UBS

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Reserve Management in the era of higher yields

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The global economy entered a new phase….

The "Great Moderation" is over, and we are transitioning to a new regime, but the outcome is still unclear

- Covid-19, followed by trillions of dollars in stimulus to kickstart the global economy again, the outbreak of inflation and the most aggressive Fed reaction in decades as well as persistent geopolitical troubles have set the proverbial (economic) pendulum in motion and have finished what many people called the "Great Moderation".
- The new regime could be marked by a return of **volatility** in markets and the economy with increased risk of accidental **pro-cyclical monetary and fiscal policy** and a **higher term premium** that would be negative for all risk assets, **block-building** and **protectionism** as structural trend, a **shift in power** from capital to labor, rising **political tensions & populism** and the **government** as key driver of investment.

Higher Interest rates……

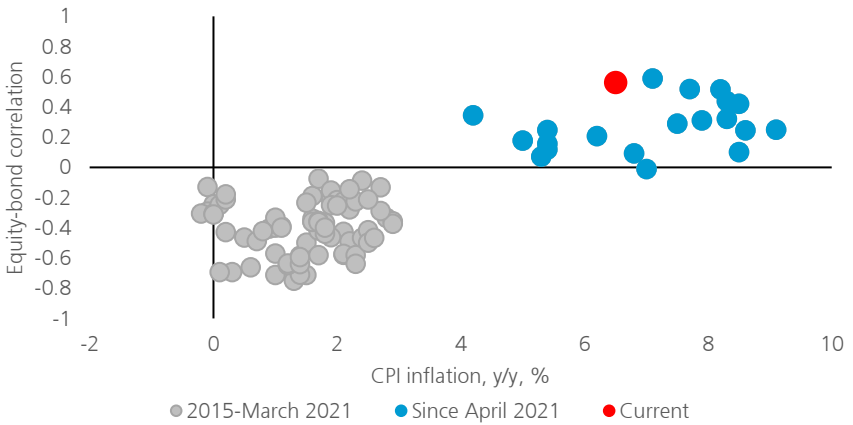
US Real interest rates

US Generic Govt TII 10 Yr

Source: UBS Asset Management, Macrobond. Data as of December 2023

….positive stock-bond correlation

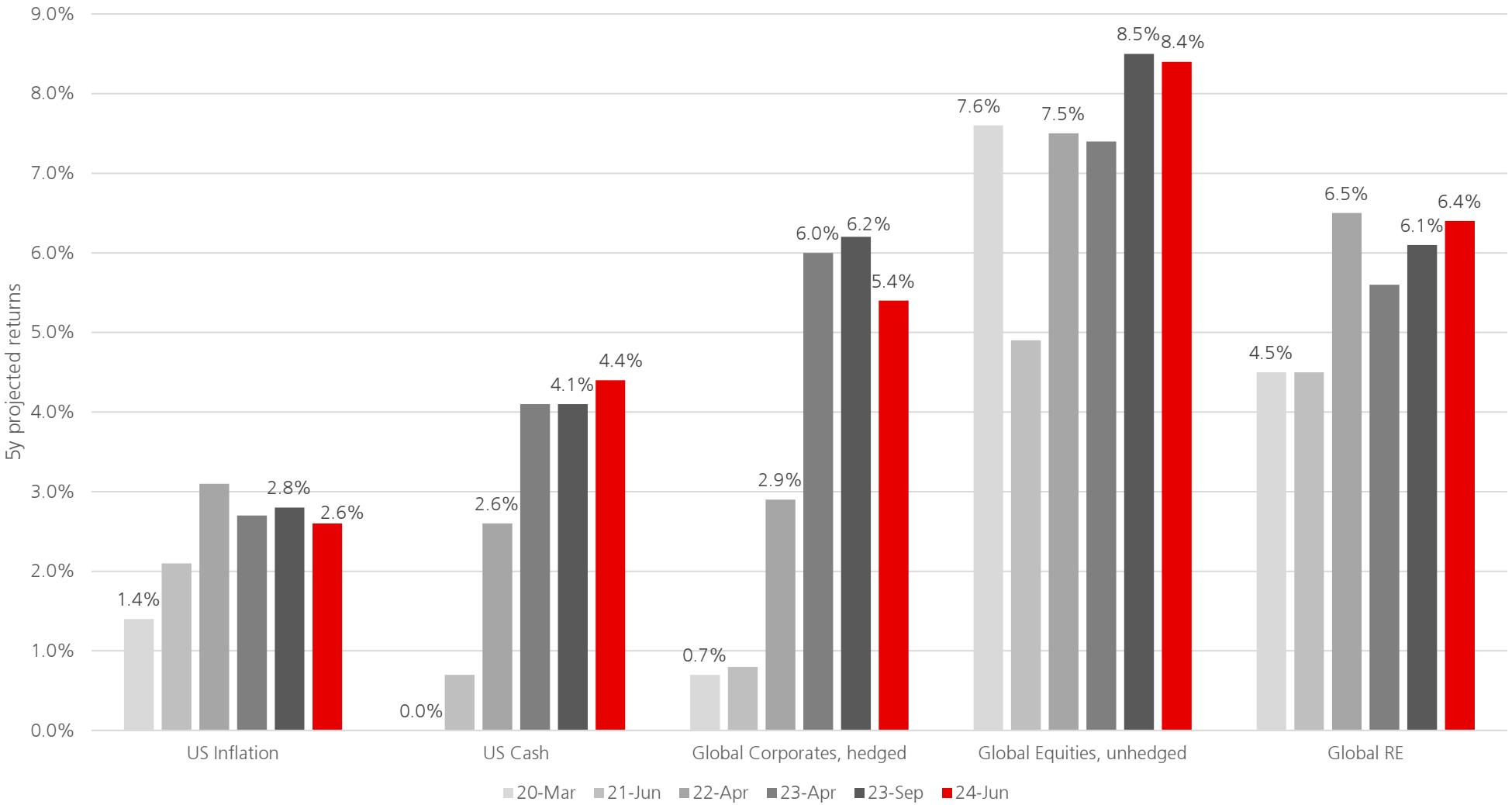
Bond-equity correlations have risen with high inflation



Source: UBS Asset Management as of 4Q 2023. For illustrative purposes only.

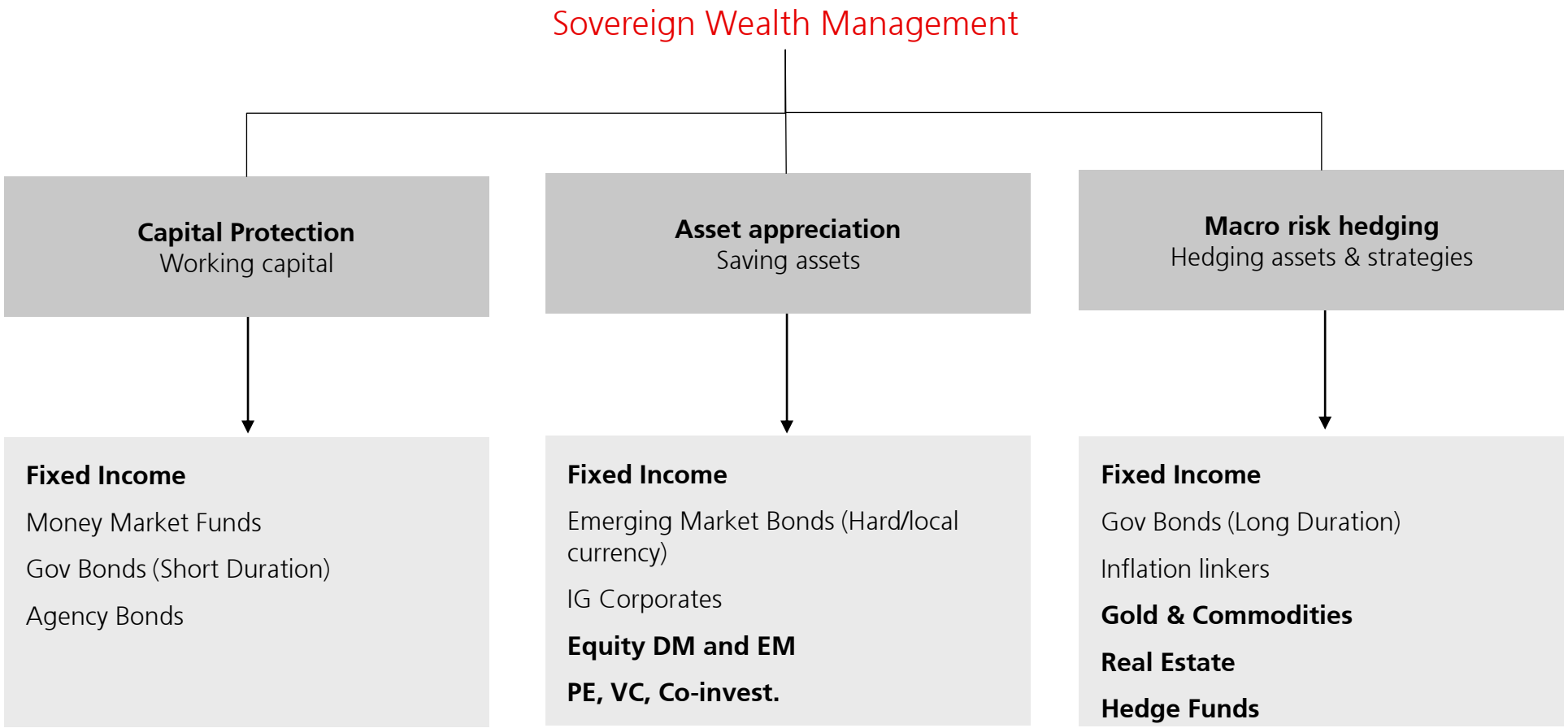
…with higher expected returns in fixed income

5-year projected returns (in USD) for key traditional and private markets ("Softish landing" scenario)



Source: UBS Asset Management as of 2Q 2024. This does not constitute a guarantee by UBS AG, Asset Management.

…leading to a new Investment paradigm for Sovereign Investors



ESG consideration: Green Bonds, Sustainable Equity, Green Alternatives

Benchmark and governance considerations

Source: UBS Asset Management as of 4Q 2023. For illustrative purposes only. This does not constitute a guarantee by UBS AG, Asset Management.

Sovereign Portfolios: Different portfolios and different goals

Liquidity and investment tranche separation

CB Working Capital

Objective

- Liquidity management for market operations

Key considerations

- Preservation of capital and liquidity
- Currency mix/reference
- Import Coverage (3-6 months)
- Short-term external debt coverage (100%)

Stabilization portfolio

Objective

- Offset oil price movements to fill gap in revenues to fund public expenditure

Key considerations

- Preservation of capital and liquidity
- Precaution/buffer during national emergencies
- Explicit/implicit liabilities
- Diversify natural/structural endowments

Savings portfolio

Objective

- Accumulate wealth for future generations
- Managing inflation impact

Key considerations

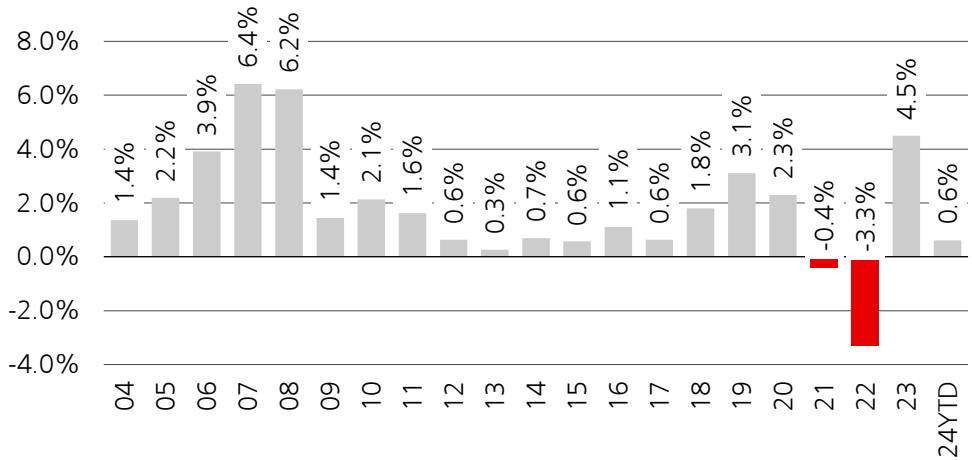
- Maximize (risk-adjusted) returns over longer time horizons
- Exploit illiquidity premium
- Return above relevant inflation target (reflecting import structure)

Source: UBS Asset Management. For illustrative purposes only.

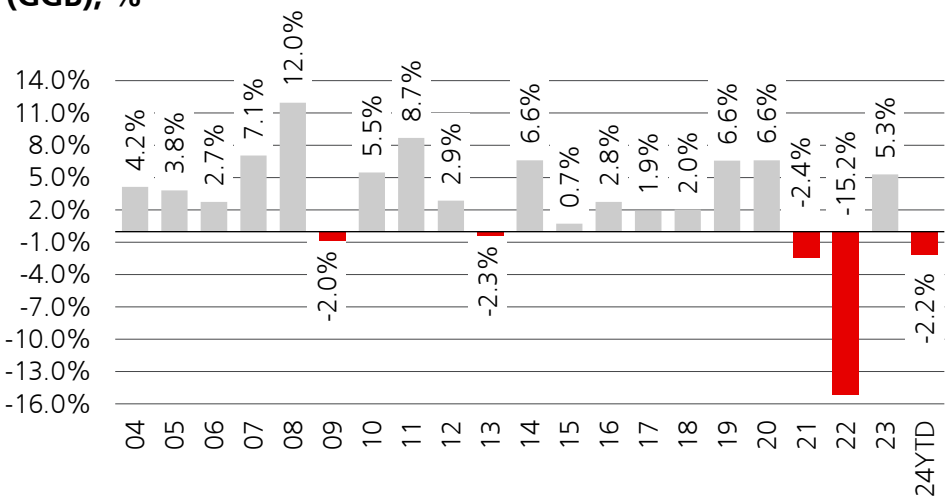
Government Bonds

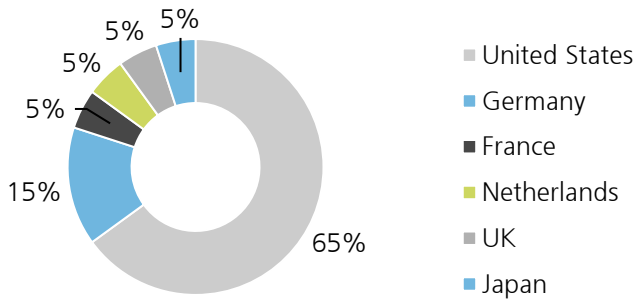
After the good returns in 2023 2024 volatile returns in 2024YTD

Global Government Bond Short Duration sample portfolio (GGB 1 – 3), %



Global Government Bond Long Duration sample portfolio (GGB), %





Key features

- GGB 1-3 and GGB are sample portfolios which track the performance of typical central bank short- and long-term government bond portfolios for analytical purposes
- The portfolio composition broadly resembles the currency composition of global FX reserves (see pie chart for details)
- Non-USD indexes all hedged in USD

Source: UBS Asset Management, Bloomberg. Data as of end of May 2024. For illustrative purposes only.

Sample Portfolios (1) – Liquid Portfolios

Sample portfolios have different levels of risk tolerance and diversification

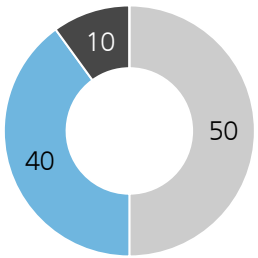
			Liquidity Most liquid – CB working capital management	**Fixed Income Diversification** Diversification across fixed income to improve risk-adjusted returns		**Equity Diversification** Liquid equity to boost risk-adjusted returns	**Equity and more Emerging Market Debt (EMD)** Equity and EMD to boost risk-adjusted returns
			CB1	**CB2**	**CB3**	**CB4**	**CB5**
Liquidity	Cash		50	10	10	10	10
	GGB 1 – 3		50	50	30	30	25
Duration	GGB			10	10	10	10
Spread	Supranationals			10	10	8	5
	Corporates			10	10	8	5
	Securitised			10	10	8	5
Inflation hedge	TIPS				10	8	5
Risk premium	EMD				10	3	15
	Equities					15	20

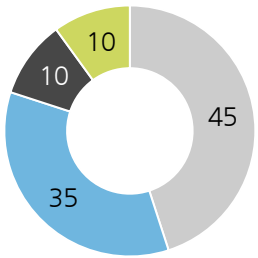
Source: UBS Asset Management. For illustrative purposes only.

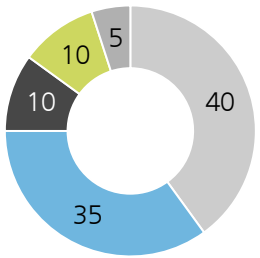
Sample Portfolios (2) – Stabilization Funds

The majority of assets are invested into liquid and high-grade government bonds, but with a longer duration to boost returns and they are also investing in equity and real estate

			Liquidity 50% in liquid GGB 1 – 3; GGB/Corporates to boost returns	**+ Equity** Equity to boost risk – adjusted returns	**+ Equity and Real Estate (RE)** Equity + RE to boost risk – adjusted returns	
			Stab1	**Stab2**	**Stab3**	
Liquidity	GGB 1 – 3		50	45	40	*Investment grade*
Duration	GGB		40	35	35	
Spread	Corporates		10	10	10	
Risk premium	Equities			10	10	
	Real Estate				5	





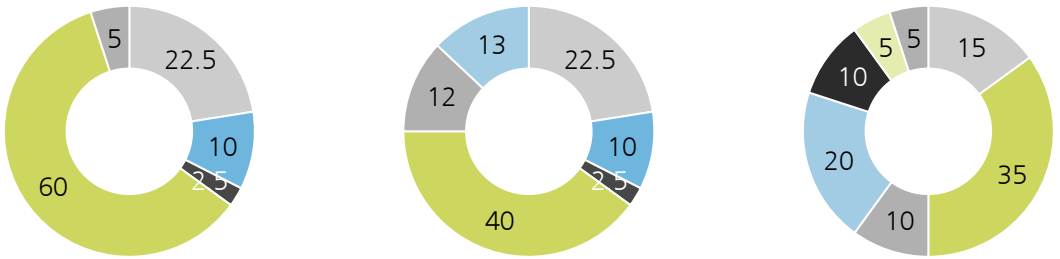


Source: UBS Asset Management. For illustrative purposes only.

Sample Portfolios (3) – Saving Funds

High risk tolerance, but implementation can differ in terms of allocation to illiquid asset classes

			Listed liquid Assets Norwegian model with majority of assets in liquid public markets	**+ Alternatives** Equity to boost risk – adjusted returns	**Large allocation to illiquid assets** Endowment model Large allocation to alternatives	
			Sav1	**Sav2**	**Sav3**	
Duration	GGB		18	16	10	*Investment grade*
Spread	Corporates		7	6	6	
Risk premium	EMD		2	2		
	Equities		70	50	30	
	Real Estate		3	7	8	
	Private Equity			11	25	
	Hedge Funds			3	8	
	Infrastructure			5	8	
	Commodity				5	

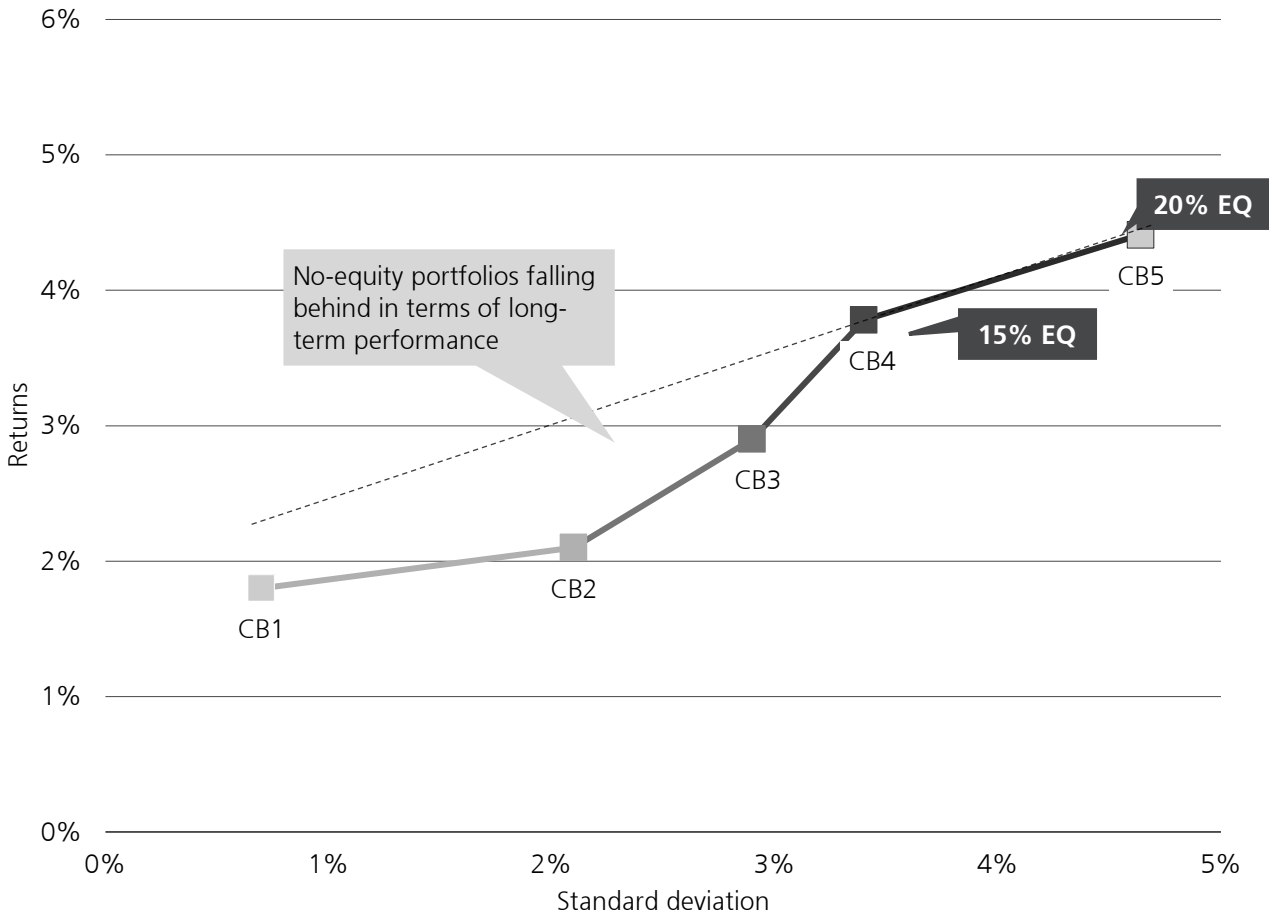


Source: UBS Asset Management. For illustrative purposes only.

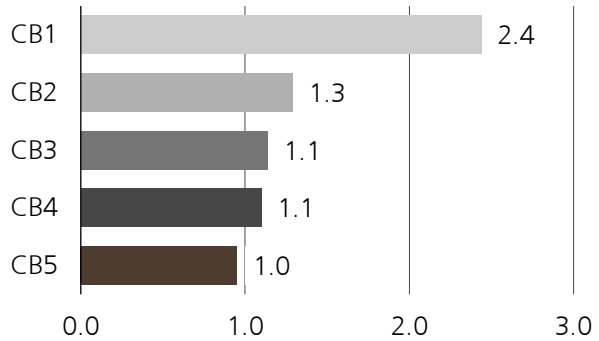
Diversification to improve returns (1)

Diversification across fixed income and equity provided a substantial increase in returns while keeping risk/return relationships relatively stable

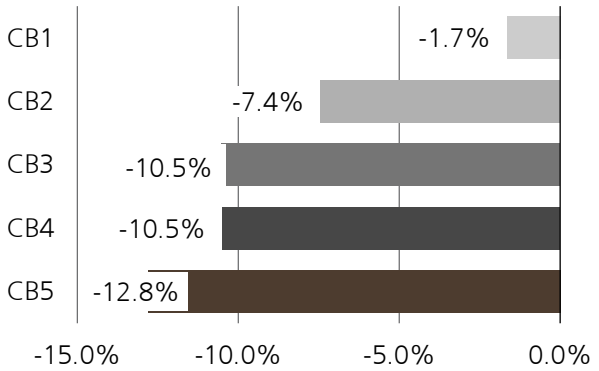
Historical Returns and Standard Deviation, 2002 – 2024YTD



Return/Risk, 2002 – 2024YTD



Worst 12 months, 2002 – 2024YTD

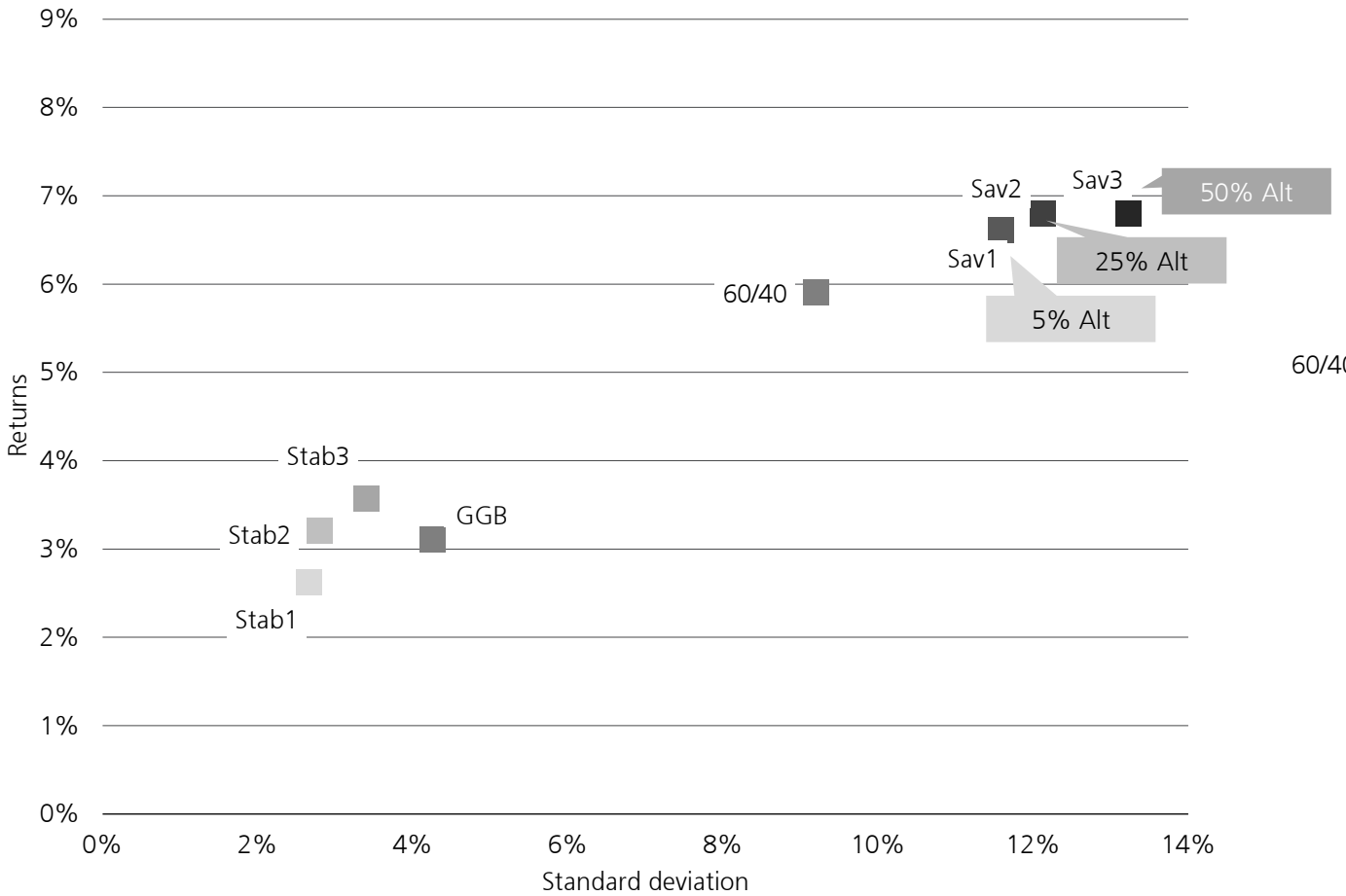


Source: UBS Asset Management. Please note that past performance is not a guide to the future. Data as of end of May 2024.

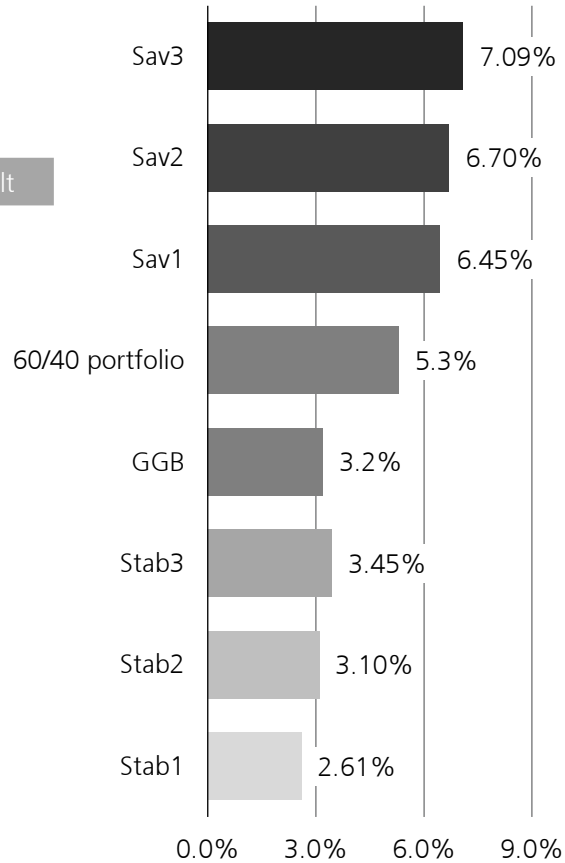
Diversification to improve returns (2)

Based on historical analysis, diversified portfolios provided higher returns; diversification into alternatives boosted returns in saving portfolios

Historical Returns and Standard Deviation, 2002 – 2024YTD



Returns, 2003 – 2024YTD



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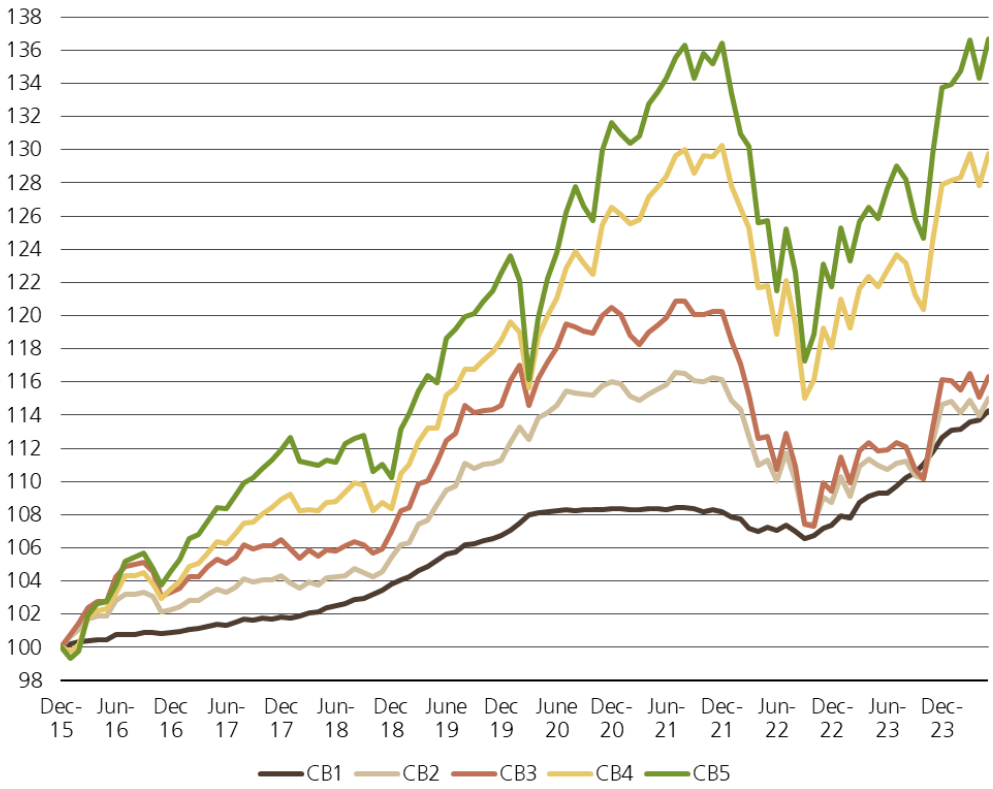
Central Bank portfolios: Recent market performance

Portfolios that included spread products or equities benefited from the rally in risk assets since April 2020, but fixed income heavy portfolios suffered some of the steepest losses in decades in 2022.

Sample central bank portfolios tracking model output

	CB1	CB2	CB3	CB4	CB5
2024 January	*0.4%*	*0.2%*	*-0.1%*	*0.2%*	*0.1%*
2024 February	*0.0%*	*-0.6%*	*-0.5%*	*0.1%*	*0.6%*
2024 March	*0.4%*	*0.6%*	*0.8%*	*1.1%*	*1.4%*
2024 April	*0.1%*	*-0.8%*	*-1.2%*	*-1.5%*	*-1.7%*
2024 May	*0.5%*	*0.9%*	*1.1%*	*1.5%*	*1.7%*
Performance 2024YTD	***1.4%***	***0.3%***	***0.1%***	***1.5%***	***2.2%***
Performance 2023	5.0%	5.4%	6.1%	8.3%	9.9%
Performance 2022	-0.7%	-6.4%	-9.0%	-9.4%	-10.8%
Performance 2021	-0.2%	0.1%	-0.2%	2.9%	3.7%
Performance 2020	1.5%	4.3%	5.1%	6.8%	7.4%
Performance 2019	2.8%	5.6%	7.1%	9.3%	11.2%
Performance 2018	2.0%	0.8%	1.0%	-0.3%	-0.7%
Performance 2017	0.9%	2.0%	3.1%	5.2%	7.0%
Performance 2016	0.9%	2.3%	3.3%	3.5%	4.6%
Performance 2015	0.5%	0.3%	0.4%	0.3%	0.4%
Performance 2014	0.5%	2.8%	4.1%	3.9%	4.3%
Performance 2013	0.3%	-1.1%	-1.9%	2.4%	3.3%
Performance 2012	0.5%	3.1%	5.0%	5.6%	7.6%
Performance 2011	0.9%	4.1%	5.4%	3.5%	3.1%
Performance 2010	1.2%	3.6%	4.9%	5.6%	6.9%
Performance 2009	1.2%	4.8%	7.0%	8.8%	12.5%
Performance 2008	4.9%	4.2%	2.9%	-3.7%	-7.9%
Performance 2007	6.0%	6.7%	6.7%	7.1%	7.1%
Performance 2006	4.6%	3.8%	4.3%	6.2%	7.8%

CB sample portfolio performance (indexed, 31.12.2015 = 100)



Source: UBS Asset Management model based on publicly available information, using broad indices and funds to Central Banks and Sovereign Wealth Fund's portfolios. For illustrative purposes only. Please see appendix for more information on portfolios. Please note that past performance is not a guide to the future.

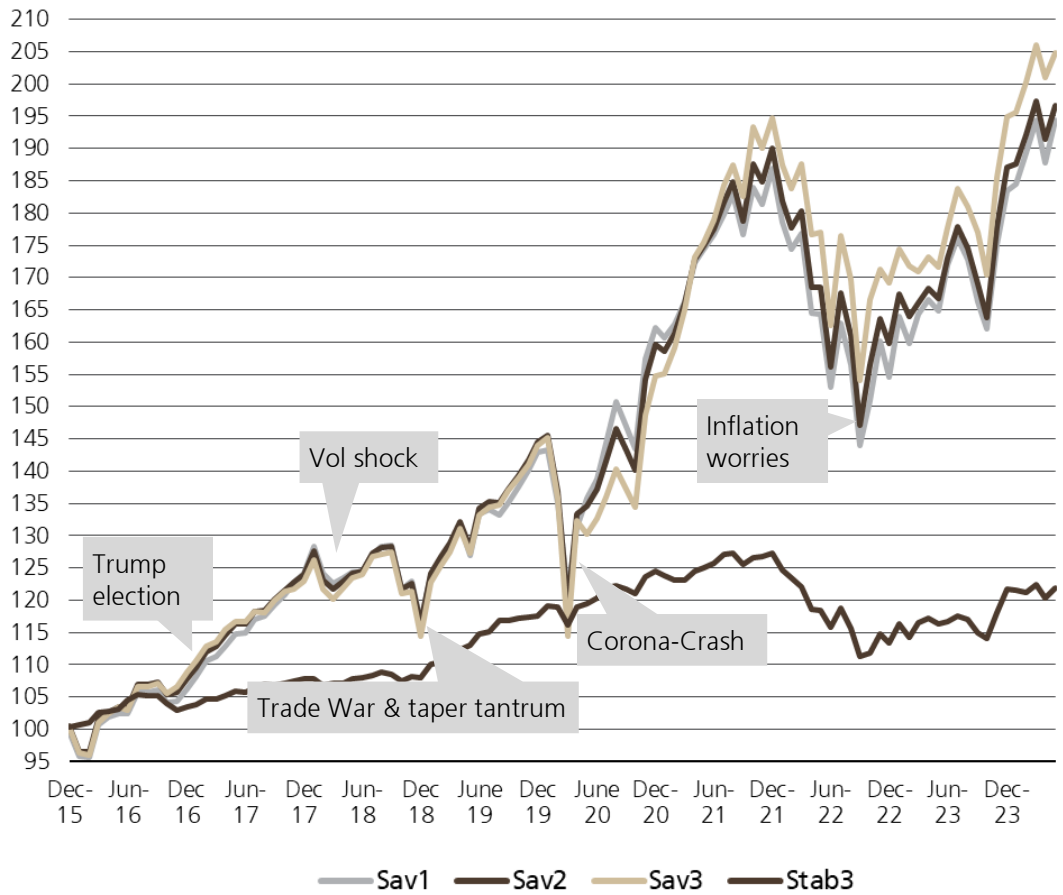
SWF portfolios: Recent market performance

Our model portfolios replicating the Strategic Asset Allocations of Sovereign Wealth Funds (Sav1-3 as well as Stab3 for comparison) show that key saving funds performed well since April 2020 due to a dramatic recovery in risk assets, with funds mainly allocated to listed equity outperforming.

Replicated Sovereign portfolios tracking model output

	Stab3	*Sav1*	*Sav2*	*Sav3*
2024 January	*-0.14%*	*0.61%*	*0.33%*	*0.37%*
2024 February	*-0.34%*	*2.65%*	*2.44%*	*2.35%*
2024 March	*1.05%*	*2.62%*	*2.71%*	*2.88%*
2024 April	*-1.75%*	*-3.37%*	*-3.07%*	*-2.41%*
2024 May	*1.33%*	*3.55%*	*2.76%*	*1.90%*
Performance 2024YTD	***0.1%***	***6.0%***	***5.2%***	***5.1%***
Performance 2023	7.5%	18.6%	17.1%	15.2%
Performance 2022	-11.0%	-17.3%	-15.9%	-13.1%
Performance 2021	2.2%	15.2%	19.1%	25.8%
Performance 2020	5.9%	13.5%	10.5%	7.5%
Performance 2019	8.8%	22.5%	24.1%	25.9%
Performance 2018	0.0%	-5.0%	-5.1%	-5.8%
Performance 2017	4.2%	16.7%	15.0%	12.9%
Performance 2016	3.1%	6.7%	7.4%	8.5%
Performance 2015	0.4%	-0.3%	0.5%	0.4%
Performance 2014	4.7%	5.9%	7.3%	7.1%
Performance 2013	1.8%	17.6%	17.2%	17.4%
Performance 2012	5.2%	13.6%	15.2%	16.2%
Performance 2011	3.9%	-1.6%	-3.1%	-6.0%
Performance 2010	6.1%	11.2%	14.1%	18.3%
Performance 2009	6.5%	23.6%	26.2%	29.7%
Performance 2008	-1.5%	-30.3%	-34.6%	-40.5%
Performance 2007	6.3%	8.0%	5.2%	2.4%
Performance 2006	6.8%	16.1%	17.3%	17.2%

SWF sample portfolio performance (indexed, 31.12.2015 = 100)



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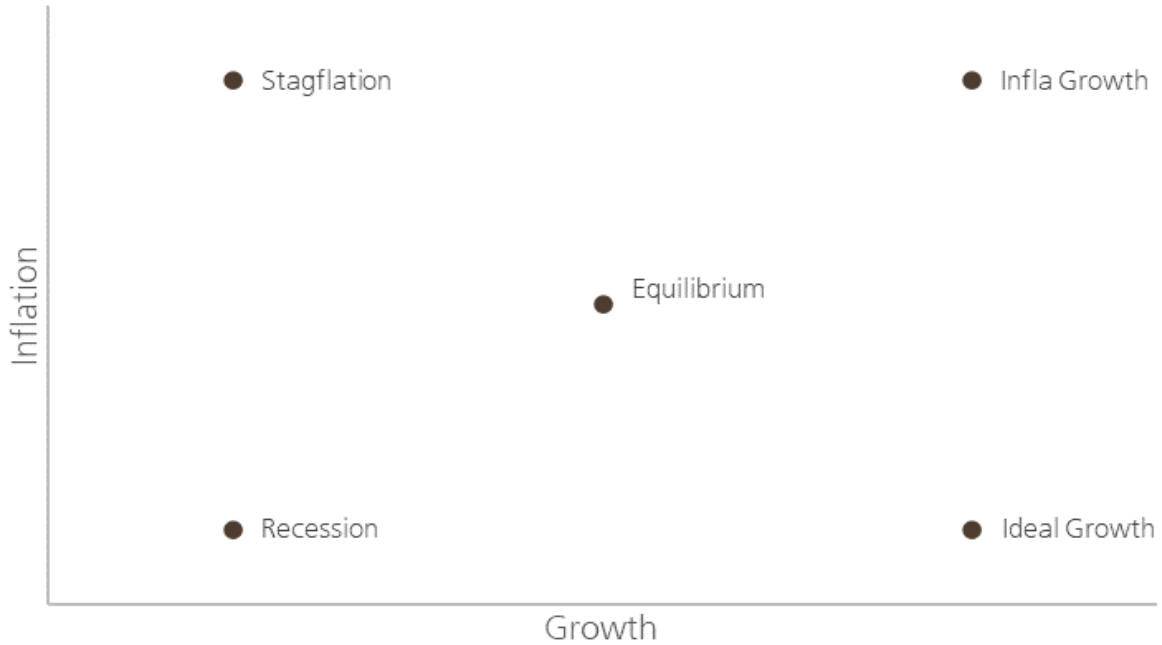
Economic scenarios – Growth and inflation matrix

Economic scenarios clustered along 5y inflation expectations and 5y economic growth outlook: Still very diverging outcomes

Macroeconomic scenario matrix

High Inflation/Rising Interest Rates/Low Growth

High Inflation/Rising Interest Rates/High Growth



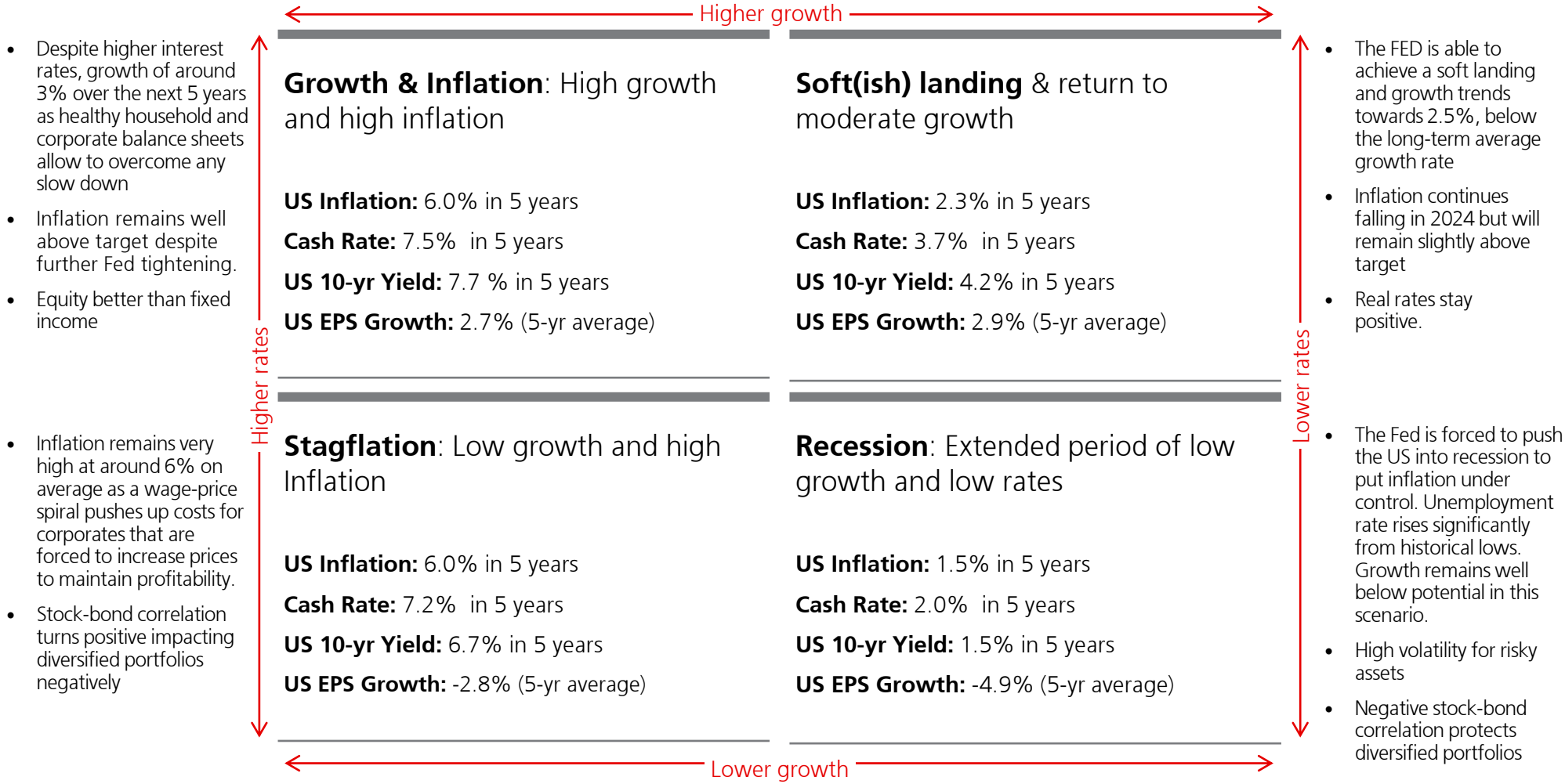
Low Inflation/Declining Interest Rates/Low Growth

Low Inflation/Declining Interest Rates/High Growth

Source: UBS Asset Management as of 2Q 2024. This does not constitute a guarantee by UBS AG, Asset Management.

Economic scenarios – Growth/rates matrix

Uncertainty with regards to the possibility of a recession and where inflation will bottom out remain high, but the probability of a prolonged recession has fallen



- Despite higher interest rates, growth of around 3% over the next 5 years as healthy household and corporate balance sheets allow to overcome any slow down
- Inflation remains well above target despite further Fed tightening.
- Equity better than fixed income

- The FED is able to achieve a soft landing and growth trends towards 2.5%, below the long-term average growth rate
- Inflation continues falling in 2024 but will remain slightly above target
- Real rates stay positive.

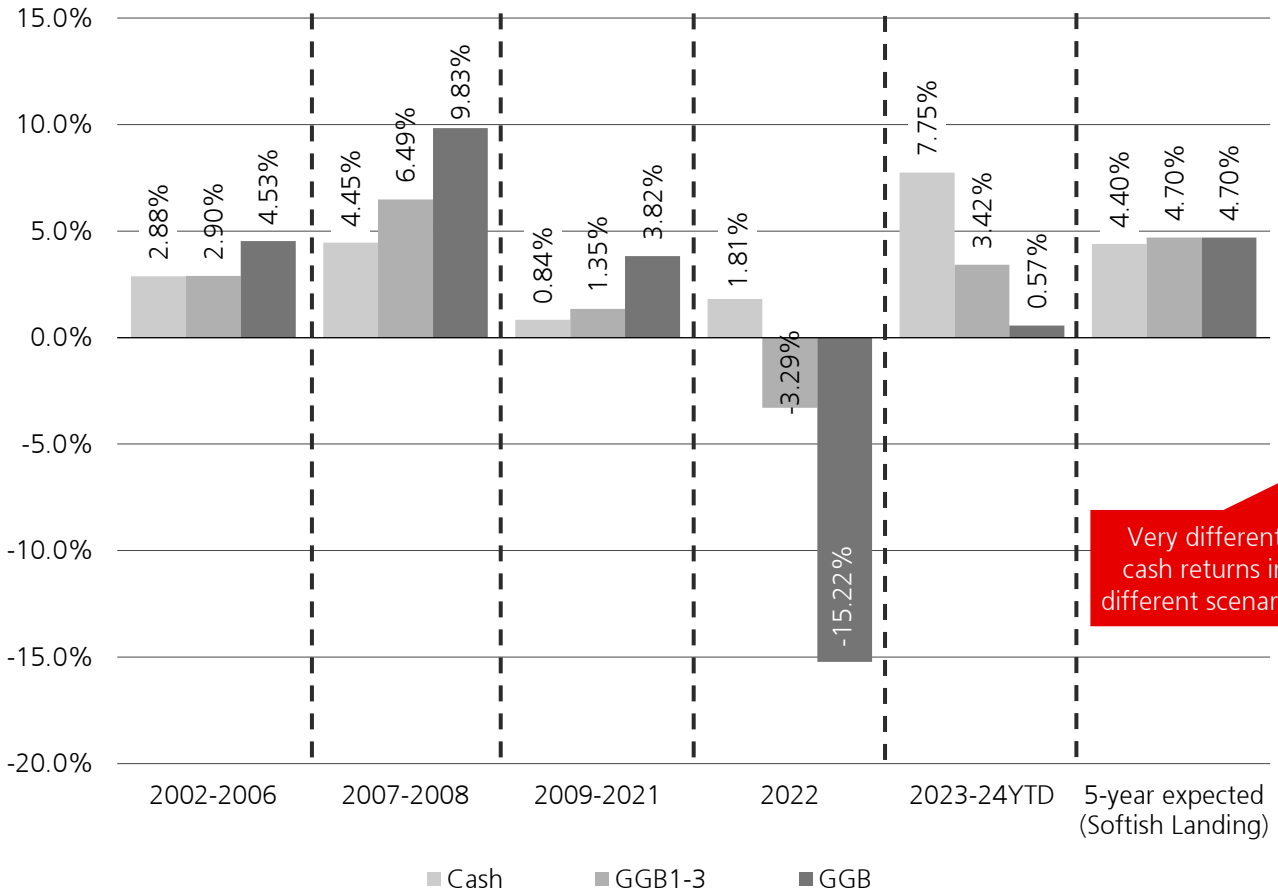
- Inflation remains very high at around 6% on average as a wage-price spiral pushes up costs for corporates that are forced to increase prices to maintain profitability.
- Stock-bond correlation turns positive impacting diversified portfolios negatively

- The Fed is forced to push the US into recession to put inflation under control. Unemployment rate rises significantly from historical lows. Growth remains well below potential in this scenario.
- High volatility for risky assets
- Negative stock-bond correlation protects diversified portfolios

Source: UBS AM as of 2Q 2024. This does not constitute a guarantee by UBS AG, Asset Management. This does not constitute a guarantee by UBS AG, Asset Management

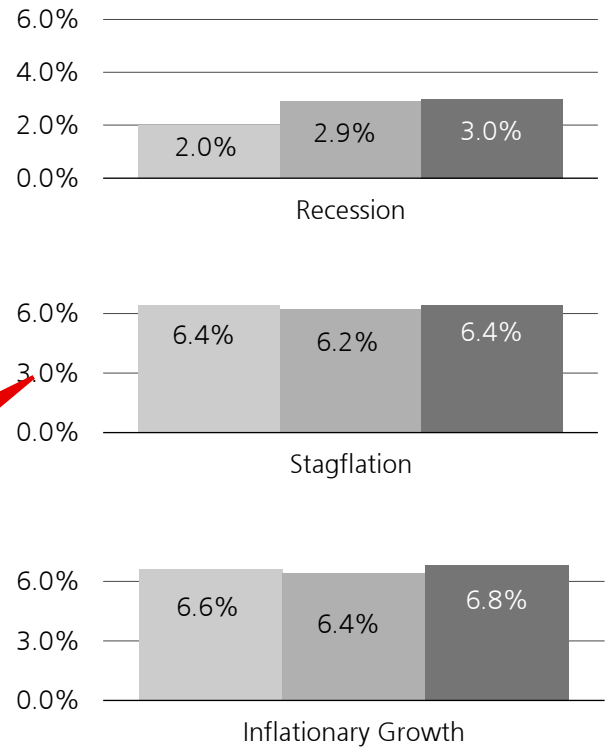
Cash / Govt Bonds – Scenario performance 5 years

Comparison of liquid cash and government bond performance



Very different cash returns in different scenarios

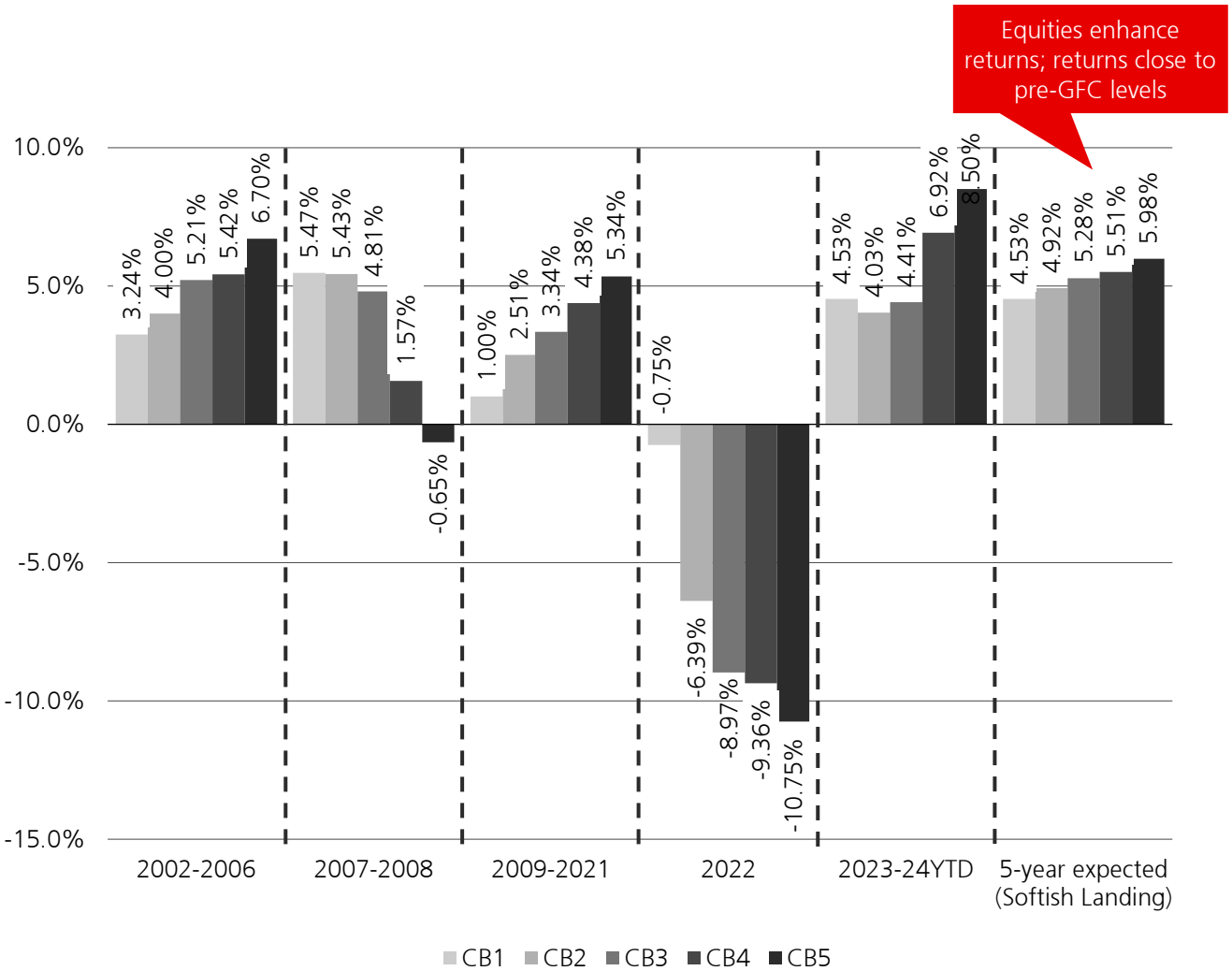
5-year expected Alternative scenarios



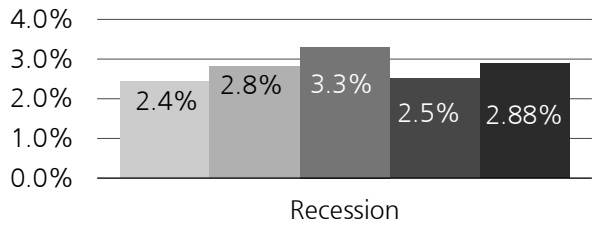
Source: UBS Asset Management. Projections as of 2Q 2024. This does not constitute a guarantee by UBS AG, Asset Management.

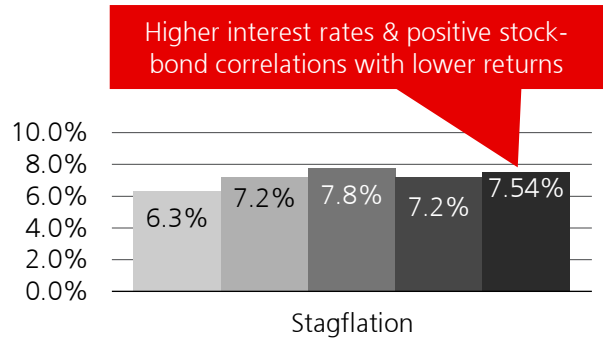
Sovereign Portfolios – Scenario performances

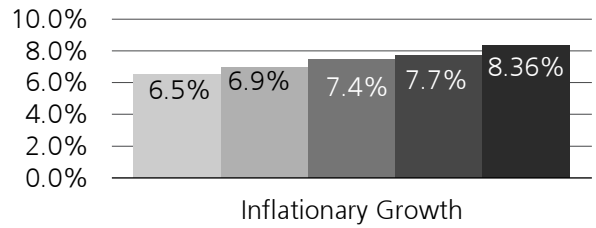
Comparison of **Central Bank** sample portfolio performance



5-year expected Alternative scenarios







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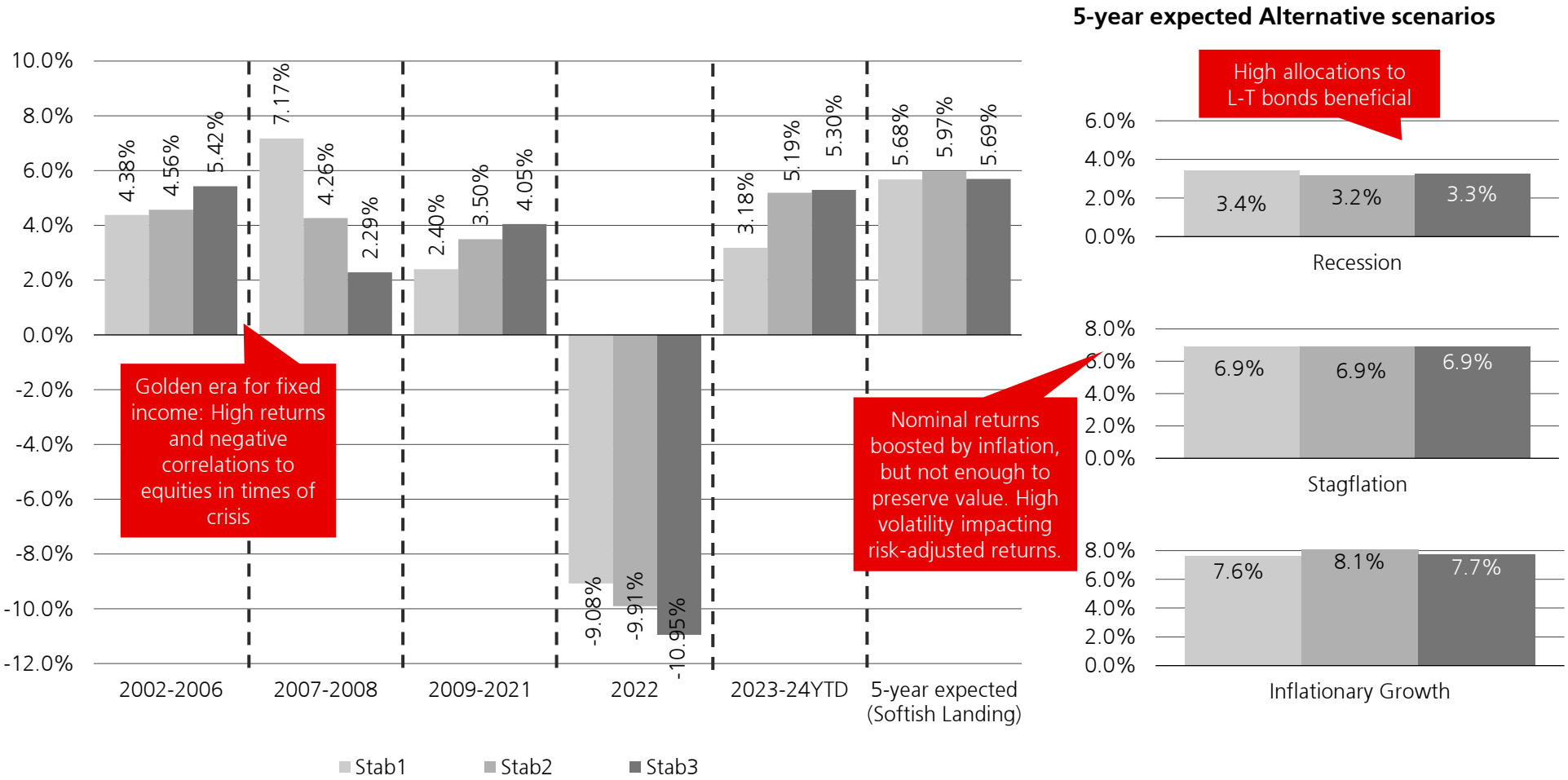
Sovereign Portfolios – Scenario performances

Comparison of **Stabilization Fund** sample portfolio performance

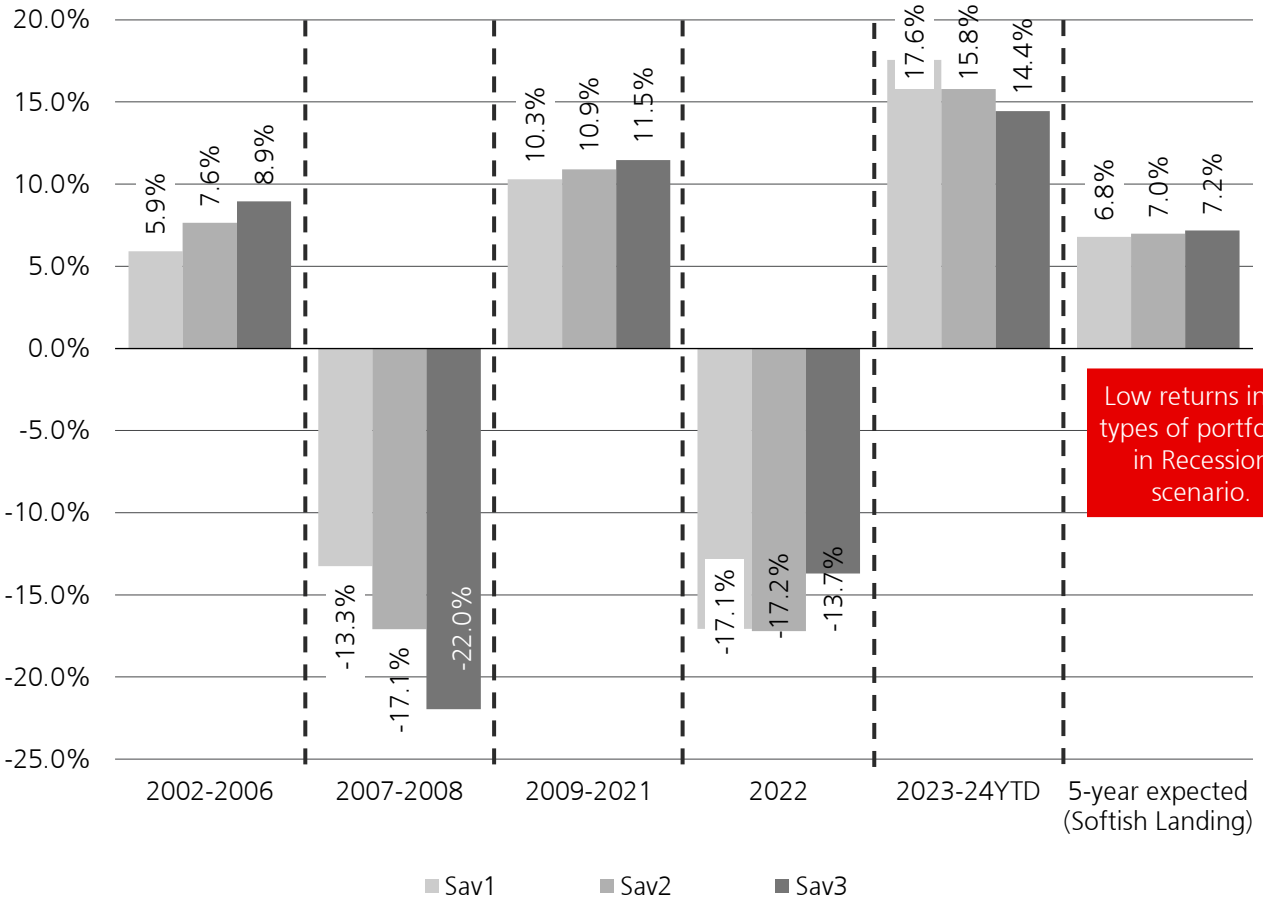


5-year expected Alternative scenarios

Source: UBS Asset Management. Projections as of 2Q 2024. This does not constitute a guarantee by UBS AG, Asset Management.

Sovereign Portfolios – Scenario performances

Comparison of **Saving Fund** sample portfolio performance



Low returns in all types of portfolios in Recession scenario.

5-year expected Alternative scenarios

Source: UBS Asset Management. Projections as of 2Q 2024. This does not constitute a guarantee by UBS AG, Asset Management.

Sovereign Investment Outlook

Fixed Income is the most attractive asset class in risk-adjusted terms given the level of yields; reserve managers are taking advantage of the opportunity

Fixed Income		Over the long-term, fixed income returns are expected to be higher as a result of higher rates, making the asset class **more attractive**, particularly for reserve managers and stabilization funds. Many investors are still in **short-term bonds**; extending duration is being considered cautiously. Higher returns in fixed income are good for asset allocation
Equity markets		The transition to a new regime after the "Great Moderation" could be marked by more **volatile business cycles and diverging economic and financial performance** across countries and sectors. Continuing China-US confrontations, the conflict with Russia and other geopolitical tensions are likely to be a source of ongoing volatility as well as inflation surprises. Investors are taking a more **flexible and tactical approaches** to investment strategies, particularly in fixed income. **Hedging** for a recession via long-term government bonds is on the rise again.
Alternative Asset Classes		Alternative assets are more attractive due to lower expected returns in public markets and their potential to improve the risk/reward profile in balanced portfolios. The outlook for this asset class is impacted by soaring yields but it also has a role to play as a hedge against inflation. In central bank portfolios, **real estate** and **infrastructure** can provide further diversification. SWFs continue taking advantage of their lower liquidity constraints to tap into opportunities in this asset class. Private loans growing very fast.
Embrace secular trends and thematic Investments		Key secular trends – Deglobalization, digitization and climate change, but also protectionism, weaponization of finance, sanctions and increasing scrutiny of foreign investments – will impact long-term investors. These trends coupled with a challenging rates environment create **disruption** but also **opportunities for alpha generation**, requiring investors to be **more active** in picking up the winners and avoiding the losers through an active **thematic** as well as country/sector/company selection.
Positive Stock/Bond correlation		The **correlation between stocks and bonds** surged in the course of 2022 and remained clearly positive since then. While a positive stock/bond correlation is not unprecedented, this is a big departure from what we have seen during the period of low inflation that characterized the last decade when fixed income provided diversification benefits and a challenge for balanced portfolios. Investors might have to re-think **diversification** strategies and **tail risk protection** to include inflationary shocks where the stock-bond correlation would remain positive in a recession.

Source: UBS Asset Management as of 1Q 2024. For illustrative purposes only.

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