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Capital Market Assumptions

# FIVE-YEAR PERSPECTIVE 2021

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The T. Rowe Price  
Capital Market Assumptions  
benefit from the expertise of our  
global investment platform.

## Capital Market Assumptions Five Year Perspective | 2021

In-depth analysis and insights to inform your decision-making.

We are pleased to present the third annual publication of T. Rowe Price's Capital Market Assumptions. Last year's publication was issued amid one of the most rapid market drawdowns and subsequent rebounds in equity market history. If one views investment returns as the paths that market securities or asset classes take towards their intrinsic fair values, then during the depths of the COVID-19 crisis, investors' future return expectations should have sky-rocketed. They should have subsequently quickly declined as equity market values returned to and then surpassed their previous highs.

Given current valuations and the significant decline in risk-free rates experienced in 2020, our nominal 2021 capital market assumptions are generally lower than those published in 2020. Lower risk-free rates were partially offset by optimism that an economic recovery fueled by vaccine progress could create upside potential for earnings and lead to further spread compression. Our covariance matrices reflect the current high volatility regime and high positive correlations experienced across credit and equity markets, during both the 2020 market drawdown and the subsequent rebound.

Since everything else about the world changed in 2020, we decided to keep much of the structure of publication and asset class/market coverage the same as in the second edition. Asset class coverage expanded slightly to explicitly include developed market equity, whereas previously we provided only the primary components, and a few new U.S. fixed income sectors. We have also included a local market version of the return forecasts for our Japanese-domiciled investors, reflecting feedback we have received in that market. Let's hope 2021 is less exciting than 2020.

Our capital market assumptions are best understood as forecasts for the central tendency of forward returns. We do not seek to predict actual or realized returns, as there is bound to be material variation around this central tendency in any given historical or future period. For this reason, T. Rowe Price's approach to portfolio construction relies on the use of multiple optimization methods and robustness checks.

Our baseline forecasts incorporate the insights of senior portfolio managers and analysts across our equity, fixed income, and multi-asset divisions. We believe this interdisciplinary approach to developing capital market assumptions, seeking to capture both fundamental and quantitative insights, delivers the best thinking of T. Rowe Price.

We encourage your questions, comments, and feedback as they truly impact the improvements we make to this publication. Please feel free to contact your T. Rowe Price relationship manager and/or any of the investment professionals who contributed to this effort.



## UNITED STATES

4.7%	U.S. LARGE-CAP EQUITY EXPECTED RETURN (in USD)
0.0%	U.S. TREASURY EXPECTED RETURN (in USD)

CURRENCY



Near-term growth is set to be solid, but uninspiring, as the economy transitions from fiscal and monetary support. Unlike the post 2008–2009 global financial crisis experience, the labor market should recover rapidly, and aging demographics are likely to lead to tighter supply conditions. This supports a modest recovery in inflation. However, the benefits to corporates would remain limited, as tighter supply conditions would force higher spending on wages and investment which could pressure earnings.

## UNITED KINGDOM

7.4%	UK EQUITY EXPECTED RETURN (in GBP)
-0.7%	UK GILTS EXPECTED RETURN (in GBP)

CURRENCY



Now that the UK has left the European Union, some internationally exposed British firms would see a Brexit discount removed. This would help offset higher costs from doing business and a more difficult export environment with their biggest trading partner. What's more, the commodity and financial firms in the country would further benefit from a supportive global environment, thanks to an ongoing rotation out of tech into commodities and financials, a steeper yield curve, and better pricing power from tighter supply conditions.

The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Please refer to the respective regional pages for data sources and important additional information.





## EUROZONE

5.3%	EUROPE EQUITY EXPECTED RETURN (in EURO)
-0.1%	EUROPE GOVERNMENTS EXPECTED RETURN (in EURO)

### CURRENCY



Longer-term growth prospects remain weak in Europe. Rising costs of an aging society, muted economic dynamism, and the prospects of ultra-low rates to cope with the COVID crisis would weigh on the financial sector. Furthermore, the ongoing depreciation of the euro could weigh on both inflation, earnings, and employment growth—hindering the COVID recovery. This makes euro area companies less attractive, other than for their superlative dividend yields.

## JAPAN

6.3%	JAPAN EQUITY EXPECTED RETURN (in JPY)
0.2%	JAPAN TREASURY EXPECTED RETURN (in JPY)

### CURRENCY



The domestic economy still faces headwinds from a shrinking workforce and slower growth in the primary export markets, such as China. To date, both monetary and fiscal policies have wandered into unconventional territory, but at the cost of an impaired financial system. That said, corporate change and restructuring look set to continue, which would unlock shareholder value and see improved business models.

## AUSTRALIA

6.3%	AUSTRALIA EQUITY EXPECTED RETURN (in AUD)
1.2%	AUSTRALIA BONDS EXPECTED RETURN (in AUD)

### CURRENCY



Australian fundamentals remain better than in most developed economies. In the near-term, a potential mini-commodity boom would lift terms of trade and boost corporate earnings and domestic income. However, in the coming years, Australia will soon see the effects of an aging society—with a step down in the growth rate of the working age population.

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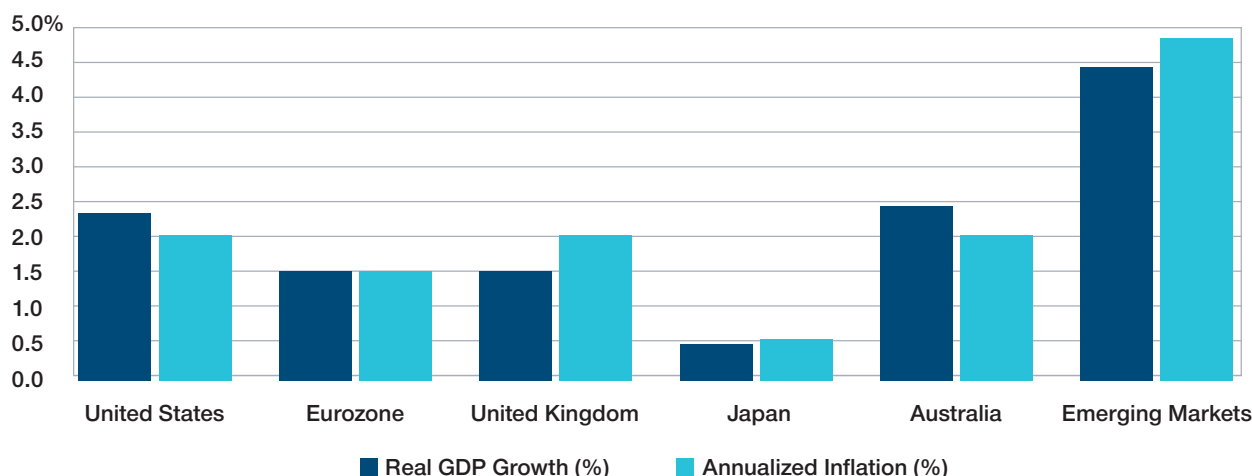


## COMMENTARY ON BASELINE FORECASTS

Following 2020, a year in which the global economy came to an abrupt stand still in March and we all became more familiar with terms like social distancing and contact tracing, further progress in curbing the pandemic and distributing vaccines are likely to be the most influential factors going into 2021. With the U.S. election and Brexit negotiation uncertainty behind us and huge global stimulus initiatives

underway, returns for the next five years will be determined by how much economic recovery already is priced into the market. Whether global inflation, which has been relatively muted recently, begins to reappear on the back of stronger economic growth is another important factor.

### MACROECONOMIC FORECASTS FOR BASELINE RESULTS



#### Equity

Our five-year expectation for equity risk premia has widened slightly compared to last year with the decline in nominal return expectations driven primarily by declining yields, rather than a compression of the equity risk premia. Globally, we perceive equity valuations as slightly stretched with a small negative total-return contribution attributable to our expectation of a forthcoming decline in P/E ratios. We believe real earnings have the potential to grow 4%-6% over the next five years, with emerging markets leading the way due to a declining U.S. dollar. Globally, dividend yields declined slightly in 2020 as stock prices rose faster than dividend payouts. Dividend cuts were not as prevalent during the coronavirus crisis as they were during the global financial crisis of 2008–2009. The U.S. equity market, and particularly its growth segment, outpaced the rest of the global equity market in 2020, continuing the trend we have seen over the past decade. We expect the relative valuation gap to close as earnings growth accelerates in Japan and the UK.

#### Fixed Income

The global backdrop of highly volatile economic growth and low yields has been accompanied by very tight credit spreads, leaving many drivers of fixed income returns particularly stretched. Our forward-looking baseline forecasts for developed-market bond returns are lower than historical experience, an acknowledgment that yield curves would need to move (or continue deeper) into negative territory to reproduce recent returns. Most developed-market yield curves started 2021 firmly in negative territory, with central banks having minimal tools remaining at their disposal to prop up the global economy.

Our investment professionals expect the shape of the yield curve to normalize over the next five years, with higher yields overall particularly at the long end of the curve. Such a bear steepener potentially would cause short-term negative returns for longer-duration instruments but higher reinvestment yields for investors with longer time horizons.

Consistent with the experience in equities, we expect to see a continuing search for yield in fixed income markets as aging populations expect steady payouts in retirement. This constant hunt

for yield, along with the possibility of continued accommodative monetary policy over most of the coming five years, could help keep a lid on credit spreads, with spread tightening a possibility. Our investment professionals see the most tightening in emerging market (EM) corporate and U.S. high yield bonds. Our U.S. inflation forecast is about 25 basis points higher than consensus, offering a slight return tailwind to Treasury inflation-protected securities (TIPS).

#### Alternatives

In 2020, commodity prices ended the year in line with where they started, but that path was uneven as a more than 20% drawdown in the first quarter was recovered over the next three. Gold lived up to its reputation as a safe haven, delivering one of the few consistently positive return patterns in 2020. We expect gold prices to retrace some of their recent run up over the next five years. As a risk-on asset, real estate had a difficult first quarter, but recovered to end the year about flat.

We continue to be concerned about energy-related areas, as structural oversupply and strong productivity growth within the sector could hinder future returns for investors. Hedge fund performance, while widely varied based on the strategy and investment approach, generally lagged public markets in 2020.

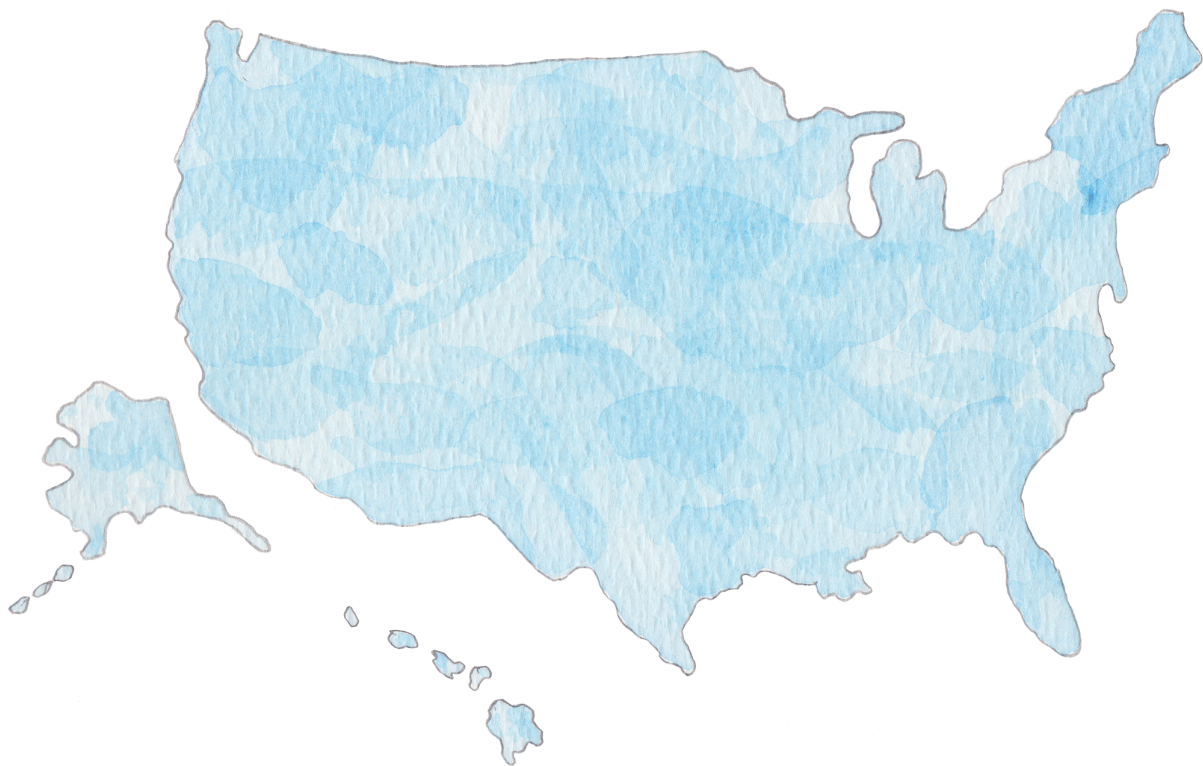
Our expectations for private assets include a slight liquidity premium but do not offer dramatically higher expectations than for public equity markets.

#### Currency

While five-year currency trends are notoriously hard to forecast, our short-term interest rate views and global growth outlooks, where they differ from consensus, offer a lens into possible currency fluctuations. Our baseline forecasts incorporate a slight strengthening of the Japanese yen, relative stability for the Australian dollar and British pound, and a weakening of the U.S. dollar and the euro. We also do not expect EM currencies to depreciate significantly relative to developed market currencies although, on a real basis, EM market exchange rates could appreciate on the backs of an economic rebound and stronger inflation differentials versus the developed markets.

## **REGION | UNITED STATES (\$ USD)**

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# REGION | UNITED STATES (\$ USD)

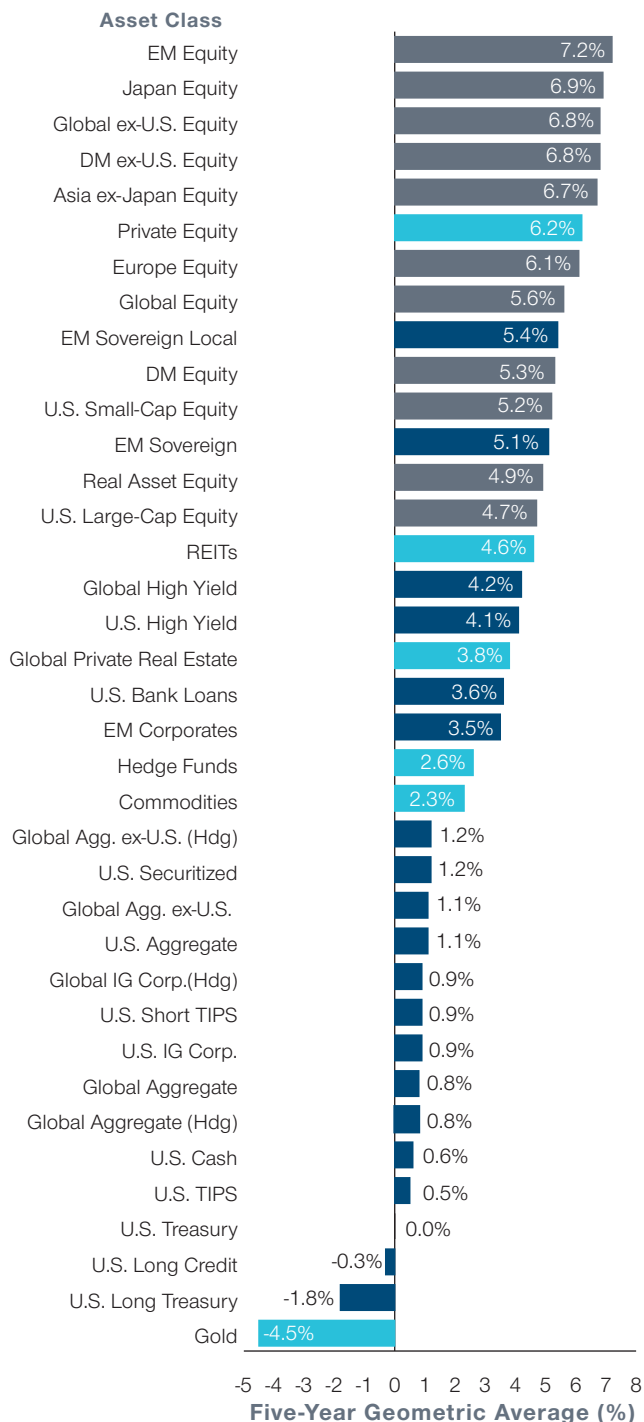


(Figures in U.S. Dollars)

## ANNUALIZED FORECAST AND HISTORICAL NOMINAL RETURNS

ASSET CLASS	2021 5-YEAR RETURN FORECAST	HISTORICAL 5-YEAR RETURNS, ENDED 31 DECEMBER		
		2020	2015	2010
EQUITY	Global Equity	5.6%	12.8%	6.6%
	Global ex-U.S. Equity	6.8	9.4	1.4
	DM Equity	5.3	12.8	8.2
	DM ex-U.S. Equity	6.8	8.1	3.2
	U.S. Large-Cap Equity	4.7	15.6	12.4
	U.S. Small-Cap Equity	5.2	13.2	9.2
	Europe Equity	6.1	7.3	4.4
	Asia ex-Japan Equity	6.7	13.9	0.1
	Japan Equity	6.9	8.8	5.3
	EM Equity	7.2	13.1	-4.6
	Real Asset Equity	4.9	6.6	2.9
FIXED INCOME	Global Aggregate	0.8	4.8	0.9
	Global Aggregate (Hdg)	0.8	4.5	3.9
	Global Agg. ex-U.S.	1.1	4.9	-0.8
	Global Agg. ex-U.S. (Hdg)	1.2	4.4	4.3
	Global IG Corp.(Hdg)	0.9	6.2	4.5
	Global High Yield	4.2	8.3	4.7
	U.S. Cash	0.6	1.1	0.0
	U.S. Treasury	0.0	3.8	2.9
	U.S. TIPS	0.5	5.1	2.5
	U.S. Short TIPS	0.9	3.0	0.8
	U.S. IG Corp.	0.9	6.7	4.5
	U.S. Long Credit	-0.3	10.0	6.5
	U.S. Long Treasury	-1.8	7.8	7.7
	U.S. Aggregate	1.1	4.4	3.2
	U.S. High Yield	4.1	8.6	5.0
	U.S. Bank Loans	3.6	5.4	3.7
	U.S. Securitized	1.2	3.2	3.0
	EM Sovereign Local	5.4	6.7	-3.5
	EM Sovereign	5.1	7.1	5.4
	EM Corporates	3.5	7.6	4.4
	Commodities	2.3	1.0	-13.5
	Gold	-4.5	11.0	-6.2
	REITs	4.6	6.7	11.9
	Hedge Funds	2.6	3.3	-0.7
ALTERNATIVES	Global Private Real Estate	3.8	5.8	12.2
	Private Equity	6.2	13.3	12.0

## FIVE-YEAR ANNUALIZED EXPECTED RETURNS



### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE/Russell. January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

# REGION | UNITED STATES (\$ USD)



(Figures in U.S. Dollars)

## FIVE-YEAR SCENARIO ANNUALIZED RETURNS

	ASSET CLASS	BASELINE	STRONG BEAR MARKET	MODERATE BEAR MARKET	MODERATE BULL MARKET	STRONG BULL MARKET
EQUITY	Global Equity	5.6%	1.8%	5.3%	5.8%	8.3%
	Global ex-U.S. Equity	6.8	3.0	6.6	7.1	8.8
	DM Equity	5.3	1.9	5.0	5.5	7.9
	DM ex-U.S. Equity	6.8	3.5	6.6	7.0	8.6
	U.S. Large-Cap Equity	4.7	1.1	4.3	4.8	7.7
	U.S. Small-Cap Equity	5.2	0.1	4.6	5.5	8.8
	Europe Equity	6.1	2.7	6.1	6.3	8.5
	Asia ex-Japan Equity	6.7	3.3	6.4	6.9	8.2
	Japan Equity	6.9	3.6	7.0	7.5	8.4
	EM Equity	7.2	1.7	6.7	7.6	9.7
	Real Asset Equity	4.9	-0.3	3.2	5.2	6.2
FIXED INCOME	Global Aggregate	0.8	0.5	0.8	0.8	1.1
	Global Aggregate (Hdg)	0.8	0.6	0.9	0.8	1.2
	Global Agg. ex-U.S.	1.1	0.6	1.1	1.1	1.3
	Global Agg. ex-U.S. (Hdg)	1.2	0.8	1.2	1.2	1.4
	Global IG Corporate (Hdg)	0.9	0.9	1.3	1.3	1.8
	Global High Yield	4.2	2.1	4.1	4.3	5.6
	U.S. Cash	0.6	0.1	0.6	0.6	1.0
	U.S. Treasury	0.0	0.7	0.1	-0.1	0.1
	U.S. TIPS	0.5	0.4	0.6	0.4	1.0
	U.S. Short TIPS	0.9	0.5	0.9	0.8	1.1
	U.S. IG Corporate	0.9	0.0	1.0	0.9	1.8
	U.S. Long Credit	-0.3	-1.4	-0.1	-0.2	1.1
	U.S. Long Treasury	-1.8	2.6	-1.5	-1.9	-2.6
	U.S. Aggregate	1.1	0.6	1.0	1.1	1.5
	U.S. High Yield	4.1	2.0	4.1	4.2	5.5
	U.S. Bank Loans	3.6	1.6	3.6	3.7	4.3
	U.S. Securitized	1.2	1.4	1.1	1.1	1.0
	EM Sovereign Local	5.4	1.5	5.1	5.7	7.3
	EM Sovereign	5.1	3.0	5.1	5.2	5.9
	EM Corporate	3.5	2.0	3.5	3.6	4.5
ALTERNATIVES	Commodities	2.3	0.4	2.5	2.6	3.5
	Gold	-4.5	4.1	2.7	-4.4	-4.7
	REITs	4.6	2.8	4.5	4.6	6.2
	Hedge Funds	2.6	0.8	2.2	2.8	3.4
	Global Private Real Estate	3.8	3.0	3.7	3.8	4.0
	Private Equity	6.2	4.0	5.9	6.3	8.1

### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM =Emerging Markets. DM = Developed Markets.

Source: T. Rowe Price. January 2021. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

# REGION | UNITED STATES (\$ USD)



(Figures in U.S. Dollars)

## EXPECTED VOLATILITIES AND CORRELATIONS

Volatility and Correlation Matrix		EQUITY											FIXED INCOME							
		Global Equity	Global ex-U.S. Equity	DM Equity	DM ex-U.S. Equity	U.S. Large-Cap Equity	U.S. Small-Cap Equity	Europe Equity	Asia ex-Japan Equity	Japan Equity	EM Equity	Real Asset Equity	Global Aggregate	Global Aggregate (Hdg)	Global Agg. ex-U.S. (Hdg)	Global Agg. ex-U.S.	Global IG Corporate (Hdg)	Global High Yield	U.S. Cash	U.S. Treasury
EQUITY	Global Equity	1.0																		
	Global ex-U.S. Equity	1.0	1.0																	
	DM Equity	1.0	1.0	1.0																
	DM ex-U.S. Equity	1.0	1.0	1.0	1.0															
	U.S. Large-Cap Equity	1.0	0.9	1.0	0.9	1.0														
	U.S. Small-Cap Equity	0.9	0.8	0.9	0.9	0.9	1.0													
	Europe Equity	1.0	1.0	1.0	1.0	0.9	0.8	1.0												
	Asia ex-Japan Equity	0.9	0.9	0.9	0.9	0.8	0.7	0.9	1.0											
	Japan Equity	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.7	1.0										
	EM Equity	0.9	1.0	0.9	0.9	0.8	0.7	0.9	1.0	0.7	1.0									
	Real Asset Equity	0.9	0.9	0.9	0.9	0.9	0.8	0.9	0.8	0.6	0.9	1.0								
FIXED INCOME	Global Aggregate	0.2	0.3	0.2	0.3	0.1	0.0	0.3	0.3	0.1	0.3	0.4	1.0							
	Global Aggregate (Hdg)	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0.0	-0.2	-0.1	0.0	0.7	1.0						
	Global Agg. ex-U.S.	0.3	0.4	0.3	0.4	0.2	0.1	0.4	0.4	0.1	0.4	0.5	1.0	0.5	1.0					
	Global Agg. ex-U.S. (Hdg)	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	-0.1	0.0	0.6	1.0	0.4	1.0				
	Global IG Corporate (Hdg)	0.6	0.6	0.6	0.6	0.5	0.4	0.6	0.6	0.4	0.6	0.7	0.6	0.6	0.6	0.6	1.0			
	Global High Yield	0.9	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.6	0.9	0.9	0.3	0.0	0.3	-0.1	0.7	1.0		
	U.S. Cash	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	0.1	-0.1	0.1	0.0	0.1	0.0	0.1	0.0	-0.2	-0.1	1.0	
	U.S. Treasury	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.5	-0.5	-0.5	-0.5	-0.4	0.5	0.8	0.3	0.7	0.1	-0.5	0.1	1.0
	U.S. TIPS	0.1	0.1	0.0	0.1	0.0	-0.1	0.0	0.2	-0.1	0.2	0.3	0.5	0.5	0.4	0.4	0.4	0.3	0.0	0.4
	U.S. Short TIPS	0.3	0.4	0.3	0.3	0.3	0.2	0.3	0.4	0.0	0.5	0.5	0.3	0.1	0.3	0.0	0.3	0.5	0.2	-0.1
	U.S. IG Corporate	0.5	0.5	0.5	0.5	0.4	0.3	0.5	0.5	0.4	0.5	0.6	0.7	0.7	0.6	0.6	1.0	0.6	-0.1	0.2
	U.S. Long Credit	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.7	0.8	0.6	0.7	0.9	0.4	-0.2	0.4
	U.S. Long Treasury	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.5	-0.5	-0.5	-0.5	-0.4	0.4	0.7	0.2	0.7	0.1	-0.5	0.0	0.9
	U.S. Aggregate	-0.2	-0.1	-0.2	-0.1	-0.2	-0.3	-0.1	0.0	-0.2	-0.1	0.0	0.7	0.9	0.5	0.8	0.6	0.0	0.1	0.8
	U.S. High Yield	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.8	0.9	0.2	0.0	0.2	-0.1	0.7	1.0	-0.1	-0.5
	U.S. Bank Loans	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.5	0.8	0.8	0.0	-0.2	0.1	-0.2	0.5	0.9	-0.1	-0.7
	U.S. Securitized	-0.2	-0.1	-0.2	-0.2	-0.2	-0.3	-0.2	0.0	-0.3	-0.1	0.0	0.6	0.8	0.4	0.7	0.5	0.0	0.1	0.7
	EM Sovereign Local	0.7	0.8	0.7	0.7	0.6	0.6	0.7	0.8	0.5	0.8	0.8	0.6	0.2	0.6	0.2	0.6	0.7	0.1	-0.2
	EM Sovereign	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.5	0.8	0.8	0.5	0.3	0.5	0.3	0.8	0.8	-0.1	-0.2
	EM Corporate	0.8	0.8	0.7	0.7	0.7	0.6	0.7	0.8	0.5	0.8	0.8	0.4	0.2	0.4	0.2	0.8	0.9	-0.1	-0.3
	ALTERNATIVES	Commodities	0.7	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.5	0.7	0.8	0.2	-0.2	0.3	-0.3	0.3	0.7	0.1
Gold		0.1	0.2	0.0	0.1	0.0	-0.1	0.1	0.2	0.0	0.3	0.3	0.6	0.4	0.5	0.3	0.3	0.2	0.2	0.3
REITs		0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.6	0.5	0.6	0.8	0.2	0.1	0.2	0.1	0.6	0.7	-0.1	-0.3
Hedge Funds		0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.8	0.0	-0.2	0.1	-0.2	0.5	0.8	0.0	-0.6
Global Private Real Estate		0.4	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.2	0.3	0.4	-0.2	-0.3	-0.2	-0.3	0.0	0.4	0.0	-0.3
	Private Equity	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.8	0.8	0.1	-0.3	0.2	-0.3	0.4	0.8	0.1	-0.6

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Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE/Russell. January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.



# REGION | UNITED STATES (\$ USD)



(Figures in U.S. Dollars)

## EXPECTED VOLATILITIES AND CORRELATIONS (CONTINUED)

Volatility and Correlation Matrix		FIXED INCOME												ALTERNATIVES						VOLATILITY (%)
		U.S. TIPS	U.S. Short TIPS	U.S. IG Corporate	U.S. Long Credit	U.S. Long Treasury	U.S. Aggregate	U.S. High Yield	U.S. Bank Loans	U.S. Securitized	EM Sovereign Local	EM Sovereign	EM Corporate	Commodities	Gold	REITs	Hedge Funds	Global Private Real Estate	Private Equity	
EQUITY	Global Equity																			17.8
	Global ex-U.S. Equity																			19.6
	DM Equity																			17.4
	DM ex-U.S. Equity																			19.0
	U.S. Large-Cap Equity																			16.9
	U.S. Small-Cap Equity																			22.3
	Europe Equity																			20.4
	Asia ex-Japan Equity																			21.6
	Japan Equity																			16.6
	EM Equity																			23.3
	Real Asset Equity																			22.5
FIXED INCOME	Global Aggregate																			5.5
	Global Aggregate (Hdg)																			2.9
	Global Agg. ex-U.S.																			8.0
	Global Agg. ex-U.S. (Hdg)																			2.8
	Global IG Corporate (Hdg)																			4.9
	Global High Yield																			12.2
	U.S. Cash																			0.8
	U.S. Treasury																			4.8
	U.S. TIPS	1.0																		4.8
	U.S. Short TIPS	0.8	1.0																	3.3
	U.S. IG Corporate	0.5	0.3	1.0																5.9
	U.S. Long Credit	0.5	0.1	1.0	1.0															9.4
	U.S. Long Treasury	0.4	-0.2	0.3	0.5	1.0														13.1
	U.S. Aggregate	0.6	0.2	0.7	0.8	0.8	1.0													3.2
	U.S. High Yield	0.3	0.5	0.6	0.4	-0.5	0.0	1.0												11.1
	U.S. Bank Loans	0.2	0.6	0.4	0.2	-0.6	-0.2	0.9	1.0											10.7
	U.S. Securitized	0.7	0.3	0.5	0.6	0.7	0.9	0.0	-0.1	1.0										2.4
	EM Sovereign Local	0.3	0.4	0.6	0.5	-0.3	0.2	0.7	0.5	0.2	1.0									11.6
	EM Sovereign	0.5	0.5	0.8	0.6	-0.2	0.3	0.8	0.7	0.3	0.8	1.0								8.5
	EM Corporate	0.5	0.6	0.7	0.6	-0.3	0.2	0.9	0.8	0.2	0.7	0.9	1.0							8.6
ALTERNATIVES	Commodities	0.3	0.6	0.3	0.1	-0.5	-0.2	0.7	0.6	-0.2	0.5	0.5	0.6	1.0						19.1
	Gold	0.6	0.5	0.4	0.3	0.3	0.5	0.1	0.1	0.5	0.4	0.4	0.3	0.4	1.0					14.1
	REITs	0.1	0.2	0.4	0.4	-0.3	0.0	0.7	0.6	0.0	0.5	0.6	0.6	0.4	0.1	1.0				22.7
	Hedge Funds	0.2	0.5	0.4	0.2	-0.6	-0.2	0.8	0.8	-0.2	0.5	0.7	0.7	0.7	0.1	0.5	1.0			9.0
	Global Private Real Estate	0.1	0.3	0.0	-0.1	-0.3	-0.2	0.4	0.5	-0.1	0.1	0.2	0.2	0.3	0.0	0.5	0.4	1.0		12.0
	Private Equity	0.1	0.4	0.3	0.1	-0.6	-0.2	0.7	0.7	-0.2	0.6	0.6	0.6	0.7	0.1	0.6	0.8	0.5	1.0	25.0

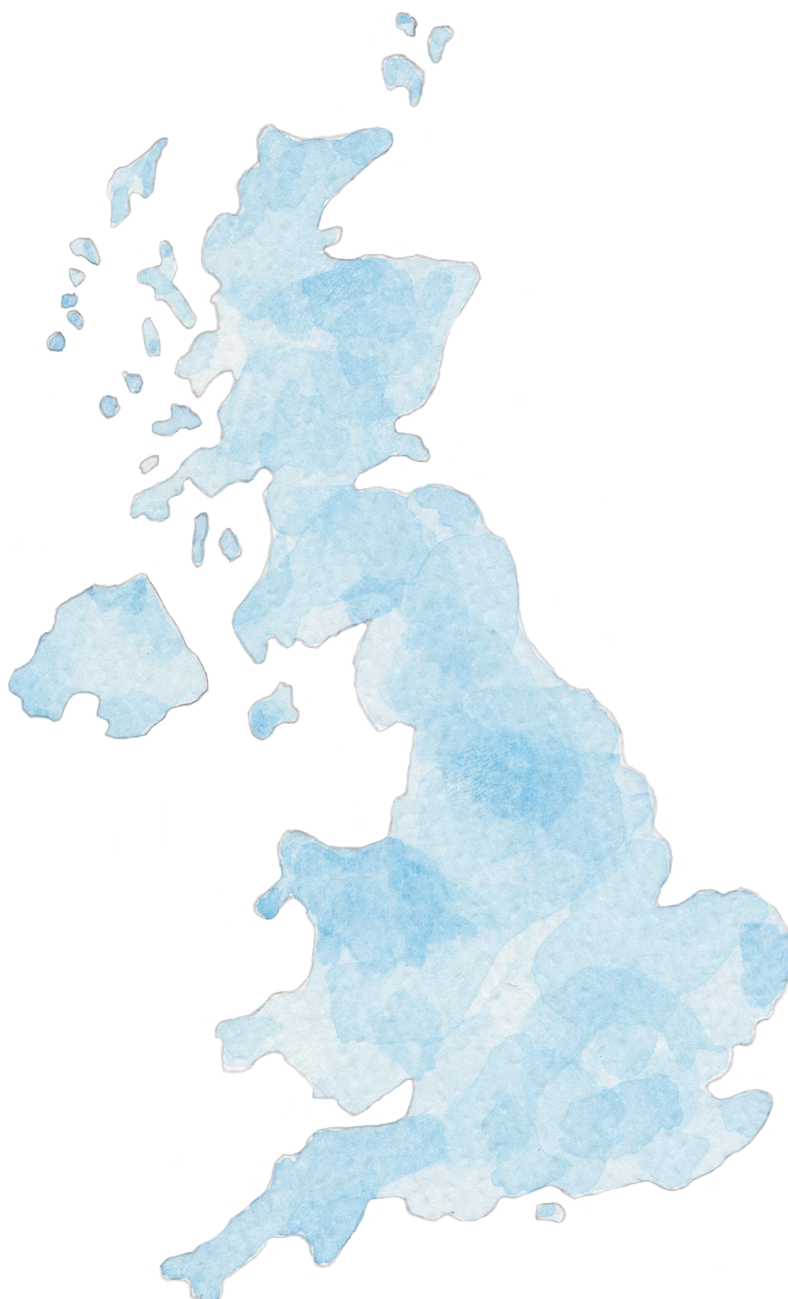
### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE/Russell. January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

## REGION | UNITED KINGDOM (£ GBP)

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# REGION | UNITED KINGDOM (£ GBP)

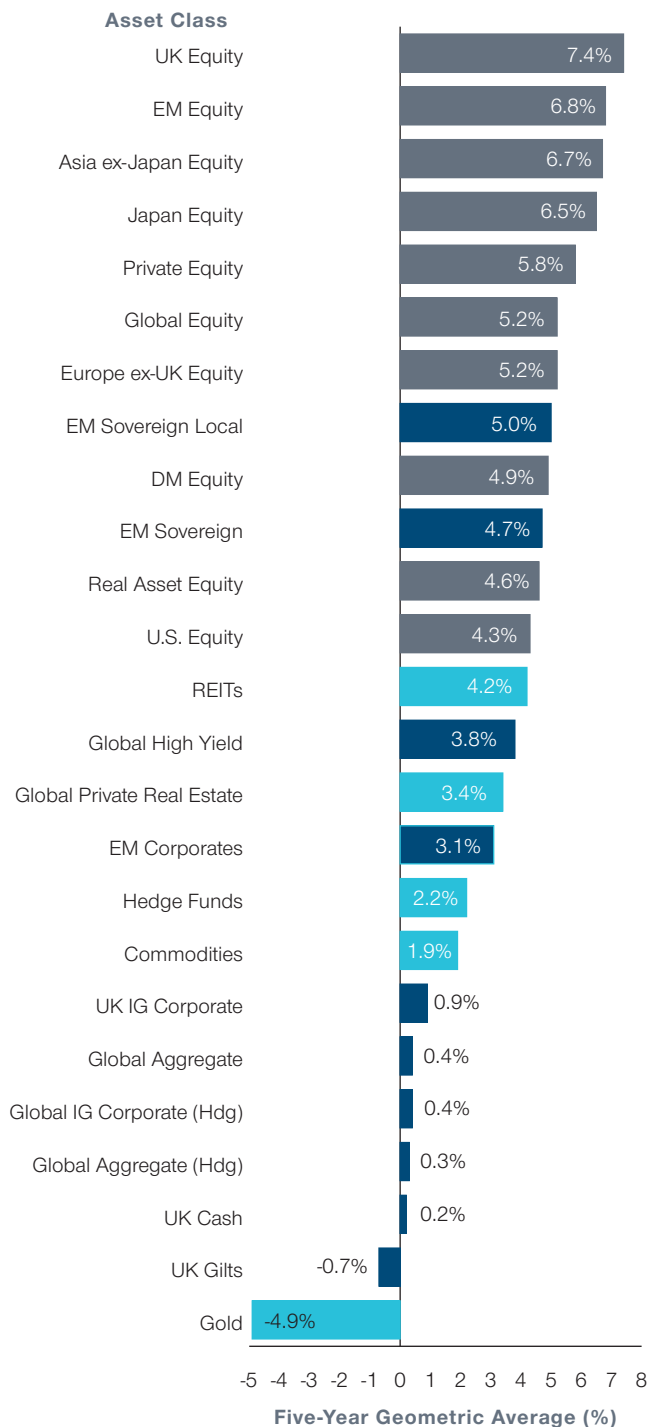


(Figures in British Pounds)

## ANNUALIZED FORECAST AND HISTORICAL NOMINAL RETURNS

ASSET CLASS	2021 5-YEAR RETURN FORECAST	HISTORICAL 5-YEAR RETURNS, ENDED 31 DECEMBER		
		2020	2015	2010
EQUITY	Global Equity	5.2%	14.6%	7.8%
	DM Equity	4.9	14.5	9.4
	U.S. Equity	4.3	17.0	13.8
	Europe ex-UK Equity	5.2	10.6	6.0
	UK Equity	7.4	4.8	4.9
	Asia ex-Japan Equity	6.7	15.6	1.2
	Japan Equity	6.5	10.7	6.1
	EM Equity	6.8	14.9	-3.5
	Real Asset Equity	4.6	8.2	4.1
	Global Aggregate	0.4	6.4	2.1
FIXED INCOME	Global Aggregate (Hdg)	0.3	3.4	4.2
	Global IG Corporate (Hdg)	0.4	5.0	4.8
	Global High Yield	3.8	9.9	6.0
	UK Cash	0.2	0.3	0.4
	UK Gilts	-0.7	5.8	5.8
	UK IG Corporate	0.9	6.9	7.2
	EM Sovereign Local	5.0	8.3	-2.3
	EM Sovereign	4.7	8.7	6.6
	EM Corporate	3.1	9.3	5.6
	Commodities	1.9	2.6	-12.5
ALTERNATIVES	Gold	-4.9	12.7	-5.1
	REITs	4.2	8.3	13.2
	Hedge Funds	2.2	4.9	0.4
	Global Private Real Estate	3.4	9.0	13.5
	Private Equity	5.8	17.7	13.3

## FIVE-YEAR ANNUALIZED EXPECTED RETURNS



### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE/Russell. January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

# REGION | UNITED KINGDOM (€ GBP)



(Figures in British Pounds)

## FIVE-YEAR SCENARIO ANNUALIZED RETURNS

	ASSET CLASS	BASELINE	STRONG BEAR MARKET	MODERATE BEAR MARKET	MODERATE BULL MARKET	STRONG BULL MARKET
EQUITY	Global Equity	5.2%	1.3%	4.9%	5.4%	7.9%
	DM Equity	4.9	1.4	4.6	5.1	7.5
	U.S. Equity	4.3	0.6	3.9	4.4	7.3
	Europe ex-UK Equity	5.2	1.7	5.2	5.4	7.7
	UK Equity	7.4	4.0	7.3	7.5	9.5
	Asia ex-Japan Equity	6.7	3.3	6.4	6.9	8.2
	Japan Equity	6.5	3.1	6.6	7.1	8.0
	EM Equity	6.8	1.2	6.3	7.3	9.3
	Real Asset Equity	4.6	-0.8	1.6	4.8	5.6
FIXED INCOME	Global Aggregate	0.4	0.1	0.4	0.4	0.7
	Global Aggregate (Hdg)	0.3	-0.1	0.3	0.3	0.6
	Global IG Corporate (Hdg)	0.4	0.2	0.7	0.8	1.2
	Global High Yield	3.8	1.6	3.8	3.9	5.2
	UK Cash	0.2	0.1	0.2	0.2	0.3
	UK Gilts	-0.7	-0.1	-0.6	-0.6	-0.6
	UK IG Corporate	0.9	-0.1	0.9	1.0	1.5
	EM Sovereign Local	5.0	1.0	4.7	5.3	6.9
	EM Sovereign	4.7	2.5	4.7	4.8	5.5
	EM Corporate	3.1	1.5	3.1	3.2	4.1
ALTERNATIVES	Commodities	1.9	-0.1	2.1	2.2	3.1
	Gold	-4.9	3.7	2.3	-4.8	-5.1
	REITs	4.2	2.3	4.1	4.2	5.8
	Hedge Funds	2.2	0.4	1.8	1.9	3.0
	Global Private Real Estate	3.4	2.6	3.3	3.4	3.6
	Private Equity	5.8	3.5	5.5	5.9	7.7

### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Source: T. Rowe Price. January 2021. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

# REGION | UNITED KINGDOM (£ GBP)



(Figures in British Pounds)

## EXPECTED VOLATILITIES AND CORRELATIONS

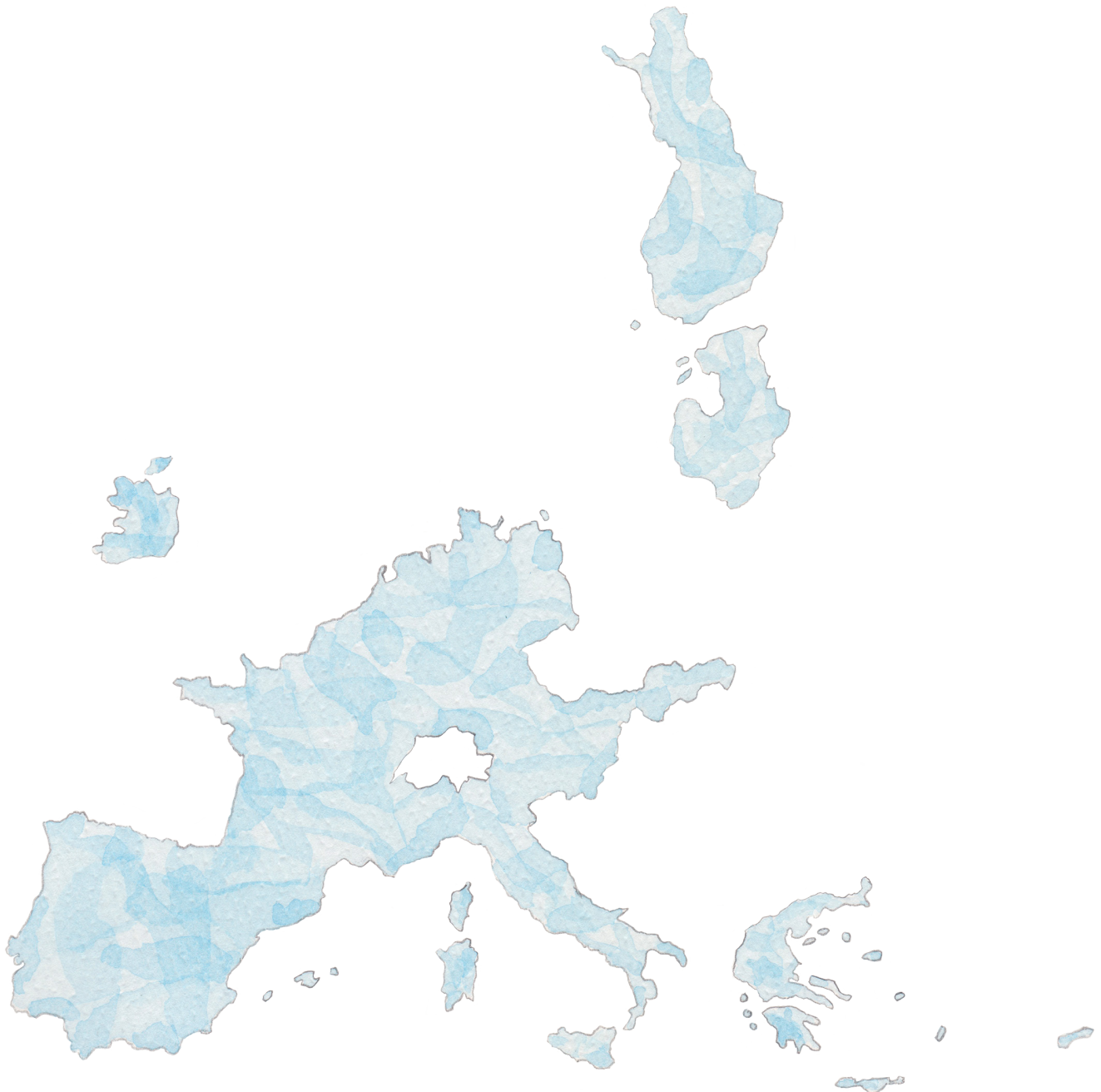
Volatility and Correlation Matrix		EQUITY								FIXED INCOME										ALTERNATIVES						VOLATILITY (%)
		Global Equity	DM Equity	U.S. Equity	Europe ex-UK Equity	UK Equity	Asia ex-Japan Equity	Japan Equity	EM Equity	Real Asset Equity	Global Aggregate	Global Aggregate (Hdg)	Global IG Corporate (Hdg)	Global HY	UK Cash	UK Gilts	UK IG Corporate	EM Sovereign Local	EM Sovereign	EM Corporate	Commodities	Gold	REITs	Hedge Funds	Global Private Real Estate	Private Equity
EQUITY	Global Equity	1.0																								14.4
	DM Equity	1.0	1.0																							14.3
	U.S. Equity	0.9	1.0	1.0																						14.5
	Europe ex-UK Equity	0.9	0.9	0.8	1.0																					16.9
	UK Equity	0.9	0.9	0.8	0.9	1.0																				14.9
	Asia ex-Japan Equity	0.8	0.8	0.7	0.8	0.8	1.0																			16.7
	Japan Equity	0.7	0.7	0.6	0.6	0.6	0.5	1.0																		15.6
	EM Equity	0.8	0.8	0.6	0.8	0.8	1.0	0.5	1.0																	18.4
	Real Asset Equity	0.8	0.8	0.8	0.7	0.8	0.6	0.6	0.7	1.0																16.6
FIXED INCOME	Global Aggregate	0.0	0.0	0.0	-0.1	-0.2	-0.1	0.2	-0.2	0.3	1.0															10.8
	Global Aggregate (Hdg)	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.3	0.7	1.0														2.9
	Global IG Corporate (Hdg)	0.6	0.5	0.4	0.6	0.6	0.6	0.3	0.6	0.6	0.1	0.6	1.0													4.8
	Global High Yield	0.8	0.8	0.7	0.7	0.7	0.6	0.5	0.6	0.8	0.2	0.2	0.6	1.0												9.3
	UK Cash	-0.1	-0.1	-0.2	0.0	-0.1	0.0	-0.1	0.1	0.0	0.0	0.0	-0.2	-0.2	1.0											1.0
	UK Gilts	-0.2	-0.2	-0.1	-0.2	-0.3	-0.1	0.0	-0.2	0.1	0.7	0.8	0.2	0.1	-0.1	1.0										6.5
	UK IG Corporate	0.7	0.6	0.6	0.7	0.7	0.6	0.4	0.6	0.7	0.1	0.5	0.9	0.7	-0.3	0.2	1.0									7.0
	EM Sovereign Local	0.5	0.4	0.4	0.4	0.3	0.5	0.4	0.5	0.6	0.6	0.5	0.5	0.6	0.1	0.3	0.4	1.0								11.1
	EM Sovereign	0.4	0.5	0.5	0.3	0.3	0.3	0.4	0.3	0.7	0.7	0.6	0.5	0.7	-0.1	0.5	0.5	0.7	1.0							9.8
	EM Corporate	0.5	0.5	0.5	0.3	0.3	0.4	0.4	0.4	0.7	0.6	0.5	0.5	0.8	-0.2	0.4	0.5	0.7	0.9	1.0						9.3
ALTERNATIVES	Commodities	0.5	0.5	0.4	0.4	0.5	0.4	0.3	0.5	0.6	-0.1	-0.1	0.3	0.4	0.2	-0.2	0.2	0.2	0.2	0.2	1.0					15.9
	Gold	-0.1	-0.1	-0.1	-0.1	-0.2	0.0	0.0	0.1	0.3	0.7	0.6	0.1	0.2	0.2	0.6	0.1	0.5	0.5	0.5	0.2	1.0				16.3
	REITs	0.7	0.7	0.7	0.6	0.6	0.4	0.4	0.4	0.8	0.1	0.2	0.5	0.7	-0.1	0.1	0.6	0.4	0.4	0.4	0.3	0.0	1.0			22.0
	Hedge Funds	0.6	0.6	0.6	0.4	0.4	0.3	0.6	0.3	0.6	0.5	0.1	0.1	0.6	-0.1	0.2	0.2	0.5	0.7	0.8	0.3	0.3	0.4	1.0		8.6
	Global Private Real Estate	0.0	0.0	0.2	-0.2	-0.2	-0.3	0.2	-0.3	0.2	0.7	0.2	-0.3	0.0	0.1	0.5	-0.2	0.3	0.5	0.4	-0.1	0.4	0.2	0.6	1.0	10.7
	Private Equity	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.7	0.2	0.0	0.2	0.6	0.0	0.0	0.3	0.4	0.5	0.5	0.4	0.2	0.6	0.8	0.5	20.1

### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE/Russell. January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

## REGION | EUROZONE (€ EUR)



# REGION | EUROZONE (€ EUR)

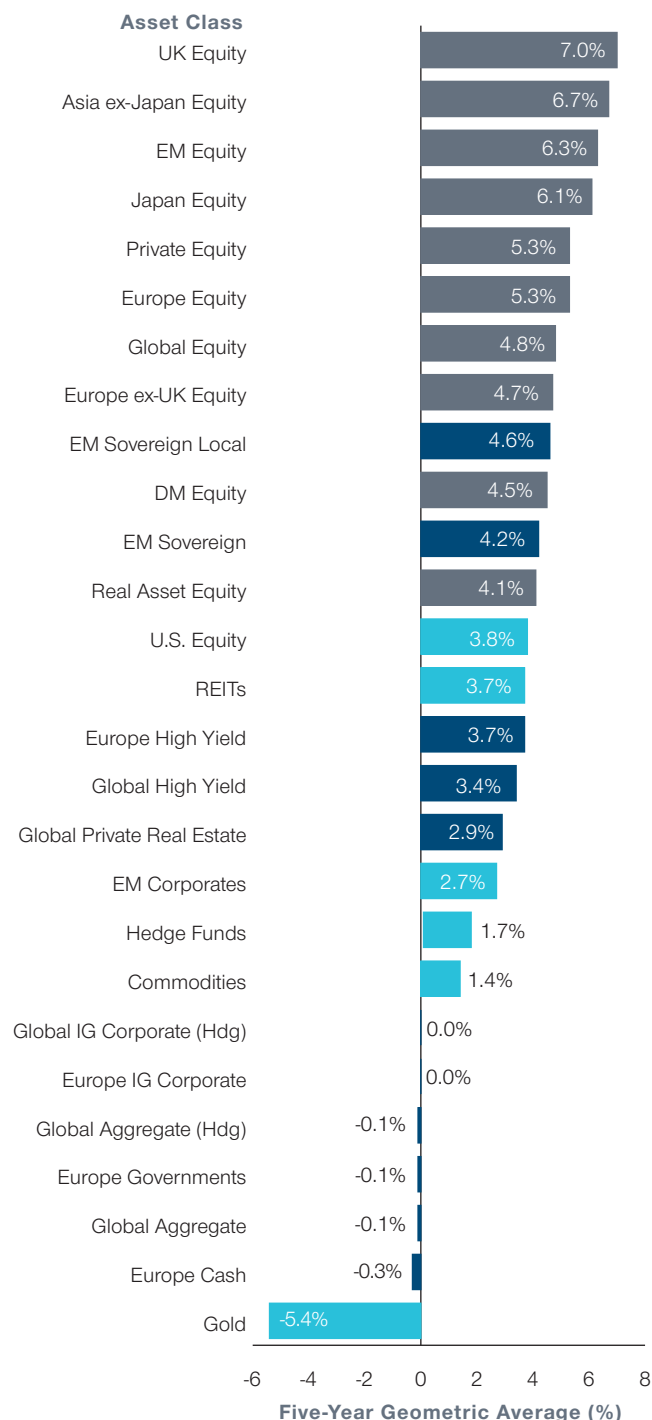
(Figures in Euros)



## ANNUALIZED FORECAST AND HISTORICAL NOMINAL RETURNS

ASSET CLASS		2021 5-YEAR RETURN FORECAST	HISTORICAL 5-YEAR RETURNS, ENDED 31 DECEMBER		
			2020	2015	2010
EQUITY	Global Equity	4.8%	10.2%	11.1%	1.5%
	DM Equity	4.5	10.2	12.7	0.5
	U.S. Equity	3.8	12.5	17.3	-0.2
	Europe Equity	5.3	4.8	8.9	0.8
	Europe ex-UK Equity	4.7	6.4	9.3	1.1
	UK Equity	7.0	0.8	8.1	0.3
	Asia ex-Japan Equity	6.7	11.2	4.3	10.4
	Japan Equity	6.1	6.3	9.5	-5.3
	EM Equity	6.3	10.5	-0.6	10.3
	Real Asset Equity	4.1	4.1	7.3	5.6
FIXED INCOME	Global Aggregate	-0.1	2.3	5.2	4.0
	Global Aggregate (Hdg)	-0.1	2.3	3.9	4.2
	Global IG Corporate (Hdg)	0.0	4.0	4.5	4.1
	Global High Yield	3.4	5.7	9.2	6.7
	Europe Cash	-0.3	-0.4	0.3	2.5
	Europe Governments	-0.1	3.0	5.9	3.3
	Europe IG Corporate	0.0	2.9	4.9	3.2
	Europe High Yield	3.7	4.5	8.7	8.9
	EM Sovereign Local	4.6	4.2	0.7	9.9
	EM Sovereign	4.2	4.6	9.8	5.8
	EM Corporate	2.7	5.1	8.8	5.6
	Commodities	1.4	-1.3	-9.8	-1.3
	Gold	-5.4	8.4	-2.2	18.1
	REITs	3.7	4.2	16.6	0.6
ALTERNATIVES	Hedge Funds	1.7	0.7	3.5	-1.6
	Global Private Real Estate	2.9	4.3	17.0	1.0
	Private Equity	5.3	12.5	16.8	9.0

## FIVE-YEAR ANNUALIZED EXPECTED RETURNS



### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE/Russell. January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

# REGION | EUROZONE (€ EUR)



(Figures in Euros)

## FIVE-YEAR SCENARIO ANNUALIZED RETURNS

	ASSET CLASS	BASELINE	STRONG BEAR MARKET	MODERATE BEAR MARKET	MODERATE BULL MARKET	STRONG BULL MARKET
EQUITY	Global Equity	4.8%	0.8%	4.4%	5.0%	7.4%
	DM Equity	4.5	0.9	4.1	4.6	7.1
	U.S. Equity	3.8	0.2	3.4	4.0	6.8
	Europe Equity	5.3	1.8	5.2	5.5	7.7
	Europe ex-UK Equity	4.7	1.3	4.7	5.0	7.2
	UK Equity	7.0	3.5	6.9	7.1	9.1
	Asia ex-Japan Equity	6.7	3.3	6.4	6.9	8.2
	Japan Equity	6.1	2.7	6.1	6.7	7.5
	EM Equity	6.3	0.8	5.8	6.8	8.9
	Real Asset Equity	4.1	-1.2	1.1	4.3	5.1
FIXED INCOME	Global Aggregate	-0.1	-0.3	-0.1	0.0	0.3
	Global Aggregate (Hdg)	-0.1	-0.4	0.0	0.0	0.3
	Global IG Corporate (Hdg)	0.0	-0.1	0.4	0.4	0.9
	Global High Yield	3.4	1.1	3.3	3.4	4.7
	Europe Cash	-0.3	-0.4	-0.3	-0.3	0.0
	Europe Governments	-0.1	-0.3	0.0	0.0	-0.1
	Europe IG Corporate	0.0	-1.1	0.0	0.0	0.5
	Europe High Yield	3.7	1.3	3.7	3.7	5.1
	EM Sovereign Local	4.6	0.6	4.3	4.8	6.5
	EM Sovereign	4.2	2.1	4.3	4.3	5.1
ALTERNATIVES	EM Corporate	2.7	1.0	2.6	2.7	3.7
	Commodities	1.4	-0.5	1.6	1.7	2.7
	Gold	-5.4	3.2	1.8	-5.3	-5.6
	REITs	3.7	1.9	3.7	3.8	5.4
	Hedge Funds	1.7	-0.1	1.3	1.4	2.5
	Global Private Real Estate	2.9	2.1	2.9	2.9	3.2
	Private Equity	5.3	3.1	5.0	5.4	7.3

### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Source: T. Rowe Price. January 2021. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

# REGION | EUROZONE (€ EUR)



(Figures in Euros)

## EXPECTED VOLATILITIES AND CORRELATIONS

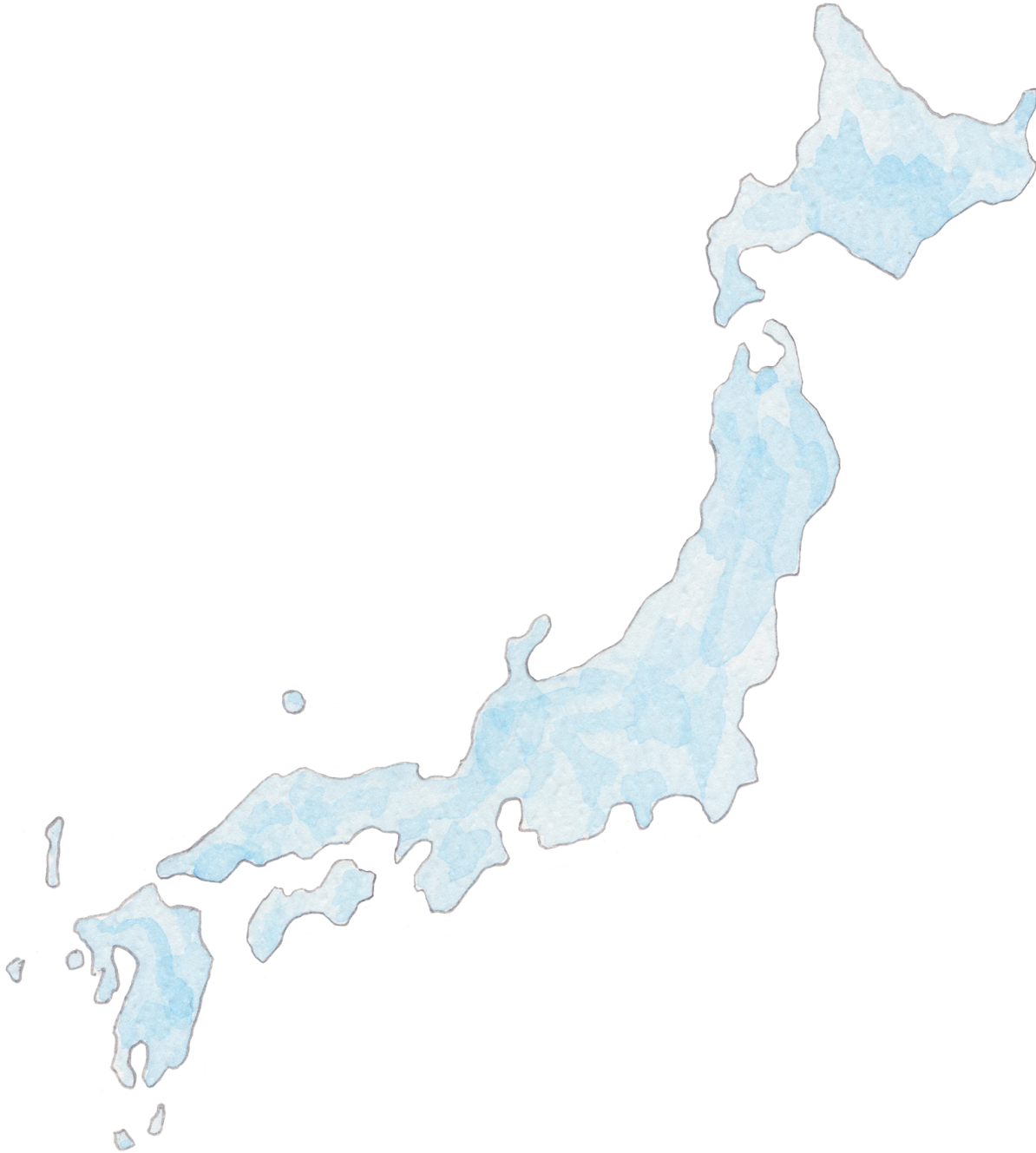
Volatility and Correlation Matrix		EQUITY										FIXED INCOME										ALTERNATIVES						VOLATILITY (%)	
		Global Equity	DM Equity	U.S. Equity	Europe Equity	Europe ex-UK Equity	UK Equity	Asia ex-Japan Equity	Japan Equity	EM Equity	Real Asset Equity	Global Aggregate	Global Aggregate (Hdg)	Global IG Corporate (Hdg)	Global High Yield	Europe Cash	Europe Governments	Europe IG Corporate	Europe High Yield	EM Sovereign Local	EM Sovereign	EM Corporate	Commodities	Gold	REITs	Hedge Funds	Global Private Real Estate		Private Equity
EQUITY	Global Equity	1.0																										15.9%	
	DM Equity	1.0	1.0																									15.7	
	U.S. Equity	0.9	0.8	1.0																								16.0	
	Europe Equity	0.9	0.8	1.0	1.0																							16.9	
	Europe ex-UK Equity	1.0	0.9	1.0	0.9	1.0																						17.5	
	UK Equity	0.8	0.7	0.8	0.8	0.8	1.0																					16.9	
	Asia ex-Japan Equity	0.8	0.7	0.7	0.7	0.7	0.6	1.0																				18.8	
	Japan Equity	0.8	0.7	0.8	0.8	0.8	1.0	0.6	1.0																			16.6	
	EM Equity	0.9	0.9	0.8	0.7	0.9	0.7	0.7	0.7	1.0																		20.1	
	Real Asset Equity	0.1	0.2	-0.1	-0.1	-0.1	0.0	0.2	-0.1	0.3	1.0																	18.9	
FIXED INCOME	Global Aggregate	-0.2	-0.2	-0.2	-0.1	-0.2	-0.1	-0.2	-0.1	0.1	0.6	1.0																7.0	
	Global Aggregate (Hdg)	0.5	0.3	0.5	0.5	0.5	0.5	0.3	0.5	0.5	0.2	0.6	1.0															2.9	
	Global IG Corporate (Hdg)	0.8	0.8	0.7	0.6	0.8	0.7	0.6	0.7	0.9	0.3	0.0	0.5	1.0														4.9	
	Global High Yield	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.0	0.2	0.3	0.0	0.0	0.0	1.0													11.7	
	Europe Cash	-0.2	-0.1	-0.2	-0.1	-0.2	-0.1	-0.1	-0.2	0.0	0.5	0.9	0.4	0.0	-0.1	1.0												0.8	
	Europe Governments	0.6	0.5	0.6	0.6	0.6	0.6	0.3	0.6	0.6	0.1	0.5	0.9	0.6	0.0	0.5	1.0											4.2	
	Europe IG Corporate	0.7	0.6	0.8	0.8	0.8	0.7	0.4	0.8	0.6	-0.2	-0.1	0.7	0.8	0.0	-0.1	0.7	1.0										4.4	
	Europe High Yield	0.6	0.5	0.5	0.5	0.5	0.6	0.5	0.6	0.7	0.5	0.3	0.5	0.7	0.2	0.2	0.5	0.4	1.0									14.6	
	EM Sovereign Local	0.6	0.6	0.4	0.4	0.5	0.5	0.5	0.5	0.8	0.7	0.3	0.4	0.8	0.1	0.3	0.4	0.4	0.7	1.0								9.8	
	EM Sovereign	0.6	0.6	0.5	0.4	0.5	0.6	0.5	0.5	0.8	0.6	0.2	0.4	0.9	0.1	0.2	0.4	0.5	0.7	0.9	1.0							10.3	
	EM Corporate	0.6	0.5	0.5	0.5	0.6	0.5	0.4	0.6	0.7	0.0	-0.2	0.2	0.6	0.1	-0.3	0.2	0.5	0.4	0.4	0.4	1.0						10.3	
ALTERNATIVES	Commodities	-0.1	-0.1	-0.1	-0.2	-0.1	0.1	0.0	0.1	0.2	0.6	0.4	0.1	0.2	0.0	0.2	0.0	-0.1	0.4	0.4	0.4	0.2	1.0					17.1	
	Gold	0.7	0.8	0.7	0.6	0.7	0.5	0.5	0.5	0.8	0.3	0.1	0.4	0.7	0.0	0.1	0.5	0.5	0.6	0.6	0.6	0.4	0.1	1.0				14.9	
	REITs	0.7	0.8	0.7	0.6	0.7	0.5	0.5	0.5	0.8	0.3	0.1	0.4	0.7	0.0	0.1	0.5	0.5	0.6	0.6	0.6	0.4	0.1	1.0	1.0			23.1	
	Hedge Funds	0.7	0.7	0.5	0.5	0.6	0.5	0.7	0.5	0.7	0.5	-0.2	0.1	0.8	0.0	-0.1	0.1	0.3	0.5	0.8	0.8	0.5	0.3	0.5	0.5	1.0		9.6	
	Global Private Real Estate	0.2	0.3	0.0	-0.1	0.0	0.0	0.3	0.0	0.3	0.6	0.0	-0.3	0.3	-0.1	0.0	-0.3	-0.2	0.2	0.6	0.5	0.2	0.4	0.3	0.3	0.7	1.0		12.4
	Private Equity	0.7	0.8	0.6	0.6	0.7	0.6	0.6	0.6	0.8	0.3	-0.3	0.1	0.7	0.1	-0.3	0.1	0.4	0.5	0.6	0.7	0.6	0.2	0.6	0.6	0.9	0.6	1.0	22.2

### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE/Russell. January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

## REGION | JAPAN (¥ JPY)





# REGION | JAPAN (¥ JPY)

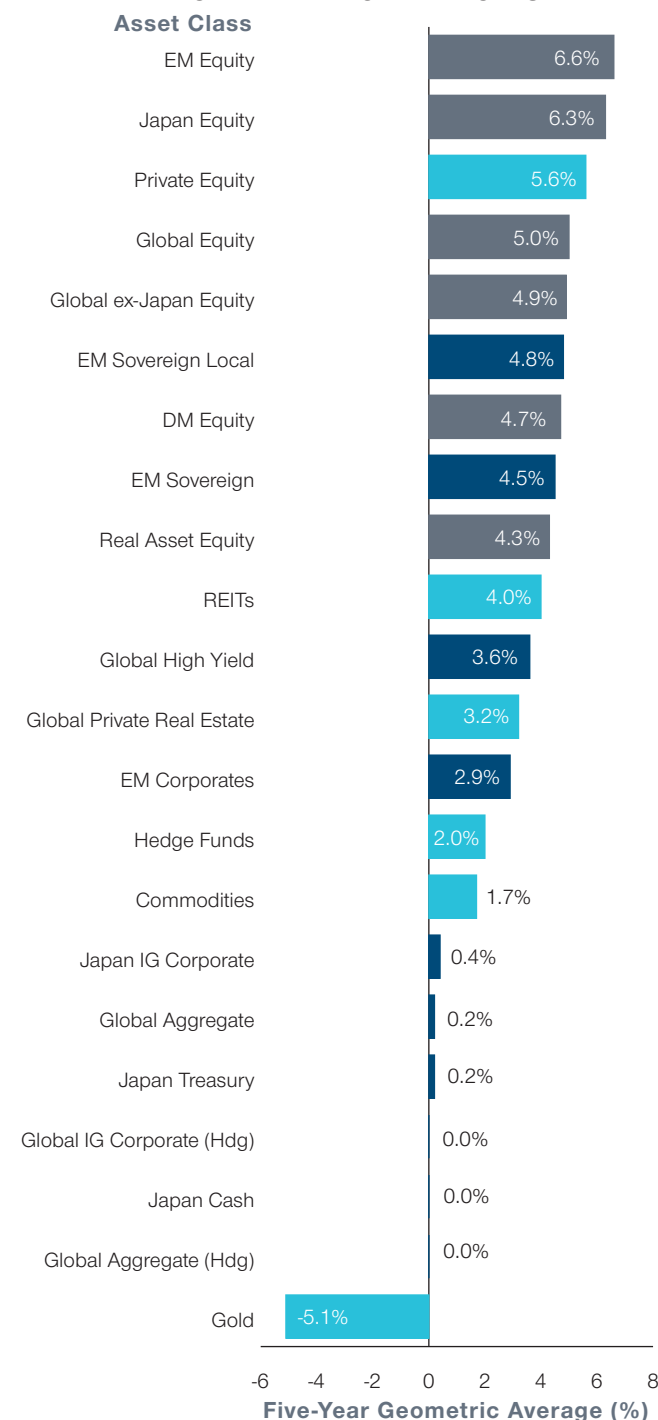
(Figures in Yen)



## ANNUALIZED FORECAST AND HISTORICAL NOMINAL RETURNS

ASSET CLASS	2021 5-YEAR RETURN FORECAST	HISTORICAL 5-YEAR RETURNS, ENDED 31 DECEMBER		
		2020	2015	2010
EQUITY	Global Equity	5.0%	9.5%	15.3%
	Global ex-Japan Equity	4.9	9.8	17.4
	DM Equity	4.7	9.4	17.0
	Japan Equity	6.3	5.5	13.9
	EM Equity	6.6	9.8	3.2
	Real Asset Equity	4.3	3.4	11.3
		0.4		
FIXED INCOME	Global Aggregate	0.2	1.6	9.2
	Global Aggregate (Hdg)	0.0	2.4	3.5
	Global IG Corporate (Hdg)	0.0	4.1	4.1
	Global High Yield	3.6	5.0	13.3
	Japan Cash	0.0	-0.1	0.1
	Japan Treasury	0.2	1.0	2.3
	Japan IG Corporate	0.4	0.5	0.1
	EM Sovereign Local	4.8	3.5	4.4
	EM Sovereign	4.5	3.9	14.0
	EM Corporate	2.9	4.4	12.9
		0.4		
	Commodities	1.7	-2.0	-6.4
	Gold	-5.1	7.7	1.5
		12.3		
ALTERNATIVES	REITs	4.0	3.5	21.0
	Hedge Funds	2.0	0.2	7.4
		-6.4		
	Global Private Real Estate	3.2	3.1	21.4
	Private Equity	5.6	10.6	21.2
		3.7		

## FIVE-YEAR ANNUALIZED EXPECTED RETURNS



### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE./Russell January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

# REGION | JAPAN (LOCAL CURRENCY)

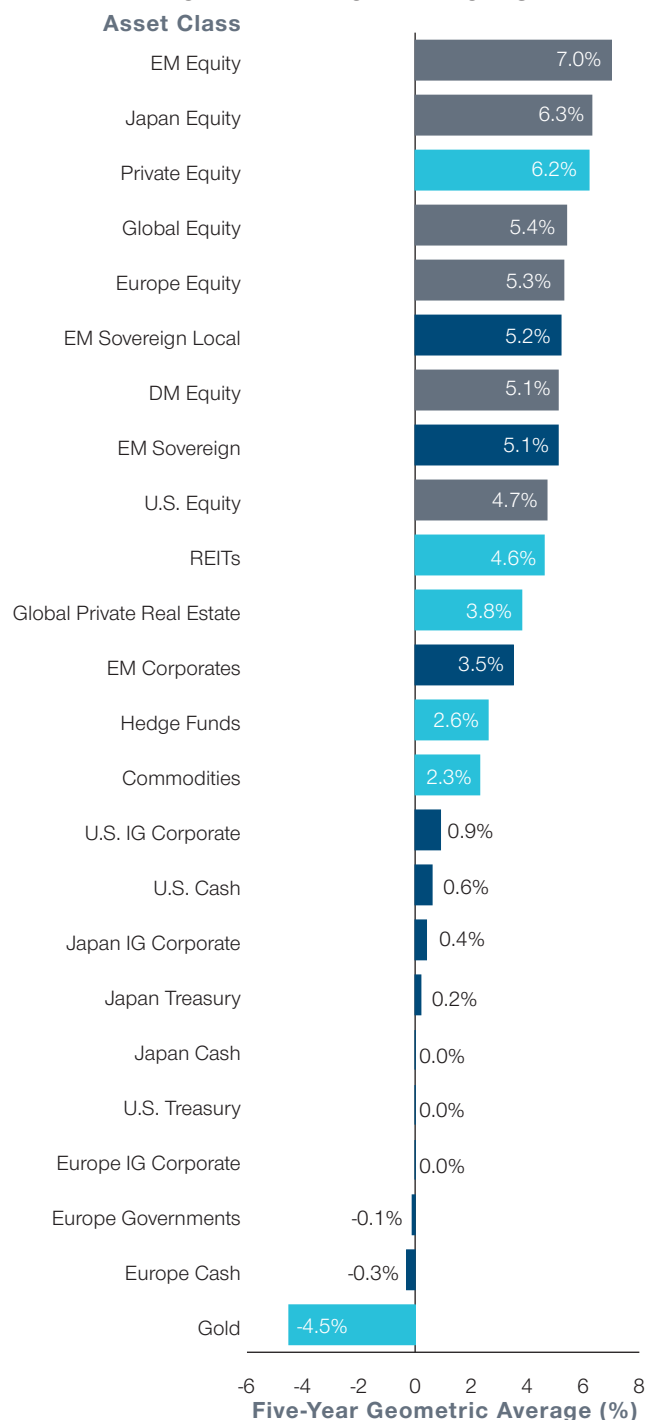


(Figures in local currency for each asset class)

## ANNUALIZED FORECAST AND HISTORICAL NOMINAL RETURNS

ASSET CLASS	2021 5-YEAR RETURN FORECAST	HISTORICAL 5-YEAR RETURNS, ENDED 31 DECMEBER		
		2020	2015	2010
EQUITY	Global Equity	5.4%	11.7%	8.5%
	DM Equity	5.1	11.6	9.6
	Japan Equity	6.3	5.5	13.9
	U.S. Equity	4.7	15.4	12.2
	Europe Equity	5.3	4.8	8.9
	EM Equity	7.0	12.6	0.9
				11.4
FIXED INCOME	Japan Cash	0.0	-0.1	0.1
	U.S. Cash	0.6	1.1	0.0
	Europe Cash	-0.3	-0.4	0.3
	Japan Treasury	0.2	1.0	2.3
	U.S. Treasury	0.0	3.8	2.9
	UK Gilts	-0.7	5.8	5.8
	Europe Governments	-0.1	3.0	5.9
	Japan IG Corporate	0.4	0.5	0.1
	U.S. IG Corporate	0.9	6.7	4.5
	Europe IG Corporate	0.0	-4.5	2.3
	EM Sovereign Local	5.2	8.4	6.6
	EM Sovereign	5.1	7.1	5.4
	EM Corporates	3.5	7.6	4.4
				8.2
	Commodities	2.3	1.0	-13.5
ALTERNATIVES	Gold	-4.5	11.0	-6.2
	REITs	4.6	6.7	11.9
	Hedge Funds	2.6	3.3	-0.7
	Global Private Real Estate	3.8	5.8	12.2
	Private Equity	6.2	13.3	12.0
				11.7

## FIVE-YEAR ANNUALIZED EXPECTED RETURNS



### Past performance is not a reliable indicator of future results.

EM =Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE./Russell January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

# REGION | JAPAN (¥ JPY)

(Figures in Yen)



## FIVE-YEAR SCENARIO ANNUALIZED RETURNS

	ASSET CLASS	BASELINE	STRONG BEAR MARKET	MODERATE BEAR MARKET	MODERATE BULL MARKET	STRONG BULL MARKET
EQUITY	Global Equity	5.0%	1.1%	4.7%	5.2%	7.7%
	DM Equity	4.9	1.0	4.5	5.1	7.7
	Global ex-Japan Equity	4.7	1.2	4.4	4.9	7.4
	Japan Equity	6.3	3.0	6.4	6.9	7.8
	EM Equity	6.6	1.1	6.1	7.0	9.1
	Real Asset Equity	4.3	-0.9	1.4	4.6	5.4
FIXED INCOME	Global Aggregate	0.2	0.0	0.2	0.2	0.6
	Global Aggregate (Hdg)	0.0	-0.2	0.0	0.0	0.4
	Global IG Corporate (Hdg)	0.0	0.0	0.4	0.5	1.0
	Global High Yield	3.6	1.4	3.5	3.7	5.0
	Japan Cash	0.0	-0.1	0.0	0.0	0.1
	Japan Treasury	0.2	0.0	0.2	0.1	0.3
	Japan IG Corporate	0.4	0.3	0.4	0.4	0.4
	EM Sovereign Local	4.8	0.9	4.5	5.1	6.8
	EM Sovereign	4.5	2.4	4.5	4.6	5.4
	EM Corporate	2.9	1.3	2.9	2.9	4.0
ALTERNATIVES	Commodities	1.7	-0.2	1.9	2.0	3.0
	Gold	-5.1	3.5	2.1	-5.0	-5.3
	REITs	4.0	2.2	4.0	3.9	5.7
	Hedge Funds	2.0	0.2	1.6	1.7	2.8
	Global Private Real Estate	3.2	2.4	3.1	3.2	3.4
	Private Equity	5.6	3.4	5.3	5.7	7.5

### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Source: T. Rowe Price. January 2021. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

# REGION | JAPAN (¥ JPY)

(Figures in Yen)



## EXPECTED VOLATILITIES AND CORRELATIONS

Volatility and Correlation Matrix		EQUITY						FIXED INCOME										ALTERNATIVES						VOLATILITY (%)
		Global Equity	Global ex-Japan Equity	DM Equity	Japan Equity	EM Equity	Real Asset Equity	Global Aggregate	Global Aggregate (Hdg)	Global IG Corporate (Hdg)	Global High Yield	Japan Cash	Japan Treasury	Japan IG Corporate	EM Sovereign Local	EM Sovereign	EM Corporate	Commodities	Gold	REITs	Hedge Funds	Global Private Real Estate	Private Equity	
EQUITY	Global Equity	1.0																						21.6
	Global ex-Japan Equity	1.0	1.0																					21.8
	DM Equity	0.9	0.8	1.0																				21.5
	Japan Equity	0.9	0.9	0.8	1.0																			20.7
	EM Equity	1.0	1.0	0.8	0.9	1.0																		25.5
	Real Asset Equity	0.8	0.8	0.7	0.7	0.8	1.0																	27.6
FIXED INCOME	Global Aggregate	-0.3	-0.3	-0.4	-0.3	-0.3	-0.3	1.0																7.4
	Global Aggregate (Hdg)	0.3	0.3	0.2	0.4	0.4	0.1	0.7	1.0															2.9
	Global IG Corporate (Hdg)	0.9	0.9	0.8	0.9	0.9	0.8	-0.3	0.3	1.0														5.1
	Global High Yield	-0.3	-0.3	-0.3	-0.2	-0.2	-0.2	0.0	-0.2	-0.2	1.0													16.7
	Japan Cash	-0.4	-0.4	-0.4	-0.4	-0.3	-0.3	0.7	0.3	-0.4	0.1	1.0												0.1
	Japan Treasury	0.0	0.0	-0.1	0.0	0.0	-0.1	0.5	0.5	0.0	0.1	0.5	1.0											2.4
	Japan IG Corporate	0.9	0.8	0.7	0.9	0.9	0.8	-0.2	0.3	0.8	-0.1	-0.2	0.0	1.0										1.4
	EM Sovereign Local	0.9	0.9	0.7	0.8	0.9	0.9	-0.2	0.3	0.9	-0.2	-0.3	-0.1	0.8	1.0									13.7
	EM Sovereign	0.9	0.9	0.7	0.8	0.9	0.9	-0.2	0.3	1.0	-0.2	-0.3	0.0	0.8	1.0	1.0								12.5
	EM Corporate	0.7	0.7	0.6	0.8	0.8	0.6	-0.5	0.1	0.7	-0.1	-0.4	-0.1	0.7	0.6	0.7	1.0							13.2
ALTERNATIVES	Commodities	0.3	0.3	0.2	0.5	0.4	0.3	0.0	0.1	0.3	-0.1	0.0	-0.1	0.4	0.4	0.4	0.5	1.0						20.9
	Gold	0.8	0.8	0.6	0.6	0.8	0.6	-0.1	0.4	0.7	-0.3	-0.1	0.1	0.7	0.7	0.6	0.5	0.2	1.0					12.5
	REITs	0.8	0.8	0.6	0.6	0.8	0.6	-0.1	0.4	0.7	-0.3	-0.1	0.1	0.7	0.7	0.6	0.5	0.2	1.0	1.0				24.7
	Hedge Funds	0.9	0.9	0.8	0.8	0.9	0.9	-0.5	0.0	0.9	-0.2	-0.5	-0.2	0.8	0.9	0.9	0.7	0.4	0.6	0.6	1.0			14.2
	Global Private Real Estate	0.6	0.6	0.6	0.5	0.7	0.8	-0.5	-0.3	0.7	-0.2	-0.4	-0.3	0.6	0.7	0.7	0.5	0.3	0.5	0.5	0.9	1.0		14.4
	Private Equity	0.9	0.9	0.8	0.8	0.9	0.9	-0.5	0.1	0.9	-0.2	-0.5	-0.2	0.8	0.9	0.9	0.8	0.4	0.6	0.6	0.9	0.8	1.0	30.4

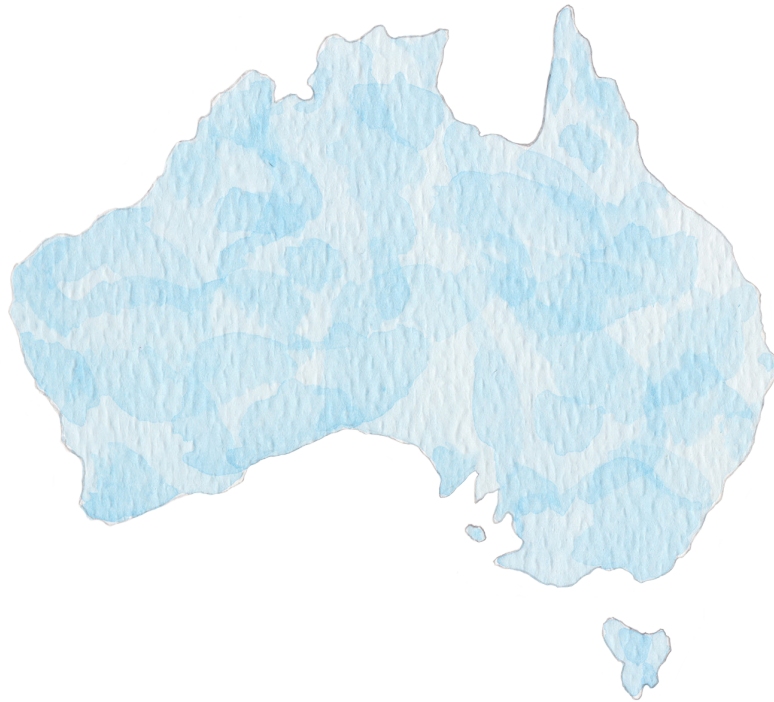
### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE./Russell January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

## REGION | AUSTRALIA (\$ AUD)

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# REGION | AUSTRALIA (\$ AUD)

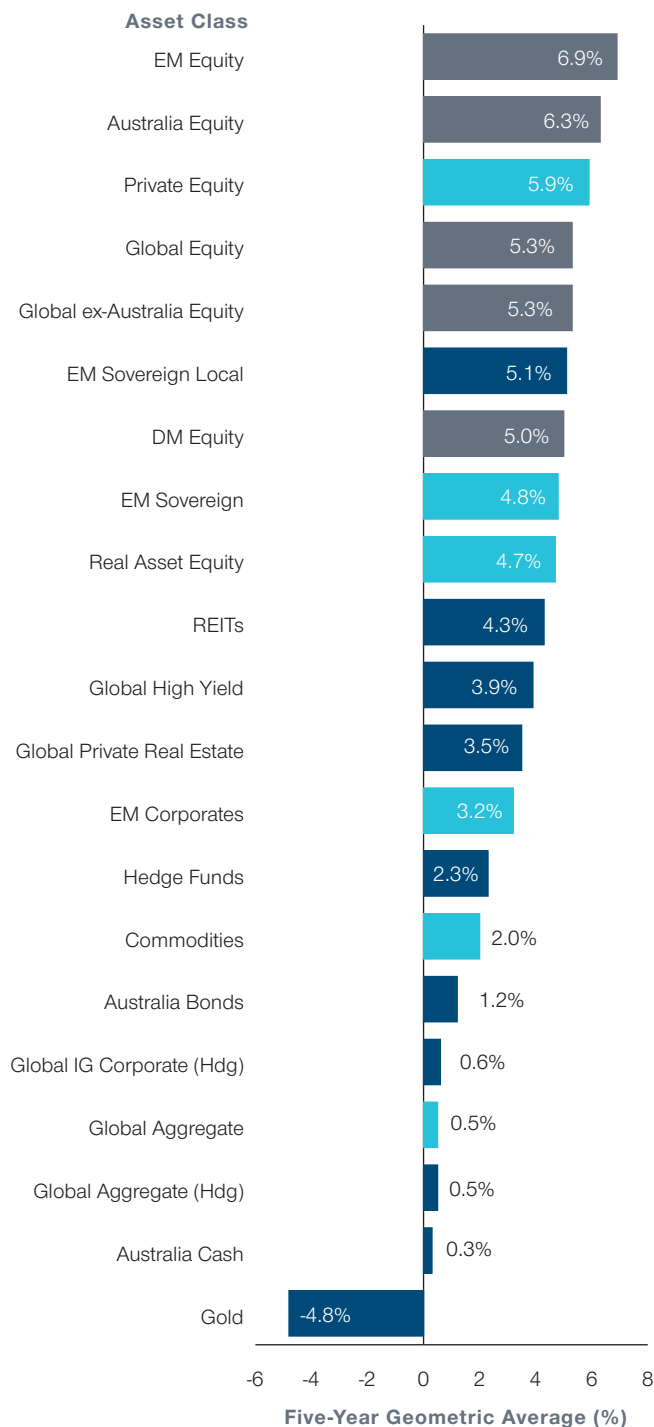


(Figures in Australian Dollars)

## ANNUALIZED FORECAST AND HISTORICAL NOMINAL RETURNS

ASSET CLASS		2021 5-YEAR RETURN FORECAST	HISTORICAL 5-YEAR RETURNS, ENDED DECEMBER 31		
			2020	2015	2010
EQUITY	Global Equity	5.3%	11.6%	14.1%	-2.7%
	Global ex-Australia Equity	5.3	11.7	14.3	-2.9
	DM Equity	5.0	11.6	15.7	-3.6
	Australia Equity	6.3	8.7	7.0	4.3
	EM Equity	6.9	11.9	2.1	5.7
	Real Asset Equity	4.7	5.4	10.2	1.3
FIXED INCOME	Global Aggregate	0.5	3.6	8.1	-0.2
	Global Aggregate (Hdg)	0.5	4.6	7.2	7.5
	Global IG Corporate (Hdg)	0.6	6.1	7.7	7.1
	Global High Yield	3.9	6.6	12.7	2.4
	Australia Cash	0.3	1.5	3.4	5.7
	Australia Bonds	1.2	4.6	6.6	5.8
	EM Sovereign Local	5.1	5.5	3.4	5.4
	EM Sovereign	4.8	5.9	12.7	1.4
	EM Corporate	3.2	6.5	11.7	1.3
ALTERNATIVES	Commodities	2.0	-0.1	-7.4	-5.3
	Gold	-4.8	9.8	0.4	13.2
	REITs	4.3	5.6	19.8	-3.6
	Hedge Funds	2.3	2.2	6.2	-5.7
	Global Private Real Estate	3.5	6.4	20.1	-3.2
	Private Equity	5.9	14.7	19.9	4.4

## FIVE-YEAR ANNUALIZED EXPECTED RETURNS



### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE./Russell January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.

# REGION | AUSTRALIA (\$ AUD)



(Figures in Australian Dollars)

## FIVE-YEAR SCENARIO ANNUALIZED RETURNS

	ASSET CLASS	BASELINE	STRONG BEAR MARKET	MODERATE BEAR MARKET	MODERATE BULL MARKET	STRONG BULL MARKET
EQUITY	Global Equity	5.3%	1.6%	5.0%	5.5%	8.1%
	Global ex-Australia Equity	5.3	1.5	5.0	5.5	8.1
	DM Equity	5.0	1.7	4.7	5.2	7.7
	Australia Equity	6.3	5.3	5.5	5.9	7.7
	EM Equity	6.9	1.6	6.4	7.3	9.5
	Real Asset Equity	4.7	-0.4	1.7	4.9	5.7
FIXED INCOME	Global Aggregate	0.5	0.4	0.5	0.6	0.9
	Global Aggregate (Hdg)	0.5	0.5	0.6	0.6	1.0
	Global IG Corporate (Hdg)	0.6	0.5	1.0	1.0	1.6
	Global High Yield	3.9	1.9	3.9	4.0	5.4
	Australia Cash	0.3	0.2	0.3	0.3	0.4
	Australia Bonds	1.2	1.0	1.1	1.2	1.8
	EM Sovereign Local	5.1	1.4	4.9	5.4	7.1
	EM Sovereign	4.8	2.9	4.9	4.9	5.8
	EM Corporate	3.2	1.8	3.2	3.3	4.4
ALTERNATIVES	Commodities	2.0	0.3	2.2	2.3	3.4
	Gold	-4.8	3.8	2.4	-4.7	-4.9
	REITs	4.3	2.7	4.4	4.2	6.1
	Hedge Funds	2.3	0.7	1.9	2.0	3.2
	Global Private Real Estate	3.5	2.9	3.5	3.5	3.8
	Private Equity	5.9	3.9	5.6	6.0	7.9

### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM = Emerging Markets. DM = Developed Markets.

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# REGION | AUSTRALIA (\$ AUD)



(Figures in Australian Dollars)

## EXPECTED VOLATILITIES AND CORRELATIONS

Volatility and Correlation Matrix		EQUITY						FIXED INCOME										ALTERNATIVES						VOLATILITY (%)
		Global Equity	Global ex-Australia Equity	DM Equity	Australia Equity	EM Equity	Real Asset Equity	Global Aggregate	Global Aggregate (Hdg)	Global IG Corporate (Hdg)	Global High Yield	Australia Cash	Australia Bonds	EM Sovereign Local	EM Sovereign	EM Corporate	Commodities	Gold	REITs	Hedge Funds	Global Private Real Estate	Private Equity		
EQUITY	Global Equity	1.0																					11.9	
	Global ex-Australia Equity	1.0	1.0																				11.9	
	DM Equity	1.0	1.0	1.0																			12.1	
	Australia Equity	0.7	0.7	0.7	1.0																		16.1	
	EM Equity	0.7	0.7	0.7	0.7	1.0																	15.2	
	Real Asset Equity	0.8	0.8	0.8	0.4	0.4	1.0																	13.3
FIXED INCOME	Global Aggregate	-0.2	-0.2	-0.1	-0.6	-0.5	0.2	1.0															11.4	
	Global Aggregate (Hdg)	-0.3	-0.3	-0.3	-0.1	-0.2	0.0	0.3	1.0														3.0	
	Global IG Corporate (Hdg)	0.2	0.2	0.2	0.5	0.4	0.2	-0.4	0.6	1.0													4.9	
	Global High Yield	0.6	0.6	0.6	0.2	0.4	0.8	0.3	0.0	0.1	1.0												8.1	
	Australia Cash	-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	0.1	0.2	-0.1	-0.2	1.0											1.0	
	Australia Bonds	-0.3	-0.3	-0.3	-0.4	-0.5	0.1	0.7	0.7	0.1	0.0	0.2	1.0										3.3	
	EM Sovereign Local	0.2	0.2	0.2	-0.1	0.1	0.4	0.5	0.3	0.0	0.5	0.2	0.4	1.0									8.5	
	EM Sovereign	0.2	0.2	0.2	-0.2	-0.1	0.6	0.7	0.3	-0.1	0.7	-0.1	0.5	0.6	1.0								8.9	
	EM Corporate	0.2	0.2	0.2	-0.2	0.0	0.5	0.7	0.2	-0.1	0.8	-0.2	0.4	0.5	0.9	1.0							8.0	
ALTERNATIVES	Commodities	0.3	0.3	0.3	0.3	0.4	0.5	-0.2	-0.3	0.0	0.2	0.0	-0.3	-0.1	-0.1	-0.1	1.0						13.7	
	Gold	-0.4	-0.4	-0.4	-0.4	-0.2	0.0	0.6	0.4	-0.2	0.0	0.2	0.6	0.4	0.4	0.3	0.0	1.0					15.5	
	REITs	0.6	0.6	0.6	0.4	0.3	0.8	0.0	0.1	0.2	0.6	-0.1	0.1	0.3	0.3	0.3	0.1	-0.1	1.0				20.4	
	Hedge Funds	0.4	0.4	0.4	-0.1	0.0	0.6	0.6	-0.2	-0.5	0.7	-0.1	0.1	0.4	0.7	0.8	0.2	0.3	0.3	1.0			9.6	
	Global Private Real Estate	0.1	0.1	0.1	-0.5	-0.3	0.4	0.8	-0.1	-0.6	0.4	0.0	0.4	0.4	0.7	0.7	0.0	0.4	0.2	0.8	1.0		14.9	
	Private Equity	0.5	0.6	0.6	0.0	0.3	0.7	0.4	-0.3	-0.4	0.7	-0.1	0.0	0.4	0.5	0.5	0.3	0.2	0.4	0.8	0.7	1.0	16.7	

### Past performance is not a reliable indicator of future results.

Hdg = Hedged currency treatment. EM =Emerging Markets. DM = Developed Markets.

Sources: T. Rowe Price, MSCI, Bloomberg Barclays, S&P, J.P. Morgan Chase & Co., HFR, Cambridge Associates, NCREIF, and FTSE./Russell January 2021. See Appendix for a representative list of indexes. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not indicative of future results. Forecasts are based on subjective estimates about market environments that may never occur. See the Methodology section for additional information. See Important Information in the Appendix.



## **METHODOLOGY**



## METHODOLOGY

# Fixed Income

### Basic Model

We decompose fixed income sector returns into three components: the average yield over the five-year period, the average roll-down yield over the five-year period, and the average annual return due to changes in valuation of the five-year period:

$$\text{Return} = \text{average yield} + \text{roll-down} + \text{valuation change}$$

These three components are calculated from the following inputs: current yield, forecast yield, and current duration for a given asset class.

### Current Yield

The current yield is calculated using linear interpolation—matching the yield on the appropriate sovereign yield curve for the maturity that matches the current duration of the sector. For spread sectors, the current option-adjusted spread is added to the yield of the sovereign maturity that matches the duration of the spread sector.

### Forecast Yield

The forecast yield is calculated similar to the current yield, with the inputs provided by the survey results. For a non-government index (e.g., credit), the five-year spread forecast from our survey is then added to the forecast sovereign yield.

### Current Duration

The current duration is used in two ways. First, to find current yield through duration matching to the sovereign curve, as discussed above. Second, it is used to calculate the average annual roll-down yield and return due to valuation change. These calculations assume the sector will maintain a constant duration throughout the subsequent five-year period. Our research shows that this assumption, while not perfect, is reasonable since modified durations typically vary within +/- one year over rolling five-year windows.

### Average Yield

The average yield is the simple average of the current yield and the forecast yield five years forward, incorporating expectations for spread capture ratios in non-Treasury asset classes:

$$\text{Average yield} = (\text{current yield} + \text{forecast yield}) / 2$$

### Change in Yield

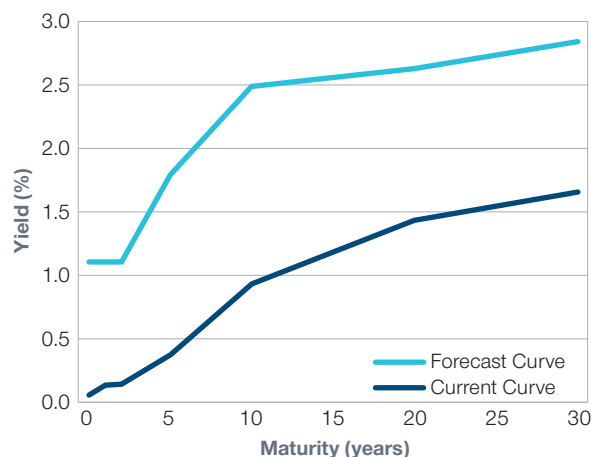
The change in yield is the annual average change from the current yield to the five-year forecast yield:

$$\text{Yield change} = (\text{forecast yield} - \text{current yield}) / 5$$

### Roll-Down Return

The roll-down return is earned through rebalancing each year to maintain a constant duration. The return is due to the convergence of a bond's end-of-period yield to the beginning-

### FORECAST U.S. TREASURY CURVE



of-period yield of an equivalent bond with a one-year shorter maturity. Thus, we estimate the roll-down return as follows:

**1.** First, we use the same estimation methods as for the current and forecast rolled-down yields, except that we interpolate to the maturity points on the current and future yield curves that are one year less than the current average maturity of the index.

**2.** Second, we estimate the average rolled-down yield over the five-year period as the simple average of the current and forecast rolled-down yields from step 1:

$$\text{Average rolled-down yield} = (\text{current rolled-down yield} + \text{forecast rolled-down yield}) / 2$$

**3.** Third, we calculate the average annual change in yield due to rolling down the curve (roll-down change):

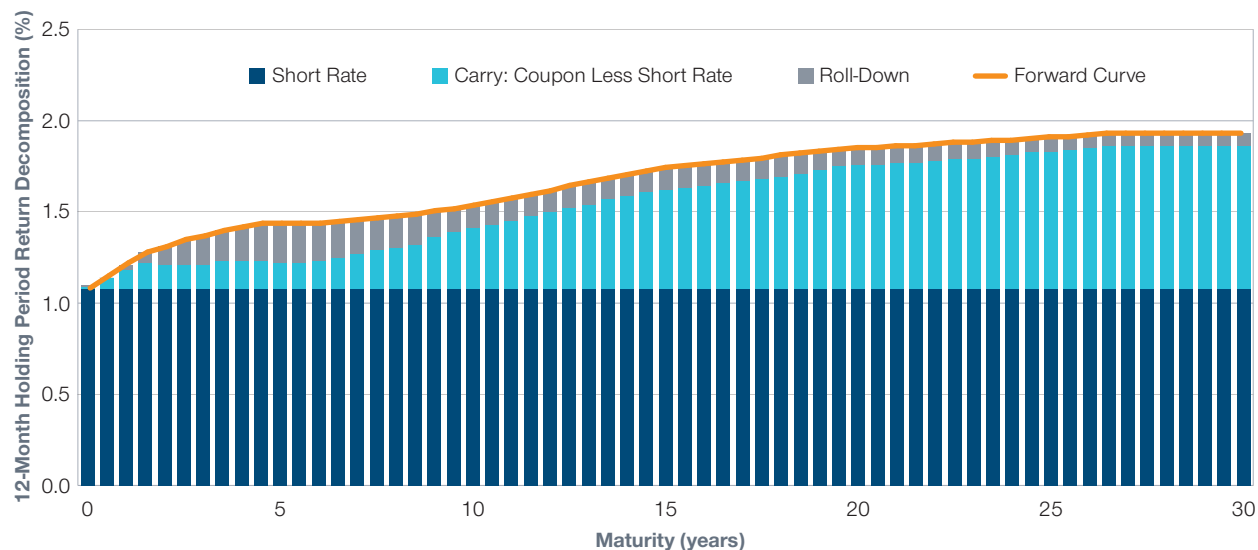
$$\text{Average roll-down change} = (\text{average rolled-down yield} - \text{average yield}) / 5$$

**4.** Last, we multiply the current duration by the roll-down change to get the average annual return to the index from rolling down the yield curve:

$$\text{Average roll-down return} = \text{current duration} \times \text{average roll-down change}$$



## CARRY AND ROLL-DOWN FOR GOVERNMENT BONDS



### Valuation Change

Valuation change has two components: the return due to changes in the level of the underlying sovereign curve and the return due to changes in the spread over the sovereign curve.

*Average level change return = current duration x yield change*

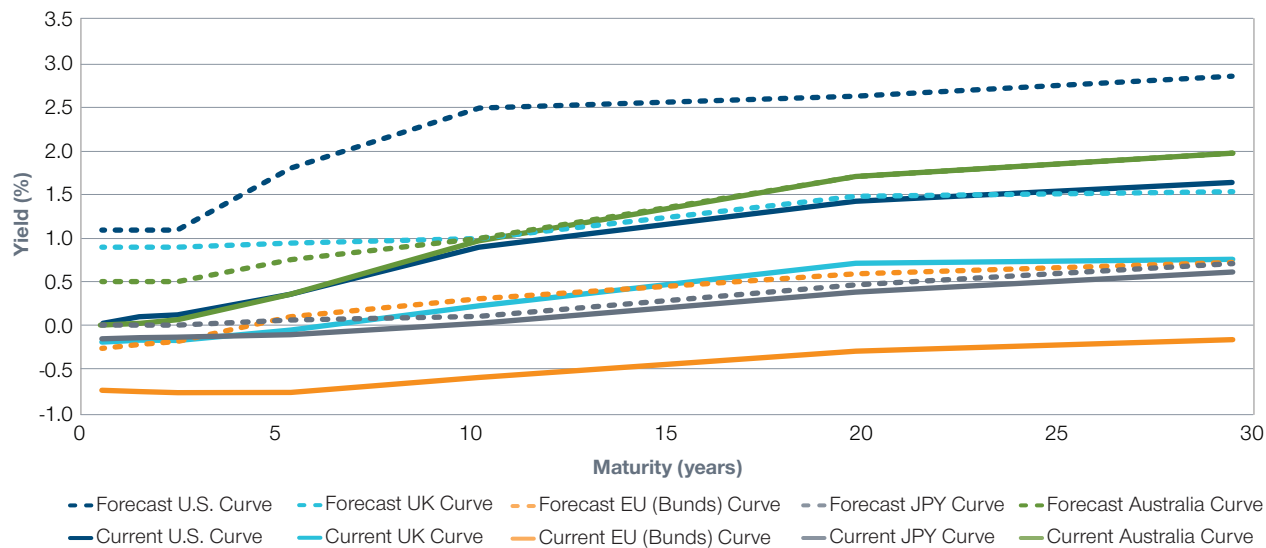
### Comment on Durations

We use analytical modified adjusted durations to ascertain the correct point on the yield curve for interpolation. However, we use empirical durations for estimating the returns from valuation changes so that we can ensure that we can cleanly separate the duration due purely to level changes in the underlying sovereign curve and changes in spread levels for a sector.

### Inflation-Linked Bonds

We decompose inflation-linked bonds returns into two components: the portion of return due to underlying changes in the nominal sovereign curve and the portion attributable to unexpected changes in inflation. The nominal government bond return is developed using the same process as described previously. The unexpected inflation return is computed by subtracting the current five-year consensus inflation estimate from our inflation forecast and then multiplying by the current duration of the index.

## GLOBAL YIELD CURVES





## METHODOLOGY

### Equities

The capital market assumptions for equities provide return forecasts for the U.S., UK, Europe, Japan, Australia, and emerging markets. U.S. returns are further broken out by large-cap and small-cap returns. Our survey process leverages the knowledge and expertise of our global equity portfolio manager and analyst teams via forecasts for each market and are combined to arrive at a global equity forecast. We blend the survey results with market data to develop our equity market assumptions.

#### Survey Data:

1. Expected Inflation—headline consumer price index annualized over next five years
2. Real earnings per share (EPS) growth—arithmetic average over the next five years
3. Future price/earnings ratio (P/E)—multiple in five years' time

#### Market Data:

1. Dividend yield—historical average percentage yield
2. Current P/E—Last 12-month P/E

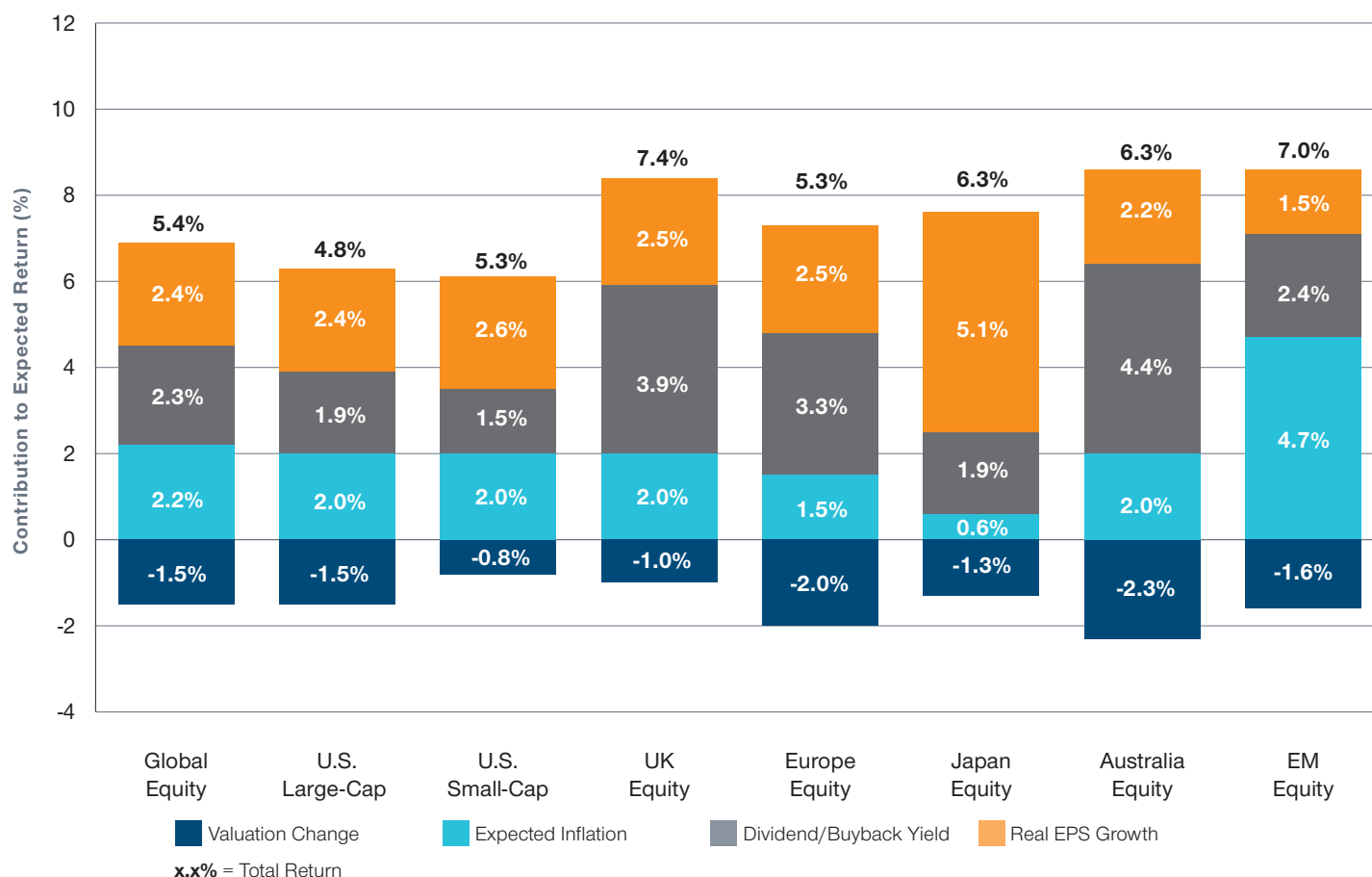
For each equity asset class, the above inputs are used to calculate expected average annual returns, according to the equation:

$$\text{Expected Inflation} + \text{Real EPS Growth} + \text{Dividend Yield} + \Delta \text{Valuation}$$

Where annual  $\Delta \text{Valuation}$  for each of the next five years is given by:

$$\left( \frac{\text{Future P/E}}{\text{Current P/E}} \right) \times \frac{1}{5}$$

### EQUITY MARKET EXPECTED RETURNS FROM 2021 TO 2026 (IN LOCAL CURRENCY)



Source: T. Rowe Price, January 2021. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not guarantees of future results. Forecasts are based on subjective estimates about market environments that may never occur. See Important Information in the Appendix.



### Real Asset Equity

The returns for real asset equities reflect the three components that make up the underlying benchmark: inflation-sensitive equities, real estate investment trusts (REITs), and physical commodities. Returns for the asset class reflect a 50% MSCI ACWI ex-USA equity, 25% REITs, and 25% commodities weighting. MSCI ACWI ex-USA Index returns were selected to give higher notional weight to commodities-producing countries at the expense of the U.S.

### Impacts of Buybacks and New Issuance

Two components purposefully absent from our equity-return model are share buybacks and net issuance. When companies buy their own stock, the remaining outstanding shares each represent a larger ownership percentage and should, therefore, appreciate in price. However, the positive effects of share buybacks may be offset by initial and secondary stock offerings. Published academic literature has been inconclusive on the net effect at the market level.

In favor of a negative buyback effect, on the order of -2% per year, William Bernstein and Rob Arnott argue that share issuances and initial public offerings have consistently outpaced buybacks. Their observation that the market capitalizations of global stock markets consistently grow faster than the price level of indexes that follow the same markets supports this argument. On the other side of the debate, Philip Straehl and Roger Ibbotson have argued for a positive buyback effect on the order of +1.5%, based on aggregating net issuance at the individual company level divided by beginning market capitalization for all stocks in the S&P 500 Index from 1970–2014.

Rather than align directly with either side of the debate, we have chosen a middle ground by assuming no net change in return due to buybacks and new issuance.



## METHODOLOGY

### Alternatives

To forecast the returns of the alternative asset classes, we use a factor regression model with the following premia used as the predictive variables:

- Equity risk premium (Equity return in excess of cash)
- Small-cap premium (Small-cap return in excess of large-cap)
- EM premium (EM equity return in excess of DM equity)
- Investment-grade credit premium (Investment grade credit return in excess of duration matched government bonds)
- Duration premium (Government bonds return in excess of cash)

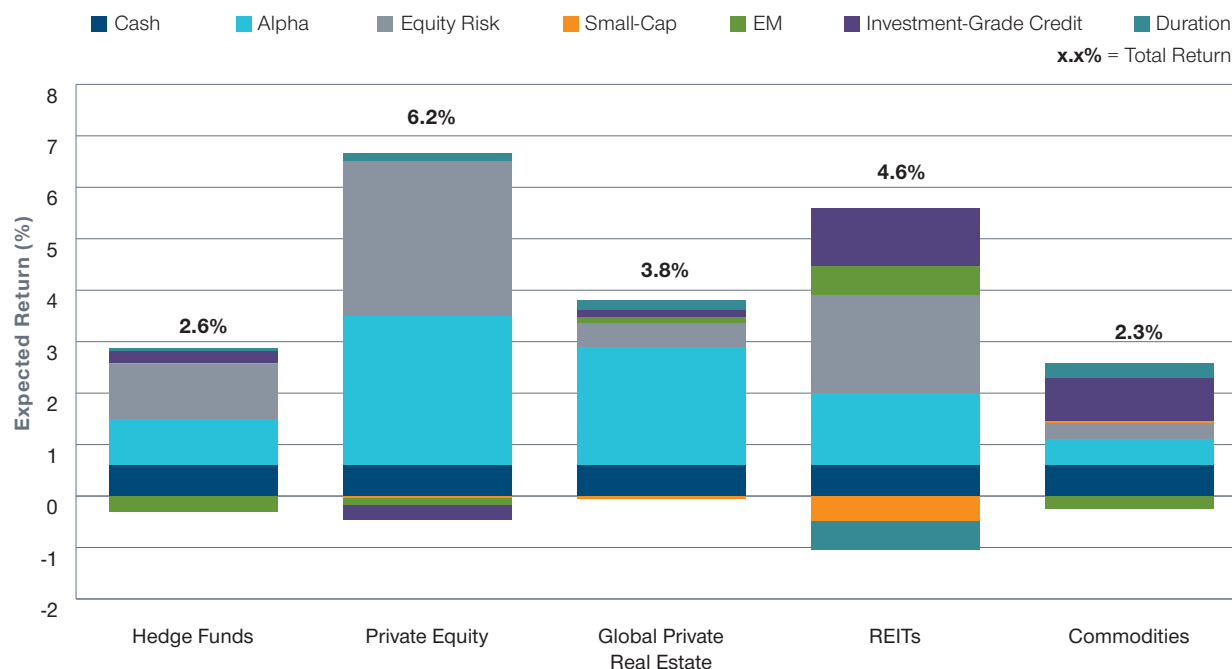
We use data starting in 2002 to help estimate the exposure of each asset class to the premia. Additionally, asset classes such as hedge funds and private equity/real estate have a

non-negligible active management component that is a foundational portion of the asset class's value proposition.

Based on our survey results, we quantify each premium as shown below and apply each asset class's historical beta to the premia to calculate an expected return.

Premia	Forecasted Value Over Next 5 Years (Arithmetic Averages)
Equity Risk	4.1%
Small-Cap	0.5%
EM	2.5%
Investment-Grade Credit	0.9%
Duration	-0.6%

### COMPONENT OF EXPECTED RETURN



Source: T. Rowe Price. January 2021. This information is not intended to be investment advice or a recommendation to take any particular investment action. The forecasts contained herein are for illustrative purposes only and are not guarantees of future results. Forecasts are based on subjective estimates about market environments that may never occur. See Important Information in the Appendix.

### Commodities

In addition to the factor model described above, for commodities we also use gold and oil forecasts from our sector specialists as inputs into our estimates. Generally, we are bearish on commodities, as supply/demand imbalances in oil have continued to place downward pressure on the asset class.

Our investment professionals forecast the average spot price in five years for a barrel of Brent crude oil and an ounce of gold as \$55 and \$1,570, respectively.

EM =Emerging Markets. DM = Developed Markets.



## METHODOLOGY

### Survey

The foundation of our CMAs is a survey provided to a wide range of senior T. Rowe Price portfolio managers, economists, and analysts across our equity, fixed income, and multi-asset divisions. The survey requests forecasts for many inputs: GDP growth, inflation, commodity prices, equity valuations, earnings growth, fixed income yields, slopes of yield curves, and spread levels. Respondents are asked to offer insights for their respective areas of expertise and are invited to add thoughts for other categories. After all surveys are collected, baseline forecasts are developed for each asset class. The Capital Market Assumptions Governance and Investment Committee then reviews the results for internal consistency and reasonableness.

### Correlations and Volatility

Empirical research has shown that over short time horizons (days and months), volatility regimes tend to cluster—i.e., today's volatility environment is highly correlated to that which investors are likely to experience in the near future. However, these results are less conclusive over longer time horizons. Similarly, certain asset classes, like EM debt, have experienced significant structural declines in volatility over the past decade, while others, like developed market investment-grade debt, recently have increased in volatility as the duration of the asset class has extended in a low interest rate environment.

The volatility and correlation matrix shown is based on 15 years of historical data, making adjustments as necessary to reflect recent developments within each asset class. We “unsmooth” return histories of alternative asset classes, which have significant auto-correlation, to better reflect the economic volatility of the underlying assets.

### Currency Treatment

Estimating returns for assets domiciled in a different currency than the base currency invites several questions:

- Should currency movements be hedged and does that view change by asset class?
- What is a reasonable approach for estimating currency return?

For the 2021 assumptions, we presume that uncovered interest rate parity holds — essentially the difference in nominal interest rates between two countries is equal to the expected depreciation of one currency relative to the other. Using our cash forecasts, therefore, we are able to estimate the currency return impact of translating returns of an asset valued in one currency to another.

Empirically, we realize that uncovered interest-rate parity does not always hold but we believe it is a reasonable expectation over the next five-year horizon.

In terms of hedging considerations, historical data demonstrates that better risk-adjusted returns potentially can be earned by investors hedging high-quality fixed income versus leaving investment-grade foreign bond exposures unhedged. This is generally true for investors domiciled across the globe. The data is less conclusive for equities and the results are more country specific. We have elected to forecast returns for global aggregate bonds and global investment-grade corporates with hedging, while leaving all other foreign currency exposures unhedged. The difference between our hedged and unhedged return expectations are driven by differences between our interest-rate views and the five-year forward cash rate implied by the market as of December 31, 2020.

### Longer-Term Expectations

Many, if not most, investors have a time horizon longer than the five-year forecasts included in this document. As examples, the T. Rowe Price Target Date and Target Allocation franchises offer strategies targeted to investors with 40+ year accumulation and 30+ year retirement cycles. We are often asked for the forecasts we use to inform the construction and design of those portfolios. While we strongly advise against using any single set of assumptions for portfolio construction, investors with a longer-term or perpetual time horizon should consider market conditions beyond the current market environment, which, admittedly, heavily influences many of the forecasts we share here. Included below are several of the risk premia we believe the markets tend to reward over long investment horizons, along with estimates of their average magnitudes over multiple market cycles. By definition, these are long term and relatively stable over time, but they are subject to revisions and revalidation as necessary. The table below shows includes the same premia we use for estimating alternative asset class returns, but are just a subset of the premia potentially available over long investment horizons.

Premia	Forecasted Value Over Market Cycles (Arithmetic Averages)
Equity Risk	5.5%
Small-Cap	1.0%
EM	1.0%
Investment-Grade Credit	0.5%
Duration	1.0%



## METHODOLOGY

### Scenarios

Point estimates of future returns are implicitly accompanied by some level of uncertainty. For that reason, we have constructed four additional sets of capital market assumptions that represent bearish, moderately bearish, moderately bullish, and bullish outlooks. These scenarios are intended to bookend our baseline scenarios, allowing for consideration of a range of economic and return scenarios.

The scenarios are underpinned by the belief that the level of aggregate investor risk appetite is the primary driver of investment returns over short- to medium-term horizons. With this in mind, our scenario generation process begins by analyzing historical periods of differing investor sentiment towards risk. Using global equity returns as a proxy for risk, we divide the past 15 years of common asset class performance into quartiles and estimate the volatility of each asset class and its correlation to global equities during those periods. This approach explicitly acknowledges that average correlations and volatilities do not adequately represent asset class behaviors during all risk regimes. We then divide the past 30

years of rolling 5-year periods into quartiles and reconstruct the broader set of asset class returns using their previously estimated volatilities and correlations.

The resulting asset class returns from this quantitative process form the starting point for the Capital Market Assumptions Governance and Investment Committee's oversight. The Committee makes adjustments to returns, often due to structural changes of an asset class that are not reflected through a solely backwards-looking quantitative lens. These qualitative insights are important in assessing the forward-looking potential behavior of investments.

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We believe that considering portfolio designs across multiple regimes is necessary for aligning investor objectives and asset allocation.



## **APPENDIX**



## APPENDIX

### Acknowledgments

The following investment professionals make up the T. Rowe Price Capital Market Assumptions Governance and Investment Committee:

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# APPENDIX



## REFERENCE INDEXES

	ASSET CLASS	REPRESENTATIVE INDEX
EQUITY	Global Equity	MSCI ACWI
	Global ex-U.S. Equity	MSCI ACWI ex-USA
	Global ex-Japan Equity	MSCI Kokusai
	Global ex-Australia Equity	MSCI ACWI ex-Australia
	DM Equity	MSCI World
	DM ex-U.S. Equity	MSCI World ex-USA
	U.S. Equity	Russell 3000
	Europe ex-UK Equity	MSCI Europe ex-UK
	UK Equity	FTSE 100
	U.S. Large-Cap Equity	Russell 1000
	U.S. Small-Cap Equity	Russell 2000
	Europe Equity	MSCI Europe
	Asia ex-Japan Equity	MSCI Asia ex-Japan
	Japan Equity	MSCI Japan
	Australia Equity	S&P/ASX 200
	EM Equity	MSCI Emerging Markets
FIXED INCOME	Real Asset Equity	S&P Real Assets Index
	Global Aggregate	Bloomberg Barclays Global Aggregate
	Global Aggregate (Hdg)	Bloomberg Barclays Global Aggregate (Hdg)
	Global Agg ex-U.S. (Hdg)	Bloomberg Barclays Global Aggregate ex-U.S. (Hdg)
	Global Agg ex-U.S.	Bloomberg Barclays Global Aggregate ex-U.S.
	Global IG Corporate (Hdg)	Bloomberg Barclays Global-Aggregate Corporate (Hdg)
	Global High Yield	Bloomberg Barclays Corporate High Yield
	U.S. Cash	Bloomberg Barclays 1-3M Treasury Bills
	U.S. TIPS	Bloomberg Barclays Global Inflation-Linked U.S. TIPS
	U.S. Short TIPS	Bloomberg Barclays Global Inflation-Linked 1-5 Year U.S. TIPS
	U.S. Treasury	Bloomberg Barclays U.S. Treasury
	U.S. IG Corporate	Bloomberg Barclays U.S. Aggregate Corporate
	U.S. Long Credit	Bloomberg Barclays U.S. Long Credit
	U.S. Long Treasury	Bloomberg Barclays U.S. Long Treasury
	U.S. Aggregate	Bloomberg Barclays U.S. Aggregate Bond
	U.S. High Yield	Bloomberg Barclays U.S. Corporate High Yield
	U.S. Bank Loans	S&P/LSTA Leveraged Performing Loan
	U.S. Securitized	Bloomberg Barclays U.S. Securitized
	UK Cash	Bloomberg Barclays Sterling Treasury Bills 0-3 Month
	UK Gilts	Bloomberg Barclays UK Gilts
	UK IG Corporate	Bloomberg Barclays UK Aggregate Corporate
	Europe Cash	Bloomberg Barclays EUR Treasury Bills 0-3 Month
	Europe Treasury	Bloomberg Barclays EUR Treasury
	Europe IG Corporate	Bloomberg Barclays EUR Aggregate Corporate
	Europe High Yield	Bloomberg Barclays EUR High Yield
	Japan Cash	Bloomberg Barclays Japan Treasury Bills 1-3 Months
	Japan Treasury	Bloomberg Barclays Japan Treasury
	Japan IG Corporate	Bloomberg Barclays Japan Aggregate Corporate
	Australia Cash	Bloomberg Ausbond Bank Bill
	Australia Bonds	Bloomberg Ausbond 0+ Composite
	EM Sovereign Local	JP Morgan GBI - EM Global Diversified
	EM Sovereign	JP Morgan EMBI Global Diversified
	EM Corporate	JP Morgan CEMBI
ALTERNATIVES	Hedge Funds	HRFX Global Hedge Fund
	Private Equity	Cambridge Associates LLC Global Private Equity
	Commodities	Bloomberg Commodity
	Gold	S&P GSCI Gold Total Return
	Global Private Real Estate	NCREIF Property
	REITs	FTSE EPRA/NAREIT Developed

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# Key Risks and Important Information

## Key Risks

Forecasts are based on subjective estimates about market environments that may never occur. Some of the factors that could impact these forecasts include, but are not limited to:

- Political and economic conditions
- Performance of financial markets
- Interest rate levels
- Changes to laws or regulations

Investments in equities are subject to the volatility inherent in equity investing, and their value may fluctuate more than investing in income-oriented securities. Certain asset classes are subject to sector concentration risk and are more susceptible to developments affecting those sectors than broader classes. Investment in small companies involves greater risk than is customarily associated with larger companies, since small companies often have limited product lines, markets, or financial resources. Transactions in securities denominated in foreign currencies are subject to fluctuations in exchange rates, which may affect the value of an investment. Debt securities could suffer an adverse change in financial condition due to a ratings downgrade or default, which may affect the value of an investment. Investments in high yield involve a higher element of risk. Investments in less developed regions can be more volatile than other, more developed markets due to changes in market, political, and economic conditions. Investments are less liquid than those that trade on more established markets.

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