GLOBAL Insight

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Perspectives from the Global Portfolio Advisory Committee

October 2021

Smart Cities, sustainable cities

As environmental pressures and infrastructure needs mount, high-tech solutions can enable urban sustainability and foster growth.

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All values in U.S. dollars and priced as of market close, September 30, 2021, unless otherwise stated.

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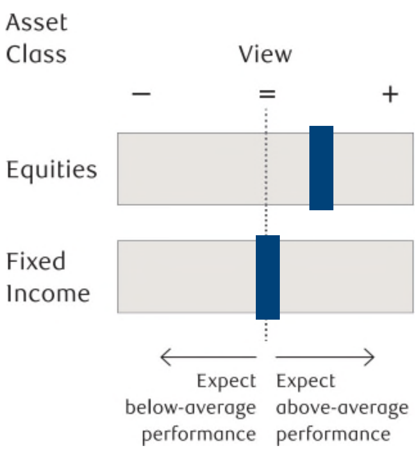

(+/=/–) represents the Global Portfolio Advisory Committee's (GPAC) view over a 12-month investment time horizon.

+ 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

- As the delta variant has spread and shipping/supply chain disruptions intensified, growth forecasts have ratcheted down, but by nowhere near the magnitude that occurred during the pandemic's onset when economies were shuttered. Relatively slower economic growth in the second half of this year compared to previous lofty expectations creates uncertainties about corporate earnings. Markets should be able to work through any forthcoming earnings-related volatility because we think the delta wave is showing signs of having peaked and GDP growth will likely stay above average.
- We remain reasonably constructive on our equities outlook, and would continue to hold moderately Overweight positions. Recession risks are nearly nonexistent, and when they do arrive, we think they will emerge the good old-fashioned way—via tight credit. That's a long way down the road, in our view. But it would be unwise to expect that the torrid pace of gains over the past 18 months will repeat in the next 18 months.

FIXED INCOME

- Global yields have risen sharply as concerns over COVID-19 variants, and risks to the economic outlook, begin to fade. This has been compounded by major central banks taking the next steps toward dialing back policy support. However, we think central banks will maintain accommodative policy stances for years to come in support of economic recoveries, while global yields are likely to rise at no more than a deliberate pace from current levels.
- We favor shorter maturities in government debt as we continue to position for modestly higher yields into the end of the year. In credit markets, valuations remain historically rich, but with few credit risks on the horizon for developed economies, we still expect corporate credit to outperform government debt through year's end.
- We maintain our Market Weight in global fixed income, but continue to reduce interest rate risk exposure as global yields are expected to rise moderately on a continued repricing of a strong economic recovery. We maintain a Neutral allocation to corporate credit, but weighted toward preferred shares and leveraged loans.

MONTHLY
Focus

Smart Cities, sustainable cities

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With cities around the world facing increasing environmental pressures and infrastructure needs, the final article of the SusTech series focuses on metropolises that use high-tech solutions to manage the challenges of urbanization in the 21st century. As these Smart Cities enable urban sustainability, the companies and industries at the forefront of this transformation should see long-lasting channels of growth.

With urbanization rates climbing, and world governments having set ambitious targets to reduce carbon dioxide emissions, pressure is mounting to make cities more efficient while limiting their impact on the environment. Cities account for more than two-thirds of global CO_2 emissions. Some have picked up the gauntlet and are using technology to help manage the challenges of urban sustainability. More efficiently run cities can improve productivity, reduce costs, and foster economic growth.

This trend toward smart, sustainable cities is being made possible by the confluence of necessity, government support, and technological innovation. The companies that provide solutions should enjoy tailwinds of secular growth.

Redefining cities

"With a municipal network of 500km of optical fibre, free WiFi routed via street lighting, and sensors to monitor air quality, parking spaces, and even waste bins, Barcelona has been at the cutting edge of testing the internet of things," trumpets the Financial Times. Barcelona is one of Europe's Smart Cities.

Smart Cities use technology to improve urban management, making everyday life easier and better for the people that live and work there, while optimizing the use of natural resources to minimize their environmental footprint.

More specifically, sensors collect data from across the urban landscape: traffic, transportation systems, air quality, waste management, hospitals, and law enforcement, among others. The data is stored, analyzed, and used to respond to challenges in real time.

Smart City solutions span a wide array of uses and services. They can offer more effective transport networks, better calibrated and less wasteful water supply, just-in-time waste management, efficient lighting and heating of buildings, and safer public spaces. This all may sound futuristic, but many cities we live in already have implemented some smart solutions, such as ride-hailing, municipal water leakage detection, intelligent traffic signals, telemedicine, and emergency response optimization.

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Smart Cities, sustainable cities

Increasing urbanization

Rising urbanization rates, and the many challenges they create, are pushing city planners and authorities to increasingly adopt smart systems. Cities gobble up more than 60 percent of the world's energy and generate some 70 percent of global CO_2 emissions. With most governments having pledged to reduce national emissions, lowering the footprint of large cities is key. Moreover, deteriorating air quality causing health problems, lack of access to fresh water (particularly at times of flooding), overwhelmed waste management, and perennial congestion have long been critical issues and are becoming ever more pressing.

These challenges will only be amplified in the future. Global urbanization rates are expected to reach 70 percent by 2050, up from today's 56.2 percent, according to the World Economic Forum. India and China alone are expected to take in an additional 300 million and 400 million city dwellers by then, respectively. Urbanization in North America, already high at 83.6 percent, is anticipated to inch higher still.

West vs. East

Despite having many old cities with legacy infrastructure systems, Europe has long led the way in terms of Smart City projects, with its early adoption of a sustainable, environmentally friendly agenda and focus on public transport and urban infrastructure in general. A 2018 McKinsey report

Solutions in focus

Smart Cities technology implementations

Construction & engineering

Energy automation systems monitor and control energy consumption in homes and buildings, matching energy use to occupancy.

In **New York City**, according to the U.S. Energy Information Agency, half of the commercial buildings were built before 1980. New York State's Energy Research and Development Authority operates a cost-sharing program for building owners who invest in real-time energy systems capable of 15%–30% energy savings each year.

Retail

Smart retail systems automatically scan shopping carts as they leave the store, with payment via automatic deduction from the customer's bank account, or by smart card or smartphone app.

In **Toronto**, Canada's second-largest food retailer, Sobeys, has launched Smart Cart contactless shopping. Sensors enable customers to weigh and pay for items, bypassing checkout lines and saving time.

Transport

Congestion pricing applies road use surcharges during peak periods to reduce traffic congestion.

London, Singapore, Stockholm, and **Milan** have already implemented congestion pricing, and it will soon be introduced in New York City.

Smart parking systems monitor the availability of street parking and control parking meter rates according to location, time of day, and day of the week. Other solutions guide drivers to available parking spaces in real time.

San Francisco was one of the first U.S. cities to introduce smart parking, in 2011. **Calgary**, Canada uses a similar system. **Central London** offers Smart Park, an integrated package of technology that provides drivers with real-time information on unoccupied parking spaces.

Smart street lighting systems control connected streetlights remotely, and monitor lighting through centralized online applications.

Copenhagen has replaced half of its street lamps with 20,000 smart LED lights that brighten when cyclists, who represent half of commuter traffic in the city, approach. The lights are dimmed when streets are empty.

Continued on next page

MONTHLY FOCUS

Smart Cities, sustainable cities

pointed out how intermodality, or combining different modes of public transport in a seamless travel experience, has been a focus of European transport strategy, and how electronic services such as ticketing systems have been driven by rapid technological development. From these, many Smart City applications have evolved.

A feature of Smart Cities in the West is that development is mainly bottom-up, with the private sector and citizens actively engaging in designing projects to improve the quality of life, drive economic growth, and safeguard the environment. For instance, in 2018 the Canadian federal government encouraged some 200 communities across the country to participate in a competition in which quality of life improvements could be leveraged through the use of technology. The Intelligent Cities program was then created with involvement from Rogers, one of Canada's predominant cellular and cable providers, and Blue City, a Montreal-based software company that focuses on intelligent road traffic management solutions. Local resident workshops were conducted to pinpoint needs and provide city officials with a roadmap to develop future traffic and public transit infrastructure.

Beyond the input and involvement of city dwellers, there also needs to be a cultural shift in the way cities are governed and operated, as well as for citywide technology platforms to be more open and not housed in "silos"

Solutions in focus, continued

Water conservation	
Smart utility services encourage consumers to reduce water consumption with smart metering and digital feedback messages. McKinsey estimates smart solutions could reduce water usage by 15%–25%.	**Cape Town**, South Africa has reduced water use by 30% over the past 15 years, while its population has grown by a similar percentage.
Waste management **Just-in-time waste collection** prevents the high volumes of rubbish generated in urban environments from accumulating.	**Singapore** was the first Smart City to experiment with this concept. In 2016, it installed solar-powered rubbish containers equipped with fill-level sensors and compactors that give them eight times the capacity of traditional bins. Each container also serves as an internet hotspot. In **Seoul**, the use of similar receptacles reduced waste collection costs by more than 75%, according to the city government.
Health care **Infectious disease surveillance** traces contacts with individuals who test positive for COVID-19. More than 45 countries have developed tracing apps during the pandemic.	**China**, together with Alipay and WeChat, introduced a system of health QR codes (machine-readable optical labels) in 200 cities that enables citizens to check whether they have been in contact with people who have tested positive for COVID-19. The app uses a "traffic light" design, with red suggesting the user should quarantine. Results of tests are shared with authorities.
Public safety	
Predictive policing uses digital tools to anticipate crime before it occurs. The technology is controversial due to concern for the protection of civil liberties. McKinsey estimates predictive systems could reduce crime by 30%–40%.	**London** is moving towards adopting this approach, although the technology remains controversial and mask-wearing during the pandemic is making implementation challenging.

Source - RBC Wealth Management; European Commission; iot.com; New York State Energy Research and Development Authority Real Time Energy Management; The Guardian; Sensa Networks; McKinsey that are unconnected and incapable of collaboration. When Los Angeles Mayor Eric Garcetti looked into implementing Smart City solutions, he found more than 40 city departments running on various disconnected technology platforms. GeoHub was created in 2016 to assemble more than 500 datasets from the city's departments, as well as from the county, state, and federal governments, to form a centralized business intelligence system. Shortly after its launch GeoHub was able to unearth insights into Los Angeles' public safety and infrastructure needs that allowed the city to manage resources and make better decisions.

In Barcelona, several silo-type models used by the city were dissolved: those where networks didn't communicate, where consumers were tied to inflexible contracts, or where the provision of services was outsourced to large operators with no government oversight of how resident data was collected or used. The responsibility for such data has since been transferred to the government to ensure privacy. Moreover, procurement of services was made transparent with a focus on small local companies.

Meanwhile, Smart City projects have proliferated in recent years in Asia, which is experiencing urbanization and digitization simultaneously. In countries with a strong central government, such as China or Singapore, Smart City development is usually top-down with the authorities formulating policies and providing funding. The focus tends to be on building up infrastructure and improving urban governance capability.

In places where the public sector owns many of the services, Smart Cities are highly developed with services, such as transport, power, telecoms, water, and waste management, all communicating with each other and collaborating. Links to smart buildings—residential, commercial, or industrial—ensure that Smart Cities are fully integrated. This interoperability, the seamless flow of data and technology, is a key requirement of a full-fledged Smart City.

Singapore is a case in point, having been consistently one of the top investors in smart systems, according to the IDC Worldwide Smart Cities Spending Guide. That the city also owns in one way or another public transportation and housing undoubtedly has helped as it reduced the complexity of the task.

China is also well-acquainted with the challenges of urbanization given it encouraged the rapid migration of rural populations to cities and saw its urban population triple to 900 million in the last three decades. This massive influx amplified already intense social pressures such as urban crowding, mass congestion, strained infrastructure, severe pollution, and a generally high cost of living. China turned to technology to mitigate some of these issues, establishing some 500 Smart Cities.

It may take several years for large legacy Western cities to reach such an advanced stage of Smart City development. It requires abolishing the silo mentality and nurturing collaboration among industries, as well as a willingness of local governments to improve infrastructure with a long-term view, as opposed to quick fixes. But the impetus for improvement is there and we are likely to see the implementation of more smart solutions, both in the East and the West.

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Smart Cities, sustainable cities

The enabling technology

At the core of Smart Cities is 5G, i.e., the fifth generation of wireless technology. 5G is a leap forward from its predecessor: its speed is up to 10 times faster than 4G; it has low latency, meaning there is only a minuscule delay of 1 to 1,000 milliseconds before a transfer of data begins following an instruction for its transfer; and it allows millions of Internet of Things (IoT) devices and sensors to be connected in a one kilometer square area—4G only allows a limited number of connections.

A number of technologies linked to 5G are needed to achieve advanced Smart City status, such as artificial intelligence (AI), blockchains, cloud computing, Big Data and edge computing, and, of course, the IoT.

For example, a city installs a large number of IoT sensors in order to detect traffic conditions. Once collected, the data are transferred through the 5G network. Blockchain technology can provide secure data transmission during this process. Traffic authorities then leverage edge computing analytics to analyze data in real time, and AI can efficiently sift through large quantities of Big Data to predict traffic flows and find practical solutions to congestion such as diverting traffic or altering traffic light sequences. The dataset is then stored on a secured cloud for future reference and analysis.

Technologies work together to enable Smart Cities

Glossary of technology terms

5G	Fifth-generation mobile network. Much more powerful than its 3G and 4G predecessors, it is designed to connect people and machines.
Artificial intelligence	Machines that are programmed to learn and solve problems like humans.
Blockchain	A digital ledger of transactions. It is a system of recording information that is difficult to hack because it is duplicated and distributed across its network of computers.
Cloud computing	The on-demand delivery of computer services such as data storage and computing power, without direct active management by the user.
Big Data	Large, complex datasets so voluminous and varied that traditional data processing software cannot cope with them.
Edge computing	Distributed computing system that brings computation and data storage closer to the sources of data. It can improve response times while saving bandwidth.
Internet of Things	Computer devices installed in cars, appliances, medical devices, etc. that connect wirelessly to a network and transmit and analyze huge amounts of data.

Source - RBC Wealth Management

The industries

There are a number of players and aspects involved in bringing Smart Cities into reality:

- 4G, 5G, and WiFi service providers and equipment manufacturers, which cater to the increasing demand for reliable high-speed connectivity; they transmit data collected by sensors through their systems

- Communications infrastructure including the high-capacity telecommunications towers and data centers that facilitate edge computing
- Semiconductor manufacturers that make the sensors to collect data
- Software companies that manage devices and sensors and provide smart solutions
- Cloud storage companies that store the encrypted data
- Cybersecurity companies, which protect systems from hackers and attacks at every step throughout the process of collecting, transferring, processing, analyzing, and storing data
- Companies that provide building management systems to maintain and optimize facility operations including energy/water/waste management, reducing energy consumption
- Companies that enable the shift to smart grids and electric vehicles

All that glitters is not gold

While the allure of technology might be powerful, there are serious challenges to achieving Smart City status.

Legacy cities have significant hurdles as it is easier to start from a relatively blank slate than to upgrade antiquated infrastructure such as in New York and London. Newer cities in the Middle East and Asia are at a distinct advantage in this regard.

Very large populations are another burden and can make the adoption of some smart solutions more cumbersome. Smaller cities such as Helsinki (1.3 million people) or Zurich (400,000 people) can be more agile in the adoption of new technology. Globally, they ranked second and third, respectively, in the IMD Smart City Index in 2020.

Other challenges that are also major impediments include:

- **Lack of interoperability:** Bringing various systems together from different sectors to form a cohesive network is difficult, particularly if they are owned by different, at times competing, entities in the private sector
- **Data breaches:** High interconnectivity can make smart systems vulnerable to cyberattacks
- **Mishandling of private data:** Smart Cities collect data regarding resident location and lifestyle, so safeguarding privacy is critical; Sidewalk Labs, a subsidiary of Google's parent Alphabet, had to pull the plug on its plans to build a Smart City on Toronto's waterfront due to severe criticism from residents fearing "surveillance capitalism"
- **Lack of long-term planning:** Some cities are not taking into account the maintenance costs of smart solutions, nor are they anticipating how their needs may change over time

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One eye on the future

We believe the recent embrace of the green economy by several governments and prospective new public investments in infrastructure in the U.S. and Europe in particular make this an opportune time for cities to invest in their future and for city planners to respond to the ongoing challenges of urbanization. Large Western legacy cities such as New York and London are under pressure to upgrade their often creaking infrastructure and are moving in that direction.

Smart Cities have the potential to enable us to live and work in a safer, faster, more convenient way. They will require greater interconnection between different forms of infrastructure. Buildings will need to be connected with the grid, and an ecosystem of communicating infrastructure stands to offer more efficient, sustainable, affordable services to citizens.

Yet given the many challenges that remain, in the West, sporadic implementations of smart solutions (rather than the highly developed Smart Cities of the East) are more likely in the foreseeable future. So initially, we'll probably see Western cities becoming "smarter," as opposed to becoming outright Smart Cities.

As noted for the other SusTech themes that we've delved into this year, we believe the industries and companies that can deliver Smart City solutions will benefit from long-term, secular growth.

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Keep your eye on earnings

It's been a very good run. All the major stock market indexes are up mightily from their spring 2020 pandemic lows. The S&P 500 stands out—up a startling 107% at its recent high from the deeply depressed lows set 17 months earlier. Equally impressive is its 34% advance from the 10-year high-water mark set in February 2020, just before the COVID-19 rout got underway. All the other major global markets have followed similar paths, but their gains have been much less remarkable.

Looking ahead one year, we expect equities will be able to deliver positive all-in returns; however, the path from here to there is likely to be much less upwardly dynamic, and the returns much more subdued.

The economy and corporate earnings will tell the tale. Differences in the performance of equity markets relative to one another have been driven largely by the pace of reopening and GDP recovery in their respective economies. Furthermore, we think equities have delivered very strong gains over this period not because investors have succumbed to unreasonable optimism, but rather because corporate sales and earnings have done so much better than anticipated.

Work by RBC Global Asset Management Inc. Investment Strategist Eric Savoie supports this view. He notes that back in the early summer of 2020, the S&P 500 was trading at 22x next-12-month earnings, which at that time were expected to come in at $150 per share. That was a long way above the S&P 500's long-term "equilibrium" forward price-to-earnings (P/E) multiple, which RBC Global Asset Management estimated to be 17.6x. But as it turned out, earnings grew much faster than expected over the year that followed—22% faster in fact, all the way to $183. So, back in July of 2020 investors were only paying 17.9x the EPS that were actually achieved over the following 12 months, a multiple not far off calculated "fair value."

Equity views

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

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

Fast-forward to today, and the S&P 500 is trading at 21x estimated earnings one year out. But this time, we believe it's highly unlikely that actual earnings achieved in the coming 12 months will turn out to be much higher than current expectations. Generating earnings growth close to that implied by today's consensus forward estimates while maintaining a somewhat-above-average P/E multiple will be critical to achieving worthwhile all-in returns from the S&P 500 over the coming 12 to 18 months.

P/E multiples in the other developed equity markets are much less demanding, as they all sit near their long-term averages in the mid-teens. But here, too, earnings growth will need to come through for expected returns to materialize.

We think the needed earnings growth will indeed materialize because the expectation is based on solid consensus estimates of GDP growth supported by several factors: very "easy" monetary conditions; the lagged effect of fiscal stimulus delivered by governments over the past 18 months; the pressing need to replenish inadequate inventories; the prospect that at least some of the immense "excess savings" now residing in North American household

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and corporate bank accounts will get spent over the next two years; and the constructive outlook for capital spending driven by high profits, low interest rates, and labour shortages.

All that said, it is very likely we have entered a period when all those expectations and assumptions will be hotly debated. The market's "worry list" is growing by the day, and now ranges from prospects for Fed tapering, the U.S. debt ceiling, and other congressional logjams, to the still-growing impact of global supply chain disruptions, and all the way to the prospect of defaults in the large Chinese property sector. A stretch of uncomfortable market volatility can't be ruled out.

What we don't see is an imminent U.S. or global recession. In our view, the investment climate favours staying with equities until such an economic downturn becomes inevitable.

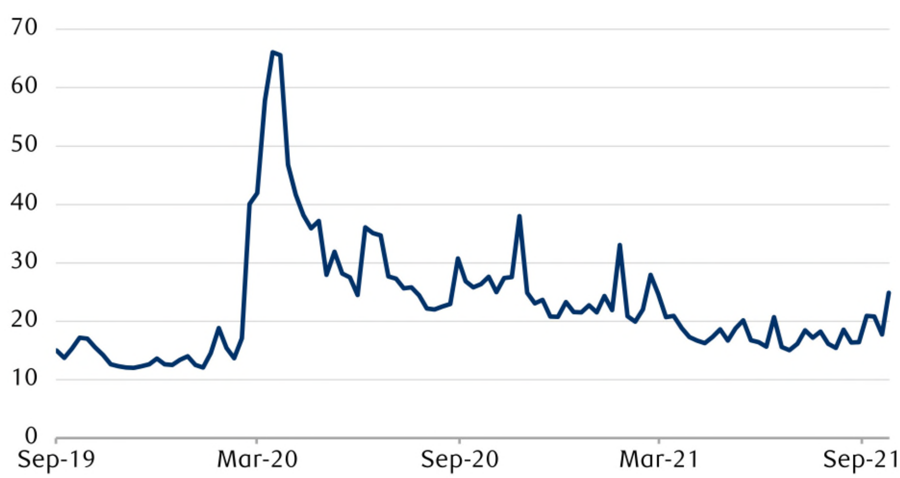
REGIONAL HIGHLIGHTS

United States

- Headwinds from the COVID-19 delta variant, much-publicized supply-chain disruptions, and the uneven labor market recovery have created uncertainties about corporate earnings growth and the market rally. The S&P 500's 103% surge from March 2020 through early September 2021 is by far the most powerful post-trough rally of all recovery periods during similar time frames going back to the 1960s. The next-best results were 61%–62% rallies in 2009, 1982, and 1974. It's no wonder the market has pulled back moderately in recent weeks when the headlines became less favorable.
- As these economic challenges have persisted, the consensus Q3 GDP growth forecast has pulled back to 5.0% from 7.0% at the start of the quarter, while the Atlanta Fed's GDPNow estimate finished the quarter even lower at 3.0%. Companies in a wide range of economically-sensitive industries—from airlines to chemicals—have already signaled tougher sledding. At the very least, we expect more market volatility leading up to or during the Q3 earnings season. It would not be surprising if the earnings beat rate falls short of the lofty levels achieved in the five preceding quarters and is punctuated by some high-profile earnings misses.
- While the major indexes seem vulnerable to additional volatility, in our view none of this would put

A measure of volatility: the VIX is on the rise

CBOE Volatility Index (VIX), since 9/1/19



Source - RBC Wealth Management, FactSet; data through 9/30/21

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an end to the bull market because leading economic indicators continue to signal that recession risks are nearly nonexistent, household fundamentals remain strong, and earnings growth should persist, albeit at a slower pace. We continue to anticipate worthwhile market gains over the next 12 months.

Canada

- Despite a slowdown related to COVID-19 variants, we continue to expect above-trend economic growth to persist through 2022. We believe this backdrop will disproportionately benefit the traditionally cyclical sectors, which supports our constructive stance towards the Canadian market given its cyclical orientation including large benchmark weights in Financials, Energy, and Materials. Moreover, the S&P/TSX Composite continues to trade at a significant discount relative to the S&P 500. Discounts of similar magnitude have historically resulted in positive relative returns for the Canadian market.

- We maintain a positive view on the Big Six Canadian banks on the expectation that loan growth will improve and in anticipation of increased cash returns to shareholders (e.g., dividend hikes and share buybacks) once regulatory restrictions are removed.

- West Texas Intermediate crude oil prices recently traded in a range roughly consistent with RBC Capital Markets' forecast of $68 per barrel in 2021 and $72 in 2022. Despite fears of the delta variant and slowing Chinese demand, RBC Capital Markets points to relative firmness in physical oil markets as other buyers pick up the slack. The supportive backdrop for oil leaves us constructive on oil producers as valuations remain attractive despite impressive free cash flow generation potential.

Europe & UK

- The economic recovery in both Europe and the UK is stalling. Less buoyancy is to be expected as economies' initial catch-up phase comes to an end and activity normalizes. But other factors are at work.

- In Europe, supply disruptions, which initially impacted manufacturing, are seeping into the service economy whose recovery is also now being hindered. Further fiscal support and a dovish European Central Bank should nevertheless continue to help support the economy.

China to continue consolidating

YTD performance, indexed to 100

Source - RBC Wealth Management, FactSet; data through 9/30/21

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- We would hold an Overweight, or above-benchmark, position in European equities. Consensus expectations for earnings growth in the region are undemanding and could be underpinned by the prospect of above-trend economic growth in Europe plus operational leverage having been underestimated by consensus over the course of the recovery.

- By contrast, the UK has chosen to rebalance its books, withdrawing fiscal support and increasing taxes, while suffering from supply chain shortages and an increase in gas prices, and just as exporters are trying to adapt their businesses to the UK being out of the EU. The Bank of England, which is already undergoing its tapering process, is worried about inflation and is considering raising rates. Despite these challenges to the domestic picture, we would hold a Market Weight position in UK equities given particularly attractive valuations. UK equities enjoy the highest dividend yield globally among the major equity markets, with the current prospective dividend yield for the FTSE All-Share Index standing at over 3.5%.

Asia-Pacific

- We expect Chinese equities to remain in a consolidation phase in Q4 2021. After the recent selloff, valuations of many Chinese Tech stocks have become quite undemanding. However, market sentiment is still fragile due to uncertainties caused by the regulatory reset. In addition, it could take a few months for policy clarification and detailed rules to come out, after which analysts could further revise their earnings estimates. The debate on whether it's time to bottom-fish could lead to range-bound trading of the market in the short term. On the macro front, the delta variant is still an overhang on the domestic Chinese economic recovery, especially on household consumption. If economic momentum continues to slow down, we believe policymakers would have more reasons to step up growth support and potentially introduce another cut in the reserve requirement ratio in the coming months. We maintain Market Weight exposure to Asia ex-Japan equities.

- For Japan's economy, we expect private consumption to remain resilient in Q3, followed by a strong recovery in Q4 with the rapid progress in vaccinations. With the ruling Liberal Democratic Party leadership vacant, we believe the market is expecting someone more popular than Prime Minister Yoshihide Suga to lead the party and defend the seats in the lower house election. We think the need to build up political support also increases the likelihood of another sizable fiscal stimulus package. Current valuations for Japan equities are inexpensive. We recently moved Japan to a tactical Overweight but remain neutral on the country in the medium term. External factors such as the direction of the U.S. Treasury yield and USDJPY are risks to our near-term constructive view.

GLOBAL
Fixed income

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Row your own boat

As the proverbial World's Central Bank, the Federal Reserve tends to lead the way with respect to making significant policy adjustments, but based on 2022 RBC Capital Markets forecasts for the four major central banks covered, the Bank of England (BoE) is now seen as raising policy rates first, the Bank of Canada (BoC) the most aggressively, the Fed taking a patient approach, and the European Central Bank (ECB) likely bringing up the rear in terms of keeping monetary policy easy for the longest.

With respect to the Fed, the timeline for tapering, or slowing, its $120 billion per month in asset purchases is finally coming into view with Fed Chair Jerome Powell guiding markets to a potential announcement at the November policy meeting, a December start, and a conclusion by the middle of next year. From there, the Fed will impose a much more stringent set of labor market and inflation tests before embarking on policy rate liftoff, but RBC Capital Markets expects the first interest rate hike to follow by the end of 2022.

The BoE appears set to leapfrog and take the lead in terms of withdrawing policy support, with RBC Capital Markets looking for a 0.15 percentage point rate increase at the May 2022 meeting, followed by a 0.25 percentage point hike to a policy rate of 0.50% at the November meeting. The BoE also appears set to bring its £875 billion bond purchase program to a close by November of this year.

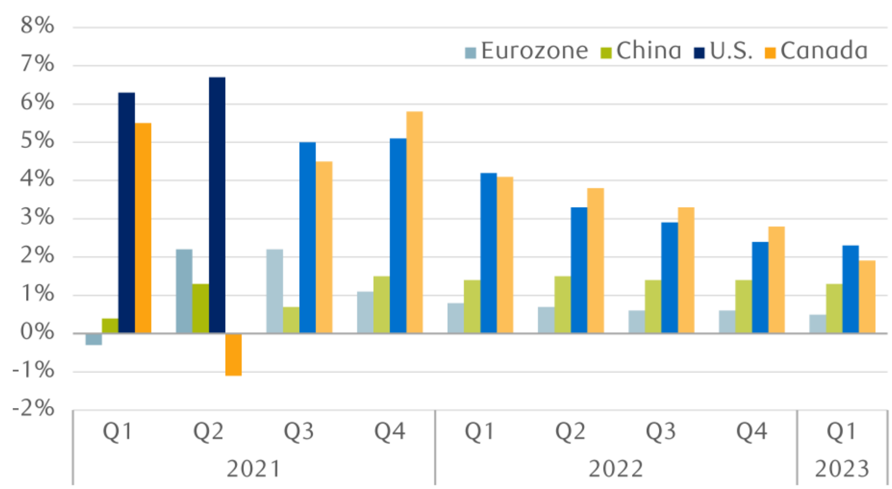
The BoC meets this month and has been the most hawkish of the group, with an earlier start to asset purchase tapering. RBC Capital Markets sees the hawkishness continuing with two full rate hikes next year, with the first by the third quarter. However, while the BoC has been the most confident in its outlook, perhaps the hawkish tilts from other banks in September

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	=	=	5–7 yr

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

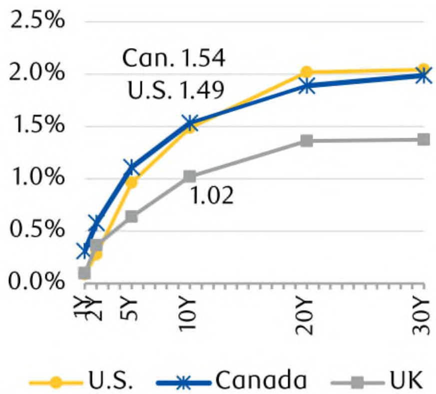
Quarterly GDP growth, actual and estimates through Q1 2023



Source - RBC Wealth Management, Bloomberg; Q1 and Q2 2021 GDP data are actual, later quarters are estimates

GLOBAL FIXED INCOME

Sovereign yield curves



Source - Bloomberg; data through 9/30/21

were simply a reflection of playing catch-up to the BoC.

The ECB considers things to be moving in the right direction, particularly with respect to inflation, but achievement of its goals is still well out of reach, and while its asset purchases may start to slow, rate hikes remain beyond the foreseeable future.

Though uncertainty remains elevated, central banks clearly are intent on dialing back monetary policy support. But regardless of the paths, central bank policy around the world will likely remain accommodative for years to come, and we believe officials will maintain a flexible approach to adjusting policy tools.

REGIONAL HIGHLIGHTS

United States

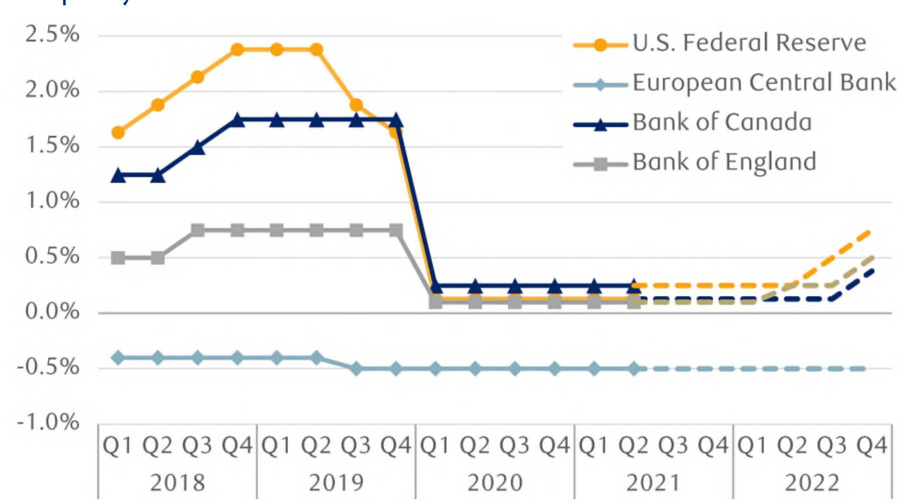
- Absent a complete collapse in labor market gains this month, the Federal Reserve appears poised to finally announce its plans to begin dialing back its $120 billion of monthly asset purchases at its November 2–3 meeting. The base case is now that the Fed will begin reducing purchases in December and that the process is completed by the middle of 2022. But the need for large-scale asset purchases has long since passed, so what transpires after—the path of policy rates—is what matters more for markets.

- Policymakers are evenly split on the prospect of a first rate hike by the end of 2022, though we expect that balance to gradually tilt in favor of one rate hike with each subsequent update to policymakers' economic forecasts. Regardless, we maintain our view that the window for the first rate hike is unlikely to open until 2023, given ongoing volatility and uncertainty with respect to the economic recovery.

- U.S. credit markets were well-insulated from the brief episode of bankruptcy fears around Evergrande and China's property market, with measures of credit risks holding steady in September and remaining near recent—and historical—lows. Investment-grade bonds now yield just 0.86% over comparable Treasuries; high-yield corporates are only at 2.80%. We continue to expect a relatively benign credit environment at this stage of the recovery.

- The municipal market held steady during September as trading volatility in the secondary market was very limited, declining just shy of January's record lows. Yet new issue volume has

RBC policy rate forecasts



Source - RBC Wealth Management, Bloomberg; Q3 2021 and later are estimates

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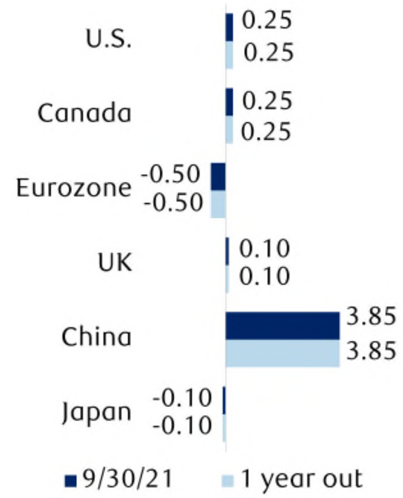
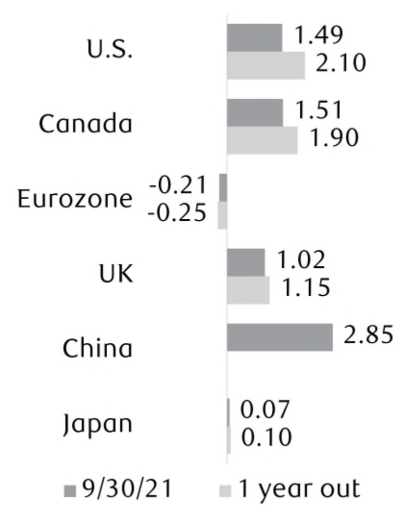
Central bank rate (%)



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

picked up substantially, reporting one of the busiest stretches year to date in September. Positive inflows into municipal funds have stretched on for 28 consecutive weeks and counting.

Canada

■ Canadian fixed income markets were quiet this quarter relative to the sharper movements seen in the first half of the year. The most notable development was a decline in government bond yields, particularly for longer-dated maturities. While bond yields in general rose meaningfully in H1 2021 on the back of a vaccination-led recovery and higher inflation expectations, the proliferation of the COVID-19 delta variant and subsequent reduction in global growth expectations has given back roughly half of that initial increase.

■ The decline in long-dated bond yields has also pushed real yields—which represent yields adjusted for inflation expectations—deeper into negative territory and close to their all-time low, meaning the market is anticipating government bond yields will fail to keep up with inflation for the foreseeable future.

■ In the corporate space, credit spreads (which measure the additional yield compensation offered for investing in corporate bonds) remained very stable throughout the quarter, and this was particularly true for higher-rated issuers. Preferred shares also saw little change in recent months, with price gains having levelled off from their rapid ascent in the first half of the year.

■ Ultimately, Canadian fixed income is subject to the side effects of very accommodative policy from the Bank of Canada and its central bank peers: low starting yields, marginal compensation for assuming credit risk, and little remaining upside. These realities have tempered our return expectations, and we prefer to remain relatively neutral in terms of duration and credit exposure in the context of an overall Underweight position in fixed income. Until compensation for taking either interest rate or credit risk improves, our bias will continue to emphasize higher-quality credit alongside a robust sleeve of liquid government bonds with modest duration.

Europe & UK

■ The European Central Bank (ECB) decided to conduct its Pandemic Emergency Purchase Programme (PEPP) at a "moderately lower pace" in Q4 rather than the elevated pace of around €80 billion in Q2 and Q3. ECB President Christine Lagarde described the shift as a "recalibration" of the programme because the ECB thinks the economic rebound in the eurozone could be maintained with less stimulus. Recent comments from three ECB officials have raised questions about the latest staff projections which estimated inflation below 2% in 2023, potentially underestimating the persistence of price pressures amid supply bottlenecks.

■ To avoid a cliff-edge scenario when PEPP ends in March 2022, the ECB will likely consider boosting the regular asset purchase programme—an announcement is likely in the next few meetings. We expect the ECB to keep interest rates on hold this year, and markets are currently only expecting a 0.10% rate increase in mid-2023.

■ In the UK, the Bank of England's (BoE's) Monetary Policy Committee (MPC) has mounting pressure to cool inflation which leapt to 3.2% m/m in August from 2% in July. Consumers in the UK expect inflation to remain above 2% for at least five years, according to the central bank's August inflation attitudes survey. Furthermore, unemployment has also surprised to the upside with soaring job vacancies, exceeding one million for the first time in history. At the September meeting, officials surprised markets by signalling the possibility of a rate hike this year. Despite recent statements by BoE

GLOBAL FIXED INCOME

officials, we expect the MPC to keep rates unchanged. Our base-case scenario is a rate increase in Q2 2022; however, there is moderate risk to an earlier hike in Q1, which is the current market expectation.

Asia-Pacific

- Asian credit sentiment was affected by news involving two major companies, namely China Huarong Asset Management, one of the biggest state-owned asset management companies, and China Evergrande, one of the country's largest property developers.

- Huarong announced a state-supported recapitalization plan that left much of the focus on China Evergrande where a debt restructuring scenario looks likely, triggering the worry that it may have a broader impact on the financial system. While this has negative implications for the Asian credit market, a report published by Fitch Ratings has quoted a recent People's Bank of China sensitivity test which indicated that if the nonperforming loan ratio for property-development lending were to rise by 15 percentage points (pp) and that for mortgages by 10pp, the average capital adequacy ratio of the 4,015 banks assessed would only drop modestly, to 12.3% from 14.4%. This marginal decline looks largely manageable, supporting our base case that banks should be able to absorb this shock.

- Meanwhile, the COVID-19 delta variant hit multiple provinces in China over July to August, triggering stringent containment measures and potentially causing significant disruptions to economic activity. This, together with the new measures to regulate various sectors in an effort to achieve "common prosperity," may set growth on the back foot, in turn affecting the performance of the Asian credit market in the near term. However, we believe that stability remains the top priority for the government. Monetary policy easing is likely in the medium term, and this would be credit positive in the longer run, in our view.

Commodities

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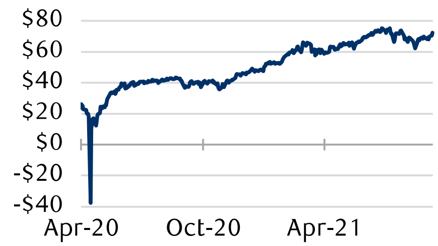
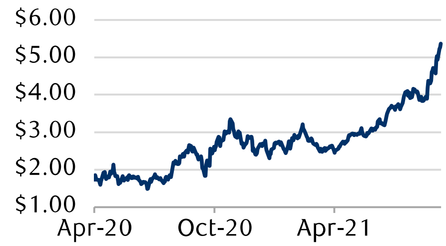
Crude oil: Improving sentiment

Approximately 27 million barrels of U.S. production remains offline post Hurricane Ida. Consequently, U.S. inventories have seen significant drawdowns, with gasoline and distillate stocks below their five-year averages. Market sentiment has improved with WTI rebounding above $70/bbl in mid-September. OPEC+ reconfirmed its intention to incrementally unwind curtailments by late 2022.



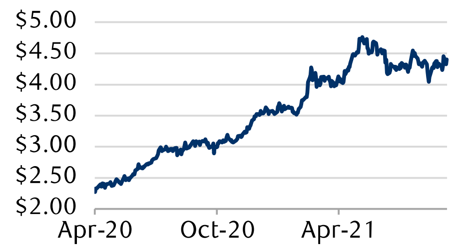
Natural gas: Multiyear highs

Natural gas prices are at multiyear highs, driven by a combination of production outages in the U.S., low stockpiles in Europe, and growing demand for liquefied natural gas. As a result, RBC Capital Markets increased its Q4 2021 high scenario to $5.94/mmBtu and notes prices could spike during the winter given a tight physical market.



Copper: Paring back

Copper has pared some of its year-to-date (YTD) gains amid concerns over slowing Chinese demand, Fed asset-purchase tapering, and a broad pullback in risk-on sentiment. Prices could remain elevated given low global inventories, but over the medium term, RBC Capital Markets believes new production will come online to address projected deficits.

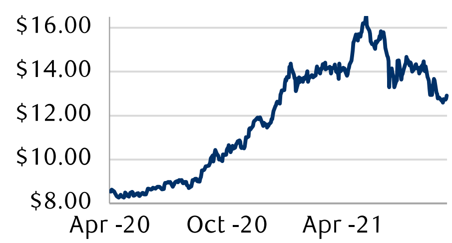


Gold: Stabilizing

Gold is down roughly 6% YTD, with prices finding a degree of stability around the $1800 level over the past month. Global supply chain disruptions have likely contributed to stronger inflation prints, which in turn should support higher prices. Low real rates also remain constructive for gold, but a faster-than-expected economic recovery could remove this support.

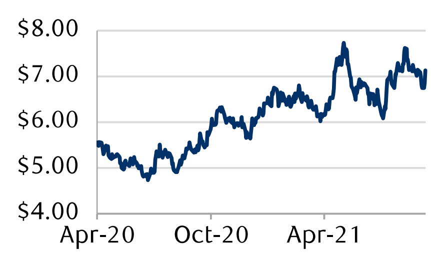
Soybeans: Consolidating

Soybean prices are approximately 22% off their YTD highs, putting them modestly in the red for the year. As of mid-September, prices appear to have firmed with some consolidation around the $12.75 level. Concerns around China remain topical, but we note that Chinese imports have been trending above USDA 2021/22 forecasts.



Wheat: Upward revisions

Global wheat production remains at record levels and the USDA is adjusting its estimates higher for the 2021/22 season following stronger Australian and Indian production. Meanwhile, global consumption estimates are also being revised higher due to stronger Chinese feed and residual demand. Global ending inventories are expected to be modestly lower on a year-over-year basis. Wheat is up approximately 11% YTD.



Commodity forecasts

Commodity	2021E	2022E
Oil (WTI $/bbl)	$67.64	$72.27
Natural gas ($/mmBtu)	$3.69	$3.85
Gold ($/oz)	$1732	$1696
Copper ($/lb)	$4.05	$3.75
Soybean ($/bu)	$14.00	$12.38
Wheat ($/bu)	$6.61	$5.90

Source - RBC Capital Markets forecasts (oil, natural gas, gold, and copper), Bloomberg consensus forecasts (soybean and wheat); data as of 9/17/21

Chart source - RBC Wealth Management, Bloomberg; date range: 4/6/20–9/15/21

Currencies

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Currency forecasts

Currency pair	Current rate	Forecast Sept. 2022	Change
Major currencies			
USD Index	94.23	96.71	3%
CAD/USD	0.78	0.79	1%
USD/CAD	1.26	1.27	1%
EUR/USD	1.15	1.13	-2%
GBP/USD	1.34	1.23	-8%
USD/CHF	0.93	0.98	5%
USD/JPY	111.29	110.0	-1%
AUD/USD	0.72	0.73	1%
NZD/USD	0.68	0.68	0%
EUR/JPY	128.88	124.0	-4%
EUR/GBP	0.85	0.92	8%
EUR/CHF	1.07	1.11	4%
Emerging currencies			
USD/CNY	6.44	6.47	0%
USD/INR	74.23	72.50	-2%
USD/SGD	1.35	1.35	0%

Change is defined as the implied appreciation or depreciation of the first currency in the pair quote. Examples of how to interpret currency data can be found in the Market Scorecard.

Source - RBC Capital Markets forecasts, Bloomberg

U.S. dollar: Edging back up with U.S. yields

U.S. Treasury yields have moved higher since the July lows despite the Federal Reserve adopting a more dovish stance in Q3 amid concerns on the delta variant and mixed U.S. economic data. We expect modest gains in Q4 for the U.S. dollar as we get closer to the tapering announcement by year-end. Beyond that, the greenback should be underpinned by the Fed seeming to intend to dial back stimulus faster than markets had expected and a possible rate hike late in 2022.

Euro: ECB shifts big decisions to December

The decision on the future of the European Central Bank's (ECB's) various quantitative easing programmes has been pushed to December, with ECB President Christine Lagarde remaining cautious by implying that the bank will need to stay accommodative for long after the pandemic is over. On a more near-term basis, we expect the euro to remain under pressure from the potential lengthy coalition-building talks from the elections in Germany.

Canadian dollar: BoC to change forward guidance?

Despite a disappointing Q2 GDP release, the Bank of Canada (BoC) maintained its relatively positive outlook for a recovering Canadian economy at the September meeting. The market reaction was muted, with the Canadian dollar moving very little. Currently, BoC guidance is for the first rate hike to occur in H2 2022. A key focus for the October meeting will be whether this guidance is pushed back into 2023.

British pound: Tighter fiscal stance ahead

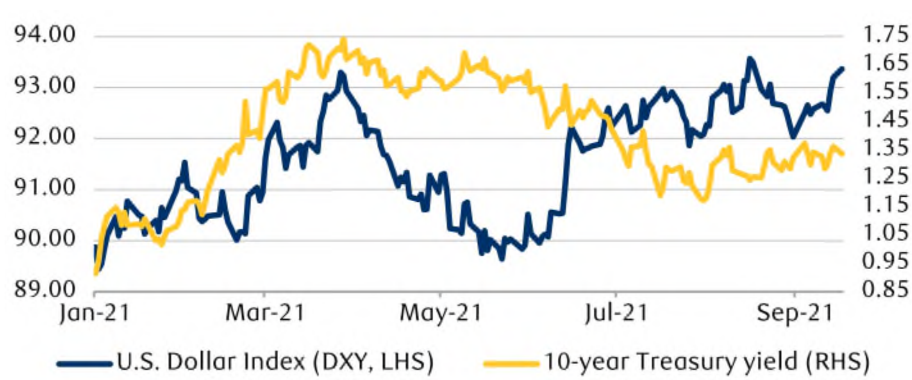
While the market prices in an interest rate increase from the Bank of England in H1 2022 following the sharp rise in UK inflation, recent economic activity indicators point to a stalling recovery. With the end of government fiscal support in September, upcoming tax hikes, and surging energy prices in the UK, the balance of risk remains on the downside and for the pound to underperform.

Japanese yen: USD/JPY remains flat near 110

The USD/JPY has barely moved since Japanese Prime Minister Yoshihide Suga announced his resignation, despite a 10% rise in the Nikkei 225. RBC Capital Markets economists see downside risks in the near term based on the hedging behaviour of domestic Japanese investors, but expect the USD/JPY to trend upwards next year, supported by upcoming Fed rate hikes.

A consolidative price action on the DXY in Q3, with U.S. yields stabilizing after a sharp unwind of the 'reflationary' theme seen in Q1

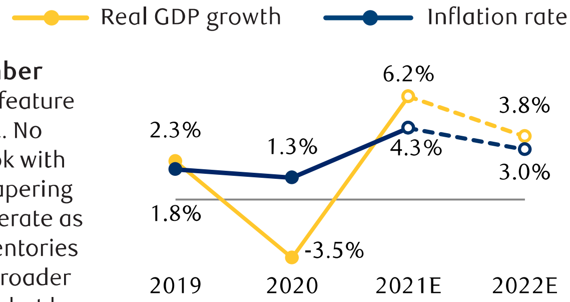
An expected taper announcement by the Fed in November or December should keep the U.S. dollar supported



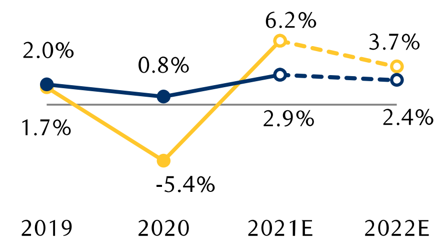
Source - RBC Wealth Management, Bloomberg; data through 9/20/21

KEY
Forecasts

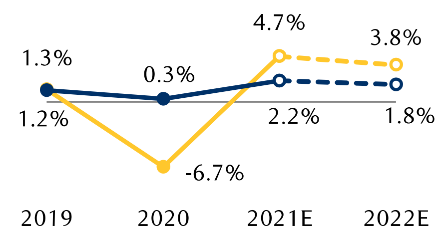
United States: Tapering likely in December
The Fed's November meeting is expected to feature a tapering plan, with a likely December start. No major changes to the Fed's economic outlook with a first rate hike now projected for '22 once tapering is complete. GDP growth forecast to reaccelerate as shipping/supply chain disruptions ease, inventories are replenished, and services benefit from broader reopening. Inflation expected to ease somewhat by H2 2022.



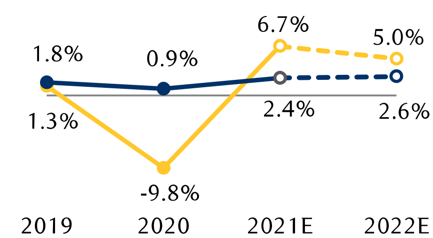
Canada: Office vacancies reach 25-year high
Office vacancies hit the highest level since 1994, topping 15.7%, signaling some distress in the commercial real estate market. The labor market continues to recover as employment rose by 90,000 in August, nearing pre-pandemic levels. The CPI index jumped 4.1% in August, the fifth consecutive increase in inflation and well above the BoC's 1%–3% target, although the BoC remains firm in its view the increases are transitory.



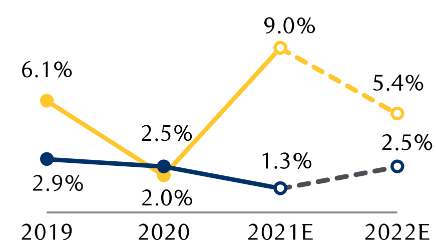
Eurozone: Inflation worsening
Manufacturing and services PMIs look to have weakened in September after strong showings in July/August, but remain firmly in expansion territory. GDP growth to improve further through 2022, but the dynamic recovery phase appears to be over. Inflation likely to exceed forecasts as supply chain disruptions and natural gas price surge force the fastest CPI increases in a decade. The ECB has urged banks to prepare for 2022 stress tests to assess industry vulnerability to climate change.



UK: Fuel crisis
UK's Composite PMI has fallen to an estimated 54.1 in September from 62.9 in May. New order growth eased to a seven-month low, as demand has slowed quickly post-reopening. Continued weakness of retail sales into August (-0.9% m/m after - 2.5%) reinforces that view. The recovery is threatened further by fuel shortages. Strong inflation data has led the BoE to open the door to a possible November rate hike.



China: Evergrande
The likelihood property developer Evergrande will default grabbed headlines followed by widespread power shortages. Some COVID-19-related regional shutdowns have not helped the GDP growth outlook. Shipping and supply chain disruptions threaten the otherwise strong export performance. PMIs, manufacturing and services, have fallen into contraction territory. Business and consumer confidence as well as retail sales have weakened.



Japan: COVID-19 emergency restrictions lifted
The government officially lifted all COVID-19 states of emergency at the end of September as daily case counts have been steadily declining since mid-August. Attention will turn to tackling long-standing economic problems including encouraging companies to raise wages to boost consumer spending. The last decade has seen Japan's population shrink by roughly 2 million, leading to labor shortages, slower growth, and rising health care costs.

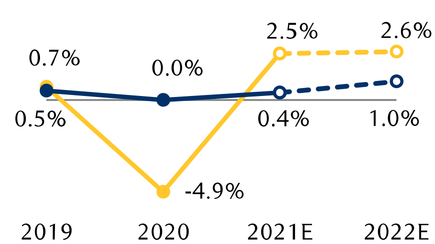


Chart source - RBC Investment Strategy Committee, RBC Capital Markets, Global Portfolio Advisory Committee, RBC Global Asset Management, Bloomberg consensus estimates

MARKET Scorecard

Data as of September 30, 2021

Equities

Global equities mostly sold off amid inflation fears and rising COVID-19 delta variant case counts.

Bond yields

Global bond yields rose on growing inflation concerns, with the exception of German Bunds, which firmed.

Commodities

Commodities were mixed m/m; metals weakened, while oil and natural gas prices continued to climb.

Currencies

The U.S. dollar firmed against most global currencies including the Canadian dollar, British pound, and euro, as investors sought to pare risk.

Index (local currency)	Level	1 month	YTD	12 month
S&P 500	4,307.54	-4.8%	14.7%	28.1%
Dow Industrials (DJIA)	33,843.92	-4.3%	10.6%	21.8%
Nasdaq	14,448.58	-5.3%	12.1%	29.4%
Russell 2000	2,204.37	-3.1%	11.6%	46.2%
S&P/TSX Comp	20,070.25	-2.5%	15.1%	24.5%
FTSE All-Share	4,058.96	-1.2%	10.5%	23.7%
STOXX Europe 600	454.81	-3.4%	14.0%	26.0%
EURO STOXX 50	4,048.08	-3.5%	13.9%	26.8%
Hang Seng	24,575.64	-5.0%	-9.8%	4.8%
Shanghai Comp	3,568.17	0.7%	2.7%	10.9%
Nikkei 225	29,452.66	4.9%	7.3%	27.0%
India Sensex	59,126.36	2.7%	23.8%	55.3%
Singapore Straits Times	3,086.70	1.0%	8.5%	25.1%
Brazil Ibovespa	110,979.10	-6.6%	-6.8%	17.3%
Mexican Bolsa IPC	51,385.55	-3.6%	16.6%	37.2%
Bond yields	**9/30/21**	**8/31/21**	**9/30/20**	**12 mo. chg**
U.S. 2-Yr Tsy	0.276%	0.209%	0.127%	0.15%
U.S. 10-Yr Tsy	1.487%	1.309%	0.684%	0.80%
Canada 2-Yr	0.530%	0.425%	0.247%	0.28%
Canada 10-Yr	1.509%	1.216%	0.561%	0.95%
UK 2-Yr	0.410%	0.219%	-0.023%	0.43%
UK 10-Yr	1.022%	0.714%	0.229%	0.79%
Germany 2-Yr	-0.689%	-0.601%	-0.701%	0.01%
Germany 10-Yr	-0.199%	-0.185%	-0.522%	0.32%
Commodities (USD)	**Price**	**1 month**	**YTD**	**12 month**
Gold (spot $/oz)	1,756.95	-3.1%	-7.4%	-6.8%
Silver (spot $/oz)	22.17	-7.2%	-16.0%	-4.6%
Copper ($/metric ton)	8,944.50	-6.1%	15.4%	34.1%
Oil (WTI spot/bbl)	75.03	9.5%	54.6%	86.5%
Oil (Brent spot/bbl)	78.52	7.6%	51.6%	91.7%
Natural Gas ($/mmBtu)	5.87	34.0%	131.1%	132.2%
Agriculture Index	416.70	1.1%	13.3%	36.9%
Currencies	**Rate**	**1 month**	**YTD**	**12 month**
U.S. Dollar Index	94.2300	1.7%	4.8%	0.4%
CAD/USD	0.7885	-0.5%	0.4%	5.0%
USD/CAD	1.2680	0.5%	-0.4%	-4.8%
EUR/USD	1.1580	-1.9%	-5.2%	-1.2%
GBP/USD	1.3474	-2.0%	-1.4%	4.3%
AUD/USD	0.7227	-1.2%	-6.1%	0.9%
USD/JPY	111.2900	1.2%	7.8%	5.5%
EUR/JPY	128.8800	-0.8%	2.1%	4.2%
EUR/GBP	0.8593	0.1%	-3.9%	-5.3%
EUR/CHF	1.0786	-0.2%	-0.2%	-0.1%
USD/SGD	1.3577	1.0%	2.7%	-0.6%
USD/CNY	6.4448	-0.2%	-1.3%	-5.1%
USD/MXN	20.6400	2.8%	3.6%	-6.7%
USD/BRL	5.4429	5.6%	4.7%	-3.0%

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 0.78 means 1 Canadian dollar will buy 0.78 U.S. dollar. CAD/USD 5.0% return means the Canadian dollar has risen 5.0% vs. the U.S. dollar during the past 12 months. USD/JPY 111.29 means 1 U.S. dollar will buy 111.29 yen. USD/JPY 5.5% return means the U.S. dollar has risen 5.5% vs. the yen during the past 12 months.

Source - RBC Wealth Management, RBC Capital Markets, Bloomberg; data through 9/30/21

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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