



Portfolio & Risk Management

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The
Investor's
Association
@ NC State

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Agenda

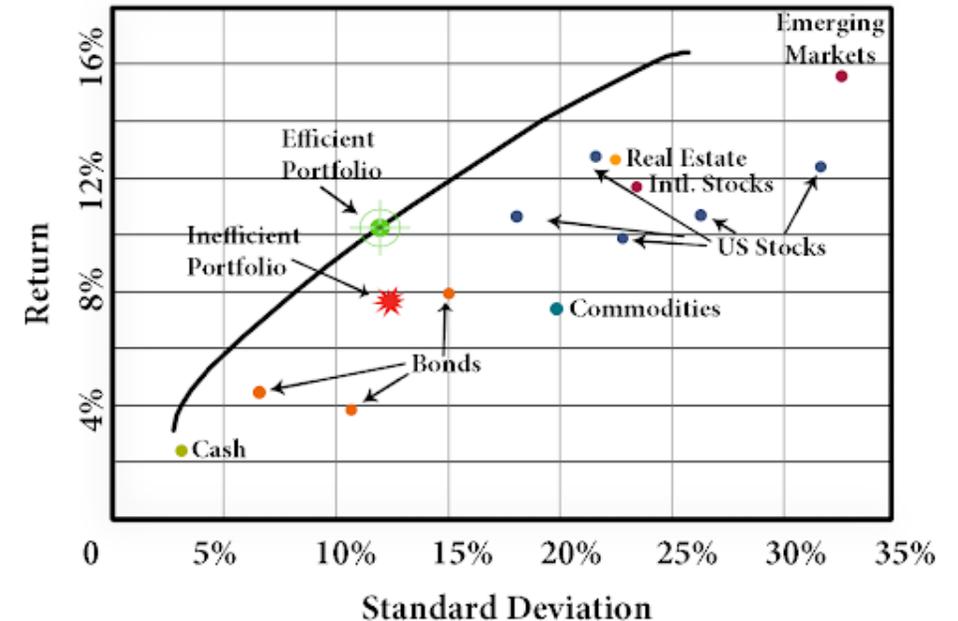
1) Overview: Three Steps to Portfolio Management

1. Planning
 - a) Asset Allocation
 - b) Modern Portfolio Theory
2. Execution
 - a) Selection
 - b) Implementation
3. Feedback
 - a) Performance Monitoring and Rebalancing
 - b) Evaluation

2) Case Study: Example Portfolio Decisions

Portfolio Management

- Definition: An ongoing process for defining **investment objectives and constraints**, making **allocation** decisions, **creating a portfolio** of assets, **monitoring the performance** of the portfolio, and **periodically rebalancing** the portfolio to ensure compliance with objectives.
- Three elements: Planning, Execution, and Feedback.



Three Steps to Portfolio Management

The Chartered Financial Analyst (CFA) Institute recommends a three-step approach to portfolio management:

Step 1

Develop an Investment Policy Statement

- ✓ Outlines risks, investment goals, and constraints
- ✓ Focuses on short-term and long-term needs of the investor
- ✓ “Road Map” to understanding needs
- ✓ Periodically updated

Step 2

Execute the Investment Strategy

- ✓ Integrate expectations with Investment Strategies
- ✓ Results in a real portfolio of assets
- ✓ Selection problem – optimize assets efficiently for maximum returns at minimum risk

Step 3

Feedback and Review

- ✓ Performance monitoring
- ✓ Rebalancing to targets
- ✓ Manage ongoing exposures
- ✓ Performance measurement, attribution reporting, and returns appraisal

Step 1: Planning and Creating the IPS

Planning for Investments

1.A) Getting Started

- ✓ Identify that investing is right for you – e.g., Excess cash above required operations
- ✓ Evaluate and choose the right brokerage firm.
- ✓ Consider investment advisors and external managers.

1.B) Identify Objectives

- ✓ Risk Objectives: measurements, capacity, and willingness to absorb losses
- ✓ Return Objectives: measurement, required rates of return, and targeted returns.

1.C) Create the IPS

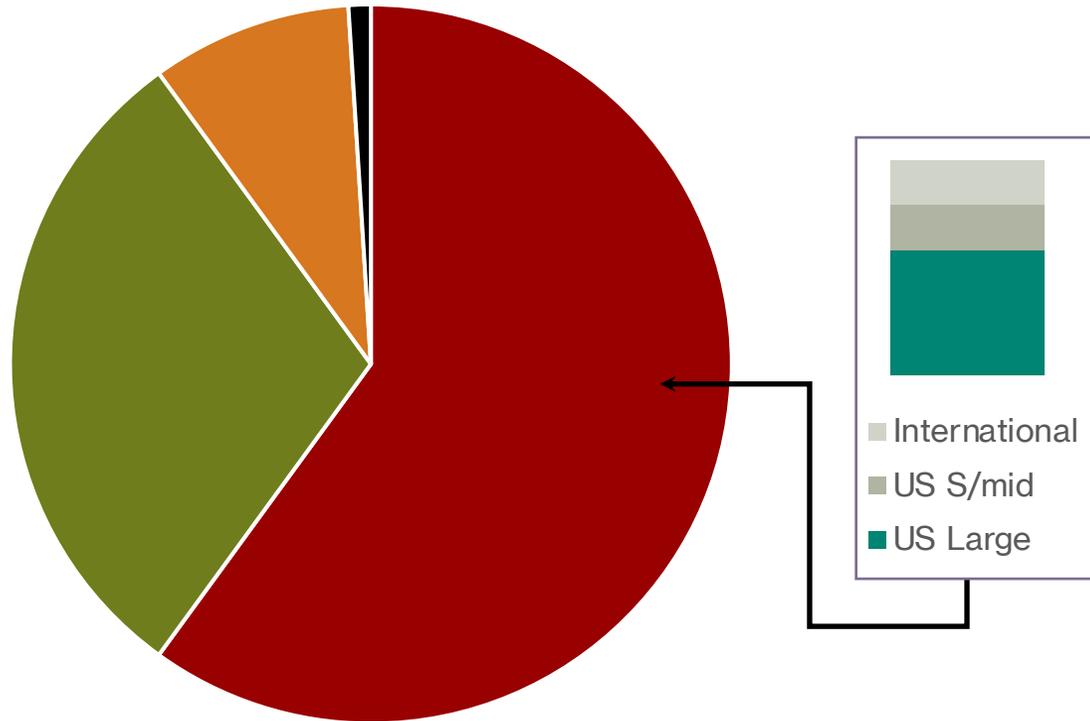
- ✓ Integrated summary of needs, preferences, and circumstances to guide further steps.
- ✓ Basis for critical asset allocation decisions.
- ✓ Defines the broad investment strategy.

1.D) Asset Allocation

- ✓ Defines exposures to major asset classes to satisfy the long-term objectives and constraints
- ✓ Quality Capital Market Outlooks
- ✓ Expectations of Risk and Return

Special Topic (A): Asset Allocation

Asset allocation is the single most influential factor in creating portfolio returns.



■ Equity ■ Fixed Income ■ Diversifying ■ Cash

- ✓ Make asset class allocation decisions based on expected returns and expected risk
- ✓ Risk-return tradeoff: increased returns at the expense of higher risks
- ✓ Longer investment horizons can generally hold larger allocations to riskier assets
- ✓ Asset class diversification provides “the only free lunch you’ll find in the investment game”
 - ✓ Less than perfect, positive correlation
 - ✓ Reduces the overall risk (variance) of the portfolio for an expected level of return
 - ✓ See: Modern Portfolio Theory

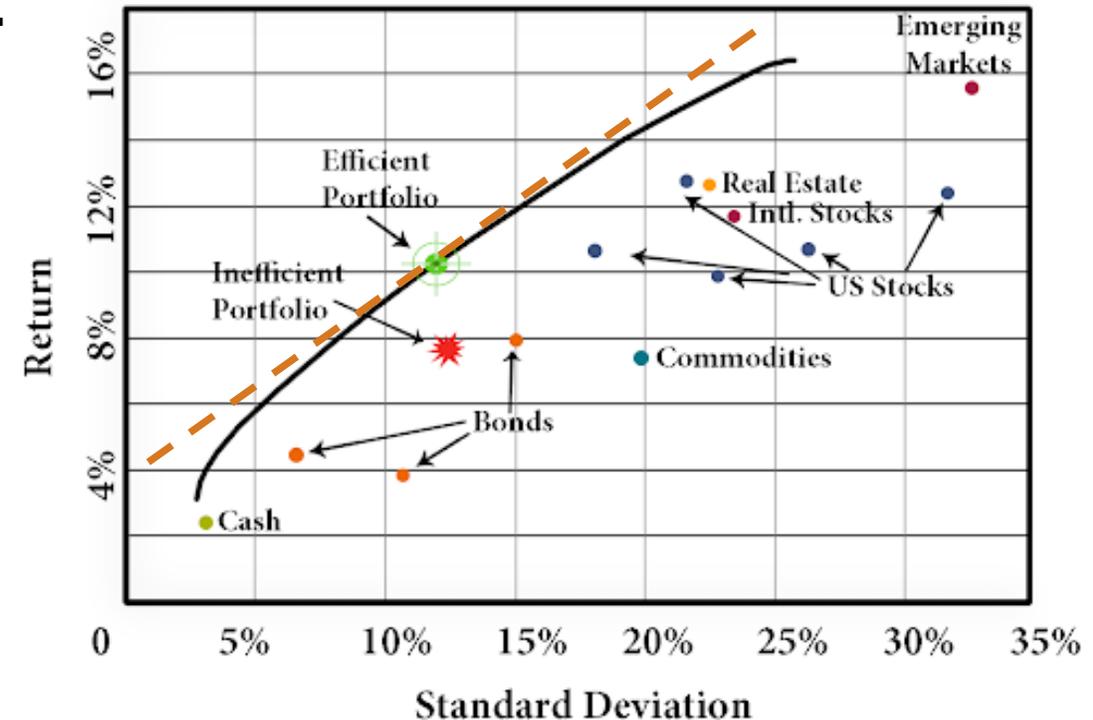
Special Topic (B): Modern Portfolio Theory

Markowitz shows us that groupings of portfolios are limited in risk/return tradeoffs by the “Efficient Frontier”

Rational investors seek minimal risk with maximum returns.

- ✓ The Efficient Frontier presents the boundary of portfolios with the lowest level of risk and volatility at which a target return can be achieved.
- ✓ Risks can be lowered with diversification across asset classes with less-than-perfect positive correlation.
- ✓ Return is less important than overall contribution to the portfolio, in terms of risk, return, and diversification.
- ✓ If observed return values are far away from the mean, the variance is higher and portfolio risk is higher.

Note: $E(R_{port})$ is the weighted average of all $E(R_{asset})$



Special Topic (B): Modern Portfolio Theory

Portfolios of assets with less than perfect, positive correlation reduce the overall variance in returns (risk).

Security A

Average Annual Return: 4.5%
 Average Std. Dev. Of Annual Returns: 3.2%

Security B

Average Annual Return: 15.2%
 Average Std. Dev. Of Annual Returns: 20.0%

In our portfolio, let's say we allocate 100% to Security A or Security B. We could expect risk and return identical to the respective above.

$$\begin{aligned} \text{Std. Dev. } (\sigma) &= \sqrt{\text{Var}} & \text{Cov}_{(a,b)} &= \rho_{(a,b)}\sigma_a\sigma_b \\ \text{Var} &= \sigma^2 \end{aligned}$$

Standard Deviation of a 2 Asset Portfolio:

$$\text{Var}_{P(a,b)} = w_a^2\sigma_a^2 + w_b^2\sigma_b^2 + 2w_a w_b \text{Cov}_{(a,b)}$$

Weighting each asset 50%, the standard deviation of the portfolio's expected return is:

$$\text{Var} = (50\%^2)(3.2\%^2) + (50\%^2)(20.0\%^2) + 0.208\%$$

$$\begin{aligned} \text{Var} &= 1.23\% \\ \sigma &= 11.11\% \\ E(R_p) &= 9.85\% \end{aligned}$$

Which reduces risk below the expected weighted average risk of 11.60%.

Now, assume the correlation coefficient (ρ) between these assets has a value of 0.65.

Step 2: Execute the Investment Strategy

Investment strategies are integrated with CMAs to build a portfolio of assets, designed to meet the target.

A) Portfolio Selection

- ✓ Strategy: Active or Passive? See IPS
- ✓ Completing Due Diligence
 - ✓ Quantitative screening
 - ✓ Investment team and organization
 - ✓ Manager's investment process
 - ✓ Historical Track Record*
- ✓ Portfolio optimization techniques to efficiently achieve risk/return objectives.

B) Implementation

- ✓ “Rubber-to-the-road”
- ✓ Trade execution: factor in transaction costs
- ✓ Poorly managed transaction costs can reduce performance and negate any advantage an investor might have.
- ✓ Purchase the assets you decided on in (2-A) to meet expected target asset class weightings.

Step 3: Feedback

Use feedback to manage ongoing exposures, ensuring that objectives and constraints are satisfied.

A) Monitoring and Rebalancing

- ✓ **Review IPS and Assets** for changes in:
 - ✓ Your (the investor's) circumstances
 - ✓ Changes in economic and market inputs
 - ✓ Changes in asset prices
- ✓ **Monitor risks** and adjust investment approach accordingly.
- ✓ Placing trades to “get back in line”
 - ✓ **Rebalances** usually occur at set intervals, e.g., quarterly, annually, etc.

B) Performance Evaluation

- ✓ Have I done a good job?
- ✓ Evaluate to assess progress toward achieving the investment objectives
- ✓ Benchmark of portfolio management skills
 - ✓ **Performance Measurement:** rates of return for the portfolio.
 - ✓ **Performance Attribution:** analyze rates of return on factors to explain returns
 - ✓ **Performance Appraisal:** how well did we perform?

Case Study

Making
Portfolio
Decisions

The Case:

Jim is a married 28-year-old FP&A Manager at a local manufacturing company. He has a one-year-old son, Jim Jr. His grandfather passed away about six months ago, who held a \$500k MetLife life insurance policy naming Jim as the beneficiary. Jim cashed the check from MetLife, and the funds have been sitting in a HYSA ever since. How should we go about creating a portfolio, based on the following facts?

The Facts:

- Investor Age: 28
- Financial acumen: 8/10
- Risk tolerance: Average
- Return preference: Average
- Savings goal: college fund for Jim Jr. and retirement
- Not considered an accredited investor under SEC Regulation D

Step 1: Create an IPS

- **Investor Description:** 28YO Corporate Finance manager looking to save for retirement and college expenses (tgt. 37 and 17 yrs, respectively) by using the proceeds of a life insurance settlement, investing in publicly traded asset classes.
- **Investment Goals:** The primary goal of the portfolio will be capital appreciation.
- **Responsibilities:** InvestCorp, the delegated portfolio manager, will be responsible for managing the portfolio under a duty of fiduciary care, and will provide accountability to the client on a quarterly reporting and annual review basis.
- **Asset Allocation:** The retirement-focused account (IRA) will pursue a growth strategy, and the college savings account (529) will pursue a moderate growth strategy.

Step 1: Create an IPS

Common Asset Allocation Strategies

Conservative



Asset Class	Allocation
Large Cap Equity	15%
Small Cap Equity	0%
International Equity	5%
Fixed Income	50%
Cash Investments	30%
Other	0%

Time Horizon: Under 3-5 years

- Want current income and stability
- Not concerned about increasing the value of your investments

“20/80”

Moderate Growth



Asset Class	Allocation
Large Cap Equity	35%
Small Cap Equity	10%
International Equity	15%
Fixed Income	35%
Cash Investments	5%
Other	0%

Time Horizon: Around 10 years

- Want solid growth with relative stability
- Current income is not the only goal
- Can tolerate some fluctuations but considerably less than overall stock market

“60/40”

Growth



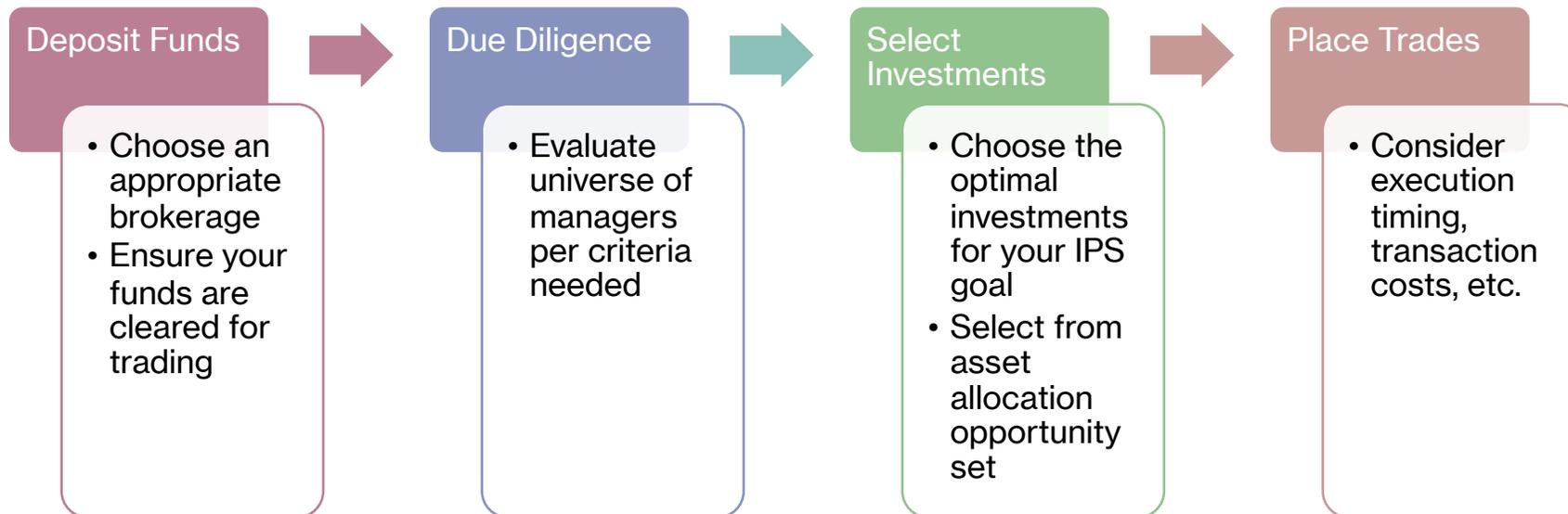
Asset Class	Allocation
Large Cap Equity	45%
Small Cap Equity	15%
International Equity	20%
Fixed Income	15%
Cash Investments	5%
Other	0%

Time Horizon: At least 10 years

- Most concerned about investments growing in value
- Don't need current income
- Have a good tolerance for risk, but want a portfolio with slightly less risk than the overall stock market

“80/20”

Step 2: Execute the Investment Strategy



Step 3: Feedback

- EOY review of IPS, personal goals, and investment opportunity set
- Monitoring risks: are any risk goals being breached?
 - If so, adjust the portfolio to reduce these risks
 - Rebalance to account for price fluctuations
- Evaluate Performance – how did we do, what caused the results, and was it good?
 - Managers should provide review documentation on a periodic basis

Sample Performance Attribution Report

Return Summary

Return Summary	
Portfolio Return	16.19
Benchmark Return	18.35
Active Return	-2.16

Active Return Attribution Summary

Active Return	-2.16	Interaction	-2.40
Allocation	-0.55		
Selection	0.78		
Currency	0.00		

