


MERCER

Investment Consulting

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Risk Budgeting: The Key to a Successfully Designed
Portable Alpha Program?

IIR Portable Alpha Summit

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Marsh & McLennan Companies



Risk Budgeting & Portable Alpha

- Portable Alpha is a tool to realize the full potential of an active risk budget
- Portable Alpha allows the fund's Active Risk Allocation to break the bonds of the Strategic Allocation



Beta and Alpha

- Beta – The Return & Risk of an asset class
 - A combination of unique systematic risk premiums
 - Available through a passive vehicle
 - Efficiency measured through Sharpe Ratio: $(\text{Return} - \text{Cash}) / \text{Risk}$
- Alpha – The Excess Return and Risk versus a Beta portfolio
 - Generated by holding only a subset of the securities in a particular Beta and/or changing those securities over time
 - Efficiency measured through Information Ratio: $\text{Alpha} / \text{Active Risk}$



Active Risk Budgeting

- Active Risk Budgeting means analyzing available active risks for the combination that provides the highest alpha for a target level of active risk
- Risk Budgeting is an optimization exercise
 - Analyze active managers available
 - Determine expected risk (tracking error), return (alpha) and the correlation among different managers
 - Use mean variance analysis to produce an efficient frontier of active manager allocations
- Risk Budgeting is a qualitative and quantitative examination of active management
 - What if ...
 - Why
 - How ...

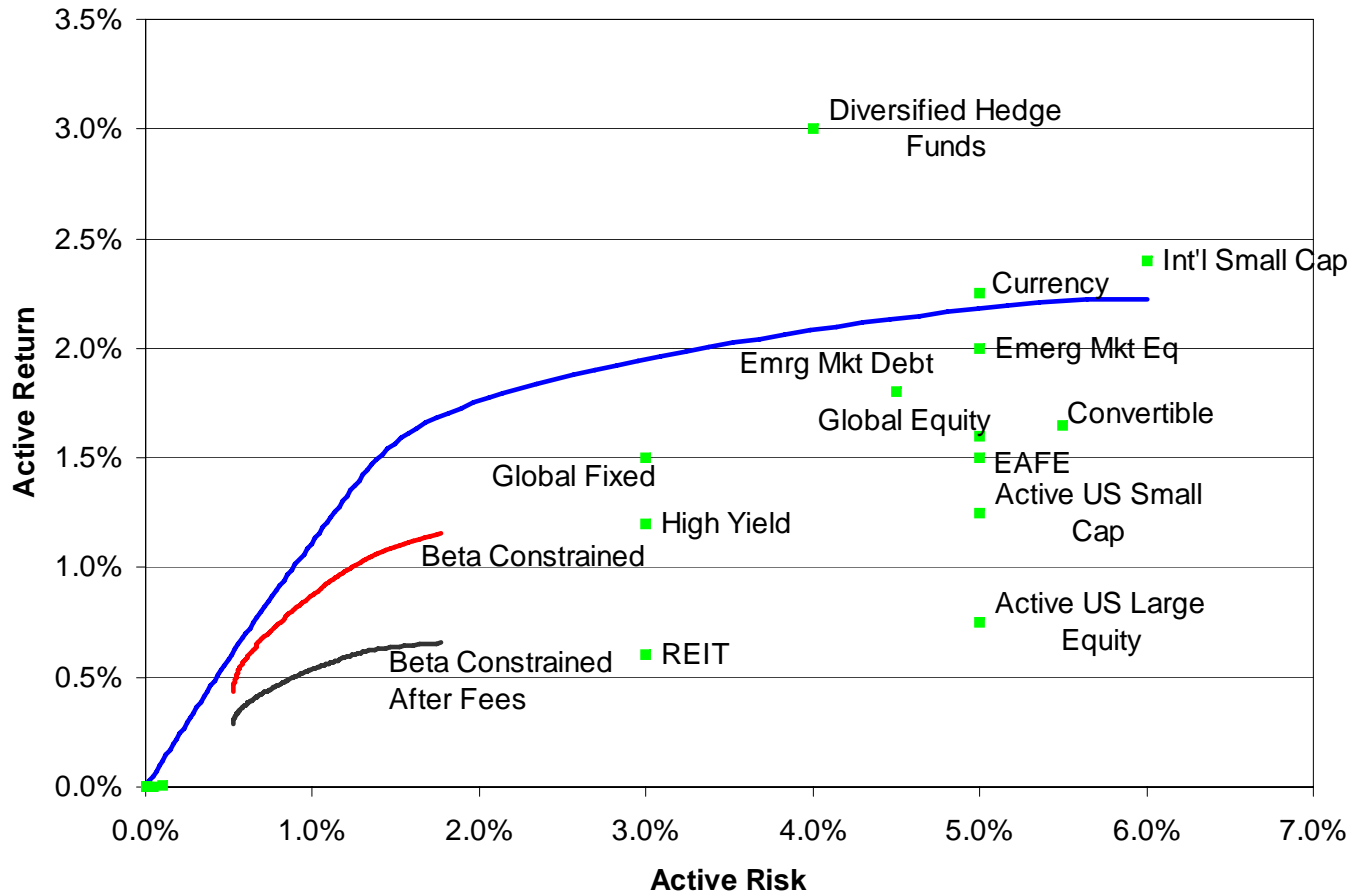


The Problem with Traditional Active Structures Beta Holds Alpha Hostage

- Traditional Structures have conditioned exposure to Alpha on the Beta exposures
 - The allocation of Beta (the Asset Allocation) is determined first
 - Alpha is left as an implementation decision
 - Active Managers are hired to fill the Beta buckets determined by the Asset Allocation
- The Primary Role of Active Management (Traditional)
 - Provide Beta Exposure
 - Stick close to benchmark
 - Don't drift to other areas



Active Risk Available

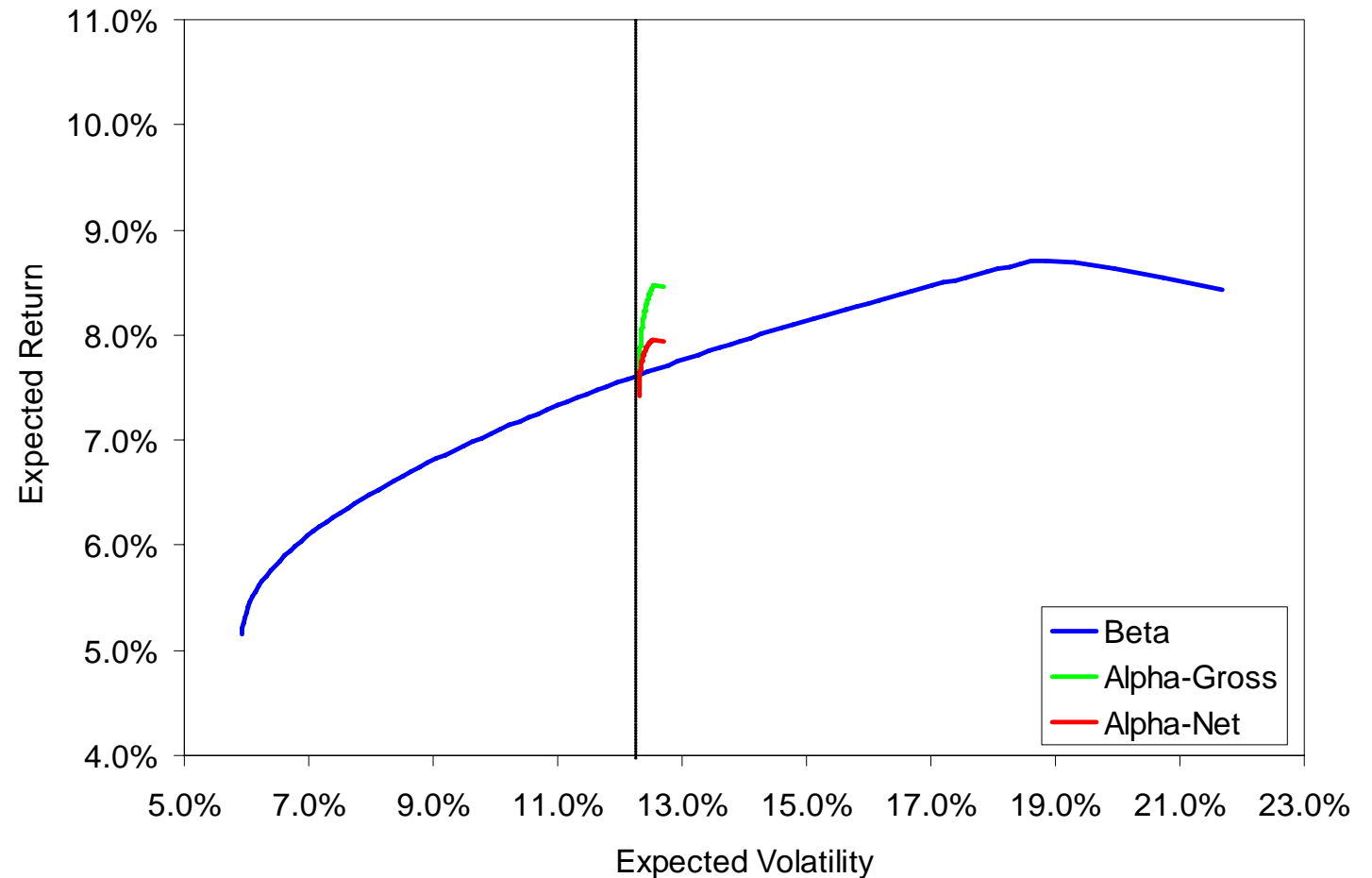




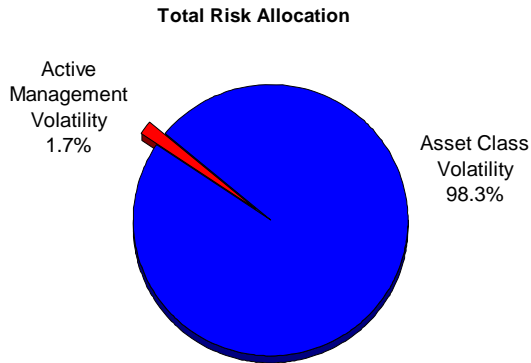
Status Check The Traditional Structure

Total Portfolio Risk / Return

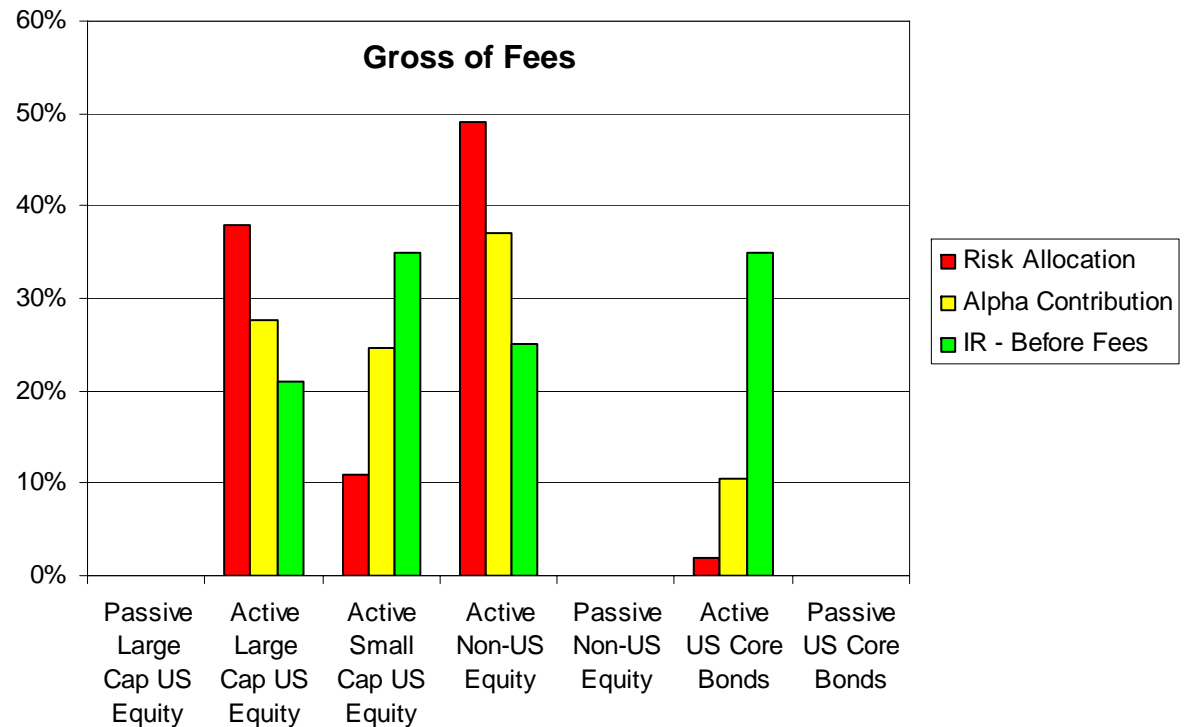
- Active Risk is immaterial in traditional structure
- Active risk has no correlation with market risk; efficient diversification
- Active Risk Puzzle



Typical Active Risk Allocation Traditional Portfolio



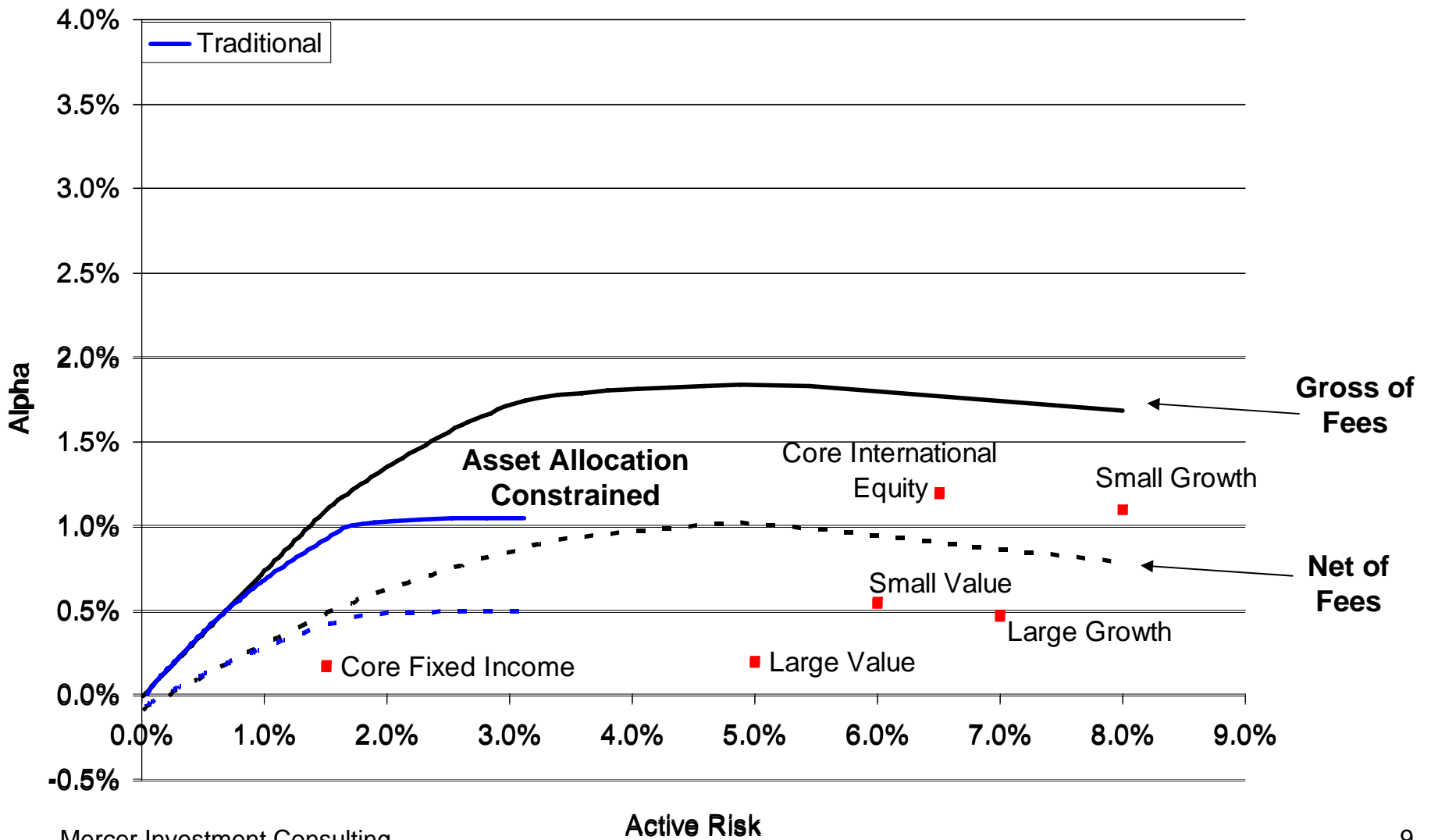
	Risk	Return
Beta	12.3	7.5
Alpha	1.5	0.4
Total	12.4	7.9



**Risk Budgeting is the process of improving this allocation.
Portable Alpha is one of the tools.**



Improving Efficiency with Portable Alpha Traditional Managers

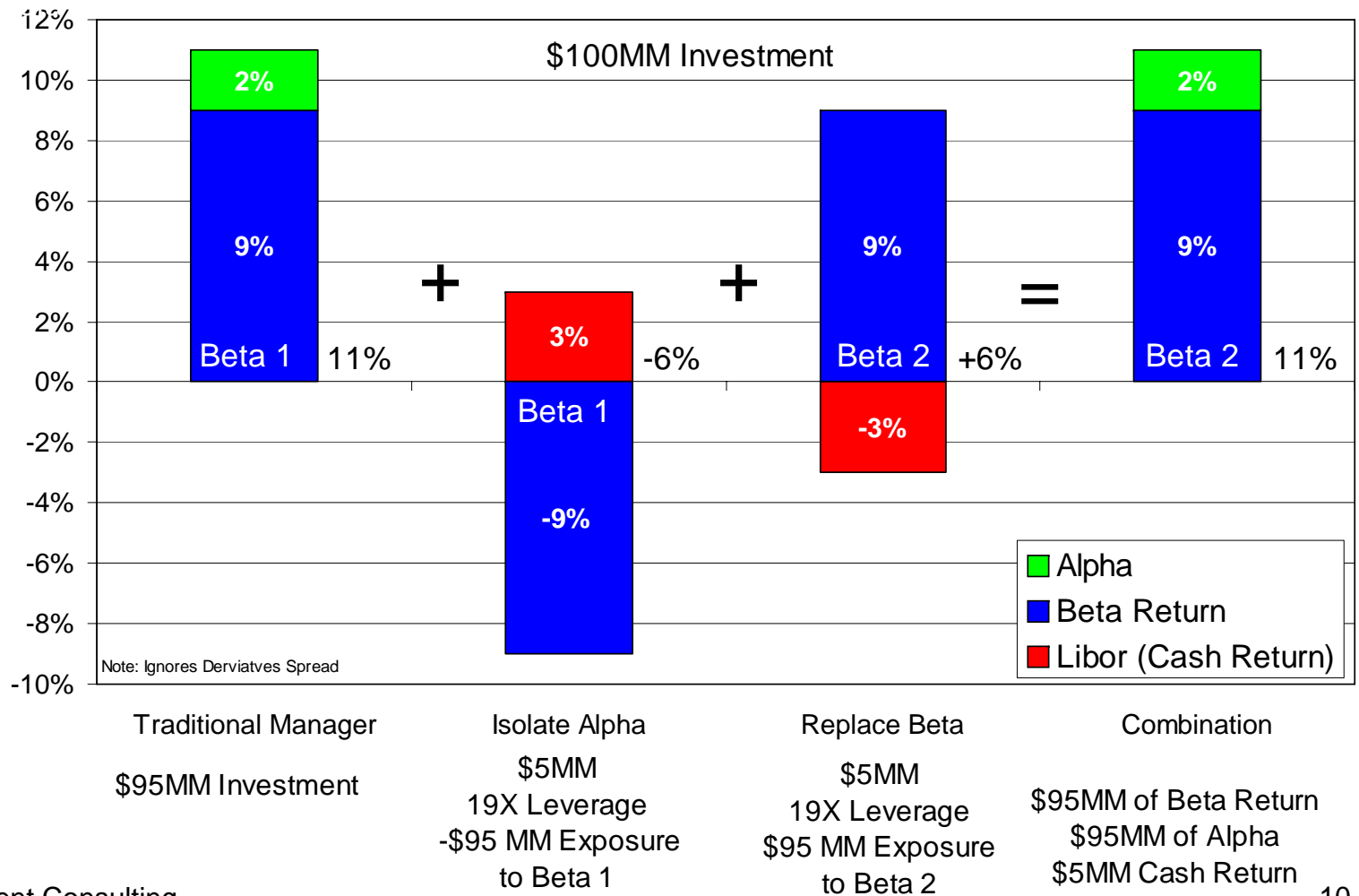




The Portable Alpha Process

Isolate Alpha to a Cash Basis

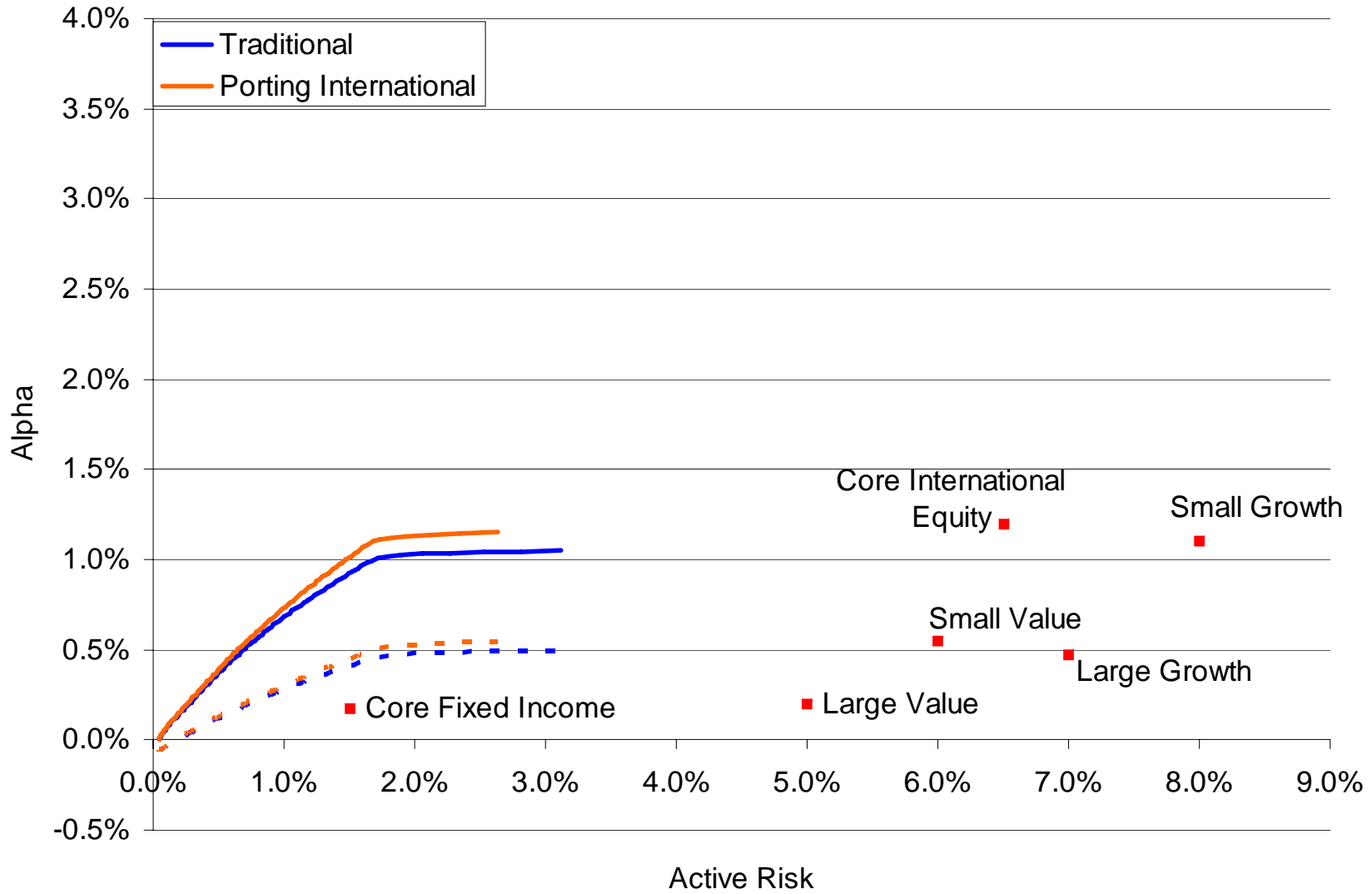
Add in desired Beta



Economics of Porting Alpha

Name	Style	Strategy	IR	Alpha	Active Risk	Management Fees	Cost to Short Beta	Cost to Add Beta	Net Alpha Available to Port
Large Growth	Growth	Active - Long Only	0.150	1.05%	7.00%	-0.58%	-0.05%	0.05%	0.42%
Large Value	Value	Active - Long Only	0.150	0.75%	5.00%	-0.55%	-0.05%	0.05%	0.15%
Small Growth	Growth	Active - Long Only	0.250	2.00%	8.00%	-0.90%	-1.00%	-0.50%	0.10%
Small Value	Value	Active - Long Only	0.250	1.50%	6.00%	-0.95%	-1.00%	-0.50%	-0.45%
Core International Equity	Core	Active - Long Only	0.300	1.95%	6.50%	-0.75%	-0.45%	0.25%	0.75%
Core Fixed Income	Core	Active - Long Only	0.350	0.53%	1.50%	-0.35%	-0.05%	-0.05%	0.13%

Porting Alpha Traditional Alpha Source



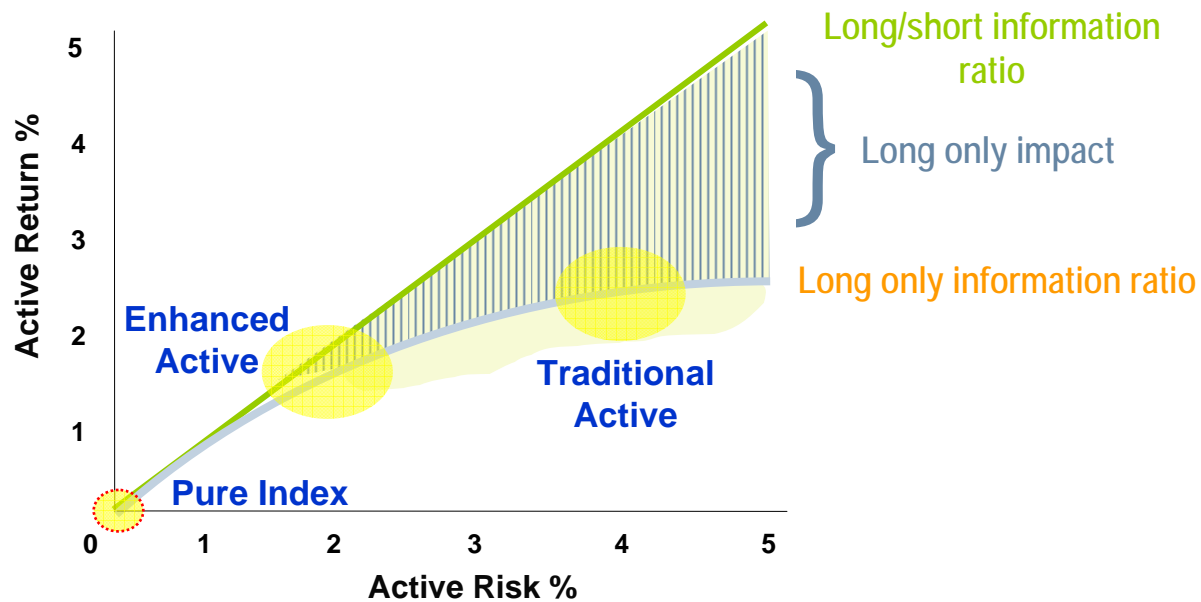


Traditional Managers and Portable Alpha

- Traditional Managers can be difficult to utilize in a portable alpha framework
- Beta can be difficult and expensive to remove from less efficient asset classes (100bp for US Small Cap, 45bp for EAFE)

Enhancing Alpha Remove the Long Constraint

- Taking more risk does not lead to higher returns for long only portfolios
 - Negative views cannot be fully reflected without shorting
 - Only a small number of stocks in the S&P 500 index have a weight of more than 1%

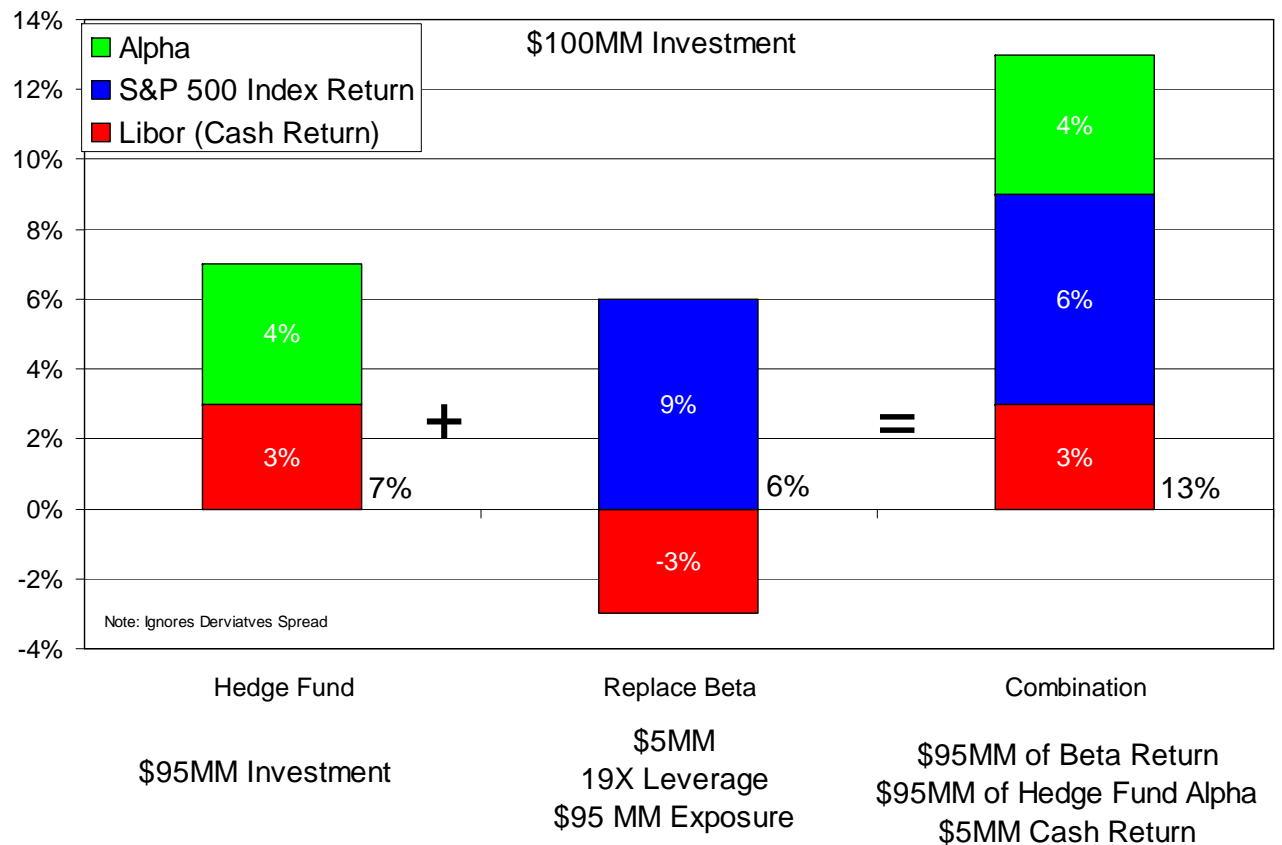


Enhanced Active strategy has a better information ratio - allowing short selling, derivatives & leverage provides opportunity for increased risk/return while preserving investment efficiency



The Portable Alpha Process Hedge Fund as Alpha

- Isolate Alpha on a Cash Basis - Done
- Add in desired Beta
 - Use derivatives to add the desired level and type of Beta exposure to the Isolated Alpha

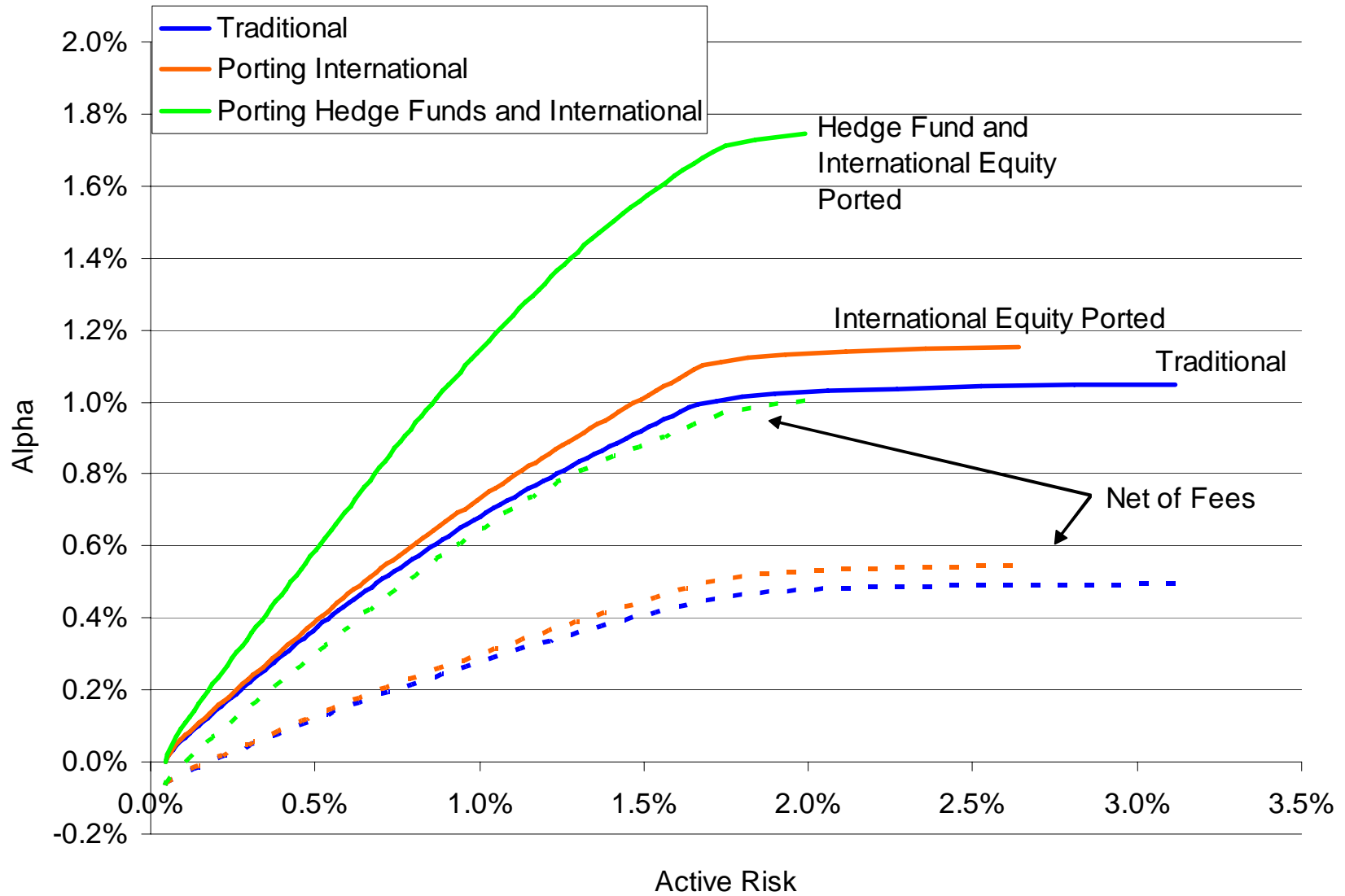


Economics of Porting Alpha

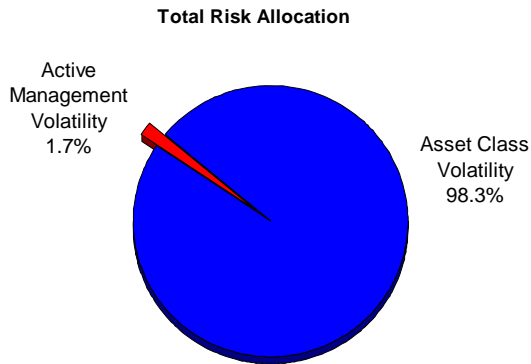
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Core International Equity	Core	Active - Long Only	0.300	1.95%	6.50%	-0.75%	-0.45%	0.25%	0.75%
Core Fixed Income	Core	Active - Long Only	0.350	0.53%	1.50%	-0.35%	-0.05%	-0.05%	0.13%
Diversified Hedge Funds	Core	Alpha Only	0.750	3.00%	4.00%	-1.00%	0.00%	0.00%	2.00%
Aggressive Hedge Fund	Core	Alpha Only	0.650	4.88%	7.50%	-1.50%	0.00%	0.00%	3.38%



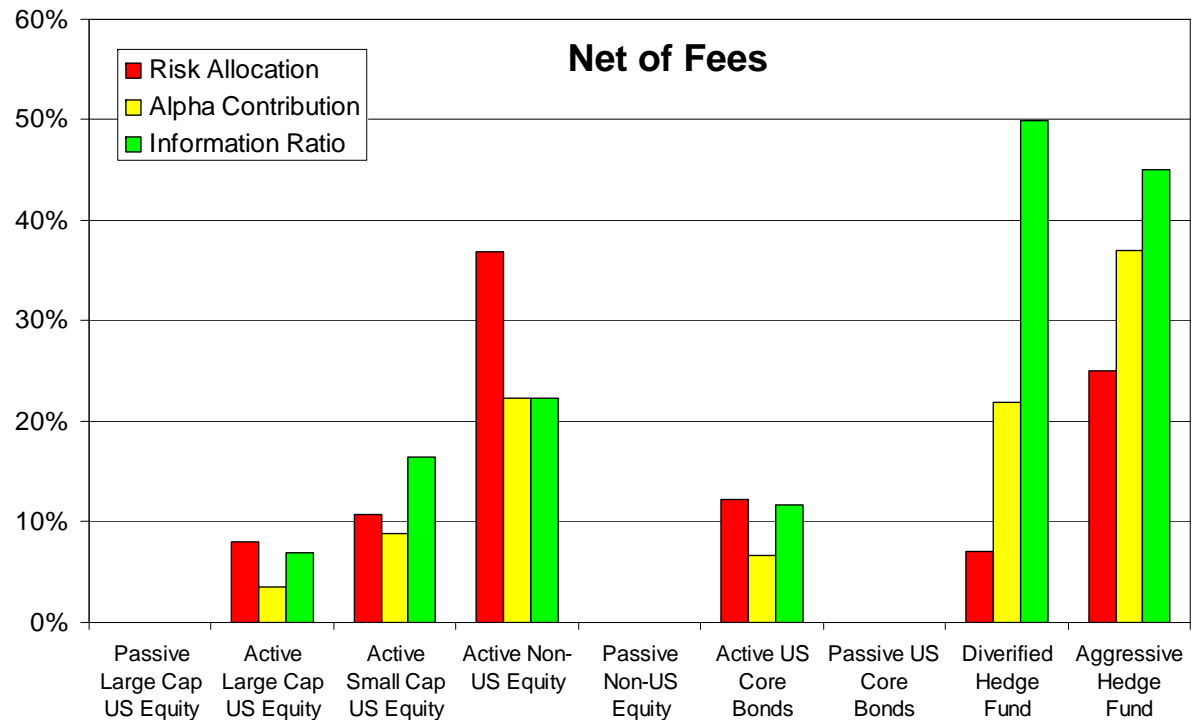
Porting Alpha Efficiency and Magnitude Matter



Active Risk Allocation Porting international Alpha and Hedge Funds



	Risk	Return
Beta	12.3	7.5
Alpha	1.5	0.9
Total	12.4	8.4



Alpha and Total return improve by 50bp net, risk is the same, active risk is allocated to the most effective areas



Alpha Porting Results Total Fund

	Traditional	Porting International	Porting Hedge Fund and International
ANALYSIS RESULTS			
TOTAL PORTFOLIO RETURN-BASED STATISTICS			
TOTAL RETURN/RISK - ENTIRE PORTFOLIO - GROSS-OF-FEE			
Arithmetic Absolute Return	9.01%	9.15%	9.80%
Standard Deviation	12.40%	12.40%	12.40%
Return/Risk Ratio	0.7269	0.7377	0.7900
Geometric Absolute Return	8.31%	8.45%	9.10%
Volatility Drag	0.70%	0.70%	0.69%
TOTAL RETURN/RISK - ENTIRE PORTFOLIO - NET-OF-FEE			
Arithmetic Absolute Return	8.55%	8.61%	9.09%
Standard Deviation	12.40%	12.40%	12.40%
Return/Risk Ratio	0.6897	0.6947	0.7328
Geometric Absolute Return	7.85%	7.91%	8.39%
Volatility Drag	0.70%	0.70%	0.70%
CONTRIBUTION TO TOTAL RETURN - ENTIRE PORTFOLIO - NET-OF-FEE			
Asset Class Return	95.6%	94.9%	90.0%
Active Management Return	4.4%	5.1%	10.0%
CONTRIBUTION TO TOTAL VARIANCE - ENTIRE PORTFOLIO			
Asset Class Volatility	98.5%	98.5%	98.5%
Active Management Volatility	1.5%	1.5%	1.5%



Alpha Porting Results Alpha & Beta

ANALYSIS RESULTS	Traditional	Porting International	Porting Hedge Fund and International
ASSET CLASS ONLY RETURN-BASED STATISTICS			
ASSET CLASS RETURN/RISK - ENTIRE PORTFOLIO - USER-SPECIFIED BETA			
Arithmetic Absolute Return	8.18%	8.18%	8.18%
Standard Deviation	12.31%	12.31%	12.31%
Return/Risk Ratio	0.6641	0.6641	0.6641
Beta	1.0000	1.0000	1.0000
Geometric Absolute Return	7.48%	7.48%	7.48%
Volatility Drag	0.69%	0.69%	0.69%
ALPHA ONLY RETURN-BASED STATISTICS			
ALPHA/TRACKING ERROR - ENTIRE PORTFOLIO - GROSS-OF-FEE			
Arithmetic Alpha	0.84%	0.97%	1.62%
Tracking Error	1.50%	1.50%	1.50%
Information Ratio	0.5589	0.6487	1.0808
Geometric Alpha	0.83%	0.96%	1.61%
Volatility Drag	0.01%	0.01%	0.01%
ALPHA/TRACKING ERROR - ENTIRE PORTFOLIO - NET-OF-FEE			
Arithmetic Alpha	0.38%	0.44%	0.91%
Tracking Error	1.50%	1.50%	1.50%
Information Ratio	0.2519	0.2929	0.6081
Geometric Alpha	0.37%	0.43%	0.90%
Volatility Drag	0.01%	0.01%	0.01%



Portable Alpha Structures

- Portable Alpha
 - Identify target Betas, Select Alphas
- Portable Beta
 - Select Efficient and Diversified Alphas
 - Develop the required synthetic Beta portfolio to create strategic allocation



Portable Alpha

- Determine areas of active risk inefficiency in portfolio
- Select desired alpha sources to replace traditional active management
- Structure the Investment
 - Bundled Alpha and Beta Vehicles
 - Distinct Beta Portfolio

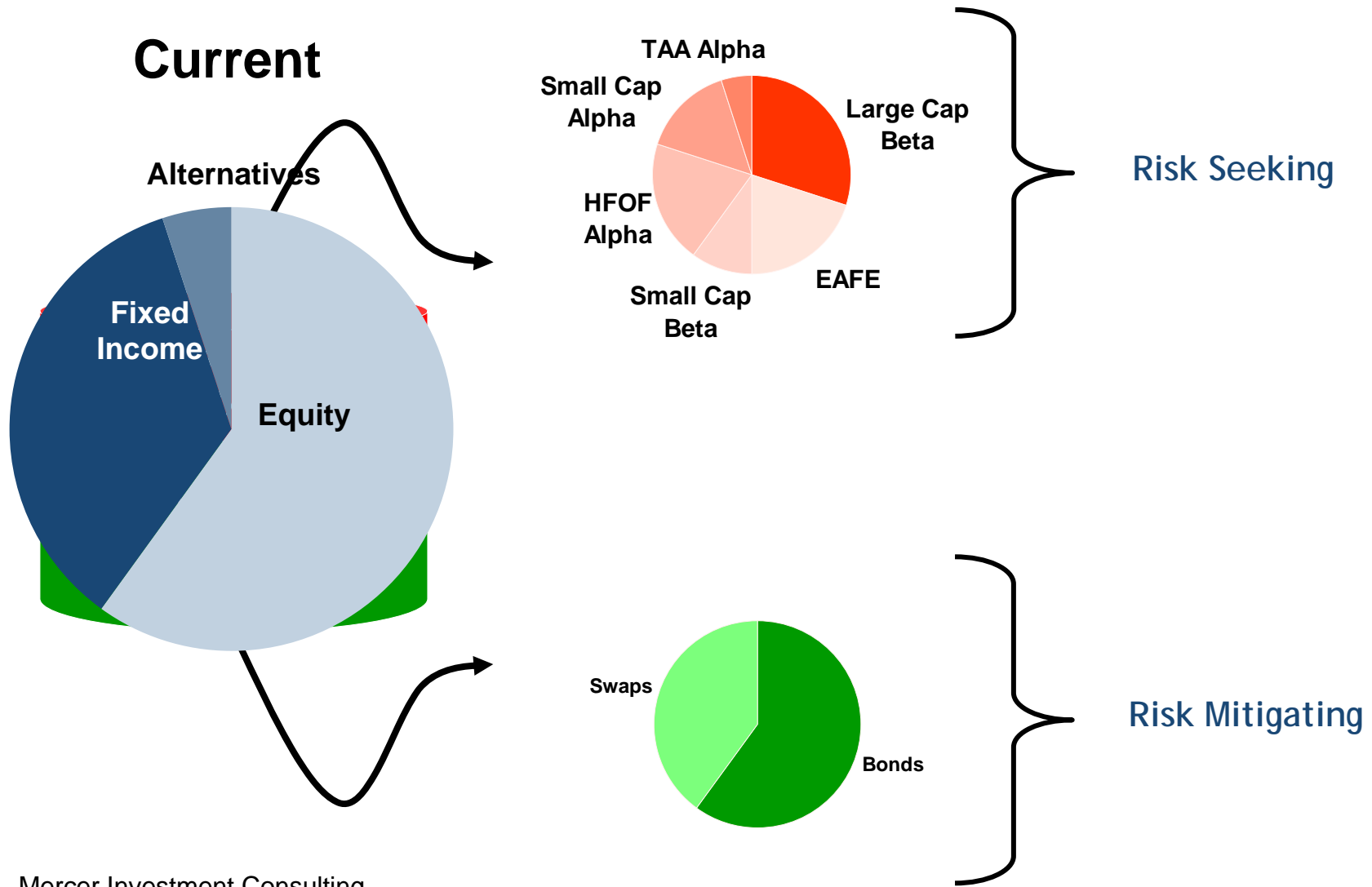


Portable Beta

- Separate Alpha and Beta to the maximum extent possible
- Develop a stable of alpha sources: the Alpha Portfolio
 - Select based on efficiency and confidence
 - Allocate between them based on maximizing Total Active Risk Efficiency
 - Pay Attention to Alpha per Unit of Capital Allocated
- Calculate Beta contributed by Alpha Portfolio
- Develop a Completion Portfolio
 - Difference between target Beta allocation and residual Beta from Alpha Portfolio
 - Consider illiquid Betas (Alpha can't be ported)
 - Develop synthetic Beta portfolio
- Allocate Capital to Alpha Portfolio, illiquid Beta portfolios and Collateral Management

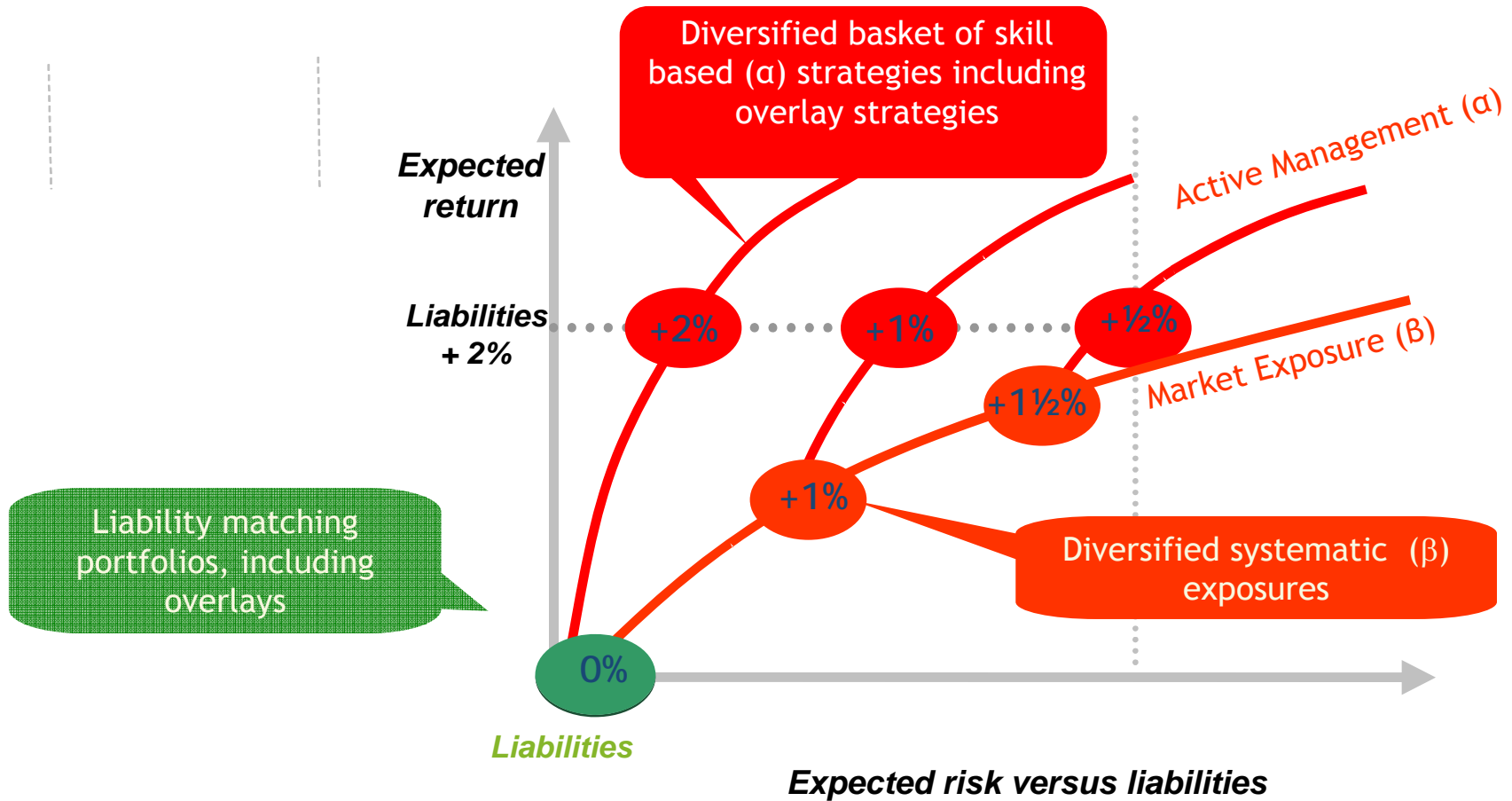
Risks to Take and Risks to Hedge

What is our risk tolerance?





The Potential of Portable Alpha

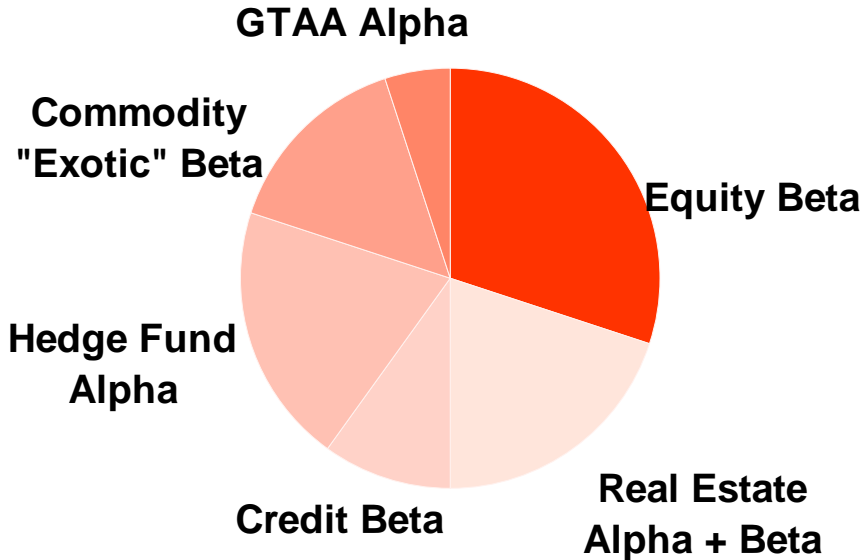




Risks to Take?

Skill Based and Systematic Return Sources Compete Side by Side

Skill Based Return Sources



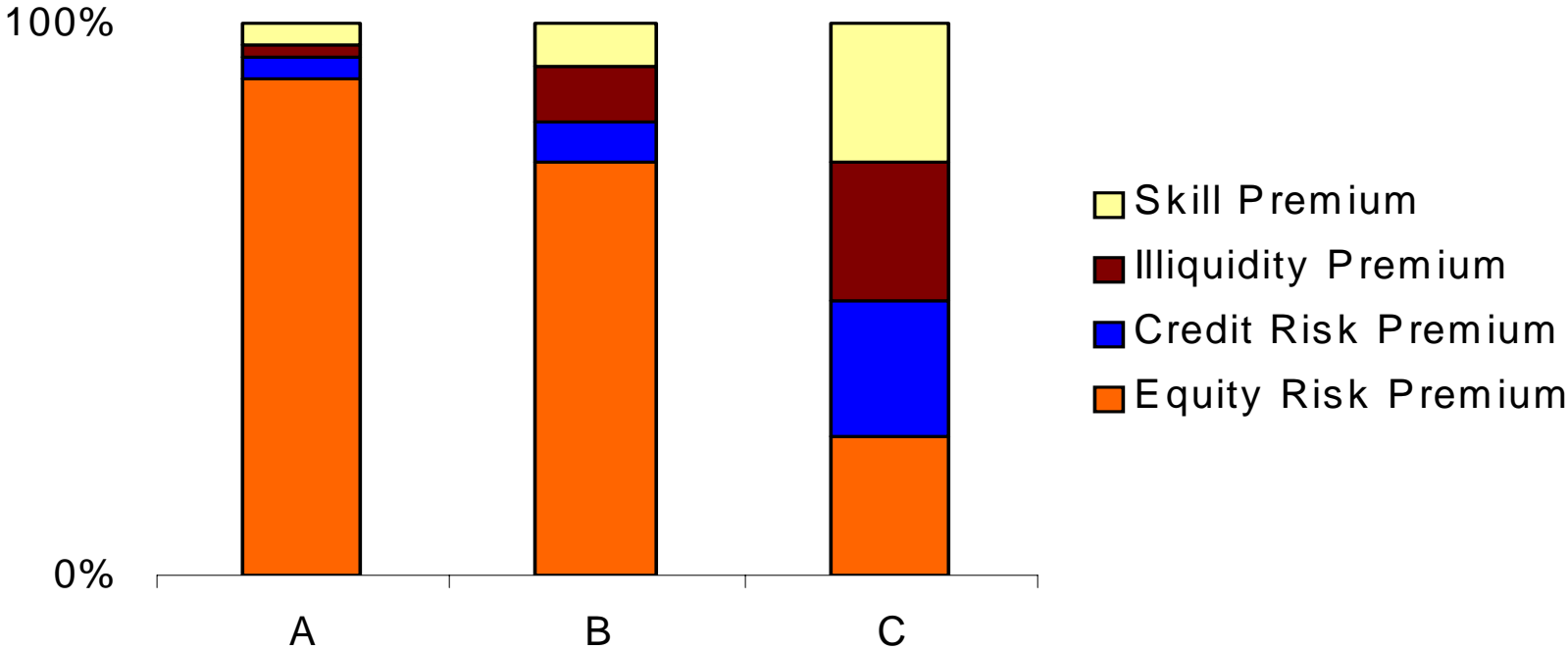
- Fundamental betas
- Exotic betas
- Liquidity premia
- Premia from underwriting downside risk
- Alphas associated with underlying betas
- Standalone alphas - funded
- Standalone alphas - overlay

Systematic Return Sources



Where are we heading?

- Recognition that diversity improves efficiency
- Portable alpha will be included in the toolbox
- Some investors will move towards Model C but more will be like Model B





Issues and Challenges

- “Model risk” and assumption setting
- Lack of “governance budget”
- Identifying alpha sources - uncorrelated, high enough, consistent, pure
- Removing betas/adding synthetic betas
- Implementation and oversight



Conclusion

- Portable Alpha is a powerful tool in managing portfolio risk
- Risk Budgeting is a systematic process for assessing where portable alpha makes sense



References

- Dopfel, Fred (BGI) – “How hedge funds fit into the institutional investor’s portfolio”, March 2005
- Arnott, Rob – “Risk Budgeting and Portable Alpha”, The Journal of Investing, Summer 2002
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- Waring, Barton, Siegel, Jeremy – “The Dimensions of Active Management”, Journal of Portfolio Management, Spring 2003

