SEPTEMBER 1, 2015
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The Spin on Active Management *- based on Grinold and Kahn*

2015 Client Summit
True North

Active Management for the CIO

Implementing Risk Budgeting for a Typical Pension

—Use risk measurement infrastructure to make decisions

—Establish cultural beliefs; Risk can be managed, Return cannot

—The Board "owns" the policy asset allocation, while CIO/staff are responsible for its implementation

—Active Risk Budgeting is a framework for allocating a limited resource

—Executing a Risk Budgeting strategy requires attributing active risk and return to asset allocation and manager selection decisions
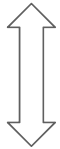
Active Management for the CIO

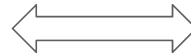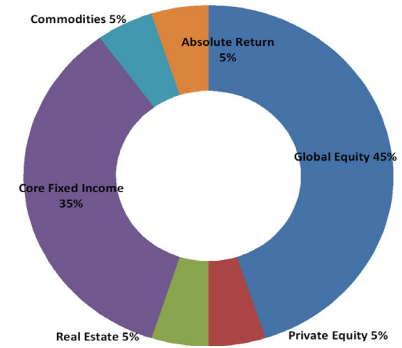## Coordinating objectives vertically and horizontally

Board

CIO

Managers

– Equity overweight?
– Leverage?
– Active/passive?
– Internal/external?
– Duration?
– **Active Risk?**

Beat High Yield benchmark ⟺ Generate absolute return via credit pairs

Commodities 5%
Absolute Return 5%
Global Equity 45%
Core Fixed Income 35%
Real Estate 5%
Private Equity 5%

What is the Information Ratio for a casino?

– For one spin of the Roulette wheel, the information ratio is .02.

– This slight advantage comes from the one green spot. If there are two green spots, the IR becomes .05.

– An exceptional active manager has an IR of .75

– For one million spins, the information ratio's become 27 and 53, respectively!

Fundamental law of active management

$$\text{Information Ratio} = \text{Skill} \cdot \sqrt{\text{Number of Repetitions}}$$

Preview

– Benchmark timing decisions are distinct from asset selection decisions and from asset allocation decisions.

– Management of absolute risk and return are distinct from management of active risk and return.

– The best active management strategy is that which has the most spins of the wheel, assuming equal skill.

Is Active Management Important?
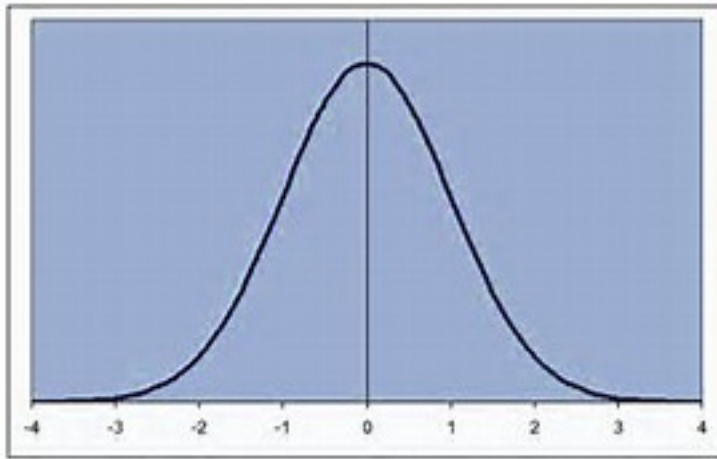
Govern...

See Jeff Scott

Absolute R...

Strategic Asset Allocation
85% of 60/40 is equity risk

Active Risk

Is Active Management Legitimate?

It is almost a premise of modern portfolio theory that successful active management is impossible.

Active Risk

Verus

What kind of active management should we pursue?

Expected return decomposition

Expected total return =

$$i_f + (\beta_n \cdot \mu_B) + (\beta_n \cdot \Delta f_B) + \alpha_n$$

A risk free part (time premium i_f)

A benchmark component (the risk premium $\beta_n \cdot \mu_B$)

A benchmark timing component (exceptional benchmark return $\beta_n \cdot \Delta f_B$)

Alpha (expected residual return α_n)

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Active Risk

Tactical asset allocation

Active managers

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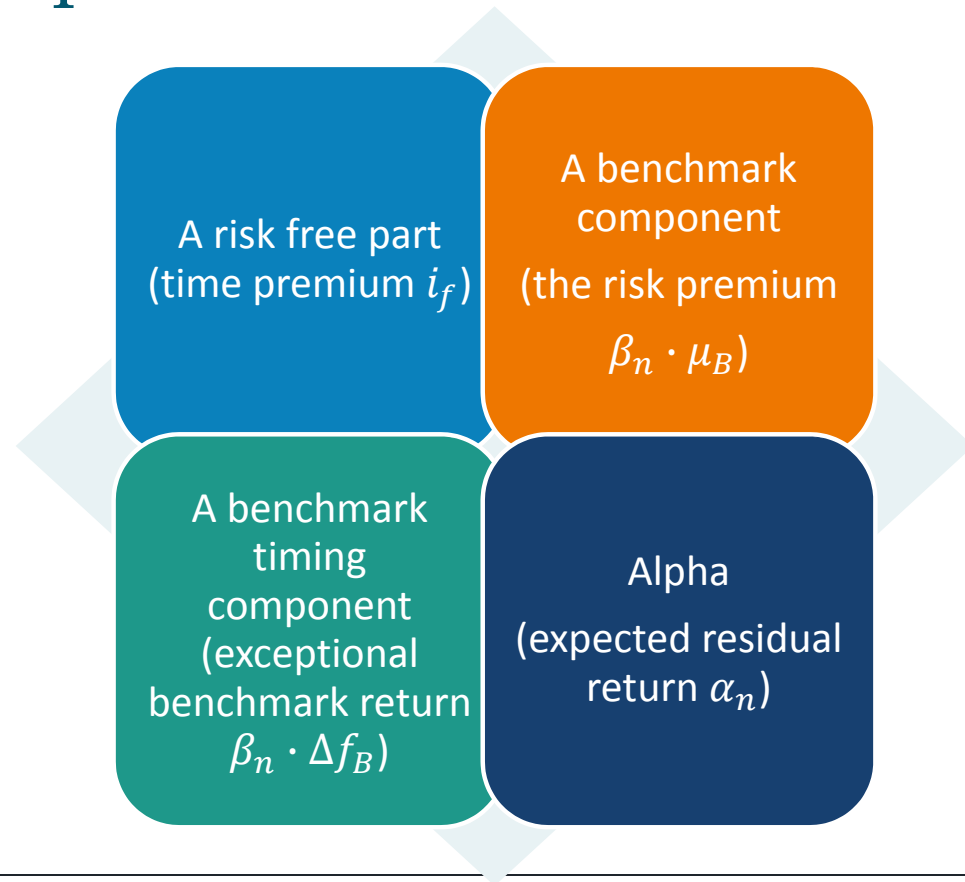
Sizing your active risk

What is the objective?

Return?   Risk?   Return-Risk?

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What is the objective?
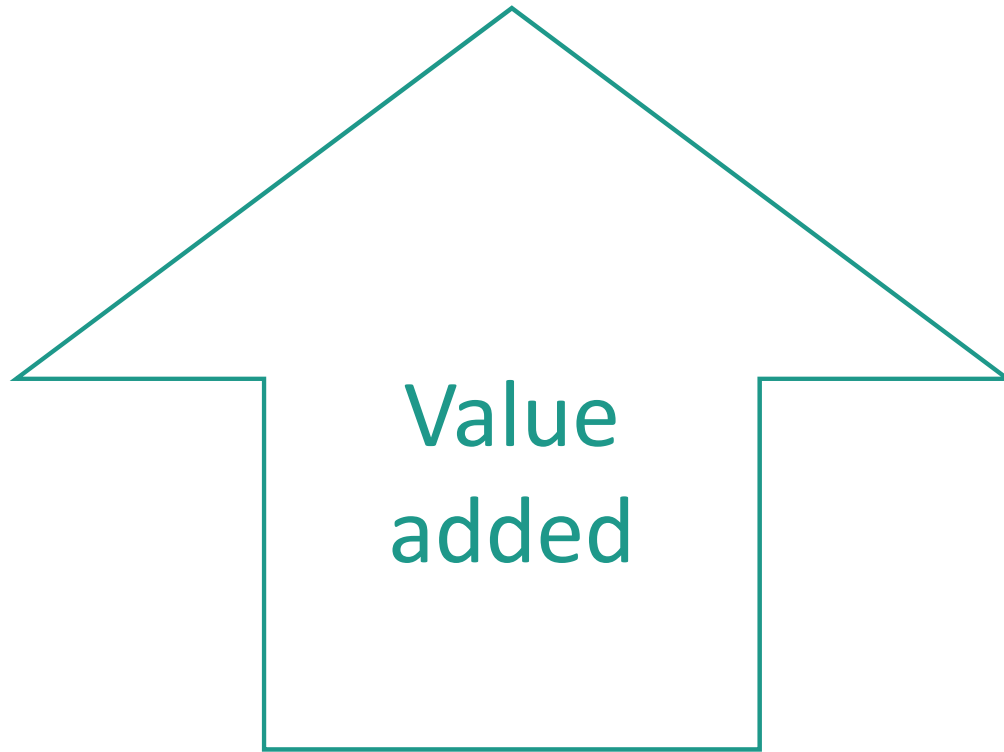
Value added

Value added is Return less

Risk adjusted for tolerance

Intuition behind risk aversion

The risk aversion that would make us
choose the benchmark as our portfolio is

$$\boxed{\begin{array}{c} \text{Risk} \\ \text{Aversion} \end{array}} \ = \ \boxed{\dfrac{\text{Return}}{2 \cdot \text{Risk}^2}}$$

If our return is 8% and our risk is 16%,
our risk aversion is 1/64 or 0.016

Not all risk is created equal

Investment managers and plan sponsors are more averse to the risk of deviation from the benchmark than to the risk of the benchmark

Portfolio #1
- 16% benchmark risk
- 0% active risk
- total risk 16%

Portfolio #2
- 15% benchmark risk
- 0% active risk
- total risk 15%

Portfolio #3
- 15% benchmark risk
- 5.6% active risk
- total risk 16%
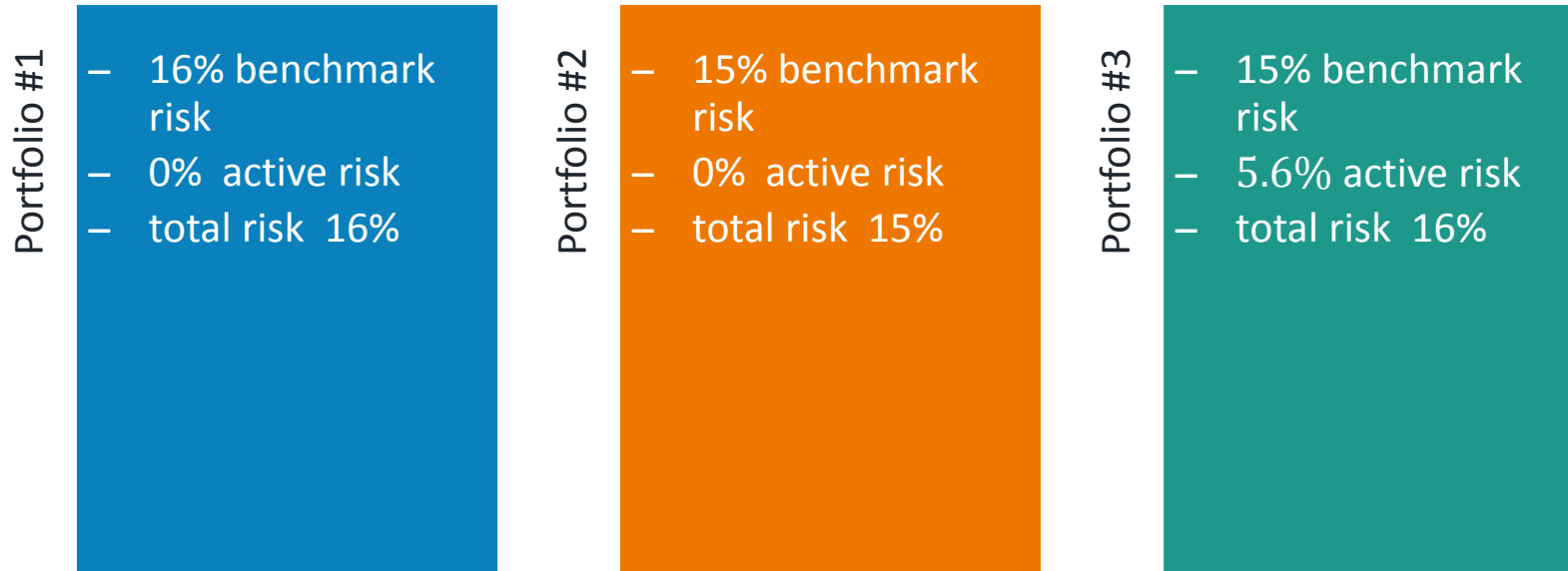
Which portfolio has more peer risk?

Information ratio and optimal tracking error

Information ratio is to active management what the Sharpe ratio is to absolute management:

$$\text{Information Ratio} = \frac{\text{Alpha}}{\text{Tracking Error}}$$

$$\text{Optimal Tracking Error} = \frac{\text{Information Ratio}}{2 \cdot \text{Risk Aversion}}$$

If our information ratio is a very good **.75** and our risk aversion is **.015**, our optimal tracking error is **25%**

Should be **0.15**!

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Conclusion

– Benchmark timing decisions are distinct from asset selection decisions and from asset allocation decisions.

– Management of absolute risk and return are distinct from management of active risk and return.

– The best active management strategy is that which has the most spins of the wheel, assuming equal skill.

What if the Manager isn't as good as we thought?

$$\text{Optimal Value Added} = \frac{\text{Information Ratio}^2}{4 \cdot \text{Risk Tolerance}} = \frac{\text{Optimal Tracking Error} \cdot \text{Information Ratio}}{2}$$

If the Risk Aversion is 0.15, we estimate that:

– for an IR of .75, the optimal tracking error is 2.5% and the value added is .94%

– for an IR of 0.3, the optimal tracking error is 1.0% and the value added is .15%

Using an IR of .75 when the true IR is .3 leads to a value added of $-.19\%$

Example Pension Portfolio

Asset Class	Policy Benchmark	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)
Equity	MSCI ACWI	54	50	4
Fixed	BarCap Agg	41	40	1
Real Estate	NCREIF ODCE	5	10	-5
Total Fund	**Target-Weighted Average**	**100**	**100**	**0**

Manager	Manager Benchmark	Manager Weight (%)
EQ Mgr I	S&P 500	20
EQ Mgr II	MSCI EAFE	30
EQ Mgr III	MSCI EM	20
Fixed Mgr	BarCap Agg	100
RE Mgr	NCREIF ODCE	100

Asset class over/underweights

Managers' weight within asset classes

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Example Pension Portfolio

Contribution to Active Risk (bps)

Asset Class	Allocation Contribution
Equity	13
Fixed	-2
Real Estate	31
Total Fund	**42**

+

Manager	Selection Contribution
EQ Mgr I	29
EQ Mgr II	16
EQ Mgr III	15
Fixed Mgr	13
RE Mgr	21
	93

+

Benchmark Misfit Contribution
24
-11
-10
0
0
3

=

Total Contribution
75
10
53
138

Asset allocation decisions

Manager tilts vs. manager benchmark

Manager benchmark tilts vs. policy benchmark

Total active risk

Questions

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