



Private
Banking

Strategic Asset Allocation 2025



2025

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Editorial

Dear readers,

Each year, we assess our Strategic Asset Allocation (SAA) based on the annual review of our Long-Term Capital Market Assumptions. The ever-evolving economic landscape requires a dynamic approach to portfolio optimisation, ensuring alignment with both market conditions and risk/return expectations. At the same time, we want to be mindful to change our SAAs only when warranted. In this report, we share with you the thinking behind our results and the changes we are making.

One of the relevant changes to our strategy is the revision of the government bond benchmark. This adjustment reflects a better alignment of duration between government bonds and investment-grade corporate bonds, allowing us to more effectively manage duration, a measure of interest rate sensitivity. The timing of this adjustment is not coincidental, since we see an opportunity to extend the bond duration as most currencies offer attractive return prospects due to high current bond yield levels – with the exception of the Swiss franc, where we abstain from the change.

We are also increasing our allocation to government bonds to reflect the attractive risk/return dynamics. This increase aims to balance the pursuit of higher returns with the need for stability and risk mitigation in our portfolios. We are also increasing our equity allocation in selected profiles to take advantage of the still attractive expected long-term outperformance of equities over bonds. We are also slightly increasing our allocation to hedge funds, where we see attractive return potential with low correlations to risky assets. To accommodate these strategic shifts, we have reduced our allocation to inflation-linked bonds and investment-grade corporate bonds. The reduction in inflation-linked bonds is based on their diminished relative attractiveness. Similarly, the reduced allocation to investment grade corporate bonds reflects a strategic reallocation towards assets with more attractive valuations and therefore potentially higher returns.

Throughout these adjustments, our objective remains the same: to construct optimal portfolios that navigate the complexities of the market, align with risk budgets, and capitalise on evolving opportunities. The following sections of this report will explain the rationale behind these changes and provide a comprehensive overview of our updates. We hope that this publication provides you with valuable guidance for your investment decisions.

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Strategic Asset Allocation: annual update

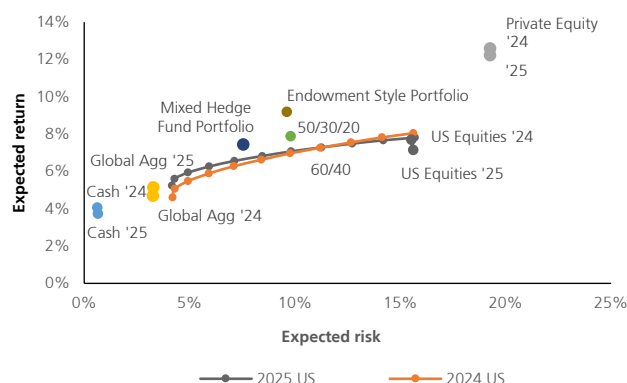
The strategic asset allocation of LGT portfolios is reviewed annually and adjusted to changing long-term market conditions with a minimum five-year horizon. Our forecasts for expected returns and risks are summarised in our “Long-Term Capital Market Assumptions 2025”, which are available in a separate publication.

Dr. Jakub Rojcek, Head Quantitative Analysis

After the broad-based sell-off across most assets in 2022, our expectations for the next five years reached their peak as reported in our 2023 edition of the Long-Term Capital Market Assumptions. This year, expected long-term returns on risky assets continue to moderate. Our base case scenario is one of continued but regionally divergent growth, of normalising inflation, and a market environment in which risks have lessened. Against this backdrop, we anticipate that risky assets will perform moderately well and that some of the high relative valuations of USD assets will revert to more typical levels. The moderate risk of geopolitical tensions is expected to persist, resulting in corresponding medium market turbulence.

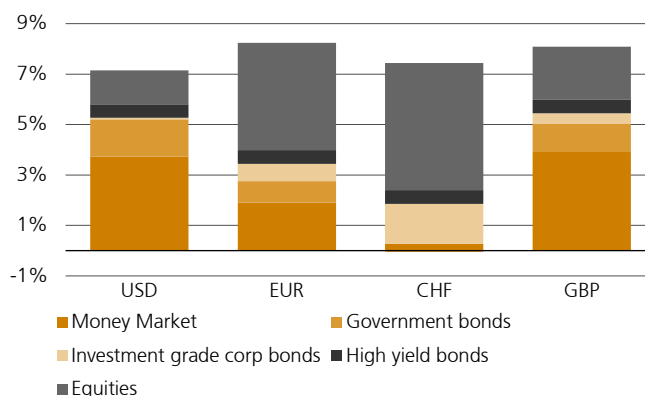
Expected returns on equities are projected to be lower than last year. Bonds, on the other hand, are anticipated to perform better due to higher initial yields and our prediction is that the overall yield level will decline. The USD stock/bond efficient frontier is flatter, with portfolios investing more in equities offering lower returns and portfolios with higher bond ratios delivering higher expected returns (graph 1). Investors face different trade-offs depending on the currency in which they are denominated (graph 2). For example, portfolios of CHF-based investors do not benefit as much from the inclusion of local government bonds as those of GBP-based investors. As a result, we place significant emphasis on constructing sound and diversified portfolios and recommend the increased use of alternative investments to complement the diversification benefits of government bonds. The addition of alternatives can significantly improve the risk/return profile of a pure equity/bond portfolio, as indicated by the enhanced 50/30/20 portfolio, which allocates 50% to equities, 30% to bonds and 20% to alternatives, rather than the traditional 60/40 equity/bond allocation (graph 1). Depending on the currency in which investors are

Graph 1: Stock/bond frontiers for the US for 2025 and 2024



USD Stock/bond frontiers based on the last two years of LTCMAs and constructed from expected returns of Global Equities, IG credit and US Treasuries. Expected return is the expected annualised compound total return, and expected risk is the expected annualised standard deviation of the portfolio. The 2025 curve is notably flatter, indicating a reduced reward for higher risk. The 50/30/20 portfolio represents a diversified portfolio of 50% equities, 30% bonds and 20% alternatives. The endowment style portfolio invests 60% in alternative asset classes. Source: LGT, Bloomberg

Graph 2: Money markets plus incremental return



The following graph presents incremental expected return on top of money market expected returns over the next five years coming from local government bonds 5-10 years maturity, global investment grade and high-yield bonds and local equities. Source: LGT.

based, such improvements can make a more significant contribution to achieving investment targets.

The performance of risky assets relative to our expectations will largely depend on the ability of economies to maintain growth in situations of high policy uncertainty and sustained elevated levels of geopolitical risk. We perceive the range of outcomes – good or bad – to be quite wide. In our risk framework, we assign slightly greater weight to the mix of negative scenarios.

In the downside scenario, economic growth is hampered by trade wars. This would lead to a slight increase in inflation, driven by elevated commodity and goods prices, but also to lower growth. If these trade conflicts coincide with a more challenging geopolitical landscape, the situation would be further exacerbated. As a result, fears of stagflation risks could grip the markets, leading to brief periods of heightened turbulence. A similar outcome could be triggered if concerns about overall debt levels, particularly in the United States and Europe, were to resurface and be perceived as unsustainable. In this case, it would not be inflation that would trigger higher interest rates, but the increased risk premium needed to attract capital to finance this debt. This, in turn, could lead to an earlier-than-expected reversion to the mean for the overvaluation of the US dollar and a subsequently increasing demand for non-US safe-haven assets. However, when considering the relative risks of stagflation versus slower growth with manageable inflation, we weigh the latter more heavily.

In the upside scenario, we would expect at least partly converse developments to those in the downside risk scenario. We do not see an improvement in trade relations as a high-probability outcome. A lower level of geopolitical conflict and renewed confidence in the forces of globalisation could create a slowly building positive momentum for growth, especially outside the US, and improve the dynamics of prices for goods and services. We place greater emphasis on productivity gains resulting from a more widespread and sooner-than-expected adoption of artificial intelligence (AI) with a higher impact. Another potential upside would come from central banks and other policymakers proactively and accurately predicting the appropriately steered tools of monetary policy. Coupled with newly found fiscal discipline (distinct from austerity), this could gradually reduce relative government debt and smooth out the business cycle. In constructing the expected returns of our scenarios, we draw on observations of asset class performance under different market and macroeconomic regimes.

Structural change of government bond benchmarks

During 2024, we reviewed the benchmarks for our strategic portfolios and decided to replace the former government bond index, which focused on bonds with maturities of between one

and ten years, with an index with longer average maturities, focusing on bonds with maturities of between five and ten years in all our reference currencies. This change accomplishes two goals: (i) it better aligns the duration of investment-grade bonds with that of government bonds, an important feature that allows us to manage duration and credit spread allocation more effectively when optimising portfolios both strategically and tactically; (ii) it increases the portfolios' weighted duration. For example, the duration for the Balanced risk profile without alternative investments rises from 2.24 to 2.67. This means that the portfolios would have greater protection in the event of yield decreases due to economic growth-related shocks, which typically coincide with negative equity performance. This benchmark update is relevant for all Discretionary Classic and Advisory Unconstrained strategic allocations. Discretionary Swiss Domestic portfolios will continue to use the one-to-ten year maturities government bond benchmark, which is more closely aligned in terms of duration to the local Swiss franc corporate bond index. This change will take effect from 1 March 2025, together with the allocation adjustments described below.

Allocation changes in our discretionary mandates

Graph 3 (next page) shows the new composition of our strategic asset allocation, using our Classic Balanced portfolio in the reference currency EUR as an example. The relative risks and expected returns of the various assets have changed only marginally compared to last year, so we are not compelled to change our positioning substantially in this year's SAA review. We adjust the portfolios in response to changing market conditions in the following areas:

Increase in overall equity exposure (+3.0%)

During 2024, we extensively reviewed the risk budget allocations across the portfolios. We concluded that, for the Conservative and Balanced risk profiles, the portfolios would benefit from a recalibration to a moderately higher equity allocation (+3.0%) in an environment of still attractive expected long-term outperformance of equities over bonds. The new strategic equity weight for a Balanced portfolio is 48% when alternative investments are included and 52% when they are excluded. For Conservative portfolios, the new strategic equity allocations are 24% in profiles with alternative investments, and 27% in profiles

without alternative investments. As a result, portfolios without alternatives offer slightly higher equity allocations. The increase in equity allocation is achieved by raising US equities by +2%. This decision is influenced by our reluctance to take on additional relative risk compared to the global equities regional market capitalisation composition, and our expectation that the return differences between downside and upside scenarios for US equities will be smaller than those for other regional equities. Additionally, we are increasing the allocation to Swiss equities by 1% due to their superior diversification characteristics, attractive expected returns, and comparatively lower return volatility. This adjustment aims to enhance the overall risk/return profile of our portfolios. The overall equity allocation for the growth risk profile remains unchanged.

Reduction of inflation-linked bonds (-1.0%)

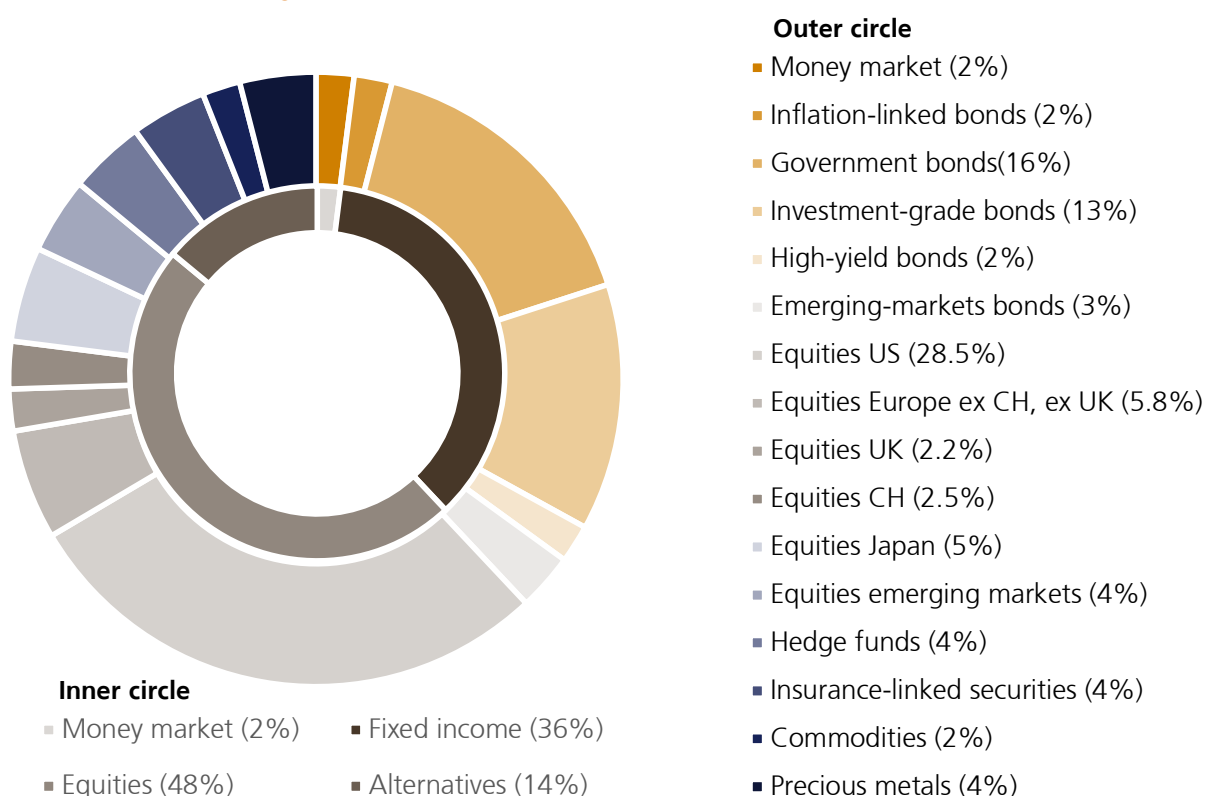
Since the inflation-induced drawdown at the end of 2021 combined with interest rate hikes, the inflation-linked bond index

has underperformed the global government bond benchmark by more than 10%, driven by sharp increases in real rates, disappointing expectations for this asset class as an inflation hedge. Due to the absence of inflation risk compensation, the expected returns of inflation-linked bonds are lower than those of comparable government bonds. Additionally, the lower diversification benefit, manifested in a higher correlation with equity indices, leads us to reduce our allocation to this fixed income segment.

Reduction of investment grade credit (-4.5%)

Investment grade corporate spreads have tightened substantially, reducing the expected outperformance of the index over the government bond benchmark to the 20th percentile of our historical predictions. This makes such investments relatively less attractive. We therefore reduce our exposure to this segment and use the proceeds to fund other assets in the portfolio. The

Graph 3: Classic Balanced including alternatives in EUR



Source: LGT

reduction in investment grade corporate bonds is smaller for risk profiles where we don't increase the overall equity allocation.

Increase in government bonds (+1.5%)

Our robust portfolio optimisation model prefers to allocate relatively more to government bonds, as the forecasted long-term correlation is -0.14, compared to 0.39 for the credit index. The slightly higher volatility of the government bond index further improves the diversification benefit. Attractive return expectations driven by high current yield levels and a positive expected valuation contribution resulting from our expectation falling yields over the next five years, combined with stable diversification benefits, lead us to allocate more to government bonds, especially given the less attractive investment grade spreads.

Increase in hedge funds (+1.0%)

The main hedge fund style in our liquid Classic portfolios is the Global Macro/CTA (Commodity Trading Advisors). This style adds diversification as it is uncorrelated to listed equities and less dependent on the outcome of scenarios. We expect this strategy to outperform cash. We therefore increase our allocation by 1%. Strategic portfolios are allocated equivalently in EUR, USD and GBP reference currencies, always using local five-to-ten-year maturity benchmarks. Changes to the strategic allocations of the Balanced risk profile are detailed in table 1, with an example in the USD reference currency.

CHF investors challenged by low bond yields

Our forecast of 0.7% inflation in Switzerland over the next five years aligns with the Swiss National Bank's goal of price stability. The limited supply of outstanding government bonds (also known as Eidgenossen), combined with Switzerland's stable political system, makes it more convenient for investors to hold these safe assets. As a result, yields and expected returns on these bonds are correspondingly low. We illustrate the changes to the strategic portfolio with an example of the Conservative risk profiles without alternative investments (table 2):

Increase in overall equity exposure (+3.0%) against government bonds (-3.0%)

The increase of the overall equity exposure in the Conservative and Balanced risk profiles is in line with the increase in the other reference currencies and implemented by increasing US eq-

Table 1: Classic Balanced in USD

Reference currency USD	incl. alternatives	new-old
Money market	2.0%	0.0%
Fixed income	36.0%	-4.0%
Equities	48.0%	3.0%
Alternatives	14.0%	1.0%
Money market	2.0%	0.0%
Inflation-linked bonds	2.0%	-1.0%
Government bonds	16.0%	1.5%
Investment-grade bonds	13.0%	-4.5%
High-yield bonds	2.0%	0.0%
Emerging-markets bonds	3.0%	0.0%
Equities US	28.5%	2.0%
Equities Europe ex CH, ex UK	5.8%	0.0%
Equities UK	2.2%	0.0%
Equities CH	2.5%	1.0%
Equities Japan	5.0%	0.0%
Equities emerging markets	4.0%	0.0%
Hedge funds	4.0%	1.0%
Insurance-linked securities	4.0%	0.0%
Commodities	2.0%	0.0%
Precious metals	4.0%	0.0%

Source: LGT

Table 2: Classic Conservative in CHF

Reference currency CHF	Conservative '25	new-old
Money market	2.0%	0.0%
Fixed income	71.0%	-3.0%
Equities	27.0%	3.0%
Alternatives	0.0%	0.0%
Money market	2.0%	0.0%
Inflation-linked bonds	6.0%	0.0%
Government bonds	27.0%	-3.0%
Investment-grade bonds	30.0%	0.0%
High-yield bonds	3.5%	0.0%
Emerging-markets bonds	4.5%	0.0%
Equities US	15.0%	2.0%
Equities Europe ex CH, ex UK	3.3%	0.0%
Equities UK	1.2%	0.0%
Equities CH	2.0%	1.0%
Equities Japan	3.5%	0.0%
Equities emerging markets	2.0%	0.0%
USD	4.7%	1.0%
EUR	0.5%	0.0%
CHF	88.8%	-1.0%
GBP	0.5%	0.0%
JPY	3.5%	0.0%
Others	1.9%	0.0%

Source: LGT

uities (+2.0%) and Swiss equities (+1.0%). Contrary to other reference currencies, this is financed entirely by the reduction of Swiss government bonds as the current low yields don't offer any compensation above our money market forecast returns. Swiss franc investors' positions in investment-grade corporate bonds as well as inflation-linked bonds are maintained as they offer incremental return.

As part of the 2025 strategic allocation update, we again reviewed the currency hedging rules for equity allocations in CHF-denominated portfolios. Our conclusion remains unchanged. From a risk mitigation perspective, it is justifiable to hedge around 60% of the currency exposure arising from the equity allocation, as this would improve the overall asset allocation.

Detailed shifts in Swiss Domestic strategy

Low yields of Swiss government bonds, coupled with still attractive return expectations for a broad Swiss equity index, mean that the current value of the expected equity risk premium is relatively high. We took advantage of this steeper efficient frontier by shifting out of bonds and into equities and Swiss real estate funds already last year. Return expectations for Swiss government bonds have deteriorated further as yields have continued to decline. We continue to adapt the allocation with the following shifts as highlighted with an example of the Balanced risk profile with alternatives (table 3):

Reduction of nominal Swiss government bonds (-3.0%)

We predict that money market investments will outperform the relevant government bond index. We reflect the negative risk premium on government bonds and the steep efficient frontier by further shifting out of bonds into money market and equities. We reduce the risks associated with interest rate movements by reducing the government bond position by 3%.

Increase in money market investments (+1.5%)

To mitigate the potential risk of higher interest rates, we reallocate proceeds from the sale of Swiss government bonds into money market instruments. Although they offer only marginally higher attractive returns, their inherently low interest rate risk due to very short maturities means that their volatility is expected to be lower. Building out a small money market position allows us to add to the longer maturity bonds tactically, should the return potential become more attractive.

Table 3: Domestic Balanced including alternatives in CHF

Reference currency CHF	Balanced '25	new-old
Money market	3.5%	1.5%
Fixed income	35.5%	-3.0%
Equities	50.5%	1.0%
Alternatives	10.5%	0.5%
Money market	3.5%	1.5%
Inflation-linked bonds	2.5%	0.0%
Government bonds	14.0%	-3.0%
Investment-grade bonds CH	19.0%	0.0%
High-yield bonds	0.0%	0.0%
Emerging-markets bonds	0.0%	0.0%
Equities US	10.5%	0.0%
Equities Europe ex CH, ex UK	2.7%	0.0%
Equities UK	1.0%	0.0%
Equities CH	32.3%	1.0%
Equities Japan	3.0%	0.0%
Equities emerging markets	1.0%	0.0%
Hedge funds	0.0%	0.0%
Swiss real estate funds	6.5%	0.0%
*Commodities (H)	0.0%	0.0%
*Precious metals (H)	4.0%	0.5%

* Commodities and precious metals positions are hedged in CHF

Source: LGT

Increase in publicly traded equities (+1.0%)

We take advantage of the relatively high equity risk premium in Swiss equities by further adding exposure to the Swiss equity market (+1.0%). Cumulatively with an increase in equity allocation last year, the current overall equity exposure stands at 50.5% for the Balanced portfolio with alternative investments and at 54.5% for the Balanced portfolio without alternative investments.

Increase in precious metals (+0.5%)

The CHF hedged precious metals position is predicted to provide attractive incremental returns with compelling uncertainty risk hedging properties. We therefore optimise the risk budget within our limits to align the precious metals position with the Classic strategy at 4%.

Changes in Unconstrained strategic asset allocations

Graph 4 illustrates the new composition of our Unconstrained strategic asset allocation in USD reference currency for a Balanced profile. The fundamental difference between this Unconstrained SAA and our Classic SAA is the addition of illiquid asset classes. The constraint on the SAA we use for our discretionary portfolio is that each asset class considered must be sufficiently liquid. We use the Unconstrained family of SAAs mainly for Advisory purposes. We adjust the portfolios under the changing market conditions in the following areas, similar to the adjustments in the Classic strategy:

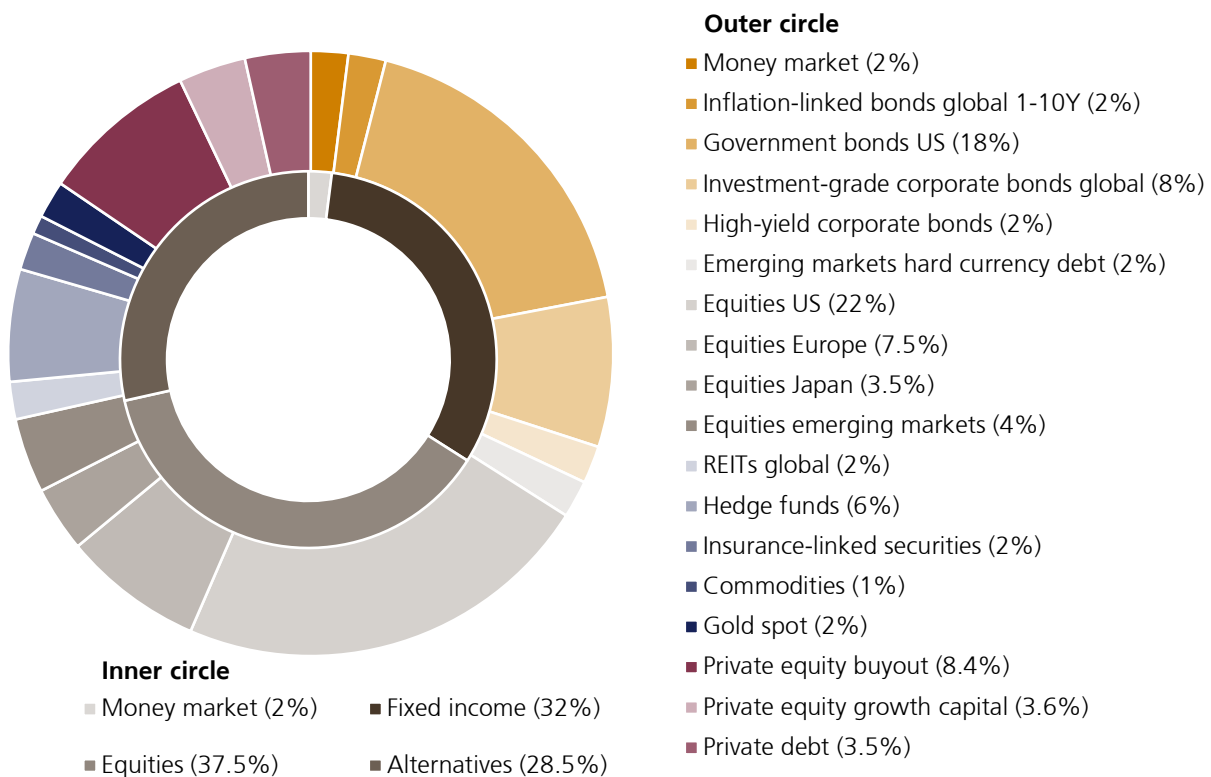
Reduction of fixed income (-2.0%) and increase in alternatives (+2.0%)

We reduce the overall fixed income allocation in the Balanced portfolio by reducing inflation-linked bonds (-1.0%), and invest-

ment grade corporate bonds (-3.0%). At the same time, we invest part of the proceeds to government bonds (+2.0%). The rationale is the same as for our Classic strategy described above. Government bonds offer more attractive returns and a higher degree of diversification than their inflation-linked counterparts. Spreads in the investment grade corporate bond segment have tightened and the incremental return that we expect to earn here is in the 20th percentile compared to our history of forecasts, hence not deemed attractive.

We increase the overall alternatives quota in the Balanced profile (+2.0%). We implement this by increasing our overall hedge fund allocation by 1% to 6.0%. This is done by increasing the allocation to less liquid institutional strategies within the hedge fund portfolio. We have a balanced focus on discretionary, uncorrelated strategies with attractive alpha potential, and diver-

Graph 4: Unconstrained Balanced risk profile in USD



Source: LGT

sified trend-following strategies, which we expect to perform well in an environment of heightened macroeconomic volatility. We also increase the allocation to private credit (+1.0%) as the credit premium that we expect to earn in the private markets is higher than in the public markets. The total allocation to private credit in the Balanced portfolio is now 3.5%.

Replacing Swiss bonds with alternatives for Swiss Franc portfolios

Last year, we eliminated the equity home bias in CHF portfolios. We are continuing with this global approach. To offset the higher currency risk, we have introduced partial hedging for CHF reference currency. As with our liquid Classic mandates, we also hedge more of the currency risk arising from our equity allocations in our Unconstrained CHF-denominated SAAs and continue to review this decision on a regular basis.

As CHF investors face similar challenges from low Swiss government bond yields to those that we face in our Classic and Domestic strategies, we have decided to rebalance the Unconstrained strategy away from Swiss government bonds to an even a greater extent. We are taking advantage of the diversification benefits and attractive excess returns offered by alternative investments as follows, using the Conservative risk profile as an example (table 4):

Reduction of fixed income (-7.0%) and increase in alternatives (+7.0%)

Return expectations for Swiss government bonds have deteriorated further as yields have continued to fall and we decrease the corresponding allocation by -10%. Within fixed income, we increase the allocation to global investment grade corporate bonds, which offer incremental yield for Swiss franc investors. We increase the allocation to private credit by 3% to 5.5%, which is 2% higher than the allocation to private credit in USD, EUR and GBP reference currencies. Similarly, the increase in hedge funds is more pronounced (+2.0%), bringing the overall hedge fund allocation for the risk profile to 7.0%. We also increase the allocation to insurance-linked securities (+2.0%). The overall allocation to this segment is 4.0%. Insurance-linked securities offer attractive return potential as spreads have not yet fully adjusted to the pre-2022 levels. With these changes, we are optimising within our illiquidity and risk budget to provide

Table 4: Unconstrained Conservative risk profile in CHF

Reference currency CHF	Conservative '25	new-old
Money market	2.0%	0.0%
Fixed income	52.0%	-7.0%
Equities	15.5%	0.0%
Alternatives	30.5%	7.0%
Money market	2.0%	0.0%
Inflation-linked bonds global 1-10Y	5.0%	0.0%
Government bonds CH 5-10Y	17.5%	-10.0%
Investment-grade corporate bonds global	25.5%	3.0%
High-yield corporate bonds	2.0%	0.0%
Emerging markets hard currency debt	2.0%	0.0%
Equities US	8.5%	0.0%
Equities Europe	3.5%	0.0%
Equities Japan	2.0%	0.0%
Equities emerging markets	1.5%	0.0%
REITs global	2.0%	0.0%
Hedge funds	7.0%	2.0%
Insurance-linked securities	4.0%	2.0%
Commodities	1.0%	0.0%
Gold spot	2.0%	0.0%
Private equity buyout	6.3%	0.0%
Private equity growth capital	2.7%	0.0%
Private debt	5.5%	3.0%
USD	7.7%	0.1%
EUR	0.5%	0.0%
CHF	87.0%	-0.1%
GBP	0.5%	0.0%
JPY	2.1%	0.0%
Others	2.2%	0.0%

Source: LGT

incremental expected return for CHF-based clients when local government bonds are unattractive. We optimise the asset class mix to take full advantage of the diversification benefits of alternative investments.

The expected risk measured as standard deviation increases from 4.9% to 5.2%, which is comparable to the expected standard deviation of the USD Conservative portfolio of 5.4%. The ratio of alternative investments in the overall portfolio for the range of risk profiles is 28%, 30.5%, 33.0%, 33.0%, and 32.0% for the Income, Conservative, Balanced, Growth, and Equity risk profile respectively. Within the alternatives bucket of the portfolios, the ratio of private equity increases at the expense of private credit and hedge funds, and insurance-linked securities as risk tolerance increases.

Appendix: Principles of building robust forward-looking portfolios at LGT

LGT's core beliefs are reflected in our strategic asset allocation: (i) long-term thinking; (ii) importance of active management; (iii) diversification; (iv) use of alternative investments to generate out-performance, but also to increase diversification; (v) creation of a robust base case; (vi) use of robust portfolio optimisation, including the definition of alternative scenarios.

The SAA defines the weights of investments in a portfolio at the asset class level. At the first level, we divide asset classes into cash, fixed income, equities and alternatives. At the second level, we generally divide fixed income into government bonds, inflation-linked bonds, investment grade corporate bonds, high yield corporate bonds and emerging market debt. Geographically, we typically divide equities into the regions US, Europe, Japan and emerging markets. We distinguish between Swiss and UK equities, as well as global REITs and Swiss real estate funds. We also model equity styles such as value, quality, momentum and others. Within alternatives, we distinguish between liquid alternatives, illiquid hedge funds and private markets. Liquid alternatives include UCITS hedge funds, insurance-linked securities, commodities and gold, while within hedge funds, we also distinguish between different styles such as relative value or diversified trend. Within private markets, we distinguish between asset classes such as buyouts, growth capital, venture capital, private debt, private real estate and private infrastructure.

We monitor existing asset classes for changes in their characteristics and research new asset classes that are investable and have the potential to improve risk-adjusted returns for our clients. The SAA can also be optimised using factors or styles (alternative risk premia) or allocated according to risk measures rather than money. We currently offer Capital Market Assumptions (CMAs) for around 150 asset classes, sub-asset classes, risk factors and styles. We also take into account the currency exposure of investments and the reference currency of investors. We do this by translating local estimates of risk and return into all available reference currencies. We also calculate CMAs for different currencies.

To classify an investor's risk tolerance, we typically use five standard categories, or risk profiles, in increasing order of risk tolerance: income, conservative, balanced, growth and equity, also known as very low, low, moderate, high and very high risk profiles. For bespoke analyses, the risk profile can be selected outside the typ-

ical ranges and the degree of illiquidity aversion can also be taken into account.

LGT Private Bank's SAA follows the principles of optimisation that is robust to uncertainty in the parameter estimates, as well as robust multi-level estimation. The inputs to the robust optimisation are the expected return and the expected risk (covariance matrix). Both are estimated under the assumption of uncertainty.

Our forecasting horizon is five years and we review our SAAs annually, unless long-term market conditions change significantly, in which case we may review SAAs on an ad hoc basis. In addition, portfolios are regularly updated through the tactical asset allocation (TAA) process. As part of the SAA review process, we calculate new estimates of expected return and risk, which are then fed into robust optimisation. We also gather views from our experts in various locations around the world, which are incorporated into our capital market assumptions. Our views and final expected return and risk figures are summarised in our annual publication, Long-Term Capital Market Assumptions.

Expected returns

The aim of calculating expected returns is to provide a robust forecast of performance for each individual asset class. We estimate expected returns using an ensemble of models, which increases the statistical robustness of our forecasts. In general, we use the building block approach, also known as the sum-of-parts approach. This has been shown to be statistically superior in the academic literature. The building blocks of expected returns typically consist of blocks such as income, growth and valuation, and can be estimated for most asset classes. For example, in the case of equities, the income component may consist of the return based on dividends, buybacks and an adjustment for new share issues. The growth component then represents the growth in total earnings and the valuation component is derived from the convergence of the current earnings price to a forecast valuation at the end of the investment horizon.

We calculate expected returns over the history available in our data samples and evaluate their statistical performance. We produce measures of forecast confidence for each asset class, which also help us to focus on asset classes with relatively lower forecast

confidence in our meetings with asset class experts. We can also use the forecast confidence information in the optimisation process itself. An important input to expected returns for all asset classes is an estimate of macroeconomic variables over the forecast horizon. We obtain these from established sources such as the IMF, the Survey of Professional Forecasters and economists' consensus estimates. We also receive estimates and views from our macroeconomic research team and systematically gather views from asset class experts and economists, which we combine with our expected returns. Finally, we translate expected returns into all the reference currencies available to our clients.

Risk modelling

We also model risk in a robust manner. We estimate the covariance matrix using the shrinkage approach, which minimises the estimation risk of the sample covariance matrix. We combine this robust estimation with a factor model, which we use to populate a covariance matrix for a large set of asset classes. We translate the local currency asset covariance matrix into different reference currencies, taking into account the currency exposure of each asset class. We can incorporate views on correlations between different asset classes by weighting robust full-sample covariance estimates with samples from different regimes or with target covariances created by using asset classes clustered by correlations.

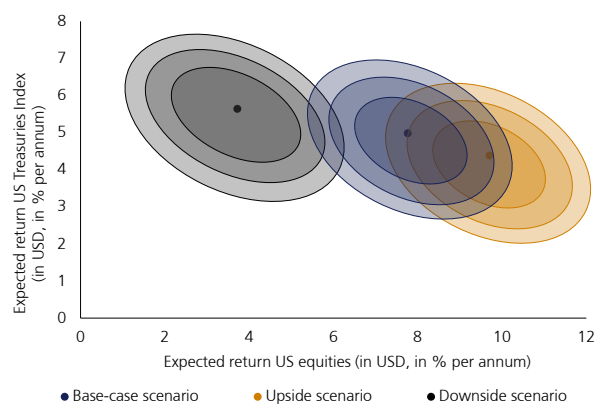
Robust optimisation

We aim to build portfolios that consistently outperform their peers over the long term. Expected performance should be aligned with the needs and risk profiles of our investors. Optimised allocations reflect our assumptions about the capital markets.

To create robust allocations, we allow for the possibility that our expectations are uncertain. We therefore create "uncertainty sets" around our point estimates of expected returns. When optimising, we simulate the expected returns from such an uncertainty set and optimise the expected return for a level of risk for each individual draw. We then average the resulting portfolios to obtain a robust allocation. In the literature, this approach is known as "robust resampled optimisation".

We further expand the set of uncertainties around our base case estimate of expected returns by using scenarios. We do this by using various regime indicators. Regimes are performance-rele-

Graph 5: Combined uncertainty sets



This chart shows the uncertainty sets of our base case, upside and downside scenarios.
Source: LGT

vant conditions that cluster over time. For example, we use a business cycle indicator based on the nowcast output gap, or a turbulence indicator based on market returns, or a macroeconomic indicator based on accelerating or decelerating rates of inflation and economic growth, or a hidden regime cluster model based on a geopolitical risk index. We create scenarios by adjusting the base case forecasts in the directions of performance observed during periods corresponding to regimes that we consider relevant for risky assets to outperform or underperform the base case. We define such conditions, as well as their probability and severity of impact, at our annual views collection meetings. We refer to such scenarios as upside and downside scenarios. We also create uncertainty sets around the scenario returns.

In the final robust allocation, we therefore simulate the expected returns from the combined uncertainty set (graph 5), including the scenario expected returns, optimise for each individual draw and average the portfolios to produce a robust resampled allocation. Such an allocation is focused on our base case, but to some extent also aims to mitigate potential risks from risk assets performing worse than expected, or to capture potential upside should risk assets perform better than expected. Based on our views, we also incorporate regime-specific covariance matrices into the covariance matrix used in the optimisation.

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Research Content and Publications

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