Two separate decisions for a diversified multi-asset class portfolio includes:
- Asset allocation decision – translating the client’s goals & constraints into an appropriate portfolio.
- Implementation decision – determining specific investments

1. INTRODUCTION

Two separate decisions for a diversified multi-asset class portfolio includes:
- Asset allocation decision – translating the client’s goals & constraints into an appropriate portfolio.
- Implementation decision – determining specific investments

S.D = standard deviation

2. DEVELOPING ASSET-ONLY ASSET ALLOCATION

• MVO requires 3 inputs: i) returns, ii) risks and iii) related assets’ pairwise correlations.
• Risk-adjusted exp. return = U_m = E (R_m) – 0.005 λ σ_m
• Common Constraints are ‘budget constraint’ & ‘no negative or short position’.
• To estimate risk aversion, determine investor’s risk preference & risk capacity
• ‘Global min. variance portfolio’, has the lowest risk & is located at the far left of the efficient frontier.
• ‘Max. expected return portfolio’ is the portfolio at the far right of the frontier. If no constraints, the max. exp. return portfolio allocates 100% in the single asset with the highest expected return.
• MVO is a single-period framework

• MVO requires 3 inputs: i) returns, ii) risks and iii) related assets’ pairwise correlations.
• Risk-adjusted exp. return = U_m = E (R_m) – 0.005 λ σ_m
• Common Constraints are ‘budget constraint’ & ‘no negative or short position’.
• To estimate risk aversion, determine investor’s risk preference & risk capacity
• ‘Global min. variance portfolio’, has the lowest risk & is located at the far left of the efficient frontier.
• ‘Max. expected return portfolio’ is the portfolio at the far right of the frontier. If no constraints, the max. exp. return portfolio allocates 100% in the single asset with the highest expected return.
• MVO is a single-period framework

• outcomes are sensitive to small Δ in inputs.
• highly concentrated asset classes.
• focuses on the mean and variance of returns only.
• may fail to properly diversify the sources of risk.
• does not consider the economic exposures of liabilities.
• not useful for multi-period objectives.
• does not take into account trading/rebalancing costs and taxes.

2.1 MVO Overview
2.2 Monte Carlo Simulation
2.3 Criticisms of MVO
2.4 Addressing the Criticisms of MVO
2.5 Allocating to Less Liquid Asset Classes
2.6 Risk Budgeting
2.7 Factor-Based Asset Allocation

• finding optimal risk budget to maximize return per unit of risk.

Some key computations for risk budgeting:
- Marginal contribution to risk (MCTR_i) = (Beta of Asset Class i relative to Portfolio) x (Portfolio S.D)
- Absolute contribution to risk (ACTR_i) = Asset class weight_i x MCTR_i
- Portfolio S.D = Sum of ACTR = Σ_i ACTR_i
- % contribution to total S.D = \frac{ACTR_i}{Portfolio S.D}
- Ratio of excess return to MCTR = \frac{(Expected Return−R_f)}{MCTR}

• is a statistical tool
• generates a no. of strategic asset allocations using random scenarios for variables such as: returns, inflation, time frame etc.
• delivers more realistic outcome
• helps to evaluate the strategic asset allocation for multi-period time horizon.
• incorporates effectively the effects of Δ in financial markets, trading or rebalancing costs & taxes.
• complements MVO by tackling the limitations of MVO.

Continued on Page 2

• is a statistical tool
• generates a no. of strategic asset allocations using random scenarios for variables such as: returns, inflation, time frame etc.
• delivers more realistic outcome
• helps to evaluate the strategic asset allocation for multi-period time horizon.
• incorporates effectively the effects of Δ in financial markets, trading or rebalancing costs & taxes.
• complements MVO by tackling the limitations of MVO.

Continued on Page 2
4. THE CARRY TRADE

- FX carry trade: it involves taking long positions in high yield currencies & short positions in low yield currencies (funding currencies).

- The idea behind this trade is that the high-yield currencies on avg. have not depreciated, & low yield currencies have not appreciated to the level predicted by IR differentials.

- During periods of low volatility, carry trades tend to generate +ve excess returns, (prone to significant crash risk in turbulent times).

- Valuation overlay approach to manage downside crash risks: high yieldeurs will be overweighted & low yielders will be underweighted when ER lie inside prescribed PPP bands.

4. DEVELOPING GOALS-BASED ASSET ALLOCATION

4.1 The Goals-Based Asset Allocation Process

Two essential parts of this process are:
1. creating portfolio module
2. matching each goal with suitable sub-portfolios.

- Advisors usually apply pre-established models that best serve the purpose.
- Different modules represent different features e.g. implied risk/return tradeoffs, liquidity concerns, eligibility of some asset-classes or strategies.

4.2 Describing Client Goals

- Distinguish b/w cash flow based-goals (for which cash flows are defined) and labeled goals (for which investor is unclear about the need).

- The advisor estimates the amount allocated for each goal and the asset allocation that will apply to that sum and then selects the suitable module.

4.3 Constructing Sub-Portfolios

- The overall asset allocation is aggregation of individual exposures.

- Because of constraints, the resultant frontier is not therefore, following concerns are crucial.
  i. Liquidity concerns
  ii. Non-normal return distribution
  iii. Include drawdown controls

- Regularly revise: modules & investor constraints

4.4 The Overall Portfolio

4.5 Revisiting the Module

- Time horizons are generally rolling concepts
- Portfolios, typically, outperform the discount rate and resultant excessive assets need rebalancing

4.6 Periodically Revisiting the Overall Asset Allocation Process in Detail:

- Managing more than one policy for each client,
- Handling portfolios on day-to-day
- Satisfying regulatory requirements of treating all clients equivalently

4.7 Issues related to the Goals-Based Asset Allocation

5. HEURISTICS AND OTHER APPROACHES TO ASSET ALLOCATION

Some other offhand techniques for asset allocation

- 120 minus your age rule
  120 minus age = equity allocation

- 60/40 stock/bond heuristic

- Endowment Model or Yale model allocates large portion to non-traditional investments (private equity, real-estate)

- Risk Parity (each asset class should contribute evenly to the overall portfolio risk). Mathematically:
  \[ w_i \times \text{Cov}(r_i, r_p) = \frac{1}{n} \sigma_p^2 \]

- The 1/N rule involves allocating equal % to each of (N) asset classes.

6. PORTFOLIO REBALANCING IN PRACTICE

<table>
<thead>
<tr>
<th>Factors &amp; their relation with corridor width</th>
<th>Effect on optimal width of corridor (all else equal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction costs</td>
<td>↑ transsaction cost, wider the corridor</td>
</tr>
<tr>
<td>Risk tolerance</td>
<td>↑ risk tolerance, wider the corridor</td>
</tr>
<tr>
<td>Correlation with the rest of the portfolio</td>
<td>↑ correlation, wider the corridor</td>
</tr>
<tr>
<td>Volatility of the rest of the portfolio</td>
<td>↑ volatility, narrower the corridor</td>
</tr>
</tbody>
</table>