

Active Risk Allocation

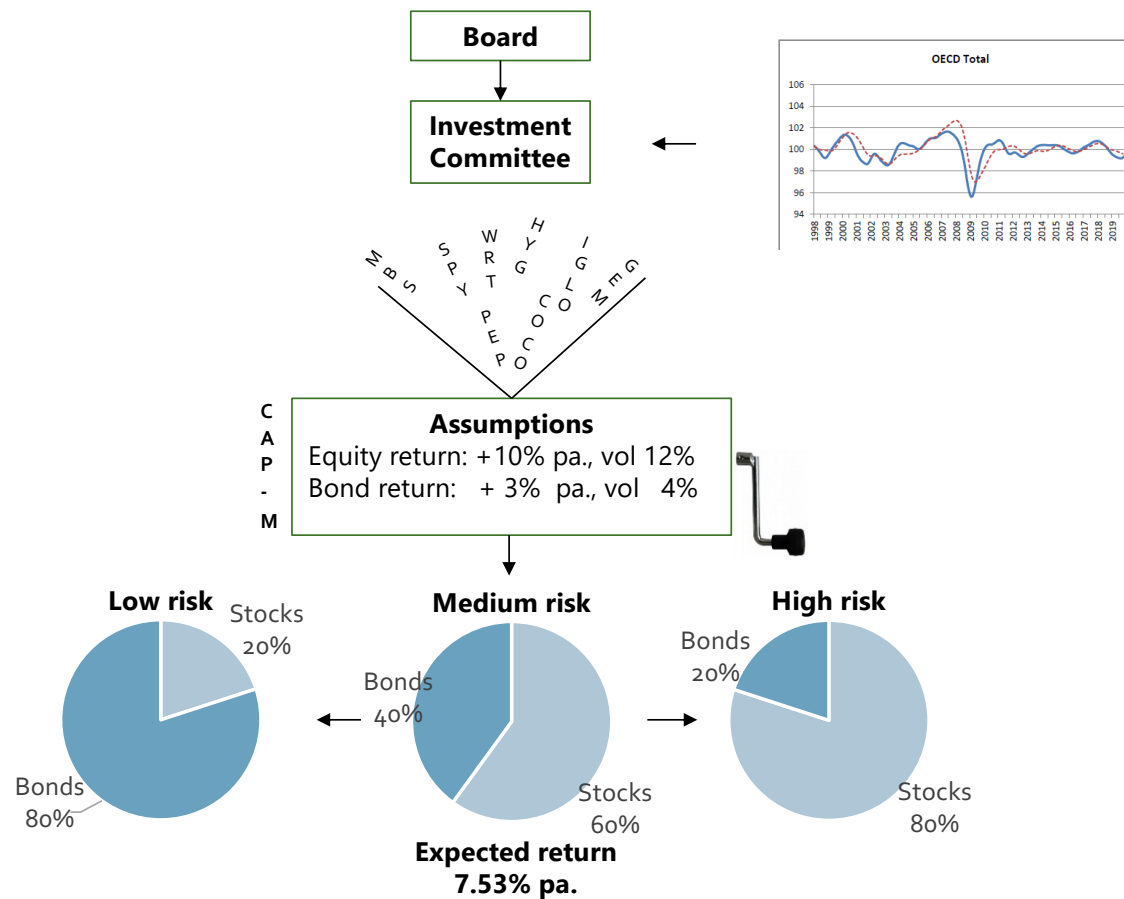
IR portfolio optimisation as per 31 October 2022





Modern Portfolio Theory

Version 1.01



Modern Portfolio Theory

Inconvenient facts

- Return forecast are always wrong
- Asset covariances are unstable
- Autocorrelation do exist
- Markets are not always efficient





Modern Portfolio

Targeting return vs Risk Management

The traditional way: Return targeting

- Based on **expectations** of future returns
 - Expectations are most often wrong
 - Fixed intervals for portfolio rebalancing
- Changes in risk/volatility not taken into consideration
- Assumes that assets move in stable patterns relative to each other
- In times of trend changes, portfolio is only rebalanced as trend estimates are revised

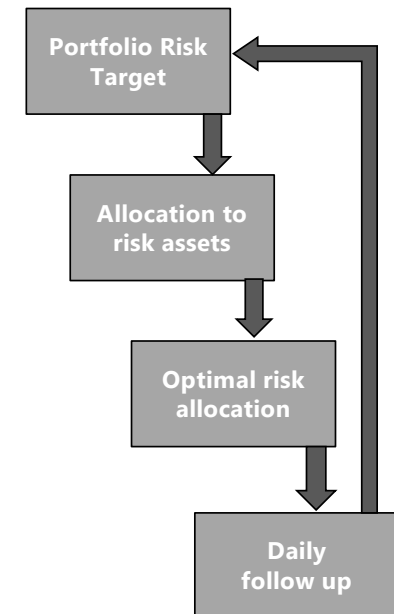
The ARA way: Volatility targeting

- Based on **existing** volatilities
 - No guesswork as the volatilities are available
 - Adaptive intervals for rebalancing determined by target volatility
- Adjusting to changes in risk
- Takes into consideration that correlation patterns change
- In times of trend changes, volatility changes force a portfolio rebalancing

ARA optimisation

Summary of process

- Decide on desired portfolio volatility band
 - 3.5-5%, 6-8% or 9-11% target
 - Depending on model input
- Allocate between risk assets and non-risk assets
 - Between 0 and 100% of portfolio may be allocated to risk assets
 - Depending on model input
- Calculate portfolio allocation
 - Allocating assets in a way that no asset class gives a too large risk contribution (almost Risk Parity)
 - Respecting overall volatility target
 - Respecting overall allocation target
- Daily follow up
 - Daily calculation of expected portfolio volatility
 - Daily supervision of OMRI and portfolio risk allocation
 - Corrective action if necessary





ARA optimisation

IR Benchmark (baseline)

Approximately a 60/40

IR Medium risk model portfolio

Name	Class	Mid	ETF Proxy
IR Basis		25	Composite
	Aktier-EU	60	XSX6 DE
	Bonds-EU GOV	10	XGLE DE
	Bonds-DK MBS	10	Nyk dmb Composite
	Bonds-HY	15	IHYG DE
	Cash	5	XEIN:GR
IR Favoritter/IR Danske Aktier	Aktier-DK	25	BIKF DC
IR Vækstlande	Aktier-GEM	20	BRIC LN
IR Erhverv	Bonds-HY	10	IHYG DE
IR Højrente	Bonds-HY	15	EMBE LN
Danske obligationer	Bonds-DK	5	NYK DMB Composite
		100	



ARA optimisation

Performance

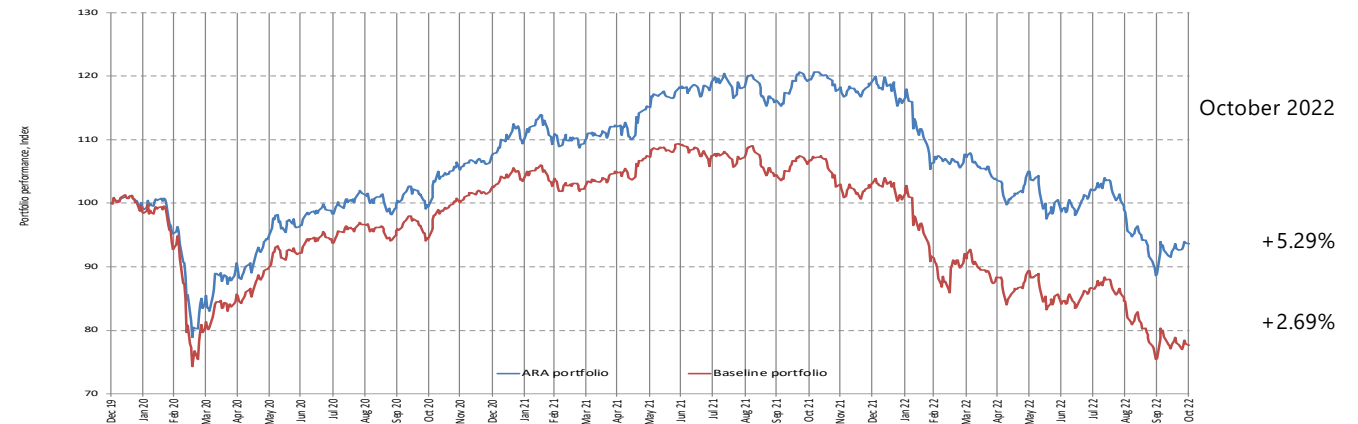
IR optimised vs Baseline

Performance structurally challenged
*);

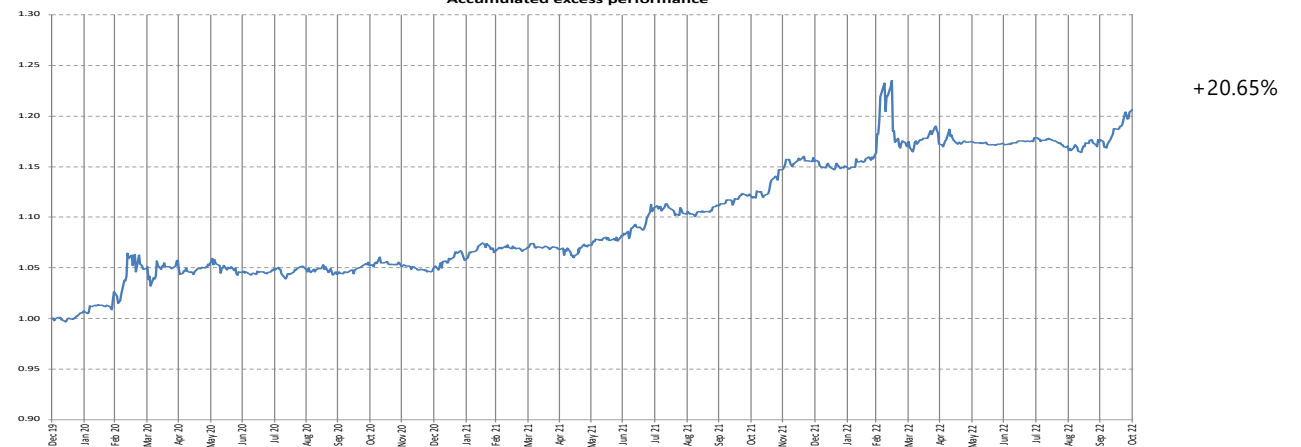
- as choice of assets correlate
- benchmark deviate from peers
- when US stocks outperform
- when USD strengthen

*) Ref. analysis of 25.11.2021

Baseline portfolio vs ARA portfolio



Accumulated excess performance

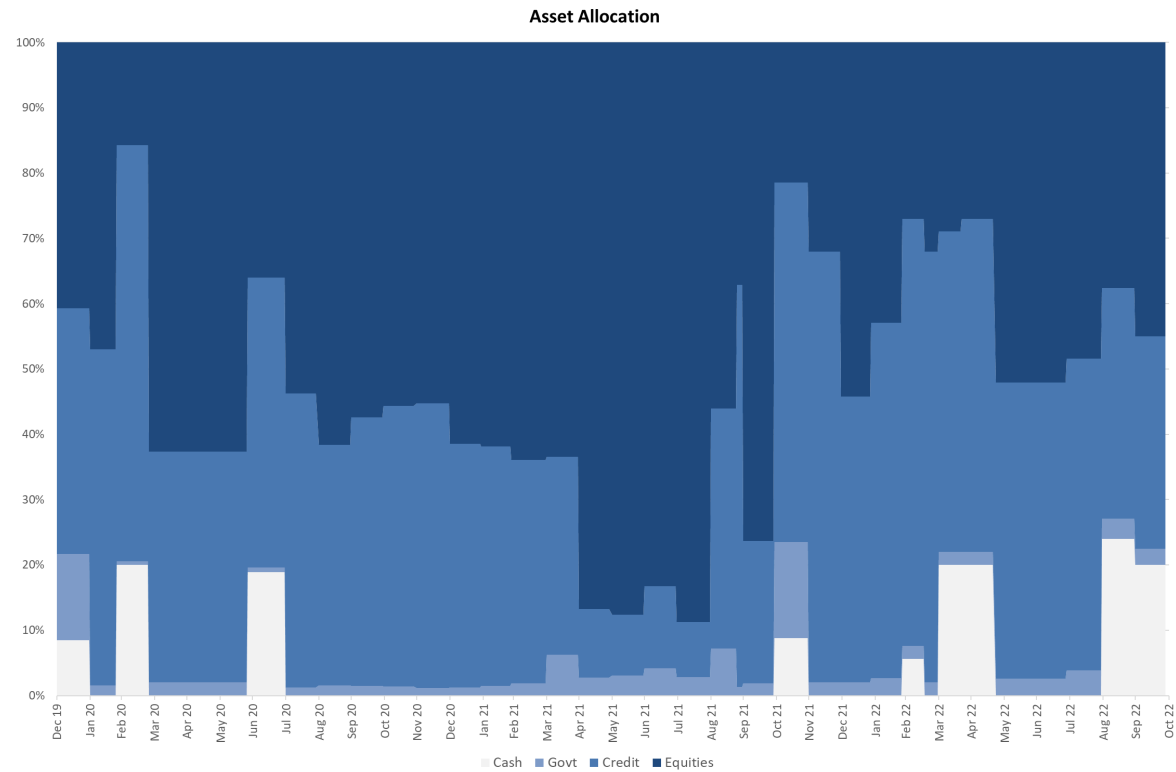




IR Asset Allocation - timeline

Asset diversification absent through 2022

OPRA limits risk allocation





ARA portfolio

November 2022

OPRA limits allocation to risk assets
All parameters are currently negative.

IR Medium risk model portfolio

Name	Limit used		Allocation	Change	Limit used	
	Minimum	Prior			Maximum	ETF proxy
Cash		20%	20%	0%		Cash
IR Basis		25%	20%	-5%		Composite
IR Danmark		24%	20%	-4%		BIKF DC
IR Vækstlande		5%	0%	-5%		BRIC LN
IR Short Stoxx		0%	0%	0%		XSSX DE
IR Erhverv		15%	5%	-10%		IHYG DE
IR Højrente		5%	25%	20%		EMBE LN
DK DMB		6%	10%	4%		Nyk Composite
		100.0%	100%	0%		

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