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Long-Term Capital Market Assumptions

Highlights, Released in Q1 2023

The information set out in the document is our latest capital market assumptions. The information is based on our capital market model and is hypothetical and provided for illustrative purposes only. There is no indication that the actual return can likely be achieved. Model performance results have certain inherent limitations. The result does not reflect the results of investing in actual accounts or the material economic and market factors that could impact an investment manager's decision-making process.

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In short: There is no change to the long-term assumptions compared to the previous quarter. Spread paths for European countries spread, EUR HY as well as US A, BB and HY were changed to start immediately. Inflation paths for EUR and US were adjusted to reflect a higher inflation risk in the near term. Furthermore, we implemented a refined equity risk premium model. As a result, we observe a decrease in return expectations for most of the asset classes, while volatility expectations remain stable.

Assumptions as of 31 December 2022 (in USD)

* Hedge to USD

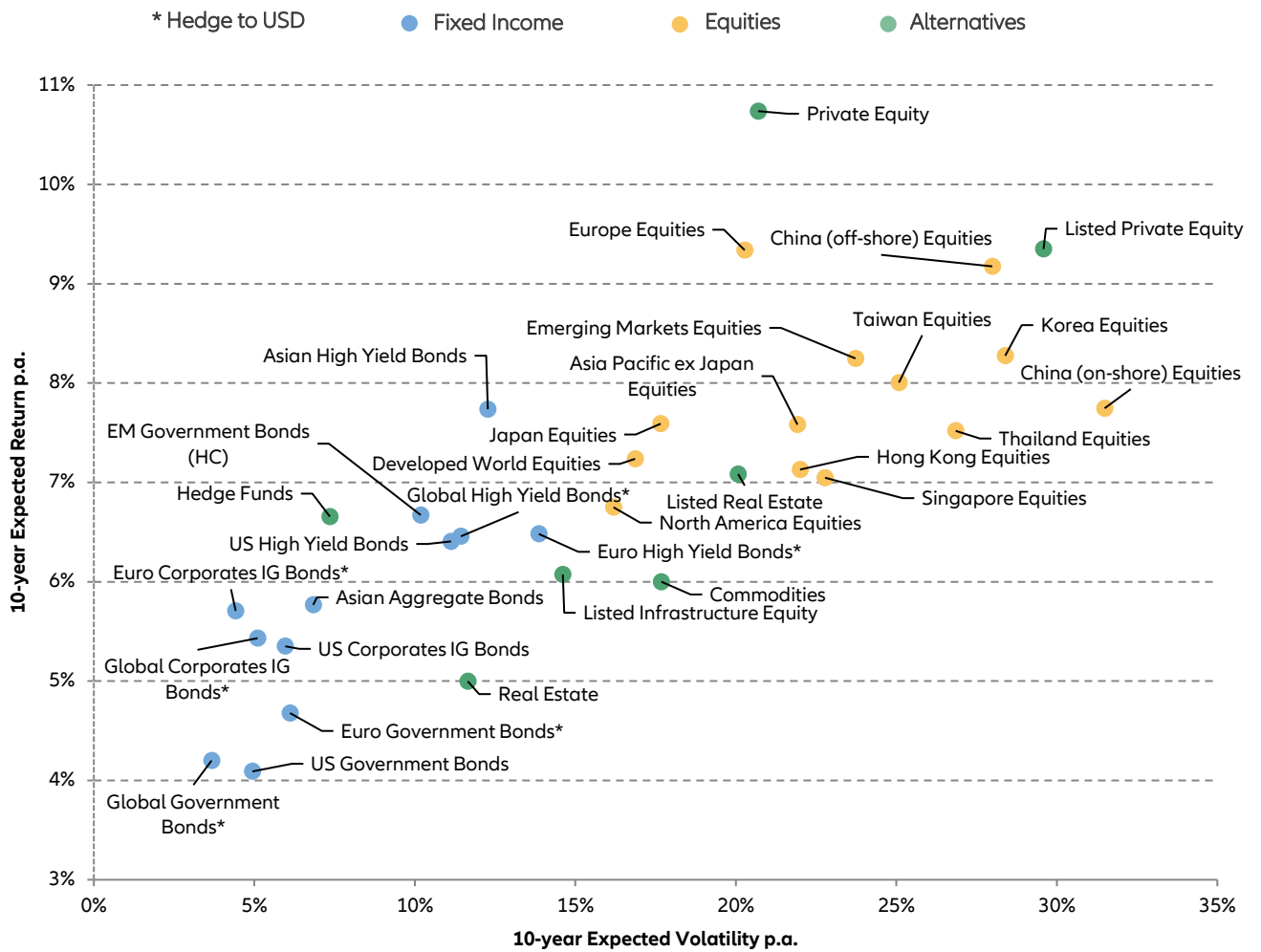
↑ = Expect higher from previous quarter

↓ = Expect lower from previous quarter

Segment	Asset Class	10-year Expected Return p.a.	Versus Previous Quarter	CORRELATION Developed World Equities -1 <----- 0 -----> +1
Fixed Income	US Government Bonds	4.1%	0.0%	-0.01
	Euro Government Bonds*	4.7%	0.0%	0.09
	Global Government Bonds*	4.2%	↑ 0.1%	0.03
	US Corporates IG Bonds	5.4%	↓ -0.2%	0.25
	Euro Corporates IG Bonds*	5.7%	↓ -0.4%	0.30
	Global Corporates IG Bonds*	5.4%	↓ -0.3%	0.28
	US High Yield Bonds	6.4%	↓ -0.3%	0.65
	Euro High Yield Bonds*	6.5%	↓ -0.5%	0.62
	Global High Yield Bonds*	6.5%	↓ -0.3%	0.66
	Asian Aggregate Bonds	5.8%	↓ -0.3%	0.45
	Asian High Yield Bonds	7.7%	↓ -1.0%	0.65
	EM Government Bonds (HC)	6.7%	↓ -0.7%	0.62
Equities	Developed World Equities	7.2%	↓ -0.8%	1.00
	North America Equities	6.7%	↓ -1.3%	0.99
	Europe Equities	9.3%	↑ 1.4%	0.96
	Asia Pacific ex Japan Equities	7.6%	↓ -0.6%	0.89
	China (on-shore) Equities	7.7%	↓ -0.8%	0.42
	China (off-shore) Equities	9.2%	↓ -0.8%	0.70
	Hong Kong Equities	7.1%	↓ -0.7%	0.72
	Japan Equities	7.6%	0.0%	0.76
	Korea Equities	8.3%	↓ -0.8%	0.71
	Singapore Equities	7.0%	↓ -0.8%	0.83
	Taiwan Equities	8.0%	↓ -0.7%	0.62
	Thailand Equities	7.5%	↓ -0.7%	0.58
	Emerging Markets Equities	8.2%	↓ -0.8%	0.88
	Alternatives	Commodities	6.0%	0.0%
Private Equity		10.7%	↓ -1.3%	0.82
Listed Private Equity		9.3%	↓ -1.7%	0.91
Real Estate		5.0%	↑ 0.4%	0.74
Listed Real Estate		7.1%	↓ -0.7%	0.88
Hedge Funds		6.7%	↓ -0.2%	0.85
Listed Infrastructure Equity	6.1%	↓ -0.4%	0.92	

Source: Allianz Global Investors. Data as of 31 December 2022 and in USD terms. Please note that the table above covers the major asset classes from a USD investor perspective, in which equity returns remain unhedged in USD, while all fixed income and alternative asset classes are either in USD terms or hedged to USD. The risk-return parameters assume an investment horizon of 10 years. Past performance, or any prediction, projection or forecast, is not indicative of future performance. Any securities mentioned (above) is for illustrative purposes only. It should not be considered as an investment advice, or a recommendation to buy or sell any particular security or strategy.

Long-term risk/return plot as of 31 December 2022 (in USD)



Source: Allianz Global Investors. Data as of 31 December 2022 and in USD terms. Please note that the chart above covers the major asset classes from a USD investor perspective, in which equity returns remain unhedged in USD, while all fixed income and alternative asset classes are either in USD or hedged to USD terms. The risk-return parameters assume an investment horizon of 10 years. Past performance, or any prediction, projection or forecast, is not indicative of future performance. Any securities mentioned (above) is for illustrative purposes only. It should not be considered as an investment advice, or a recommendation to buy or sell any particular security or strategy.

Appendix: The Capital Market Model

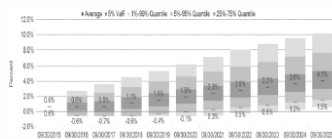
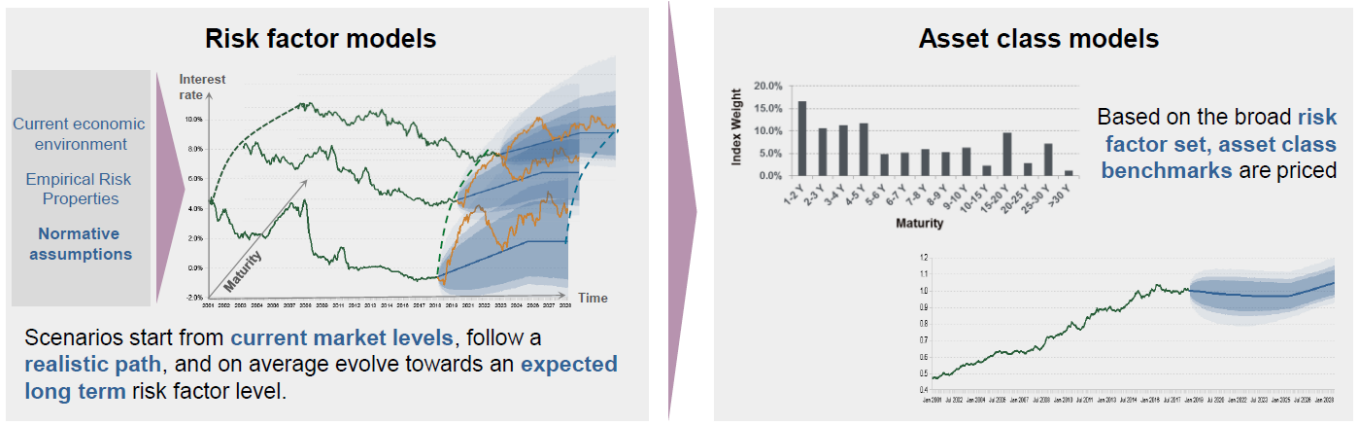
The Capital Market Assumptions (CMA) presented in the previous section are based on the underlying economic and financial factors. These factors define the core of our Capital Market Model.¹ Each asset class is mapped to certain risk factors, which drive its value.

- For fixed-income assets, the underlying risk factors are used to price the asset class benchmarks and derive their returns for different economic scenarios.
- For equity and alternative asset classes, risk premia are added to cash returns in order to derive their return expectations.

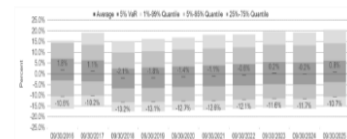
Illustration - Systematic Setup for Creating Forward-Looking Stochastic Scenarios for Risk Factors in the Fixed-Income Universe as Part of our Capital Market Model

¹ Please note that the model uses assumptions which are coordinated with the AllianzGI Economic & Strategy team but may deviate.

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Calibrated scenario set risk and return expectations (CMAs) for each asset class (derived from the scenario set)



Source: Allianz Global Investors.

Risk factors include inflation (along the term structure), real interest rates (along the term structure), credit spreads (along the term structure), foreign exchange rates, individual equity risk factors and individual alternatives risk factors.

Relevant Economic Factors

The risk factors are described by a hierarchical structure comprising three cascades.

- First, “economic factors” include the modelling of the basic economic drivers such as the growth of gross domestic product (GDP) and inflation rates. This is performed for different economies such as the US, the Eurozone, Japan, the UK, Canada and Switzerland.
- In the second cascade, “yield curve” is the modelled nominal interest rate term structure, which is the sum of expected inflation and real rate term structures. In addition, the corporate spread curves for different corporate ratings (AAA to BBB) are modelled in this cascade. These also include the credit spread modelling for investment-grade, high-yield and emerging market spreads. The results from the nominal rates and credit spreads constitute the major drivers for returns of fixed-income asset classes.
- The third cascade, “equity and alternatives” includes the equity and alternatives risk factor modelling. These risk factors are calibrated to the current market environment, historical risk characteristics based on time series information as well as forward-looking normative assumptions.

Normative Assumptions

The risk factors are modelled as stochastic processes. The mean paths of these processes are set by the Normative Assumptions Working Group consisting of global AllianzGI experts based on long-term anchors, academic studies and proprietary research. Deviations from long-term anchors are based on forward-looking considerations supported by our research. Long-term assumptions are reviewed on a quarterly basis and adjusted when necessary.

Fixed Income

Fixed-income benchmarks are valued with their underlying risk factor curves, which are a combination of a risk-free curve and spreads for different risks. The model for interest rate curves follows a process with mean reversion to our long-term normative assumptions set.

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Equities

Equity return assumptions are derived from a CAPM-type model, in which the expected return is the risk-free cash yield plus an equity risk premium. For developed market equities, we use a risk premium of 4.0% for a broad market portfolio and for emerging market equities a risk premium of 5.0%. Sub-index returns are beta-adjusted to reflect their systematic risk differences. To capture empirical equity market risk characteristics as realistically as possible, we allow for different market regimes during the scenario generation process by applying Markov switching techniques covering normal and disturbed or stressed market characteristics with different (stressed) correlation properties, respectively. On the other hand, we do not use any short-term valuation adjustments on a sub-index level. Benchmark indices are not adjusted for single stock characteristics like dilution or international exposure.

Alternatives

Commodity asset class returns are estimated based on a long-term excess return over cash, which is explained by a combination of roll return and spot return. The historically high spot return is adjusted to reflect lower expected inflation rates in historical terms. On aggregate, we assume a forward-looking excess return for commodities of 2%, which is lower than the historically calculated risk premium.

Private equity is modelled as an equity process with an additional complexity premium of 3%. We assume an integrated strategy with a buyout focus investing over different regions such as the US, Europe and Asia. The complexity premium is pretty much constant over time, in line with indications from benchmark providers such as Cambridge Associates.

Asset Class Benchmarks

The table below provides an overview of asset classes and underlying benchmark indices.

Segment	Asset Class	Benchmark Index
Fixed Income	US Government Bonds	ICE BofA US Treasury Index LOC
	Euro Government Bonds*	ICE BofA Euro Government Index USD hedged
	Global Government Bonds*	ICE BofA Developed Markets Sovereign Bond Index LOC [ext.] JPM GBI Global Unhedged in LOC
	US Corporates IG Bonds	ICE BofA US Corporate Index LOC
	Euro Corporates IG Bonds*	ICE BofA Euro Corporate Index USD hedged
	Global Corporates IG Bonds*	ICE BofA Global Corporate Index USD hedged
	US High Yield Bonds	ICE BofA US High Yield Constrained Index LOC
	Euro High Yield Bonds*	ICE BofA Euro High Yield Constrained Index USD hedged
	Global High Yield Bonds*	ICE BofA Global High Yield Constrained Index USD hedged
	Asian Aggregate Bonds	J.P. Morgan Asia Credit Composite Total Return Index USD [ext.] JP Morgan Chase Asia Bond Investment Grade Total Return
	Asian High Yield Bonds	J.P. Morgan Asia Credit Non-Investment Grade Total Return Index USD
	EM Government Bonds (HC)	J.P. Morgan Emerging Markets Bonds Index Global Diversified Composite
Equities	Developed World Equities	MSCI World Net Total Return Index USD
	North America Equities	MSCI North America Net Total Return Index USD
	Europe Equities	MSCI Europe Net Total Return Index USD
	Asia Pacific ex Japan Equities	MSCI AC Asia Pacific Ex Japan Net Total Return Index USD
	China (on-shore) Equities	MSCI China A Onshore Net Return Index USD
	China (off-shore) Equities	MSCI China Net Total Return Index USD
	Hong Kong Equities	MSCI Hong Kong Net Total Return Index USD
	Japan Equities	MSCI Japan Net Total Return Index USD
	Korea Equities	MSCI Emerging Markets Korea Net Total Return Index USD
	Singapore Equities	MSCI Singapore Net Total Return Index USD
	Taiwan Equities	MSCI Emerging Markets Taiwan Net Total Return Index USD
	Thailand Equities	MSCI Emerging Markets Thailand Net Total Return Index USD
	Emerging Markets Equities	MSCI Emerging Net Total Return Index USD
Alternatives	Commodities	Bloomberg Commodity Total Return Index
	Private Equity	risklab Private Equity Small Cap Proxy Index
	Listed Private Equity	LPX50 Listed Private Equity Index (TR) [in USD]
	Real Estate	-
	Listed Real Estate	MSCI Daily TR World Net Real Estate USD
	Hedge Funds	HFRI Fund Weighted Composite Index
Listed Infrastructure Equity	MSCI ACWI Infrastructure Net Total Return USD Index	

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