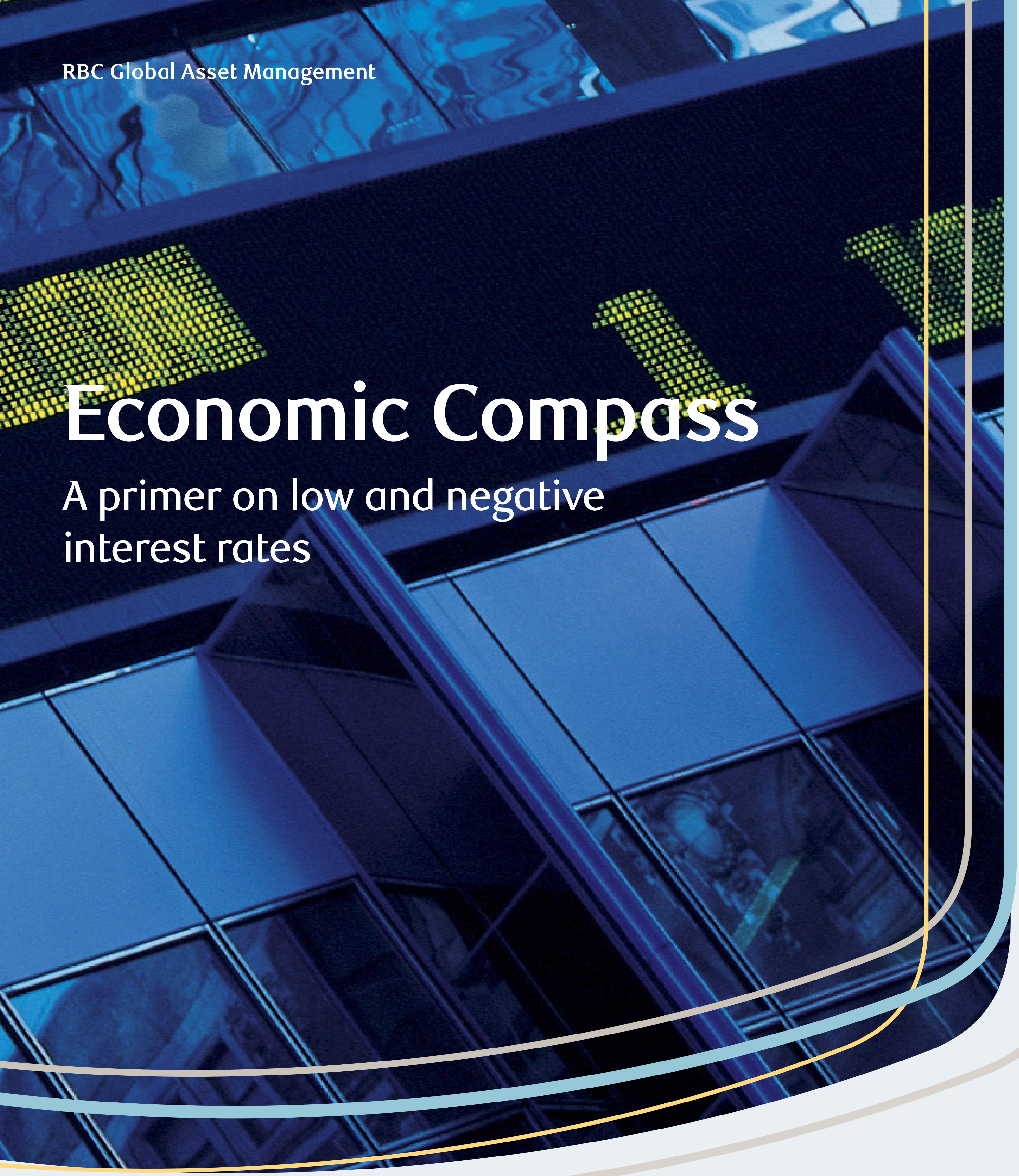


RBC Global Asset Management

Economic Compass

A primer on low and negative interest rates

ISSUE 40 • NOVEMBER 2019

In this issue

Eric Lascelles
Chief Economist
RBC Global Asset Management

Over the past decade, bond yields have plumbed depths never before witnessed in recorded history. The situation has become particularly surreal in recent years as up to US$17 trillion in global debt has paid an outright negative yield (Exhibit 1). The global economy and financial markets struggle to navigate this unfamiliar environment.

In this report, we set out to understand why interest rates are so low, who is buying negative-yielding debt and how long this situation can last. We then highlight some of the distortions that arise from this unusual interest rate environment, and think about the implications for the economy and investors.

Negatively-yielding bonds return less money to an investor than the investor originally put in – hardly an appealing proposition. Conversely, for borrowers, it is an astonishing opportunity to borrow for free – or even to be paid to use someone else's money. Granted, it is mostly stodgy governments that enjoy this privilege rather than businesses or households.

Interest rates are down nearly everywhere, but lowest in Japan and Europe. Within Europe, even Greece has managed to issue its first negative-yield bond despite the country's still-precarious public debt levels that spurred a galloping sovereign debt crisis just a few years ago.

As much as bond yields have lately edged a hair higher, the ultra-low rate story isn't necessarily over: the world's central banks are still more inclined to cut rates than to hike them, and the European Central Bank (ECB) and U.S. Federal Reserve (Fed) have returned to the outright bond-buying that served as a catalyst for the original downward swoop in yields a decade ago.

Why are interest rates so low?

There are a slew of factors keeping interest rates so low today.

First, slow real economic growth tends to result in low real interest rates because businesses will not invest in new projects unless the cost of borrowing is less than the prospective return on their projects (this return tends to rhyme with the rate of economic growth). To the extent that economic growth is structurally low today for a myriad of reasons including challenging demographics, it makes sense that inflation-adjusted bond yields would also be low.

Second, low and relatively stable inflation tends to depress the inflation-expectations component of nominal bond yields. Given such structural depressants as an aging population alongside globalization and automation, it makes sense that inflation is unusually restrained.

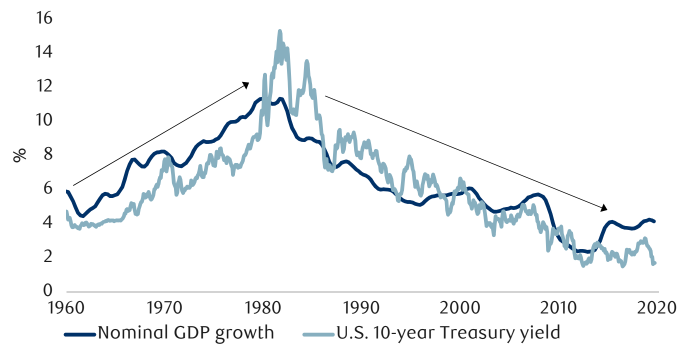
Third, providing something of a cross-check on the two prior arguments, nominal GDP growth is calculated by adding the aforementioned real economic growth and inflation together. Nominal interest rates have indeed tracked nominal economic growth lower over the past several decades (Exhibit 2).

Fourth, although it is hard to fathom given elevated government debt loads, there is arguably a shortage of safe debt in the world rather than a surplus of it. This exerts downward pressure on yields. The world's financial wealth

Exhibit 1. Share of bonds with negative yields surged

Note: As of 11/4/2019. Percentage of bonds in Bloomberg Barclays Global Aggregate Bond Index trading at negative yields. Source: Bloomberg, RBC GAM

Exhibit 2. U.S. nominal GDP and 10-year yield in tandem



Note: U.S. Treasury yield as of Oct 2019. 5-year moving average of year-over-year nominal GDP growth as of Q3 2019. Source: BEA, Federal Reserve Board, Macrobond, RBC GAM

is very high, and investors seek to stow some fraction of that wealth in the safety and liquidity of government securities. In particular, as the pool of emerging-market (EM) wealth expands, these savers are crowding into the same developed-world debt markets as everyone else since there are few AAA- or AA-rated investment opportunities in their own markets.

Fifth, and somewhat perversely, whereas high debt levels should theoretically push borrowing costs upward to reflect the greater risk of default, in practice it simply means that central banks must artificially restrain interest rates to keep borrowing affordable in heavily-indebted economies. The higher the debt level, the lower the borrowing cost must be.

Sixth, we maintain a bond fair-value model that was originally developed by the Bank of England. While it doesn't quite conclude that bond yields should be as low as they are today, it does concede that a normal yield is much lower than was once the case, in the range of 3% for the U.S. 10-year yield. Central banks broadly agree, having downgraded their own definitions of a "neutral" short-term rate to below 3%.

Seventh, from a substitution perspective, extremely low interest rates in Japan and Europe exert a downward pressure on other markets such as the U.S., U.K. and Canada. Although the fundamentals are not the same in these markets, investors hungry for yield nibble away at the rate gap by shifting a fraction of their holdings into the higher-yielding markets.

Eighth, history shows that the high interest rates of the 1970s, 1980s and to a lesser extent 1990s were an extreme outlier. Furthermore, low interest rates have persisted over multi-decade periods in the past (see next chart). In this context, the current episode may be particularly extreme in its depth, but not in its length. The bond market is by no means overdue to rebound to significantly higher levels (Exhibit 3).

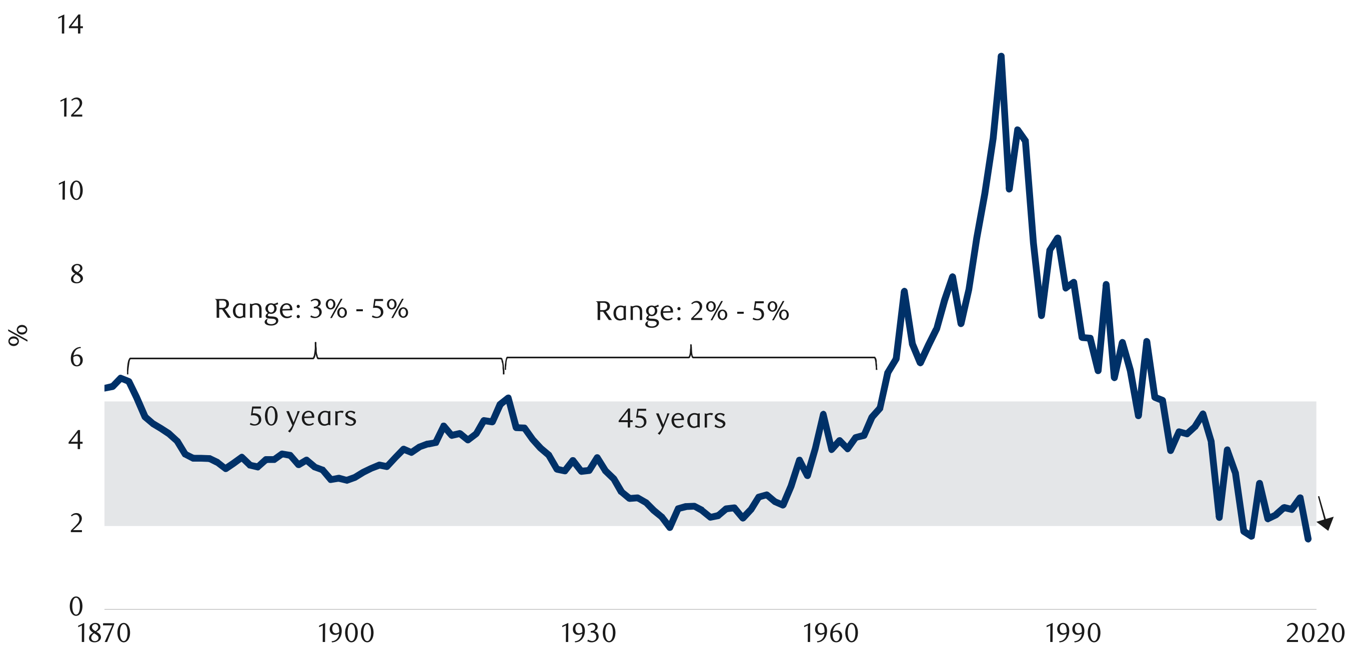
Lastly, in addition to this long list of structural depressants, it should be acknowledged that there are also various cyclical pressures that push downward on bond yields, most obviously in the form of easing central banks and the lateness of the business cycle. These aren't permanent influences, but they are helping to keep yields toward the lower end of their new normal range. In particular, it is notable that the Eurozone and Japanese central bank rates are now themselves negative. This means that negative yields aren't just a temporary mismatch between bond supply and demand, but something that is sanctioned by the highest government authorities.

Who would buy a negative-yielding bond?

Negative interest rates are repulsive to many investors. The idea of lending one's money to someone and paying them for the privilege seems nothing short of outrageous.

But the shift into negative interest rates is arguably just a minor development when compared to the more important threshold that was breached a decade ago: when inflation-adjusted, after-tax bond yields turned negative. After all, a bond yield of 1%, 2% and even (depending on one's tax rate) 3% also pays out a negative coupon once taxes and inflation have been accounted for. Investors have been opting to buy bonds and accept a slight degradation of their wealth for many years now. It is simply more visible to the lay

Exhibit 3. Historical U.S. 10-year treasury yields



Note: As of 10/31/2019. Source: RBC CM, RBC GAM person (and the loss is more substantial) now that nominal yields have joined real yields and real after-tax yields in negative territory.

To the extent that many bond investors have grudgingly tolerated negative real after-tax yields for years, it is perhaps not surprising that some have also come to accept negative nominal yields.

For ordinary investors, bonds constitute an important part of an investment portfolio not simply for their yield, but also because they tend to provide ballast to the portfolio during times of economic distress and risk aversion.

Some investors are actually able to convert a negative-yielding bond in a foreign market into a positive return in domestic terms by hedging out the currency risk. Certain conditions must be met: one's home market must have the higher short-term interest rate of the two, and the foreign market must have the steeper yield curve. These conditions are presently fulfilled for North American investors buying negative-yielding European bonds, meaning they can still cobble together a positive return.

But the main story behind the remarkable resilience of negative interest rates is that a surprising fraction of bond-holders simply aren't very sensitive to the yield they receive.

The ECB has purchased many European sovereign bonds with the intent of helping to depress interest rates as opposed to profiting from them, and is unlikely to sell given the economic environment. Other central banks have behaved similarly. The world's four largest central banks – the Fed, ECB, Bank of Japan (BOJ) and People's Bank of China (PBOC) – collectively hold US$19.3 trillion of debt.

Commercial banks are generally obliged to keep much of their capital in safe and liquid investments like government bonds. If the return on these bonds is negative, it is unfortunate but can't be helped. Globally, commercial banks maintain trillions of dollars of reserves.

Foreign reserve managers are similarly obliged to hold safe, liquid and usually short-term debt of foreign nations with an eye toward managing their exchange rate, not achieving a positive return. These managers hold more than US$11 trillion in mostly short-term bonds.

Other investors are sensitive to their expected return, but cannot adjust quickly or at all. As an example, an institutional investor might be mandated to hold only AAA-rated European securities in its portfolio. The investor cannot buy something else unless its mandate changes – an involved process. Similarly, a pension fund may be unwilling to tolerate the risk necessary to buy higher-yielding bonds, and so is stuck with a negative return.

Why wouldn't investors grappling with the prospect of a negative return simply keep their money in cash, or put it in a chequing account? Because those are not "risk-free" investments, unlike a sovereign bond:

- Cash can be lost, destroyed or stolen.
- A chequing account is generally quite safe and provides deposit insurance, but this may not be sufficient for a corporation with far more money than deposit insurance can cover and given the degree of flux in some banking sectors since the global financial crisis.

How long can negative rates last?

We are not convinced that negative interest rates will prove a permanent element of the fixed income market. Current yields are quite low even after factoring in all of the relevant structural depressants. Entering a more constructive phase of the business cycle would allow higher policy rates. Similarly, we are hopeful that other countries will eventually follow the recent U.S. lead and secure moderately faster productivity growth that will help to elevate GDP growth and thus the level of bond yields.

Additionally, we believe Europe is less vulnerable than Japan was to getting stuck in a low-growth, low-inflation, low-rate and high-debt environment. The U.S. and Canada are even less exposed. Not all are equal in this regard.

But the basic reality is that the great majority of the justifications for low yields presented earlier are likely to persist to varying degrees for years. Inflation has seemingly been tamed; demographics constrain the rate of economic growth; the shortage of safe assets will likely persist; and so on.

Thus, whether interest rates remain negative or not, they will probably remain quite low for many years to come.

Distortions

A variety of distortions result from low and negative interest rates as savers, investors and borrowers adapt to the situation.

Low interest rates push savers into taking larger investment risks in an effort to secure some sort of return. Larger investment risks bring not just the possibility of substantial unanticipated losses, but also of diminished liquidity. This reduces the resilience of corporations and retirees alike to economic shocks.

Negative rates encourage businesses and people to make greater use of physical cash, rather than be subjected to negative interest rates in a bank account or bond. This tendency expands the underground economy, compromises government tax revenues and increases the incidence of theft.

Businesses and households seek to stow their savings in unconventional ways. Examples include pre-paying commercial invoices, income-tax bills and credit cards, all in an attempt to shift the problem of negative interest rates onto someone else. This form of "hot potato" distends the economic system in unintended ways.

While banks generally enjoy low interest rates because this encourages clients to borrow, extremely low or outright negative rates are a different story. The excess reserves of banks stop earning a return and net interest margins shrink as certain forms of bank funding bump into an effective zero lower bound.

When borrowing costs are zero or negative, the necessary return on a new business idea only needs to be marginally positive. As a result, dubious investments are hatched. Similarly, unviable businesses that would normally be wiped out by debt-servicing costs are able to hang on as zombie firms, crowding the landscape for more productive firms.

Lastly, and perhaps most obviously, borrowing naturally rises when the cost of servicing debt is extremely low. While this can support economic growth, the additional leverage can eventually create problems, particularly were interest rates ever to rebound.

Economic implications

First and foremost, low interest rates help to boost short-term economic growth as businesses and households are encouraged to borrow and spend more, and discouraged from saving. This remains the primary effect.

However, as interest rates descend ever lower, an important headwind arguably builds, diminishing the aforementioned economic benefit. Whereas low interest rates normally encourage borrowing and spending, ultra-low interest rates start to have the opposite effect. At some point, people saving for retirement recognize that their prospective rate of return has diminished in the fixed income market, leading to the conclusion that they must save more rather than less.

It is not clear where exactly the switch is flipped between wanting to save less and wanting to save more. Different central banks have come to varying conclusions, with the ECB and BOJ clearly judging that slightly negative interest rates still produce the desired economic behavior. In contrast, the Bank of England, U.S. Federal Reserve and Bank of Canada have all argued that it is best not to allow policy rates to descend below 0%. We are inclined to think that the

latter group is correct, meaning that negative interest rates may ultimately prove a mistake.

Either way, there is a broad recognition among central banks that there is a limit to how far negative policy rates should go since the economic benefit diminishes as one descends further.

As for other economic implications of low rates, these include the previously-mentioned reduction in the quality of business investment decisions that threatens to diminish productivity growth.

From a risk management perspective, low interest rates limit the ability of central banks to rescue economies when they run into trouble. There just isn't that much room to cut before bumping into the lower bound. In turn, recessions could become more frequent and/or more severe. Simultaneously, the additional borrowing encouraged by low interest rates increases the risk of a balance sheet-style recession.

Market implications

When interest rates are low, there are cascading implications for markets and investors.

Returns in the fixed income market are unavoidably limited in a low or negative interest rate environment. This is highly consequential for investors, as most possess at least a modicum of fixed income securities.

Pension funds are particularly challenged in this environment as many maintain low-risk, long-duration, fixed income-heavy portfolios designed to match the stable stream of payouts promised to their retirees. Those that stick with this approach are increasingly having to accept the prospect of diminished future returns and accordingly raising contribution rates and/or cutting retiree benefits.

When confronted with diminished returns, many investors are opting to venture further out the risk spectrum, restoring their prospective returns but at the expense of greater volatility and risk associated with credit products, equities and private markets.

This quest for yield results in return-sensitive investors crowding into riskier asset classes, increasing their valuations. As a result, credit spreads can be unusually narrow and stock-market price-earnings ratios can be higher than normal. This is a profitable experience for first-movers, but ultimately reduces the steady-state rate of return available from these asset classes over the long run.

Bottom line

The world now operates in an extremely low interest rate environment. There are reasonably sound economic and market-structure considerations that endorse these low rates. While a handful of these factors are merely cyclical and thus temporary, a significant fraction are structural and so should keep yields very low for some time. We are not convinced that negative interest rates will become a permanent feature of the fixed income landscape, but they can likely persist for several years at least.

While low interest rates are theoretically an economic stimulant, growth headwinds begin to mount as rates become negative. The same goes for financial markets, where investors must accept lower rates of return or engage with riskier investment products. Through both an economic and an investment lens, the world is a more fragile place when interest rates are extremely low.

Disclosure

This report has been provided by RBC Global Asset Management (RBC GAM) for informational purposes only and may not be reproduced, distributed or published without the written consent of RBC Global Asset Management Inc. (RBC GAM Inc.). In Canada, this report is provided by RBC GAM Inc. (including PH&N Institutional). In the United States, this report is provided by RBC Global Asset Management (U.S.) Inc., a federally registered investment adviser. In Europe, this report is provided by RBC Global Asset Management (UK) Limited, which is authorised and regulated by the UK Financial Conduct Authority. In Asia, this document is provided by RBC Global Asset Management (Asia) Limited, which is registered with the Securities and Futures Commission (SFC) in Hong Kong.

RBC GAM is the asset management division of Royal Bank of Canada (RBC) which includes RBC GAM Inc., RBC Global Asset Management (U.S.) Inc., RBC Global Asset Management (UK) Limited, RBC Global Asset Management (Asia) Limited., and BlueBay Asset Management LLP, which are separate, but affiliated subsidiaries of RBC.

This report has not been reviewed by, and is not registered with any securities or other regulatory authority, and may, where appropriate, be distributed by the above-listed entities in their respective jurisdictions. Additional information about RBC GAM may be found at www.rbcgam.com.

This report is not intended to provide legal, accounting, tax, investment, financial or other advice and such information should not be relied upon for providing such advice. RBC GAM takes reasonable steps to provide up-to-date, accurate and reliable information, and believes the information to be so when printed. RBC GAM reserves the right at any time and without notice to change, amend or cease publication of the information.

Any investment and economic outlook information contained in this report has been compiled by RBC GAM from various sources. Information obtained from third parties is believed to be reliable, but no representation or warranty, express or implied, is made by RBC GAM, its affiliates or any other person as to its accuracy, completeness or correctness. RBC GAM and its affiliates assume no responsibility for any errors or omissions.

All opinions and estimates contained in this report constitute RBC GAM's judgment as of the indicated date of the information, are subject to change without notice and are provided in good faith but without legal responsibility. Interest rates and market conditions are subject to change.

A note on forward-looking statements

This report may contain forward-looking statements about future performance, strategies or prospects, and possible future action. The words "may," "could," "should," "would," "suspect," "outlook," "believe," "plan," "anticipate," "estimate," "expect," "intend," "forecast," "objective" and similar expressions are intended to identify forward-looking statements. Forward-looking statements are not guarantees of future performance. Forward-looking statements involve inherent risks and uncertainties about general economic factors, so it is possible that predictions, forecasts, projections and other forward-looking statements will not be achieved. We caution you not to place undue reliance on these statements as a number of important factors could cause actual events or results to differ materially from those expressed or implied in any forward-looking statement. These factors include, but are not limited to, general economic, political and market factors in Canada, the United States and internationally, interest and foreign exchange rates, global equity and capital markets, business competition, technological changes, changes in laws and regulations, judicial or regulatory judgments, legal proceedings and catastrophic events. The above list of important factors that may affect future results is not exhaustive. Before making any investment decisions, we encourage you to consider these and other factors carefully. All opinions contained in forward-looking statements are subject to change without notice and are provided in good faith but without legal responsibility.

RBC Global Asset Management

Publication date: November 6, 2019

EC (40/2019)