2020 Long-Term Capital Market Assumptions

Q2 update

Invesco Investment Solutions | South African Rand (ZAR)

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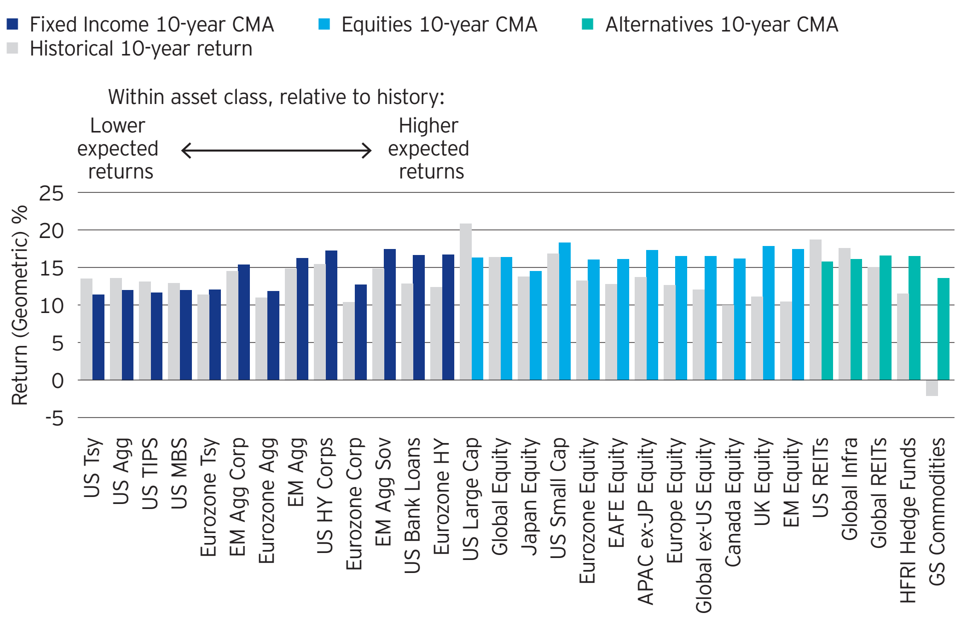
Executive Summary

+ **Strategic Perspective.** Many would argue that we are in, or on the verge of, the first global recession. Considering the magnitude of change over the past months, we have incorporated some fundamental adjustments to the regular systematic update of our return forecasts, which we believe will more accurately capture the current market dynamics. Specifically, we have embedded the expectation of a U-shaped recession as our "Base" case and provided Bull and Bear scenarios should our views change. As we've noted in prior perspectives, prudent asset allocation requires discipline, especially when markets are calm and diversification seems mundane. Recent events have only made the environment of high valuations, low yields, and high uncertainty even tougher to navigate as those trends have become more pronounced. This recession is unlikely to look exactly like those of the past and the next decade's returns are unlikely to be like those from the last **(Figure 1)**. Our strategic perspective is to maintain a focus on diversification in the face of increased volatility as scenarios rapidly evolve, accept reasonable levels of risk to fit their strategic outlook, and remain ready to tactically pivot as opportunities present themselves over the near term.
+ **Tactical View.** We believe this macro environment, a global contraction, warrants a defensive portfolio posture. While global market sentiment has stabilized over the past month, it remains in a downward trend, suggesting markets are still expecting downward revisions to global growth expectations. We investigate the potential paths forward for the global economy and the likely evolution of our macro regime framework over the next twelve months, conditional on the hypothetical evolution of the COVID-19 pandemic. For our Base case, we would expect sideways markets with alternating bouts of volatility. Investors may want to consider average risk exposure, overweighting credit assets through an underweight position in equities and government bonds.
+ **Global Market Outlook.** Considerable uncertainty surrounds the pandemic itself, the near-term economic outlook and longer-term trends that might affect potential economic growth in major economies and the world as a whole. Since the start of the pandemic, we have focused on three policy prongs – health, fiscal and monetary – that we expect to drive the shape of both the economic downturn and eventual recovery, as well as capital-market performance over tactical horizons. Wide-ranging macro scenarios and the associated uncertainties carry with them specific asset class implications. Even so, we expect a generally upward bias for risk assets given the massive central bank balance sheet expansion that seems likely to exceed fiscal deficits, encouraging private investors and intermediaries to extend out of perceived safe assets and diversify into risk assets both sector-wise and geographically.

Figure 1: Expectations relative to historical average (ZAR)



Source: Invesco, estimates as of March 31, 2020. Proxies listed in **Figure 12**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 16 for information about our CMA methodology. Please reference the CMA methodology paper for additional CMA information. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here.

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Asset Allocation Insights

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Strategic perspective

It took 11 years, but the longest lasting bull market on record has ended. Years from now, hindsight will probably tell us that the COVID-19 global outbreak was something we should have seen coming as soon as it left China's borders. We should have known that the economic shutdown in Wuhan was going to follow the virus wherever it went, and that the closing of the US and European economies, an unimaginable concept as recent as the prior edition of this quarterly publication, was all but inevitable. However, hindsight always affords much greater clarity about the past.

In reality, the outbreak took markets by surprise. Prior pandemics provided little guidance for what was to happen. The uncertainty of events and mitigation efforts never before experienced by investors resulted in some of the wildest and sharpest swings ever seen in history of financial markets. In fact, many would argue that we are in, or on the verge of, the first global recession. Given that backdrop, Invesco Investment Solutions will continue to develop risk-aware portfolios, drawing conclusions about what we expect to see in asset class performance in the months and years to come. Considering the magnitude of change over the past months, we have incorporated some fundamental adjustments to the regular systematic update of our return forecasts, which we believe will more accurately capture the current market dynamics. Specifically, we have embedded the expectation of a U-shaped recession as our "Base" case. We will discuss the impact of that view to asset class returns and the specific adjustments we made to our strategic building blocks and tactical regime framework in the following pages and sections.

While it is impossible to make predictions about COVID-19 related medical advancements, we focus our attention on possible scenarios pertaining to the duration of the pandemic, and how its impact on economic data and growth expectations may drive our investment process. A brief narrative of the three scenarios, Bull, Base, and Bear is illustrated in **Figure 2**. Our objective is not to identify the most likely scenario and position the portfolio accordingly for the next twelve months; rather, it is to evaluate the most likely range of market outcomes, their associated risks and investment implications.

Figure 2: Three hypothetical scenarios for how the pandemic may unfold

Bear scenario	Base scenario	Bull scenario
■ Prolonged **Contraction** regime (lasts full 12-15 mo. period) ■ **COVID-19** effects are more severe than anticipated, last through the fall, and economy struggles to re-open ■ Recurrence of viral outbreaks may cause global markets to drop further	■ **Recovery** begins in 3rd quarter with high volatility and sideways markets, with risk of fall back to **contraction**. ■ **COVID-19** peaks mid-April; however lack of vaccine risks fall outbreak and halting re-opening of economy ■ Snap-back in demand but growth remains weak, and fragile investor sentiment leads to varied recovery across industry/regions	■ Potential **Recovery** regime in second half of 2020, is sustained into 2021 ■ **COVID-19** positive news on a drop in cases and/or medical developments ■ Strong economic & market recovery in H2 fueled by return to work and lagged effects of stimulus

Source: For illustrative purposes only.

Our Base scenario begins with what we have already witnessed, a dramatic stoppage of economic activity that is faster and more pronounced than traditional indicators can capture and that continues with elevated levels of uncertainty until a rapid recovery later in the year. This is not a traditional recessionary period and the possibility of transitioning into either the Bull, due to medical developments, or Bear scenarios, from a second wave of outbreaks, remains highly uncertain. For this reason, we stand ready to provide Capital Market Assumptions (CMAs) for the other scenarios should our views change.

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Across fixed income and equities, the distinction between winners and losers will be dependent on the composition of future demand, strength of government and corporate balance sheets, and insulation of economic growth. Equities will likely face a reduction in real earnings growth over the next few years and have been adjusted downward based on each assets' underlying sectors. From studying prior recessions, we anticipate a contraction in earnings growth in the first year, a subsequent recovery by year three, and an eventual reversion to the long-term average growth rate by year five. Without these adjustments, most equity returns would have been meaningfully higher. Total yields have remained relatively unchanged in this process as the numerator, dividends and buybacks, were reduced commensurate with a reduction in the stock price in the denominator that resulted from lower earnings growth expectations. Within fixed income, our expectations reflect the reality that default rates are likely to be above average for the next four years. All adjustments are more exaggerated, to the upside and downside, should our views shift outside the Base case.

It may be surprising that equity returns did not shift markedly higher despite the sell-off. From a USD perspective, the US is one of the few countries with increased expected returns over the quarter after our adjustments due to more resilient earnings than what will likely be seen in non-US regions. US small caps have the added tailwind of extreme valuation discounts. Outside of the US, insulated economies like mainland China are likely to have stronger earnings growth in the coming years than developed markets (DM) and other emerging markets (EM) that are more heavily reliant on external sources of demand. Beyond the insulation, Chinese equities are overvalued relative to their EM peers, detracting from their expected return.

Within fixed income, credit-sensitive assets present some of the most interesting opportunities while rate sensitive assets are now much less attractive. Expected returns for global high yield bonds increased in excess of our default adjustment to account for steeper curves and wider credit spreads. Government bonds remain challenged due to historically low interest rates. As the rally in short rates was most pronounced in the US, the increased expected inflation in non-US developed markets, based on our Interest Rate Parity model, simultaneously reduced their currency tailwind[1].

Within alternatives, hedge funds remain attractive on a risk-adjusted basis and increased in expected return due to their exposure to assets like small cap and high yield. The potential for hedge funds to provide alpha beyond their exposures to traditional asset classes tends to be higher during times of greater return dispersion as we are experiencing today.

As we've noted in prior perspectives, prudent asset allocation requires discipline, especially when markets are calm and diversification seems mundane. Recent events have only made the environment of high valuations, low yields, and high uncertainty even tougher to navigate as those themes have become more pronounced. This recession is unlikely to look exactly like those of the past and the next decade's returns are unlikely to be like those from the last. Our strategic perspective is to maintain a focus on diversification in the face of increased volatility as scenarios rapidly evolve, accept reasonable levels of risk to fit their strategic outlook, and remain ready to tactically pivot as opportunities present themselves over the near term.

1 Of note, our currency CMA building block is based on Interest Rate Parity and is derived on a country by country basis. Currently, EM & Asia Pacific regions are estimated on the index level and do not employ a bottom-up country construction, and therefore do not include a currency building block. This is in development as a future enhancement to our CMA methodology and the omission is conservative due to present volatility in those regions

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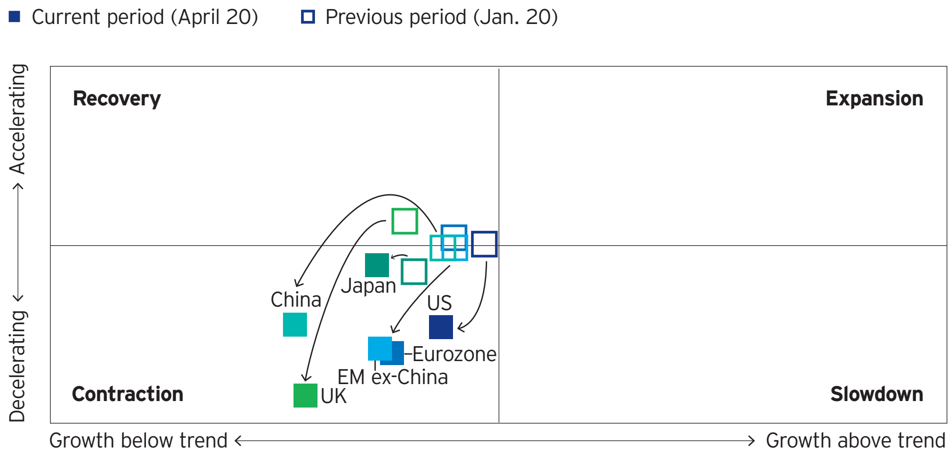
Tactical view

Our macro regime framework continues to signal that the global economy and all its major regions and countries are in a contraction regime, the bottom left quadrant of **Figure 3**. As widely expected, the economic data are beginning to reflect the disruption caused by quarantines and lockdowns, resulting in a significant deterioration in our leading economic indicators, which we expect to continue for some time. While global market sentiment has stabilized over the past month, it remains in a downward trend, suggesting markets are still expecting downward revisions to global growth expectations. As previously discussed in last quarter's CMA update, we believe this macro environment warrants a defensive portfolio posture. We have not made major changes to our asset allocation and continue to favor an overweight exposure in investment grade credit and defensive equity factors.

Figure 3: Leading Indicators are all thoroughly in contraction



Source: Invesco Investment Solutions proprietary research, April 30, 2020.

This quarter we investigate the potential paths forward for the global economy and the likely evolution of our macro regime framework over the next twelve months, conditional on the hypothetical evolution of the COVID-19 pandemic. Under the three scenarios, Bear, Base, and Bull, we expect our global framework to oscillate between a recovery and a contraction regime, given the economy today is in a below-trend environment. Next, we outline our tactical asset allocation, style, and factor views for each scenario, as summarized in **Figure 4**.

Bear scenario: We would expect broad-based risk aversion and outperformance of (relatively) defensive assets. In this case, investors may want to consider below average risk expressed via overweight exposures in long-duration government bonds and high-quality credit, favoring US dollar or US dollar-hedged assets given the potential for further US dollar appreciation. Other considerations include underweight riskier credit assets, especially emerging markets (EM) local currency and hard currency debt, or underweight equities, especially in emerging and developed markets ex-US. Within equities, we would favor growth over value, large caps over small caps, and defensive factors such as quality, low volatility and momentum.

Base scenario: We would expect sideways markets with alternating bouts of volatility. In this case, investors may want to consider average risk exposure, overweighting credit assets through an underweight position in equities and government bonds. Within fixed income, we would hold an overweight position through high-quality credit - such as investment grade corporate and muni debt - or a combination of riskier credit (i.e. high yield) and long-dated, longer duration government bonds, while reducing exposure in short and medium term government bond maturities. Within equities, we may favor US equities over developed ex-US and emerging markets, growth over value, large caps over small caps, and defensive factors such as quality and low volatility.

Bull scenario: We would expect broad-based outperformance in cyclical and risky asset classes. In this case, investors may want to consider an above average risk posture, expressed via overweight exposures to riskier credit assets and equities and underweight exposures to government bonds and high-quality credit. Within credit, we favor high yield, structured credit, EM hard currency and local currency debt with the expectation that US dollar depreciates. In equities, we may favor emerging markets and developed markets ex-US over US equities, and cyclical style and factor exposures, including a preference for value over growth, small caps over large caps, and underweight positions in factors at risk of short-term reversal effects such as low volatility and momentum.

Figure 4: Three hypothetical scenarios and Tactical Asset Allocation tilts

Overweight (+) **Neutral (=)** **Underweight (–)**

Asset Allocation tilts	Bear	Base	Bull
Equity	––	–	+
US	++	=	––
Developed ex-US	–	–	+
Emerging Markets	––	–	++
Risky Fixed Income (i.e. High Yield, Bank Loans, Structured Credit)	–	+	++
High Quality Fixed Income (i.e. Investment Grade Corporate, Muni Debt)	+	++	–
Government Bonds	++	–	––
Commodities	–	=	+

Factor / Style tilts	Bear	Base	Bull
Large	+	+	–
Small	––	–	++
Value	––	–	++
Growth	+	+	–
Momentum	+	=	––
Quality	++	+	=
Low volatility	++	+	––

Source: Invesco, estimates as of April 30, 2020. Asset Allocation tilts are relative to a static, Global 60/40 benchmark, represented by 60% MSCI ACWI Index and 40% BBG BARC Global Aggregate Bond Index. Factor/Style tilts are relative to the market-cap weighted benchmark. A "--" equals max underweight while a "++" equals max overweight. For illustrative purposes only. There is no guarantee these views will come to pass.

Our analysis is an over-simplification of what we think is likely to occur. There may be several unexpected developments, related or unrelated to COVID-19, which may affect these scenarios and the market response. Nonetheless, from our perspective this type of analysis provides a useful context to think about potential outcomes and design action plans given that, as we described in the past, asset prices tend to experience large and rapid adjustments at the inflection points of a cycle, i.e. during a recession and coming out of it.

Global Market Outlook

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Tracking the Pandemic and Road to Recovery

Considerable uncertainty surrounds the pandemic itself, the near-term economic outlook and longer-term trends that might affect potential economic growth in major economies and the world as a whole. Since the start of the pandemic, we have focused on three policy prongs – health, fiscal and monetary – that we expect to drive the shape of both the economic downturn and eventual recovery, as well as capital-market performance over tactical horizons.

Over longer-term strategic asset-allocation horizons, structural changes in national and global economic policies may well affect both economic and financial performance. Major crises in the past – such as the global financial crisis, the eurozone crisis or major emerging market (EM) currency, banking and debt crises have been followed by greater regulation and "self-insurance" in the form of higher household savings, less debt tolerance in some economies and greater official FX reserves, bank capital and liquidity buffers or regulation – at least for years, sometimes for decades after the crisis itself has passed.

Between the short-term uncertainty and potential medium- or longer-term structural changes in regulation or behavior, growth might be lower – as indeed it has been since the GFC. But it has also often proven more resilient, durable or differentiated. We, therefore, continue to believe that a deliberate approach to asset allocation and diversification will pay long-term dividends.

Disease Dynamics
Major uncertainties continue to surround COVID-19 itself including its infectiousness, the potential that people without symptoms can carry and spread the virus for long periods or that not all symptoms are known; concerns about the efficacy and enforcement of measures to control its spread; and how long it will take to develop effective treatment, cure or a vaccine – the earliest hope is put at 12-18 months, but no major, mass-use vaccine has been developed in less than four years. Furthermore, health policy may be less effective or rapid in some Western countries than in North Asia. Lockdowns came late, were uneven and incomplete. Testing rates vary widely across countries and regions; they remain very low relative to populations in almost every country; and are not random but are mostly aimed at establishing whether people with symptoms are, in fact, infected. Even fatality information is subject to some doubt. Some major economies are counting only hospital deaths of confirmed COVID-19 cases, whereas the run rate of deaths now exceeds multi-year averages in many countries.

As a result, we cannot be sure that infections or fatalities are or will continue to fall durably, though we believe the chances are good that epidemic curves are flattening, opening the door to partial releases in lockdowns and social distancing at least in many major DM economies. Against this good news, the pandemic is still accelerating in many major EM countries, which also have lockdowns of varying stringency, but in most cases lack the fiscal policy space available in the West, as well as the public health capacity for mass testing or high, rising numbers of critically ill patients.

These uncertainties and shortcomings raise the risk that premature releases in lockdowns or relaxation of social distancing could lead to a resurgence in infections and fatalities in Q3-Q4, or possibly even 2021. There is thus a significant risk of secondary infection waves, whether domestic or imported, as some countries in Asia first in and first out of the pandemic may now be experiencing, such as Singapore and Japan.

Linking Epidemics and Economies
The hard and soft data confirm that there is an unprecedented compression underway in both demand and supply as a result of the lockdowns in both major developed and emerging market economies. The worst of the economic compression was probably concentrated in Q1 for China, Korea and Japan, but the worst is unfolding even now in much of the rest of the world.

China, in particular, went into a severe lockdown in late January and began to emerge in April, experiencing -9.8%[2] GDP growth in Q1, on a YoY basis. Even as China's domestic demand is now recovering, external demand is likely to hold back China's recovery. Employment may also be constrained as services resume tentatively, and small- / medium-sized businesses recover more slowly than large industrial enterprises.

2 Source: Haver Analytics as of April 30, 2020

The impact began in Q1 for the West and EM but is likely to be concentrated in Q2 when severe double-digit declines in GDP are expected in many major economies. DM and EM major economies went into varying degrees of lockdown in February to March and are likely to emerge into partial release only in May-June. Given economic pressures and epidemiological uncertainty, imminent Western and EM lockdown releases seem likely to proceed, yet be partial and staggered – by sector, region and economy. The wide variation in testing rates and the timing and extent of lockdowns suggests that partial domestic or regional releases will precede the full opening of borders or restoration of full and free movement even within economically integrated regions like the eurozone, across some geographically large national economies such as the United States or India as well as borderlands, which are sometimes more integrated across national boundaries than they are with their respective national economies.

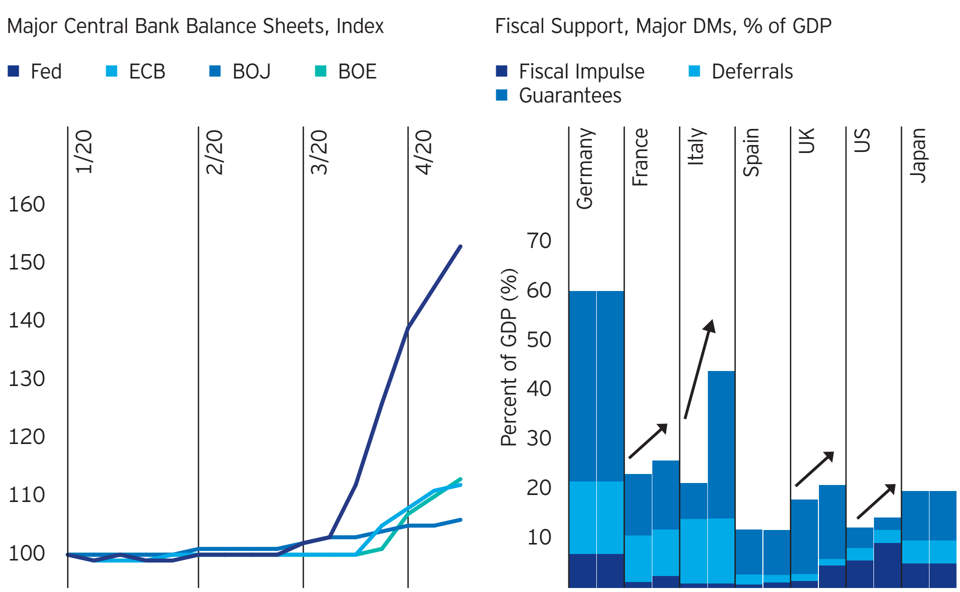
Such policy choices suggest that domestic demand may be released more rapidly and fully than the global economy as a whole, with important sectoral implications for trade, travel, tourism and other cross-border services. Local services in such sectors as hospitality, entertainment and leisure may be challenged by ongoing requirements or lingering consumer preferences for social distancing.

These factors will probably prevent a full-blown V-shaped recovery in major economies, which in turn will likely imply sustained high unemployment rates, low inflation and GDP growth continued easy monetary and financial conditions, and low bond yields. We believe these factors help to account for the bounce back and support for risk assets in sectors that benefit – such as technology and utilities, at the expense of cyclical, discretionary and durable goods sectors.

Fiscal and Monetary Policy Support

In response, there has been a massive dose of monetary policy support from major central banks, led by the Federal Reserve (Fed) as depicted in **Figure 5**. The central bank response should keep financial markets and systems liquid and fully functional, ensuring that major economies continue to operate as close to normal as possible during lockdowns, partial releases and any future lockdowns – unlike in a financial crisis.

Figure 5: Fed leads other major central banks in balance sheet expansion, while US leads in direct fiscal spending, Germany, Italy and UK in loan guarantees



Source: Invesco calculations as of April 30, 2020. Left-hand side chart data from Haver. Indices rebased to 100 as of Dec. 31, 2019. Right-hand side chart, Bruegel Datasets.

In addition, we have received a significant dose of fiscal support, over and above the automatic increase in budget deficits due to falling tax revenue/rising unemployment benefits – more than what was provided during the global financial crises. The size and composition of fiscal support vary widely by country. The US leads through direct income support because the US has by far the most flexible labor market among DMs, whereas Europe leads mainly through loan guarantees and deferrals rather than direct spending. We believe this country-specific design of fiscal support should help to sustain the solvency of households and many firms, helping to put a floor under private spending, laying the foundations for a broad-based recovery as the coronavirus is conquered.

Further fiscal support and continued monetary policy accommodation may be needed as the lockdowns and partial releases unfold. More traditional fiscal stimulus may also be required after the pandemic. There may well be complications in providing further fiscal support across the global economy: In the US, political differences between Republicans and Democrats about the role and size of the state may stand in the way. In the EZ, differences in the fiscal space of EZ member-states and reluctance to engage in cross-national burden-sharing may continue to limit the size of a coordinated and joint fiscal response. In EM, external financing challenges may limit the ability of some governments, parastatal and private firms and banks to refinance debt, let alone borrow fresh amounts. Nevertheless, we believe that the major DM and EM economies – especially the US, UK, Germany, France, Japan as well as China and to a lesser degree India should have the necessary policy space to support recovery over time.

Capital Markets and Base Currency Perspectives
Such wide-ranging macro scenarios and the associated uncertainties carry with them specific asset class implications. Even so, we expect a generally upward bias for risk assets given the massive central bank balance sheet expansion that seems likely to exceed fiscal deficits, encouraging private investors and intermediaries to extend out of perceived safe assets and diversify into risk assets both sector-wise and geographically. We note that most perceived safe-haven asset-class valuations are at or near extreme, historic lows, but risk-asset yields are higher. In addition, yields, for example, in Japan – which was among the first in and first out of the corona crisis (even allowing for a partial secondary wave and some risk of renewed lockdown), suggest that risk assets will recover as the worst of the pandemic passes. We expect similar capital markets behavior as Europe and the United States emerge gradually from their lockdowns.

We would, therefore, re-emphasize that the most valuable message of the global financial crisis is the centrality of maintaining or re-establishing long-term strategic objectives and associated long-term asset allocations in the face of severe market dislocations. Despite market volatility and dramatic weakening in the global economy, broad diversification and adequate exposure to risk assets over the long run has historically proven to be beneficial. Over the horizon, beyond the pandemic, we would expect the benefits of taking the long view and being broadly diversified to continue to come through. We believe so even granting that the near-term outlook for financial and economic performance will probably continue to be challenged by the pandemic and its aftermath in the coming years, as well as longer-term risks and challenges in the macroeconomic and structural business operating environment around the world.

We share widespread concerns about the large increases in government debt and deficits as well as central bank balance sheets. We also doubt that any free-lunch ideas, such as full monetization with no consequences (as per Modern Monetary Theory), will be perceived as sustainable. However, we do not expect a surge in inflation or inflation expectations in the foreseeable future, and therefore would not position portfolios for a surge in bond yields (which if sharp, could conceivably unseat risk assets and lead to a sizeable, sudden shift out of assets exposed to inflation like long-dated fixed income, many types of equity, real estate or alternatives into cash and gold).

We also acknowledge the important risks to our constructive view on higher-yielding risk assets and diversification more generally. These risks include the potential for a re-ignition of tariff wars between the US and China in response to the COVID-19 pandemic, efforts to divert supply chains and otherwise raise investment and trade barriers. We concur with the consensus that there may be major, far-reaching changes in both domestic and international economic systems. In particular, we would not be surprised by a reappraisal of the appropriate role of the state in requiring private or providing public health insurance; perhaps a wider definition of "national security" to include public health policies and capacity as well as a more national economy-focused orientation in other structural economic policies.

Last but not least, we acknowledge the risk of "financial repression" in which public sector balance sheets are repaired through indirect or hidden taxes on private returns on capital or private incomes, whether on households, firms or both. However, we note that modern episodes of financial repression – after World War II or during the Great Inflation of the 1960s-70s, both during the Bretton Woods era, were periods when real growth together with inflation were well above bond yields as in the pre-COVID, post-GFC era. But these episodes were also accompanied by strict cross-border capital controls that imposed heavy home bias on all resident financial investors (though not on corporates in developed economies), by fixed exchange rates to gold or the dollar, and in the 1970s by dollar flotation, instability and devaluation.

In contrast, today, in most major developed economies, there are no capital controls, and requirements to remain invested in specific countries or asset classes apply only partially to banks, insurers and pension funds – but not in general. Furthermore, almost all major developed economies today face a similar joint supply and demand shock – even if not completely simultaneous, nor comprehensive, which suggests that no one base currency is likely to see a major divergence from the other. The possible exception that proves this rule is the dollar, given its role in funding so much of global trade and investment, particularly via the capital markets. However, if the dollar were to surge again, we would expect the Fed to get back on the case and provide more dollar liquidity to offset associated domestic and global deflation risks.

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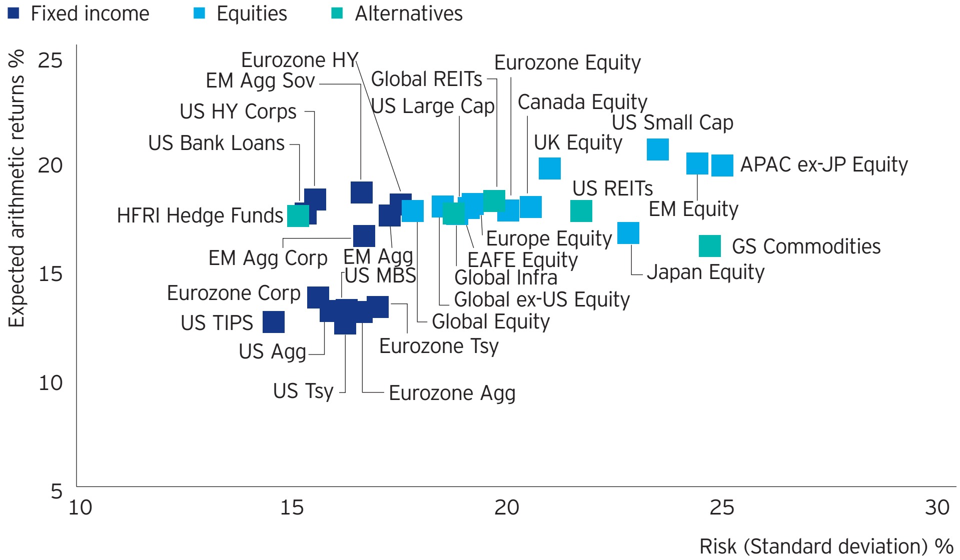
Figure 6: 10-year asset class expectations (ZAR)



Source: Invesco, estimates as of March 31, 2020. Proxies listed in **Figure 12**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 16 for information about our CMA methodology. Please reference the CMA methodology paper for additional CMA information. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here. **Performance, whether actual or simulated, does not guarantee future results.**

Figure 7: CMA difference: 5-year minus 10-year assumptions (ZAR)

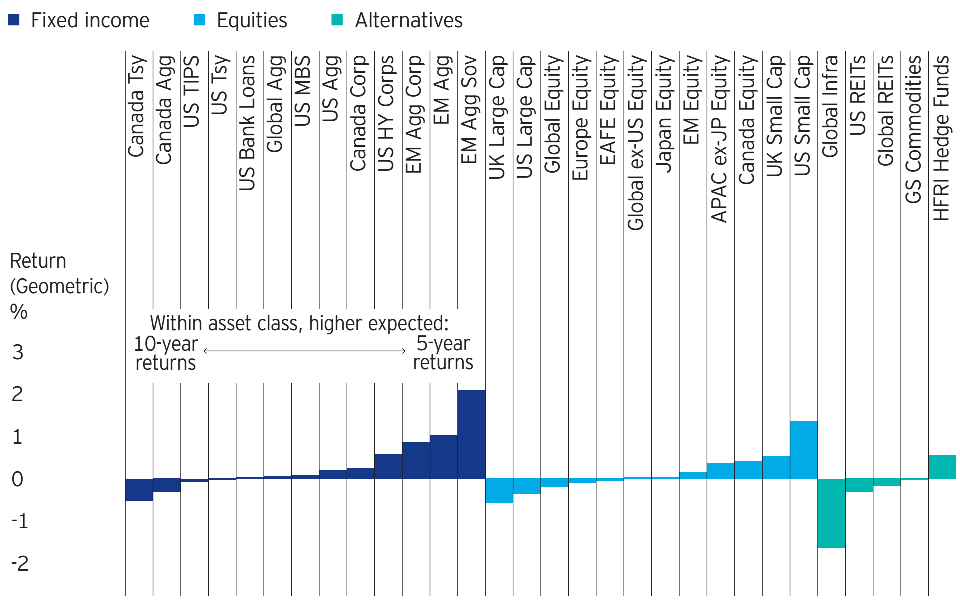


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Figure 8: Equity quarter-over-quarter change (ZAR)

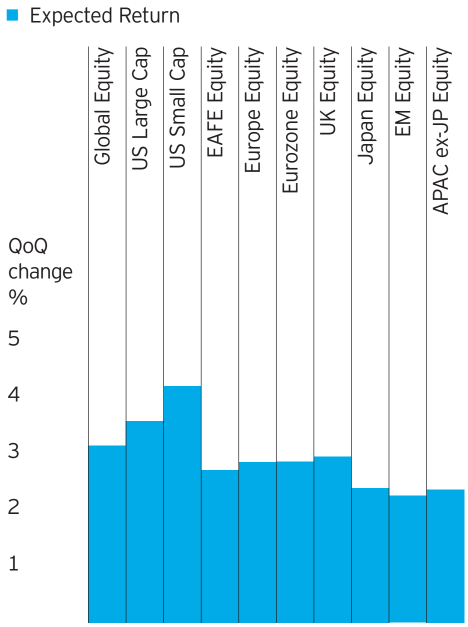

Figure 9: Fixed income quarter-over-quarter change (ZAR)

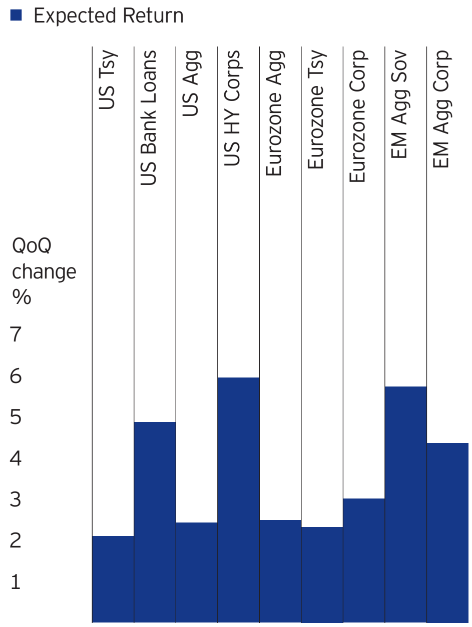

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Figure 10: Equity quarter-over-quarter change attribution (ZAR)

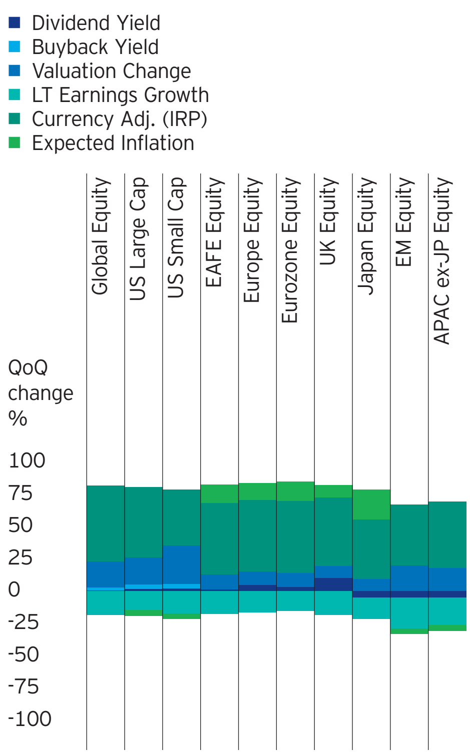

Figure 11: Fixed income quarter-over-quarter change attribution (ZAR)

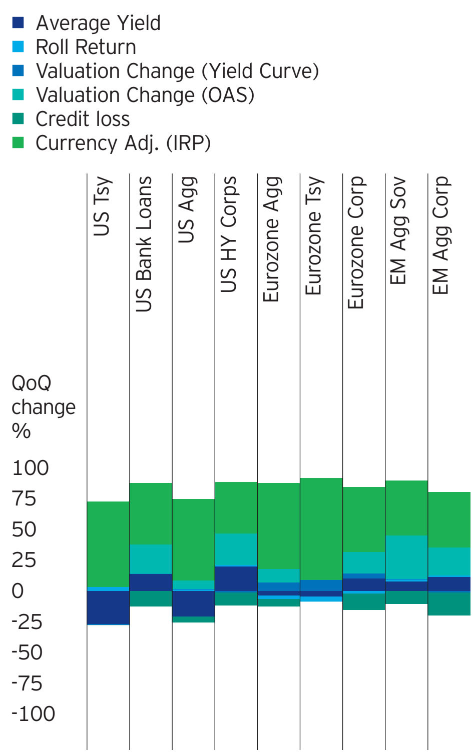

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Figure 12: 10-year asset class expected returns, risk, and return-to-risk (ZAR)

	Asset class	Index	Expected geometric return %	Expected arithmetic return %	Expected risk %	Arithmetic return to risk ratio
Fixed income	US Tsy Short	BBG BARC US Tsy Short	10.8	11.8	14.5	0.81
	US Tsy IM	BBG BARC US Tsy IM	11.0	12.1	15.7	0.77
	US Tsy Long	BBG BARC US Tsy Long	11.1	12.8	19.7	0.65
	US TIPS	BBG BARC US TIPS	11.6	12.6	14.6	0.86
	US Bank Loans	CSFB Leverage Loan	16.6	17.6	15.3	1.15
	US Agg	BBG BARC US Agg	12.0	13.1	15.9	0.82
	US IG Corp	BBG BARC US IG	13.4	14.5	15.8	0.92
	US MBS	BBG BARC US MBS	12.0	13.1	16.3	0.81
	US Preferred Stocks	BOA ML Fixed Rate Pref Securities	14.8	16.3	18.5	0.88
	US HY Corps	BBG BARC US HY	17.2	18.2	15.6	1.17
	UK Linker	BofA ML UK Inflation-Linked Gilt	10.3	11.2	14.3	0.79
	UK Gilts	BBG BARC Sterling Agg Gilts	11.1	12.1	14.9	0.81
	UK Corp	BBG BARC Sterling Agg Non-Gilts Corp	13.2	14.0	13.4	1.04
	Global Agg	BBG BARC Global Agg	12.1	13.2	15.9	0.83
	Global Agg ex-US	BBG BARC Global Agg ex-US	12.1	13.2	15.9	0.83
	Global Tsy	BBG BARC Global Tsy	11.8	13.0	16.5	0.79
	Global Sov	BBG BARC Global Sov	12.9	13.9	15.3	0.91
	Global Corp	BBG BARC Global Corp	13.2	14.2	14.6	0.97
	Global IG	BBG BARC Global Corp IG	13.3	14.2	14.8	0.96
	Eurozone Corp	BBG BARC Euro Agg Credit Corp	12.7	13.7	15.6	0.88
	Eurozone Tsy	BBG BARC Euro Agg Gov Tsy	12.0	13.3	17.0	0.78
	Asian Dollar IG	BOA ML AC IG	12.9	14.4	18.5	0.78
	EM Agg	BBG BARC EM Agg	16.2	17.5	17.3	1.01
	EM Agg Sov	BBG BARC EM Sov	17.4	18.6	16.6	1.12
	EM Agg Corp	BBG BARC EM Corp	15.4	16.5	16.7	0.99
	EM Agg IG	BBG BARC EM USD Agg IG	13.5	14.9	17.9	0.83
Equities	Global Equity	MSCI ACWI	16.4	17.7	17.8	0.99
	Global ex-US Equity	MSCI ACWI ex-US	16.5	17.9	18.5	0.97
	US Broad Market	Russell 3000	16.6	18.2	19.5	0.93
	US Large Cap	S&P 500	16.3	17.8	19.1	0.93
	US Mid Cap	Russell Midcap	17.2	19.0	20.7	0.92
	US Small Cap	Russell 2000	18.3	20.5	23.5	0.87
	EAFE Equity	MSCI EAFE	16.1	17.6	18.8	0.93
	Europe Equity	MSCI Europe	16.5	18.0	19.2	0.94
	Eurozone Equity	MSCI Euro ex-UK	16.0	17.7	20.0	0.88
	UK Large Cap	FTSE 100	17.5	19.2	20.7	0.93
	UK Small Cap	FTSE Small Cap UK	18.9	21.6	26.1	0.83
	Canada Equity	S&P TSX	16.1	17.9	20.6	0.87
	Japan Equity	MSCI JP	14.5	16.7	22.8	0.73
	EM Equity	MSCI EM	17.5	19.9	24.4	0.81
	APAC ex-JP Equity	MSCI APXJ	17.3	19.8	25.0	0.79
	Pacific ex-JP Equity	MSCI Pacific ex-JP	17.5	20.1	25.1	0.80
Alternatives	US REITs	FTSE NAREIT Equity	15.7	17.7	21.7	0.81
	Global REITs	FTSE EPRA/NAREIT Developed	16.5	18.1	19.7	0.92
	Global Infra	DJ Brookfield Global Infra Composite	16.1	17.6	18.8	0.94
	HFRI Hedge Funds	HFRI HF	16.5	17.5	15.1	1.15
	GS Commodities	S&P GSCI	13.5	16.1	24.7	0.65
	Agriculture	S&P GSCI Agriculture	9.3	11.6	23.2	0.50
	Energy	S&P GSCI Energy	15.7	21.2	38.0	0.56
	Industrial Metals	S&P GSCI Industrial Metals	13.2	15.6	23.7	0.66
	Precious Metals	S&P GSCI Precious Metals	11.9	13.7	20.0	0.68

Source: Invesco, estimates as of March 31, 2020. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 16 for information about our CMA methodology. Please reference the CMA methodology paper for additional CMA information. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here. Agg = Aggregate, Infra = Infrastructure, Corp = Corporate, DJ = Dow Jones, HY = High Yield, Muni = Municipals, Tsy = Treasury, IM = Intermediate, ML = Merrill Lynch, Sov = Sovereign, EM = Emerging Markets, IG = Investment Grade, APAC = Asia Pacific, Gov = Government, MBS = Mortgage Backed Securities, TIPS = Treasury Inflation Protected Securities.

Figure 13: 10-year correlations (ZAR)

- Greater than 0.70
- 0.30 to 0.70
- Less than 0.30

	Asset class	US Tsy Short	US Tsy IM	US Tsy Long	US TIPS	US Bank Loans	US Agg	US IG Corp	US MBS	US HY Corps	UK Linker	UK Gilts	UK Corp	Global Agg	Global Agg ex-US	Global Tsy	Global Sov	Global Corp	Global IG	Eurozone Corp	Eurozone Tsy	Asian Dollar IG	EM Agg	EM Agg Sov	EM Agg Corp	EM Agg IG
		Fixed income																								
Fixed income	US Tsy Short	1.00																								
	US Tsy IM	0.99	1.00																							
	US Tsy Long	0.85	0.91	1.00																						
	US TIPS	0.95	0.97	0.91	1.00																					
	US Bank Loans	0.90	0.86	0.70	0.88	1.00																				
	US Agg	0.98	0.99	0.92	0.98	0.89	1.00																			
	US IG Corp	0.94	0.95	0.90	0.97	0.91	0.98	1.00																		
	US MBS	0.99	1.00	0.90	0.97	0.88	1.00	0.96	1.00																	
	US Preferred Stocks	0.78	0.78	0.69	0.78	0.76	0.80	0.83	0.78																	
	US HY Corps	0.83	0.79	0.65	0.84	0.94	0.83	0.89	0.82	1.00																
	UK Linker	0.80	0.81	0.76	0.86	0.82	0.83	0.85	0.81	0.80	1.00															
	UK Gilts	0.87	0.88	0.83	0.89	0.81	0.89	0.88	0.88	0.77	0.93	1.00														
	UK Corp	0.76	0.76	0.66	0.80	0.83	0.79	0.83	0.77	0.82	0.90	0.93	1.00													
	Global Agg	0.95	0.97	0.90	0.97	0.86	0.98	0.96	0.97	0.82	0.86	0.92	0.83	1.00												
	Global Agg ex-US	0.89	0.92	0.85	0.92	0.80	0.92	0.91	0.91	0.78	0.86	0.91	0.83	0.98	1.00											
	Global Tsy	0.93	0.96	0.91	0.95	0.81	0.96	0.94	0.95	0.77	0.85	0.91	0.80	1.00	0.99	1.00										
	Global Sov	0.92	0.94	0.88	0.96	0.88	0.96	0.97	0.94	0.87	0.88	0.90	0.85	0.98	0.96	0.96	1.00									
	Global Corp	0.93	0.94	0.86	0.96	0.91	0.96	0.98	0.94	0.89	0.89	0.92	0.89	0.98	0.96	0.96	0.99	1.00								
	Global IG	0.92	0.93	0.86	0.95	0.91	0.95	0.98	0.93	0.89	0.89	0.92	0.89	0.97	0.95	0.95	0.98	1.00	1.00							
	Eurozone Corp	0.78	0.79	0.69	0.82	0.76	0.80	0.83	0.79	0.77	0.82	0.85	0.86	0.89	0.93	0.88	0.90	0.92	0.92	1.00						
	Eurozone Tsy	0.82	0.84	0.77	0.84	0.73	0.85	0.84	0.83	0.72	0.82	0.87	0.81	0.92	0.96	0.93	0.92	0.91	0.92	0.97	1.00					
	Asian Dollar IG	0.95	0.96	0.89	0.98	0.92	0.98	0.98	0.97	0.88	0.86	0.89	0.83	0.96	0.91	0.93	0.97	0.97	0.97	0.83	0.85	1.00				
	EM Agg	0.84	0.84	0.77	0.89	0.89	0.88	0.93	0.86	0.92	0.82	0.80	0.81	0.87	0.84	0.84	0.93	0.92	0.93	0.81	0.79	0.94	1.00			
	EM Agg Sov	0.83	0.84	0.78	0.89	0.88	0.87	0.92	0.85	0.90	0.82	0.80	0.81	0.87	0.84	0.84	0.93	0.92	0.92	0.80	0.79	0.92	0.99	1.00		
	EM Agg Corp	0.81	0.81	0.73	0.88	0.89	0.85	0.91	0.83	0.92	0.82	0.80	0.81	0.85	0.82	0.81	0.91	0.92	0.92	0.82	0.79	0.93	0.98	0.95	1.00	
	EM Agg IG	0.90	0.91	0.86	0.95	0.90	0.94	0.97	0.92	0.91	0.86	0.86	0.83	0.93	0.89	0.91	0.98	0.97	0.97	0.84	0.84	0.98	0.97	0.97	0.96	1.00
Equities	Global Equity	0.52	0.47	0.31	0.51	0.67	0.50	0.57	0.50	0.76	0.57	0.54	0.68	0.53	0.53	0.49	0.61	0.63	0.64	0.64	0.55	0.57	0.68	0.66	0.69	0.63
	Global ex-US Equity	0.42	0.37	0.22	0.43	0.58	0.40	0.49	0.39	0.69	0.52	0.48	0.66	0.46	0.48	0.42	0.54	0.56	0.57	0.63	0.52	0.48	0.62	0.60	0.63	0.56
	US Broad Market	0.58	0.52	0.35	0.55	0.71	0.54	0.60	0.54	0.78	0.56	0.54	0.66	0.55	0.53	0.50	0.62	0.63	0.64	0.60	0.53	0.60	0.68	0.66	0.68	0.64
	US Large Cap	0.60	0.55	0.38	0.57	0.72	0.57	0.62	0.57	0.78	0.57	0.56	0.67	0.58	0.56	0.53	0.64	0.66	0.66	0.62	0.55	0.62	0.70	0.68	0.70	0.66
	US Mid Cap	0.47	0.41	0.26	0.47	0.66	0.45	0.53	0.44	0.74	0.50	0.46	0.60	0.46	0.44	0.41	0.54	0.56	0.57	0.54	0.45	0.52	0.64	0.62	0.64	0.58
	US Small Cap	0.39	0.33	0.16	0.36	0.57	0.35	0.42	0.35	0.65	0.40	0.37	0.51	0.36	0.34	0.31	0.43	0.45	0.46	0.43	0.35	0.42	0.53	0.51	0.51	0.47
	EAFE Equity	0.47	0.42	0.27	0.46	0.61	0.45	0.52	0.44	0.71	0.56	0.52	0.69	0.50	0.52	0.46	0.58	0.60	0.61	0.66	0.56	0.52	0.64	0.62	0.64	0.58
	Europe Equity	0.42	0.37	0.21	0.41	0.57	0.40	0.47	0.39	0.67	0.53	0.49	0.66	0.46	0.48	0.41	0.53	0.56	0.57	0.64	0.54	0.47	0.59	0.58	0.60	0.54
	Eurozone Equity	0.38	0.33	0.19	0.38	0.52	0.37	0.44	0.36	0.63	0.49	0.45	0.61	0.43	0.46	0.39	0.51	0.52	0.53	0.62	0.53	0.43	0.57	0.55	0.57	0.51
	UK Large Cap	0.46	0.40	0.23	0.45	0.62	0.43	0.51	0.43	0.69	0.57	0.54	0.71	0.48	0.49	0.43	0.54	0.58	0.59	0.62	0.52	0.50	0.61	0.60	0.61	0.56
	UK Small Cap	0.34	0.28	0.12	0.34	0.57	0.32	0.42	0.31	0.66	0.49	0.45	0.67	0.36	0.39	0.32	0.44	0.49	0.50	0.53	0.41	0.41	0.54	0.52	0.56	0.47
	Canada Equity	0.31	0.26	0.14	0.35	0.52	0.30	0.40	0.29	0.62	0.43	0.36	0.53	0.35	0.36	0.31	0.43	0.46	0.47	0.48	0.37	0.40	0.55	0.53	0.56	0.47
	Japan Equity	0.57	0.53	0.41	0.55	0.63	0.55	0.59	0.55	0.66	0.55	0.54	0.64	0.56	0.54	0.53	0.60	0.62	0.62	0.56	0.52	0.58	0.61	0.59	0.64	0.60
	EM Equity	0.19	0.15	0.05	0.23	0.37	0.19	0.28	0.18	0.51	0.32	0.26	0.44	0.24	0.27	0.21	0.33	0.35	0.36	0.42	0.31	0.28	0.46	0.44	0.44	0.37
	APAC ex-JP Equity	0.31	0.28	0.18	0.34	0.45	0.31	0.39	0.30	0.58	0.39	0.36	0.51	0.35	0.37	0.32	0.43	0.45	0.46	0.48	0.39	0.39	0.52	0.50	0.52	0.46
	Pacific ex-JP Equity	0.25	0.21	0.12	0.30	0.44	0.26	0.36	0.24	0.56	0.38	0.33	0.53	0.31	0.34	0.28	0.41	0.43	0.44	0.49	0.38	0.36	0.52	0.50	0.51	0.44
Alternatives	US REITs	0.38	0.37	0.35	0.45	0.54	0.42	0.49	0.39	0.63	0.50	0.44	0.52	0.43	0.43	0.41	0.52	0.51	0.52	0.47	0.43	0.48	0.57	0.57	0.55	0.55
	Global REITs	0.37	0.35	0.32	0.45	0.57	0.41	0.51	0.38	0.67	0.54	0.48	0.62	0.45	0.46	0.42	0.55	0.56	0.57	0.55	0.48	0.50	0.62	0.62	0.60	0.58
	Global Infra	0.62	0.61	0.54	0.68	0.76	0.65	0.72	0.62	0.81	0.73	0.68	0.76	0.68	0.69	0.65	0.75	0.76	0.76	0.73	0.68	0.71	0.78	0.79	0.75	0.76
	HFRI Hedge Funds	0.94	0.91	0.74	0.90	0.95	0.92	0.92	0.92	0.92	0.81	0.84	0.84	0.90	0.85	0.86	0.91	0.93	0.93	0.81	0.79	0.92	0.89	0.88	0.88	0.91
	GS Commodities	0.32	0.27	0.11	0.35	0.50	0.29	0.35	0.29	0.49	0.43	0.36	0.49	0.34	0.36	0.30	0.39	0.42	0.42	0.47	0.37	0.36	0.43	0.41	0.45	0.38
	Agriculture	0.47	0.47	0.36	0.48	0.45	0.46	0.47	0.46	0.46	0.45	0.45	0.44	0.50	0.52	0.50	0.50	0.51	0.50	0.51	0.49	0.48	0.47	0.45	0.47	0.48
	Energy	0.16	0.11	-0.04	0.19	0.37	0.13	0.20	0.12	0.37	0.30	0.21	0.37	0.17	0.20	0.14	0.23	0.26	0.26	0.32	0.21	0.20	0.29	0.28	0.31	0.23
	Industrial Metals	0.40	0.36	0.21	0.41	0.49	0.37	0.40	0.37	0.51	0.42	0.40	0.46	0.42	0.44	0.40	0.44	0.46	0.46	0.51	0.44	0.43	0.47	0.44	0.47	0.43
	Precious Metals	0.57	0.61	0.60	0.65	0.49	0.61	0.60	0.60	0.48	0.58	0.61	0.53	0.66	0.67	0.67	0.64	0.63	0.62	0.59	0.61	0.62	0.59	0.59	0.59	0.61

Source: Invesco, estimates as of March 31, 2020. Proxies listed in **Figure 12**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 16 for information about our CMA methodology. Please reference the CMA methodology paper for additional CMA information. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here.

Figure 13: 10-year correlations (ZAR)

- Greater than 0.70
- 0.30 to 0.70
- Less than 0.30

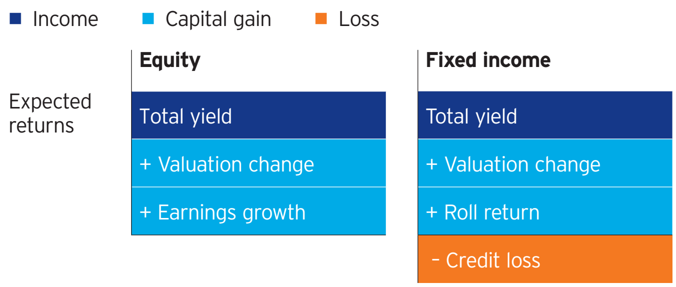
		Equities																Alternatives								
	Asset class	Global Equity	Global ex-US Equity	US Broad Market	US Large Cap	US Mid Cap	US Small Cap	EAFE Equity	Europe Equity	Eurozone Equity	UK Large Cap	UK Small Cap	Canada Equity	Japan Equity	EM Equity	APAC ex-JP Equity	Pacific ex-JP Equity	US REITs	Global REITs	Global Infra	HFRI Hedge Funds	GS Commodities	Agriculture	Energy	Industrial Metals	Precious Metals
Fixed income	US Tsy Short																									
	US Tsy IM																									
	US Tsy Long																									
	US TIPS																									
	US Bank Loans																									
	US Agg																									
	US IG Corp																									
	US MBS																									
	US Preferred Stocks																									
	US HY Corps																									
	UK Linker																									
	UK Gilts																									
	UK Corp																									
	Global Agg																									
	Global Agg ex-US																									
	Global Tsy																									
	Global Sov																									
	Global Corp																									
	Global IG																									
	Eurozone Corp																									
	Eurozone Tsy																									
	Asian Dollar IG																									
	EM Agg																									
	EM Agg Sov																									
	EM Agg Corp																									
	EM Agg IG																									
Equities	Global Equity	1.00																								
	Global ex-US Equity	0.97	1.00																							
	US Broad Market	0.97	0.87	1.00																						
	US Large Cap	0.97	0.87	1.00	1.00																					
	US Mid Cap	0.94	0.87	0.97	0.95	1.00																				
	US Small Cap	0.86	0.79	0.91	0.88	0.95	1.00																			
	EAFE Equity	0.96	0.99	0.88	0.88	0.86	0.78	1.00																		
	Europe Equity	0.94	0.97	0.85	0.86	0.84	0.76	0.98	1.00																	
	Eurozone Equity	0.93	0.96	0.83	0.83	0.82	0.74	0.97	0.99	1.00																
	UK Large Cap	0.92	0.93	0.84	0.84	0.83	0.74	0.94	0.95	0.90	1.00															
	UK Small Cap	0.84	0.87	0.76	0.75	0.80	0.74	0.86	0.86	0.83	0.86	1.00														
	Canada Equity	0.83	0.83	0.78	0.76	0.82	0.76	0.78	0.76	0.73	0.79	0.75	1.00													
	Japan Equity	0.77	0.76	0.72	0.73	0.68	0.61	0.79	0.68	0.66	0.67	0.65	0.55	1.00												
	EM Equity	0.80	0.87	0.68	0.67	0.71	0.65	0.79	0.77	0.77	0.72	0.73	0.77	0.55	1.00											
	APAC ex-JP Equity	0.81	0.86	0.71	0.70	0.71	0.66	0.79	0.76	0.76	0.72	0.73	0.71	0.60	0.96	1.00										
	Pacific ex-JP Equity	0.83	0.88	0.74	0.72	0.77	0.71	0.84	0.81	0.79	0.79	0.77	0.79	0.57	0.86	0.85	1.00									
Alternatives	US REITs	0.66	0.61	0.68	0.67	0.73	0.68	0.61	0.60	0.59	0.56	0.56	0.55	0.48	0.46	0.48	0.57	1.00								
	Global REITs	0.78	0.77	0.75	0.73	0.80	0.73	0.76	0.74	0.72	0.71	0.73	0.69	0.59	0.64	0.65	0.77	0.92	1.00							
	Global Infra	0.82	0.78	0.80	0.81	0.78	0.65	0.79	0.76	0.73	0.78	0.67	0.72	0.65	0.59	0.62	0.68	0.69	0.79	1.00						
	HFRI Hedge Funds	0.77	0.69	0.80	0.80	0.75	0.67	0.71	0.66	0.62	0.70	0.63	0.62	0.71	0.48	0.56	0.55	0.54	0.61	0.80	1.00					
	GS Commodities	0.54	0.56	0.50	0.49	0.54	0.48	0.53	0.52	0.47	0.60	0.55	0.66	0.40	0.46	0.42	0.50	0.29	0.42	0.54	0.53	1.00				
	Agriculture	0.38	0.37	0.36	0.37	0.33	0.26	0.37	0.35	0.34	0.37	0.31	0.35	0.31	0.29	0.31	0.34	0.27	0.32	0.37	0.48	0.39	1.00			
	Energy	0.45	0.47	0.41	0.40	0.47	0.44	0.45	0.45	0.40	0.53	0.49	0.60	0.31	0.40	0.34	0.44	0.23	0.35	0.46	0.41	0.97	0.20	1.00		
	Industrial Metals	0.57	0.57	0.52	0.52	0.52	0.46	0.54	0.52	0.49	0.56	0.52	0.61	0.40	0.54	0.54	0.56	0.37	0.46	0.44	0.53	0.53	0.38	0.40	1.00	
	Precious Metals	0.29	0.29	0.27	0.28	0.23	0.15	0.28	0.25	0.22	0.27	0.20	0.34	0.30	0.24	0.27	0.23	0.24	0.26	0.40	0.55	0.30	0.42	0.16	0.43	1.00

Source: Invesco, estimates as of March 31, 2020. Proxies listed in **Figure 12**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 16 for information about our CMA methodology. Please reference the CMA methodology paper for additional CMA information. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here.

About our capital market assumptions methodology

We employ a fundamentally based "building block" approach to estimating asset class returns. Estimates for income and capital gain components of returns for each asset class are informed by fundamental and historical data. Components are then combined to establish estimated returns (Figure 14). Here we provide a summary of key elements of the methodology used to produce our long-term (10-year) estimates. Five-year assumptions are also available upon request. Please see Invesco's capital market assumption methodology whitepaper for more detail.

Figure 14: Our building block approach to estimating returns



For illustrative purposes only.

Fixed income returns are composed of:

+ **Average yield:** The average of the starting (initial) yield and the expected yield for bonds.
+ **Valuation change (yield curve):** Estimated changes in valuation given changes in the Treasury yield curve.
+ **Roll return:** Reflects the impact on the price of bonds that are held over time. Given a positively sloped yield curve, a bond's price will be positively impacted as interest payments remain fixed but time to maturity decreases.
+ **Credit adjustment:** Estimated potential impact on returns from credit rating downgrades and defaults.

Equity returns are composed of:

+ **Dividend yield:** Dividend per share divided by price per share.
+ **Buyback yield:** Percentage change in shares outstanding resulting from companies buying back or issuing shares.
+ **Valuation change:** The expected change in value given the current Price/Earnings (P/E) ratio and the assumption of reversion to the long-term average P/E ratio.
+ **Long-term (LT) earnings growth:** The estimated rate in the growth of earning based on the long-term average real GDP per capita and inflation.

Currency adjustments are based on the theory of Interest Rate Parity (IRP) which suggests a strong relationship between interest rates and the spot and forward exchange rates between two given currencies. Interest rate parity theory assumes that no arbitrage opportunities exist in foreign exchange markets. It is based on the notion that, over the long term, investors will be indifferent between varying rate of returns on deposits in different currencies because any excess return on deposits will be offset by changes in the relative value of currencies.

Volatility estimates for the different asset classes, we use rolling historical quarterly returns of various market benchmarks. Given that benchmarks have differing histories within and across asset classes, we normalise the volatility estimates of shorter-lived benchmarks to ensure that all series are measured over similar time periods.

Correlation estimates are calculated using trailing 20 years of monthly returns. Given that recent asset class correlations could have a more meaningful effect on future observations, we place greater weight on more recent observations by applying a 10-year half-life to the time series in our calculation.

Arithmetic versus geometric returns. Our building block methodology produces estimates of geometric (compound) asset class returns. However, standard mean-variance portfolio optimisation requires return inputs to be provided in arithmetic rather than in geometric terms. This is because the arithmetic mean of a weighted sum (e.g., a portfolio) is the weighted sum of the arithmetic means (of portfolio constituents). This does not hold for geometric returns. Accordingly, we translate geometric estimates into arithmetic terms. We provide both arithmetic returns and geometric returns given that the former informs the optimisation process regarding expected outcomes, while the latter informs the investor about the rate at which asset classes might be expected to grow wealth over the long run.

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Invesco Investment Solutions

Invesco Investment Solutions is an experienced multi-asset team that seeks to deliver desired client outcomes using Invesco's global capabilities, scale and infrastructure. We partner with you to fully understand your goals and harness strategies across Invesco's global spectrum of active, passive, factor and alternative investments that address your unique needs. From robust research and analysis to bespoke investment solutions, our team brings insight and innovation to your portfolio construction process. Our approach starts with a complete understanding of your needs:

+ We help support better investment outcomes by delivering insightful and thorough analytics.
+ By putting analytics into practice, we develop investment approaches specific to your needs.
+ We work as an extension of your team to engage across functions and implement solutions.

The foundation of the team's process is the development of capital market assumptions — long-term forecasts for the behavior of different asset classes. Their expectations for returns, volatility, and correlation serve as guidelines for long-term, strategic asset allocation decisions.

Assisting clients in North America, Europe and Asia, Invesco's Investment Solutions team consists of over 60 professionals, with 15+ years of experience across the leadership team. The team benefits from Invesco's on-the-ground presence in more than 20 countries worldwide, with over 150 professionals to support investment selection and ongoing monitoring.

About the Invesco Global Market Strategist office

The GMS office is comprised of investment professionals based in different regions, with different areas of expertise. It provides data and commentary on global markets, offering insights into key trends and themes and their investment implications.

Investment risks

The value of investments and any income will fluctuate (this may partly be the result of exchange rate fluctuations) and investors may not get back the full amount invested.

Invesco Investment Solutions develops CMAs that provide long-term estimates for the behavior of major asset classes globally. The team is dedicated to designing outcome-oriented, multi-asset portfolios that meet the specific goals of investors. The assumptions, which are based on 5- and 10-year investment time horizons, are intended to guide these strategic asset class allocations. For each selected asset class, we develop assumptions for estimated return, estimated standard deviation of return (volatility), and estimated correlation with other asset classes. This information is not intended as a recommendation to invest in a specific asset class or strategy, or as a promise of future performance. Estimated returns are subject to uncertainty and error, and can be conditional on economic scenarios. In the event a particular scenario comes to pass, actual returns could be significantly higher or lower than these estimates.

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Further information is available using the contact details shown overleaf.

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