GOVERNMENT PENSION FUND

GPF's approaches in Asset Allocation & 2025 Investment Outlook

2025 Krungsri Business Exclusive Talk

15 March 2025

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Agenda

I) GPF's Asset allocation framework

- SAA Risk / return objectives & Capital market assumptions
- TAA Alpha generations

II) Currency management

- Framework & Benchmarking
- Hedged or Unhedged?

III) 2025 Investment Outlook

- Landing scenarios
- How we position accordingly?

SAA Framework

GPF's Asset Allocation Framework

Time Horizon	Objectives and actions	Approach	Governance structure	Considerations
SAA	• To deliver a sustainable long-term return at a given risk level • A return target is CPI-base and is derived by replacement rate and Minimum lump sum of members	• Mean-Variance Optimization (MVO)	• Board of Directors to approve SAA • Risk, Research and Investment strategy teams to propose	• Member profiles • Long-term growth & inflation • Risk/return profiles, VaR, Max. drawdown
MTAA	• To add additional return over SAA • Economic scenarios (expansion/ compression) leads to volatilities and that presents opportunities in medium-term	• MVO + Risk budget	• Approved by IC • TAA requires different skill set and is often covered by another team	• Economic regimes • Monetary policy shift • Market equilibrium
TAA / DAA	• To hedge downside or to lever up risks arisen from particular events • To benefit from price dislocations	• Trade sizing • RV / Correlation trades	• GPF	• Liquidity • Policy responses • Volatilities • Price equilibrium

- SAA is passive & no view. It shall contribute 80-90% to long-term return target
- TAA aims at generating Alpha (excess return) over that of SAA or Reference portfolio

Construction of SAA : Risk/Return objectives & Capital market assumptions

Member Centric

- Replacement Rate > 80%
- Minimum Lump Sum > P70
- Risk appetite

Risk / return objectives

Investment themes & Demography

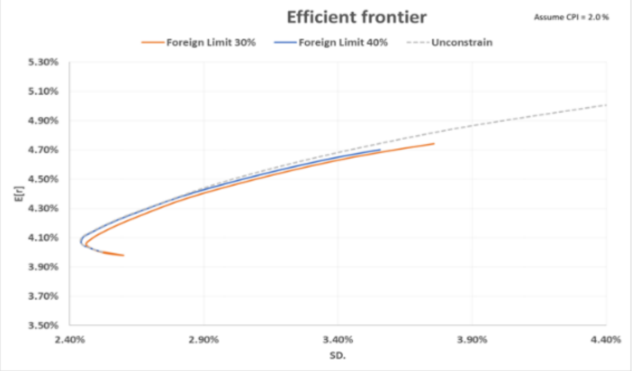
- Low Potential Economic Growth
- Higher long-term inflation
- High liquidity in financial system
- Rising Geopolitical risk

Long-term Inflation at 2.0%

Capital Market Assumptions

Optimization

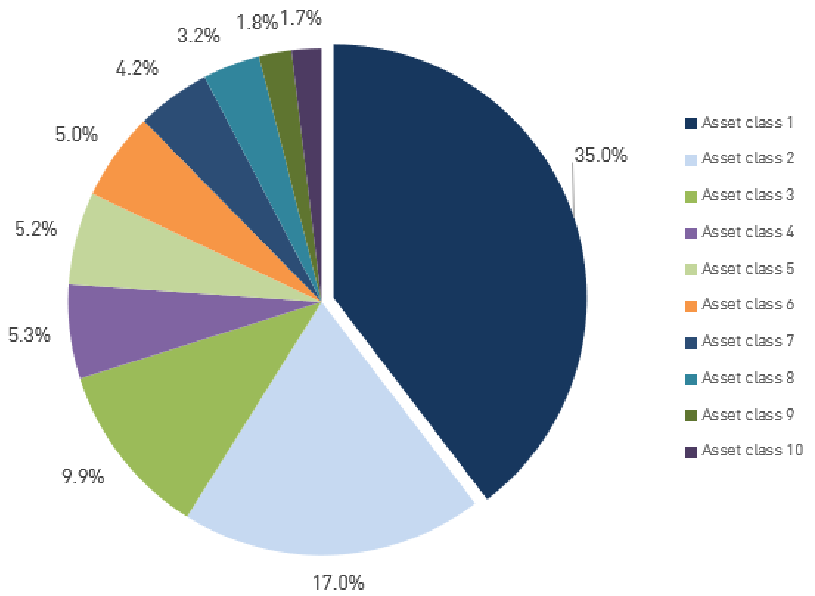
SAA

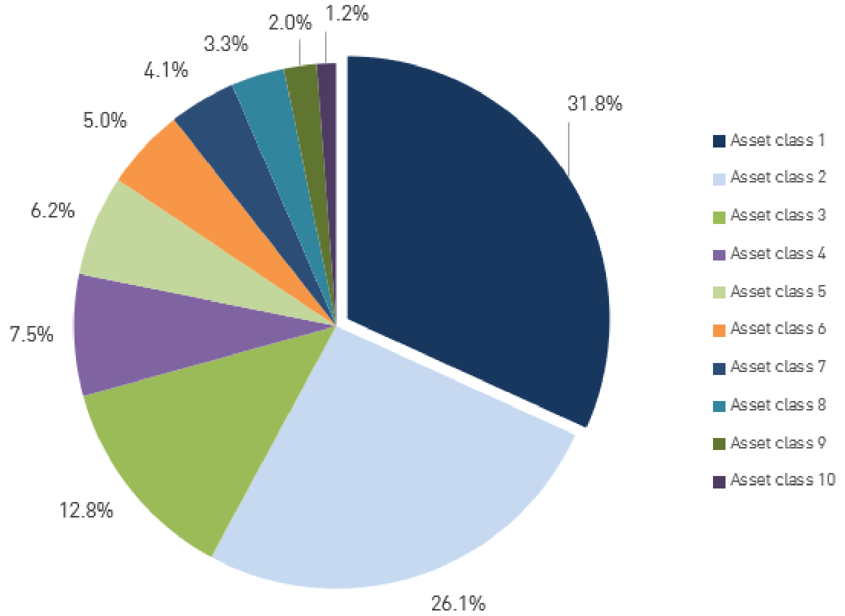


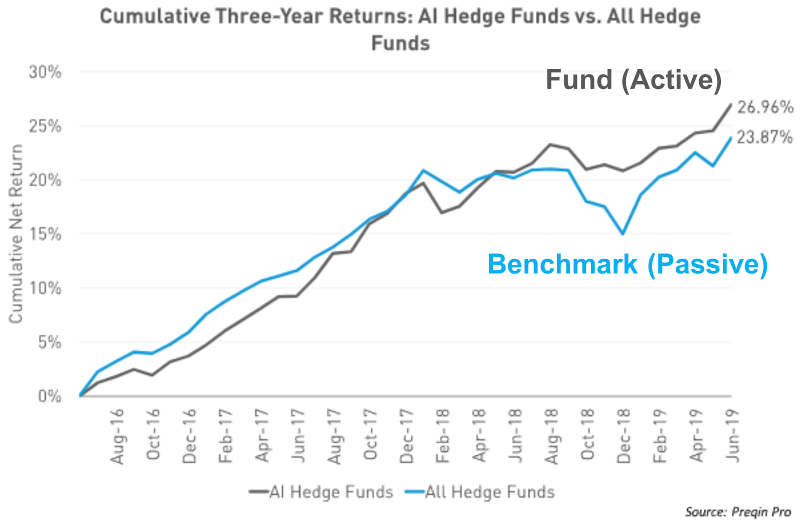
Observations

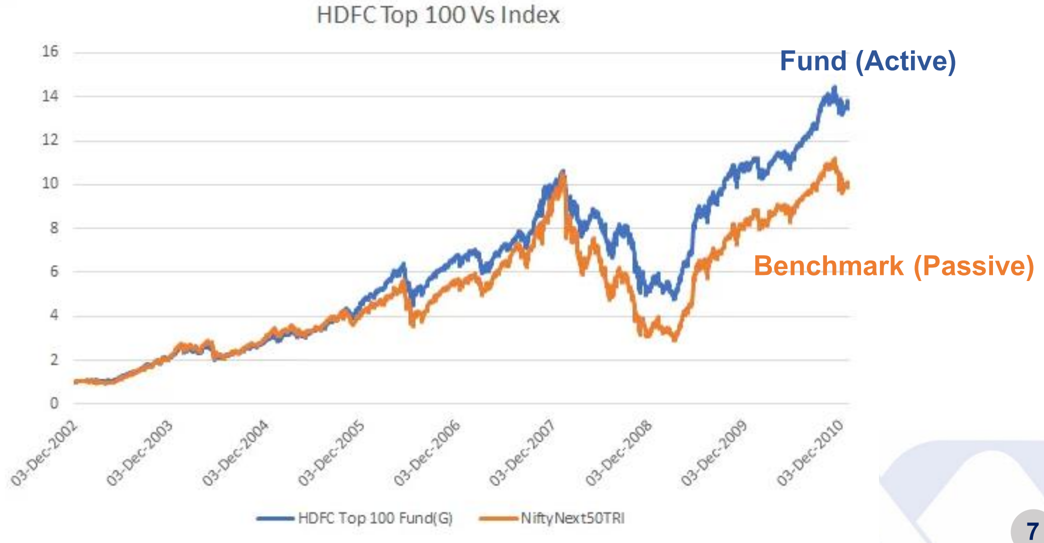
- SAAs are designed to provide an attractive return-risk trade-off over the next full economic cycle. They are constructed from optimizing asset class's equilibrium returns, risk and correlation matrix.
- Drivers behind SAA changes stem from significant evolution of global economic and policy environment in responds to specific occurrences.
- Incidents believed to be shorter than one economic cycle can be tackled or responded by TAA.

Active / Passive ALLOCATION vs Active / Passive SELECTION









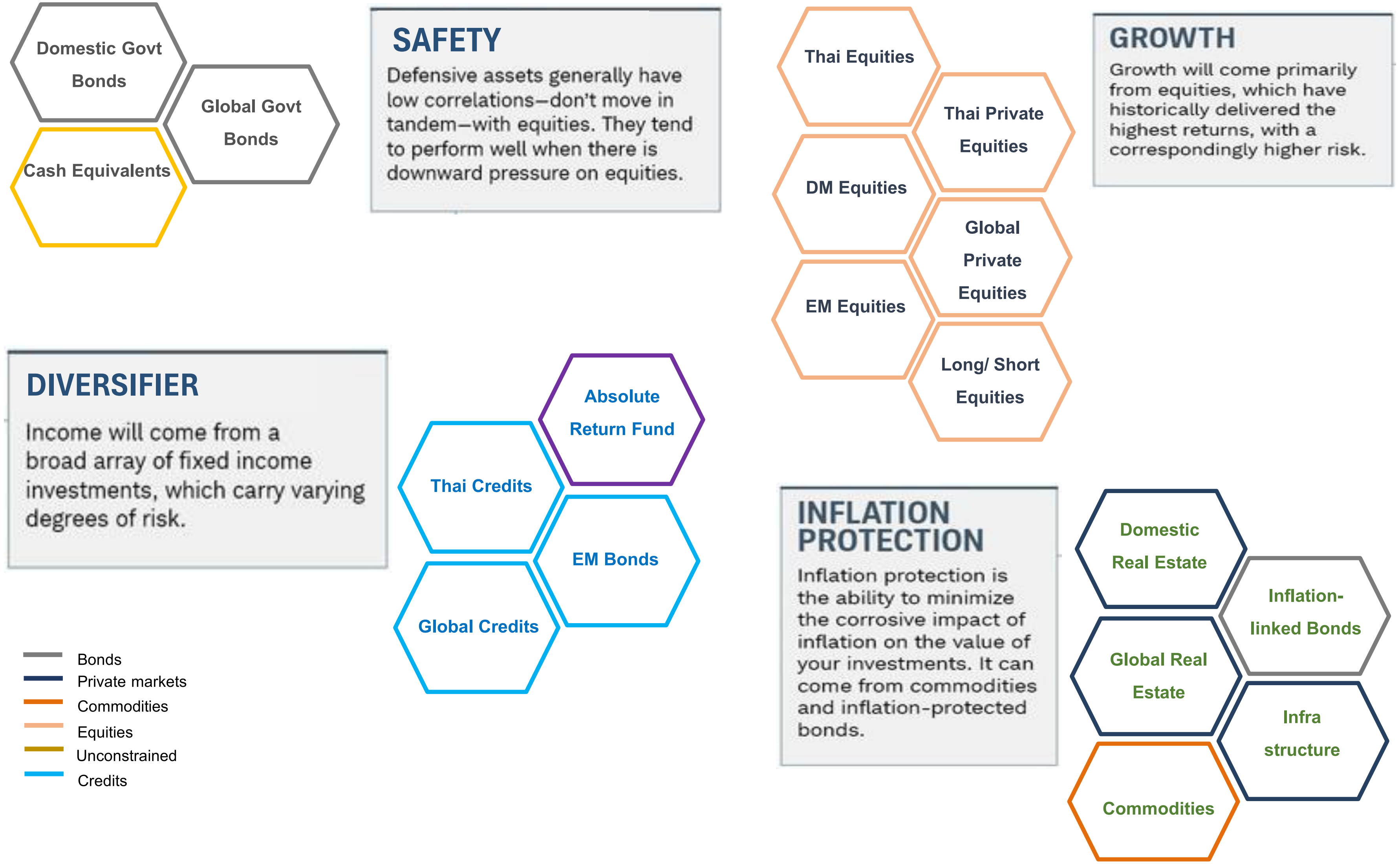
GPF's Investment Management Structure

GPF's key limits

- Safety assets ≥ 60%
- Offshore limits ≤ 60%

Asset class	Insourcing		Outsourcing	
	Allocation	Internal Team	Allocation	No.of mgrs
Inv. Strategy	N/A	3		
THB bonds	25-35%	2*		
Thai equities	5%	2*		
Global Govy + Ccy	8-10%	3		
DM equities			7-15%	5
EM equities			5%	4
Global credits			10-15%	4
EM Debts			5%	3
ARF			5%	5
Private markets			20%	3+3

Asset classes and their roles



GPF's Philosophy and Styles

- We believe in active Asset Allocation and active Selection Strategies.

EM

- EM are inefficient, alphas can be sought from security selections and arbitrage.
- Fundamental quants have become a trend as they can leverage from their analytics to digest news feeds and apply across a stock universe.

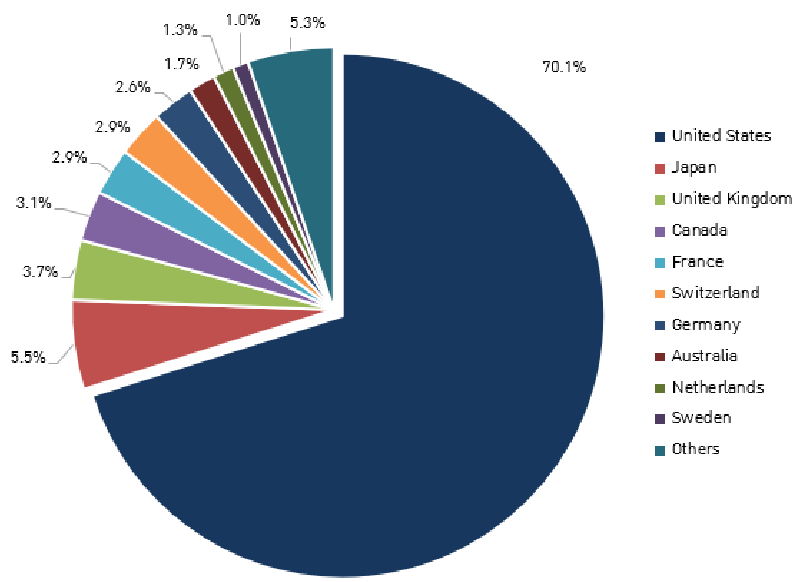
DM assets

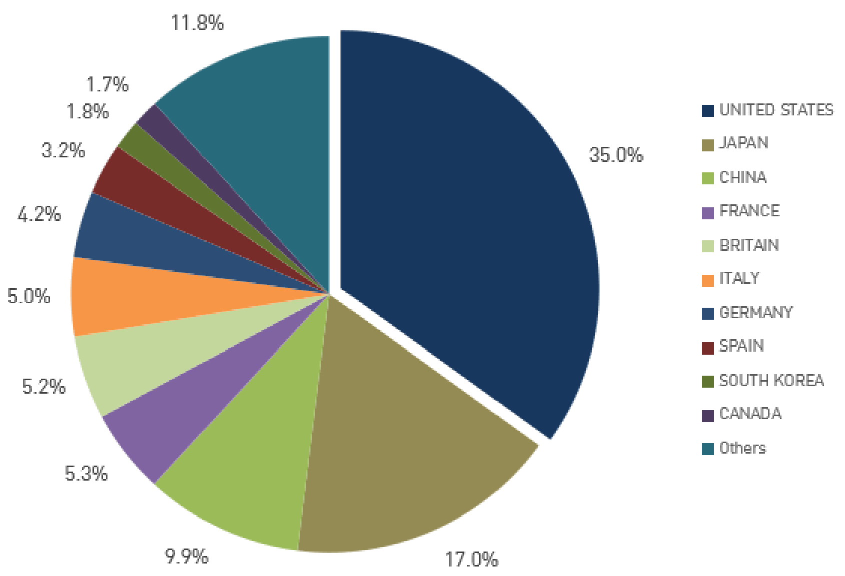
- Though markets are very efficient, top-tier managers can deliver decent 250-350bp alphas over long run.
- Asset owners can expect 80% of total alpha from security selection.

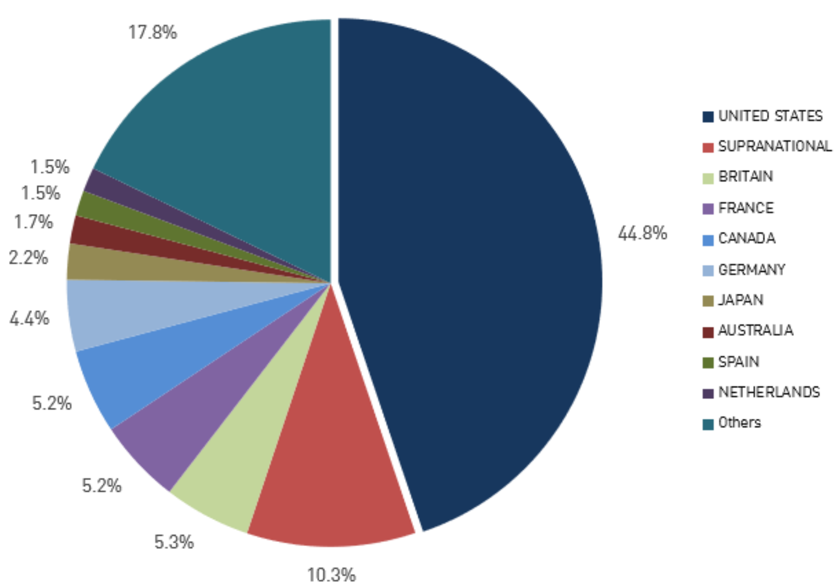
Currencies

- In long term, we look at Currency as an asset class that helps lower risk of our portfolio. Yet, in shorter-run, it presents opportunities to increase return.

Asset classes and Benchmarking







No.	Name	Weight
1	Technology	27.7%
2	Financials	14.5%
3	Consumer Discretionary	13.8%
4	Industrials	13.7%
5	Health Care	10.9%
6	Consumer Staples	5.3%
7	Energy	4.0%
8	Utilities	2.9%
9	Basic Materials	2.6%
10	Telecommunications	2.5%
11	Others	2.2%
Total		100.0%

Policies & Risk framework

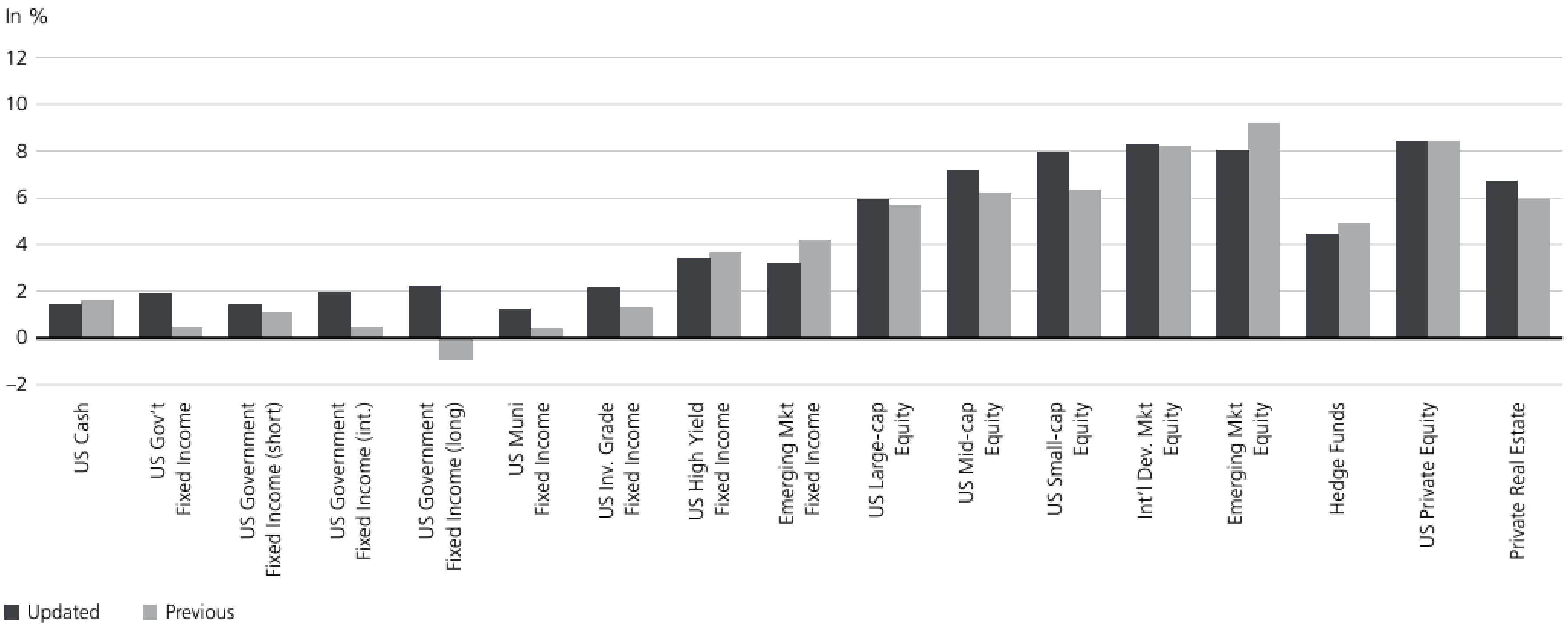
- Concept : Asset owner vs Asset manager
- Style : Active / Passive ALLOCATION vs Active / Passive SELECTION
- Good portfolio managers deliver consistent return and alphas over the long-run
- Setting tracking error limit controls active risk and drawdown

No.	Sector	Weight
1	Banking	20.1%
2	Supranational	10.4%
3	Consumer Non-Cyclical	10.1%
4	Consumer Cyclical	5.9%
5	Electric	5.5%
6	Communications	5.3%
7	Sovereign	5.0%
8	Technology	4.9%
9	Insurance	4.7%
10	Energy	4.6%
11	Others	23.5%
Total		100.0%

Capital Market Assumptions

Fig. 5

2022 vs. 2020 Strategic Arithmetic Return CMAs



Source: UBS WM-USA Asset Allocation Committee, as of 21 March 2022

Snapshots

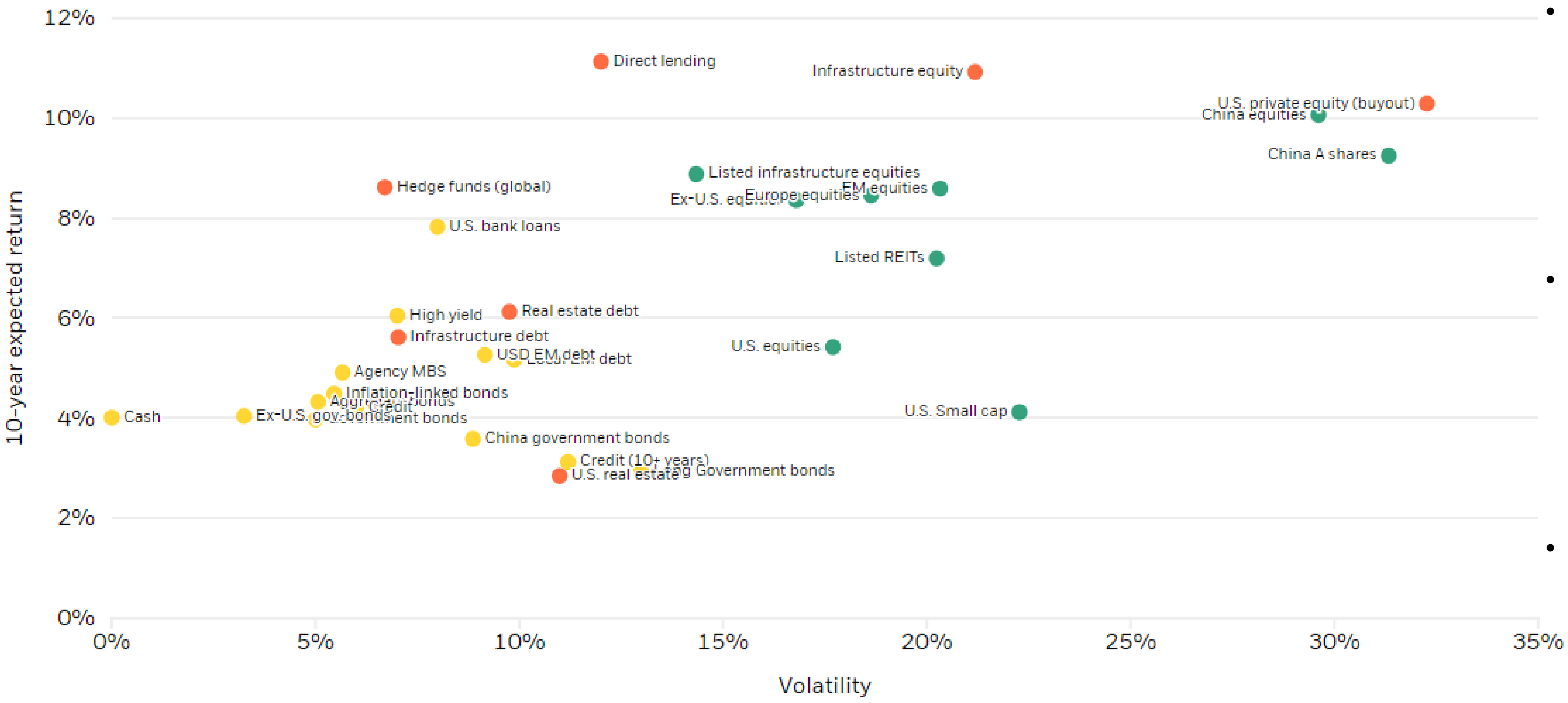
- The increase in fixed income returns stems from the higher Treasury yields now versus their level in 2020 when the pandemic began — they're over 100bps higher across the entire Treasury curve.
- The strategic expected US equity arithmetic returns increase by 30-40bps for large-cap stocks, and between 1-1.5% for mid- and small-cap equities.

Capital Market Assumptions

Asset return and volatility expectations

USD

Select to show/hide Equities Fixed income Private markets



Source: BlackRock Investment Institute, May 2024. Data as of 28 March 2024.

This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise - or even estimate - of future performance.

Notes:

- Return assumptions are total nominal returns. Our CMAs generate market, or beta, geometric return expectations. Asset return expectations are gross of fees.
- We use long-term volatility assumptions. We break down each asset class into factor exposures and analyze those factors' historical volatilities and correlations over the past 20 years.
- We combine the historical volatilities with the current factor makeup of each asset class to arrive at our forward-looking assumptions. This approach takes into account how asset classes evolve over time.
- Some fixed income indices are of shorter or longer duration than they were in the past. Our forward-looking assumptions reflect these changes, whereas a volatility calculation based only on historical monthly index returns would fail to capture the shifts.

Asset Classes and Asset Roles

No.	Asset Classes	SAA	MTAA 2023	Port as of 31-Mar-23	Active Weight
Asset classifications		100.00%	100.00%	100.00%	
1	Bonds	65.10%	64.60%	63.50%	-1.00%
2	Stocks (Risky Assets)	15.50%	14.50%	13.60%	-0.90%
3	Alternatives (Liquid)	2.00%	2.50%	3.80%	1.30%
4	Alternatives (Private)	17.40%	18.50%	19.10%	0.70%
Bonds		65.10%	64.60%	63.50%	
1	Short Term Bond (STB)	4.10%	2.60%	4.00%	1.40%
2	Thai Government Bond (TGB)	17.00%	15.00%	14.10%	-0.90%
3	Thai Credit Bond (TCB)	18.00%	17.50%	16.90%	-0.60%
4	Global Government Bond (GGB)	3.00%	13.00%	9.70%	-3.30%
5	Global Credit Bond (GCB)	21.00%	14.00%	16.10%	2.10%
6	Inflation Linked Bond (ILB)	0.00%	0.50%	0.30%	-0.20%
7	Emerging Market Bond (EMB)	2.00%	2.00%	2.50%	0.50%
Stocks (Risky Assets)		17.50%	17.00%	17.40%	
8	Thai Equity (TEQ)	4.50%	4.00%	2.60%	-1.40%
9	Developed Market Equity (DMEQ)	7.50%	7.50%	7.80%	0.30%
10	Emerging Market Equity (EMEQ)	3.50%	3.00%	3.20%	0.20%
11	Absolute Return Funds (ARFs)	2.00%	1.50%	2.50%	1.00%
12	Commodity (CMDY)	0.00%	1.00%	1.30%	0.30%
Alternatives (Private Assets)		17.40%	18.50%	19.10%	
13	Thai Real Estate (TRE)	3.70%	4.00%	4.10%	0.10%
14	Thai REITs (TREIT)	0.00%	0.00%	0.00%	0.00%
15	Global Real Estate (GRE)	4.50%	5.00%	5.30%	0.30%
16	Global Inflastructure (GIF)	4.50%	4.80%	4.90%	0.10%
17	Regional Private Equity (RPE)	1.30%	1.30%	0.80%	-0.50%
18	Global Private Equity (GPE)	3.40%	3.40%	4.10%	0.70%
	Total	100.00%	100.00%	100.00%	

For illustration purposes

GPF's key limits

- Safety assets ≥ 60%
- Offshore limits ≤ 60%

Rationales

- SAA was last revised during Covid-19 when connectedness across key asset classes were largely affected
- Equity and USD indices are the primary transmitters of shocks before the outbreak, whereas the bond index becomes the main transmitters of shocks during the COVID-19 outbreak. However, the USD index is a net receiver of shocks to other assets during the outbreak period

MTAA / TAA Framework

MTAA : Asset regime navigator

GS Financial Condition Index = 100

Recovery
PMI > 50, FCI < 100

Growth
Thai, Emerging and Developed Market Equities, Private Equities

Boom/Overheat
PMI > 50, FCI ≥ 100

Inflation Sensitive
Commodities, Thai and Global Real Estate, Infrastructure

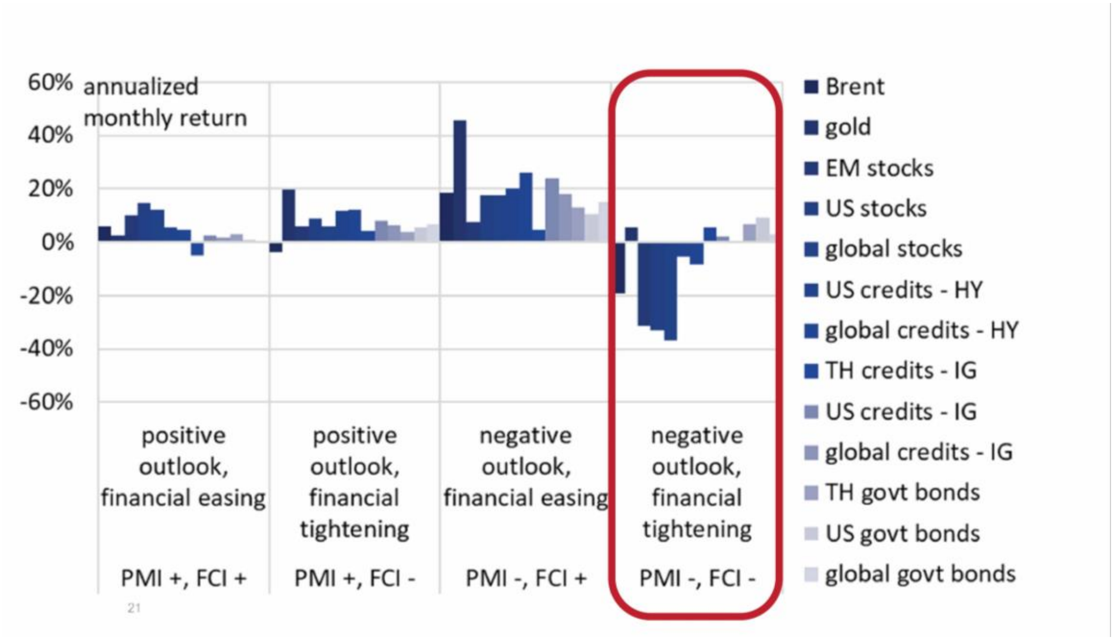
PMI = 50

Slowdown
PMI ≤ 50, FCI < 100

Safety Assets
Thai and Global Govt Bonds

Recession
PMI ≤ 50, FCI ≥ 100

Diversifiers
Corporate Bonds, Absolute Return Fund, EM Debt



- Economic regime is often expressed in terms of GDP vs CPI relationship. How far the current state deviates from its equilibrium (SAA) is where we shall exercise MTAA.
- A relationship between PMI and FCI was also explored to determine whether the economy is advancing or slowing, thus indicates what assets shall perform.

MTAA : Asset regime navigator

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

Higher growth

Higher rates

- 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

Growth & Inflation: High growth and high inflation

US Inflation: 6.0% in 5 years

Cash Rate: 7.5% in 5 years

US 10-yr Yield: 7.7 % in 5 years

US EPS Growth: 2.7% (5-yr average)

Soft(ish) landing & return to moderate growth

US Inflation: 2.3% in 5 years

Cash Rate: 3.7% in 5 years

US 10-yr Yield: 4.2% in 5 years

US EPS Growth: 2.9% (5-yr average)

Lower rates

- 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

Stagflation: Low growth and high Inflation

US Inflation: 6.0% in 5 years

Cash Rate: 7.2% in 5 years

US 10-yr Yield: 6.7% in 5 years

US EPS Growth: -2.8% (5-yr average)

Recession: Extended period of low growth and low rates

US Inflation: 1.5% in 5 years

Cash Rate: 2.0% in 5 years

US 10-yr Yield: 1.5% in 5 years

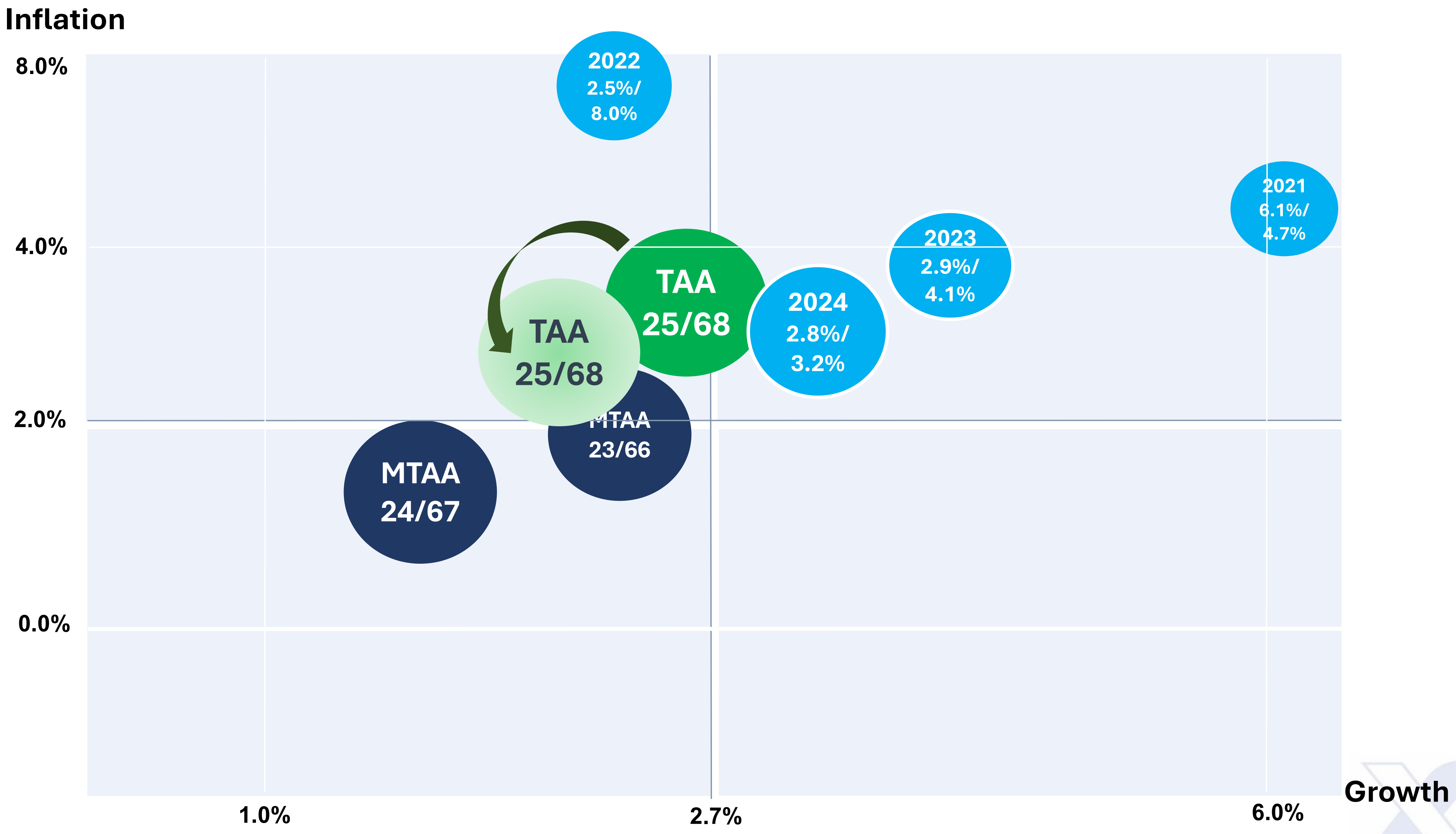
US EPS Growth: -4.9% (5-yr average)

- 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

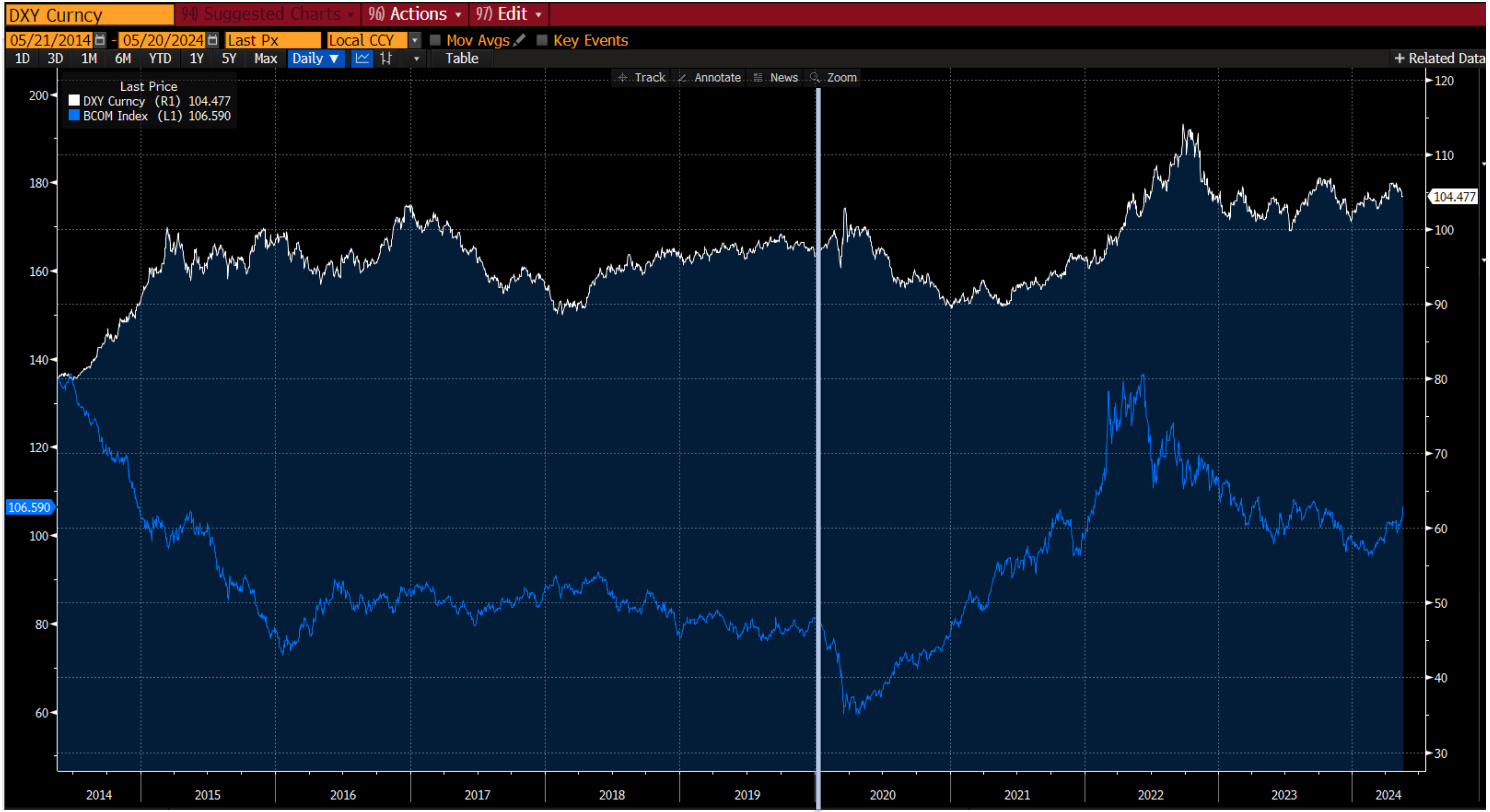
Lower growth

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

Uncertainties from monetary policies & Geo-politics → The needs for TAA

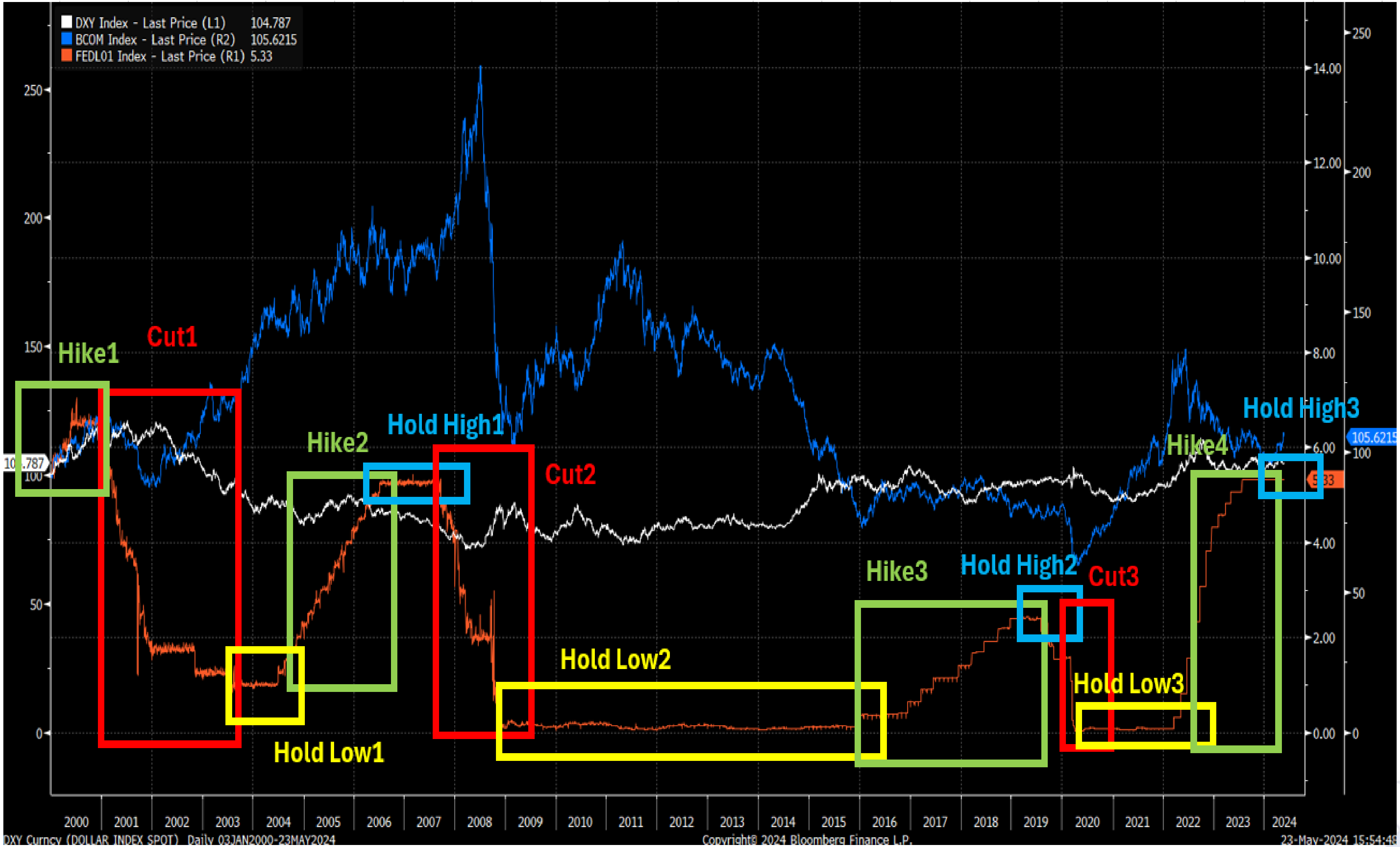


Correlation of US Dollar and Commodity

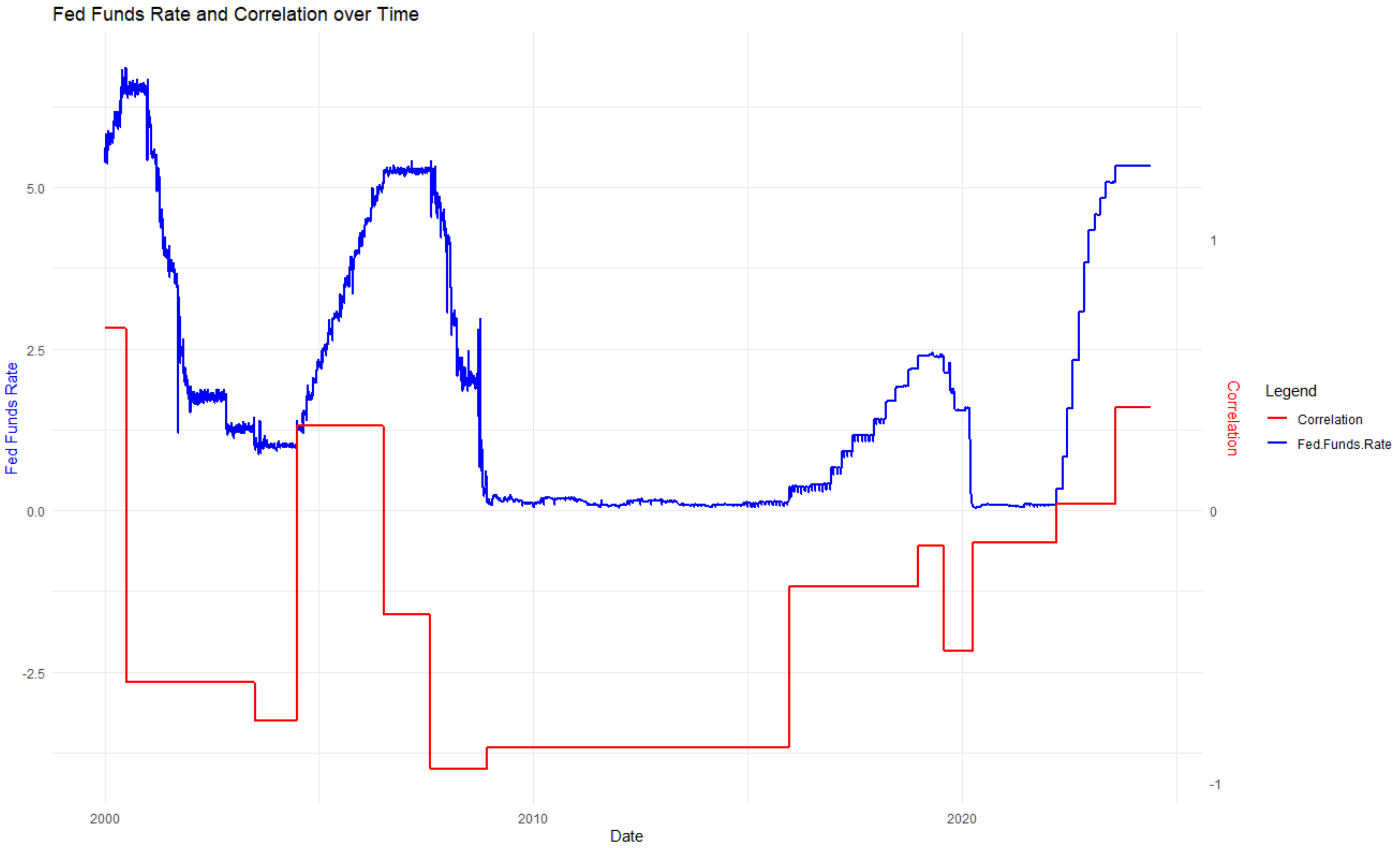


Timeframe	Correlation
Pre-Covid	-0.822
Post-Covid	+0.560

Correlation Breakdown by Regime

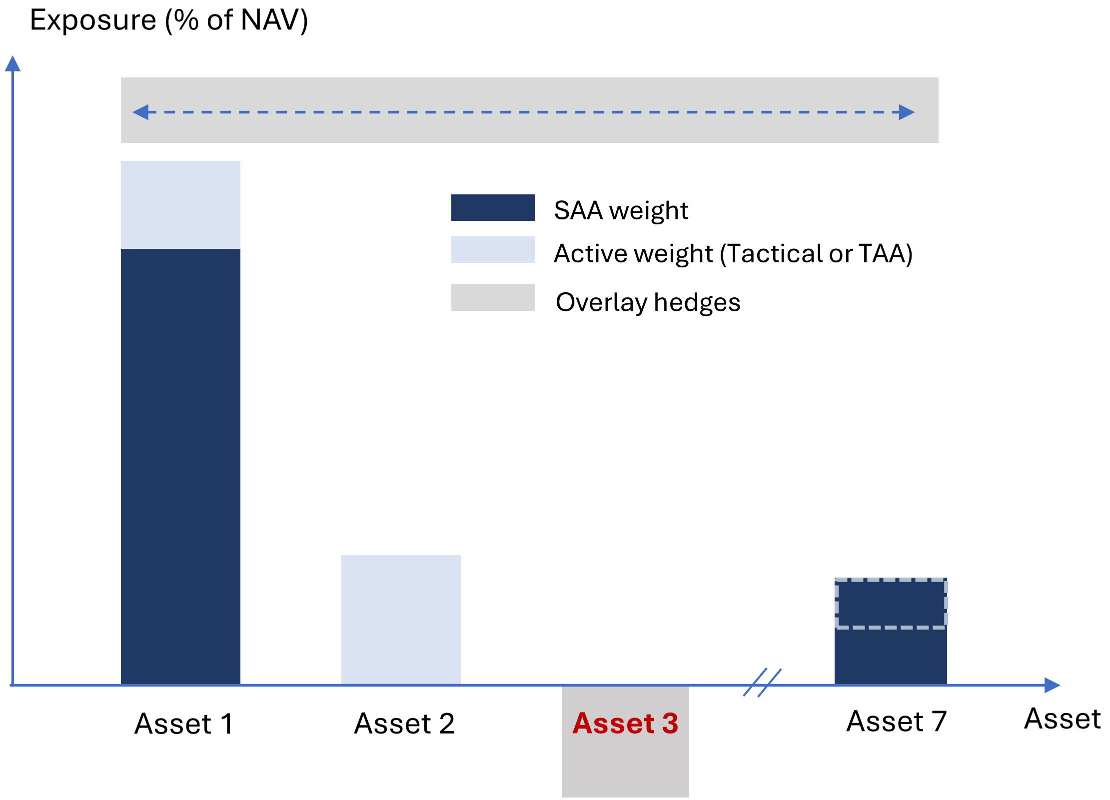


Correlation by Regime Dynamics



Regime	DXY-BCOM Correlation
Hike 1	+0.670
Cut 1	-0.633
Hold Low 1	-0.771
Hike 2	+0.312
Hold High 1	-0.381
Cut 2	-0.951
Hold Low 2	-0.873
Hike 3	-0.278
Hold High 2	-0.131
Cut 3	-0.518
Hold Low 3	-0.117
Hike 4	+0.02
Hold High 3	+0.380

Portfolio structure : SAA vs MTAA / TAA



Strategies & Portfolio structure

Strategies	Book	Target weight	Timeframe	Strategies	Benchmark
Core holdings	CORE	MTAA	1 year	Alpha	Asset class's
Tactical call	TAA	TAA	< 1 year	Beta	MTAA
Overlay hedges	Overlay	~	< 3 months	Beta	MTAA

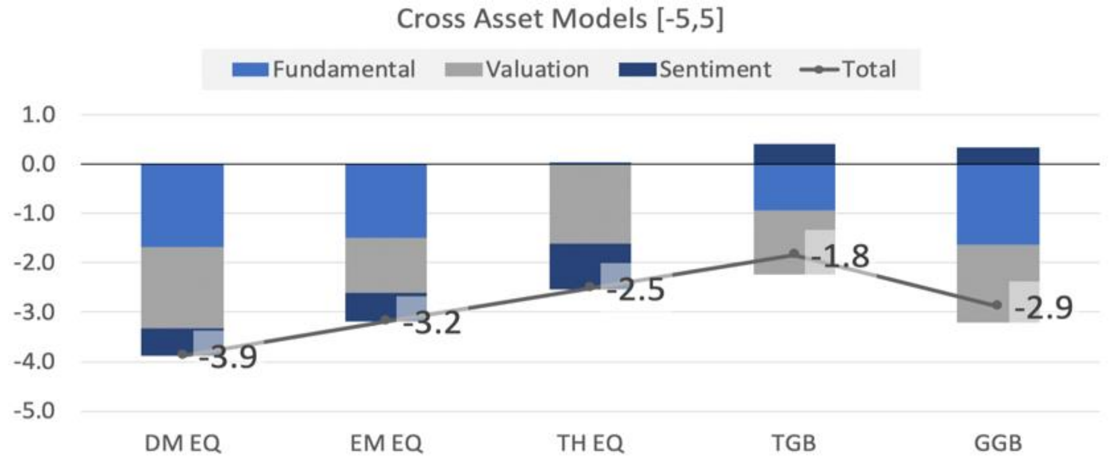
Rationales

- Each asset has its own benchmark. Active weight (+/- from actual weight or SAA) reflects views and/or events intra-year.
- In 2022, stocks & bonds highly correlated, due to monetary policy divergence, rising rates affected every asset class. Overlay hedges i.e. shorting UST aims to reduce such repricing risk of overall portfolio.

CrAM : Cross Asset Model

Assessing Score (-5 to +5) from each factor

Normalized residuals of valuation by macro variables including growth, price and policy variables	Fundamental
Normalized historical data (1 year rolling)	Valuation
Normalized Greed & Fear of Bond/Equity	Risk Sentiment



[-5, 5]		DMEQ	EMEQ	THEQ	GGB	TGB	THB
Fundamental (20%)	Current						
Valuation (20%)	Last week						
	Current						
Sentiment (60%)	Last week						
	Current						
Total (100%)	Last week	-0.95	-1.43	-0.08	1.19	0.76	-1.25
	Current	**-0.68**	**-1.21**	**0.23**	**2.13**	**0.91**	**0.09**
		Neutral	Slightly Negative	Neutral	Slightly Positive	Slightly Positive	Neutral

Adjusted with

AA Committee Survey

Assets	Very Negative	Negative	Slightly Negative	Neutral	Slightly Positive	Positive	Very Positive
DMEQ	X		X				
EMEQ		X			X		
THEQ		X		X			
TGOV			X	X			
GGB		X					

Takeaways:

- **Equity valuation:** DMEQ Negative ; EMEQ : Neutral ; THEQ : Positive
- **Equity sentiment:** DMEQ and EMEQ : Neutral ; THEQ : Slightly Negative
- **Bond sentiment:** GGB : Slightly Positive ; TGB : Neutral
- **THB technical composite:** THB : Neutral

CrAM : Equities

Emerging Market Equities (EMEQ)

EMEQ overall: -1.21 [-5, +5] – Slightly Negative

Fundamental: -3.66 [-5, +5] –Negative

- Close to fair value (fair level = 967 actual level = 1076).
- Stronger EM FX

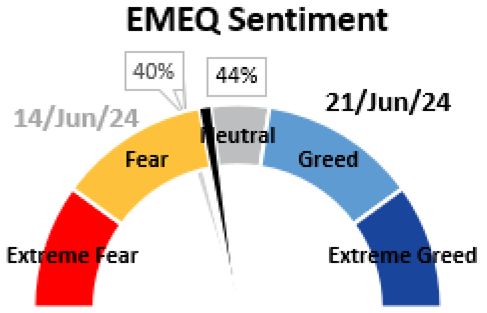
Valuation: -0.54 [-5, +5] –Neutral

Data range (for standardization)		9.5 years	8 years	10 years	10 years	9 years	3.5 years	4.5 years	
EMEQ		Shiller's CAPE	fwd PE	Price/Sales	EV/EBITDA	Price/FCF	EYG	rEYG	
Current data		7.86	13.17	1.41	9.34	21.02	3.90	6.60	
Data as of	14/06/2024	7.85	13.05	1.39	9.30	20.67	3.96	6.64	
SD		1.22	2.08	0.18	1.28	3.41	0.74	0.85	
Z-Score		**1.734**	**-0.140**	**0.800**	**0.939**	**-0.134**	**-0.244**	**0.199**	
Prob		83.6%	42.1%	73.5%	75.9%	38.1%	49.7%	75.5%	Composite
Prob Normal		95.9%	44.4%	78.8%	82.6%	44.7%	40.4%	57.9%	
Score [-5, +5] as of	14/06/2024	-3.36	**1.02**	**-2.11**	**-2.73**	**1.45**	**0.48**	**2.77**	**-0.35**
Score [-5, +5] as of	**21/06/2024**	**-3.36**	**0.79**	**-2.35**	**-2.59**	**1.19**	**-0.03**	**2.55**	**-0.54**

Shiller's CAPE and EV/BITDA indicated strong overvaluation. rEYG indicated slightly undervaluation.

Sentiment: -0.61 [-5, +5] – Neutral

Components	14/Jun/24	21/Jun/24	Last 6 months
Momentum	80%	84%	
Safe Haven Demand	14%	49%	
PutCall	46%	40%	
Stock Strength	61%	25%	
FX	38%	37%	
Volatility	3%	29%	
Composite	**Average**		**Last 6 months**
EM Equity Sentiment	40%	44%	
[-5, +5]	-0.98	-0.61	



- Turn less negative compared to last week due to lower safe haven demand and lower volatility

Thai Equities (THEQ)

THEQ overall: 0.23 [-5, +5] – Neutral

Fundamental: : 1.82 [-5, +5] – Positive

- Fundamentally at fair value(fair level = 1500; actual level = 1370).
- Worsen tourism

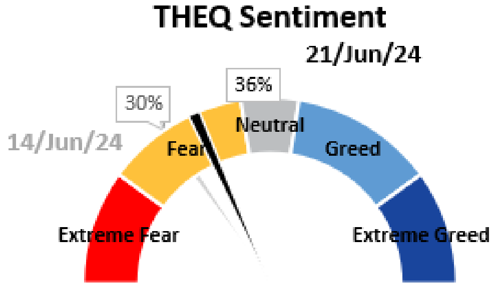
Valuation: 3.60 [-5, +5] – Positive

Data range (for standardization)		6 years	1.5 years	3.5 years	1 years	3.5 years	7 years	10 years	
THEQ		Shiller's CAPE	fwd PE	Price/Sales	EV/EBITDA	Price/FCF	EYG	rEYG	
Current data		15.35	14.03	0.90	8.41	17.28	4.42	5.86	
Data as of	14/06/2024	15.54	14.01	0.91	8.35	16.69	4.37	5.87	
SD		1.67	0.97	0.19	0.65	24.45	0.61	2.14	
Z-Score		-1.072	-1.878	-1.632	-1.076	-0.989	1.413	0.557	
Prob		31.1%	2.6%	10.1%	22.0%	7.3%	96.2%	79.3%	Composite
Prob Normal		14.2%	3.0%	5.1%	14.1%	16.1%	92.1%	71.1%	
Score [-5, +5] as of	14/06/2024	**1.78**	**4.82**	**3.99**	**3.23**	**4.27**	**4.49**	**2.95**	**3.65**
Score [-5, +5] as of	**21/06/2024**	**1.89**	**4.74**	**3.99**	**2.80**	**4.27**	**4.62**	**2.93**	**3.60**

- Thai equities undervalue as fwd PE, Price/Sales, EV/EBITDA, Price/FCF and EYG

Sentiment: -1.43 [-5, +5] –Slightly Negative

Components	14/Jun/24	21/Jun/24	Last 6 months
Momentum	21%	25%	
Safe Haven Demand	8%	9%	
PutCall	15%	38%	
Stock Strength	5%	9%	
USDTHB	42%	41%	
Volatility	68%	71%	
US Composite	49%	57%	
Composite	**Average**		**Last 6 months**
TH Equity Sentiment	30%	36%	
[-5, +5]	-2.04	-1.43	



- Turn less negative compared to last week due to lower PutCall

CrAM : Bonds

Global Government Bonds (GGB)

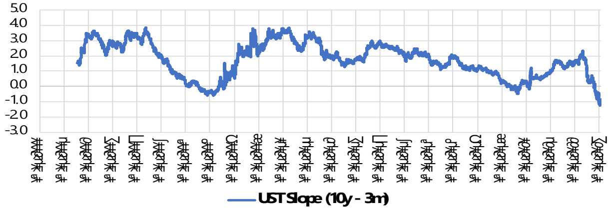
GGB overall 2.13 [-5, +5] – Slightly Positive

Fundamental: 1.92 [-5, +5] – Slightly Positive

- 10-yr UST fundamentally over-valued (fair level = 4.274%; actual level = 4.481%)
- Lower forward real yield

Valuation: 4.12 [-5, +5] – Very Positive

GGB	UST Slope 10y3m	GGB10y2y	GGB2yfedfun	GGB real yield
Current data	-1.10	-0.48	-1.07	2.02
Mean	1.33	1.02	1.26	0.79
SD	1.25	0.97	1.25	0.99
Z-Score	-1.94	-1.55	-1.87	1.24
score	4.74	4.39	4.69	3.92
Score [-5, +5] as of	14/06/2024	3.23		
Score [-5, +5] as of	21/06/2024	4.12		



- The 10y3m, 10y-2y, and 2y-fedfund are positive for valuation

Sentiment: 1.54 [-5, +5] – Slightly Positive

[0, 100%]

Indicators	14/06/2024	21/06/2024	Description
US Yield Momentum	86%	79%	10y UST vs 30dMA
Credit Spread	70%	69%	Corporate BBB over 10Y UST
Over Bund	45%	48%	USGG10y Over 10y Bund
MOVE - VIX	18%	66%	10y Treasury Note Vol Index - VIX
Average	55%	65%	
[-5, +5]	0.48	1.54	

- GGB Sentiment upgraded from the previous week due to higher MOVE-VIX

Thai Government Bonds (TGB)

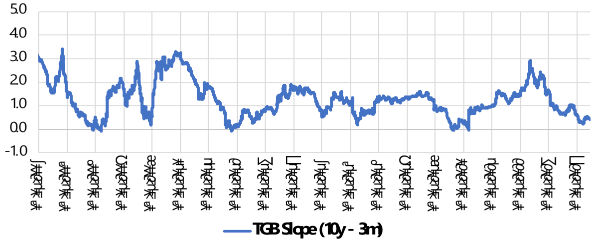
TGB overall 1.90 [-5, +5] – Slightly Positive

Fundamental: 2.29 [-5, +5] – Positive

- Fundamentally under-valued (fair level = 2.68%, actual level = 2.78%).
- Better CPI

Valuation: 2.54 [-5, +5] – Positive

TGB	TGB Slope 10y3m	TGB10y2y	TGB real yield
Current data	0.39	0.35	1.27
Mean	1.24	0.94	1.32
SD	0.70	0.50	1.99
Z-Score	-1.21	-1.18	-0.02
score	3.86	3.81	-0.06
Score [-5, +5] as of	14/06/2024	2.40	
Score [-5, +5] as of	21/06/2024	2.54	



- The 10y3m, 10y2m, and TGB real yield are positive.

Sentiment: -0.10 [-5, +5] – Neutral

10 Year Yield	14/06/2024	21/06/2024	Previous 6 months	Description
	[-5, 5]			
TGB10Y Momentum	1.76	2.04		10y TGB yield relative to 30-day MA
UST10Y Momentum	3.86	3.66		10y UST yield relative to 30-day MA
TGB10Y - USG10Y Momentum	-4.44	-3.89		Difference b/w the first two indicators
Foreign Flows	-3.94	-3.31		Foreign flows relative to 30-day MA
USDTHB1M IV	1.96	1.01		USDTHB implied volatility vs 30-day MA
Composite	-0.16	-0.10		Equally-weighted score

- TGB Sentiment turned slightly less negative, primarily as higher TGB10Y Momentum

Currency management

FX Hedging rationale

I) To Hedge or not to Hedge?

- Objective: Risk reduction of portfolio or source of portfolio return
- Investment horizon: Strategic horizon, medium-term horizon or tactical horizon
- Asset class: Risky assets or safety assets

II) Approaches

Risky Assets

- Unhedged benchmark (0% Hedge Ratio – Long USD)
- Some currencies provide diversification benefit to the portfolio due to low or negative correlation between risky assets and currency

Safety Assets

- Fully hedged benchmark (100% Hedge Ratio)
- Safety assets volatility < currency volatility; we should consider to close out FX exposure

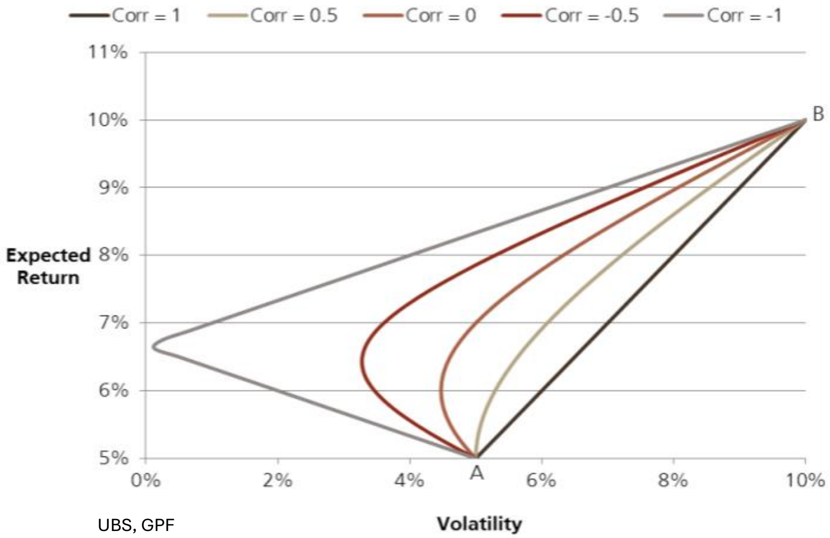
SAA

- Set hedging range (Risky assets: 0%, Safety assets: 100%)
- To be active management over the medium-term horizon
- Incorporate the analysis on macroeconomic and long-term valuation model (PPP, REER)

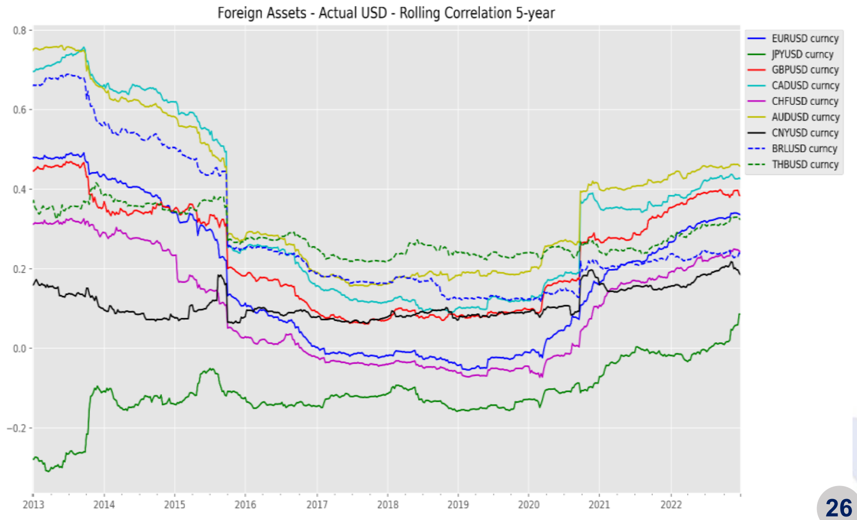
TAA

- Tactically tilt around the hedge ratio Asset allocation committee has set
- Objective is to seek additional return from short-term market movement due to sentiment and flows

The expected return and volatility of the portfolio A and B under different assumption about the correlation



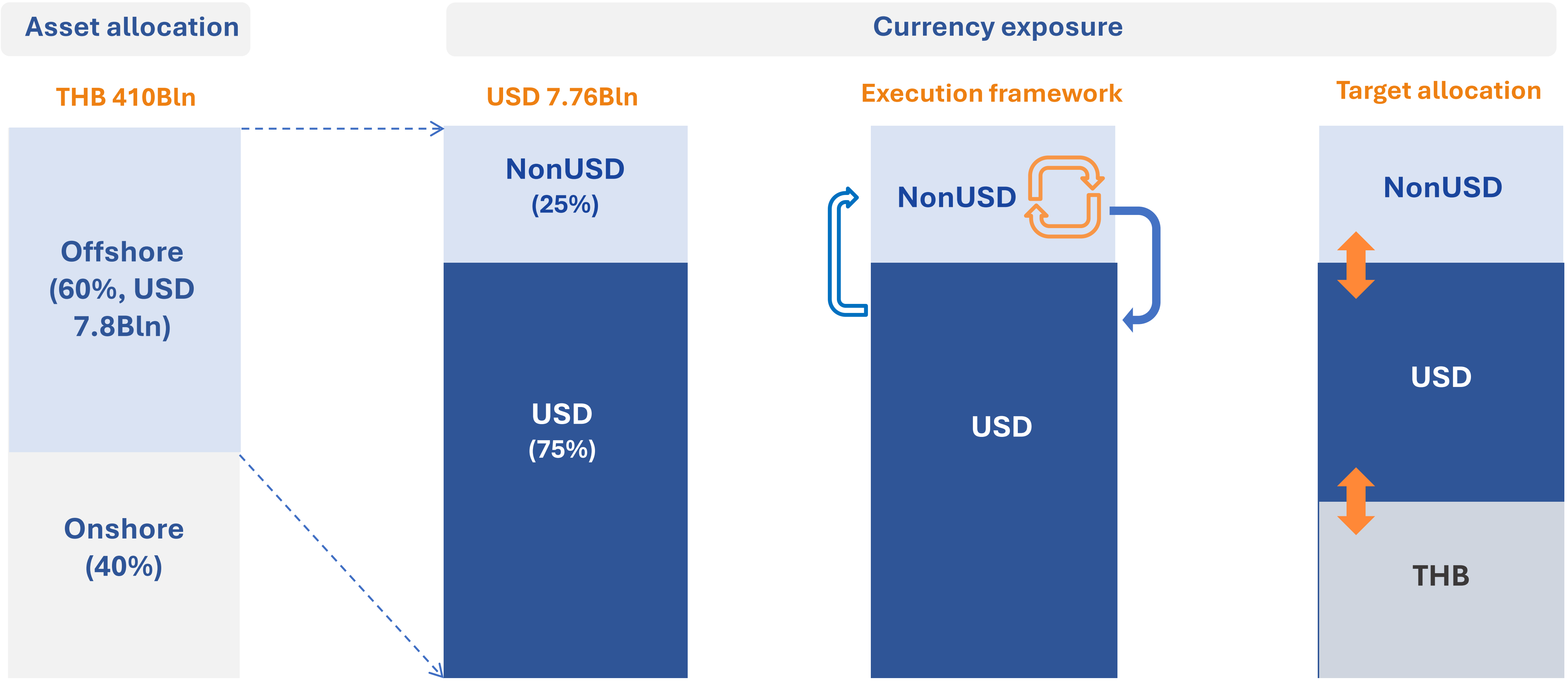
Correlation of CCY and GPF's foreign assets



FX Philosophy & Frameworks

	XXV	SWF	Mutual Fund	Manager I	Manager II	Manager III
FX Philosophy	Semi-active	Looking at FX as a holistic view of LTSAA	Depending on mandates			
FX Frameworks	**Two-layer concept:** • USD/THB (By asset group) • Non-USD/USD (Active management under T/E)	**Top-down approach** ▪ Medium- to Long- term based on Fundamental of CCY (Overvalue / Undervalue)	**Long-term Target Portfolio (SAA)** • Having an 11% of currency risk from unhedged foreign bonds and foreign equities	**FX framework over SAA, MTAA & TAA** • FX in overall strategy of the portfolio (SAA) • Reducing MTAA & TAA hedge ratios leeways • Two-layer concept: USD/Local & Non-USD/USD	**Strategic view: Optimal hedge ratio and Tactical view: Downside risk protection & cyclical alpha** • Two-layer concept: USD/local and Non-USD/USD	**FX framework over L/T SAA, MTAA & TAA** • LTSAA: Hedged to USD and unhedged to THB • MTAA: 0-100% Hedged to THB • TAA: Alternative absolute return
Investment Style (Active vs Passive)	**Semi-Active** • USD/THB: Hedge ratio • Non-USD/USD: Tracking Error (TE)	**Passive** • No active risk on FX • Fully hedged benchmark	**Semi-Active** • Dynamic hedging policy from 0 to 100% • 15% FX loss in income statement • Enhancing returns on non-USD/USD	**Semi-Active** • USD/THB: Hedge ratio • Non-USD/USD: Risk budget limits for alpha (dedicated FX resources)	**Semi-Active** • USD/THB: Hedge ratio • Non-USD/USD: More active for alpha seeking (Managed either internally or outsourced)	**Active** • FX as an alternative absolute return allocation • Benchmarked against USD cash and subject to risk budget(Managed either internally or outsourced)
Investment Goal (Reduce Risk vs Enhance Returns)	**Both** • USD/THB: Reduced risk • Non-USD/USD: Enhanced returns	**Reduced Risk**	**Both**	**Both**	**Both**	**Enhanced Returns**
FX as a standalone asset class	Only Non-USD/USD via asset pooling	No	No	Partially yes	Partially yes	Yes
Case Studies	-	-	-	**HK MPF** • Dynamic hedging policies • At least 30% HKD in all funds (regulation)	**Australian Industry Superannuation Funds** • Benchmark hedging policy vs Active hedging policy	NPS Korea, Swiss Pension Funds & Sovereign Wealth Funds

GPF's offshore allocation & currency exposure

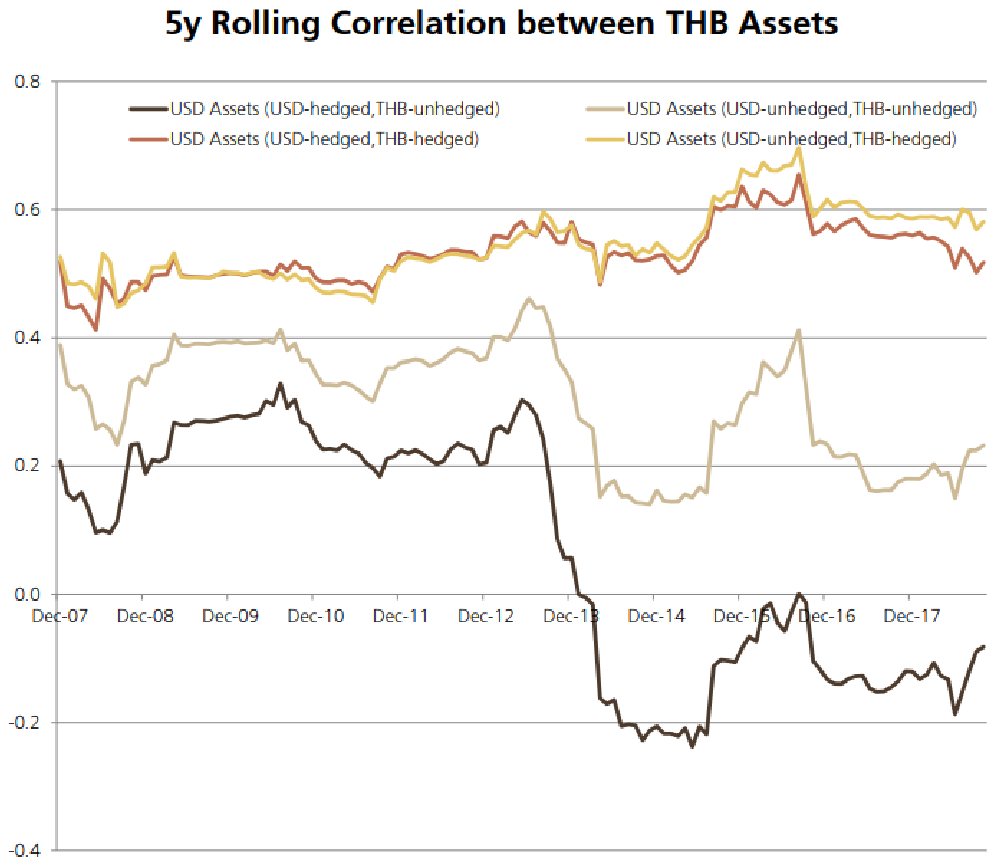


Objective of currency management

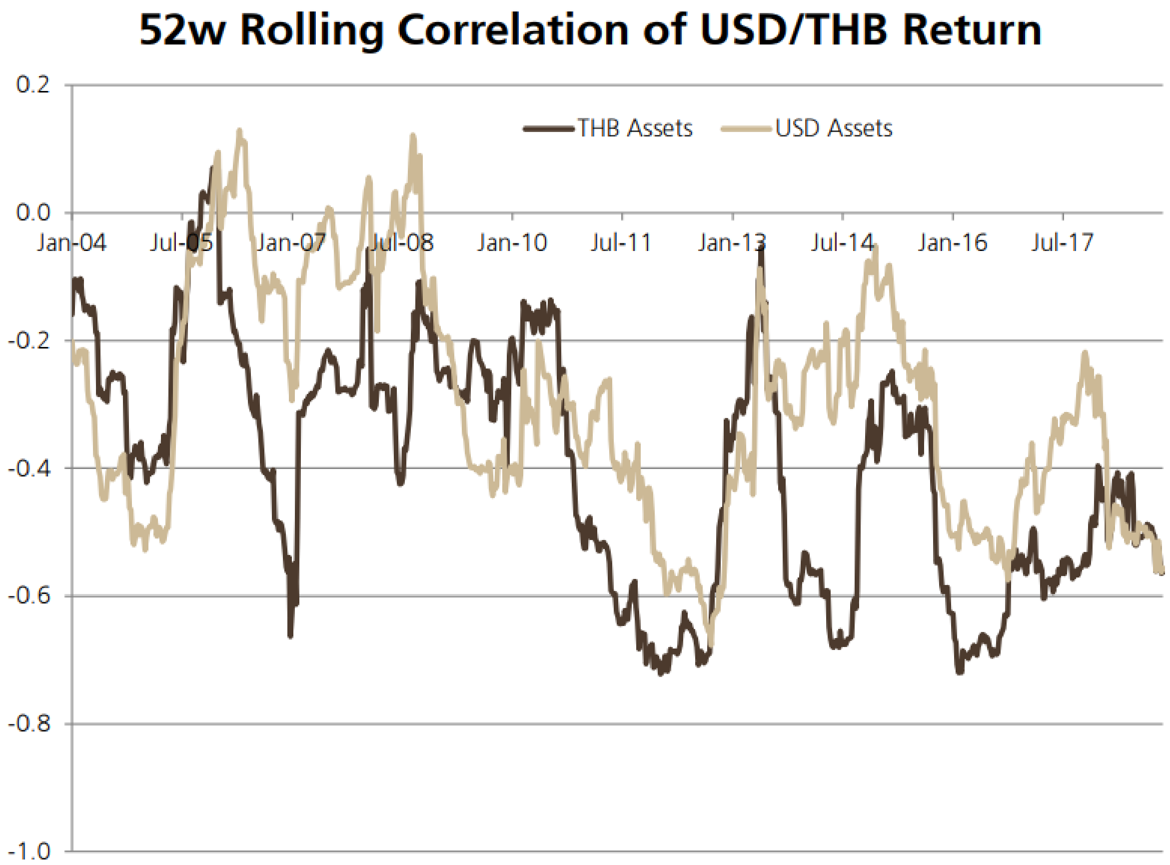
- Risk reduction in the long run. Longing certain currencies helps reduce portfolio volatilities
- In tactical view, alpha can be sought from NonUSD and high-beta currencies

Some studies by currency advisor

Correlation between THB and USD assets under different hedging arrangement

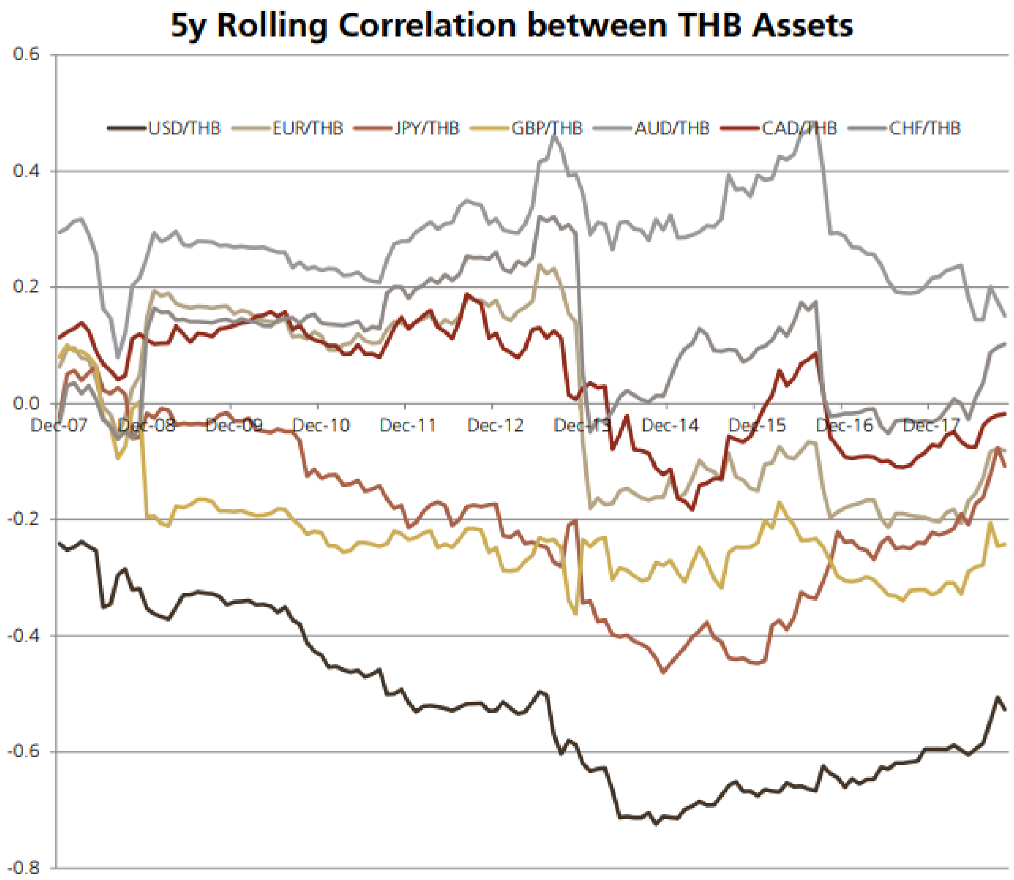


The 52-week rolling correlation between the returns of USDTHB and THB & USD denominated assets. Foreign assets are hedged to USD but not THB

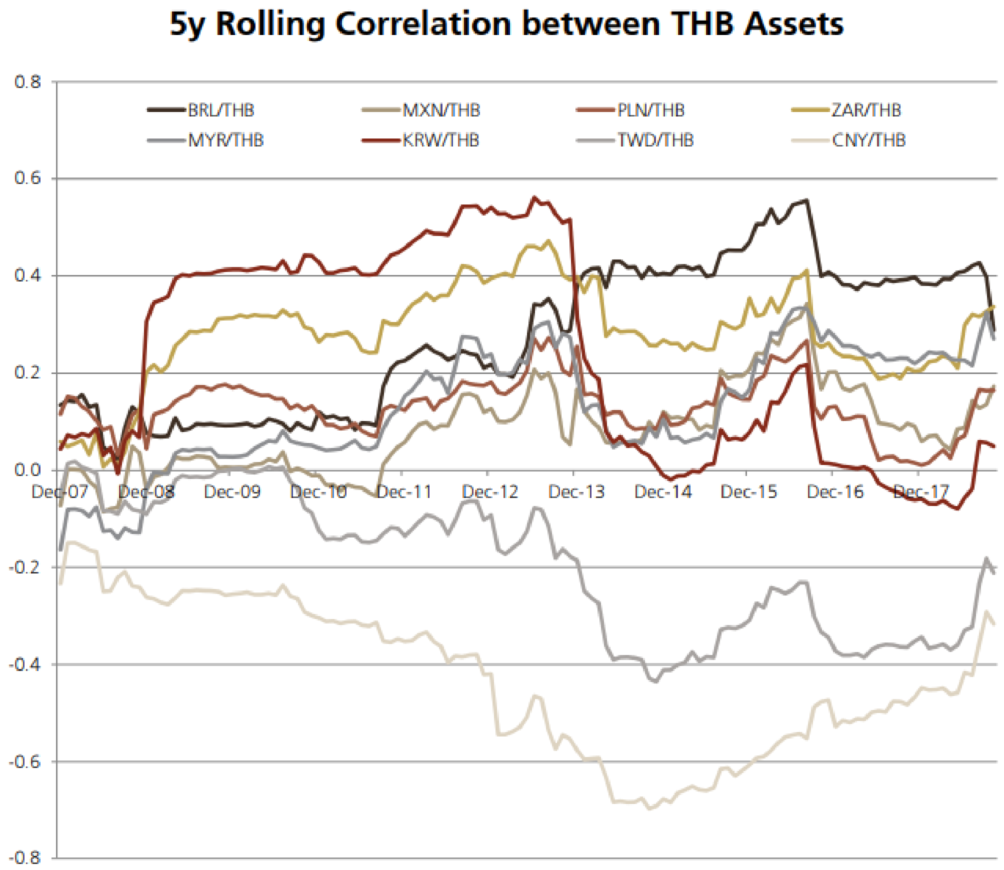


Some studies by currency advisor

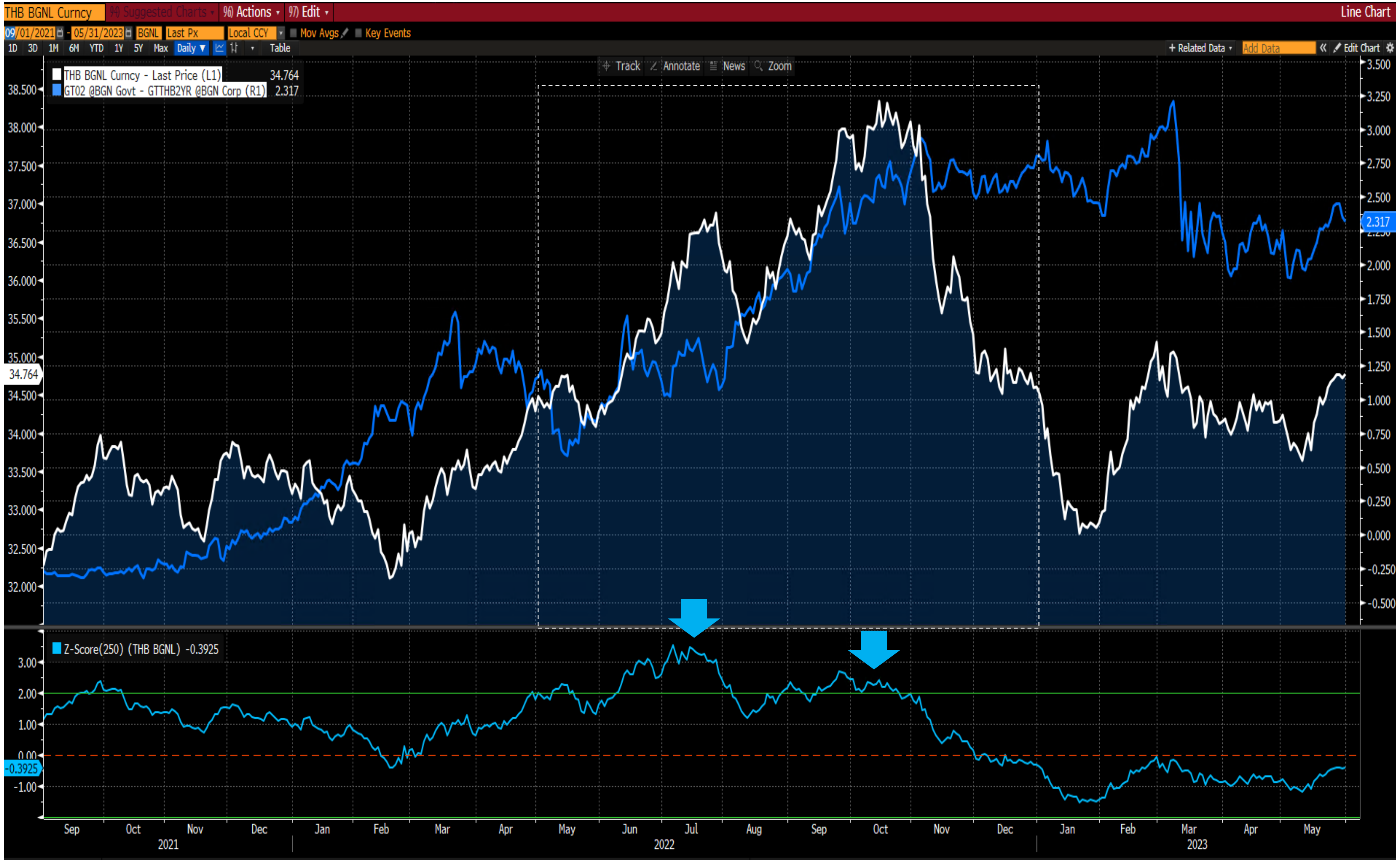
5y rolling correlation between THB-denominated assets and selected G10 currencies



5y rolling correlation between THB-denominated assets and selected EM currencies



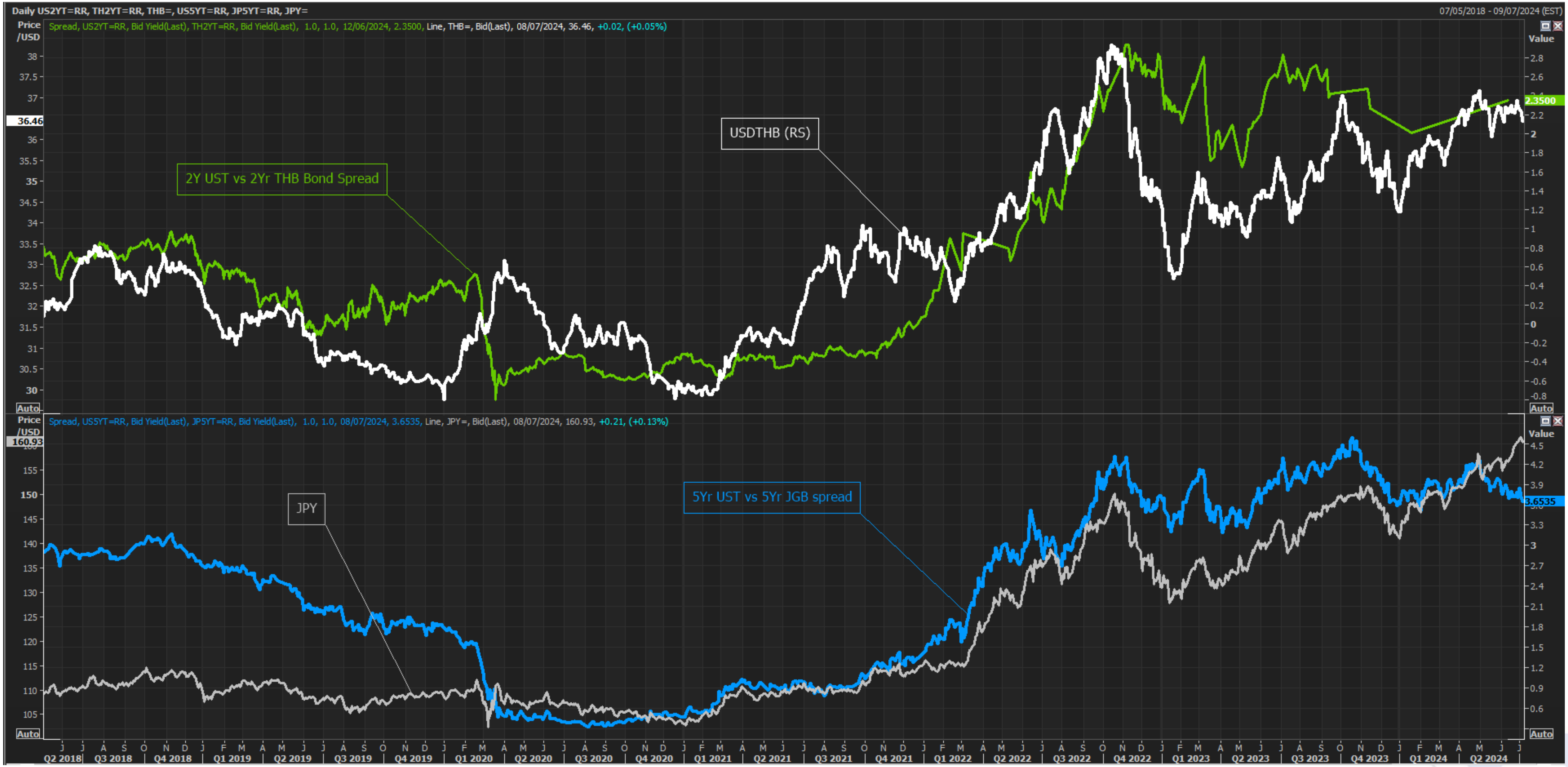
FX Hedging Strategies – a case study



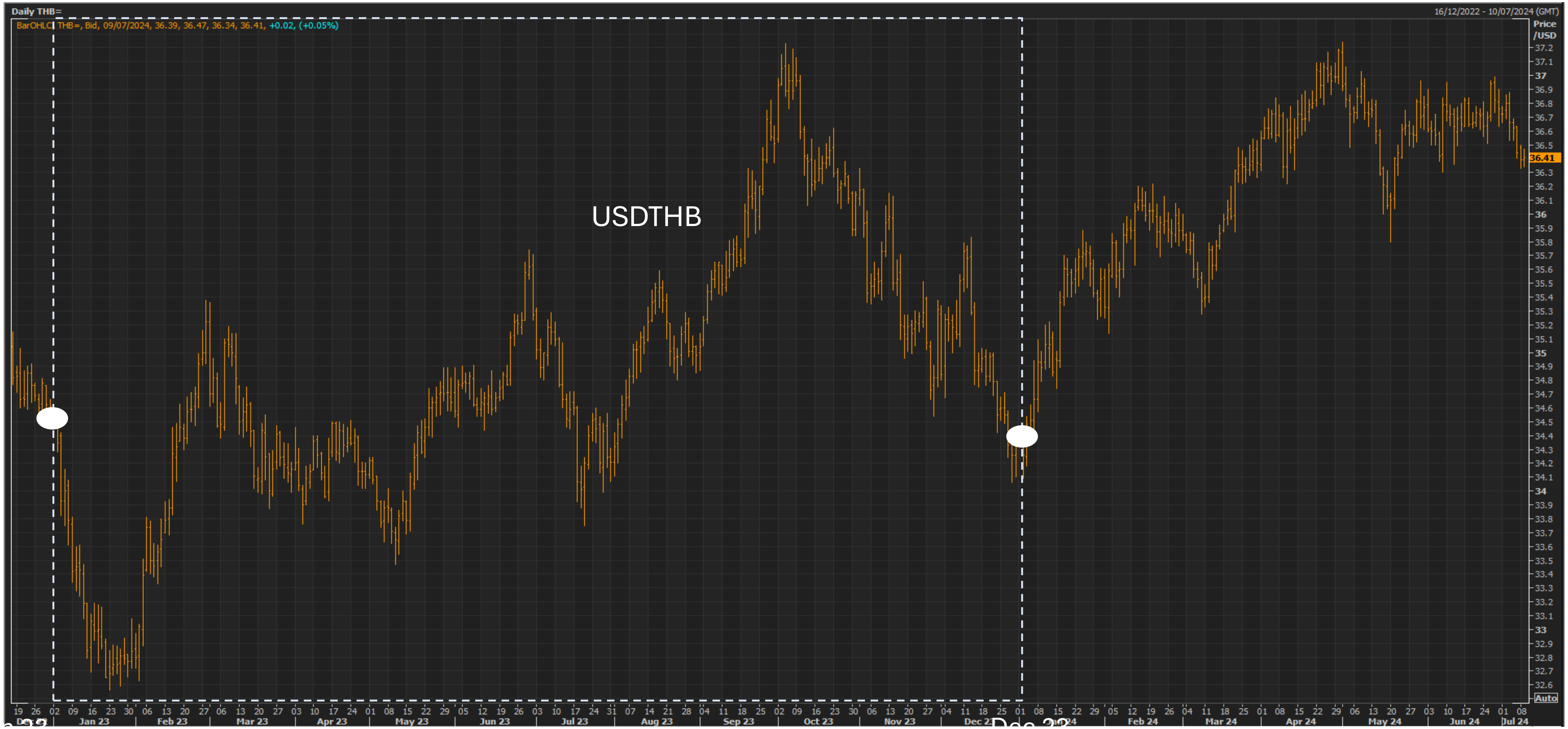
USDTHB Hedging

- After market had realized that inflation in US was not "Transitory" market was pricing more rate hike by the FED.
- In this chart, widening interest rate differentials, 2Y-UST and 2Y-THB bond yields, directly affects USDTHB "Hedging cost".
- Depending on whether we view this as a structural or cyclical trend, widening 2Y-Bond spreads are likely to result in strong USD.
- Offshore allocations are with FX risk that could wipe out 3-6% of the capital invested. FX framework is key to portfolio return and shall be driven by a Philosophy and asset allocation.

Interest rate differentials vs FX spot



Currency management : Tactical vs Strategic



- Unless treated as an asset class, currency's performance shall be looked in conjunction with that of underlying assets.
- There are cases where USDTHB hedge ratio is actively managed, but USDTHB spot ended flat for the year.

2025 Investment Outlook

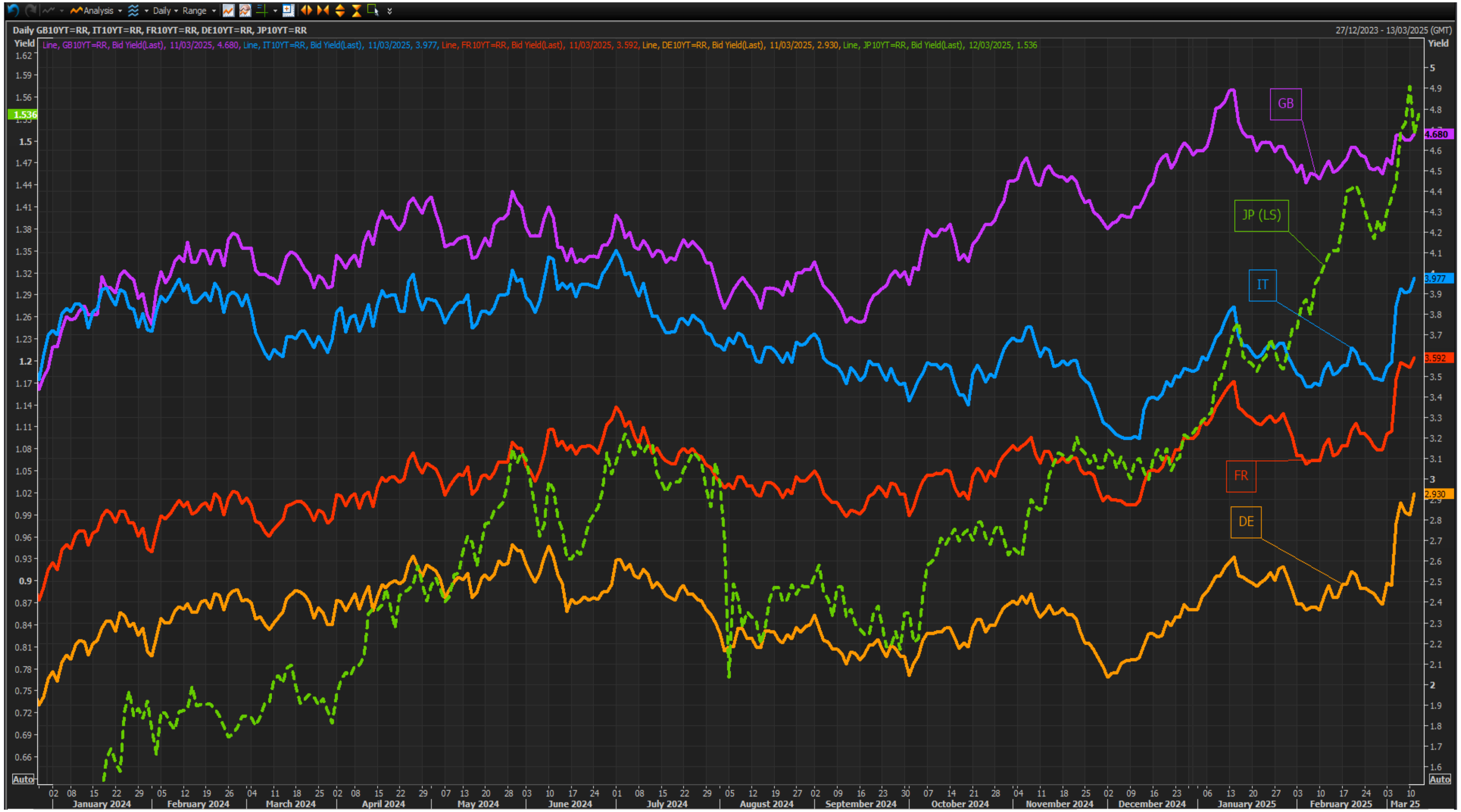
Definition of each landing scenario

Scenarios	Definition
1. No Landing **(Economy Keeps Growing, Inflation Stays High))**	• The economy continues to grow without a significant slowdown, despite high interest rates or inflationary pressures. • Central banks may struggle to bring inflation under control because demand remains strong. • This scenario can lead to prolonged inflation and the risk of aggressive future rate hikes.
2. Soft Landing **(Growth Slows Without a Recession)**	• Economic growth slows down just enough to reduce inflation without causing a recession. • Central banks successfully manage to cool inflation while avoiding a sharp rise in unemployment or a major downturn. • This is the ideal outcome for policymakers aiming for sustainable growth.
3. Hard Landing **(Recession, Job Losses, Economic Decline)**	• The economy slows down too much, leading to a recession. • Higher interest rates or policy tightening cause a sharp drop in consumer spending and business investment. • Unemployment rises, and economic activity contracts significantly.

2025 Key Themes : Growth divergence shifted to other economies

Theme	Thesis	Implications	Scenario prob.	Landing scenarios		
				No	Soft	Hard
10Y USD yield scenario				4.5-5.2%	3.5-4.2%	2.8-3.5%
1. US Policy uncertainties	• Trump's tariff policies impact global trades & competitiveness • Inflation and sentiments to swing	• Policy rates to remain high, one potential cut • Credit spreads could still hold up	~~25%~~ 35%	~~25%~~ 5%	~~60%~~ 65%	~~15%~~ 30%
2. Desynchronized growth	• US growth is still strong from spendings & rising CAPEX cycle • Inflations though with sign of slowing, still higher than target	• Corporate margins & earnings growth still high • USD to remain strong. EUR and JPY under pressure. EMs vary	~~15%~~	~~30%~~	~~40%~~	~~30%~~
	• Reforms in China, Germany & Japan	• Growth divergence to other Economies	15%	5%	70%	25%
3. US Exceptionalism	• Leverage its economic dominance. • It could delay fiscal responses as ability to absorb shocks is higher. High investor confidence leads to asset price stable.	• AI adoptions will support long-term growth • Trump's policies favor onshoring and reshoring	~~20%~~ 10%	~~30%~~ 15%	~~40%~~ 50%	~~30%~~ 35%
4. Policy mistake	• Fed fails to curbs rising inflation	• Series of cuts	20%	-	20%	80%
5. Stagflation	• High interest rates for long slows down growth	• Rising input cost lowers margin. • Wages do not keep up with inflation • Policy dilemma	20%	-	70%	25%
			100%	--%	--%	--%

Growth divergence seen in other economies



China

Long-term reforms

- 15^{th} Five-Year Plan : Tech advancement Econ stability
- SOE reform alongside private sector support
- Fiscal & tax reforms : from -3% to -4% of GDP
- Local Govt Debt swap with central Govt

Germany & EU

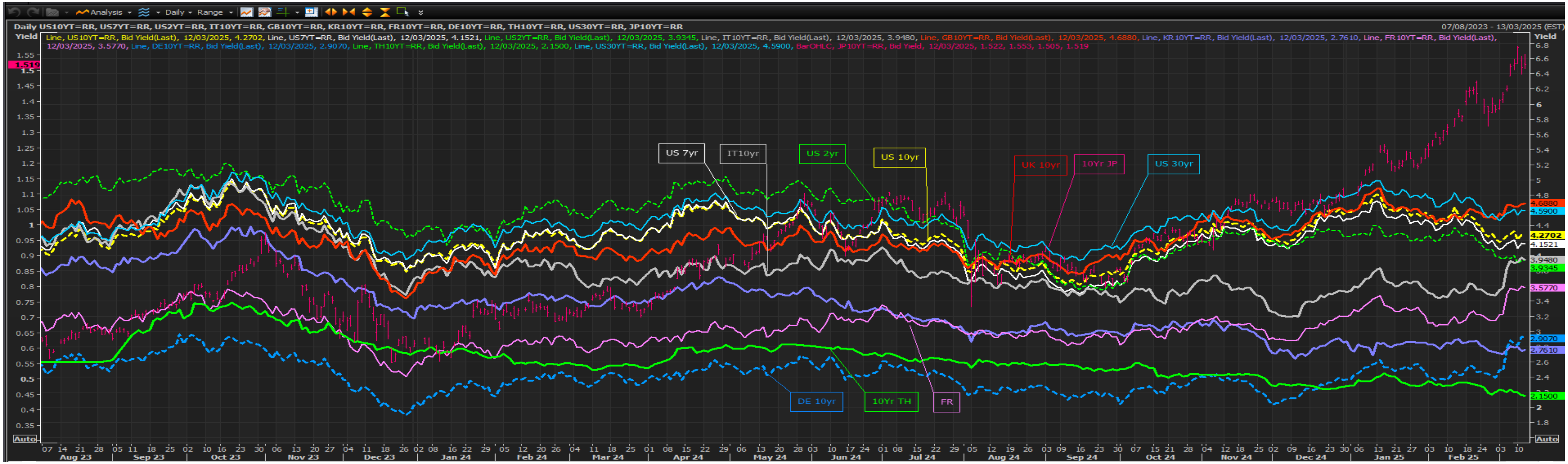
- Increased Govt spending : €500Bln Infra investment & 1% of GDP on Defense
- Reforms of Fiscal constraints : Removal of obstacles to allow for borrowing to boost outputs to end stagnations.

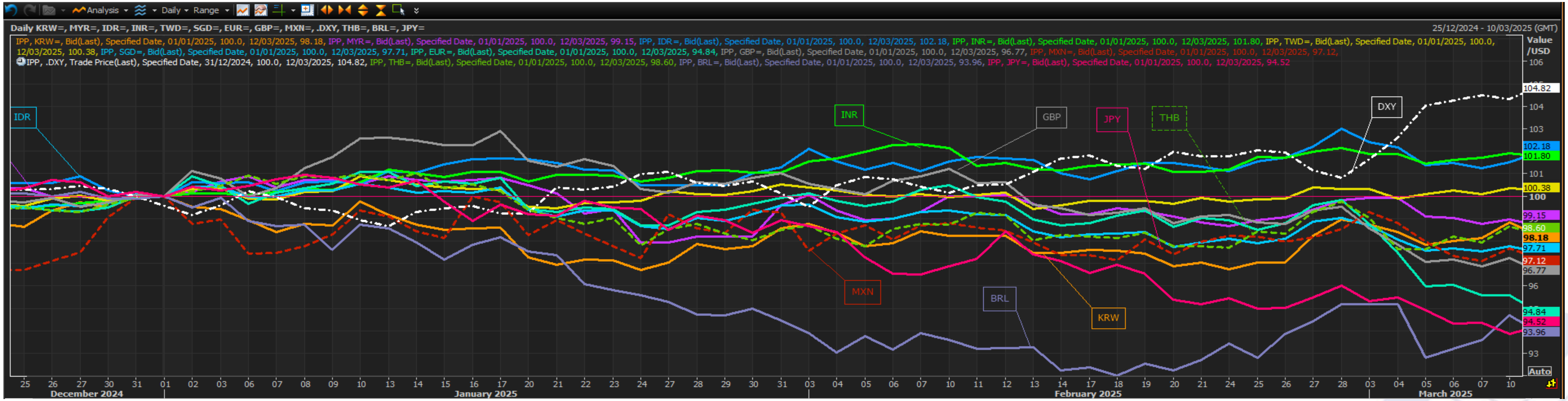
Japan

- Monetary policy adjustments, Inflation targeting
- Wage increase
- Capital markets & listed companies

Stock performance & Bond yield

Changing econ policy, growth & inflation affects Ccy and asset prices





Key indicators & characteristics in each scenario

Scenarios	GDP	Inflation	Labor Market	Spending	Business sentiment	Interest Rates & Yield Curve	Stock market	Bond market
1. No Landing	• Strong growth	• Stubbornly high	• Strong job growth	• High on discretionary • Household borrowing	• PMI >> 50	• Rates don't slow growth • Hawkish stance	• Continued rally	• Steepening
2. Soft Landing	• Moderate slowdown	• Gradual decline	• Slight slowdown in hiring	• Spending slows moderately	• PMI +-50	• Rates stabilize or decline gradually • Dovish stance	• Volatile but stable growth	• Normalizing • Fed cuts progress gradually
3. Hard Landing	• Contraction (negative GDP)	• Sharp drop (esp. if demand collapses)	• Rising unemployment	• Cut back on discretionary items • Lower CAPEX	• PMI << 50	• Aggressively cut rates	• Significant declines • -20% from Top	• 2/10 (-) then (+) after cut • (-) Real yield
Indicators	• GDPNow • Weekly econ. index	• Inflation Nowcasting • Inflation swap • Breakeven inflation • PriceStat • 5Y/5Y Fwd inflation	• NFP • JOLTS • ADP employment • Initial jobless claim • Unemployment rate	• Retail sales • U. Mich consumer sentiment	• Industrial production • Service & Manu. PMI	• Fed member comments • Hawk-Dove ratio	• CFTC S&P • AAII bullish sentiment • Greed Fear Index • ETF flow to US markets • 2Y/10Y, 3m/10Y	• CFTC 10Y UST • 2-10 spread • Real yield • Prob of recession from Term structure

Indicator ballparks

Indicators	No landing	Soft landing	Hard landing
GDP Growth	Annual growth > 2.8%	1% - 2.8%	< 1% or negative
Weekly Economic Index (WEI)	> 3%	1% to 3%	< 1% or negative
Inflation (CPI)	> 3.5%	1% to 3.5%	< 1% or deflation
Nonfarm Payrolls MoM	Monthly increase > 250,000	100,000 to 250,000	< 100,000 or negative
JOLTS Job Openings	> 7 million	5 to 7 million	< 5 million
ADP Employment Change	Monthly increase > 250,000	50,000 to 250,000	< 50,000 or negative
Initial Jobless Claims	< 200,000	200,000 to 325,000	> 325,000
Unemployment Rate	< 3.7%	3.7% to 4.5%	> 4.5%
Retail Sales Growth MoM	Monthly increase > 1%	0.2% to 1%	< 0.2% or negative
U of Mich. Consumer Sentiment	Index > 90	70 to 90	< 70
Industrial Production	Monthly increase > 0.5%	0% to 0.5%	Negative growth
Manufacturing PMI	> 54	46 to 54	< 46
Services PMI	> 54	46 to 54	< 46

Thank you