

# Calculated “Bets” and the Risk Model to Support Them

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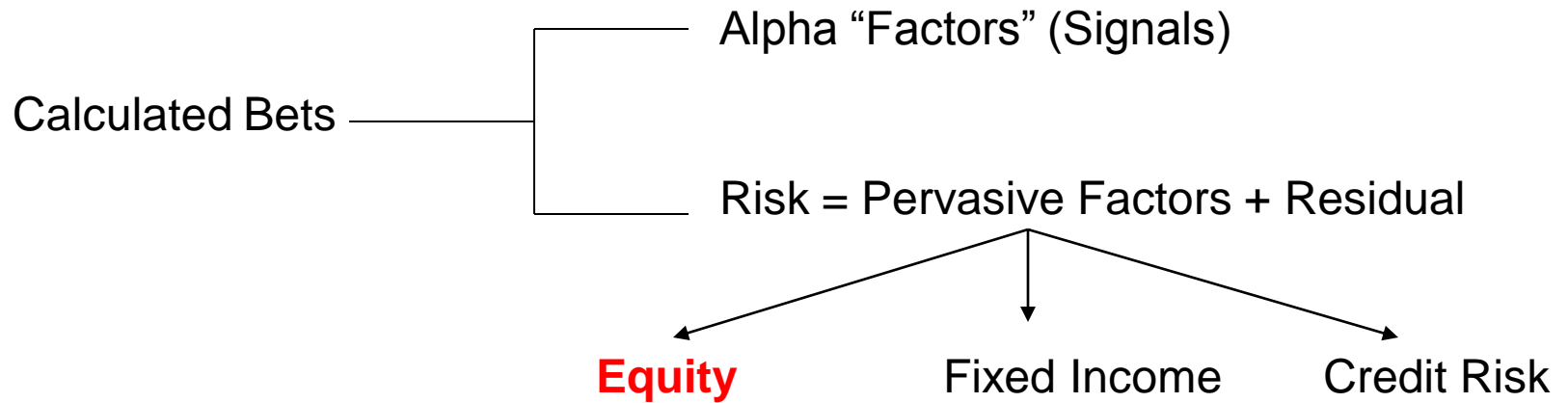
**U.C. Berkeley**

**QWAFAFEW: Factor Risk Models and Optimization**

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# “Calculated Bets”



Whose “Calculated Bets”?

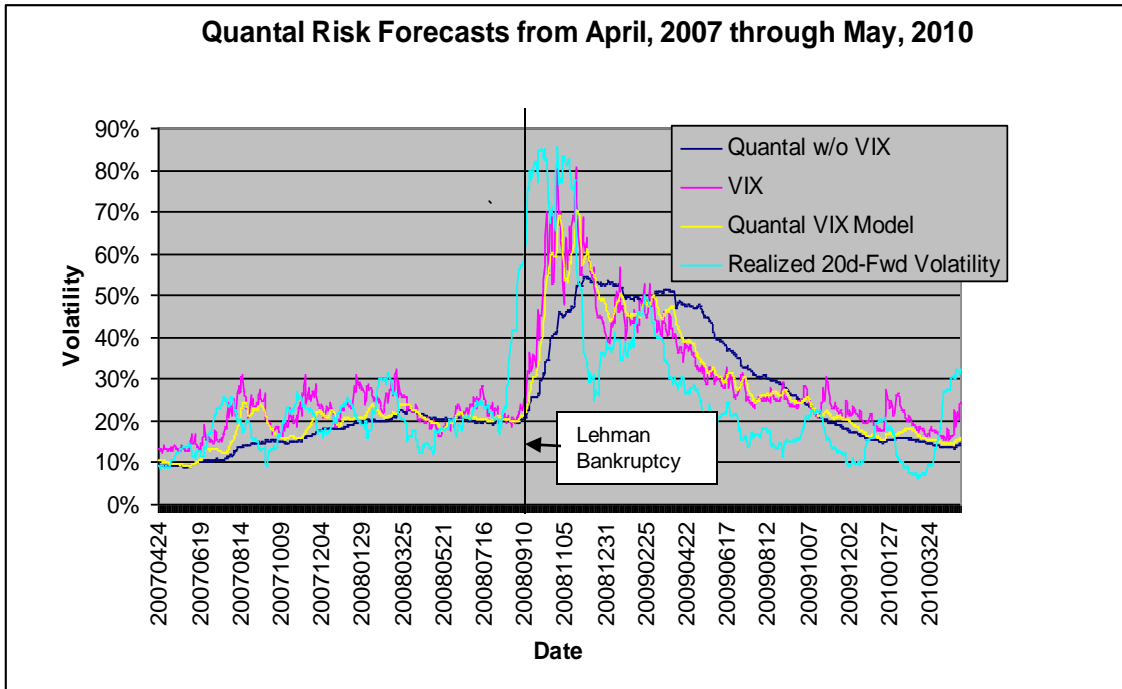
- Beneficial Investors (Principal)
- Portfolio Managers (Agent)

# Risk Model: Accurate & “Holistic”

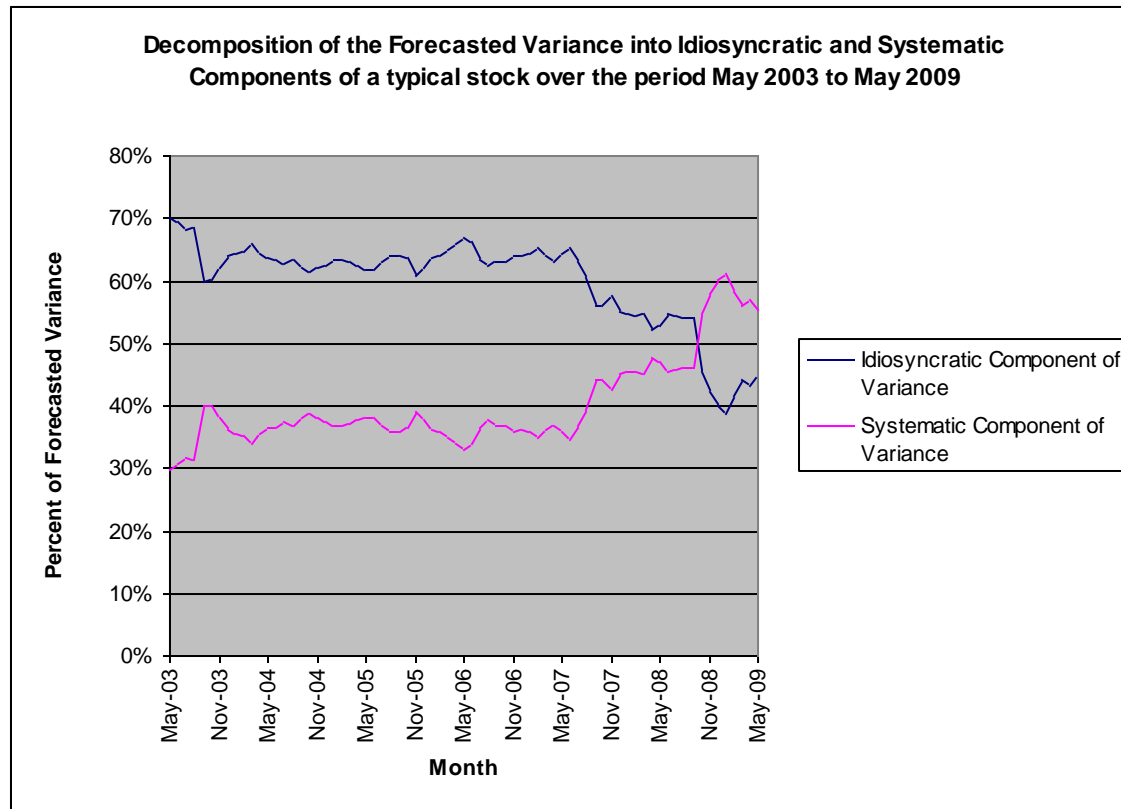
## 1. Forecast Accuracy:

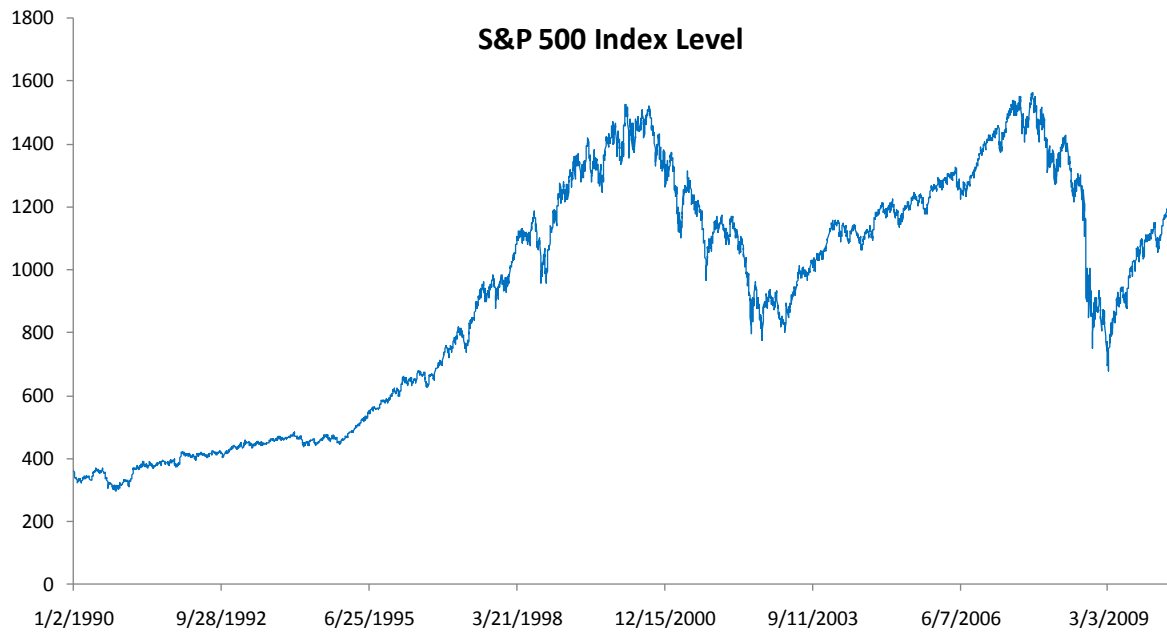
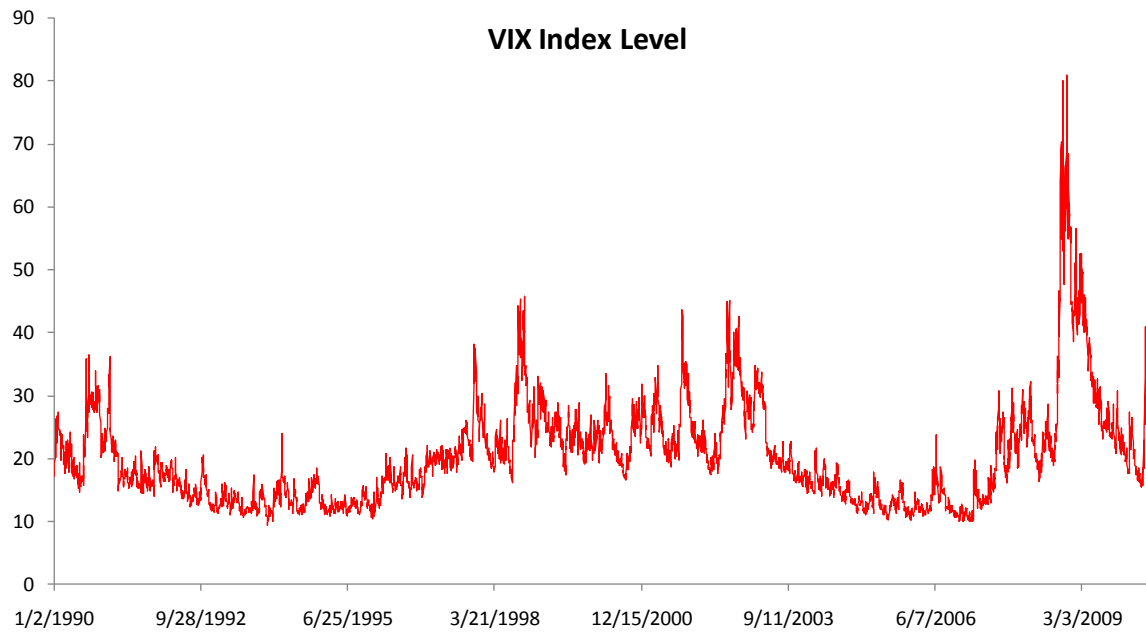
- Don't want risk exposures you didn't know you had -- the “25 standard deviation events”

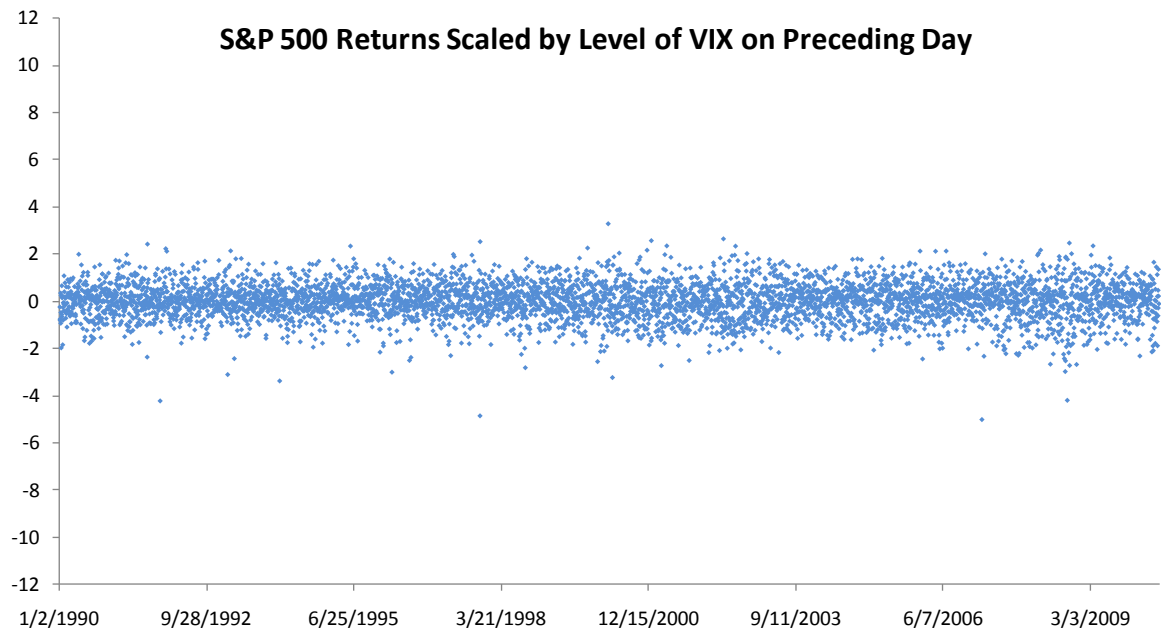
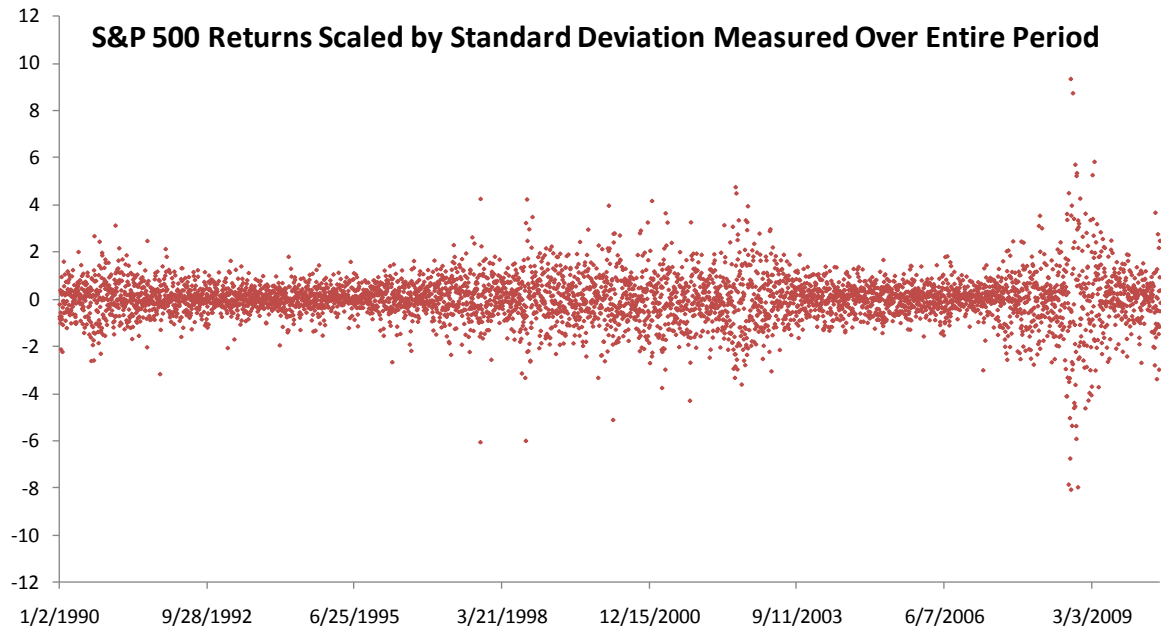
# Risk Regimes I: Volatility



# Risk Regimes II: Multivariate (Correlation)



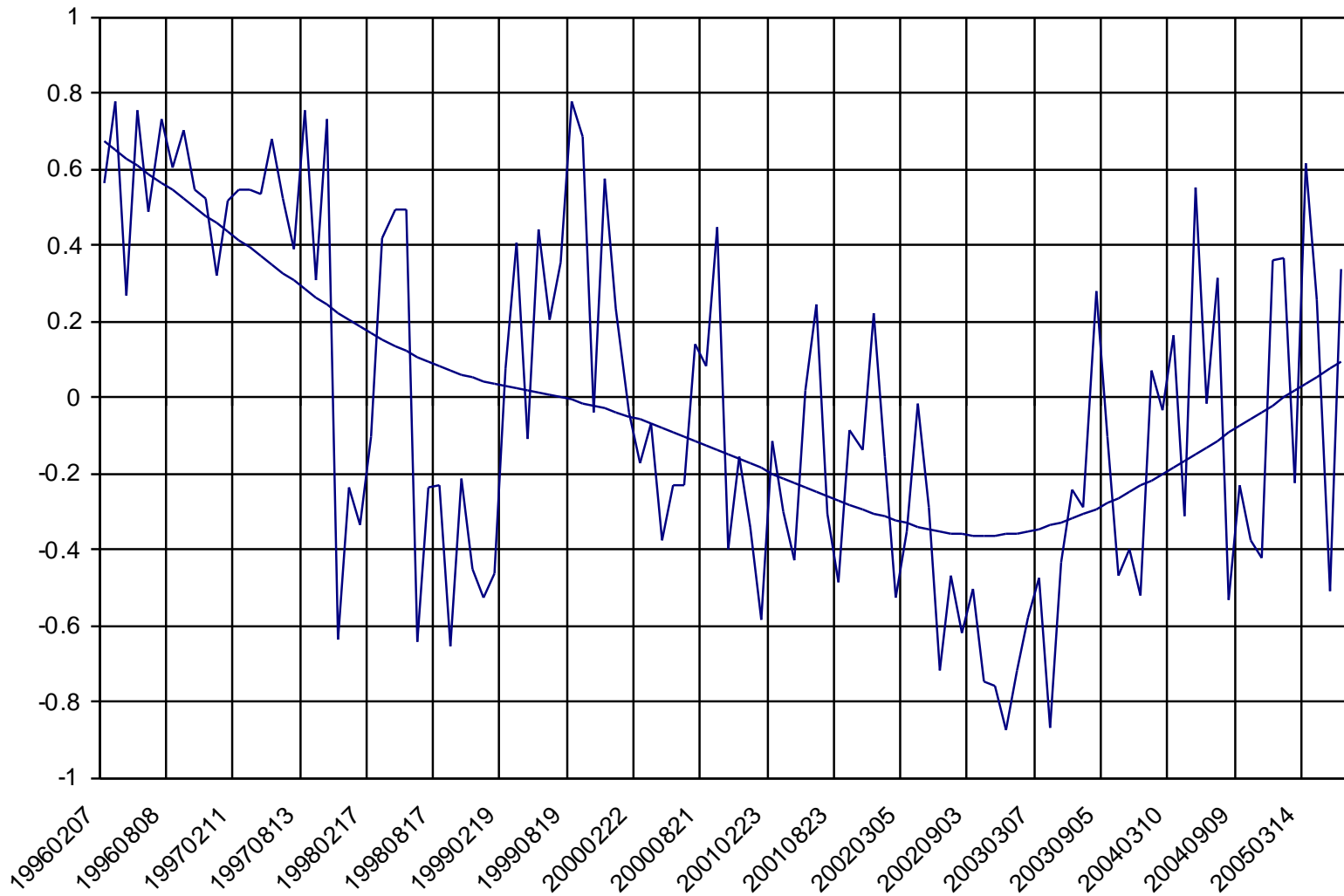




	<u>S&amp;P 500 Returns Scaled by Standard Deviation Measured over Entire Period</u>	<u>S&amp;P 500 Returns Scaled by VIX on Preceding Day</u>
Mean	0.018302	0.017289
Median	0.044372	0.048046
Standard Deviation	1.000000	0.776764
Sample Variance	1.000000	0.603362
Kurtosis	11.963779	4.473268
Skewness	-0.200296	-0.361824
Minimum	-8.059105	-5.031819
Probability of Seeing Minimum or Less if Normal	0.00000000017166268407%	0.12512451075820100000%
Maximum	9.325208	3.307484
Probability of Seeing Maximum or More if Normal	0.00000000000000000000%	91.16557201094780%



# Realized Correlation between U.S. Equity and Govt. Bond Returns over the Last Decade (to 2005)

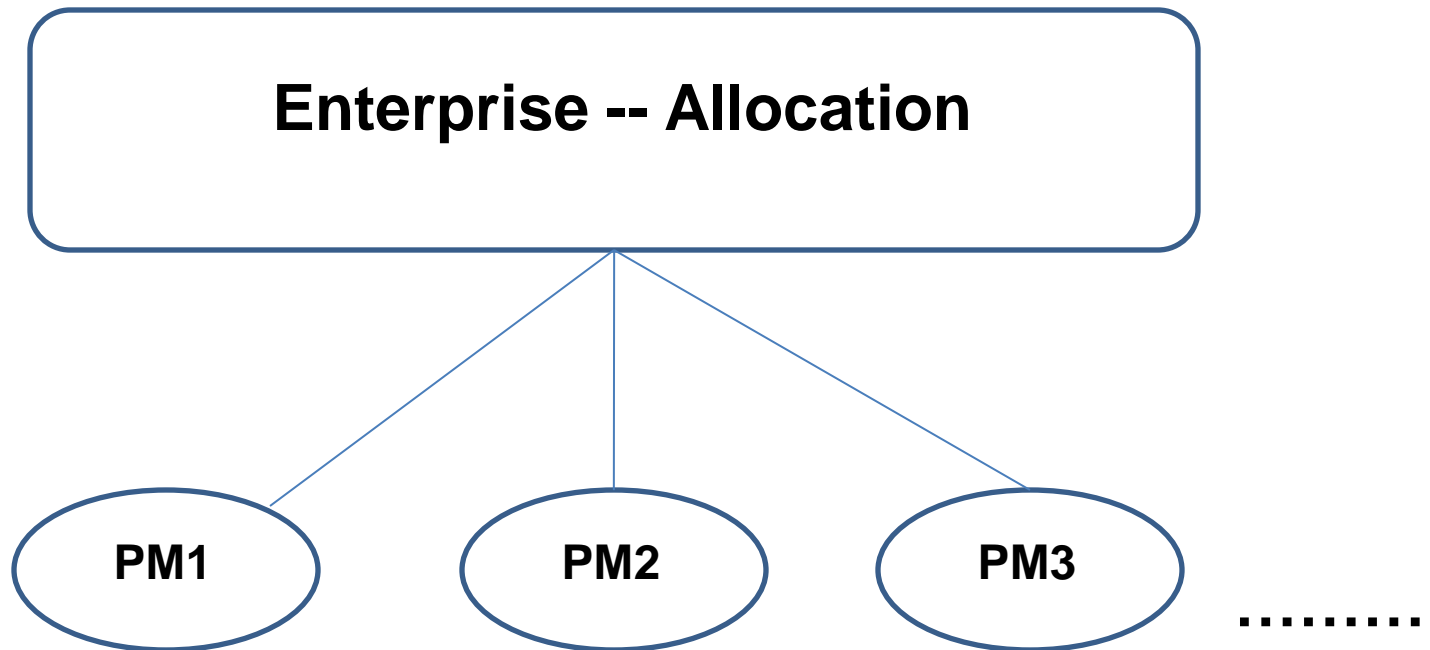


# Now other Asset Classes....


- Private Equity, Real Estate
  - “Liquidity” and “Valuation Risk”, but general cross-asset properties can be modeled?

# Risk Model: Accurate & “Holistic”

## 2. “Holistic” .....



# Some Implications

- “Liability” (Investor context) – Driven
  - E.g. Endowment: Factors Driving Tuition, Fundraising, Gov’t Grants, Property
- Fees & Performance Attribution   
*Ex ante* Risk Exposures
- Delegated portfolio management changing -- which managers “line up”?