absence of convincing signals from the economy and credit markets that a recession is in the offing, we would treat it, if and when it arrives, as something that has to be endured on the way to further worthwhile market gains as the economic expansion plays out for several years yet.

GLOBAL

Fixed income

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Tip-toeing into tapering

Markets can be so fickle at times. Just a handful of months removed from the early spring inflation fears—and concerns about possible central bank policy responses—fixed income markets have seemingly reversed course as global sovereign yields at their peak may have overshot the reality of economic recovery. They have since slipped back toward the low end of recent trading ranges.

And the reality is that the global economic reopening, despite still-robust expectations, will likely be a rocky one. Nowhere was that more evident than in the substantial miss in U.S. hiring relative to expectations in the April Nonfarm Payroll report. On the inflation front, markets have tried to force the hands of policymakers by pricing in ever-higher inflation expectations, only to see policymakers push back even more forcibly via public comments, reconfirming their broad-based belief that near-term inflationary pressures are likely to prove transitory.

And so the June meetings for the Federal Reserve and European Central Bank, that only recently were seen as likely to mark the major shift in global central bank monetary policy, may offer little more than the earliest glimpses at the updated timelines for tapering asset purchases based on refreshed economic forecasts.

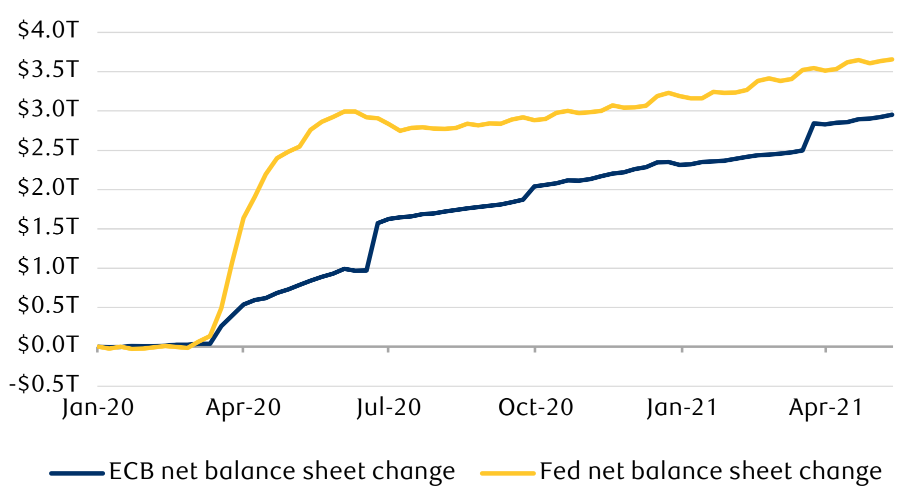
But that has also given markets room to breathe. We maintain our view that key global central banks such as the Fed and the European Central Bank will take a highly cautious approach to removing accommodation no matter how strong the recovery—put simply, the costs of moving too early far outweigh those of waiting too long, in our view. For the Fed, we think that means that actual tapering doesn't commence until Q1 2022.

In the U.S., we expect to see Treasury yields consolidating around current levels until later in the summer, when tapering plans are likely to be more in focus, which could then fuel the next leg modestly higher toward 2%. The same broadly holds true in Europe where the German 10-year Bund yield could edge closer to a return to positive territory.

While little has changed on the economic front, we expect a kind of "two steps forward, one step back" process to play out for markets and central bank policymakers as uncertainty is likely to remain elevated.

Both the ECB and the Fed have seen significant growth to their balance sheets since the onset of the pandemic as the central banks ramped up asset purchases.

Net change in the ECB and Fed balance sheets



Source - RBC Wealth Management, Bloomberg; data through 5/14/21

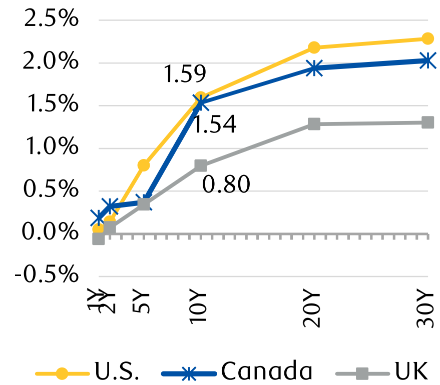
GLOBAL FIXED INCOME

Fixed income views

Region	Gov't bonds	Corp. credit	Duration
Global	=	=	5–7 yr
United States	=	=	5–7 yr
Canada	=	=	5–7 yr
Continental Europe	=	=	5–7 yr
United Kingdom	–	=	3–5 yr

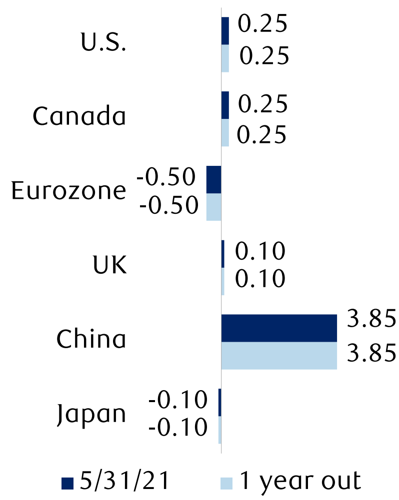
+ Overweight; = Market Weight; – Underweight
Source - RBC Wealth Management

Sovereign yield curves



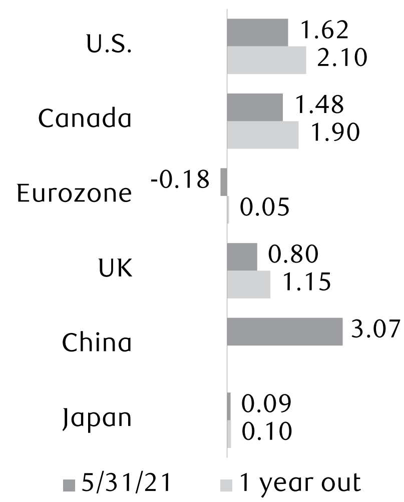
Source - Bloomberg; data through 5/31/21

Central bank rate (%)



Source - RBC Investment Strategy Committee, RBC Capital Markets forecasts, Global Portfolio Advisory Committee, RBC Global Asset Management

10-year rate (%)



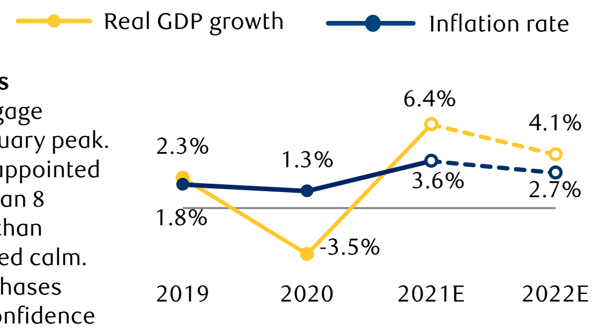
Note: Eurozone utilizes German Bunds.

Source - RBC Investment Strategy Committee, Global Portfolio Advisory Committee, RBC Global Asset Management

KEY
Forecasts

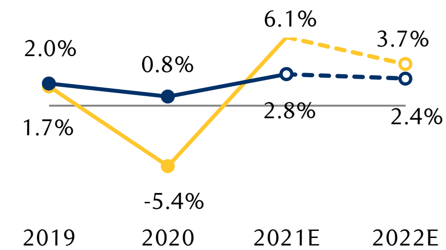
United States: Record high home prices

House prices up most since 2005, but mortgage purchase applications off steeply since January peak. Home builder optimism softer. Payrolls disappointed in April, but labor market tight with more than 8 million unfilled jobs. Inflation spiked more than expected, but Fed and bond market remained calm. Expectations for Fed tapering of asset purchases now pushed out to early 2022. Consumer confidence and business confidence remain elevated.



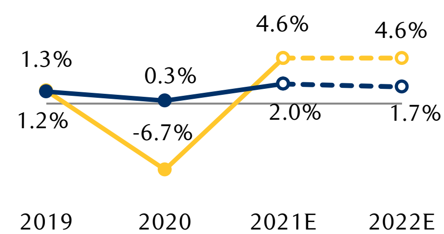
Canada: No rush to raise interest rates

The BoC dampened expectations for a rate hike. This comes one month after it pared back bond purchases and appeared to advance the timetable for a possible rate hike driving the Canadian dollar higher. Accelerating vaccinations and loosening restrictions sent consumer confidence to fresh highs. But third-wave lockdowns will have taken a toll on Q3 GDP growth after having caused the labour market to stumble. Businesses are optimistic about H2 prospects.



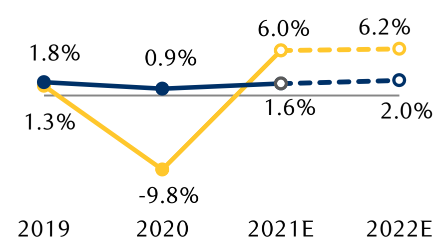
Eurozone: Confidence/economy strengthening

Accelerating vaccinations and declining infection rates fueled expectations the ECB may start scaling back support, but ECB President Christine Lagarde downplayed that possibility. IHS Markit data remain solid with all three measures near record highs. The improving economic backdrop has boosted consumer confidence to a nearly three-year high. Business confidence has risen steadily over the past 12 months. In talks, the EU agreed to postpone tariff hikes on some U.S. goods.



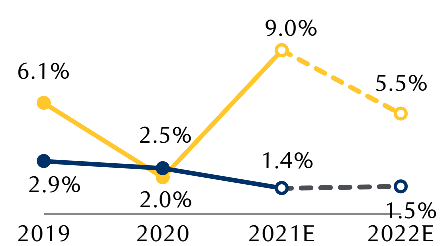
UK: Economy ready for consumer-led recovery

A recent report shows Bloomberg Economics is pointing to a solid consumer-driven recovery this year based on re-opening and easy prior-year comparisons. Business confidence has been lagging, but surged on reopening plans. PMIs have risen sharply in recent months for manufacturing, services, and construction. Trade and travel with the EU remains a source of some uncertainty.



China: Manufacturing still strong, services trail

Consensus forecast calls for China's economy to expand at 7.9% y/y during Q2, well below the record 18.1% y/y GDP growth China posted during Q1. The Q1 GDP growth was primarily fueled by China's strong manufacturing sector despite headwinds presented by a weak service economy. Restrictive policies have weighed on business confidence. Loan growth slowing as has fixed asset investment.



Japan: Economy stalls amid new infection wave

Supportive fiscal policy by the Bank of Japan last year and well into this year is likely to continue. Japan's fiscal policy, complete with massive government spending last year and a record budget this year, has pushed debt to 256% of GDP. The nascent recovery looks to have been cut short by a third wave of COVID-19. The containment has raised recession risk concerns.

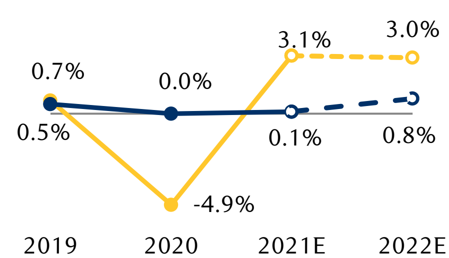


Chart source - RBC Investment Strategy Committee, RBC Capital Markets, Global Portfolio Advisory Committee, Bloomberg consensus estimates

MARKET Scorecard

Data as of May 31, 2021

Equities

Global equity markets have been full steam ahead year-to-date as indexes are green across the board, with the Mexican Bolsa IPC and Russell 2000 leading the way.

Bond yields

The U.S. 10-year Treasury has consolidated around current levels, but RBC Economics' expectations still hold for a gradual climb toward 2% by year-end.

Commodities

Silver and gold were the top performers in May, rising 8.1% and 7.8%, respectively, but oil and copper were still the leading commodities year-to-date with gains >30%.

Currencies

The USD/CAD neared a record low as the dollar continues to weaken. The U.S. Dollar Index ended the month below 90.

Equity returns do not include dividends, except for the Brazilian Ibovespa. Equity performance and bond yields in local currencies. U.S. 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 0.82 means 1 Canadian dollar will buy 0.82 U.S. dollar. CAD/USD 14.2% return means the Canadian dollar has risen 14.2% vs. the U.S. dollar during the past 12 months. USD/JPY 109.58 means 1 U.S. dollar will buy 109.58 yen. USD/JPY 2.6% return means the U.S. dollar has risen 1.6% vs. the yen during the past 12 months.

Source - RBC Wealth Management, RBC Capital Markets, Bloomberg; data through 5/31/21

Index (local currency)	Level	1 month	YTD	12 month
S&P 500	4,204.11	0.5%	11.9%	38.1%
Dow Industrials (DJIA)	34,529.45	1.9%	12.8%	36.0%
Nasdaq	13,748.74	-1.5%	6.7%	44.9%
Russell 2000	2,268.97	0.1%	14.9%	62.8%
S&P/TSX Comp	19,730.99	3.3%	13.2%	29.9%
FTSE All-Share	4,016.13	0.8%	9.3%	19.4%
STOXX Europe 600	446.76	2.1%	12.0%	27.5%
EURO STOXX 50	4,039.46	1.6%	13.7%	32.4%
Hang Seng	29,151.80	1.5%	7.1%	27.0%
Shanghai Comp	3,615.48	4.9%	4.1%	26.8%
Nikkei 225	28,860.08	0.2%	5.2%	31.9%
India Sensex	51,937.44	6.5%	8.8%	60.2%
Singapore Straits Times	3,164.28	-1.7%	11.3%	26.0%
Brazil Ibovespa	126,215.70	6.2%	6.0%	44.4%
Mexican Bolsa IPC	50,885.95	6.0%	15.5%	40.9%

Bond yields	5/31/21	4/30/21	5/29/20	12 mo. chg
U.S. 2-Yr Tsy	0.141%	0.158%	0.160%	-0.02%
U.S. 10-Yr Tsy	1.594%	1.626%	0.653%	0.94%
Canada 2-Yr	0.320%	0.301%	0.290%	0.03%
Canada 10-Yr	1.486%	1.546%	0.534%	0.95%
UK 2-Yr	0.063%	0.080%	-0.043%	0.11%
UK 10-Yr	0.795%	0.842%	0.184%	0.61%
Germany 2-Yr	-0.662%	-0.601%	-0.659%	0.00%
Germany 10-Yr	-0.187%	-0.185%	-0.447%	0.26%

Commodities (USD)	Price	1 month	YTD	12 month
Gold (spot $/oz)	1,906.87	7.8%	0.4%	10.2%
Silver (spot $/oz)	28.03	8.1%	6.2%	56.9%
Copper ($/metric ton)	6,486.50	4.3%	32.3%	91.5%
Uranium ($/lb)	20.90	-0.5%	-12.6%	-7.7%
Oil (WTI spot/bbl)	68.55	4.3%	36.7%	86.9%
Oil (Brent spot/bbl)	69.32	3.1%	33.8%	96.2%
Natural Gas ($/mmBtu)	3.05	1.9%	17.6%	61.5%
Agriculture Index	273.20	-3.5%	17.8%	64.7%

Currencies	Rate	1 month	YTD	12 month
U.S. Dollar Index	89.8290	-1.6%	-0.1%	-8.7%
CAD/USD	0.8289	1.9%	5.6%	14.2%
USD/CAD	1.2064	-1.8%	-5.2%	-12.5%
EUR/USD	1.2227	1.7%	0.1%	10.1%
GBP/USD	1.4212	2.8%	4.0%	15.1%
AUD/USD	0.7734	0.2%	0.5%	16.0%
USD/JPY	109.5800	0.2%	6.1%	1.6%
EUR/JPY	133.9700	2.0%	6.2%	11.9%
EUR/GBP	0.8604	-1.1%	-3.7%	-4.3%
EUR/CHF	1.0991	0.1%	1.7%	3.0%
USD/SGD	1.3217	-0.7%	0.0%	-6.5%
USD/CNY	6.3701	-1.6%	-2.4%	-10.7%
USD/MXN	19.9534	-1.4%	0.2%	-10.0%
USD/BRL	5.2188	-4.0%	0.4%	-2.2%

Research resources

This document is produced by the Global Portfolio Advisory Committee within RBC Wealth Management's Portfolio Advisory Group. The RBC Wealth Management 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 Global Portfolio Advisory Committee leverages the broad market outlook as developed by the RBC Investment Strategy Committee (RISC), providing additional tactical and thematic support utilizing research from the RISC, RBC Capital Markets, and third-party resources.

The RISC consists of senior investment professionals drawn from individual, client-focused business units within RBC, including the Portfolio Advisory Group. The RISC builds a broad global investment outlook and develops specific guidelines that can be used to manage portfolios. The RISC is chaired by Daniel Chornous, CFA, Chief Investment Officer of RBC Global Asset Management Inc.

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