



Asset Allocation

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“Advancing Your Investments”



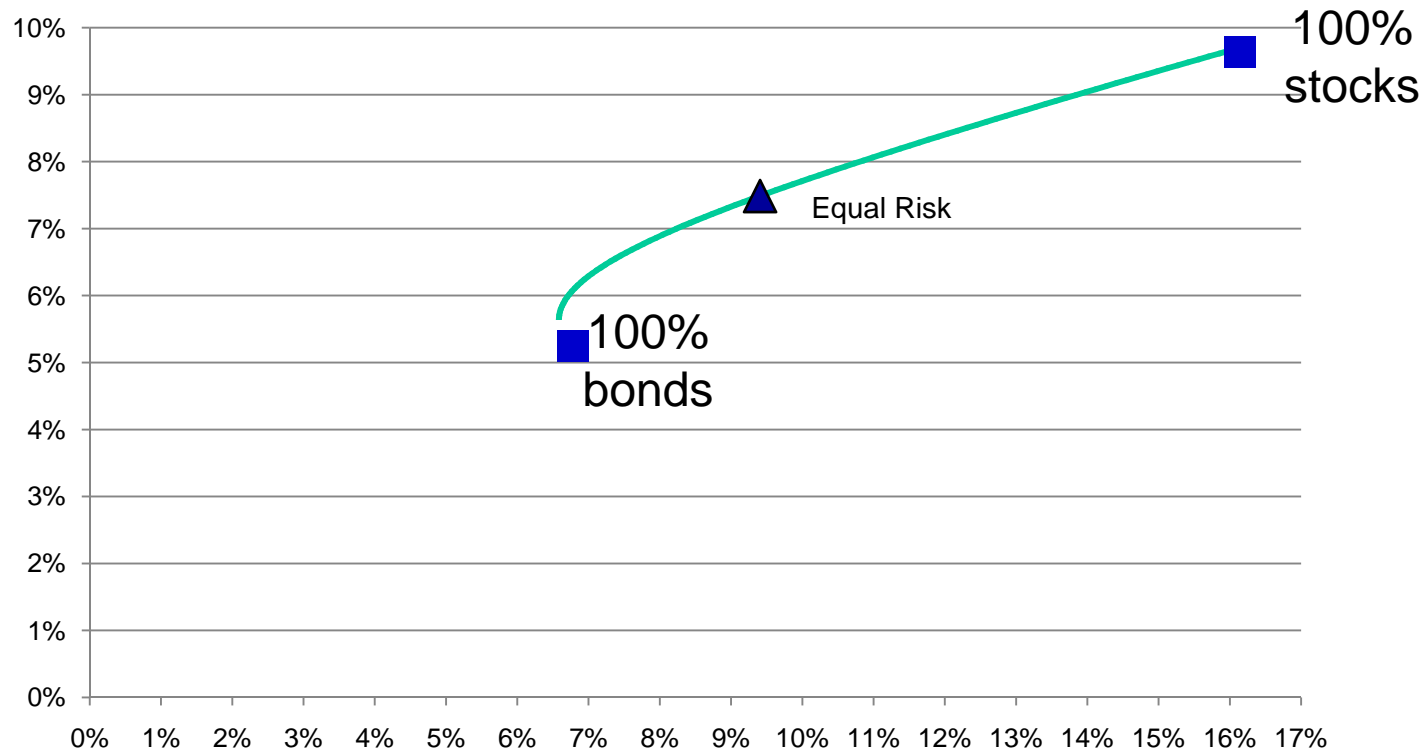
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Modern Portfolio Theory

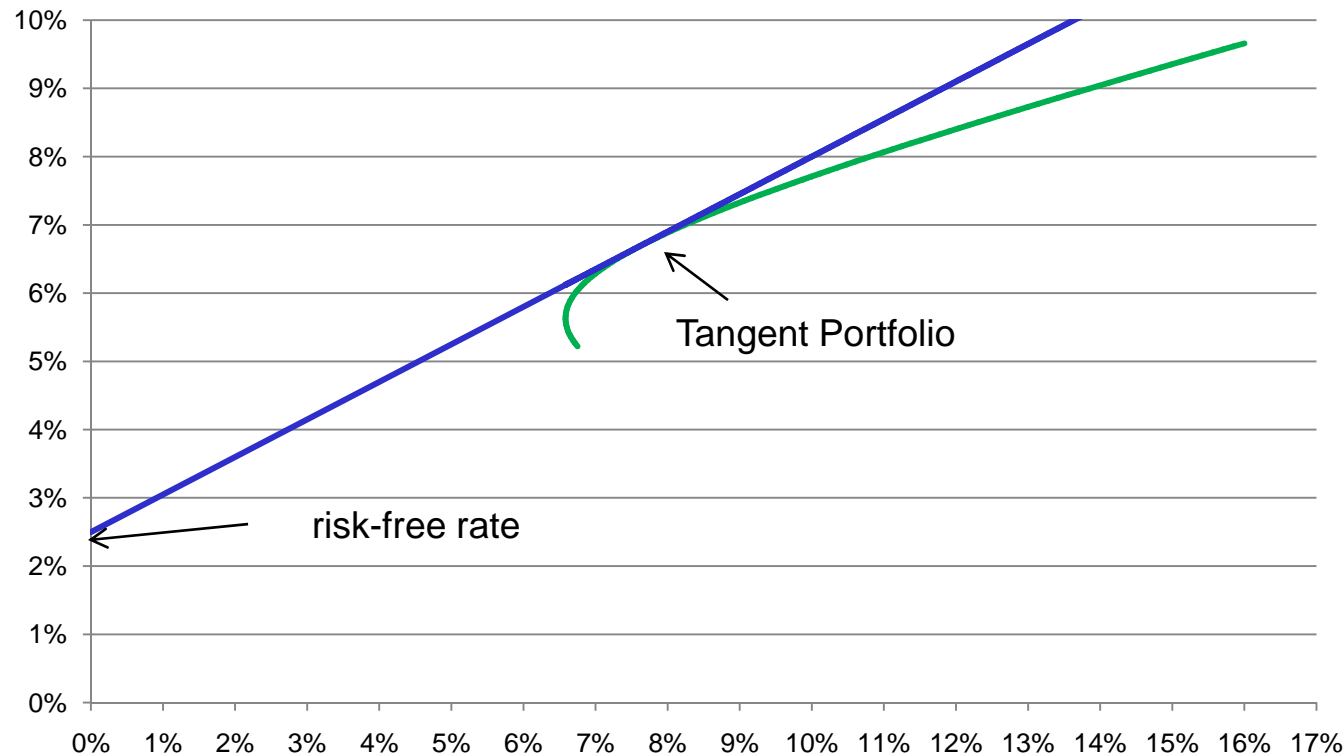
- Most asset allocation models rely on Mean-Variance Optimization
 - Lots of assumptions
 - Mathematical model determines the “best” mix of assets
 - Highest possible level of return for a given level of risk (volatility)
 - Lowest possible level of risk (volatility) for a given level of return
 - Summary, it builds a portfolio with the highest possible risk-adjusted returns

Efficient Frontier



- Developed by Harry Markowitz in 1952
- Example uses just large cap and core fixed income
- An equal risk portfolio is about 70% fixed income

CAPM - 50 Year Old Observation



- **Capital Asset Pricing Model (CAPM)**

- Developed by William Sharpe in the late 1950s
- Risk-free rate can be combined with a single portfolio on the efficient frontier to generate more efficient portfolios

So What's Wrong with Portfolio Theory?

- People confuse the statistical and English meanings of “expected”
- People confuse the relationship between standard deviation and risk
- Projected returns for risky assets are just guesstimates
- The normal distribution underestimates the likelihood of extreme events (aka, fat tails)

MPT Summary

- Is MPT a useful tool?
 - Yes (works best for liquid assets in liquid markets)
 - But shortcomings - so must be used with judgment and as “one” part of the asset allocation decision process
- Additional tools
 - Risk Budgeting
 - Scenario Analysis
 - Liquidity Analysis

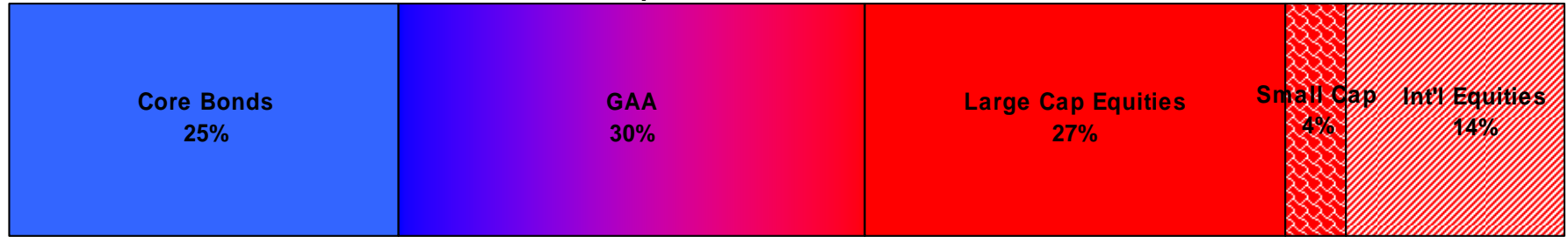
(1) Risk Budgeting

- Consider the portfolio from a total risk perspective rather than total return
- An attempt to determine the contribution to risk by each asset class in the portfolio, based on
 - Asset class volatility assumptions
 - Correlations between asset classes
- Shows the benefit of diversification
 - But also the risk exposures in relation to allocation size

Risk Budgeting - Example

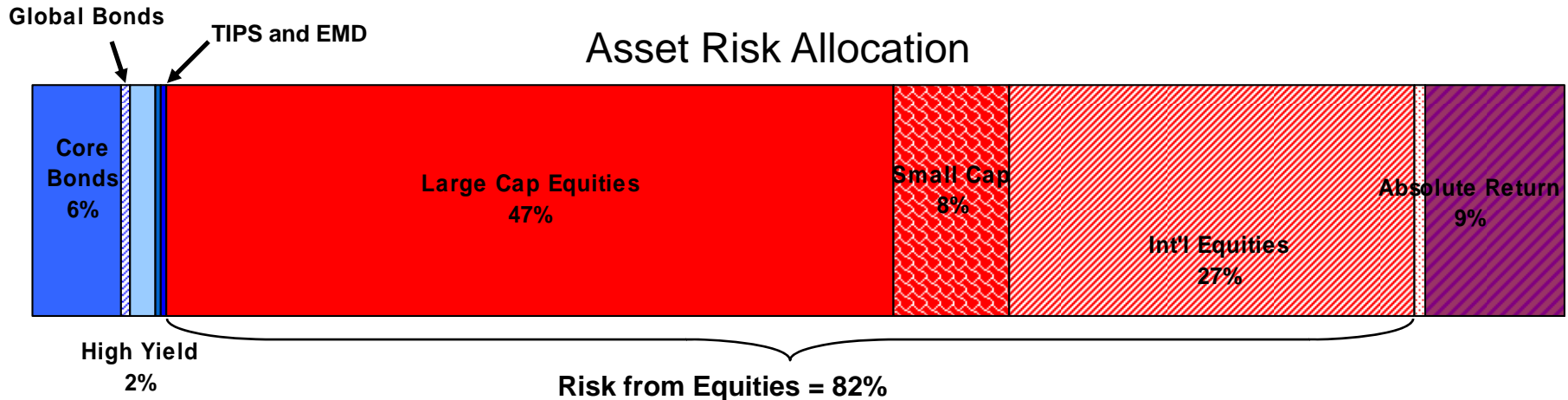
Current Target

Capital Allocation



Allocation to Equities = 45%

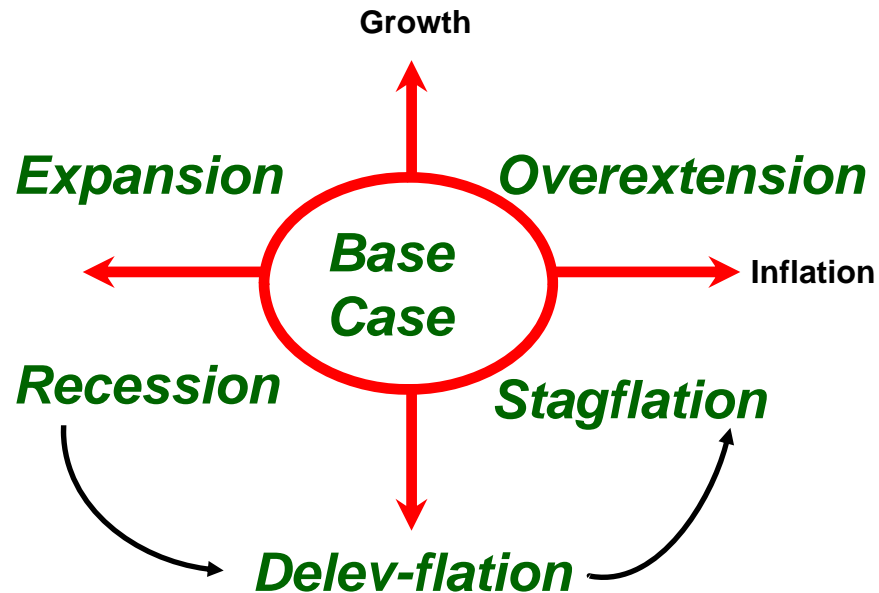
Asset Risk Allocation



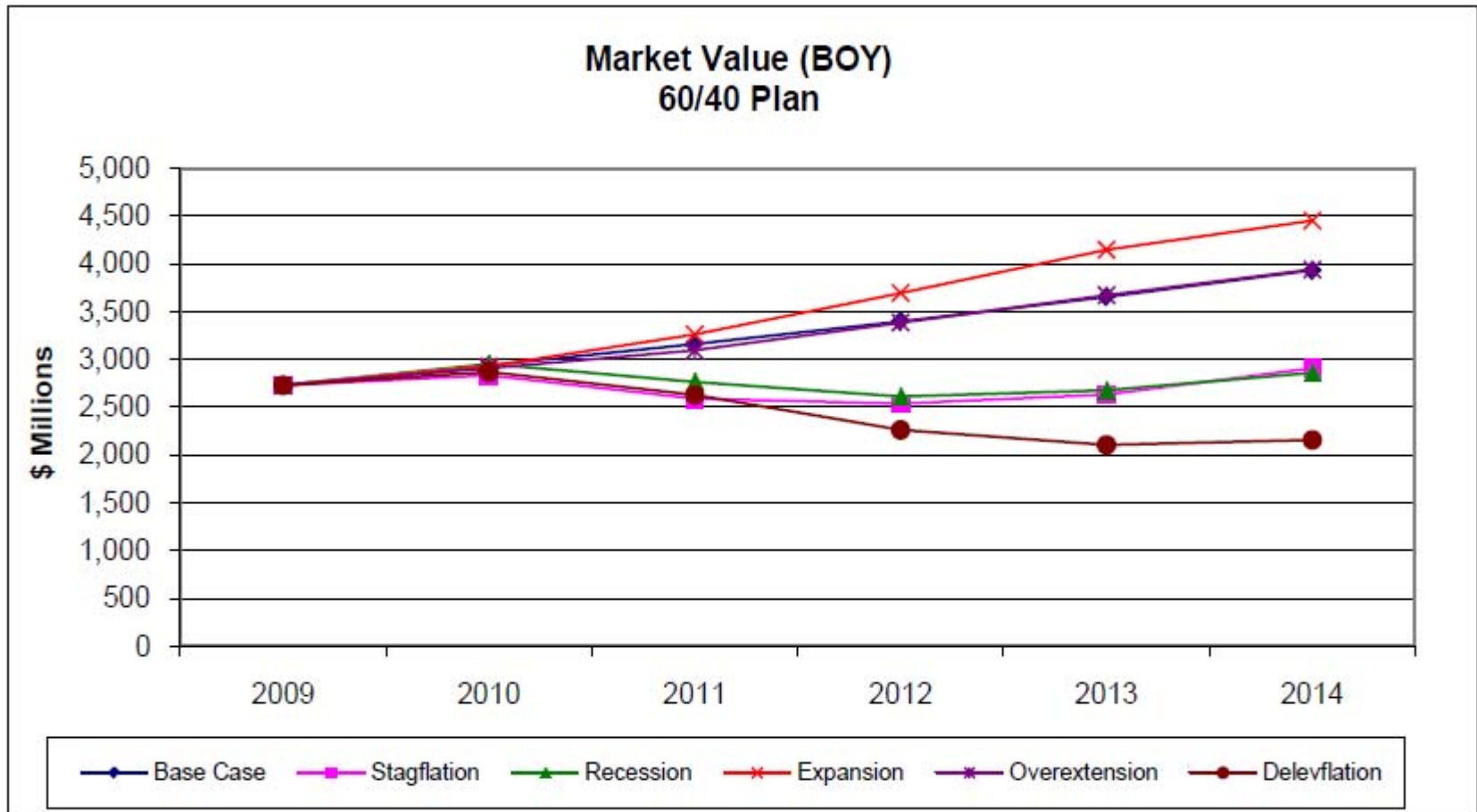
Risk from Equities = 82%

(2) Scenario Analysis

- Test the viability of alternative asset mixes under multiple economic scenarios
- Allows better understanding of risk exposures under various economic regimes



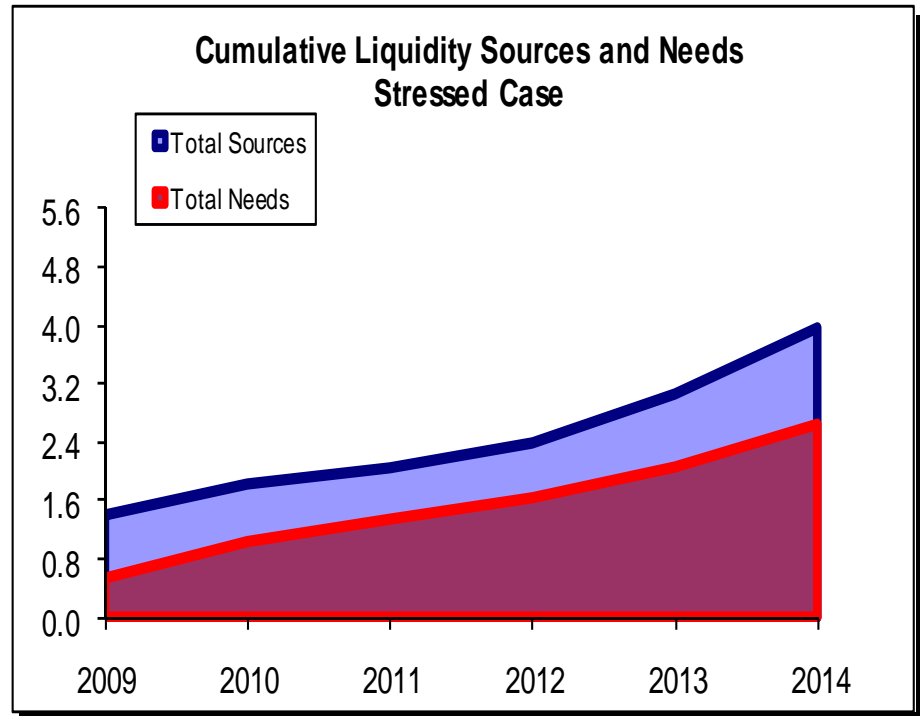
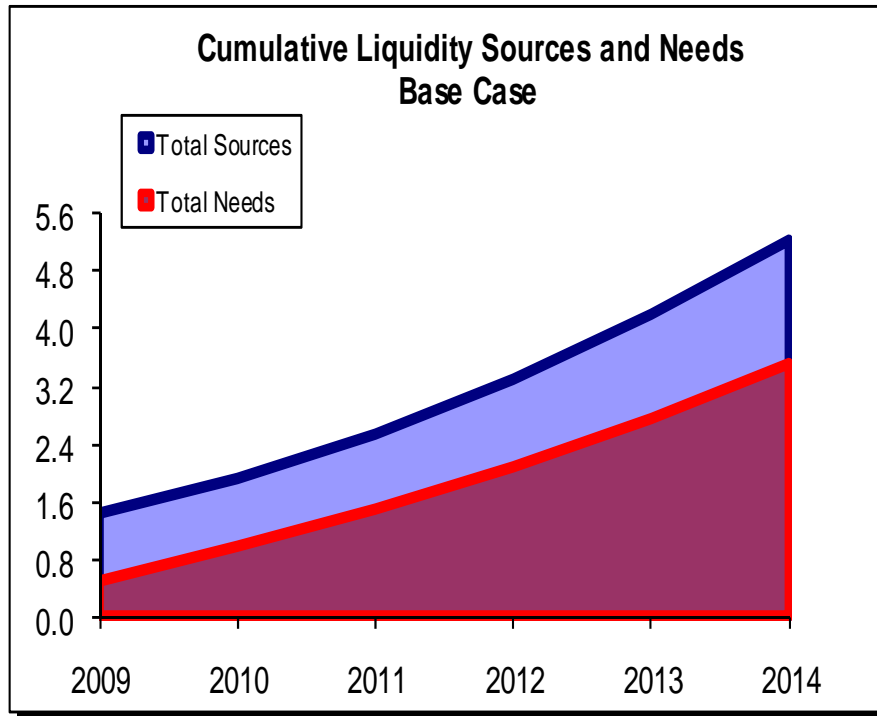
Scenario Analysis (60/40 Plan)



(3) Liquidity Analysis

- Defining liquidity
- When does liquidity become a concern?
- Current liquidity profile
- Liquidity sources and needs
- Asset allocation projection

Liquidity sources and needs



Summary

- MPT still useful, but consider other tools
- Risk Budgeting
 - Allocate risk across asset classes
- Scenario Analysis
 - Test the viability of the Plan under multiple economic scenarios
- Liquidity Analysis
 - Test for deeper concerns

Thank You!