# Macro / Decision Based Attribution

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# Sample Endowment Structure:

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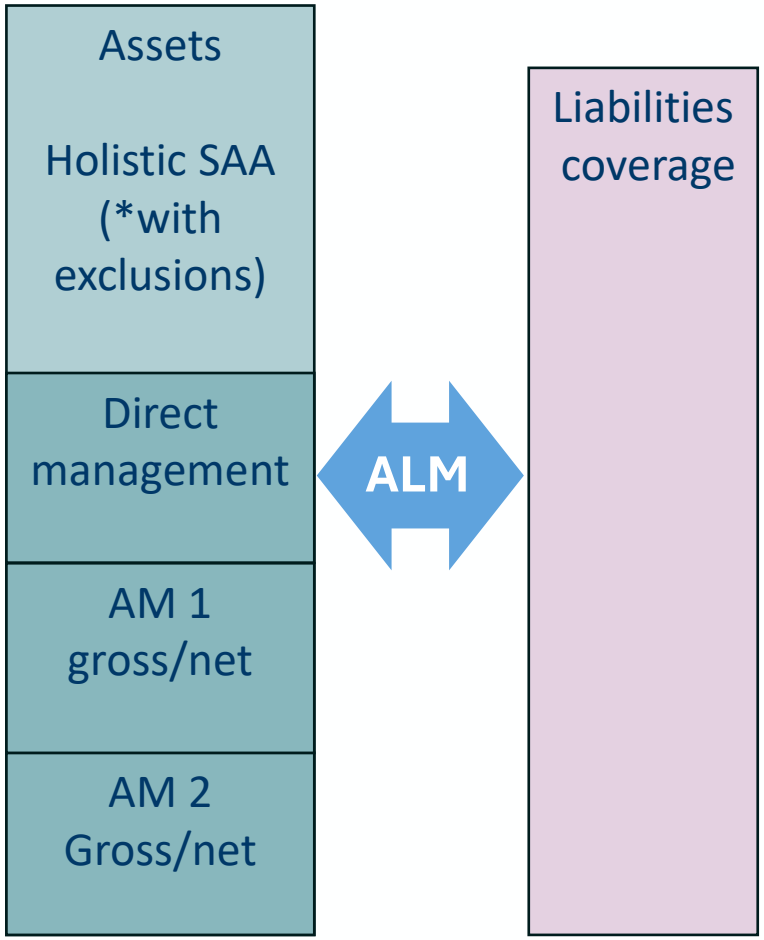
# Traditional Macro- or Decision-based Attribution

- Traditional ‘Macro attribution’: Modelling the impact of the fund sponsor’s (asset owner’s) decision-making process.
- Examples of types of macro decisions to be attributed:
  - Strategic Asset allocation
  - Tactical Asset allocation
  - Policy Exclusions or Concentrations
  - Style selection
  - Manager selection
  - Fee effects

# Client calls it “Investment Value Chain Analysis”




## Decision-Based Attribution needs to be simple enough for AO board consumption

| | | | Value Added | |
|---|---|---|---|---|
| Mandate Market Value Start | | 1,200,000,000 | % | $ |
| | Risk Free | | 0.2065 | 2,478,000 |
| | SAA | | 4.34567 | 52,148,040 |
| | SAA exclusions | | 0.621 | 7,452,000 |
| | Active Management | | -2.174 | -26,088,000 |
| | Expenses | | -0.005 | -60,000 |
| Mandate Market Value End | | 1,235,930,040 | | |
| | | Total return | 2.99417 | 35,930,040 |

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# CFA Definition of Macro Attribution

- Each decision-making level is treated as an investment strategy
- Each strategy (decision level) represents / can be thought of as a benchmark
- The absolute performance of each strategy (decision level) is compared to the cumulative performance of the previous strategy (decision level)
- The strategies (decision levels) are hierarchically ordered in terms of increasing volatility / risk and complexity.

## What is Macro Attribution trying to capture?

- Macro attribution calculates the incremental contribution that the choice to move to that strategy produces
- How much did each of the decision-making levels contribute to the Fund's change in value over an evaluation period?

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# CFA Definition of Macro Attribution

Increasing Risk

| | | | |
|---|---|---|---|
| Strategy 1 | Net Cashflows | Assume net cash inflows earns 0% return | Return = 0% or Net Cashflows |
| Strategy 2 | Risk Free Asset | Added benefit of investing in risk free asset | Return = Return on Risk Free Asset – Net Cashflows |
| Strategy 3 | Asset Categories | Added benefit of passive investment in market benchmarks at policy weights | Return = Return on Asset Categories – Return on Risk Free Asset |
| Strategy 4 | Benchmarks | Added benefit of passive investment in mandate benchmarks at policy weights (e.g., restrictions) | Return = Return on Benchmarks – Return on Asset Categories |
| Strategy 5 | Investment Management | Added benefit of active investment at policy weights | Return = Return on Investment Management – Return on Benchmarks |
| Strategy 6 | Allocation Effects | Added benefit of allocating funds at weights different to policy weights | Return = Actual Return – Return on Investment Management |

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# Out Client's Requirements:

To report contributions of different decisions in the investment value chain:

1. Return from liability replicating portfolio
2. Return from target SAA (market benchmarks at target weights)
3. Return from target SAA with ESG exclusions (market benchmarks at target weights)
4. Return from active management split into gross and expenses

--> The return contributions should be simply additive for ease of interpretation

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# Client Requirements

| | | | |
|---|---|---|---|
| Strategy 1 | Immunization Portfolio | **Assume return of immunization portfolio** | **Contribution = return of immunization portfolio** |
| Strategy 2 | SAA | **Added benefit of passive investment in market benchmarks at policy weights** | **Contribution = Return on SAA – Return on Immunization Portfolio** |
| Strategy 3 | ESG | **Added benefit of passive investment in ESG exclusion benchmarks at policy weights** | **Contribution = Return on ESG – Return on SAA** |
| Strategy 4 | Gross Asset Management | **Added benefit of active investment** | **Contribution = Actual Gross Return** |
| Strategy 5 | Expenses | **Added loss due to cost of active management** | **Contribution = Actual Net Return – Actual Gross Return** |

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# Comparison

| CFA | | Client | |
|---|---|---|---|
| Net Cashflows | Assume net cash inflows earns 0% return | Immunization Portfolio | Assume return of immunization portfolio |
| Risk Free Asset | Added benefit of investing in risk free asset | SAA | Added benefit of passive investment in market benchmarks at policy weights |
| Asset Categories | Added benefit of passive investment in market benchmarks at policy weights | ESG | Added benefit of passive investment in ESG exclusion benchmarks at policy weights |
| Benchmarks | Added benefit of passive investment in mandate benchmarks at policy weights | Gross Asset Management | Added benefit of active investment |
| Investment Management | Added benefit of active investment at policy weights | Expenses | Added loss due to cost of active management |
| Allocation Effects | Added benefit of allocating funds at weights different to policy weights | | |

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# Our Solution Requirements

All asset owners do not follow the same decision process

- need to allow for flexible number of decisions to correctly capture the investment process
- need to allow for user definable names for each decision
- need to allow any definition of a decision to accurately reflect the asset owner's investment process

The output needs to be easy to understand:

- additive
- return (%) and value metric ($, £, €)

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# Our Proposed Solution

- Users can define their decision by simply assigning a portfolio or benchmark to reflect the return earned at each decision
- Users can define the calculation of the value add for each decision by setting the type to one of the following:
    - **Incremental Return:** Value Add = Return of a specified portfolio, benchmark or risk free rate – Return of previous decision (strategy one level higher)
    - **Residual:** Value Add = Portfolio Return – Sum of all other decision value add

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# Proposed Inputs

| Decision Order | Decision Name | Reference Type & Entity | Value Add Calculation |
|---|---|---|---|
| Decision 1 | *Custom text box (150)* | Choose type and then display existing entities<br>* Portfolio & Return Type<br>* Benchmark<br>* Risk Free Rate | Choice between:<br>* Incremental: Value Add = Decision 2 Return – Decision 1 Return<br>* Residual = Actual Return – sum of other decision returns |

## Other Inputs Required:

- Portfolio Return Type to decompose
- Arithmetic or Geometric

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# Sample of Proposed Solution Settings

| Decision Order | Decision Name | Reference Type & Entity | Value Add Calculation |
|---|---|---|---|
| Decision 1 | Immunization Portfolio | Portfolio = Immunization Portfolio<br>Return Type = Contribution Return | Incremental |
| Decision 2 | SAA | Benchmark = Blended SAA Benchmark | Incremental |
| Decision 3 | ESG | Benchmark = Blended ESG Adjusted Bmk | Incremental |
| Decision 4 | Gross Active Management | Portfolio = Aggregate A<br>Return Type = Gross Price | Incremental |
| Decision 5 | Expenses | Portfolio = Aggregate A<br>Return Type = Net Price | Incremental |

# Planned Output

| Investment Value Add Summary | Fund Value | Return | | Value Add | |
|---|---|---|---|---|---|
| | $m | % | $m | % | $m |
| Start Value | 2,252 | | | | |
| Cashflows | 2,321 | | 69 | | |
| Decision 1: Risk Free | 2,329 | 0.32 | 7 | 0.32 | 7 |
| Decision 2: Asset Categories | 2,340 | 0.79 | 18 | 0.48 | 11 |
| Decision 3: Benchmarks | 2,342 | 0.92 | 21 | 0.13 | 3 |
| Decision 4: Active Management | 2,352 | 1.37 | 31 | 0.45 | 10 |
| Decision 5: Allocation Effects | 2,353 | | | 0.04 | 1 |
| End Value | 2,353 | 1.41 | 32 | 1.41 | 32 |


## Table:

- Decision Name
- Decision Return %
- Decision Return Monetary
- Value Add %
- Value Add Monetary

## Chart:

- Waterfall

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# Feedback requested from participants

1. How many decisions is reasonable to support?
2. Terminology more commonly used: macro attribution vs decision based?
3. Is the full multi level brinson attribution framework also required for macro attribution?
4. Terminology for monetary value for benchmark return? We're thinking "implied benchmark p&l"
5. Are their any regulatory reporting requirements?