



# **Decision Making Process and Active Management in an Uncertain Environment: The Central Bank of Peru Approach**

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CEMLA-BCRP**



# AGENDA

1. Institutional and Investment Framework
2. Active Asset Management Process
3. Tools for Active Asset Management
4. Main Alpha Generating Strategies



# 1. Institutional and Investment Framework



# 1. Institutional and Investment Framework

## Investment objective

- Safety, liquidity and return, in that order, according to article 71 of BCRP Charter Law.

## Management by tranches

- 1. Working Capital
- 2. Liquidity
- 3. Intermediation
- 4. Investment
- 5. Diversification and Special Investments

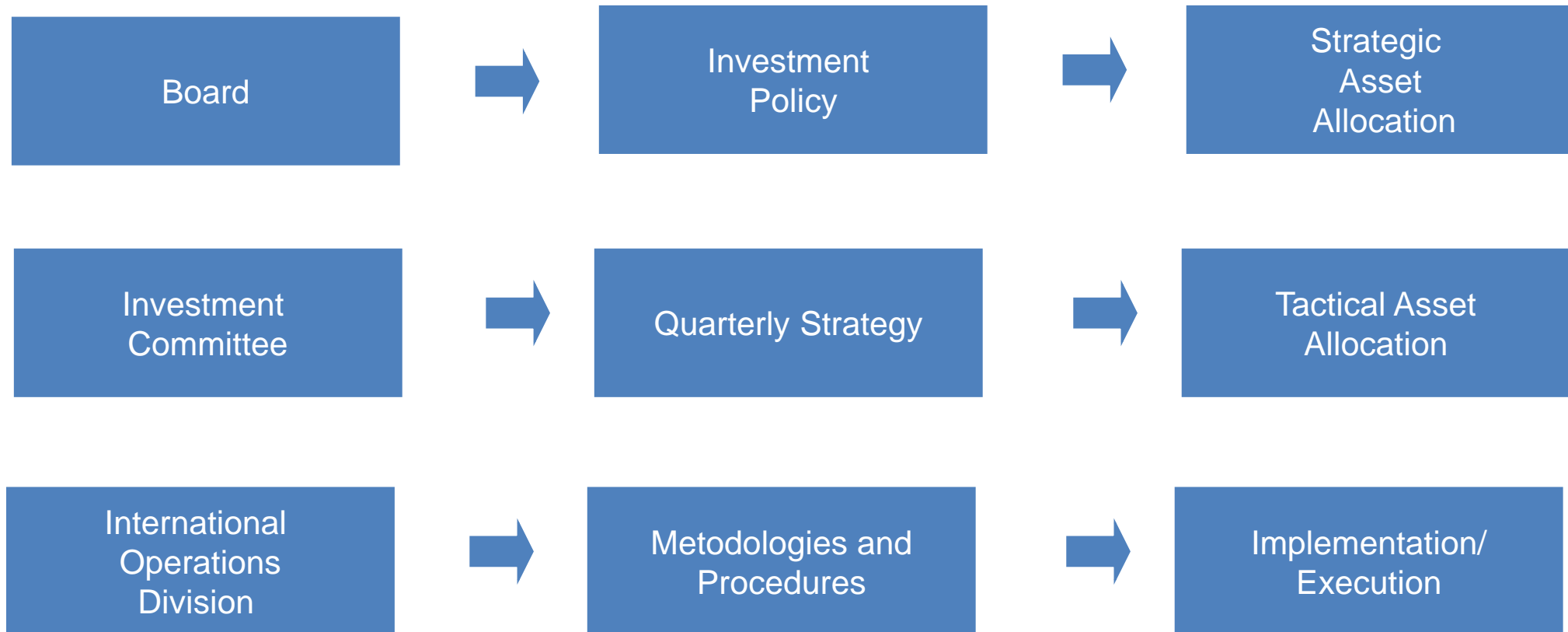
## Strategy and Execution

- Prudent control risks to achieve the objectives, and generate adequate risk-adjusted returns.



# 1. Institutional and investment framework

***The internal governance structure has a clear allocation and separation of responsibilities, and accountability with appropriate hierarchical levels.***





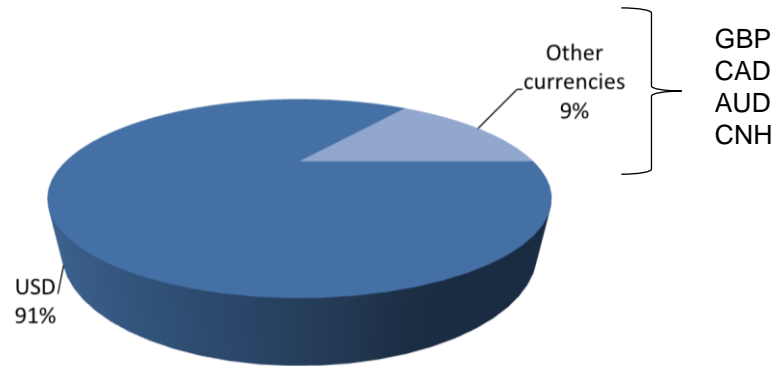
## **2. Active Asset Management Process**



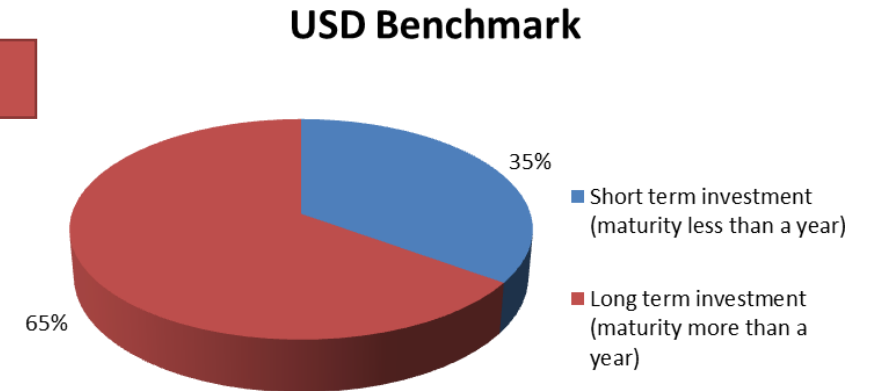
# 2. Active Asset Management Process

## BCRP's benchmark composition

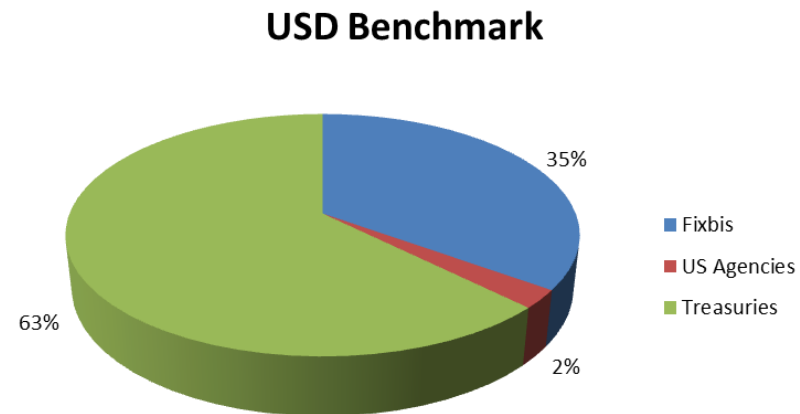
By Currency



By Maturity



By Securities





# 2. Active Asset Management Process

## Allowed Deviations

### Allowed Deviations

Allowed Asset Classes

Allowed Strategies

Banks (Term deposits)

Buy/Sell Securities

Supranationals and Sovereign backed (including Agencies) up to 10 yrs

Unhedged currency exposure for benchmark currencies

Hedged positions in other currencies

Callable Bonds

Futures for duration management

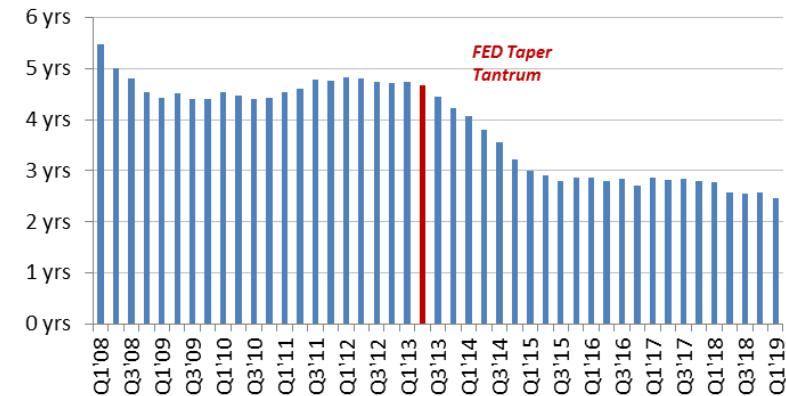
### Limits

Credit Risk: Limits to: bank exposure – Credit Rating

Liquidity: Concentration Limits

Market Risk: Duration Deviations

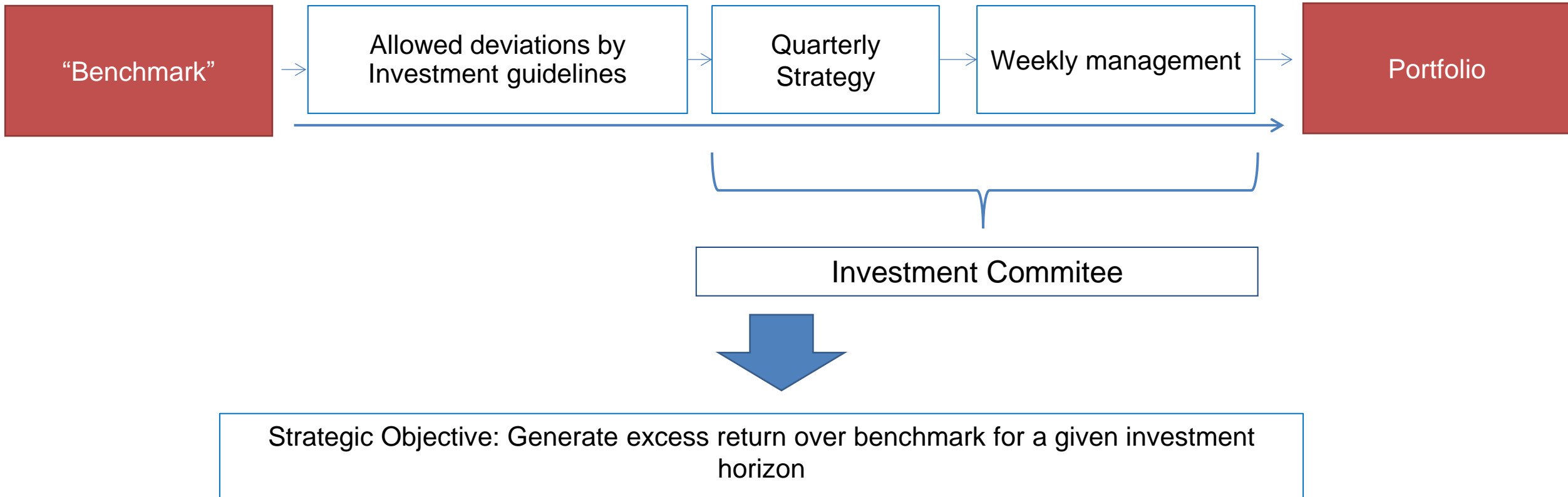
Largest maturity of bonds\* held in USD







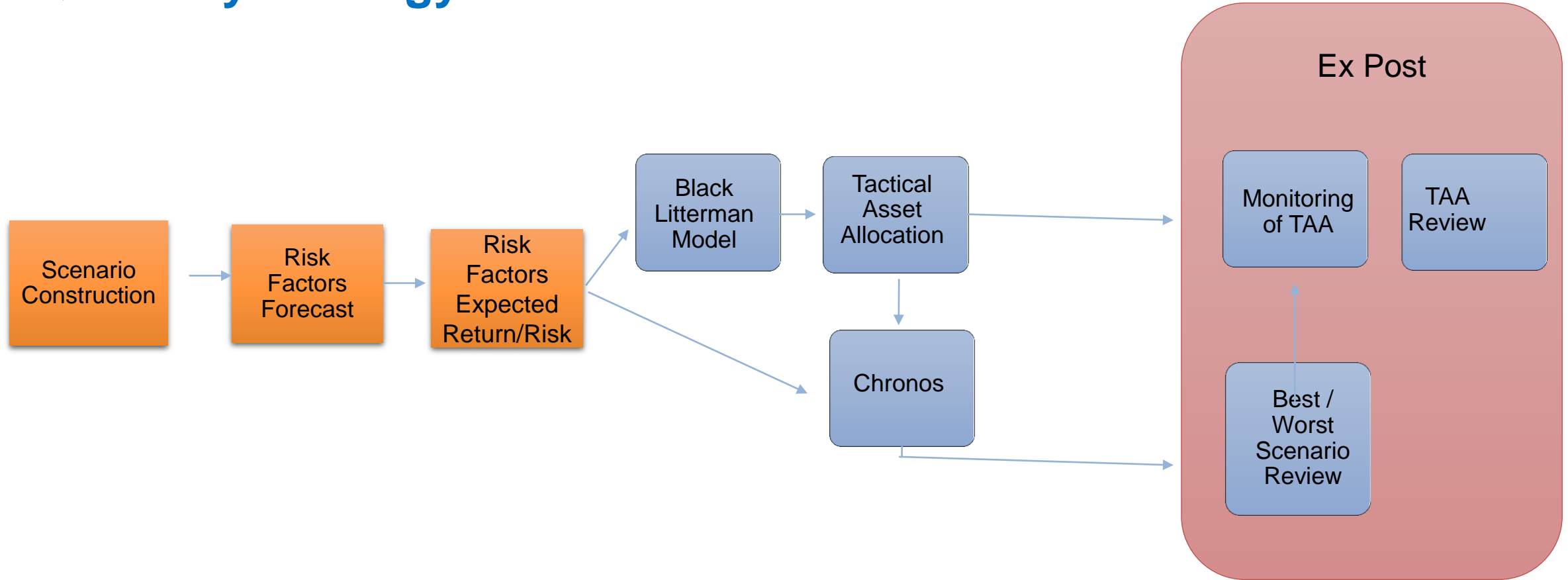
## 2. Active Asset Management Process





# 2. Active Asset Management Process

## Quarterly Strategy Process



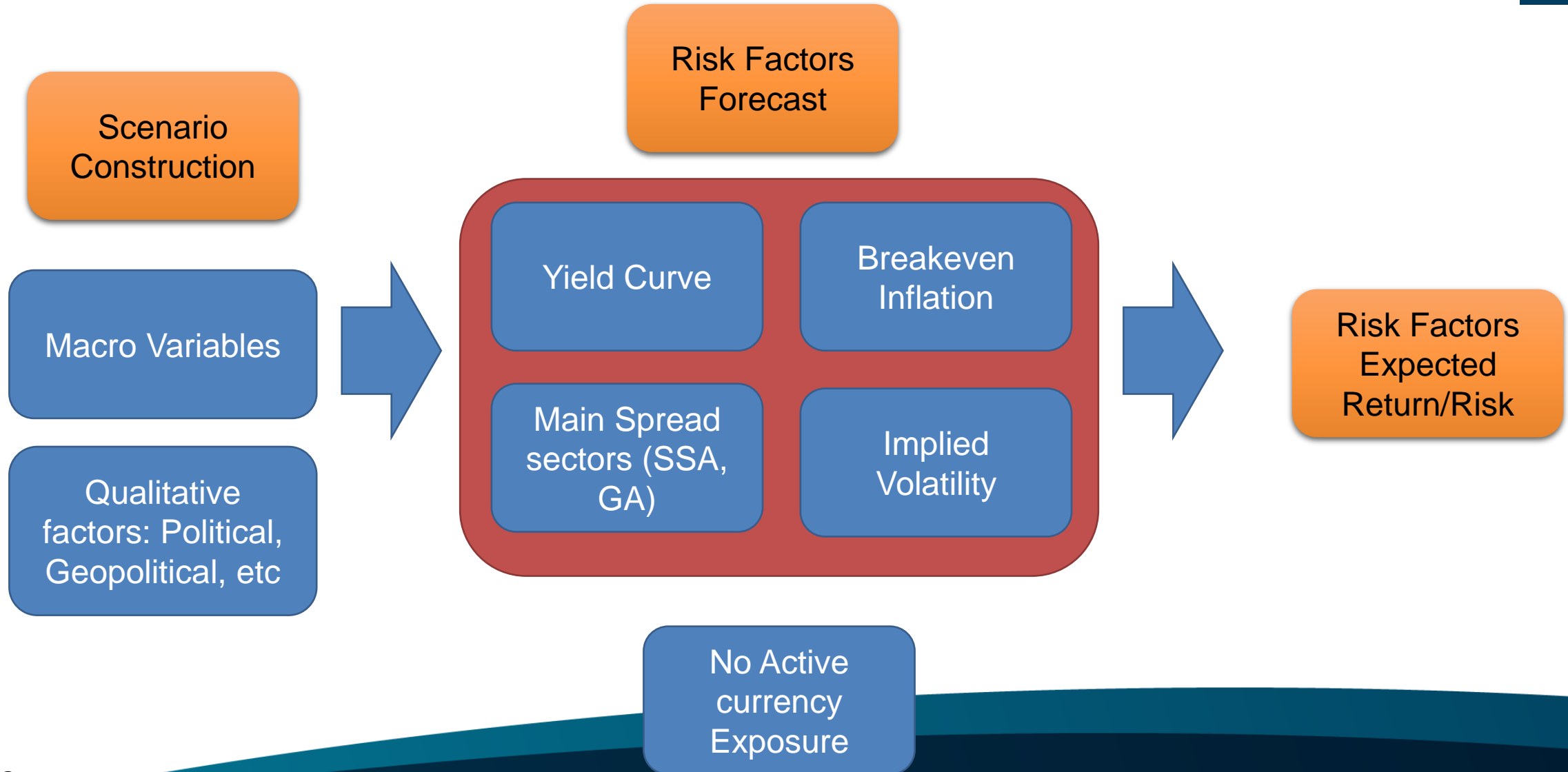


# **3. Tools for Active Asset Management**



# 3. Tools for active asset management

## Forward Looking Approach





# 3. Tools for Active Asset Management

## Implied Curve Expectations (ICE) Model

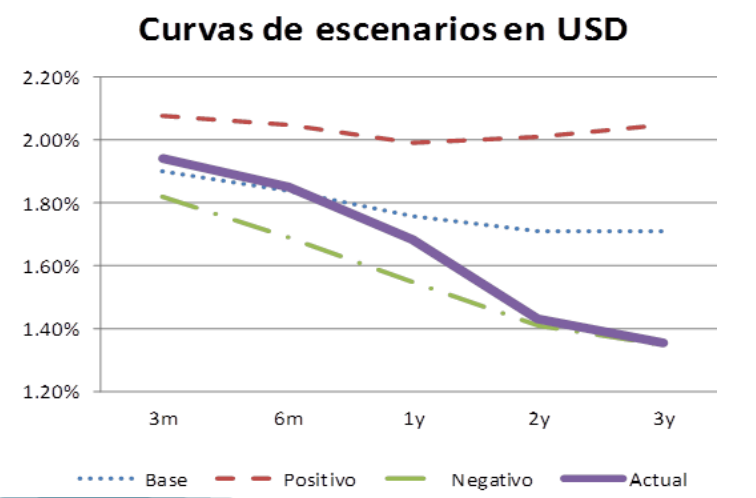
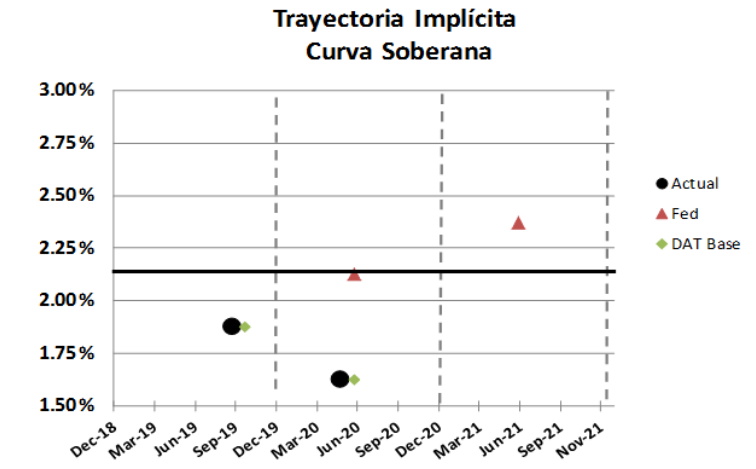
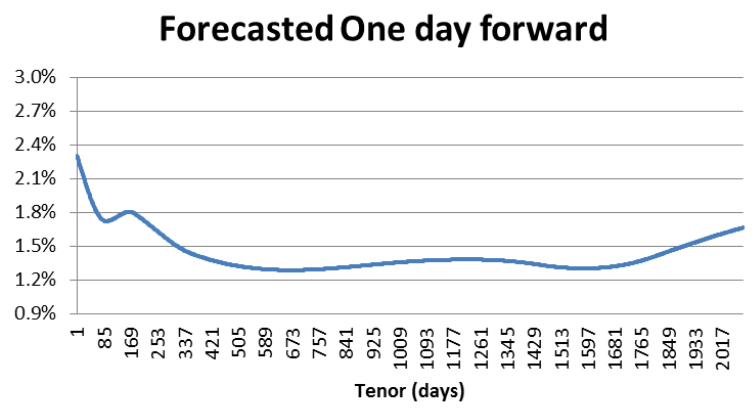
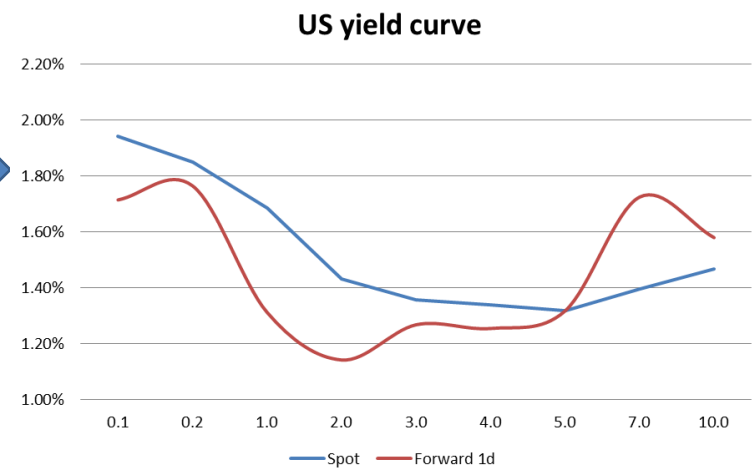
ICE

Implied market pricing

How many hikes or cuts the market (sovereign yield curve) is actually pricing, based on an implied 1 day forward curve

Reverse engineering

Turn our views into monetary policy forecasts by extrapolating the entire yield curve





# 3. Tools for Active Asset Management

## Black Litterman Model

### Risk Factors Exposure

- USD**  
UST rates  
AG/SSA spreads  
Breakeven
- GBP**  
Gilt rates  
SSA spreads
- CAD**  
Govt rates  
Prov/SSA spreads
- AUD**  
Govt rates  
SSA Spreads

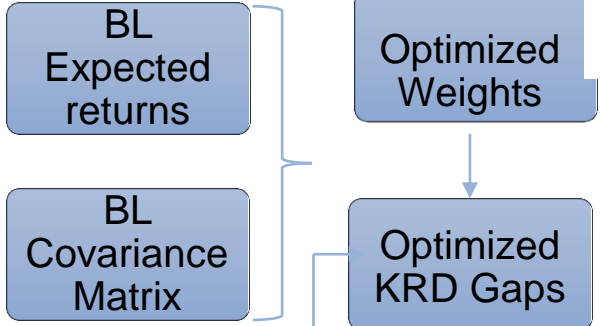
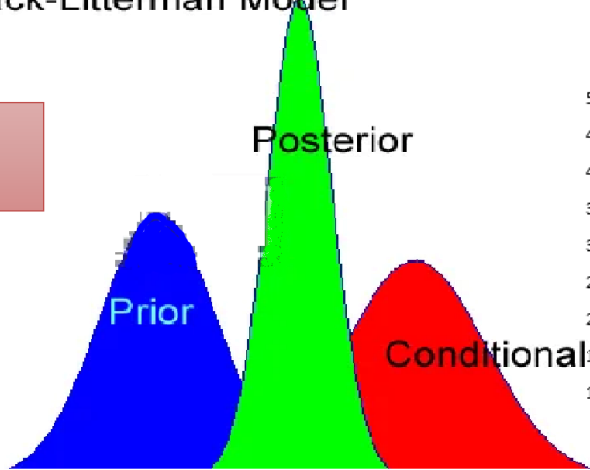
### Forward Looking Approach

Set of Views:  
Forecast of Proxy Risk Factors Securities  
(Conditional)

Securities Profiles:  
(Prior)

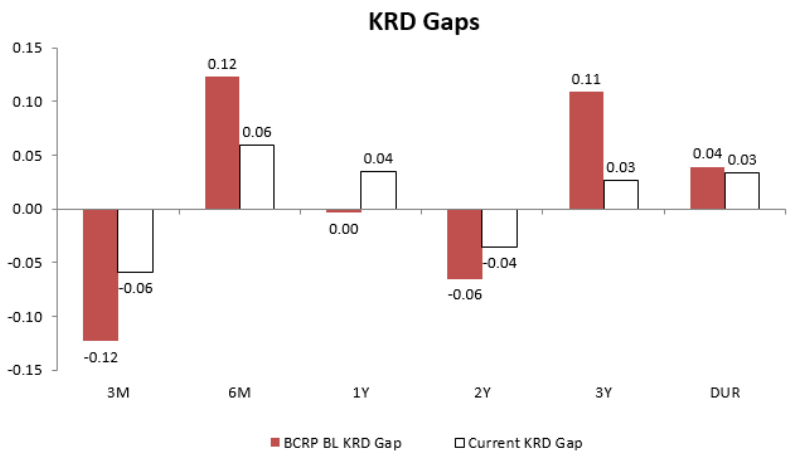
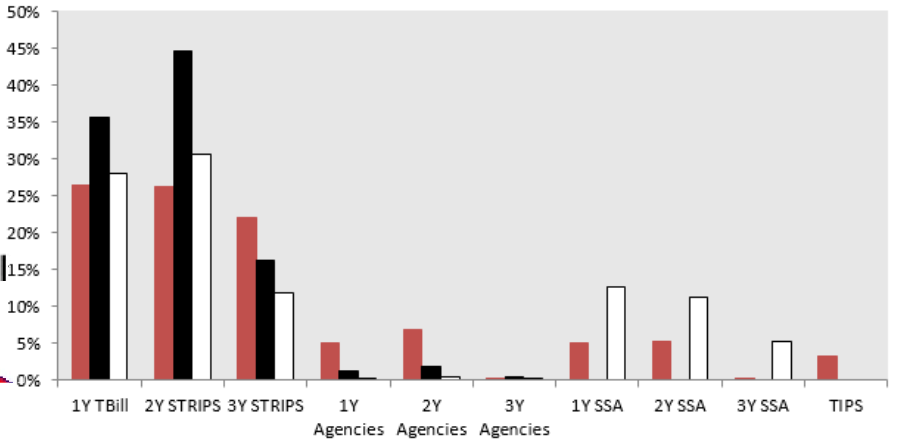
Ex Ante historical implied Expected Return / Covariance Matrix

Black-Litterman Model



Posterior

Weights



# 3. Tools for Active Asset Management



## Cronos

### Full Valuation Approach

- We project the cash flows of our investment portfolio in order to discount them using their corresponding curve (Treasuries, sovereign bonds, government agencies, SSAs, TIPs, callable bonds, etc.)
- Projection of the value of the different currencies portfolios for the next quarter.

### Performance Attribution Forecast

- Calculation of the main alpha contributing factors of the projected portfolio value such as:
  - Carry
  - Duration/Price effect
  - Spread duration

### Stress Testing

- This tool basically takes the ICE model forecasted rates as an input, but it can incorporate any shock the user wants to test by shocking the initial yield curves and spreads.
- That way, we can assess the performance of our portfolios in different and extreme scenarios.

## Scenario Analysis Internal System

Resultados del análisis de escenarios (cifras trimestrales)					
Portafolio	Escenario	Alfa	Carry	Curva	Spread+Residuo
USD	Base	1.09	1.77	0.58	-1.25
	Negativo	-0.93	0.91	1.64	-3.48
	Positivo	4.43	3.05	-0.31	1.68
GBP	Base	3.31	3.99	-0.24	-0.44
	Negativo	-2.08	3.99	-0.56	-5.50
	Positivo	2.59	3.99	1.09	-2.49
CAD	Base	4.33	3.12	1.48	-0.26
	Negativo	-2.05	3.06	2.62	-7.74
	Positivo	3.33	3.78	-0.01	-0.44
AUD	Base	3.94	4.99	0.07	-1.13
	Negativo	-4.20	2.22	0.43	-6.85
	Positivo	8.86	5.98	-0.04	2.93



# 3. Tools for Active Asset Management

## Weekly monitoring of the strategy

Monitoring

Impact of macroeconomic variables

Interest rate levels

Slope of the curve

Spreads

Internal Rate Light System



USD - Remuneración mensual (sorpresa)

-0.89      -0.10      0.10      0.10      0.92

Impact of financial variables

S&P Financial Sector

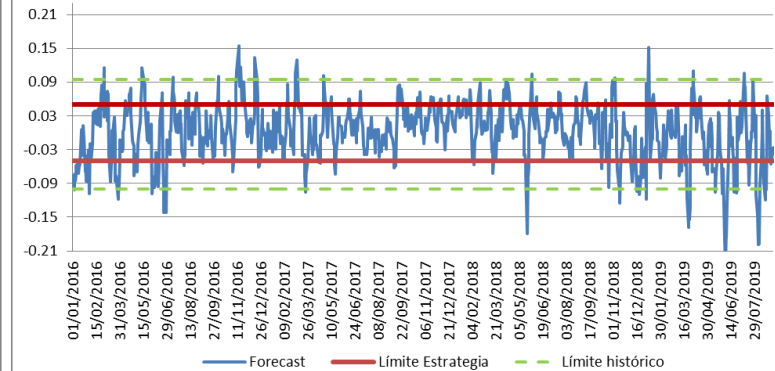
Economic Surprise

Option Volatility Estimated Index

Chicago Board Options Exchange Volatility Index (VIX)

Internal Risk Aversion Indicator

Modelo indicadores volatilidad (rezagos: -1)







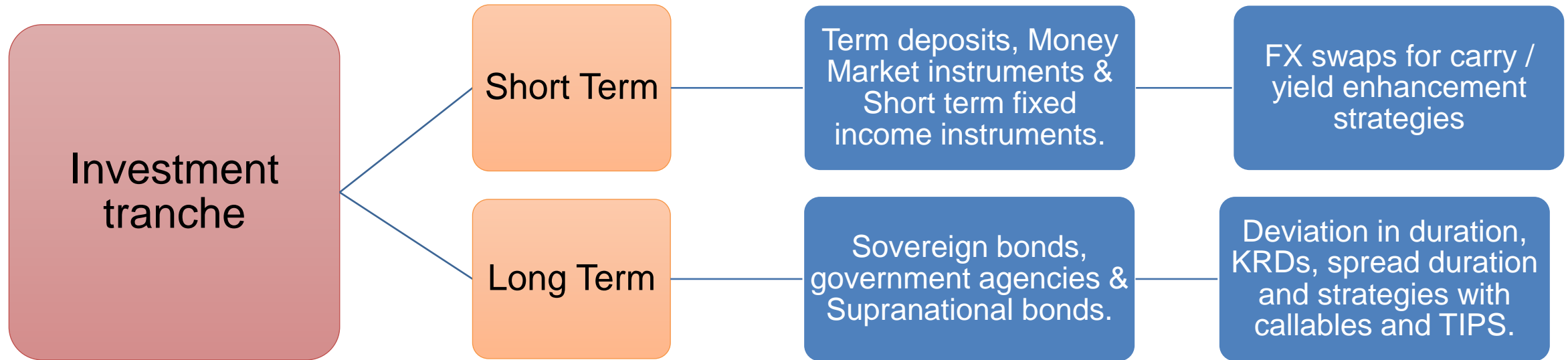
# 4. Main Alpha Generating Strategies



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## Asset allocation

A tactical deviation is proposed based on the allowed exposures by our Investment Guidelines: Duration, yield curve positioning, spread duration, inflation linked and embedded option bonds.

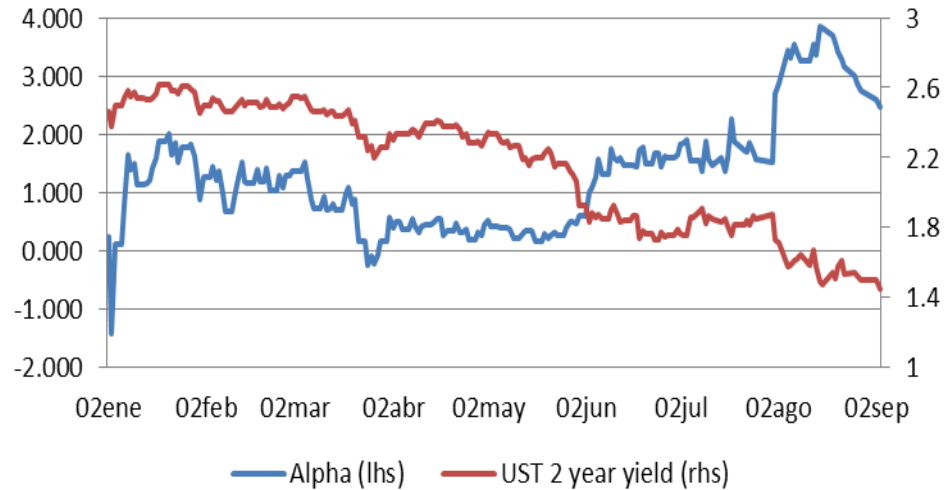


# 4. Main Alpha Generating Strategies

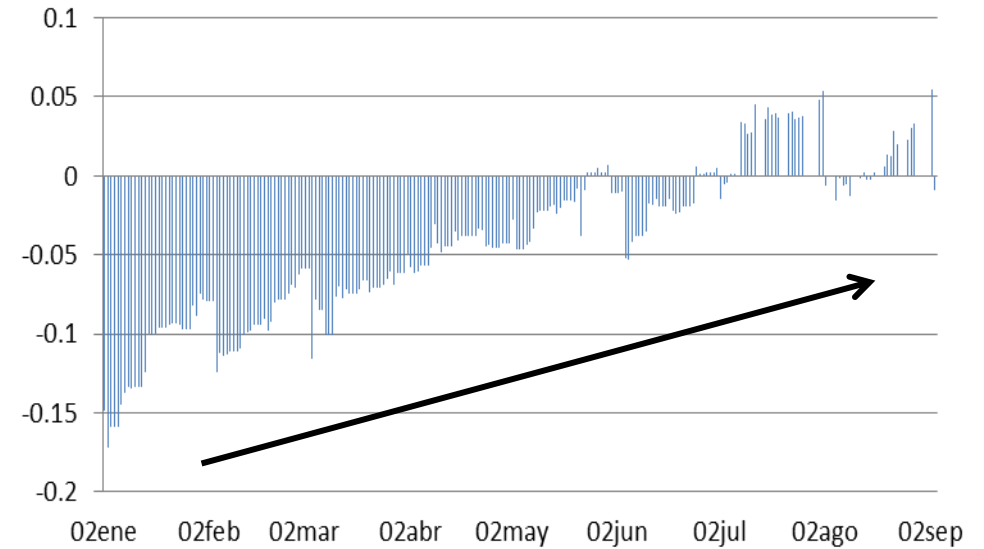


## Duration and KRDs

USD Investment tranche KRD alpha vs 2 year yields



USD Investment tranche duration gap

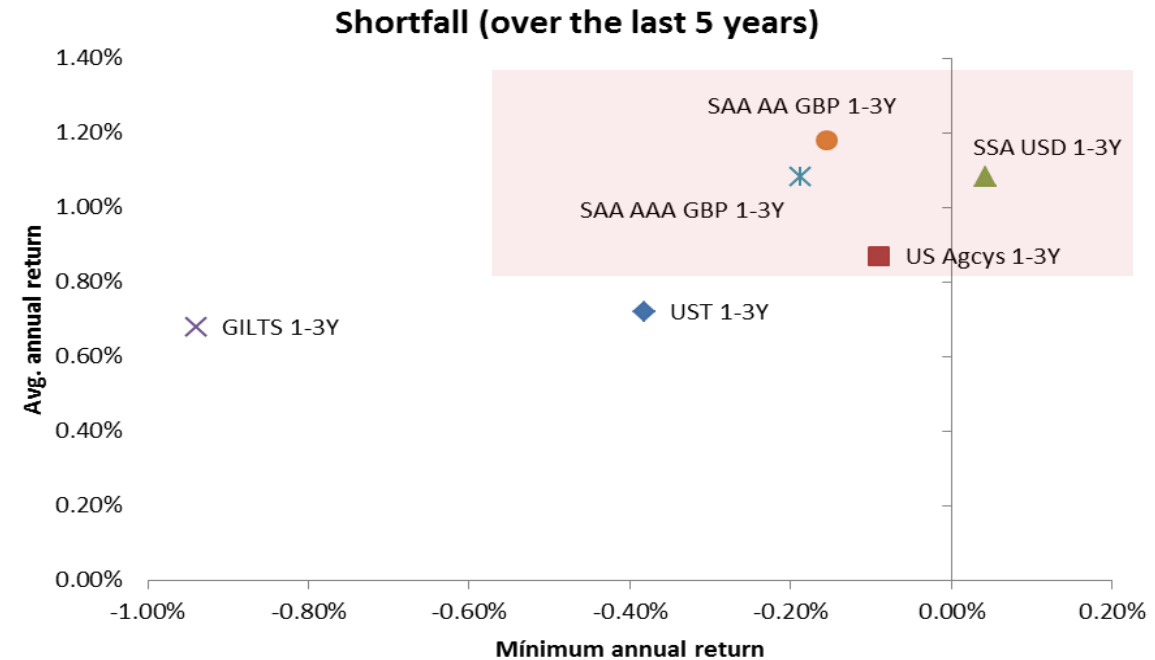
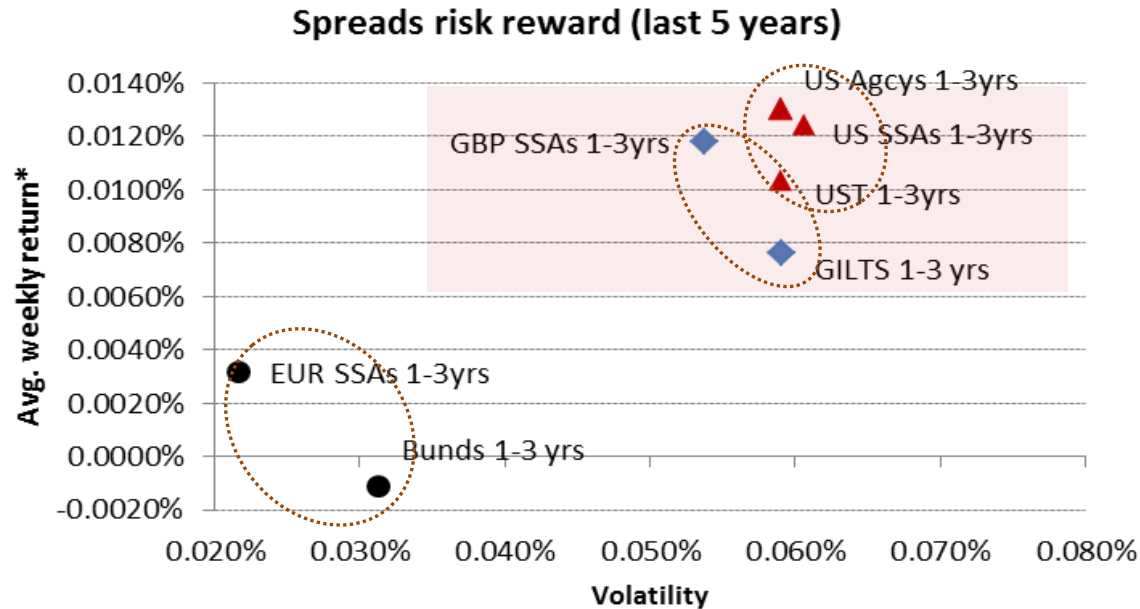


We manage our duration gap according to our expectations of UST yields and market momentum, so we have been systematically increasing our duration gap as we expected UST yields would keep decreasing.



# 4. Main Alpha Generating Strategies

## Spread instruments



\*Duration-adjusted weekly returns. Calculated using weekly data of BofAML Bond Indices. Volatility is the standard deviation of weekly returns

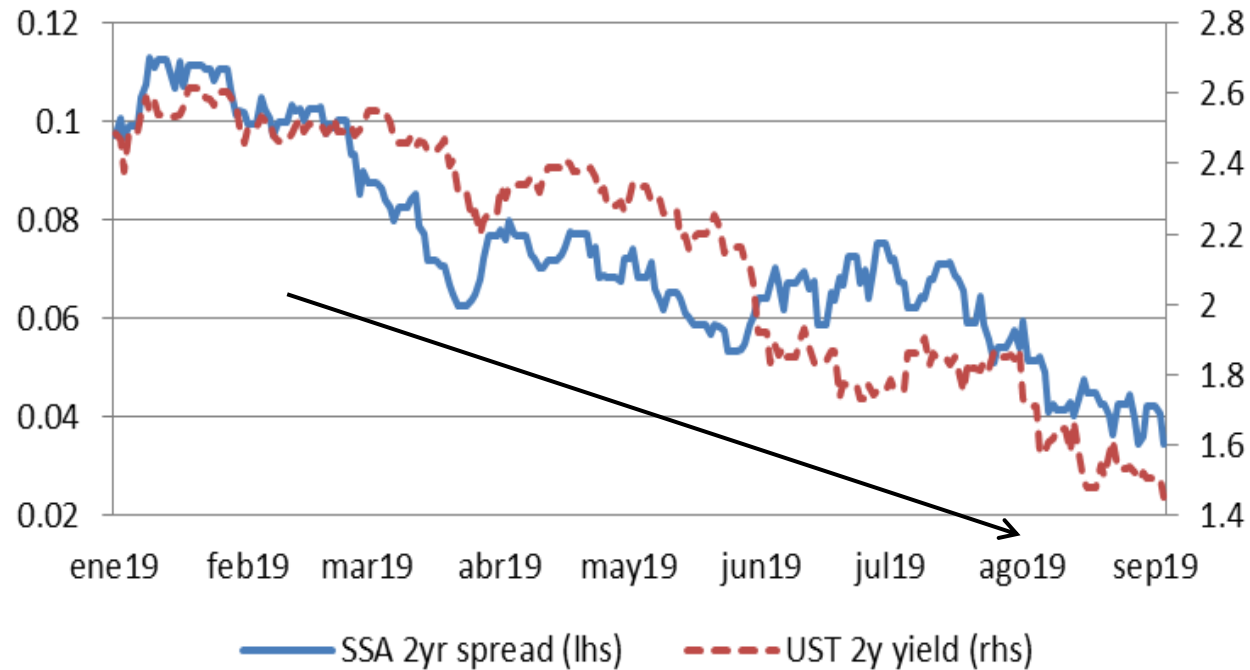
In different currencies, spreads have been an attractive investment. They have offered the highest reward for risk compared to government bonds.



# 4. Main Alpha Generating Strategies

## Spread instruments

### 2 yr SSA spread vs UST yields



SSA spreads did not widened even during the risk off events over the the lasts quarters, but instead continued to tighten even more.



**THANKS**