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Evaluating Transparency Risk: Implications for
Fair Value Measurement and Asset Allocation

By

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Presentation Outline

- About Axiom Valuation Solutions (www.AxiomValuation.com)
- The Nature of the Problem that Fiduciaries Face in the *Post-Madoff Era*:
Are AI returns misreported? If so, what does this mean for ensuring that endowment AI values are properly reported at fair value
- What can fiduciaries do to be certain that AI values are properly reported?
- Minimizing Transparency Risk: A Primary Fiduciary Responsibility
- Axiom Valuation's AI Valuation Platform ensures that asset managers report investment values properly
- Misreported AI returns: Implications for asset allocation decisions



Two Key Conclusions

- Endowment Fund Managers Can Not Meet Their Fiduciary Responsibility Without Implementing a Process that Quantifies that AI Values on Their Financial Statements are Proper. Simply Accepting the Values Provided by AI Managers Does Meet the Audit Oversight Standard.
- AI Sharp Ratios are Biased Upward Creating the False Impression That When AI is Added to an Endowment Portfolio, the Portfolio will Generate an Incremental Return at Very Little Additional Risk.



The Nature of the Problem that Fiduciaries Face in the Post-Madoff Era

- The *Madoff Event* has put fiduciaries on notice that there is a probability that self-reported Alternative Investment (AI) values may not be accurate.
- AI managers face a critical conflict when reporting investment values to plan trustees.
 - Phalippou & Gottshalg, *Review of Financial Studies* (2009) indicate that self-reported PE returns and associated valuations are too high.
 - After making initial investments, AI managers have incentives to report investment values that are often higher than fair value would suggest.
 - Auditors are NOT SIGNING OFF ON WHETHER THE UNDERLYING INVESTMENTS ARE AT FAIR VALUE.



AI is Characterized By a High Degree of Transparency Risk

Transparency Risk: The probability that self-reported investment values provided by AI managers are not accurate.

Recent Academic Research Indicates that AI Returns are Systematically Misreported

- Hedge Fund Returns: Bollen and Pool (2009)
 - The authors find a greater than expected frequency of returns just above zero and a lower than expected frequency of returns that are just below zero. Moreover, in contrast to these findings, they do not find such a pattern in the distribution of mutual fund returns.
- Private Equity: Phalippou and Gottschalg (2009)
 - A key finding in the study that is relevant for fiduciaries is that a large part of the investment performance reported by PE funds is attributable to inflated accounting valuations applied to the Net Asset Values (NAVs) of the underlying assets.

What We Know About PE Fund Performance

- The average PE return is overstated by 3%- 6% per year.
- The PE Sharp Ratio is overstated: Upward bias in returns and return smoothing.
 - Aggregation of fund returns using total capital committed instead of the present value of actual funds committed overstates the performance of the average PE fund.
- Performance persistence: Prior fund performance is the best indicator of future fund performance.



What Do We Know About Hedge Fund Performance

- Hedge funds invested in publicly traded securities are far less likely to misreport than private equity managers.
- Hedge fund managers that invest in illiquid, non-traded assets are more likely to have the same misreporting issues that private equity managers have.
- Fund-of-Funds are inherently non-transparent and while they offer some diversification benefits, the cost is increased transparency risk.

No free lunch!



The Nature of Transparency Risk and Fair Value Measurement

- Question: ***Can Endowments Determine the Fair Value of Their Alternative Investment Classes if Research Indicates that AI Returns are Systematically Misreported?***

FAS157 Changes the Responsibility of Fiduciaries

- Topic 820 (FAS 157) lays out the specific process, the steps if you will, that one must go through to establish fair value.
- FAS 157's intent is to establish transparency as to process which in this case means enlightening fair value end users as to how fair value is measured.
- The fiduciary's responsibility includes, among other things, that investment manager transparency is fully aligned with the transparency requirements of the fiduciary.



Audit Sign Off Is Not A Safe Harbor For Fiduciaries

- All auditors do not opine on whether reported investment values are fair value but rather that their audit of the process used, is consistent with the requirements of fair value.
 - This is a far weaker standard than establishing the values are indeed fair value.
- Custodians provide pricing services for thinly traded securities that often do not meet FAS 157 Standard
 - Prices used are often quotes from traders using pricing services which survey traders as to what they believe prices of certain securities may be, this is not good enough. In the *post-Madoff era*, the fair value standard requires that the price shown be a transaction price.



A Fiduciary's Primary Concern

**MINIMIZE
TRANSPARENCY RISK!**



Systematic Misreporting Means that AI Transparency Risk is High and AICPA Guidelines Require that Management Have a Formal Process in Place that Validates the AI Values on the Endowment's Financial Statement.

- AI Transparency Risk: The probability that self-reported investment values are not accurate.
- A central reason why fiduciaries carry out **due diligence** is to reduce transparency risk to as close to **zero** as possible so the only risk being taken is investment risk.



What Processes Minimize Transparency Risk?

Minimizing Transparency Risk

– Information Due Diligence

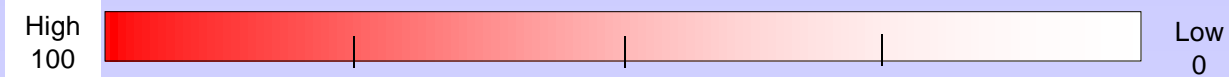
- Pre-investment Assessment
- Post-investment monitoring

– Analytical Due Diligence

- Statistically validating that self-reported AI values are correct
- Creating a process that can be effectively audited



Transparency Risk Barometer



Information Due Diligence

– Pre-Investment Due Diligence

- Assess the personnel 100 -----> 85
- Evaluate and document the investment strategy and risk 85-->75
- Consider operational issues 75 ---> 70

– Post Investment Monitoring

- Review fund communications 70 -----> 50
- Monitor fund key personnel 70 -> 65
- Review internal processes and controls at the institutional level 65 -> 60

– Analytic Due Diligence

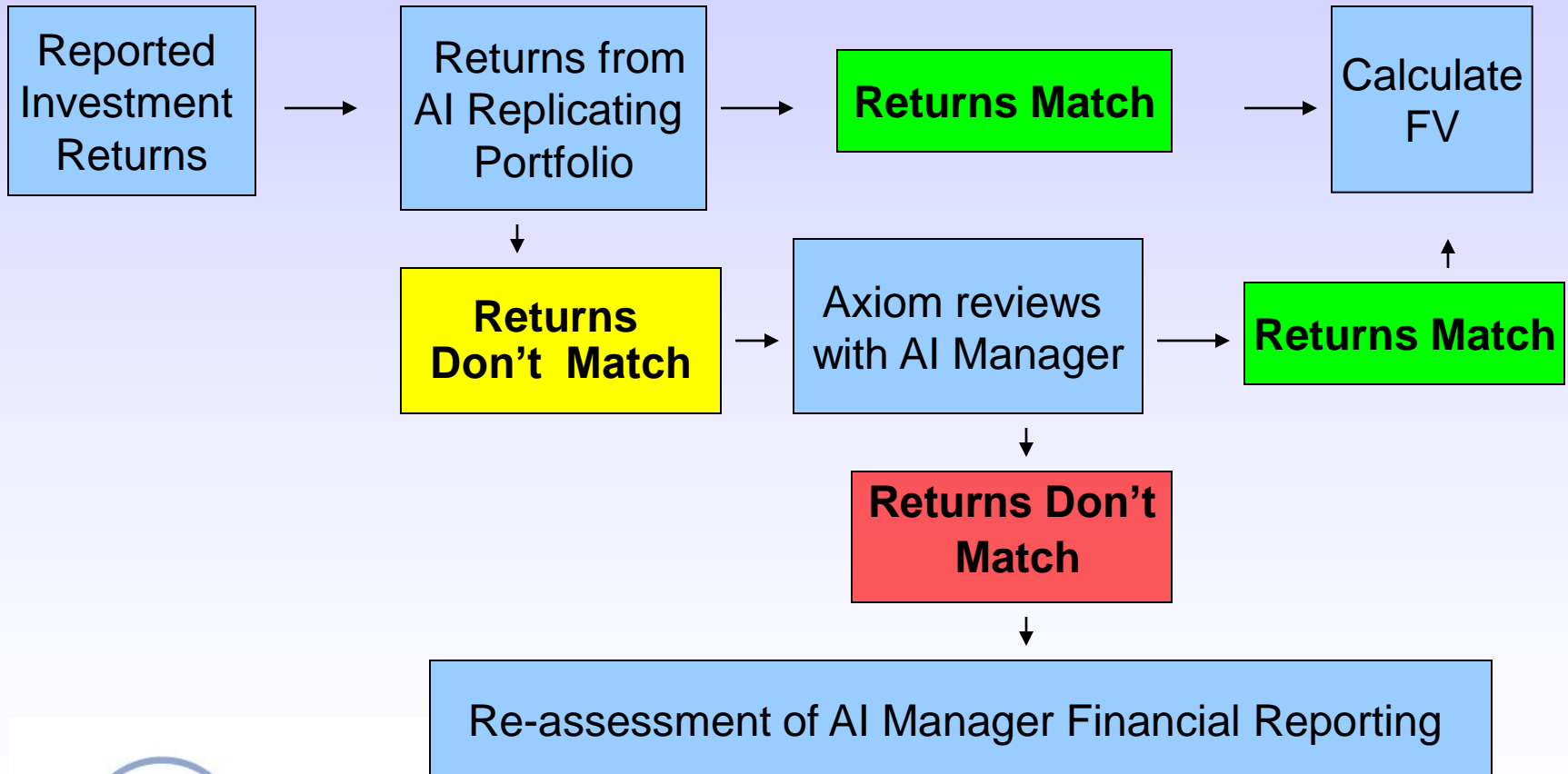
- Replicating Portfolio Methodology 50-----> 0



Best Practice Now Requires Going Beyond Information Due Diligence



Axiom Valuation's AI Valuation Platform Ensures that Asset Managers Report Investment Values Properly



The Replicating Portfolio Concept

- The basic concept of the replicating portfolio follows from Arbitrage Pricing Theory
- If one knows the make-up of a target AI portfolio: asset class, geography, industry distribution, leverage; then it can be shown that a portfolio can be created that has the same risk/return characteristics as the target portfolio and therefore should be priced equivalently.

Using the Replicating Portfolio to Measure The Fair Value of AI

Endowment Fund XYZ

Assets: \$10 Billion

Valuation Date: 6/2009

Type: Endowment Fund

Assets (in 000's):

Category of Investment	Value: Thousands	Allocation
U.S. Government Bonds	1,900,000	19%
Int'l Bonds	900,000	9%
High Yield Bonds	300,000	3%
Mortgage Backed Bonds	700,000	7%
Absolute Return	1,000,000	10%
U.S. Equities	2,100,000	21%
Global Equities	700,000	7%
Emerging Market Equities	800,000	8%
Private Equity	900,000	9%
Real Estate	700,000	7%
TOTAL	10,000,000	100%

Identify Private Equity Investments

Investment	Public / Private	Position	Value (\$ in millions)	%
ABC	Private	Debt	\$31.3	3.48%
DEF	Private	Debt	\$81.6	9.07%
HIJ	Private	Equity	\$21.6	2.40%
KLM	Private	Equity	\$123.8	13.75%
NOP	Private	Equity	\$109.4	12.16%
QRS	Public	Equity	\$36.5	4.05%
TUV	Private	Equity	\$82.3	9.15%
WXY	Private	Equity	\$139.1	15.46%
AAA	Private	Equity	\$111.8	12.42%
BBB	Private	Equity	\$44.6	4.95%
CCC	Public	Equity	\$118.0	13.11%
Total			\$900.0	100.00%

Analysis

Step 1 – Search for Public Comparable Companies

Private Investment	Comparable Company Name	Ticker
PC1	Comp1	CC1
	Comp2	CC2
PC2	Comp3	CC3
	Comp4	CC4
PC3	Comp5	CC5
	Comp6	CC6
PC4	Comp7	CC7
	Comp8	CC8
PC5	Comp9	CC9
	Comp10	CC10
PC6	Comp11	CC11
PC7	Comp12	CC12
PC8	Comp13	CC13

Analysis

Step 2 – Public company comparables' return calculation

Pricing	CC1	CC2	CC3	CC4	CC5	CC6	CC7	CC8	CC9	CC10	CC11	CC12	CC13
6/30/2009	5.49	1.6	24.42	30.25	14.39	10.48	10.23	10.46	44.42	15.15	4.65	34.41	18.42
3/31/2009	5.03	1	24.39	29.32	13.51	7.04	5.3	7.8	47.89	10.89	2.78	27.66	17.87
12/31/2008	5.23	1.22	27.19	32.44	16.66	7.16	6.49	11.42	45.95	8.35	4.08	29.66	23.94
9/30/2008	6.47	2.16	26.22	30.21	19.31	7.32	7.19	10.2	50.63	12.44	7.1	34.2	25.82
6/30/2008	7.34	2.07	31.25	32.93	18.59	6.17	8.35	8.43	53.49	19.96	8.26	37.52	24.18
3/31/2008	7	3.02	35.16	33.36	18.96	8.76	8.25	15.15	50.11	22.46	8.91	37.33	22.9
Returns	CC1	CC2	CC3	CC4	CC5	CC6	CC7	CC8	CC9	CC10	CC11	CC12	CC13
12/31/2008 - 6/30/2009	4.97%	31.15%	-10.19%	-6.75%	-13.63%	46.37%	57.63%	-8.41%	-3.33%	81.44%	13.97%	16.01%	-23.06%
3/31/2009	-3.82%	-18.03%	-10.30%	-9.62%	-18.91%	-1.68%	-18.34%	-31.70%	4.22%	30.42%	-31.86%	-6.74%	-25.36%
12/31/2008	-19.17%	-43.52%	3.70%	7.38%	-13.72%	-2.19%	-9.74%	11.96%	-9.24%	-32.88%	-42.54%	-13.27%	-7.28%
9/30/2008	-11.85%	4.35%	-16.10%	-8.26%	3.87%	18.64%	-13.89%	21.00%	-5.35%	-37.68%	-14.04%	-8.85%	6.78%
6/30/2008	4.86%	-31.46%	-11.12%	-1.29%	-1.95%	-29.57%	1.21%	-44.36%	6.75%	-11.13%	-7.30%	0.51%	5.59%



Analysis

Step 3 – Underlying assets return calculation based on comparable company returns

	PC1		PC2		PC3		PC4		PC5	
	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8	Comp9	Comp10
12/31/2008 to 6/30/2009										
Return	4.97%	31.15%	-10.19%	-6.75%	-13.63%	46.37%	57.63%	-8.41%	-3.33%	-17.23%
Weight	95.00%	5.00%	90.00%	10.00%	95.00%	5.00%	80.00%	20.00%	95.00%	5.00%
Weighted Average Return	6.28%		-9.84%		-10.63%		44.42%		-4.02%	
2009 Q1										
Return	-3.82%	-18.03%	-10.30%	-9.62%	-18.91%	-1.68%	-18.34%	-31.70%	4.22%	30.42%
Weight	95.00%	5.00%	90.00%	10.00%	95.00%	5.00%	80.00%	20.00%	95.00%	5.00%
Weighted Average Return	-4.53%		-10.23%		-18.05%		-21.01%		5.53%	
2008 Q4										
Return	-19.17%	-43.52%	3.70%	7.38%	-13.72%	-2.19%	-9.74%	11.96%	-9.24%	-32.88%
Weight	95.00%	5.00%	90.00%	10.00%	95.00%	5.00%	80.00%	20.00%	95.00%	5.00%
Weighted Average Return	-20.38%		4.07%		-13.15%		-5.40%		-10.43%	
2008 Q3										
Return	-11.85%	4.35%	-16.10%	-8.26%	3.87%	18.64%	-13.89%	21.00%	-5.35%	-37.68%
Weight	95.00%	5.00%	90.00%	10.00%	95.00%	5.00%	80.00%	20.00%	95.00%	5.00%
Weighted Average Return	-11.04%		-15.31%		4.61%		-12.50%		-21.50%	
2008 Q2										
Return	4.86%	-31.46%	-11.12%	-1.29%	-1.95%	-29.57%	1.21%	-44.36%	6.75%	-11.13%
Weight	95.00%	5.00%	90.00%	10.00%	95.00%	5.00%	80.00%	20.00%	95.00%	5.00%
Weighted Average Return	3.04%		-1.49%		-13.00%		-21.57%		-2.19%	



Analysis

Step 4 – Replicating portfolio return calculation

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11
12/31/2008 - 6/30/2009											
Return	6.28%	-9.84%	-10.63%	-10.63%	44.42%	44.42%	-4.02%	16.01%	16.01%	-23.06%	13.97%
Weight	2.40%	13.75%	12.42%	12.16%	9.15%	4.95%	15.46%	3.48%	9.07%	4.05%	13.11%
WtgAvgRet of Replicating Portfolio	0.15%	-1.35%	-1.32%	-1.29%	4.06%	2.20%	-0.62%	0.56%	1.45%	-0.93%	1.83%
Tot Ret of Replicating Portfolio	4.73%										
2008 Q4											
Return	-20.38%	4.07%	-13.15%	-13.15%	-5.40%	-5.40%	-10.43%	-13.27%	-13.27%	-7.28%	-42.54%
Weight	2.40%	13.75%	12.42%	12.16%	9.15%	4.95%	15.46%	3.48%	9.07%	4.05%	13.11%
WtgAvgRet of Replicating Portfolio	-0.49%	0.56%	-1.63%	-1.60%	-0.49%	-0.27%	-1.61%	-0.46%	-1.20%	-0.30%	-5.58%
Tot Ret of Replicating Portfolio	-13.07%										
2008 Q3											
Return	-11.04%	-15.31%	4.61%	4.61%	-12.50%	-12.50%	-21.50%	-8.85%	-8.85%	6.78%	-14.04%
Weight	2.40%	13.75%	12.42%	12.16%	9.15%	4.95%	15.46%	3.48%	9.07%	4.05%	13.11%
WtgAvgRet of Replicating Portfolio	-0.27%	-2.11%	0.57%	0.56%	-1.14%	-0.62%	-3.32%	-0.31%	-0.80%	0.28%	-1.84%
Tot Ret of Replicating Portfolio	-9.00%										
2008 Q2											
Return	3.04%	-1.49%	-13.00%	-13.00%	-21.57%	-21.57%	-2.19%	0.51%	0.51%	5.59%	-7.30%
Weight	2.40%	13.75%	12.42%	12.16%	9.15%	4.95%	15.46%	3.48%	9.07%	4.05%	13.11%
WtgAvgRet of Replicating Portfolio	0.07%	-0.20%	-1.61%	-1.58%	-1.97%	-1.07%	-0.34%	0.02%	0.05%	0.23%	-0.96%
Tot Ret of Replicating Portfolio	-7.37%										

Qtr	Actual	Replicating Portfolio
Q4 2008	-12.22%	-13.07%
Q3 2008	-8.32%	-9.00%
Q2 2008	-6.35%	-7.37%



Analysis

Step 5 – Regression and fair value calculation

SUMMARY OUTPUT						
<i>Regression Statistics</i>						
Multiple R	0.999319154					
R Square	0.998638771					
Adjusted R Square	0.997277542					
Standard Error	0.003262431					
Observations	3					
ANOVA						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	1	0.007808363	0.007808363	733.6302491	0.023493315	
Residual	1	1.06435E-05	1.06435E-05			
Total	2	0.007819007				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	0.004784507	0.002599326	1.840672365	0.316825966	-0.028243058	0.037812072
Replicating Portfolio	0.997741144	0.036836577	27.08560963	0.023493315	0.529688055	1.465794232

Row		Value	Source
1	Last Audited Value	\$5,799,610	2008 Financial Statement
2	Last Audited Date	12/31/2008	
3	Axiom Expected Return from Last Audited Date to 6/30/2009	4.73%	Axiom
4	Value Based on Axiom Return	\$6,074,052	Row 1 * (1+ Row 3)
5	Additional Contribution on 4/1/2009	\$233,720	XYZ University
6	Fair value of additional contribution	\$239,250	Row 5 * (1 + Row 3 / 2)
7	Total Axiom Fair Value	\$6,313,302	Row 4 + Row 6
8	Liquidity Discount	\$70,887	Axiom
9	Axiom Value as of 6/30/2009	\$6,242,415	Row 7 - Row 8
10	ABC Value as of 6/30/2009	\$6,512,053	ABC Private Equity
11	Value Difference	-4%	Row 9 / Row 10 - 1



Conclusion

- Using TRP one can create an AI customized portfolio that allows managements to validate AI values without requiring AI managers to divulge the specifics of individual portfolio investments.
- TRP creates a process that is auditable and meets AICPA financial reporting guidelines.



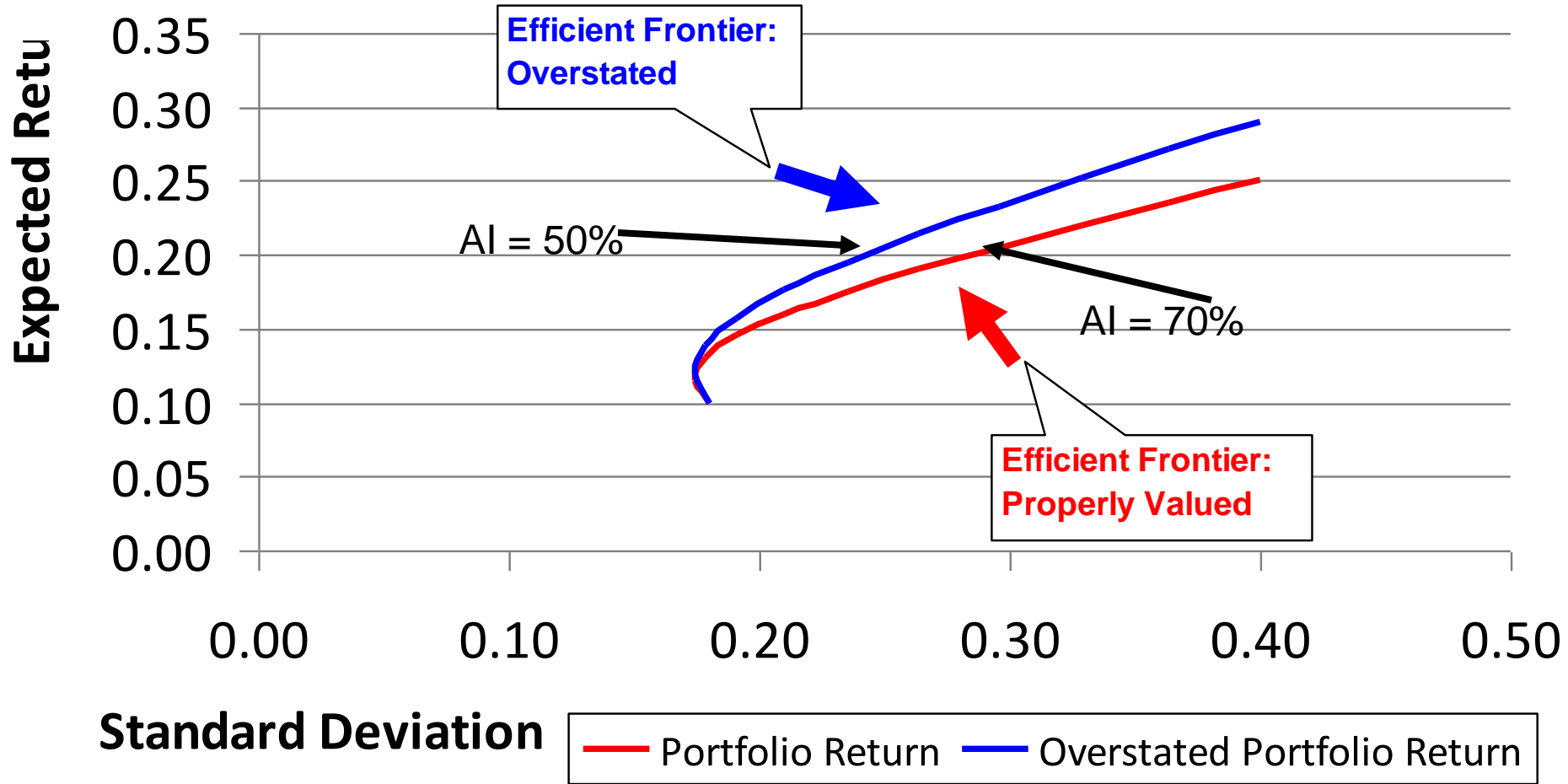
The Nature of Transparency Risk and Asset Allocation

Question: *Can Endowments Determine the Appropriate Exposure to Alternative Investment Classes if the Underlying AI Values and Returns are Misreported?*

An Example of The Influence of Misreporting on Asset Allocation Decisions

	Risk Free Rate	Market Index	AI (Overstated)	AI (Properly Valued)
	1.00%	10.00%	29.00%	25.00%
Correlation with Market Index			0.20	0.20
Standard Deviation		18.00%	40.00%	40.00%
Sharp Ratio		0.50	0.70	0.60

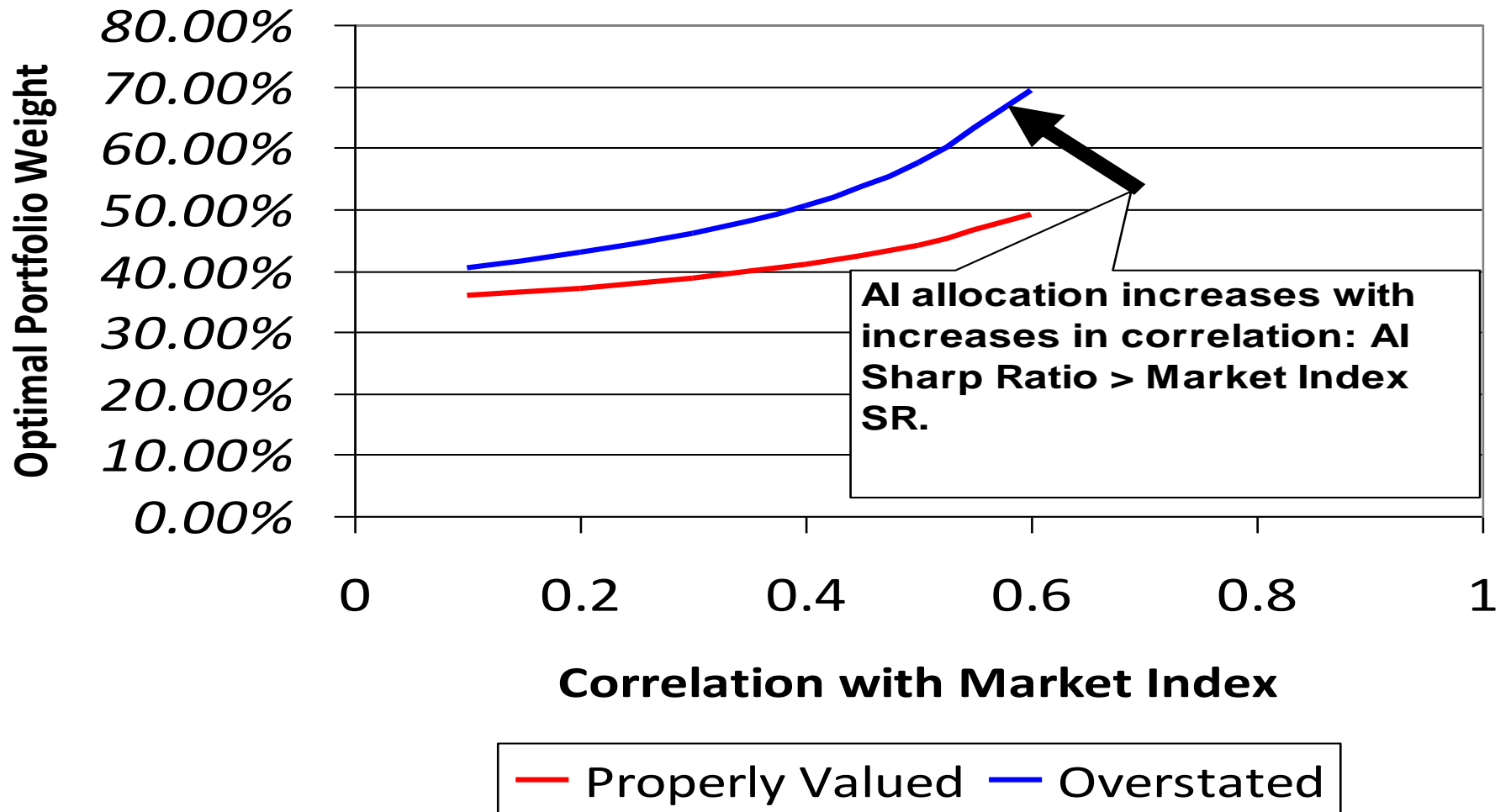
Efficient Frontier (Correlation 0.2)



Conclusion

1. When AI returns are misreported, the percentage of AI needed to provide a higher portfolio return at lower risk is less.
2. Since AI competes with other asset classes for the endowment dollar, one can argue that you need a relatively modest exposure to achieve the required incremental return. Thus barriers to entry are reduced for AI managers when returns are misreported.

Correlation vs. Weight of AI



Implications for Asset Allocation

1. As the correlation between the market index and AI increase, it pays to own proportionally more AI when AI returns are misreported than is the case when AI returns are properly reported. This is true as long as the AI Sharp Ratio is greater than the Sharp Ratio for the Market Index.
2. Since misreporting of returns is consistent with return smoothing, misreporting of returns also means that reported return volatilities of AI investments are likely to be lower than they in fact are.

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- Bollen, N. and Pool, V. (2009). "Conditional Return Smoothing in the Hedge Fund Industry". *Journal of Financial Quantitative Analysis* forthcoming
- Palippou, L. and Gottschalg, O. (2009). "The Performance of Private Equity Funds". *The Review of Financial Studies* 22, 1747-1777.

Axiom Valuation

Axiom Valuation is a nationally recognized financial security and business valuation firm. Axiom has conducted valuation assignments for clients throughout the U.S., Europe and Asia. Axiom is heavily engaged in fair value assignments for financial institutions in terms of fair valuing portfolio assets and liabilities as well as acting as an advisor and assessing whether internal transfers between funds meet the fair value standard. Axiom Valuation's Co-founder and Chairman, Dr. Stanley Jay Feldman, an advisor group to FASB on fair value issues, helped draft Financial Accounting Standard 157 (now Topic 820) as part of FASB's Valuation Resource Group. Axiom has developed a series of state-of-the-art models to value complex financial securities. While fair value is an exchange price concept, in cases where pricing is infrequent and idiosyncratic, these models help determine the fair value range and whether the price is consistent with other observable market factors.

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