2020 Long-Term Capital Market Assumptions

Q3 update

Invesco Investment Solutions | Japanese yen (JPY)

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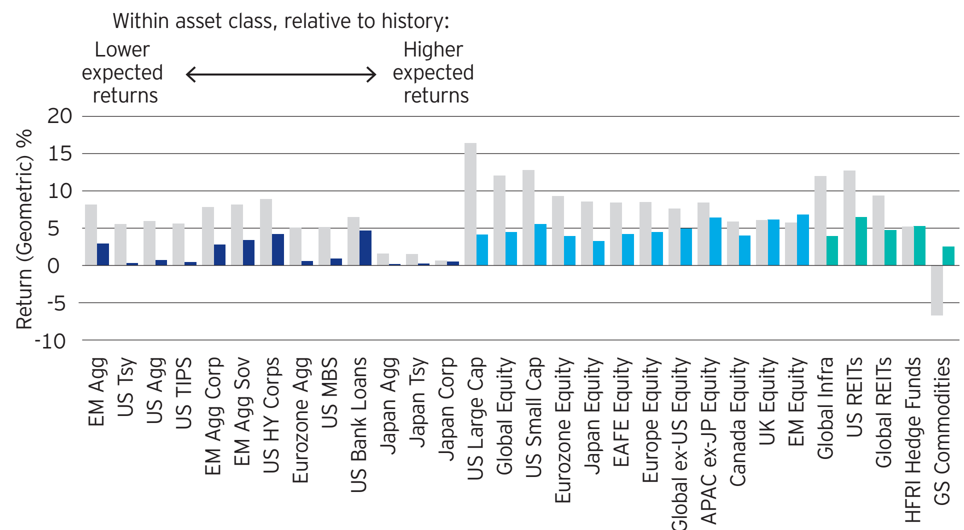
Executive Summary

+ **Strategic Perspective.** It is difficult to imagine that only three months ago we were writing about riding out the first global recession, record levels of unemployment and declines in earnings not seen during any of our lifetimes. This historic decline was followed by historic policy action and subsequently a historic recovery. From the Solutions Team's strategic perspective on asset allocation, we remain in our Base case scenario introduced last quarter and we feel the market has largely priced in a picture-perfect COVID and economic recovery, with the worst largely behind us. For the most part, the COVID charts we've been following are all still pointing up. In alphabetical terms, we would classify the recovery in the market and economy as squarely in the "V" territory, while the virus is still looking like a "U" (inverted) or maybe a cursive "W" if we want to get creative. Not unlike how we started the year, two long quarters ago, investors are faced with low returns for stocks and bonds, full valuations and political uncertainty **(Figure1)**.
+ **Tactical View.** Based on our macro regime framework, we expect the global business cycle to remain in a recovery regime, with growth below trend and expected to improve over the next few months. Meaningful, timely economic policy developments in Europe contributed to boost market sentiment, but the favorable cyclical outlook is threatened by a sputtering fiscal impulse in the US and potential for second waves of the virus and lockdowns. We maintain a higher risk posture than our benchmark[1] in our Global Tactical Allocation model, sourced through an overweight to equities, tilting towards (small) size and value stocks, and credit, while underweighting government bonds outside the US.
+ **Global Market Outlook.** The cyclical global macroeconomic and capital markets outlook are critically dependent on the path of the pandemic and public health, monetary and fiscal policies. The longer-term outlook in turn depends both on how the pandemic, the cyclical recovery and structural reform of the international system and national economies all evolve. Both are uncertain, but both our short- and long-term views argue for diversification – not home bias, and a mix of risk-seeking and perceived safe assets in strategic asset allocation and tactical portfolio construction. The prospect of greater variety and variability in both national and corporate income, in diverging discount rates and in returns from greater friction in the international economy calls for active selection of countries, currencies, asset classes in the longer term.

Figure 1: Expectations relative to historical average (JPY)



Source: Invesco, estimates as of June 30, 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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1 Global 60/40 benchmark (60% MSCI ACWI / 40% Bloomberg Barclays Global Agg USD Hedged).

Asset Allocation Insights

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Strategic perspective

It is difficult to imagine that only three months ago we were writing about riding out the first global recession, record levels of unemployment and declines in earnings not seen during any of our lifetimes. While it may have felt like the last quarter lasted much longer than a quarter, with us all stuck at home with limited distractions, it is still remarkable to take stock of what has changed during that short time period. Record unemployment and potential demand destruction has been whitewashed over by an avalanche of fiscal stimulus. Concerns over markets locking up due to liquidity demands have largely been alleviated through loosening monetary policy and direct intervention in markets that needed it most. Lastly, let's not forget the support to main street via financing and other aid to businesses, troubled or not, helping them to weather the storm and be ready to reopen when conditions allowed. Taken in isolation, someone looking at those factors could easily see how markets could have recovered the way they have this quarter, but it was certainly not evident to most at the time. Add to that the level of technological innovation many of us have witnessed during this time period, with working from home and near-instant delivery of goods now options for many individuals, and some of today's lofty asset prices start to make sense; historic loss followed by historic rebound, supported by quick policy action and further hopes of innovation on the medical front.

The confounding detail that is at odds with this recovery, of course, is COVID-19 and its continuing impact on the world. At this time, we are still seeing the virus rapidly spread in many regions along with resurgence and reclosure in areas where there was thought to be containment. For the most part, the COVID charts we've been following are all still pointing up. In alphabetical terms, we would classify the recovery in the market and economy as squarely in the "V" territory, while the virus is still looking like a "U" (inverted) or maybe a cursive "W" if we want to get creative.

Amid this uncertainty we are privileged to share our 3Q 2020 Capital Markets Assumptions with our clients and colleagues. From the Solutions Team's strategic perspective on asset allocation, we remain in our Base case scenario introduced last quarter and we feel the market has largely priced in a picture-perfect COVID and economic recovery, with the worst largely behind us. In the short-term, given the level of stimulus from around the globe, this may be broadly within reach. Even if that proves to be the case, the multi-trillion-dollar bill for this stimulus will eventually come due, and we expect there will be winners and losers along the way, precisely the reason for our long-term look on a broad set of assets globally.

Figure 2: Three hypothetical scenarios for how the pandemic may unfold – we remain in the Base case

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.

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CMA observations:
Not unlike how we started the year, two long quarters ago, investors are faced with low returns, full valuations and political uncertainty. A global 60/40[1] portfolio has seen its expected 10-year returns fall by almost 1% year-to-date, to 3.7% annualized, and worse is expected for its US counterpart. This is the lowest expected return since we started tracking the data in early 2000. Both equity and fixed income assets are likely to experience headwinds over the coming decade which makes the job of an investor increasingly challenging. As such, Alternatives like Hedge Funds, Commodities, and Private Market assets are increasingly finding their way into discussions to help achieve return targets and diversify risks.

Nearly all **Developed Market equities** saw a decrease in return assumptions quarter-over-quarter, lead by higher valuations and lower yields. Growth expectations recovered somewhat as we look past the damage done over the past few quarters and forward to a recovery. Our expectations around return to peak earnings are still in the U-shaped recovery camp. The base case scenario captured most of the downward revisions to earnings and we expect they will return to peak in late '21 or early '22.

Emerging Market equities return assumptions are broadly higher, largely driven by a quicker return to growth than previously modeled, especially in economies with ties to China. Valuations moved up with higher growth expectations but are still close to fair value and not overly expensive. Yields also appear to have stabilized.

Within **Fixed Income**, the largest quarter-over-quarter decreases in return expectation were centered on spread-sensitive assets such as corporate bonds, emerging market bonds and bank loans. Default probabilities remain above their long-term average. High yield bonds, specifically, saw the largest decrease in return expectations after a swift recovery and tightening spreads in the second quarter. Hong Kong Dollar bonds and US Long Treasuries were some of the few other assets that saw an increase in returns, given a slightly steepening curve.

1 Global 60/40 represented by 60% MSCI ACWI Index and 40% BBG BARC Global Aggregate Bond Index.

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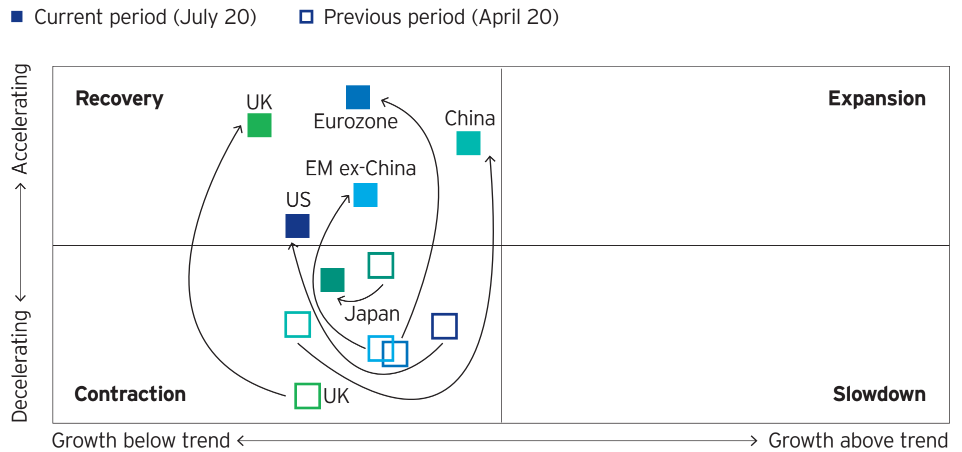
Tactical view

The global economy continues its gradual healing process. Based on our macro regime framework, we expect the global business cycle to remain in a **recovery** regime, with growth below trend and expected to improve over the next few months. Recent economic data show that more regions around the world have now entered a recovery regime, with Europe and Emerging Asia still leading the way. While momentum in the US has slowed down, market expectations remain tilted toward an improving growth environment over the next few months.

Figure 3: Leading economic indicators suggest the recovery is broadening, but Emerging Asia and Europe continue to exhibit stronger momentum



Source: Invesco Investment Solutions proprietary research, July 31, 2020.

Region	(a) Current level of growth (LEIs)		(b) Change in global growth expectations (GRACI)		(c) Expected macro regimes
Global	**Below Trend**				**Recovery**
United States	**Below Trend**				**Recovery**
Developed Markets ex-USA	**Below Trend**				**Recovery**
Europe	**Below Trend**				**Recovery**
United Kingdom	**Below Trend**				**Recovery**
Japan	**Below Trend**	**&**	**Growth Expectation Improving**	**=**	**Recovery**
Emerging Markets	**Below Trend**				**Recovery**
China	**Below Trend**				**Recovery**
Emerging Markets ex-China	**Below Trend**				**Recovery**

Source: Invesco Investment Solutions. Macro regime data as of July 31, 2020. The Leading Economic Indicators (LEIs) are proprietary, forward-looking measures of the level of economic growth. The Global Risk Appetite Cycle Indicator (GRACI) is a proprietary measure of the markets' risk sentiment.

Meaningful economic policy developments in Europe contributed to higher market sentiment. The creation of a European Recovery Fund was of utmost importance to avert risks of a prolonged recession in parts of Europe, but also to eliminate the threat of a new European debt crisis, the return of Euro break-up risk, and a repeat of the costly impasse of 2010-2012. For the first time in the history of the Euro, European authorities have agreed to a large-scale economic program of mutual support in a timely manner, clearly signaling to the market their willingness to find a political compromise and embrace a common path forward during an emergency.

We believe there are two main threats to this favorable cyclical outlook:

- loss of fiscal impulse in the United States, caused by expiring benefits and other policies of social support;
- a second wave in COVID-19 cases in the northern hemisphere during the fall, causing the largest economies in the world to re-instate lockdown measures.

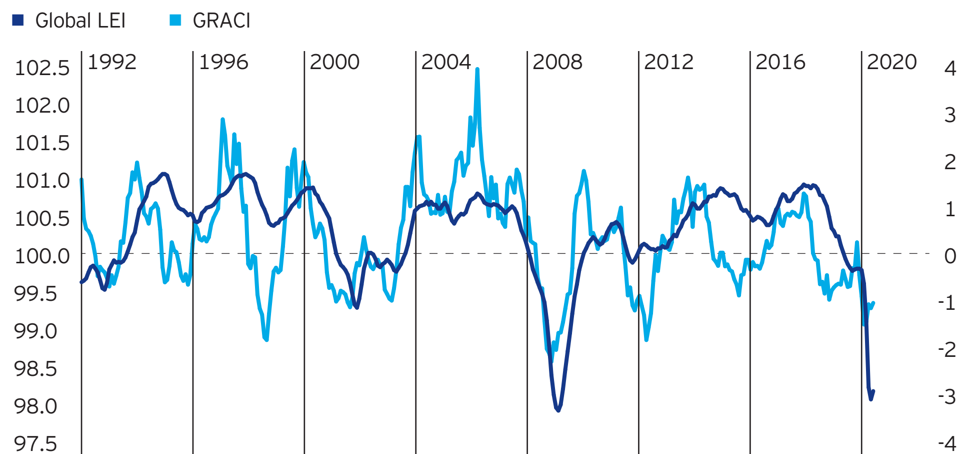
We believe a second round of lockdown measures is likely to have a less severe impact than the first, given a lower level of uncertainty in the marketplace and a higher level of preparedness in the economy compared to the initial shock. However, such shock would be enough to tilt the economy back into contraction and it still represents a non-negligible probability. We expect our framework to adjust in a timely manner if the probability of this scenario increases meaningfully.

Investment Positioning

We maintain a **higher risk posture** than the benchmark[2] in our Global Tactical Asset Allocation model, sourced through an overweight exposure to equities and credit at the expense of negative or low yielding government bonds outside the US. In particular:

- Within **equities** we hold large tilts in favor of developed markets outside the US and emerging markets, driven by more favorable cyclical conditions, attractive local asset valuations and an expensive US dollar which, in our opinion, is in the early stages of a long-term depreciation cycle. The confluence of these medium and short-term drivers increases the potential for long-term capital inflows in non-US equity markets. As a result, we hold a large underweight position to US equities, especially in quality and momentum stocks, given our tilts in favor of value and (small) size factors. The underperformance of small and mid-cap value stocks versus large cap quality and momentum stocks continues to be one of the most prominent and surprising features of this market recovery. While rational economic explanations for such a divergence can be found in the technology-driven nature of the Covid-19 recovery, as well as the QE-driven interest rate environment, even a modest recovery in the global earnings cycle for small and mid-cap value companies can lead to a large positive impact on prices, given high operating leverage and attractive valuations.
- In **fixed income**, we maintain an overweight exposure to US high yield credit, emerging markets sovereign dollar debt, and event-linked bonds at the expense of investment grade corporate credit and government bonds, particularly in developed markets outside the US, given the negative yield environment. Overall, we are overweight credit risk and neutral duration[3] versus the benchmark.
- In **currency markets**, we maintain an overweight exposure to foreign currencies, positioning for long-term US dollar depreciation. Within developed markets we favor the Euro, the British pound, the Canadian dollar and the Norwegian kroner. In emerging markets, we favor the Indian rupee, Indonesian rupiah and Russian ruble.

Figure 4: Improving growth expectations, signaled by rising risk appetite, suggest the global business cycle should continue to recover over the next few months



Sources: Bloomberg L.P., MSCI, Citi, Barclays, JPMorgan, Invesco Investment Solutions research and calculations, from January 1992 to July 2020. The Global Leading Economic Indicator (LEI) is a proprietary, forward-looking measure of the macroeconomic trend level. The Global Risk Appetite Cycle Indicator (GRACI) is a proprietary measure of the markets' risk sentiment. A level above (below) 100 on the Global LEI signals growth above (below) a long term average trend, while a GRACI number above (below) zero suggests above trend risk sentiment.

2 Global 60/40 benchmark (60% MSCI ACWI / 40% Bloomberg Barclays Global Agg USD Hedged).
3 Credit risk defined as DTS (duration times spread).

Global Market Outlook

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Pandemic, Public Health and Macro Policies Point to Diversification Benefits

The cyclical global macroeconomic and capital markets outlook are critically dependent on the path of the pandemic and public health, monetary and fiscal policies. The longer-term outlook in turn depends both on how the pandemic, the cyclical recovery and structural reform of the international system and national economies all evolve. Both are uncertain, but both our short- and long-term views argue for diversification – not home bias, and a mix of risk-seeking and perceived safe assets in strategic asset allocation and tactical portfolio construction.

Waves of risk appetite and aversion seem set to drive short-term performance in response to pandemic and global macro policy trends. First and foremost among these, loose US Federal Reserve and fiscal policies point to a weak dollar and easy global financial conditions, amid mixed US pandemic containment efforts as against better results and rising hopes for sustainable re-opening and recovery in other major economies, especially China and the Eurozone (EZ), where fiscal and monetary support should also contribute to recovery. Cyclical divergences across economies, sectors and firms that stand to benefit from re-opening or renewed lockdowns, point to highly dispersed returns across economies and asset classes, amid rising or receding tides of risk seeking.

Our long-term views place a high value on diversification, active asset allocation and country selection strategies, based on differentiated potential growth at the macro level as well as sectoral and corporate performance. Via diversification benefits, these divergences should compensate for the threats to growth; to corporate cashflow, earnings and scale; and to market depth for new technologies from rising trade and investment barriers.

Accordingly, we believe that both tactical and strategic asset allocation should aim for wide diversification across asset classes, regional and national geographic exposures as well as strategies and styles. Today's prevalence of "risk-on" vs. "risk-off" behaviour at asset-class/index levels points to prospective returns and diversification benefits from a market-exposure approach via passive strategies. The prospect of greater variety and variability in both national and corporate income, in diverging discount rates and in returns from greater friction in the international economy calls for active selection of countries, currencies, asset classes in the longer term.

The Pandemic: Divergent Public Health Policies and Performance
COVID-19 containment varies strikingly across countries. The main drivers seem to be the strength and central coordination of lockdowns and contact tracing as well as demographic features. Yet almost all countries are now experiencing significant secondary outbreaks, probably limiting the pace and extent of economic recovery; raising the risk of renewed lockdowns – yet boosting the case for further macro policy support, and hence for ongoing easy financial conditions and buoyant risk asset valuation.

By official data, high-population economies except China have high infections. The US, Brazil, India are all geographically, ethnically and economically diverse federations, complicating central coordination of public health policies. In contrast, Australia, Germany and Russia, with more centralized public health policies than other federation, all have reported significantly lower infection and mortality rates.

Above and beyond structural geographic, demographic and political features, however, public health and macro policy choices are having a major effect on performance in both pandemic containment and recovery. The US and UK, with relatively laissez-faire lockdowns, have had higher infection and mortality rates and less success in flattening the epidemic curve than most countries with stricter policies. Brazil and India, with severe challenges in social distancing and public health capacity are heading for the highest infection incidences. Yet strict and laissez-faire countries as well as centralized and federal countries alike are undergoing secondary outbreaks as they gradually reopen and imposing regional lockdowns in response.

These outbreaks do not fully qualify as second waves epidemiologically because they quickly follow re-openings rather than seasonally- or mutation-led, after first-wave dissipation. Plus, summer in the Northern Hemisphere has not produced a pullback in pandemic numbers. Even though full-blown second waves may occur as the seasons turn and people spend more time indoors, a continuation of the first wave cannot be ruled out.

Whether secondary outbreaks continue or a definitive new second wave emerges, we would expect regional rather than renewed national lockdowns: The lack of a well-defined end to the first wave would make it difficult to distinguish; as importantly, the economic, financial and fiscal costs of additional comprehensive lockdowns may exceed public or political tolerance, unless a second wave were very severe.

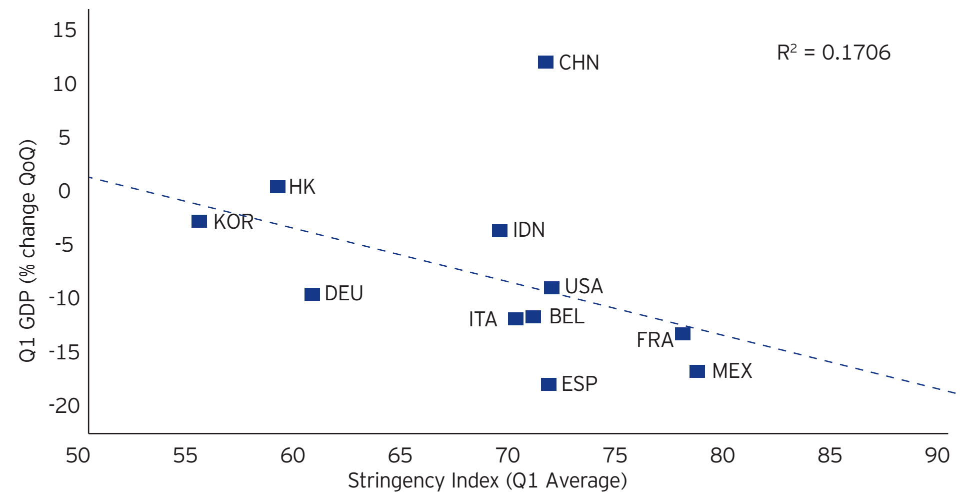
Further regional lockdowns, as opposed to new economy-wide lockdowns, should limit the risk of a new downturn. But the persistence of outbreaks and need for regional lockdowns suggests that 1) the speed and extent of economic recovery will be limited, given the close relationship between lockdown policies and economic activity (Figure 5); 2) monetary and fiscal policy will remain exceptionally accommodative; and 3) though the threat of another major activity collapse is limited, it cannot be fully ruled out. The backdrop points to easy financial conditions; asset-price buoyance, amid high uncertainty and risk-on and risk-off return volatility.

The Downturn: Lockdowns Drive Sharp, Shared "Great Compression"

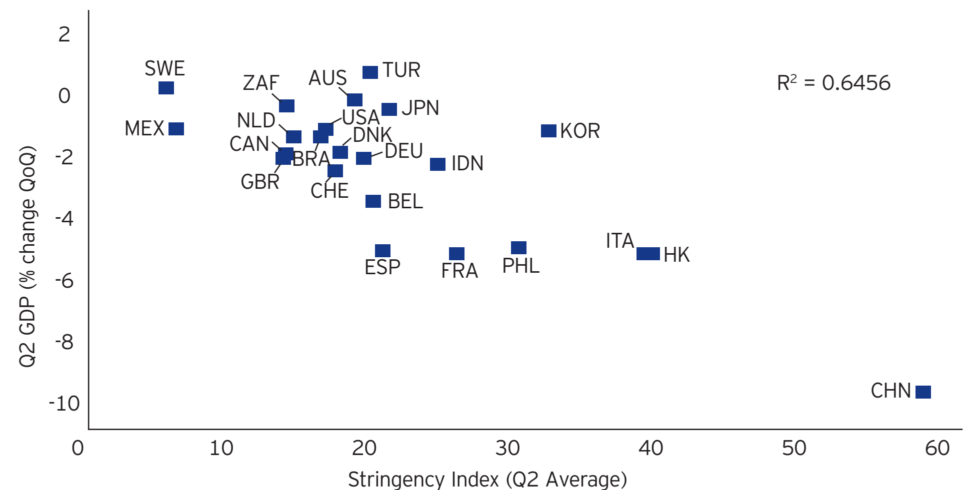
A "Great Compression" in economic activity in Q1-2 across most major economies – the direct result of a deliberate decision to shut down economic activity, thereby sacrificing national income to preserve and protect public health – seems linked to the duration and stringency of COVID-19 lockdowns across countries (Figure 5).

Figure 5: Lockdown stringency has had a linear relationship with economic activity across economies

Q1 GDP vs. quarterly lockdown stringency averages



Q2 GDP vs. quarterly lockdown stringency averages



Note: The X-axis is the Oxford University Blavatnik School of Government national lockdown stringency index. Regional or municipal lockdown stringency is not accurately reflected in this index, which suggests that the ongoing shift from economy-wide lockdowns to lockdowns targeting epicentres and secondary outbreaks is likely to be accompanied by weaker relationships between GDP levels/growth and lockdown stringency. We believe China is an outlier in Q2 largely because of a much more significant and earlier re-opening in Q2, while other major and smaller economies were locking down; without China the R-squared – a measure of the tightness of fit in this simple linear regression – rises to about 0.68 – against 0.65 in Q1 (right-hand side chart) – though fewer countries have reported Q2 GDP data at the time of writing, than are in the Q1 sample. Source: Blavatnik School of Government, Oxford University; National Statistical Authorities; Invesco.

This relationship between lockdowns and the economy seems very strong despite the vastly different composition of GDP across economies: Some, like China, the EZ as a whole, Brazil and the United States among others are large and relatively closed to global trade and therefore driven more heavily by domestic demand. Some like China, Japan and the EZ are trade- and current-account surplus countries, while the US and Brazil are deficit countries. Others like Belgium, the United Kingdom and Mexico are smaller, with far higher trade ratios of exports plus imports to GDP. We believe this cross-country relationship owes to the nature of comprehensive, intensive economy-wide lockdowns shutting down swaths of economic activity, leaving mainly just basic needs, essential work and work that can be done from home up and running, with similar effects across countries.

The Cyclical Recovery: Gradual, Differentiated with a "Square-Root" Shape to follow the Great Compression
In general, the Global Market Strategist office expects most economies to exhibit something like a "square-root" shaped path in the level of GDP: An abrupt compression in GDP as an immediate response to lockdowns, falling during Q1 in China and in most other economies in Q1-2; then a re-opening rebound on the release of pent-up supply and demand – as in China in Q2, and now unfolding in Q3 in many other economies; then followed by a levelling off due to sectoral, regional, national and indeed, global speed limits to a full-blown recovery.

We expect various obstacles to prevent a re-opening rebound from becoming a full V-shaped recovery: secondary outbreaks and regional lockdowns; the risk of second waves in coming quarters preventing the return of public confidence; public and private-sector debt burdens due to borrowing to offset revenue and income forgone during H1 lockdowns, and refinance maturing debt. Recovery may also be jagged because secondary outbreaks and regional lockdowns may well recur in the coming quarters, causing multiple mini-cycles.

That said, we still see limited risk of full-blown double or multiple dips. We believe that all major central banks and finance ministries fully intend to avoid severe second legs down that could cause a depression, especially via unmanaged financial crises. That said, we acknowledge a depression cannot yet be fully ruled out, because severe second waves or hits to household and corporate confidence could precipitate renewed drops in private spending. On the flip side, a significant improvement in the outlook towards a full-blown recovery with a V- or U-shape cannot be ruled out, for example, if an effective vaccine becomes widely available.

Despite the shared economic compression during lockdowns, despite the shared experience of secondary outbreaks and despite the shared risk of second waves across countries, we expect re-opening to produce highly varied recoveries in economic output across countries, within a generalized square-root path. Variations on the theme of a Great Compression and "square-root" recovery would reflect the vast variety in the structure of GDP and in available fiscal space to support recovery. We would expect these differences to become much more important and evident in the context of re-openings, secondary outbreaks and any full-blown second waves.

For example, the EZ South, including Spain, Italy, depend more on tourism and small businesses than Northern Europe. The UK, stronger in high-end manufacturing and professional and financial services, or Germany, with its manufacturing oriented Mittelstand small/medium-enterprises are better positioned than say Italy, with its small hospitality and tourism sector; and France somewhere in between. But the UK is probably more exposed to double-dip risk, apart from the pandemic, given the persisting risk of a no-deal Brexit at year-end. Emerging markets are at least as differentiated: India is more reliant on migrant labor and small-scale manufacturing and services than say China. Brazil, Russia and South Africa are more exposed to commodity export prices than China or India. Turkey and Mexico depend heavily on trade with the EU and US, respectively. And so on.

Furthermore, shifts from one scenario to another are possible anytime. Lately, market hopes have tilted from US leadership (on a diversified, flexible and domestic-facing economy with massive fiscal and monetary support) to EZ strength (on effective lockdowns, efficient coordination of public health policies and enlarged monetary and fiscal support). Plus, extreme event risks such as EZ exits or disintegration are declining with a new deal for grants to member-states hit hard by COVID-19, notably Italy. We don't see this as political and fiscal union strong enough for the euro to unseat the dollar as a global currency, but the EU pledge for ever-deeper union has been at least revived, supporting global risk appetite. A wide range of possibilities presents unquantifiable uncertainty, but the scale of monetary and fiscal support as well as the moves towards EU fiscal and legal integration cushions the downside risk while tilting the balance towards gradual economic recovery over time.

We therefore believe that investors are best served by widely diversifying across regions, asset classes and investment strategies and styles, avoiding concentration risks; market volatility could overwhelm accumulated returns in what we expect will continue to be a low-growth, low-inflation, low-yield world for years to come.

The Trend: Increasing Geopolitical / Geo-Economic Variety to Appeal, Across Base Currencies

Long-term global potential growth and corporate earnings remain under threat from both COVID-19 and from escalating international tensions. These are widening from mainly Sino-American to other DMs including the EU, UK, Canada Australia, as well as India, among major EMs. These signals seem to point to a new "Cold War" and a bipolar world order of two spheres of influence via "decoupling" in technology and trade.

But we think a multi-polar world is more likely, without full-blown decoupling. Back in the first Cold War, the USSR and Warsaw Pact countries with state-dominated economies were in an ideological struggle with the West. China was even more walled off in political isolationism and economic autarky not just from the West, but even from the USSR, following a schism in the mid-1950s. India was partly off-limits with its mixed planned/market economy with public and private property. Much of Latin America, East Asia and Southern Europe had similar growth models, amid geopolitical "non-alignment", avoiding subordination to the US or Soviet spheres of influence, though many tilted one way or the other, Brazil toward the US and India toward the USSR for example.

Yet even during the Cold War, foreign direct investment and bank credit flowed to Brazil, India and other developing countries. Western private and official credit went to the USSR itself. Thus, even the first Cold War world was neither as fully decoupled geo-economically nor as fully bipolar geopolitically as often assumed.

Though the coming decades seem likely to include continued geopolitical / geo-economic tensions around technology and ideology mainly between the United States and China, we would expect a more explicitly multipolar world than bipolar world order, for several reasons. For one, neither the US nor China enjoy nearly the relative economic or military strength wielded by the USSR and US within their respective spheres of influence for much of the 20th Century. Consider the economic weight of the EU and the significant military and geo-strategic capability of many "middle powers" including Russia, the UK, France and India. The EU and US, even though they share basic political and economic values and structural similarities, are not fully aligned on many geo-economic and geopolitical issues, including relations with China and Russia. India is increasingly likely to tilt toward the US given rising border and other tensions with China, and Russia's renewed relationship with China; yet India is unlikely to reduce its own geopolitical or geo-economic great power ambitions to fully subscribe to a US sphere of influence – any more than it was willing to do so during the Cold War with either the USSR or US. And Russia, with its centuries-long complex and changeable relationship with China veering from alignment to opposition, is unlikely to fully subordinate itself to China's sphere of influence.

We therefore see the better historical metaphor as the late 19th Century rather than the late 20th Century. The 1800s were a time of radical economic transformation through industrial and technological revolution; through many facets of rivalry among several great powers as well as fierce private-sector competition; and through flows of information and ideas, people and goods as well as financial investment and corporate capex.

Conclusion: Differentiation in both Cyclical and Trend Growth Paths Calls for Diversification – not Home Bias

Beyond COVID-19, barriers to trade and investment are likely to persist and perhaps rise even further, but full-blown decoupling seems unlikely, since many governments, firms and key people will want to hedge their bets as well as seek greater opportunities and possibilities across the world.

In such a scenario, we would expect the benefits of diversification to increase across all major base currencies, even amid pressures for rising home bias in both financial portfolios as well as real economic activity if reforms encourage domestic financing of public debt, corporate supply-chain reshoring or near-shoring for economic resilience and security. Such incentives, combined with barriers to trade and investment, would contribute to differentiated trend growth rates, business cycles and by extension both corporate cashflow and discount rates.

The possibilities for financial diversification and uncorrelated, or at least less correlated returns in both sovereign "risk-free" and risk assets would rise because of elevated tensions and trade/investment barriers. Thus, both the unfolding, differentiated and tentative cyclical recovery and the longer-term divergent outlook call out the value of geographic and sectoral diversification in the face of rising pressures for home bias

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

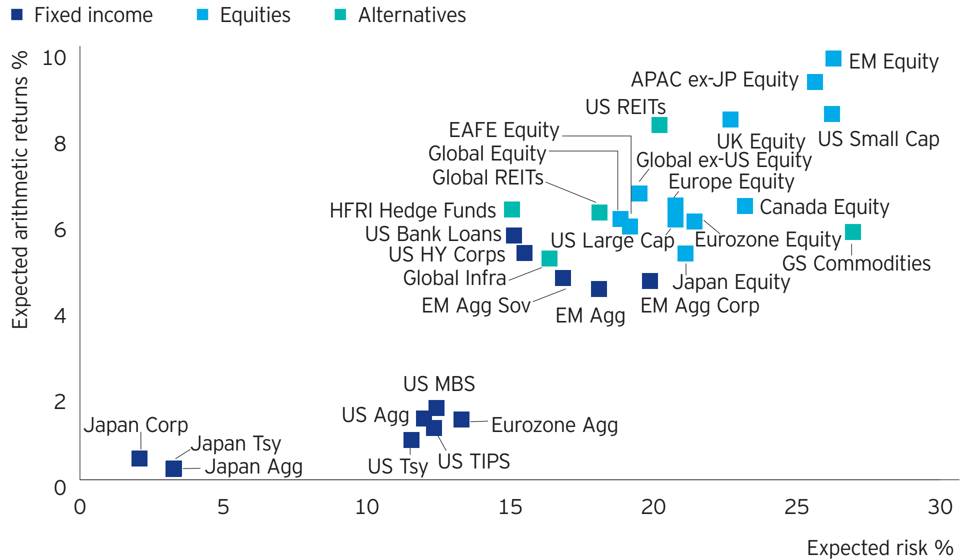

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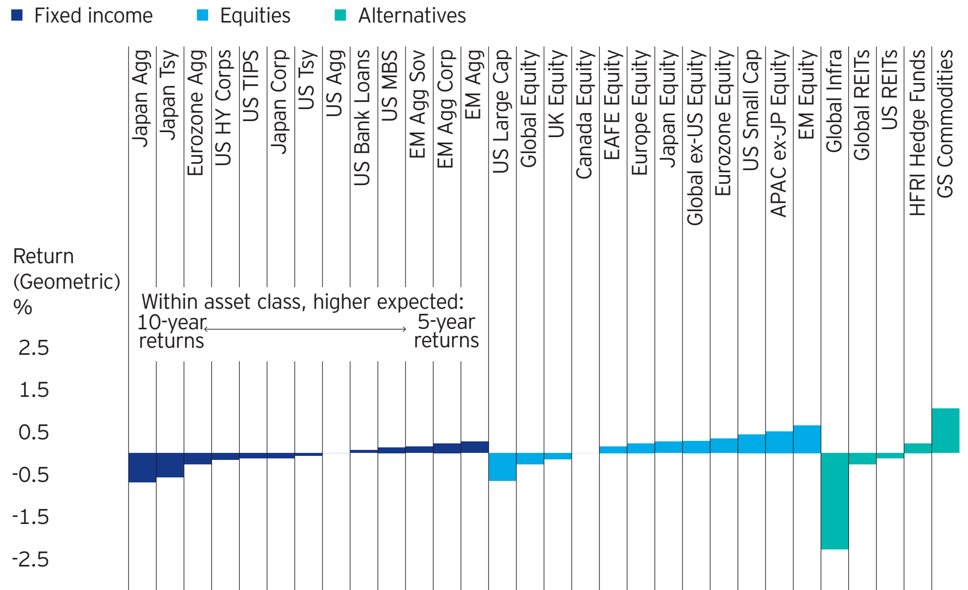
Figure 7: CMA difference: 5-year minus 10-year assumptions (JPY)



Source: Invesco, estimates as of June 30, 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.**

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

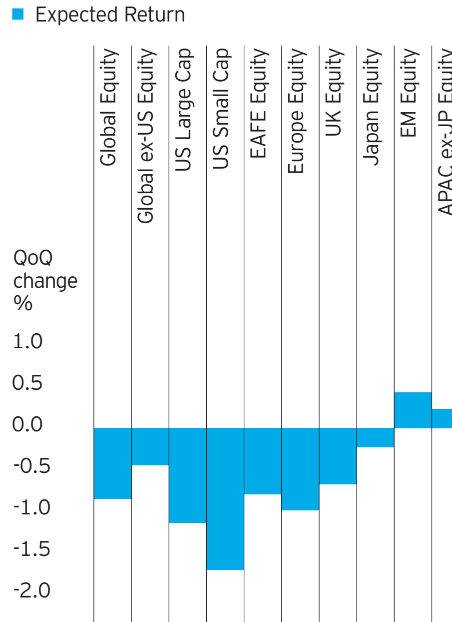
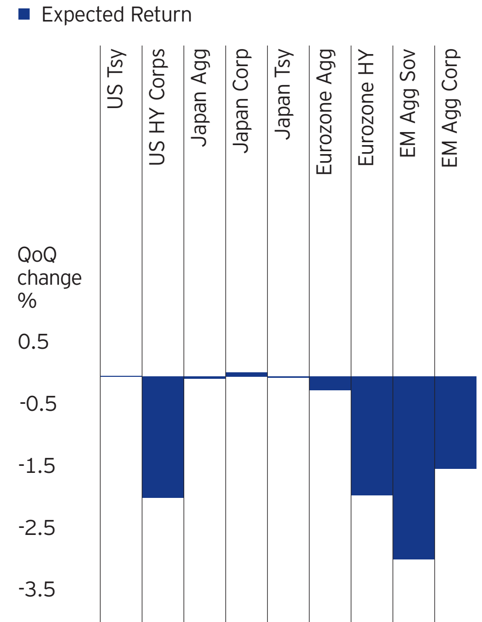


Figure 9: Fixed income quarter-over-quarter change (JPY)



Source: Invesco, estimates as of June 30, 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 10: Equity quarter-over-quarter change attribution (JPY)

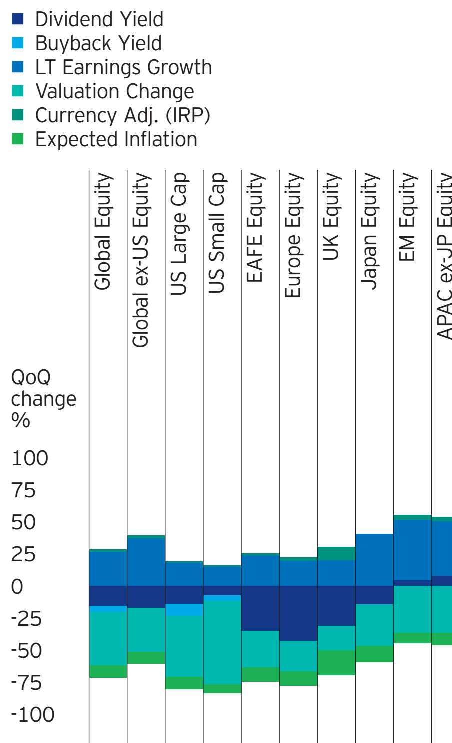
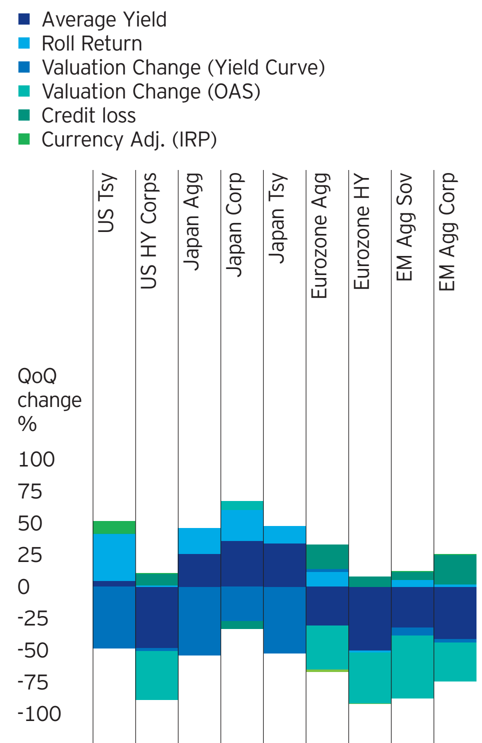


Figure 11: Fixed income quarter-over-quarter change attribution (JPY)



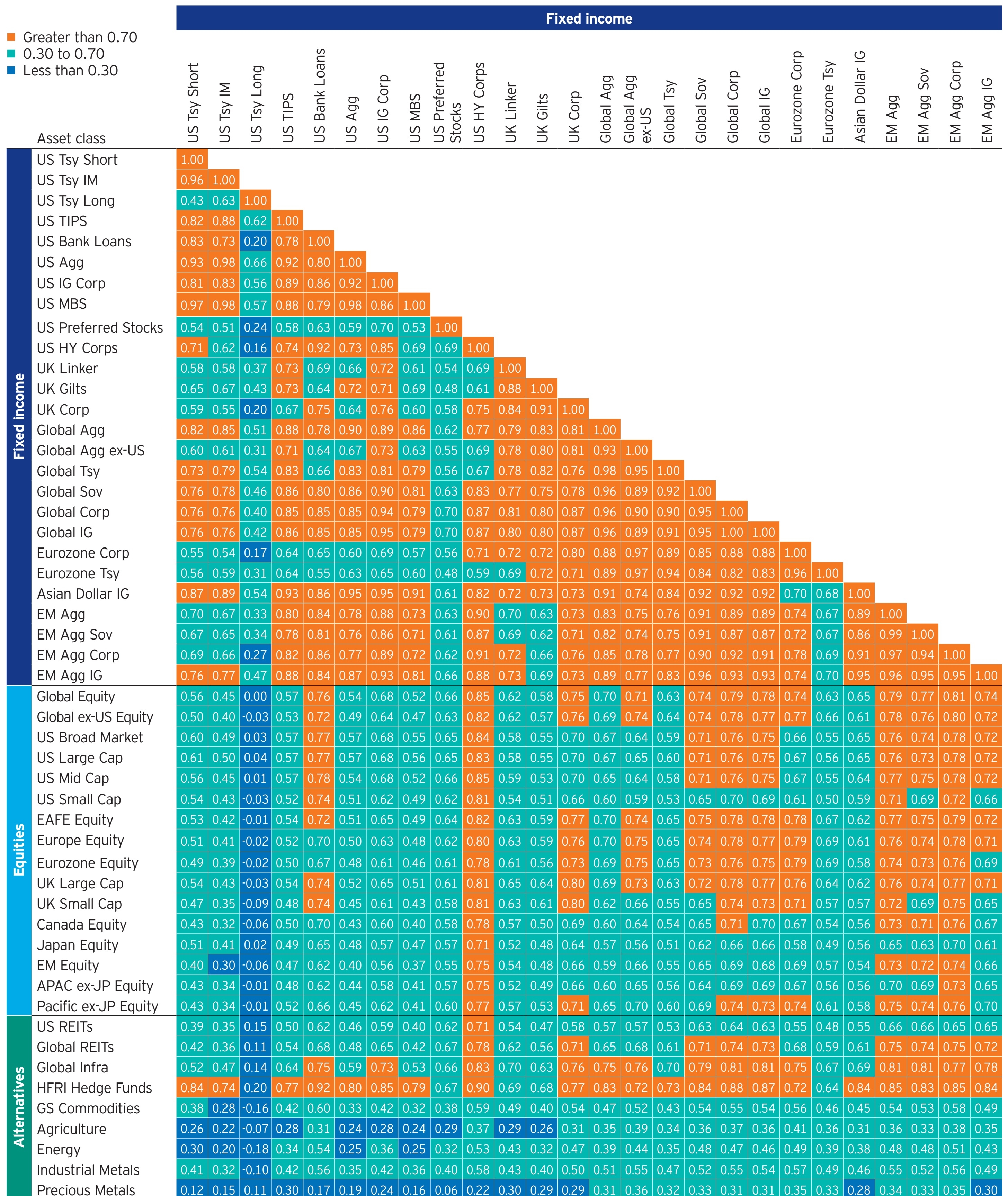
Source: Invesco, estimates as of June 30, 2020. Proxies listed in **Figure 12**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 16 for information about our CMA methodology. Please reference the CMA methodology paper for 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 12: 10-year asset class expected returns, risk, and return-to-risk (JPY)

	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	-0.2	0.5	12.1	0.04
	US Tsy IM	BBG BARC US Tsy IM	-0.1	0.6	11.4	0.05
	US Tsy Long	BBG BARC US Tsy Long	0.3	1.3	14.0	0.09
	US TIPS	BBG BARC US TIPS	0.5	1.2	12.3	0.10
	US Bank Loans	CSFB Leverage Loan	4.6	5.7	15.1	0.38
	US Agg	BBG BARC US Agg	0.7	1.4	12.0	0.12
	US IG Corp	BBG BARC US IG	1.2	2.0	12.7	0.16
	US MBS	BBG BARC US MBS	0.9	1.7	12.4	0.13
	US Preferred Stocks	BOA ML Fixed Rate Pref Securities	2.6	3.7	14.8	0.25
	US HY Corps	BBG BARC US HY	4.2	5.3	15.5	0.34
	UK Linker	BofA ML UK Inflation-Linked Gilt	-0.1	0.9	14.2	0.06
	UK Gilts	BBG BARC Sterling Agg Gilts	0.0	0.7	12.0	0.06
	UK Corp	BBG BARC Sterling Agg Non-Gilts Corp	1.2	2.6	17.2	0.15
	Global Agg	BBG BARC Global Agg	0.9	1.4	10.0	0.14
	Global Agg ex-US	BBG BARC Global Agg ex-US	0.9	1.4	9.5	0.15
	Global Tsy	BBG BARC Global Tsy	0.7	1.1	8.3	0.13
	Global Sov	BBG BARC Global Sov	1.3	2.1	12.9	0.16
	Global Corp	BBG BARC Global Corp	1.3	2.2	13.6	0.16
	Global IG	BBG BARC Global Corp IG	1.3	2.3	14.7	0.16
	Eurozone Corp	BBG BARC Euro Agg Credit Corp	0.9	2.1	15.3	0.13
	Eurozone Tsy	BBG BARC Euro Agg Gov Tsy	0.7	1.5	12.9	0.12
	Asian Dollar IG	BOA ML AC IG	1.5	2.5	14.5	0.17
	EM Agg	BBG BARC EM Agg	2.9	4.4	18.1	0.25
	EM Agg Sov	BBG BARC EM Sov	3.4	4.7	16.8	0.28
	EM Agg Corp	BBG BARC EM Corp	2.8	4.6	19.9	0.23
	EM Agg IG	BBG BARC EM USD Agg IG	1.6	2.7	15.1	0.18
Equities	Global Equity	MSCI ACWI	4.4	6.1	18.8	0.32
	Global ex-US Equity	MSCI ACWI ex-US	4.9	6.7	19.5	0.34
	US Broad Market	Russell 3000	4.2	6.3	21.4	0.29
	US Large Cap	S&P 500	4.1	6.1	20.8	0.29
	US Mid Cap	Russell Midcap	4.7	7.2	23.3	0.31
	US Small Cap	Russell 2000	5.5	8.5	26.2	0.32
	EAFE Equity	MSCI EAFE	4.2	5.9	19.2	0.31
	Europe Equity	MSCI Europe	4.4	6.4	20.8	0.31
	Eurozone Equity	MSCI Euro ex-UK	3.9	6.0	21.4	0.28
	UK Large Cap	FTSE 100	5.9	8.2	22.6	0.36
	UK Small Cap	FTSE Small Cap UK	6.6	9.9	27.6	0.36
	Canada Equity	S&P TSX	3.9	6.4	23.2	0.27
	Japan Equity	MSCI JP	3.2	5.3	21.1	0.25
	EM Equity	MSCI EM	6.8	9.8	26.3	0.37
	APAC ex-JP Equity	MSCI APXJ	6.4	9.3	25.6	0.36
	Pacific ex-JP Equity	MSCI Pacific ex-JP	5.2	8.4	26.8	0.31
Alternatives	US REITs	FTSE NAREIT Equity	6.4	8.3	20.2	0.41
	Global REITs	FTSE EPRA/NAREIT Developed	4.7	6.2	18.1	0.34
	Global Infra	DJ Brookfield Global Infra Composite	3.9	5.1	16.4	0.31
	HFRI Hedge Funds	HFRI HF	5.2	6.3	15.1	0.42
	GS Commodities	S&P GSCI	2.5	5.8	26.9	0.21
	Agriculture	S&P GSCI Agriculture	-2.1	0.7	24.2	0.03
	Energy	S&P GSCI Energy	4.8	11.3	39.6	0.28
	Industrial Metals	S&P GSCI Industrial Metals	2.2	5.2	25.7	0.20
	Precious Metals	S&P GSCI Precious Metals	0.9	2.6	19.1	0.14

Source: Invesco, estimates as of June 30, 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 (JPY)



■ 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 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
		Fixed income																									
Fixed income	US Tsy Short	1.00																									
	US Tsy IM	0.96	1.00																								
	US Tsy Long	0.43	0.63	1.00																							
	US TIPS	0.82	0.88	0.62	1.00																						
	US Bank Loans	0.83	0.73	0.20	0.78	1.00																					
	US Agg	0.93	0.98	0.66	0.92	0.80	1.00																				
	US IG Corp	0.81	0.83	0.56	0.89	0.86	0.92	1.00																			
	US MBS	0.97	0.98	0.57	0.88	0.79	0.98	0.86	1.00																		
	US Preferred Stocks	0.54	0.51	0.24	0.58	0.63	0.59	0.70	0.53	1.00																	
	US HY Corps	0.71	0.62	0.16	0.74	0.92	0.73	0.85	0.69	0.69	1.00																
	UK Linker	0.58	0.58	0.37	0.73	0.69	0.66	0.72	0.61	0.54	0.69	1.00															
	UK Gilts	0.65	0.67	0.43	0.73	0.64	0.72	0.71	0.69	0.48	0.61	0.88	1.00														
	UK Corp	0.59	0.55	0.20	0.67	0.75	0.64	0.76	0.60	0.58	0.75	0.84	0.91	1.00													
	Global Agg	0.82	0.85	0.51	0.88	0.78	0.90	0.89	0.86	0.62	0.77	0.79	0.83	0.81	1.00												
	Global Agg ex-US	0.60	0.61	0.31	0.71	0.64	0.67	0.73	0.63	0.55	0.69	0.78	0.80	0.81	0.93	1.00											
	Global Tsy	0.73	0.79	0.54	0.83	0.66	0.83	0.81	0.79	0.56	0.67	0.78	0.82	0.76	0.98	0.95	1.00										
	Global Sov	0.76	0.78	0.46	0.86	0.80	0.86	0.90	0.81	0.63	0.83	0.77	0.75	0.78	0.96	0.89	0.92	1.00									
	Global Corp	0.76	0.76	0.40	0.85	0.85	0.85	0.94	0.79	0.70	0.87	0.81	0.80	0.87	0.96	0.90	0.90	0.95	1.00								
	Global IG	0.76	0.76	0.42	0.86	0.85	0.85	0.95	0.79	0.70	0.87	0.80	0.80	0.87	0.96	0.89	0.91	0.95	1.00	1.00							
	Eurozone Corp	0.55	0.54	0.17	0.64	0.65	0.60	0.69	0.57	0.56	0.71	0.72	0.72	0.80	0.88	0.97	0.89	0.85	0.88	0.88	1.00						
	Eurozone Tsy	0.56	0.59	0.31	0.64	0.55	0.63	0.65	0.60	0.48	0.59	0.69	0.72	0.71	0.89	0.97	0.94	0.84	0.82	0.83	0.96	1.00					
	Asian Dollar IG	0.87	0.89	0.54	0.93	0.86	0.95	0.95	0.91	0.61	0.82	0.72	0.73	0.73	0.91	0.74	0.84	0.92	0.92	0.92	0.70	0.68	1.00				
	EM Agg	0.70	0.67	0.33	0.80	0.84	0.78	0.88	0.73	0.63	0.90	0.70	0.63	0.73	0.83	0.75	0.76	0.91	0.89	0.89	0.74	0.67	0.89	1.00			
	EM Agg Sov	0.67	0.65	0.34	0.78	0.81	0.76	0.86	0.71	0.61	0.87	0.69	0.62	0.71	0.82	0.74	0.75	0.91	0.87	0.87	0.72	0.67	0.86	0.99	1.00		
	EM Agg Corp	0.69	0.66	0.27	0.82	0.86	0.77	0.89	0.72	0.62	0.91	0.72	0.66	0.76	0.85	0.78	0.77	0.90	0.92	0.91	0.78	0.69	0.91	0.97	0.94	1.00	
	EM Agg IG	0.76	0.77	0.47	0.88	0.84	0.87	0.93	0.81	0.66	0.88	0.73	0.69	0.73	0.89	0.77	0.83	0.96	0.93	0.93	0.74	0.70	0.95	0.96	0.95	0.95	1.00
Equities	Global Equity	0.56	0.45	0.00	0.57	0.76	0.54	0.68	0.52	0.66	0.85	0.62	0.58	0.75	0.70	0.71	0.63	0.74	0.79	0.78	0.74	0.63	0.65	0.79	0.77	0.81	0.74
	Global ex-US Equity	0.50	0.40	-0.03	0.53	0.72	0.49	0.64	0.47	0.63	0.82	0.62	0.57	0.76	0.69	0.74	0.64	0.74	0.78	0.77	0.77	0.66	0.61	0.78	0.76	0.80	0.72
	US Broad Market	0.60	0.49	0.03	0.57	0.77	0.57	0.68	0.55	0.65	0.84	0.58	0.55	0.70	0.67	0.64	0.59	0.71	0.76	0.75	0.66	0.55	0.65	0.76	0.74	0.78	0.72
	US Large Cap	0.61	0.50	0.04	0.57	0.77	0.57	0.68	0.56	0.65	0.83	0.58	0.55	0.70	0.67	0.65	0.60	0.71	0.76	0.75	0.67	0.56	0.65	0.76	0.73	0.78	0.72
	US Mid Cap	0.56	0.45	0.01	0.57	0.78	0.54	0.68	0.52	0.66	0.85	0.59	0.53	0.70	0.65	0.64	0.58	0.71	0.76	0.75	0.67	0.55	0.64	0.77	0.75	0.78	0.72
	US Small Cap	0.54	0.43	-0.03	0.52	0.74	0.51	0.62	0.49	0.62	0.81	0.54	0.51	0.66	0.60	0.59	0.53	0.65	0.70	0.69	0.61	0.50	0.59	0.71	0.69	0.72	0.66
	EAFE Equity	0.53	0.42	-0.01	0.54	0.72	0.51	0.65	0.49	0.64	0.82	0.63	0.59	0.77	0.70	0.74	0.65	0.75	0.78	0.78	0.78	0.67	0.62	0.77	0.75	0.79	0.72
	Europe Equity	0.51	0.41	-0.02	0.52	0.70	0.50	0.63	0.48	0.62	0.80	0.63	0.59	0.76	0.70	0.75	0.65	0.74	0.78	0.77	0.79	0.69	0.61	0.76	0.74	0.78	0.71
	Eurozone Equity	0.49	0.39	-0.02	0.50	0.67	0.48	0.61	0.46	0.61	0.78	0.61	0.56	0.73	0.69	0.75	0.65	0.73	0.76	0.75	0.79	0.69	0.58	0.74	0.73	0.76	0.69
	UK Large Cap	0.54	0.43	-0.03	0.54	0.74	0.52	0.65	0.51	0.61	0.81	0.65	0.64	0.80	0.69	0.73	0.63	0.72	0.78	0.77	0.76	0.64	0.62	0.76	0.74	0.77	0.71
	UK Small Cap	0.47	0.35	-0.09	0.48	0.74	0.45	0.61	0.43	0.58	0.81	0.63	0.61	0.80	0.62	0.66	0.55	0.65	0.74	0.73	0.71	0.57	0.57	0.72	0.69	0.75	0.65
	Canada Equity	0.43	0.32	-0.06	0.50	0.70	0.43	0.60	0.40	0.58	0.78	0.57	0.50	0.69	0.60	0.64	0.54	0.65	0.71	0.70	0.67	0.54	0.56	0.73	0.71	0.76	0.67
	Japan Equity	0.51	0.41	0.02	0.49	0.65	0.48	0.57	0.47	0.57	0.71	0.52	0.48	0.64	0.57	0.56	0.51	0.62	0.66	0.66	0.58	0.49	0.56	0.65	0.63	0.70	0.61
	EM Equity	0.40	0.30	-0.06	0.47	0.62	0.40	0.56	0.37	0.55	0.75	0.54	0.48	0.66	0.59	0.66	0.55	0.65	0.69	0.68	0.69	0.57	0.54	0.73	0.72	0.74	0.66
	APAC ex-JP Equity	0.43	0.34	-0.01	0.48	0.62	0.44	0.58	0.41	0.57	0.75	0.52	0.49	0.66	0.60	0.65	0.56	0.64	0.69	0.69	0.67	0.56	0.56	0.70	0.69	0.73	0.65
	Pacific ex-JP Equity	0.43	0.34	-0.01	0.52	0.66	0.45	0.62	0.41	0.60	0.77	0.57	0.53	0.71	0.65	0.70	0.60	0.69	0.74	0.73	0.74	0.61	0.58	0.75	0.74	0.76	0.70
Alternatives	US REITs	0.39	0.35	0.15	0.50	0.62	0.46	0.59	0.40	0.62	0.71	0.54	0.47	0.58	0.57	0.57	0.53	0.63	0.64	0.63	0.55	0.48	0.55	0.66	0.66	0.65	0.65
	Global REITs	0.42	0.36	0.11	0.54	0.68	0.48	0.65	0.42	0.67	0.78	0.62	0.56	0.71	0.65	0.68	0.61	0.71	0.74	0.73	0.68	0.59	0.61	0.75	0.74	0.75	0.72
	Global Infra	0.52	0.47	0.14	0.64	0.75	0.59	0.73	0.53	0.66	0.83	0.70	0.63	0.76	0.75	0.76	0.70	0.79	0.81	0.81	0.75	0.67	0.69	0.81	0.81	0.77	0.78
	HFRI Hedge Funds	0.84	0.74	0.20	0.77	0.92	0.80	0.85	0.79	0.67	0.90	0.69	0.68	0.77	0.83	0.72	0.73	0.84	0.88	0.87	0.72	0.64	0.84	0.85	0.83	0.85	0.84
	GS Commodities	0.38	0.28	-0.16	0.42	0.60	0.33	0.42	0.32	0.38	0.59	0.49	0.40	0.54	0.47	0.52	0.43	0.54	0.55	0.54	0.56	0.46	0.45	0.54	0.53	0.58	0.49
	Agriculture	0.26	0.22	-0.07	0.28	0.31	0.24	0.28	0.24	0.29	0.37	0.29	0.26	0.31	0.35	0.39	0.34	0.36	0.37	0.36	0.41	0.36	0.31	0.36	0.33	0.38	0.35
	Energy	0.30	0.20	-0.18	0.34	0.54	0.25	0.36	0.25	0.32	0.53	0.43	0.32	0.47	0.39	0.44	0.35	0.48	0.47	0.46	0.49	0.39	0.38	0.48	0.48	0.51	0.43
	Industrial Metals	0.41	0.32	-0.10	0.42	0.56	0.35	0.42	0.36	0.40	0.58	0.43	0.40	0.50	0.51	0.55	0.47	0.52	0.55	0.54	0.57	0.49	0.46	0.55	0.52	0.56	0.49
	Precious Metals	0.12	0.15	0.11	0.30	0.17	0.19	0.24	0.16	0.06	0.22	0.30	0.29	0.29	0.31	0.36	0.32	0.33	0.31	0.31	0.35	0.33	0.28	0.34	0.33	0.35	0.30

Source: Invesco, estimates as of June 30, 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 (JPY)

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

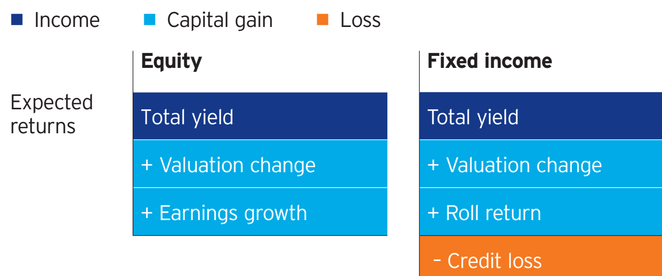
		Equities															Alternatives								
	Asset class	Global Equity	Global ex-US Equity	US Broad Market	US Large Cap	US Mid Cap	US Small Cap	EAFE Equity	Europe Equity	Eurozone Equity	UK Large Cap	UK Small Cap	Canada Equity	Japan Equity	EM Equity	APAC ex-JP Equity	Pacific ex-JP Equity	US REITs	Global 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	0.98	1.00																						
	US Broad Market	0.97	0.91	1.00																					
	US Large Cap	0.97	0.91	1.00	1.00																				
	US Mid Cap	0.96	0.91	0.98	0.97	1.00																			
	US Small Cap	0.91	0.85	0.95	0.93	0.97	1.00																		
	EAFE Equity	0.98	0.99	0.91	0.91	0.90	0.85	1.00																	
	Europe Equity	0.96	0.98	0.90	0.90	0.89	0.83	0.99	1.00																
	Eurozone Equity	0.95	0.97	0.88	0.89	0.87	0.82	0.98	0.99	1.00															
	UK Large Cap	0.94	0.95	0.88	0.89	0.87	0.82	0.96	0.97	0.93	1.00														
	UK Small Cap	0.89	0.91	0.84	0.83	0.86	0.82	0.91	0.90	0.88	0.90	1.00													
	Canada Equity	0.90	0.90	0.86	0.85	0.88	0.84	0.86	0.85	0.82	0.86	0.83	1.00												
	Japan Equity	0.82	0.83	0.78	0.77	0.77	0.73	0.85	0.77	0.76	0.76	0.76	0.70	1.00											
	EM Equity	0.89	0.93	0.81	0.81	0.82	0.77	0.89	0.86	0.86	0.84	0.83	0.87	0.72	1.00										
	APAC ex-JP Equity	0.88	0.91	0.80	0.80	0.80	0.76	0.86	0.84	0.83	0.81	0.81	0.82	0.71	0.97	1.00									
	Pacific ex-JP Equity	0.91	0.94	0.84	0.84	0.85	0.81	0.91	0.88	0.87	0.87	0.84	0.87	0.72	0.93	0.91	1.00								
Alternatives	US REITs	0.73	0.71	0.74	0.73	0.78	0.76	0.71	0.69	0.69	0.67	0.67	0.67	0.58	0.63	0.62	0.70	1.00							
	Global REITs	0.85	0.85	0.82	0.81	0.85	0.81	0.84	0.82	0.81	0.81	0.81	0.79	0.70	0.79	0.77	0.85	0.94	1.00						
	Global Infra	0.89	0.87	0.86	0.86	0.86	0.80	0.87	0.86	0.84	0.87	0.80	0.85	0.72	0.80	0.77	0.84	0.77	0.87	1.00					
	HFRI Hedge Funds	0.88	0.84	0.88	0.88	0.88	0.84	0.84	0.82	0.80	0.84	0.80	0.80	0.75	0.76	0.76	0.78	0.63	0.73	0.82	1.00				
	GS Commodities	0.60	0.63	0.56	0.55	0.59	0.56	0.61	0.61	0.57	0.66	0.59	0.69	0.51	0.57	0.52	0.59	0.37	0.50	0.62	0.62	1.00			
	Agriculture	0.40	0.42	0.36	0.36	0.36	0.33	0.41	0.41	0.40	0.41	0.37	0.41	0.29	0.41	0.39	0.44	0.29	0.37	0.35	0.37	0.43	1.00		
	Energy	0.53	0.55	0.49	0.48	0.52	0.50	0.54	0.53	0.50	0.58	0.53	0.61	0.45	0.49	0.44	0.50	0.31	0.43	0.56	0.54	0.98	0.29	1.00	
	Industrial Metals	0.65	0.67	0.60	0.60	0.61	0.58	0.64	0.63	0.60	0.65	0.62	0.69	0.50	0.67	0.65	0.68	0.46	0.57	0.55	0.63	0.60	0.38	0.50	1.00
	Precious Metals	0.26	0.31	0.21	0.20	0.23	0.20	0.27	0.26	0.26	0.27	0.24	0.39	0.17	0.36	0.32	0.33	0.18	0.25	0.27	0.27	0.31	0.23	0.24	0.38	1.00

Source: Invesco, estimates as of June 30, 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 70+ professionals, with 20 years of experience across the leadership team. The team benefits from Invesco's on-the-ground presence in more than 25 countries worldwide, with more than 8,000 employees focused on client needs across the globe.

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.

マルチアセット運用戦略に関する投資リスク

- 当運用戦略は、国内外の株式、債券、ETF、REIT、債券、短期公社債、派生商品取引、および不動産、インフラ等の実物資産、プライベート・エクイティ等に投資する現ファンドなどを主要投資対象としますので、組み入れた国内外の株式、ETF、REIT、債券、短期公社債、派生商品取引、不動産、インフラなどの実物資産、プライベート・エクイティ等の価格変動などの影響により、損失を被ることがあります。
- したがって、投資家の皆様の投資元本は保証されているものではなく、組入れ資産価格の下落により、損失を被り、投資元本を割り込むことがあります。
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