

202 Long-Term Capital Market Assumptions

Invesco Investment Solutions I Japanese yen (JPY) I Q3 Update

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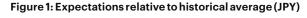


Executive Summary

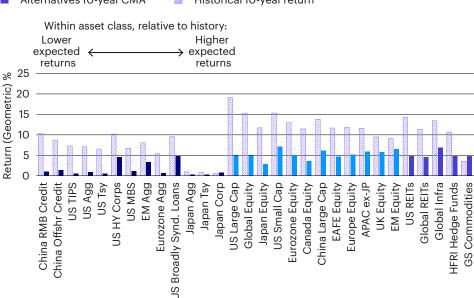


Duy Nguyen CIO, Invesco Investment Solutions

- The Invesco Investment Solutions capital market assumptions (CMAs) are
 approaching a regime where expected returns for the next decade are close to,
 or higher than, historical returns of the past decade for most asset classes, driven
 by fixed income assets. A notable exception to this shift is US Large Cap equity.
- Equity CMAs outside of China and Japan have also improved significantly in the second quarter. With markets experiencing further price drawdowns from the start of the year, we note additional improvements in the valuation building blocks of equity CMAs.
- Within fixed income, global aggregate bonds are expected to return 2.8% (USD) over the next decade. Compared to our year end forecast of 1.3%, the CMAs of broad fixed income assets have more than doubled in just two quarters, aiding savers and creating a high hurdle for risky assets.



Fixed Income 10-year CMA
Alternatives 10-year CMA
Historical 10-year return



Source: Invesco, estimates as of June 30, 2022. Proxies listed in **Figure 8**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 11 for information about our CMA methodology. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here.

Executive Summary

Asset Allocation Insights

2

Asset Allocation Insights



Jacob Borbidge
Senior Portfolio Manager,
Head of Investment Research,
Invesco Investment Solutions

For further details on our process for defining scenarios and adjustments, please refer to our CMA Methodology paper.

Executive Summary

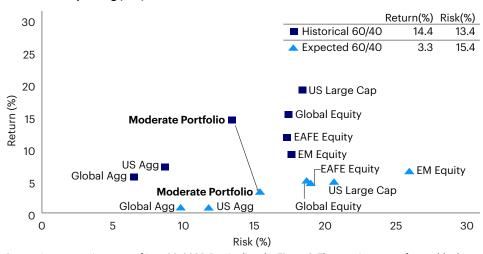
Asset Allocation Insights

2022 Capital Market Assumptions

Strategic perspective

The Invesco Investment Solutions CMAs are approaching a regime where expected returns for the next decade are close to, or higher than, historical returns of the past decade for most asset classes. This is a notable shift compared to prior releases of this publication and has been driven primarily by our fixed income expectations. However, compared to much longer historical time periods, forward returns for fixed income are still much lower than the past. Nominal equity returns outside the US continue to be higher than their historical returns while our US large cap equity CMAs, a dominant portion of global equities, are expected to be dramatically lower than the past decade. Risk, even after accounting for recent bouts of market volatility from COVID and recent drawdowns, is still expected to be slightly higher than the past. We are monitoring how this shift is influencing client return targets and allocation decisions, where traditional public assets may still not reach expected levels. All in all, after a difficult first half for multiasset portfolios, forward prospects are improving for a moderate mix of equities and fixed income.

Figure 2: Historical returns for the 60/40 have fallen amid recent selloff while expected returns are improving (JPY)



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3Q22 CMA Observations (10Y, USD):

Equities:

Equity CMAs outside of China and Japan have also improved significantly in the second quarter. With most markets experiencing further price drawdowns from the start of the year, we note additional improvements in the valuation building blocks of equity CMAs. Abnormally high and persistent inflation is beginning to cement itself in inflation expectations, improving nominal expected returns. Earnings growth expectations are a quarter over quarter detractor as adjustments we have made to our standard methodology account for persistent disruptions, with COVID lockdowns affecting Asia, and Russia related dislocations, affecting Europe. EM CMAs remain some of the highest return despite trending lower over recent quarters.

Fixed Income:

Fixed income CMAs continue to rise in attractiveness as yield curves globally react to the tightening of central banks. It is not farfetched to expect returns upwards of 2% on cash-like instruments from developed market governments based on current yield levels, a high hurdle for risky assets in a volatile market. Moving up the risk spectrum, global aggregate bonds are expected to return 2.8% (USD) over the next decade. Compared to our year end forecast of 1.3%, the CMAs of broad fixed

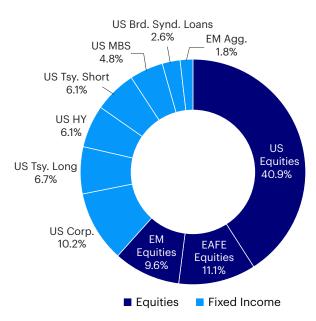
income assets have more than doubled in just two quarters, aiding savers globally with a long time horizon after years of low or negative interest rates. Credit assets, which sold off this quarter from wider spreads, had the largest CMA increases given our expectation of volatility mean reversion. This is not to say that there will not be further widening of spreads as 2020 and 2008 have shown that credit spreads can be much higher than they currently are. Loan CMA returns are at their highest levels since 2009 and could be an attractive, low duration option given rising interest rates, should there not be further deterioration of credit.

Alternatives:

Alternatives, like real estate and infrastructure, provide similar level returns to equities with significantly higher sharpe ratios. Private equity LBO CMAs have increased 1.4% to 12.8% on improved growth despite higher cost of financing. When analyzing private asset CMAs, we anticipate both higher levels of returns compared to their own history and relative to their public counterparts.

Strategic Asset Allocation Trends:

Figure 3: 2022 Q3 SAA Rebalance (USD)



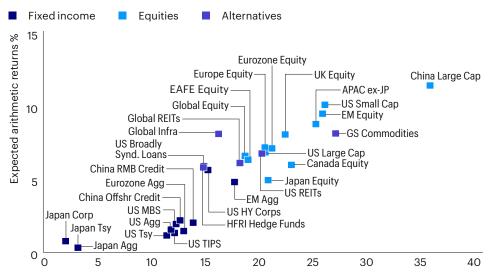
Source: Invesco Investment Solutions, as of June 30, 2022. Proxies listed in **Figure 8**. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here. References to overweights and underweights are relative to a 60% global equity and 40% global aggregate fixed income benchmark.

- · Portfolio level:
 - We reduced the overweight positioning in equity from 1.6% to 0.5%, due to improved returns in fixed income, and reduced the duration as interest rates continue to rise by increasing our overweight to treasuries from 1.22% to 2.5%.
- Within equities:
 - We remain overweight US and EM equities and underweight developed markets outside of the US.
- · Within fixed income:
 - We increased the magnitude of our overweight to risky credit over quality credit.

3

2022 Capital Market Assumptions

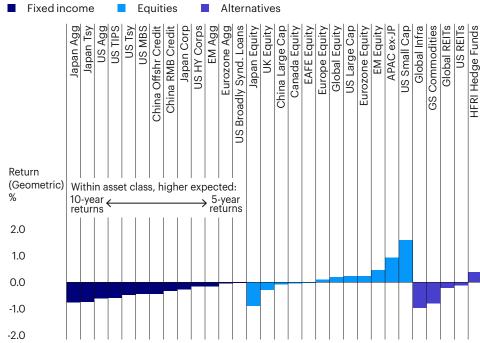
Figure 4: 10-year asset class expectations (JPY)



Expected risk %

Source: Invesco, estimates as of June 30, 2022. Proxies listed in **Figure 8**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 11 for information about our CMA methodology. 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 5: CMA difference: 5-year minus 10-year assumptions (JPY)



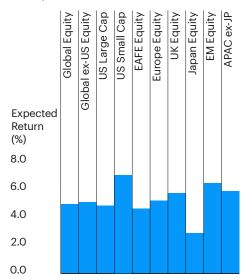
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Executive Summary

Asset Allocation Insights

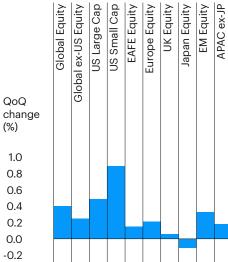
Figure 6a: Equity CMA building block contribution (JPY) (%)

Expected Return



	Dividend Yield	Buyback Yield	LT Earnings Growth	Expected Inflation	Valuation Change	Currency Adj. (IRP)
Global Equity	2.16	0.76	2.07	2.24	0.20	-2.48
Global ex-US Equity	3.04	0.00	2.10	2.02	-0.01	-2.07
US Large Cap	1.60	1.25	2.05	2.38	0.33	-2.75
US Small Cap	1.46	0.82	3.49	2.38	1.62	-2.75
EAFE Equity	3.16	0.00	1.54	1.54	-0.29	-1.31
Europe Equity	3.24	0.00	1.54	2.02	-0.22	-1.38
UK Equity	3.99	0.00	1.97	2.52	-0.65	-2.08
Japan Equity	2.49	0.00	1.29	-0.36	-0.51	0.00
EM Equity	2.86	0.00	3.30	3.00	0.65	-3.39
APAC ex-JP	2.78	0.00	2.72	2.84	0.83	-3.32

Figure 6b: Equity CMA building block quarter-over-quarter change and contribution (JPY) (%)



	Dividend Yield	Buyback Yield	LT Earnings Growth	Expected Inflation	Valuation Change	Currency Adj. (IRP)
Global Equity	0.32	0.06	-0.25	0.41	0.49	-0.63
Global ex-US Equity	0.35	0.00	-0.21	0.36	0.38	-0.63
US Large Cap	0.29	0.11	-0.28	0.44	0.56	-0.65
US Small Cap	0.28	0.07	-0.25	0.44	0.97	-0.65
EAFE Equity	0.35	0.00	-0.22	0.33	0.30	-0.61
Europe Equity	0.40	0.00	-0.12	0.46	0.26	-0.79
UK Equity	0.30	0.00	-0.08	0.33	0.17	-0.66
Japan Equity	0.21	0.00	-0.56	-0.12	0.36	0.00
EM Equity	0.34	0.00	-0.26	0.35	0.44	-0.54
APAC ex-JP	0.29	0.00	-0.25	0.37	0.35	-0.59

Figure 6c: Equity CMA building block year-over-year change and contribution (JPY) (%)

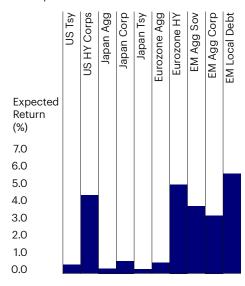
YoY change (%)	Global Equity	Global ex-US Equity	US Large Cap	US Small Cap	EAFE Equity	Europe Equity	UK Equity	Japan Equity	EM Equity	APAC ex-JP	
0.0											Ī
-0.5											
-1.0											
-1.5											
-2.0											

-						
	Dividend Yield	Buyback Yield	LT Earnings Growth	Expected Inflation	Valuation Change	Currency Adj. (IRP)
Global Equity	0.48	0.16	-2.01	0.73	1.41	-1.31
Global ex-US Equity	0.79	0.00	-2.14	0.62	0.78	-1.22
US Large Cap	0.31	0.22	-1.92	0.79	1.84	-1.36
US Small Cap	0.45	0.22	-2.37	0.79	1.85	-1.36
EAFE Equity	0.78	0.00	-1.99	0.59	0.67	-1.17
Europe Equity	0.79	0.00	-2.09	0.82	0.78	-1.44
UK Equity	0.61	0.00	-1.84	0.85	0.13	-1.43
Japan Equity	0.53	0.00	-1.79	-0.23	0.33	0.00
EM Equity	0.92	0.00	-2.40	0.70	1.04	-1.25
APAC ex-JP	0.86	0.00	-2.34	0.66	1.01	-1.32

Source: Invesco, estimates as of June 30, 2022. Proxies listed in **Figure 8**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 11 for information about our CMA methodology. 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**.

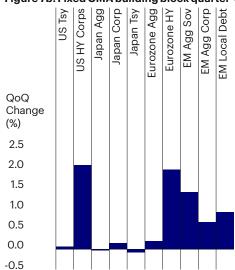
Figure 7a: Fixed CMA building block contribution (JPY) (%)

Expected Return



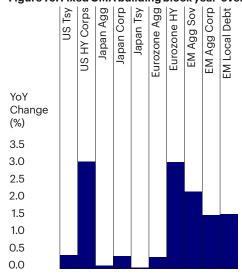
	Average Yield	Roll Return	Valuation Change (Yield Curve)	Valuation Change (OAS)	Credit Loss	Currency Adj. (IRP)
US Tsy	3.33	0.22	-0.29	0.00	0.00	-2.75
US HY Corps	8.80	0.15	-0.22	0.25	-1.70	-2.75
Japan Agg	0.95	0.52	-1.16	-0.02	0.00	0.00
Japan Corp	1.02	0.34	-0.46	0.04	-0.20	0.00
Japan Tsy	0.90	0.52	-1.16	0.00	0.00	0.00
Eurozone Agg	2.29	0.16	-0.34	0.08	-0.40	-1.15
Eurozone HY	7.09	0.27	-0.22	0.44	-1.26	-1.15
EM Agg Sov	7.37	0.12	-0.52	0.93	-1.25	-2.75
EM Agg Corp	7.61	0.15	-0.22	0.31	-1.72	-2.75
EM Local Debt	7.44	0.61	-0.38	0.00	0.00	-1.88

Figure 7b: Fixed CMA building block quarter-over-quarter change and contribution (JPY) (%)



	Average Yield	Roll Return	Valuation Change (Yield Curve)	Valuation Change (OAS)	Credit Loss	Currency Adj. (IRP)
US Tsy	0.67	-0.01	0.05	0.00	0.00	-0.65
US HY Corps	1.73	0.06	-0.07	1.02	0.00	-0.65
Japan Agg	0.20	-0.07	-0.16	0.00	0.00	0.00
Japan Corp	0.17	0.09	-0.12	0.04	-0.03	0.00
Japan Tsy	0.23	0.01	-0.32	0.00	0.00	0.00
Eurozone Agg	1.09	0.06	-0.22	0.22	-0.12	-0.82
Eurozone HY	2.05	0.03	-0.11	0.83	0.00	-0.82
EM Agg Sov	1.19	-0.09	0.17	0.87	-0.08	-0.65
EM Agg Corp	1.15	-0.05	0.01	0.44	-0.23	-0.65
EM Local Debt	0.75	0.07	0.08	0.00	0.00	0.02

Figure 7c: Fixed CMA building block year-over-year change and contribution (JPY) (%)



	Average Yield	Roll Return	Valuation Change (Yield Curve)	Valuation Change (OAS)	Credit Loss	Currency Adj. (IRP)
US Tsy	1.83	-0.58	0.51	0.00	0.00	-1.36
US HY Corps	3.13	-0.34	0.32	1.36	0.00	-1.36
Japan Agg	0.49	0.04	-0.44	0.00	0.00	0.00
Japan Corp	0.36	0.19	-0.19	0.05	-0.04	0.00
Japan Tsy	0.48	0.09	-0.53	0.00	0.00	0.00
Eurozone Agg	1.62	-0.37	0.26	0.46	-0.21	-1.42
Eurozone HY	3.01	0.10	0.08	1.32	0.00	-1.42
EM Agg Sov	2.40	-0.72	0.51	1.50	-0.10	-1.36
EM Agg Corp	2.65	-0.49	0.41	0.87	-0.53	-1.36
EM Local Debt	1.76	-0.14	0.33	0.00	0.00	-0.36

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Figure 8: 10-year asset class expected returns, risk, and return-to-risk (JPY)

	Asset class	Index	Expected geometric return %	Expected arithmetic return %	Total Yield %	Expected risk %	Arithmetic return to risk ratio
	US Tsy Short	BBG US Tsy Short	-0.2	0.6	-0.7	12.1	0.05
	US Tsy IM	BBG US Tsy IM	0.4	1.1	0.3	11.3	0.09
	US Tsy Long	BBG US Tsy Long	-0.3	0.6	0.6	13.9	0.03
	US TIPS	BBG US TIPS	0.6	1.3	0.5	12.1	0.11
	US Broadly Synd. Loans	CSFB Leverage Loan	4.8	5.9	5.4	14.8	0.40
	US Agg	BBG US Agg	0.9	1.5	1.0	11.8	0.13
	US IG Corp	BBG US IG	1.2	2.0	2.0	12.5	0.16
	US MBS	BBG US MBS	1.2	1.9	1.0	12.2	0.16
	US Preferred Stocks	BOA ML Fixed Rate Pref Securities	2.3	3.4	3.7	14.5	0.23
	US HY Corps	BBG US HY	4.5	5.6	6.1	15.2	0.37
	UK Linker	BofA ML UK Inflation-Linked Gilt	-0.6	0.5	0.5	14.5	0.03
me	UK Gilts	BBG Sterling Agg Gilts	0.8	1.5	0.2	11.9	0.12
ဥ	UK Corp	BBG Sterling Agg Non-Gilts Corp	1.8	3.1	2.3	16.6	0.19
d:	Global Agg	BBG Global Agg	0.9	1.3	1.0	9.8	0.14
Fixedincome	Global Agg ex-US	BBG Global Agg ex-US	0.7	1.1	1.0	9.3	0.12
Œ	Global Tsy	BBG Global Tsy	0.6	0.9	0.7	8.1	0.11
	Global Sov	BBG Global Sov	0.9	1.7	1.6	12.9	0.13
	Global Corp	BBG Global Corp	1.5	2.3	2.0	13.3	0.18
	Global IG	BBG Global Corp IG	1.5	2.5	2.0	14.4	0.17
	Eurozone Corp	BBG Euro Agg Credit Corp	1.5	2.6	2.1	15.0	0.17
	Eurozone Tsy	BBG Euro Agg Gov Tsy	0.8	1.6	0.6	12.6	0.12
	Asian Dollar IG	BOA ML AC IG	1.6	2.6	2.2	14.3	0.18
	EM Agg	BBG EM Agg	3.3	4.8	4.4	17.7	0.27
	EM Agg Sov	BBG EM Sov	3.9	5.2	4.9	16.5	0.31
	China Policy Bk & Tsy	BBG China PB Tsy TR	0.5	1.4	0.1	13.2	0.10
	China RMB Credit	BBG China Corporate	1.1	2.0	0.7	13.8	0.14
	Global Equity	MSCIACWI	5.0	6.6	0.4	18.7	0.35
	Global ex-US Equity	MSCI ACWI ex-US	5.1	6.8	1.0	19.3	0.35
	US Broad Market	Russell 3000	5.1	7.1	0.1	21.2	0.34
	US Large Cap	S&P 500	4.9	6.8	0.1	20.6	0.33
	US Mid Cap	Russell Midcap	5.6	8.0	0.1	23.1	0.35
	US Small Cap	Russell 2000	7.1	10.1	-0.5	26.1	0.39
တ္သ	EAFE Equity	MSCIEAFE	4.7	6.3	1.9	18.9	0.33
Equities	Europe Equity	MSCI Europe	5.2	7.1	1.9	20.5	0.35
ᇛ	Eurozone Equity	MSCI Euro ex-UK	5.1	7.1	1.8	21.2	0.33
-	UK Large Cap	FTSE100	5.6	7.8	1.9	22.3	0.35
	UK Small Cap	FTSE Small Cap UK	6.9	10.2	1.1	27.4	0.37
	Canada Equity	S&PTSX	3.6	6.0	-0.3	23.0	0.26
	Japan Equity	MSCIJP	2.9	4.9	2.5	20.8	0.24
	EM Equity	MSCIEM	6.5	9.5	-0.5	25.9	0.37
	China Small Cap	CSI 500	7.1	13.1	-1.0	38.2	0.34
	Pacific ex-JP Equity	MSCI Pacific ex-JP	4.9	8.0	0.7	26.5	0.30
	US REITs	FTSE NAREIT Equity	4.9	6.7	0.7	20.2	0.33
S	Global REITs	FTSE EPRA/NAREIT Developed	4.6	6.1	1.4	18.2	0.33
Alternatives	HFRI Hedge Funds	HFRI HF	4.8	5.8	-	14.8	0.39
nati	GS Commodities	S&P GSCI	4.9	8.1	-	27.1	0.30
err	Agriculture	S&P GSCI Agriculture	0.1	2.8	-	24.2	0.12
¥	Energy	S&P GSCI Energy	7.7	14.0	-	39.6	0.35
	Industrial Metals	S&P GSCI Industrial Metals	3.8	6.8	-	25.7	0.26
0	Precious Metals	S&P GSCI Precious Metals	1.6	3.3	-	18.8	0.18

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Figure 9: 10-year correlations (JPY)

		Fixed income																									
	Greater than 0.70									ks																Tsy	
	0.30 to 0.70				-	jq.				US Preferred Stocks						Global Agg ex-US					0					× ×	èdit
	Less than 0.30	Ę		D	(Syl				s pe	SC) ex			Q		Sorp	sy	<u> </u>		>	y B	RMB Credit
	2000 111011 0100	Sho	Σ	Lon		ad ly	_	orp	(0	erre	Sori	er	"	۵	Agg	Agg	Tsy	Sov	Cor	<u>0</u>	ne (ne T	9	_	So	olic	W MB
		US Tsy Short	US Tsy IM	USTsy Long	USTIPS	US Broadly Synd. Loans	Agg	USIGCorp	USMBS	Pref	US HY Corps	UK Linker	UK Gilts	UK Corp	Global Agg	bal	Global Tsy	Global Sov	Global Corp	Global IG	Eurozone Corp	Eurozone Tsy	Asian Dollar IG	Agg	EM Agg Sov	China Policy Bk &	па Б
	Asset class	.SN	.SN	.SN	. SN	US Bro Loans	US Agg	NS	NSI	NSI	NSI	UK	λ	ÜK	Glo	Glo	Glo	Glo	Glo	Glo	Eur	Eur	Asia	EM Agg	EM	Chi	Chinal
	US Tsy Short	1.00																									
	US Tsy IM	0.43																									
	US Tsy Long	0.24		1.00	100																						
	US TIPS US Broadly Synd. Loans			0.60 -0.29		1.00																					
	US Agg			0.85	_		1.00																				
	US IG Corp			0.55				1.00																			
	USMBS			0.73																							
	US Preferred Stocks			0.12			-		_																		
	US HY Corps UK Linker	-0.15 0.03		-0.10 0.34								1.00															
me	UK Gilts	0.03		0.34				_				0.85	100														
ည	UK Corp		0.09		0.48								0.87	1.00													
Fixedincome	Global Agg	0.21	0.61	0.54								0.67	0.71	0.65	1.00												
Fixe	Global Agg ex-US			0.39																							
	Global Tsy	0.25			_	_		_	_	_	_			0.54		0.96		1.00									
	Global Sov Global Corp	0.12		0.43					0.53									0.91	100								
	Global IG			0.36					0.52					0.81				0.91		1.00							
	Eurozone Corp		0.20			_		0.60	0.33	0.46	0.61	=		0.74			0.76	0.82	0.88	0.88	1.00						
	Eurozone Tsy			0.30																	0.94						
	Asian Dollar IG			0.47					0.62					0.58 0.62							0.58	0.55	_	1.00			
	EM Agg EM Agg Sov			0.20	$\overline{}$				$\overline{}$	-											0.68				1.00		
	China Policy Bk & Tsy	0.08												-							-				0.21	1.00	
	China RMB Credit	0.05			0.21	_			_												0.34						
	Global Equity			-0.20																				$\overline{}$			
	Global ex-US Equity US Broad Market	-0.11 -0.17		-0.21 -0.20										0.68										0.70			0.27
	US Large Cap			-0.20																							
	US Mid Cap			-0.21																							
	US Small Cap			-0.27					-0.06					0.51							0.46				0.51		
es	EAFE Equity			-0.21								-		-	$\overline{}$	-		-		-	0.69			$\overline{}$			
Equities	Europe Equity			-0.21	_																0.69 0.70						
日	Eurozone Equity UK Large Cap		_	-0.19 -0.28	_									_			_				0.70						
	UK Small Cap			-0.28										0.74							0.62						
	Canada Equity	-0.12		-0.21										0.61							0.60	0.43	0.41	0.65	0.62	0.18	0.22
	Japan Equity			-0.15																							
	EM Equity			-0.17		_														-	-	$\overline{}$	$\overline{}$	$\overline{}$			
	China Small Cap Pacific ex-JP Equity			-0.03 -0.17	_						0.32										0.30				0.31 0.66		
	US REITs			0.05	_																						
	Global REITs			0.00								-		0.65						0.68	-		0.52		0.69		
Alternatives	HFRI Hedge Funds	-0.21		-0.27					-0.09												0.56						
nati	GS Commodities			-0.38	_			_	_														-				
teri	Agriculture			-0.16 -0.38																							
A	Energy Industrial Metals		_	-0.23	_																			_			_
	Precious Metals		_	0.24								-		$\overline{}$	_	-		-		-	0.43		$\overline{}$	$\overline{}$			

Source: Invesco, estimates as of June 30, 2022. Proxies listed in **Figure 8**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 11 for information about our CMA methodology. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here.

Figure 9: 10-year correlations (JPY)

			Equities													Alternatives									
•	Greater than 0.70 0.30 to 0.70 Less than 0.30 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	China Small Cap	Pacific ex-JP Equity	USREITs	Global REITs	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 Broadly Synd. 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 Corp Global IG Eurozone Corp Eurozone Tsy Asian Dollar IG EM Agg EM Agg Sov China Policy Bk & Tsy China RMB Credit																								
ives Equities	Pacific ex-JP Equity US REITs Global REITs HFRI Hedge Funds	0.96 0.95 0.94 0.91 0.87 0.88 0.76 0.86 0.38 0.90 0.71 0.84 0.89 0.	0.88 0.87 0.88 0.81 0.99 0.97 0.96 0.93 0.88 0.79 0.92 0.40 0.92 0.66 0.83 0.89	1.00 0.97 0.92 0.88 0.87 0.86 0.83 0.80 0.83 0.80 0.75 0.34 0.82 0.73 0.81 0.82 0.83 0.81 0.86 0.	0.89 (0.	0.95 0.87 0.87 0.88 0.85 0.82 0.83 0.86 0.86 0.69 0.77 0.34 0.83 0.76 0.84 0.89 0.89	0.80 0.78 0.77 0.75 0.79 0.66 0.71 0.32 0.77 0.70 0.76 0.85	0.99 0.98 0.95 0.89 0.81 0.85 0.36 0.67 0.82 0.86 0.	0.99 0.95 0.88 0.83 0.71 0.82 0.34 0.86 0.65 0.80 0.84 0.	0.92 0.86 0.80 0.70 0.81 0.34 0.66 0.79 0.82 0.	0.89 0.84 0.69 0.79 0.33 0.85 0.60 0.77 0.84	0.80 0.70 0.78 0.34 0.81 0.63 0.78 0.86 0.	0.63 0.82 0.36 0.86 0.63 0.77 0.88	0.67 0.32 0.68 0.50 0.64 0.69	0.45 0.89 0.57 0.74 0.83	0.39 0.15 0.25 0.42	0.85	0.93 0.60	0.76						
Alternatives	GS Commodities Agriculture Energy Industrial Metals Precious Metals	0.49 0.28 0.43 0.58 0.20	0.32 0.47 0.60	0.22 0.39 0.52	0.22 (0.37 (0.51 (0.24 0.43 0.55	0.21 0.41 0.49	0.30 0.46 0.57	0.29 0.46 0.56	0.28 0.42 0.53	0.32 0.54 0.59	0.28 (0.46 (0.56 (0.34 0.58 0.66	0.18 0.33 0.39	0.34 0.41 0.60	0.02 0.11 0.31	0.37 0.44 0.63	0.22 0.23	0.30 0.35 0.52	0.28 0.55 0.59	0.41 0.97 0.55 0	0.27 0.36	0.45		1.00

Source: Invesco, estimates as of June 30, 2022. Proxies listed in **Figure 8**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 11 for information about our CMA methodology. 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 10). 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 10: 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 earnings 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 meanvariance 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 75 professionals, with 20+ years of experience across the leadership team. The team benefits from Invesco's on-the-ground presence in 25 countries worldwide, with over 150 professionals to support investment selection and ongoing monitoring.



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。
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インベスコ・アセット・マネジメント株式会社

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