# San Jose Police and Fire Department Retirement Plan

## Overview of Meketa Investment Group's Asset Allocation Analysis

MEKETA INVESTMENT GROUP
5796 ARMADA DRIVE SUITE 110 CARLSBAD CA 92008
760 795 3450 fax 760 795 3445 www.meketagroup.com

# Introduction

## Making Sense of Many Great Ideas – A Preferences Lens

- The San Jose Police and Fire Board has asked for a best ideas asset allocation from both Staff and Meketa
  - Several different perspectives and views have also been sought out
- While seeking a varied selection of views/metrics/perspectives/etc. is a laudable goal, it is also challenging to make sense of such a large amount of information
  - We hope to provide a framework to aid in this area, based on preferences
- Our framework is unconstrained, purely mathematical, and transparent
  - This allows us to provide a completely unbiased picture
- Why preferences?
  - Preferences reflect which solutions are not just 'best' but which are best *for San Jose Police & Fire*
    - Perhaps the most important role of a consultant is to understand these unique preferences in order to suggest solutions/investments that are suitable
  - If preferences are understood and quantified, then:
    - It will help us make sense of how differing views should affect our decision making
    - It will provide a consistent framework for evaluation now and during implementation

## A Consultant's Dual Role – Merging Best Ideas

- Bringing our best ideas
  - We always bring our best ideas to the table, in this case these are represented in our asset study
    - Months of work with input from several area experts
    - Combination of fundamental and quantitative approaches
    - Tried and true methods
- Helping the board/staff express their best ideas
  - The board and staff are the elected/appointed individuals representing the retirees
    - As such we have a duty to assist them in expressing their best ideas
    - We have incorporated staff best ideas into our analysis
- Included staff preferences:
  - ***Venture Capital –*** *'A 50% Chance of beating the broad market by 150bps'*
  - ***A Short-Term Interest Rate Preference*** – A flat term structure supports this view

# A Brief Introduction to High Dimension Optimization (HDO)

## HDO - A Tool To Understand Individualized Preferences

- The power of trade-offs
  - 'To Optimize' simply means to find the best available trade-off
    - This general framework underpins almost every insight in finance in economics
- The limits of constraints
  - Constraints confirm existing biases
    - The best way to find the best available trade-off is avoiding constraints
- Where the fund chooses to allocate reflects their preferences
  - The key to expressing preferences is a focus on efficiency
    - Nothing in life is free, but we should sacrifice the least possible for any potential gain
- Real-world preferences/objectives are complex and conflicting
  - In practice, this means single trade-offs can never be examined in isolation
    - Everything is connected
  - HDO is a tool to help us 'keep an eye' on each of these moving pieces

# A Very Brief History of Portfolio Optimization

| Framework | Return Goals | Risk Goals | Intuition | Additional information it attempts to incorporate relative to MVO |
|---|---|---|---|---|
| **MVO - 1952** | Expected Return | Expected Variance | Foundation of all below. Investors like return but dislike risking capital | NA |
| **Mean-cVaR - 1999** | Expected Return | Expected Tail Risk | Focuses on extreme losses as these are of more importance to investors | Asset behavior in extreme scenarios |
| **MVTE - 1992** | Expected Return | Expected Variance + Expected Tracking Error | Taking a position that I s different from the market is a risk | Trade-off of relative risk |
| **BL - 1992** | Market Base Case (CAPM) + confidence weighted investor views | Market Base Case (CAPM) + confidence weighted investor views | Expressing a view that is different from the market is a risk and should be systematically weighted by confidence | Confidence weighted investor views |

**Foundation of Risk/Return Frameworks**

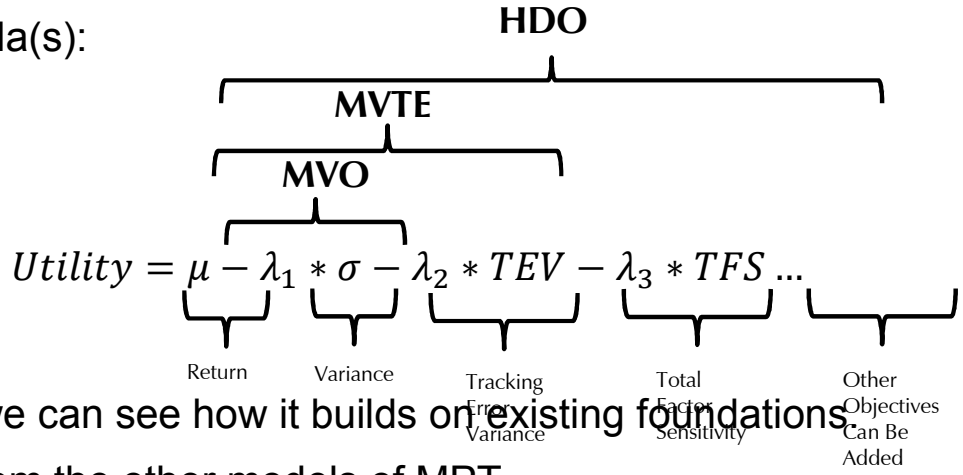
**Models that add/modify informational value on top of the foundation of MVO**

- MVO is the foundation of all Modern Portfolio Theory (MPT).
- Since its creation, many have added value on top of this foundational model.
- HDO does the same, but is designed to incorporate any and all.

## HDO: Flexible and Expanding on Strong Foundations

### Where Does High Dimension Optimization Fit In?

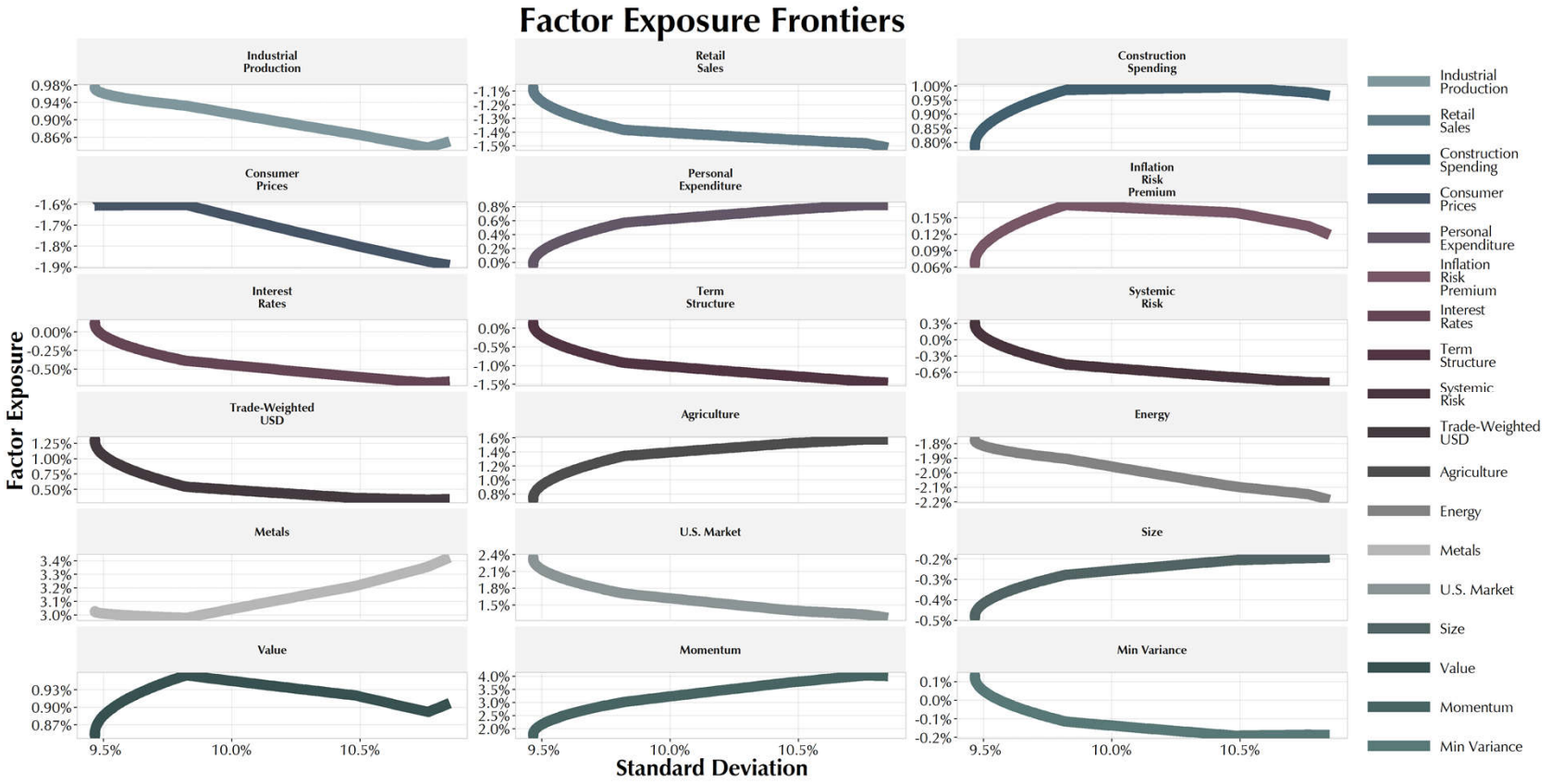
- Modern Portfolio Theory in Formula(s):




- Looking at the formula for HDO, we can see how it builds on existing foundations.
- HDO also incorporates insights from the other models of MPT.
  - Tail-Risk:
    - This was the focus of Mean-cVaR and is controlled for within the Total Factor Sensitivity portion of HDO by trading off or targeting Systemic Risk.
  - Black-Litterman (BL) and confidence weighted expectations:
    - The insight of BL was about how to formulate forward looking returns.
    - This is addressed in the machine learning measurement process of HDO and the same insights of BL can be incorporated into HDO.

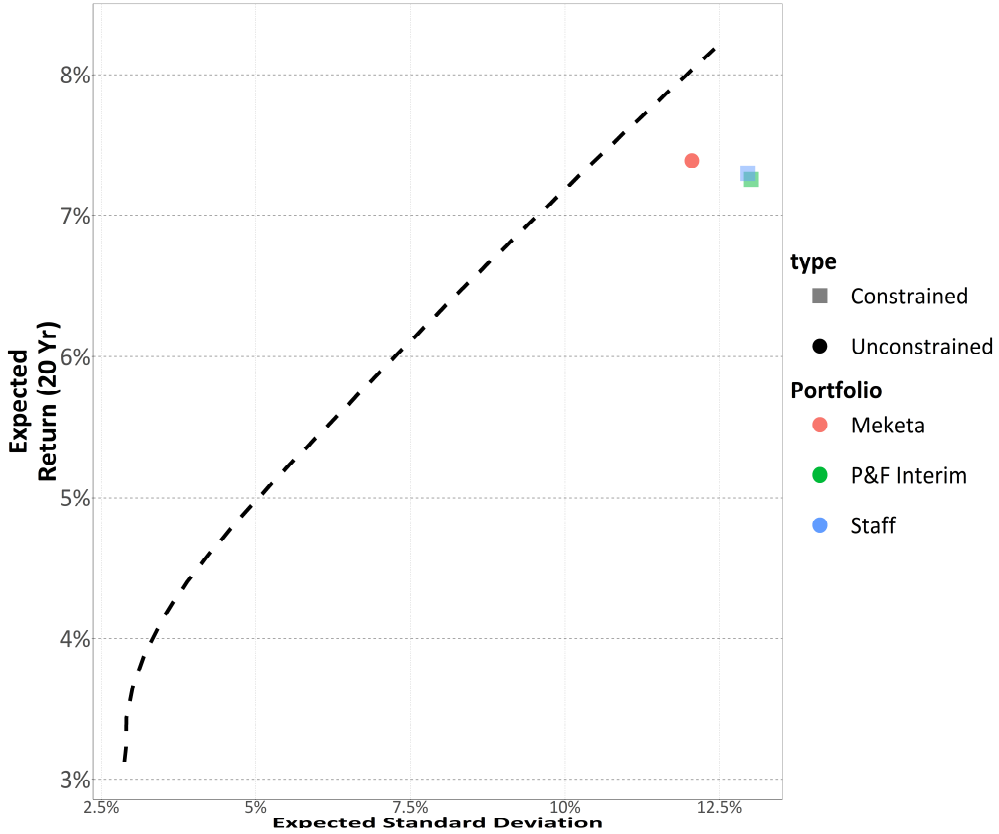
## What Does "High Dimension" Look Like?

- Risks and opportunities can come in many different forms and factors.
  - To find the best trade-off in this complex landscape, each much be evaluated ***simultaneously***.



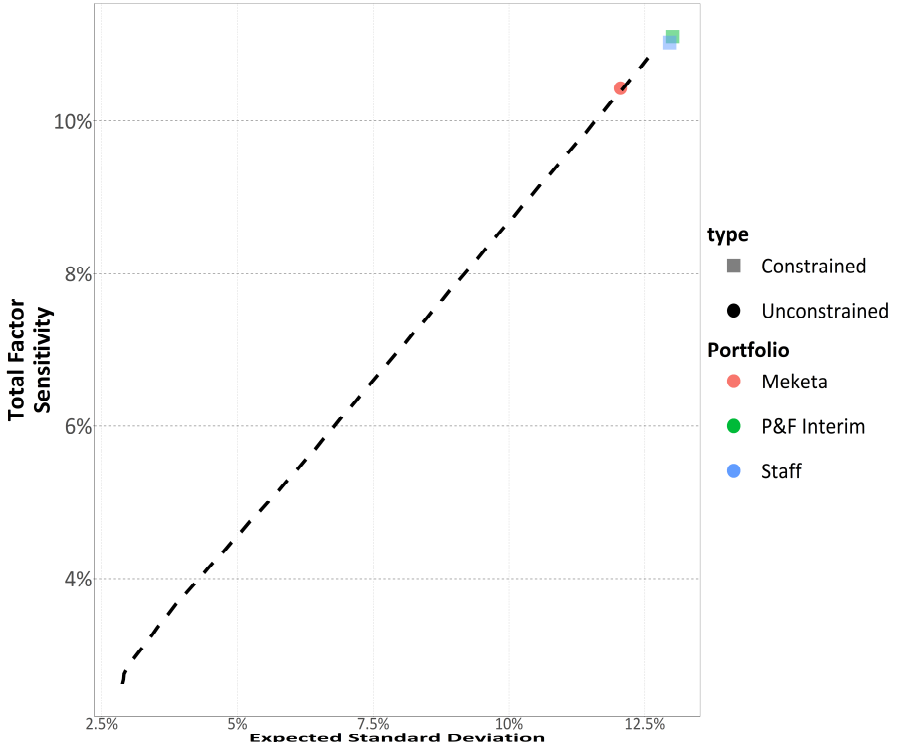
## The Foundational Trade-off

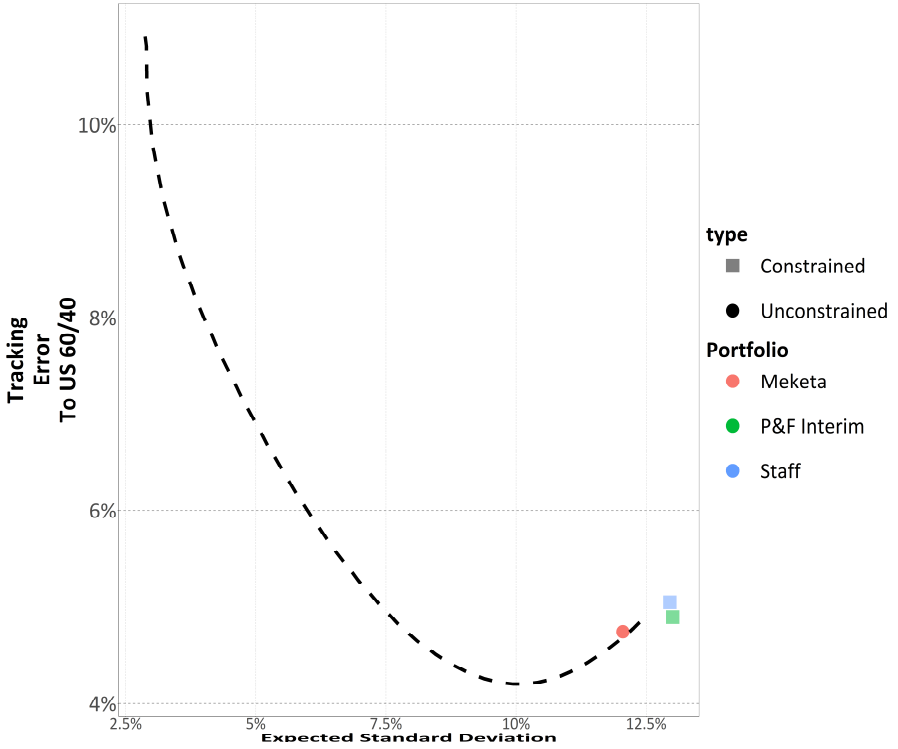
- Another view of the traditional MVO trade-off.
  - The Meketa approach avoids using constraints, which is an unbiased expression of modeled preferences.



## Factor Sensitivity and Tracking Error Trade-offs

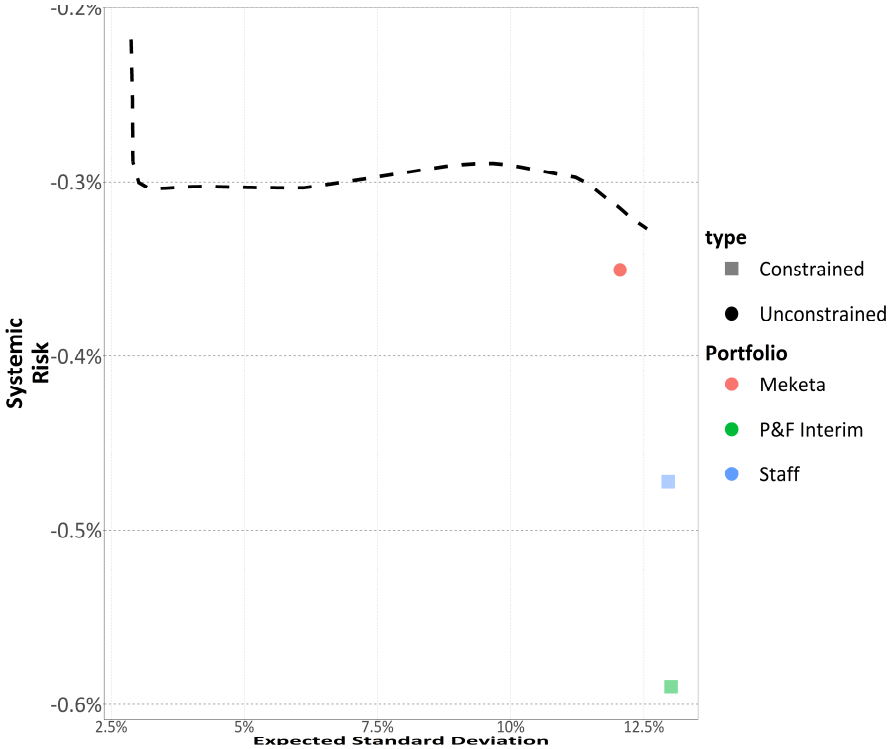
- Below we can see two other important trade-offs
  - Although elevated relative to the Meketa portfolio, the other options are on the frontier here.

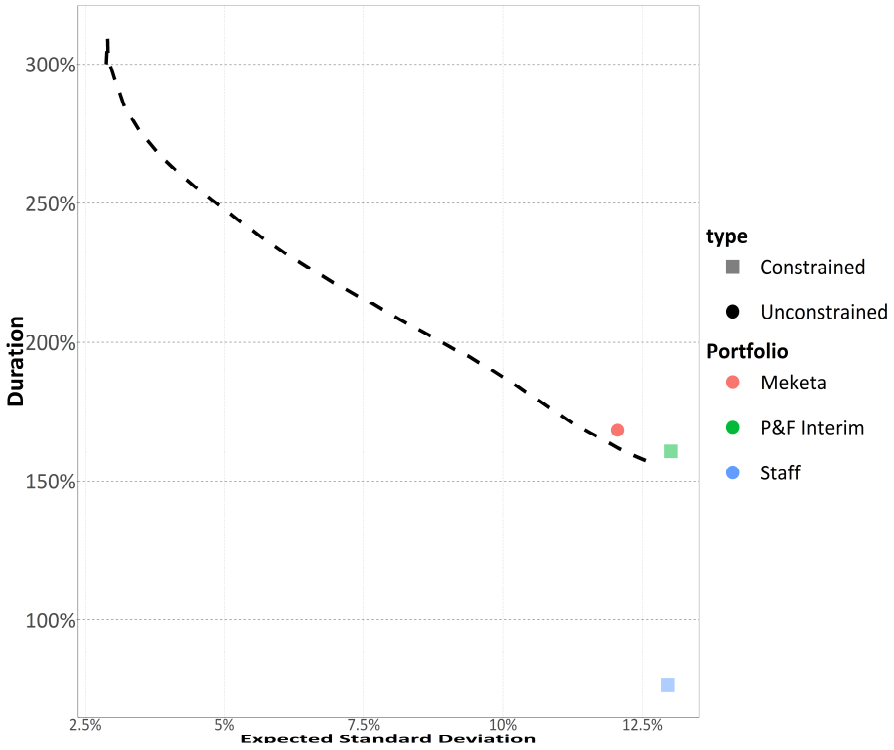


## Tail-Risk and Duration Trade-offs

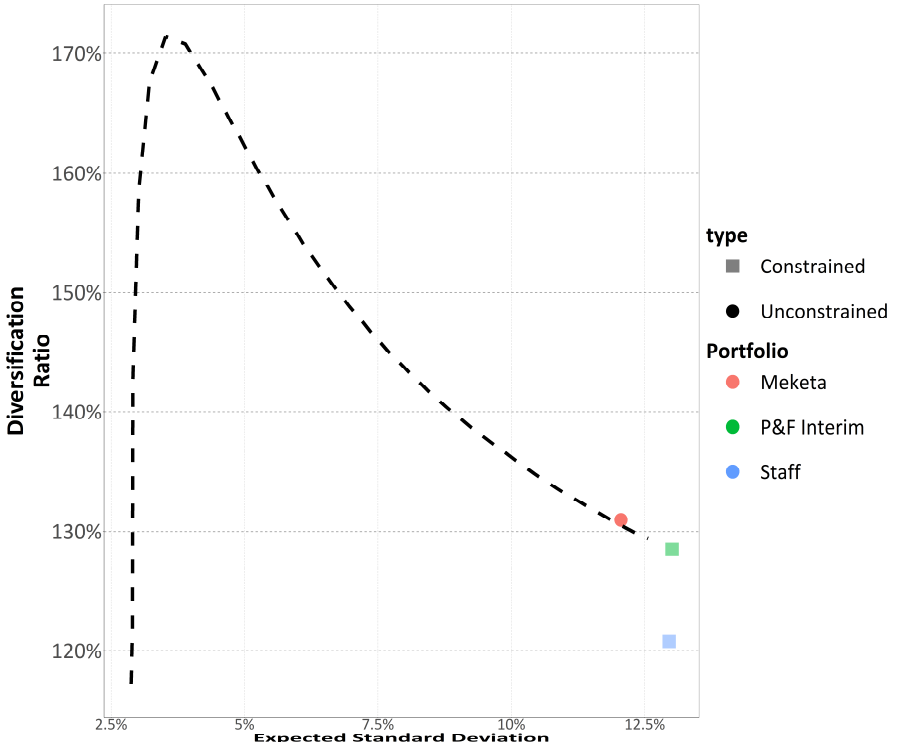
- For these important trade-offs, the Meketa portfolio has significant improvements.
  - Duration is especially important in terms of liabilities, and conflicts with the Staff short-term interest rate preference.

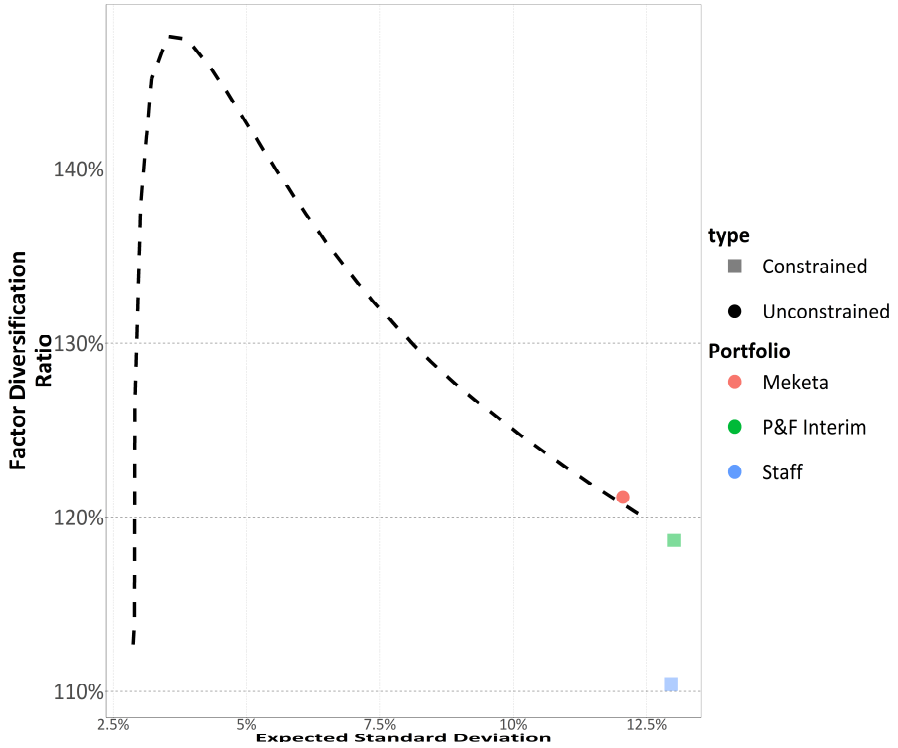


## Diversification Trade-offs

- The Staff portfolio sacrifices substantially on diversification.
  - Through the HDO process, we examine many many more of these frontiers.



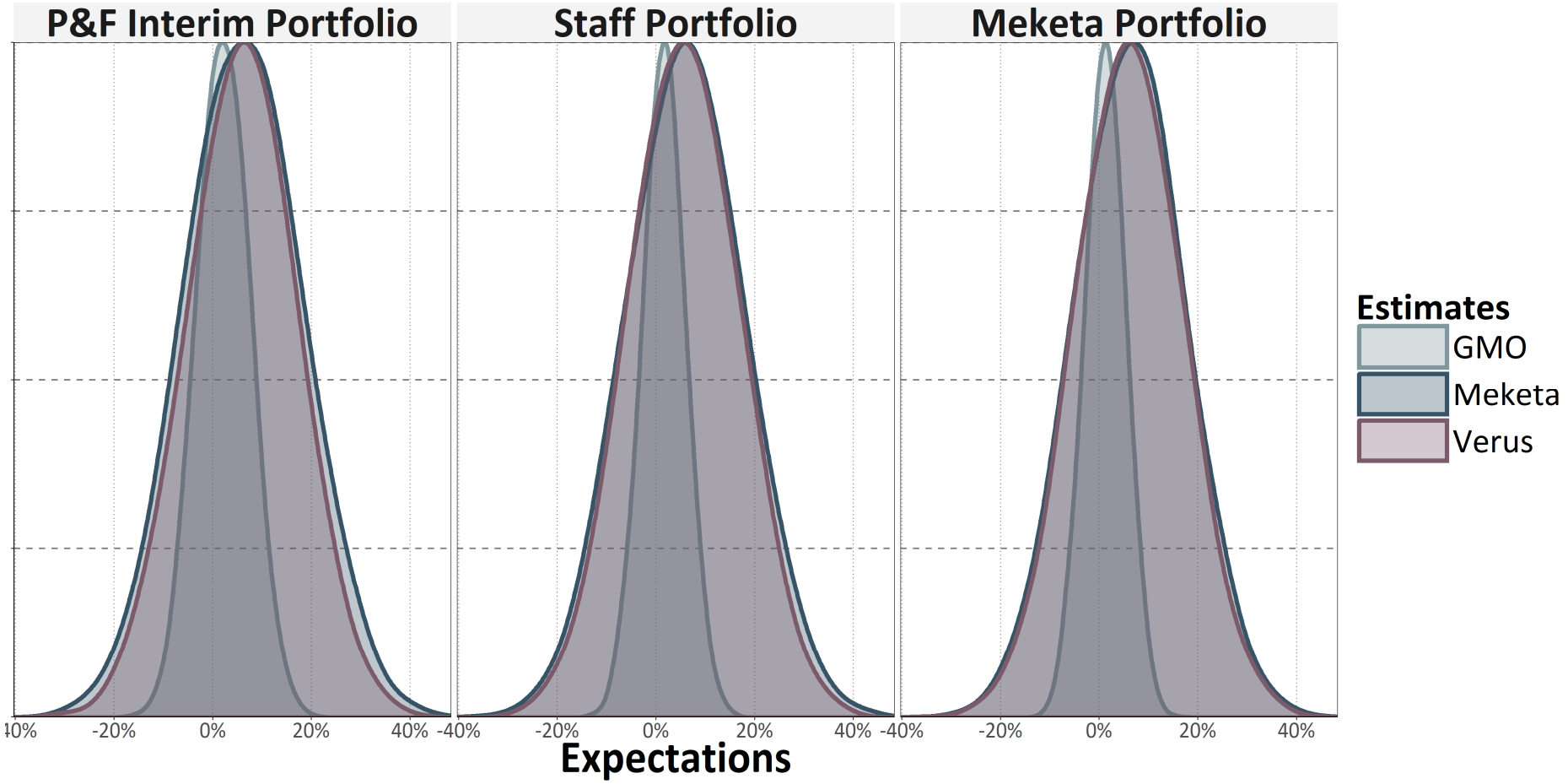
# Examining Expectations

## Different Expectations for the Future

- In this section we examine how using different expectations would affect our suggested allocation
- Most expectations overlap with each other
- Staying humble when discussing future expectations is essential, and drives our preference for diversification
- We will show that the importance of preferences tends to override difference in expectations
  - Different expectations don't necessarily move the allocation in large ways if preferences are well defined
    - This is largely due to the large amount of overlap and uncertainty in future prediction

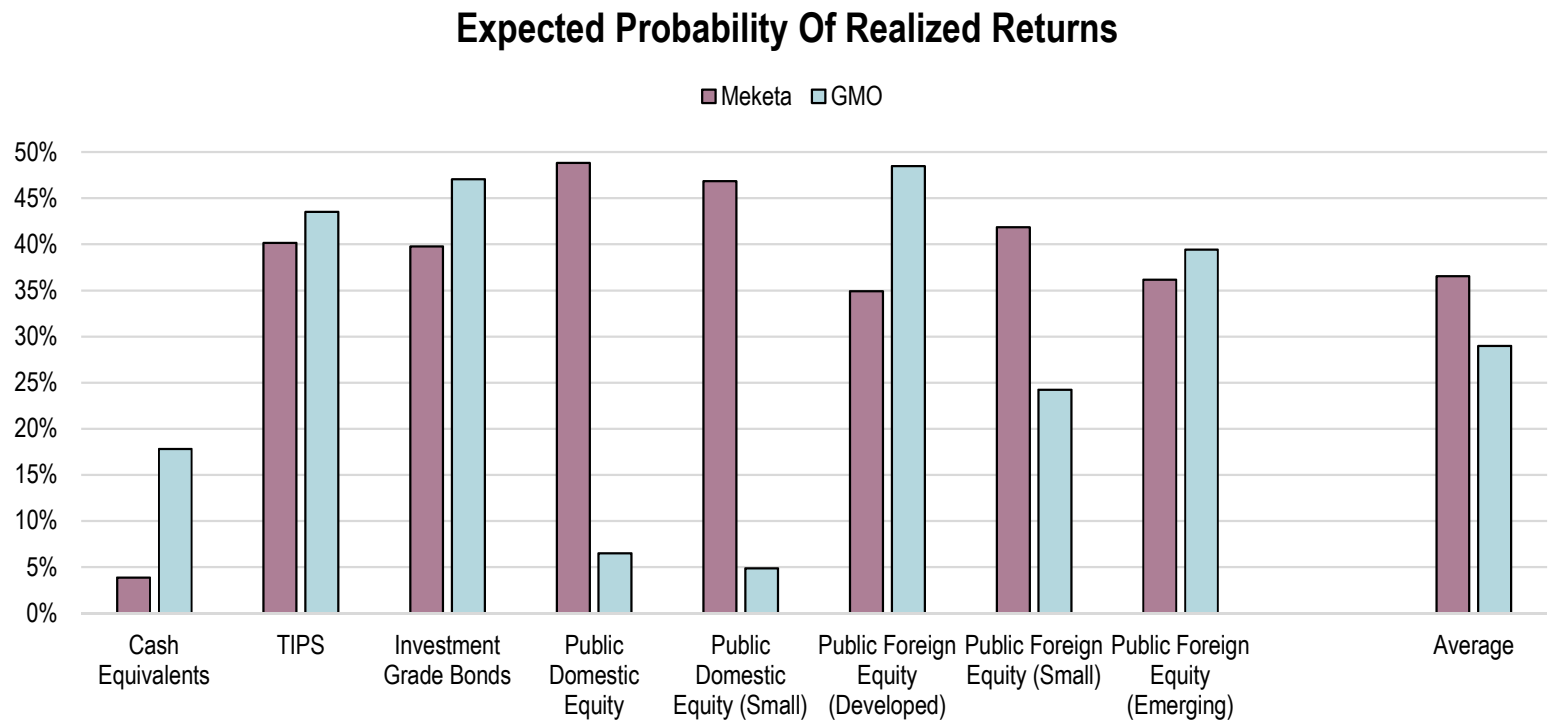
## Overlapping Expectations

- Gathering different views is an additive process and much is made of small differences
  - Important to note - these views overlap substantially



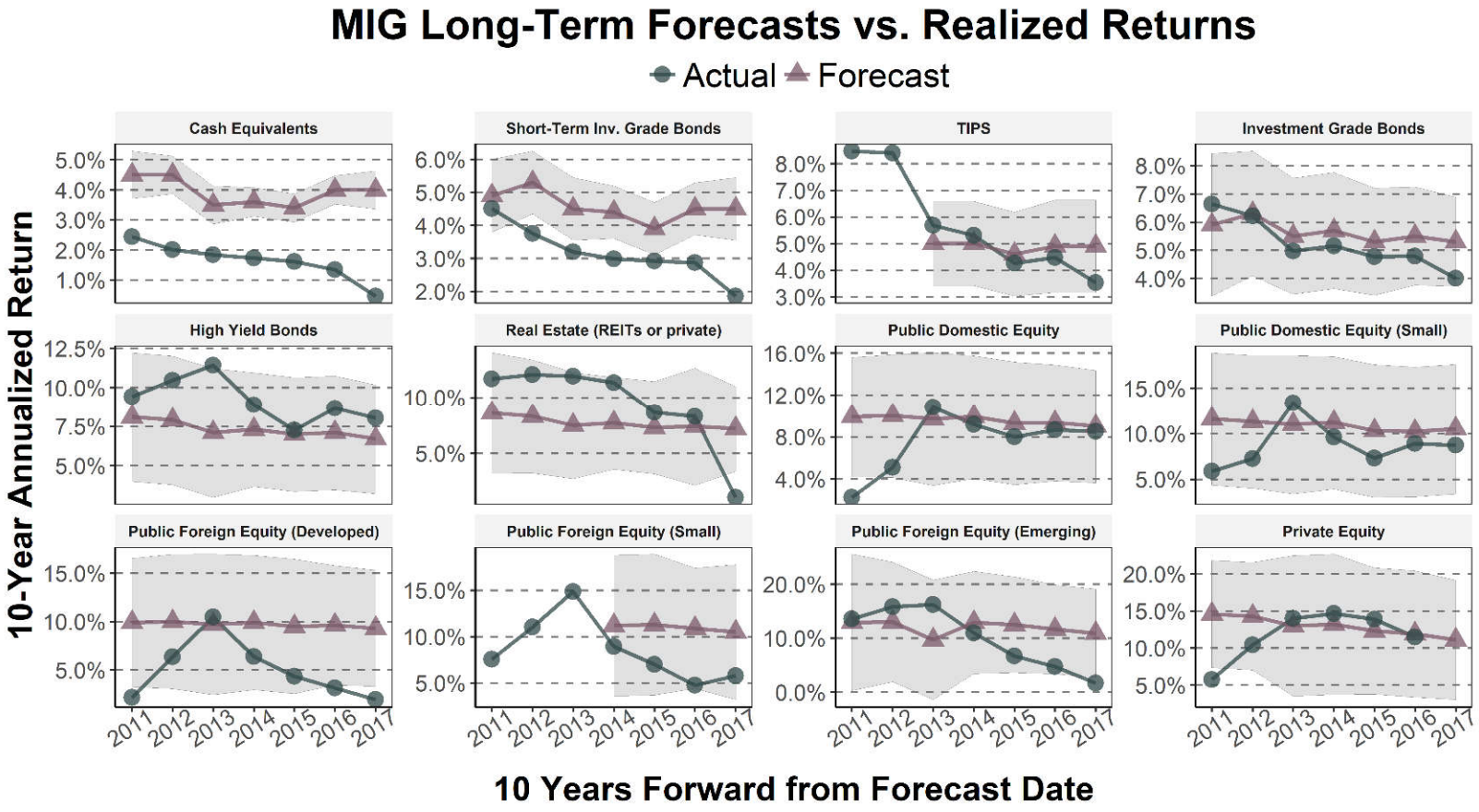
## Confidence In Expectations

- In the chart above, the GMO expectations were much narrower (i.e. more confident)
  - GMO is a famous forecaster of returns and has a reputation of doing quite well.
  - However, there is empirical evidence that like many other market participants their confidence is overly high.



## Staying Humble with Empirical Evaluation

- Meketa consistently examines the empirical performance of our expectations
  - Forecasting is hard, but we seek to be honest about our limitations and learn from our mistakes

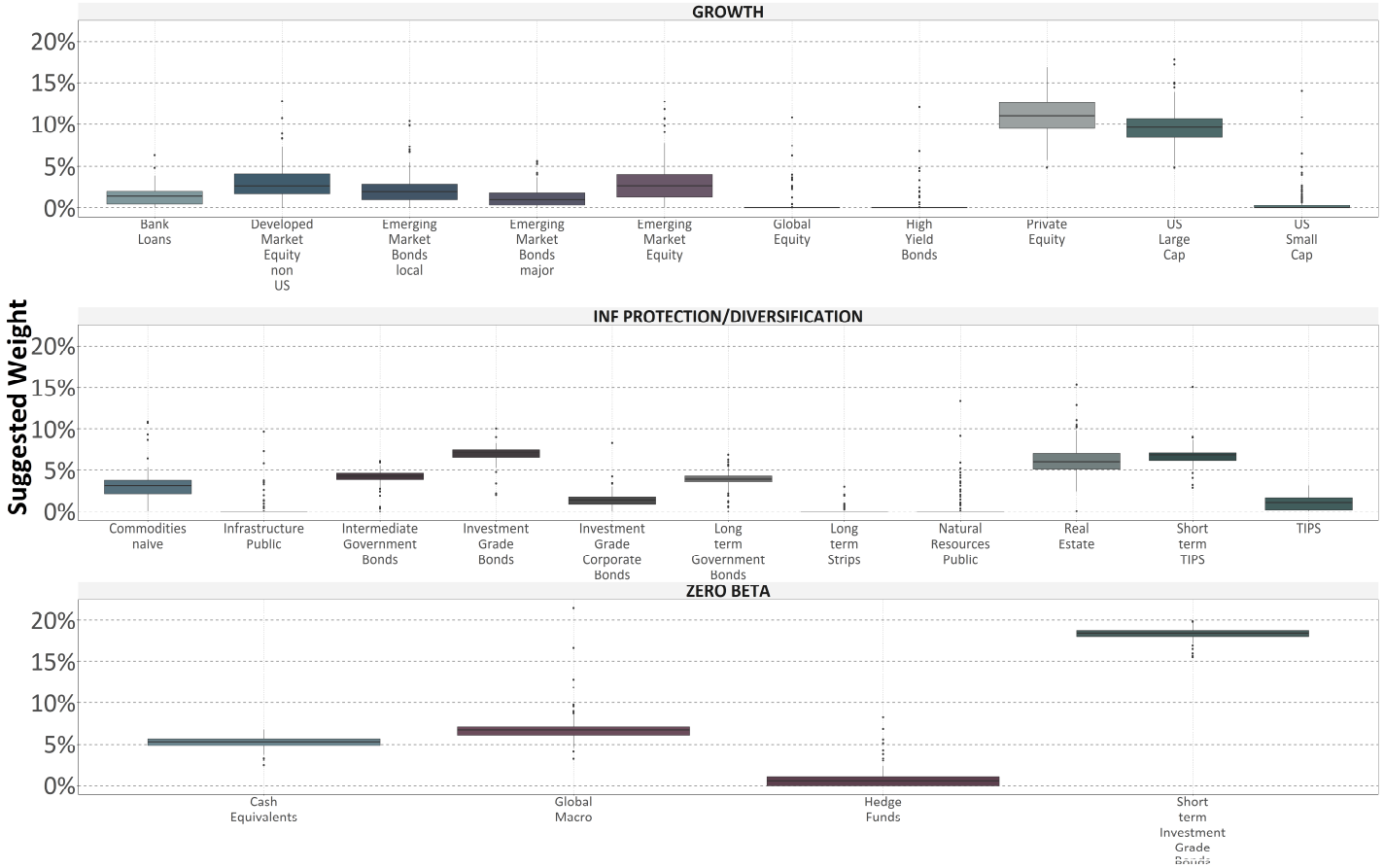


## How important are these expectations in the context of preferences?

- Future expectations get all the glory
  - We all love opining on the future, but when it comes down to making a plan, it serves us best to diversify and get the best trade-offs available to us
- The dampening effect of overlap and preference setting
  - Future expectations are important, but perhaps not as important as you may think
  - Several factors dampen how much changing expectations affect allocations
    - Overlap of expectations
    - Limited confidence
    - Well-defined preferences
- In the next graph we randomly selected return expectations.
  - The takeaway is that in many cases, these random selected expectations don't move the allocation as much as many may think

## Randomly Selecting Expectations

- Through randomly selecting expected returns, we can see in the vast majority of cases the allocation would not change meaningfully
  - This is a result of our expressed preferences and future uncertainty



# Metric Comparison

## Our Main Goal -- An Unbiased Evaluation

- Our main goal here is to provide an unbiased evaluation
  - That said, we did favor our own best ideas as requested
  - We also included Staff views as we understand them
- While proud of our expectations process and outcomes, we don't argue that we are better forecasters
  - Rather, our focus is on getting the best portfolio for the specific needs of the plan
  - We take in substantially more information and trade-offs than traditional approaches
- Preferences can be changed
  - We believe our rigorous trade-off methodology is a disciplined approach and can help the fund evaluate the information set in front of them
- Adopting a preferences approach will be helpful during implementation
  - The same preferences should adhere to managers as they do for policy level allocation

## Metrics By Portfolio


- The key behind HDO's insights is the ability to consider all metrics simultaneously
  - In this case we match or improve on each metric
  - More importantly, using this unbiased approach allows us to evaluate all views and preferences

# M E K E T A  I N V E S T M E N T  G R O U P

**BOSTON**

100 Lowder Brook Drive
Suite 1100
Westwood, MA 02090

Tel: (781) 471-3500

**CHICAGO**

One E Wacker Drive
Suite 1210
Chicago, IL 60601

Tel: (312) 474-0900

**SAN DIEGO**

5796 Armada Drive
Suite 110
Carlsbad, CA 92008

Tel: (760) 795-3450

**PORTLAND**

205 SE Spokane Street
Suite 300
Portland, OR 97202

Tel: (971) 202-5082

**MIAMI**

5200 Blue Lagoon Drive
Suite 120
Miami, FL 33126

Tel: (305) 341-2900

**LONDON**

41-43 Brook Street
London W1K 4HJ
U.K.

Tel: +44 (0)20 3841 6255

**www.meketagroup.com**