PEREGRINE
SECURITIES
Derivative & Quantitative Research

Moving from Fund Performance to Manager Skill

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Contents

The Vagaries of Manager Skill

Back of the envelope calculations…

Manager types	Skilled	Average	Poor
Average alpha	+3%	0%	-2%
Tracking error	----------	5%	----------
Pr[outperformance]	46%	28%	11%

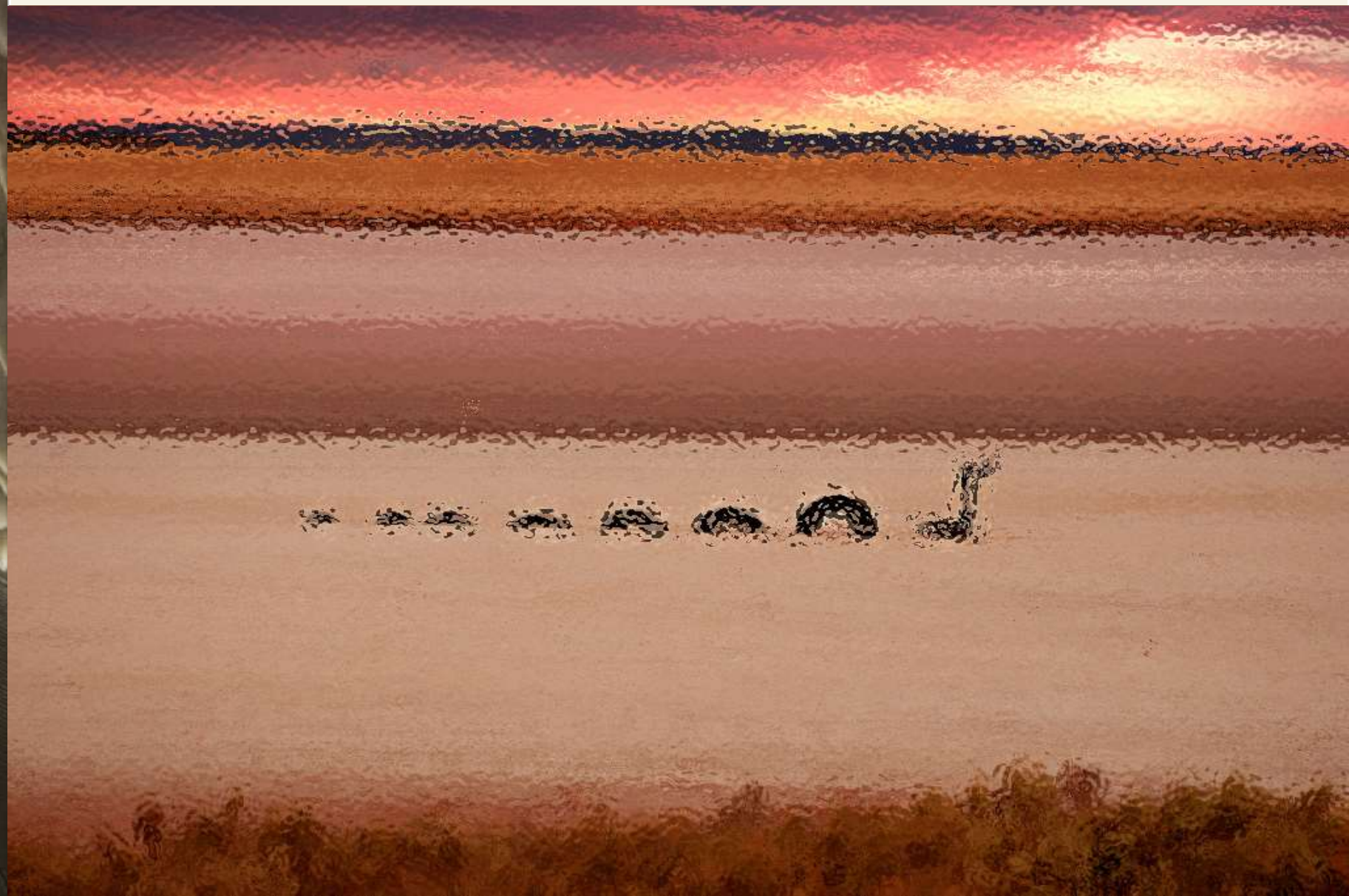
➔ Majority of outperformers are skilled?

Manager proportions	10%	30%	60%
Prop. Outperformers	**23%**	43%	34%

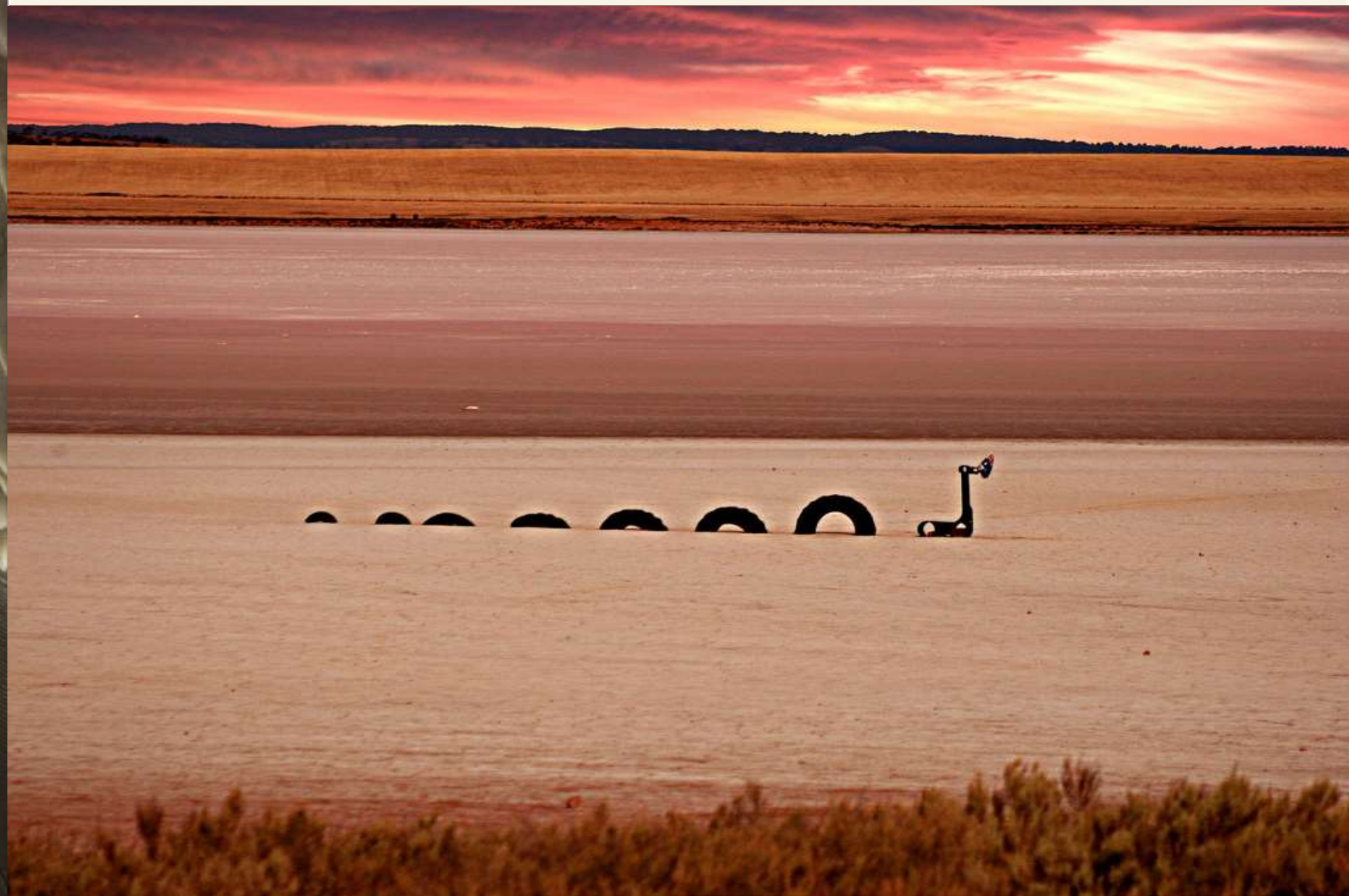
Less than 1 in 4 outperformers are due to skill!

Contents

The Myth of Diversification



The Myth of Diversification



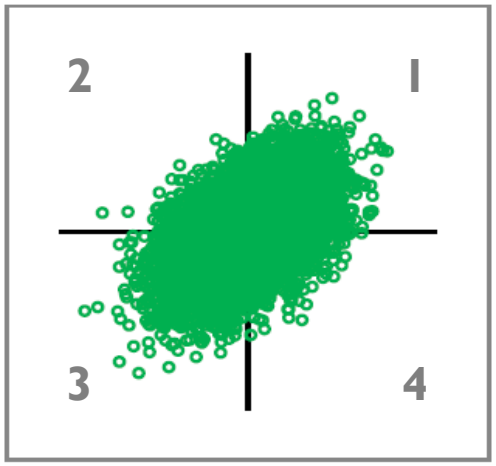
Usual Risk Measures

Alpha
Beta
Correlation
Volatility
Drawdown
Sharpe
VaR

Conditional Risk Measures

CVaR
Omega
Downside Beta
Semivariance
Sortino
Exceedence

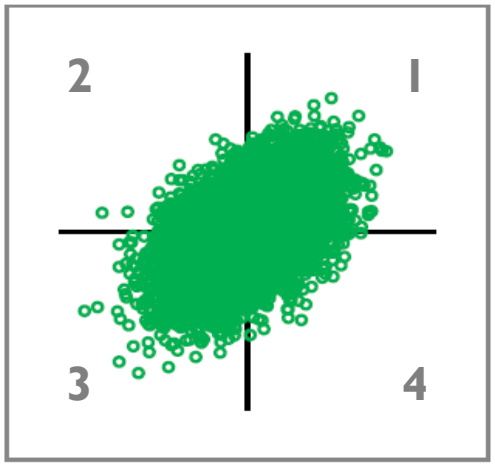
A Joint Normal Example



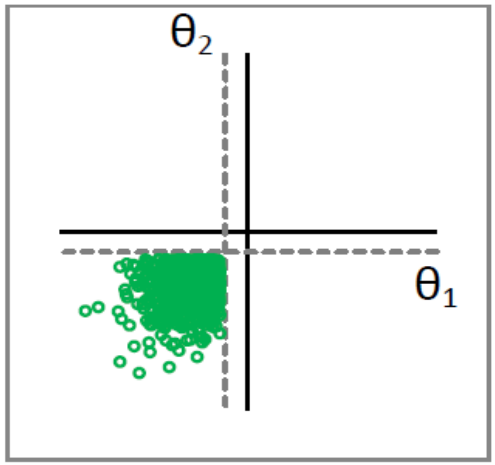
A1: Full Sample

$\rho = 50\%$

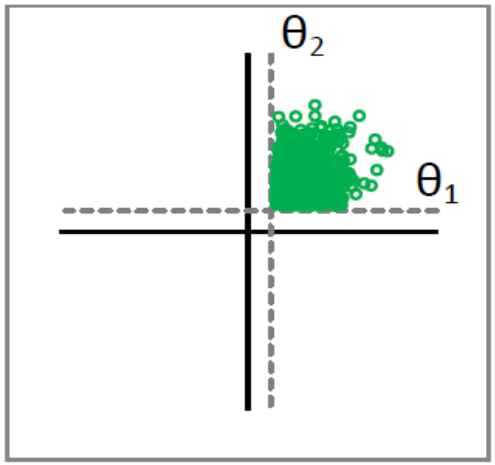
A Joint Normal Example



A1: Full Sample



A2: Down Market



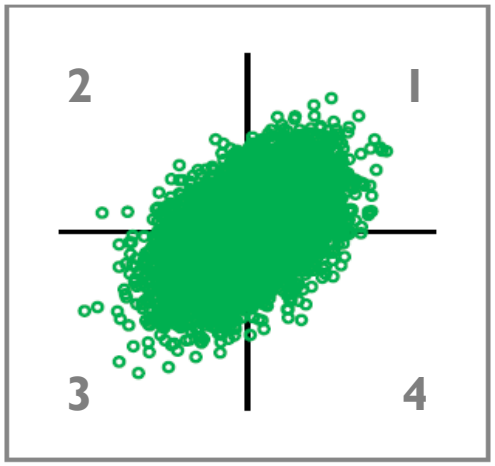
A3: Up Market

$\rho = 50\%$

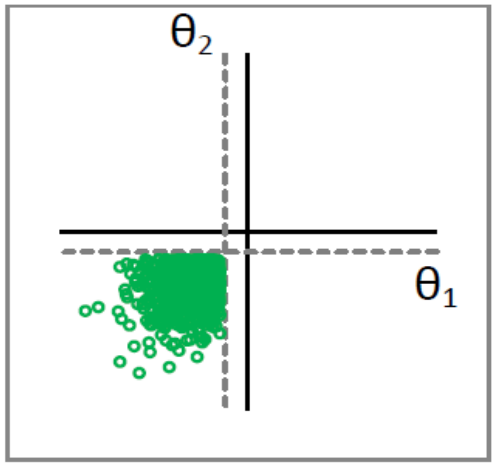
$\rho = ?$

$\rho = ?$

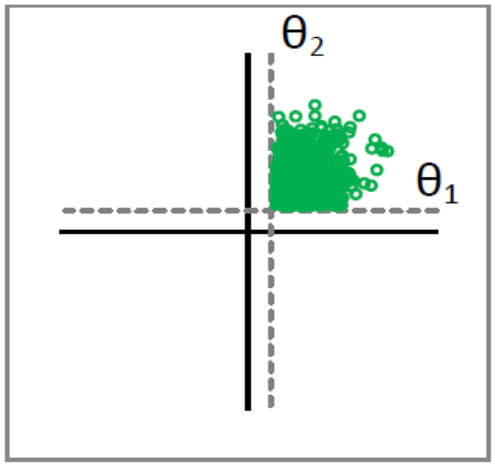
A Joint Normal Example



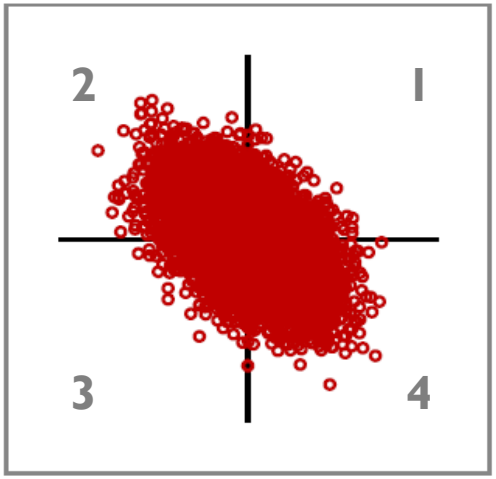
A1: Full Sample



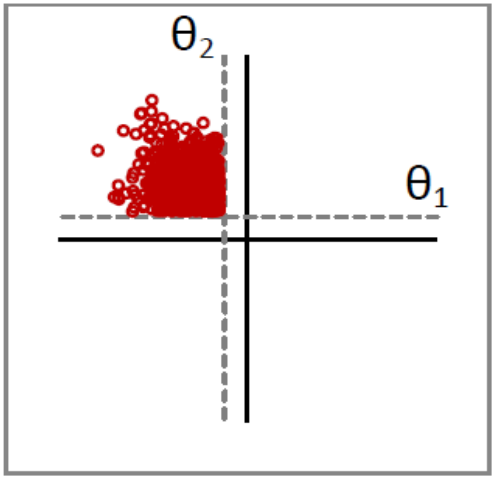
A2: Down Market



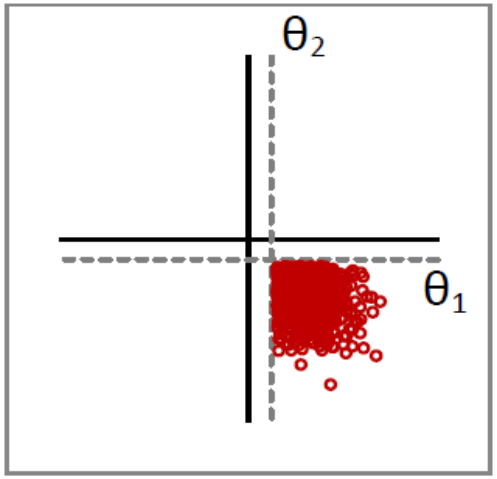
A3: Up Market



B1: Full Sample

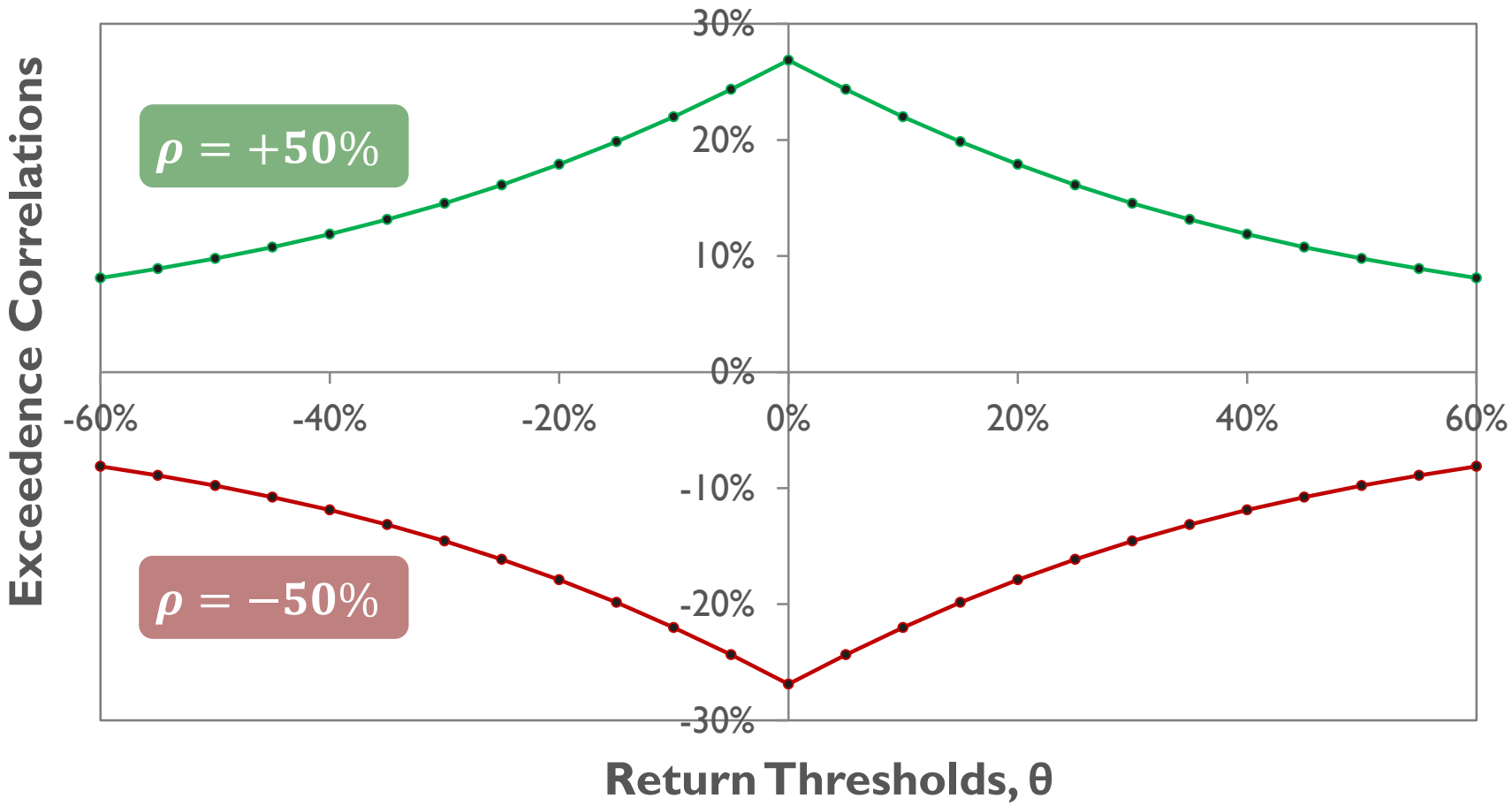


B2: Down Market

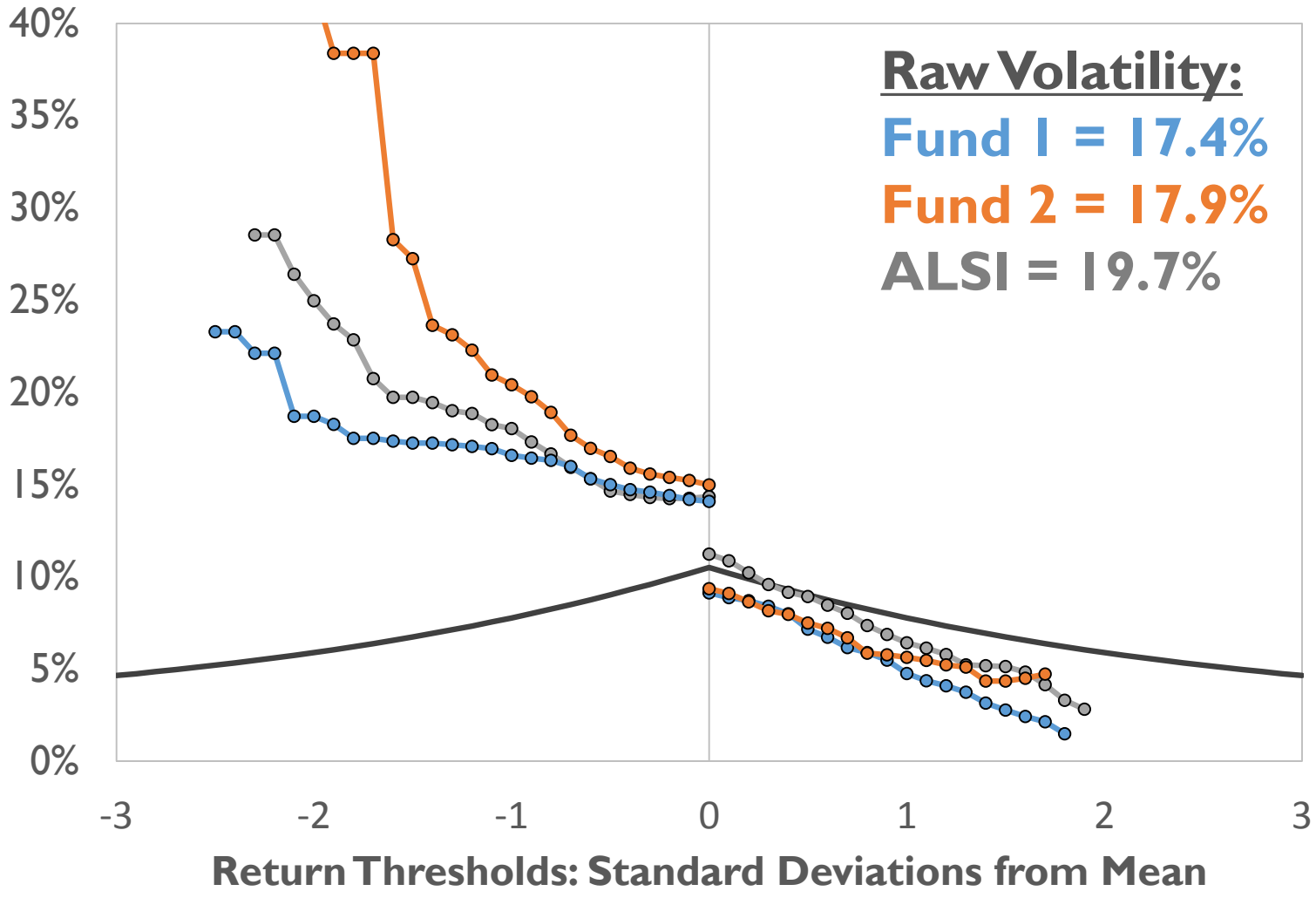


A3: Up Market

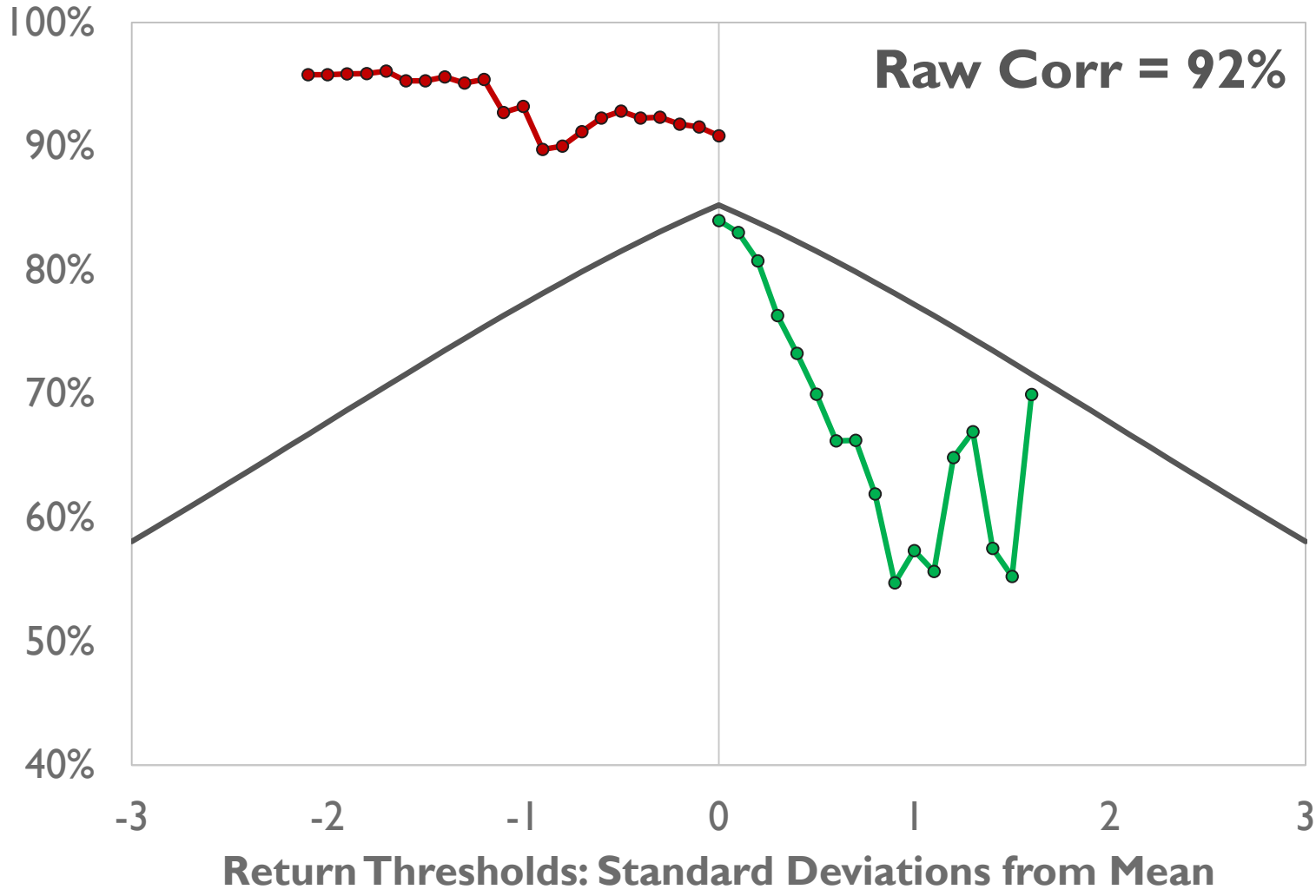
Exceedence Correlation Profile



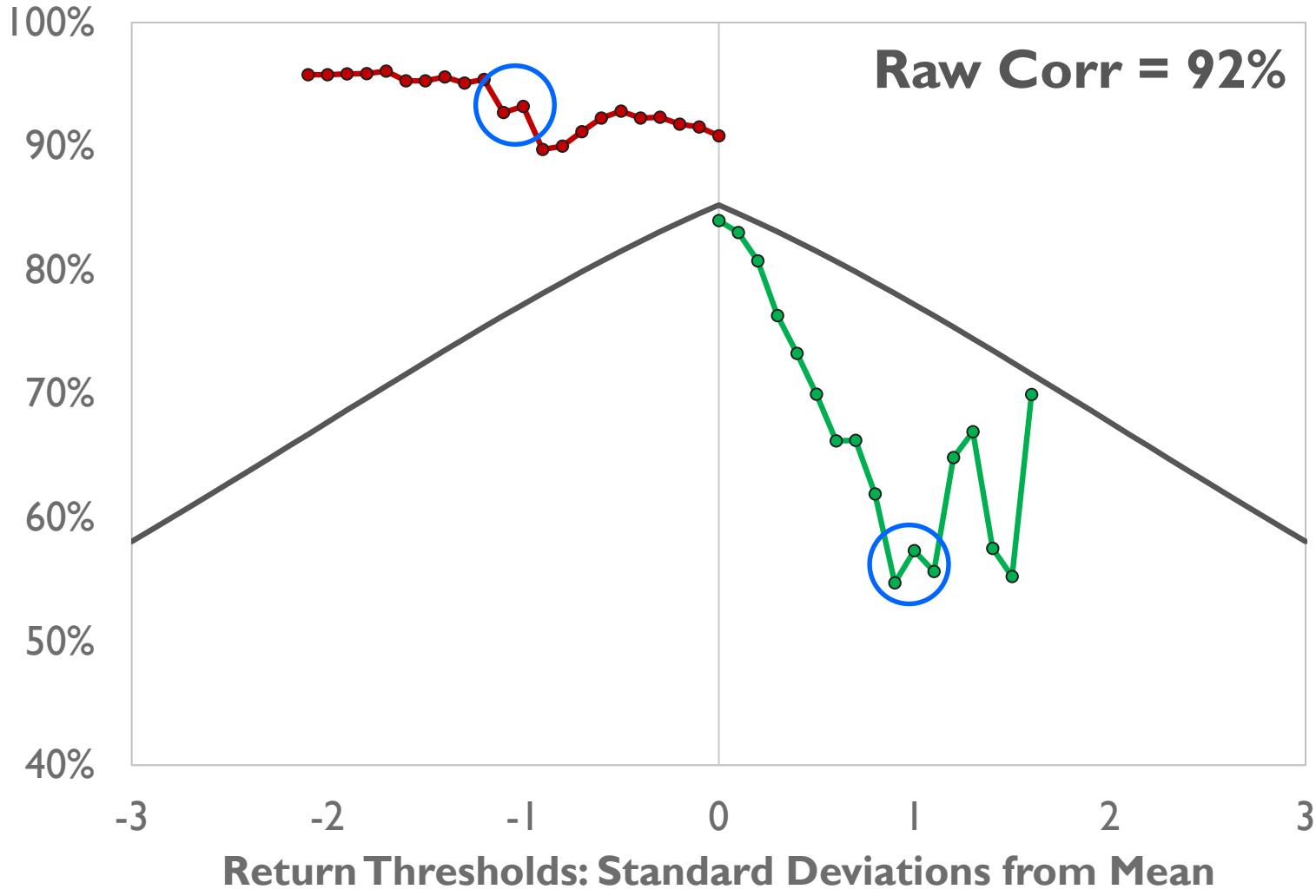
Fund Exceedence Volatility



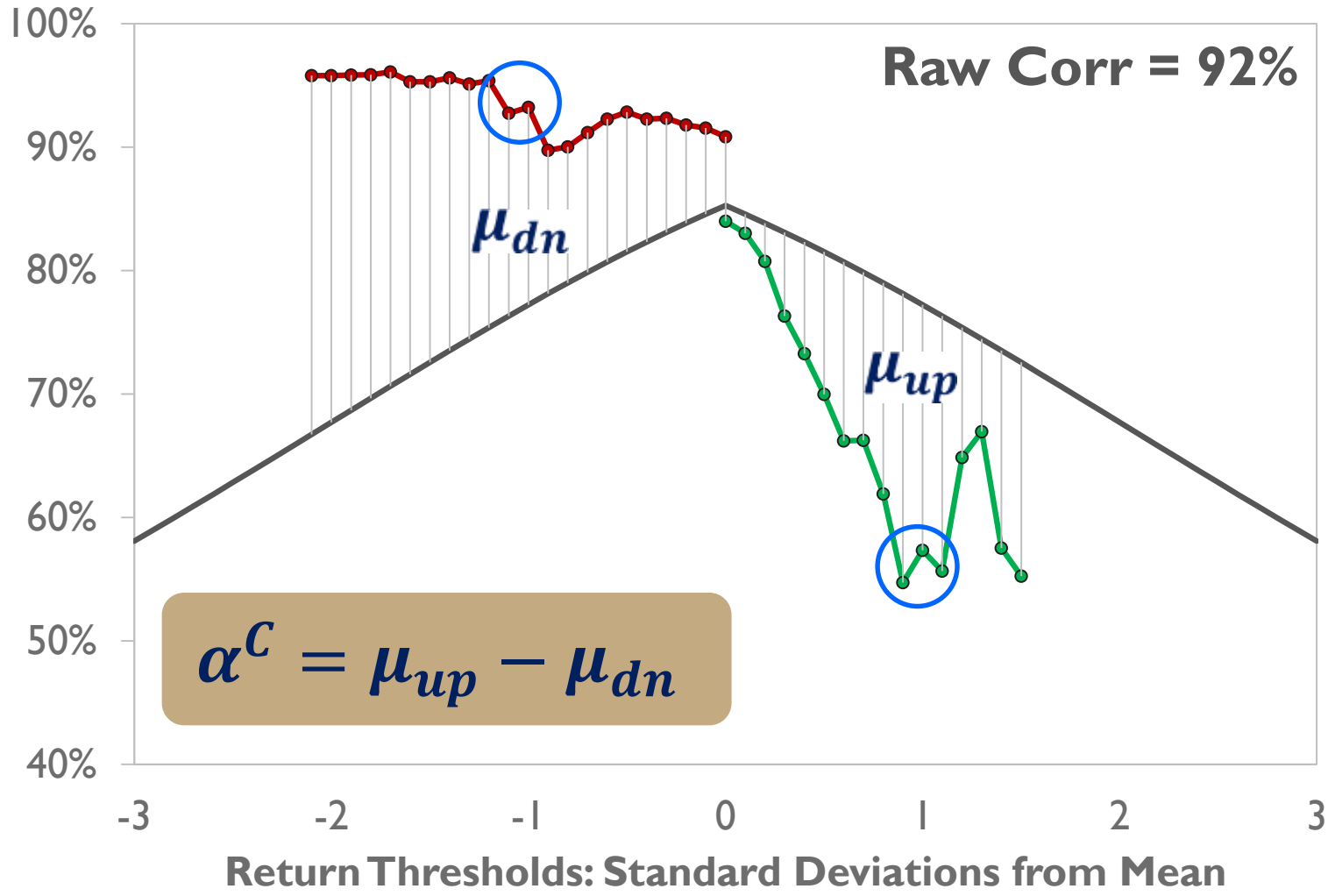
ALSI-Fund 1 Exc. Correlation



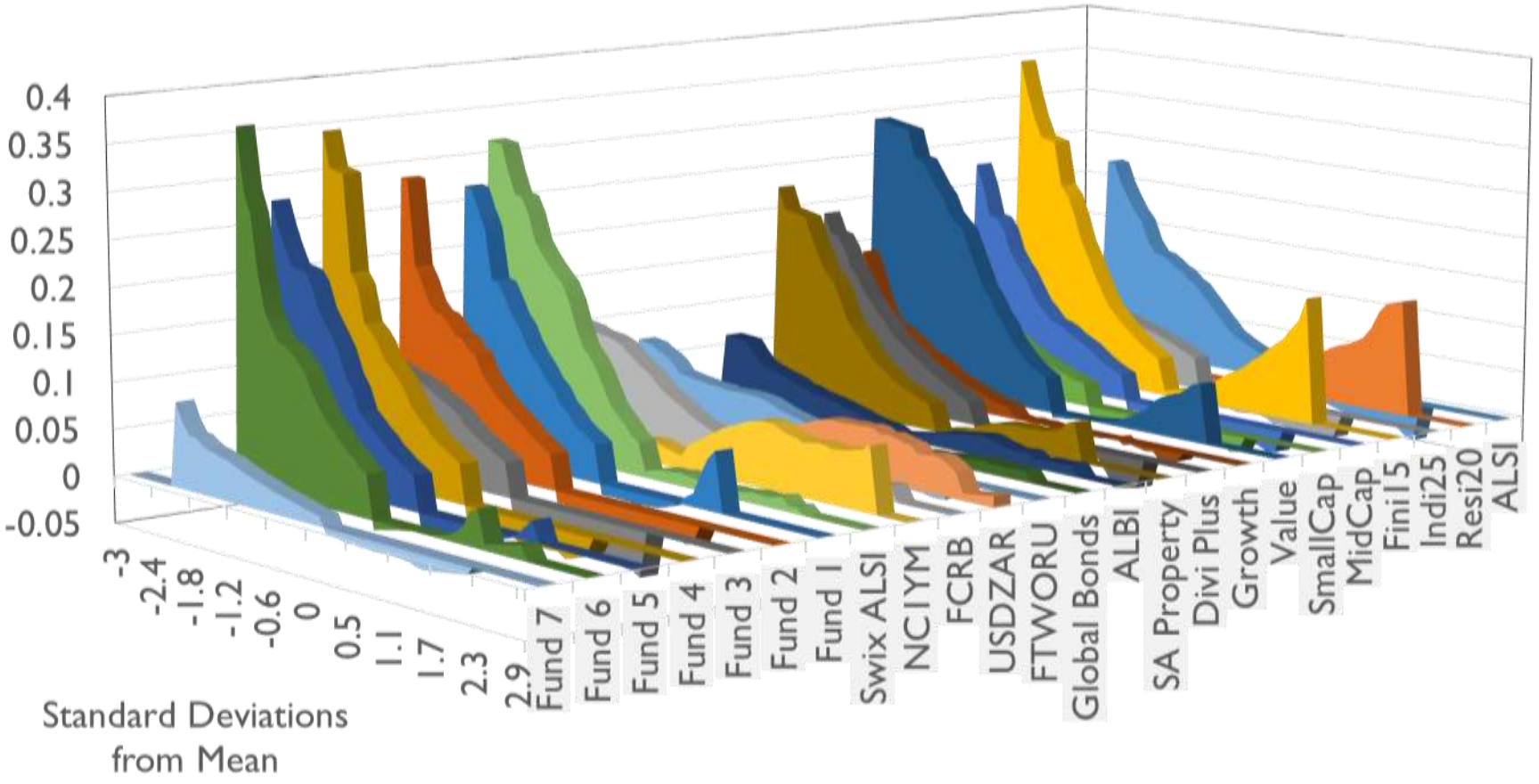
ALSI-Fund I Exc. Correlation



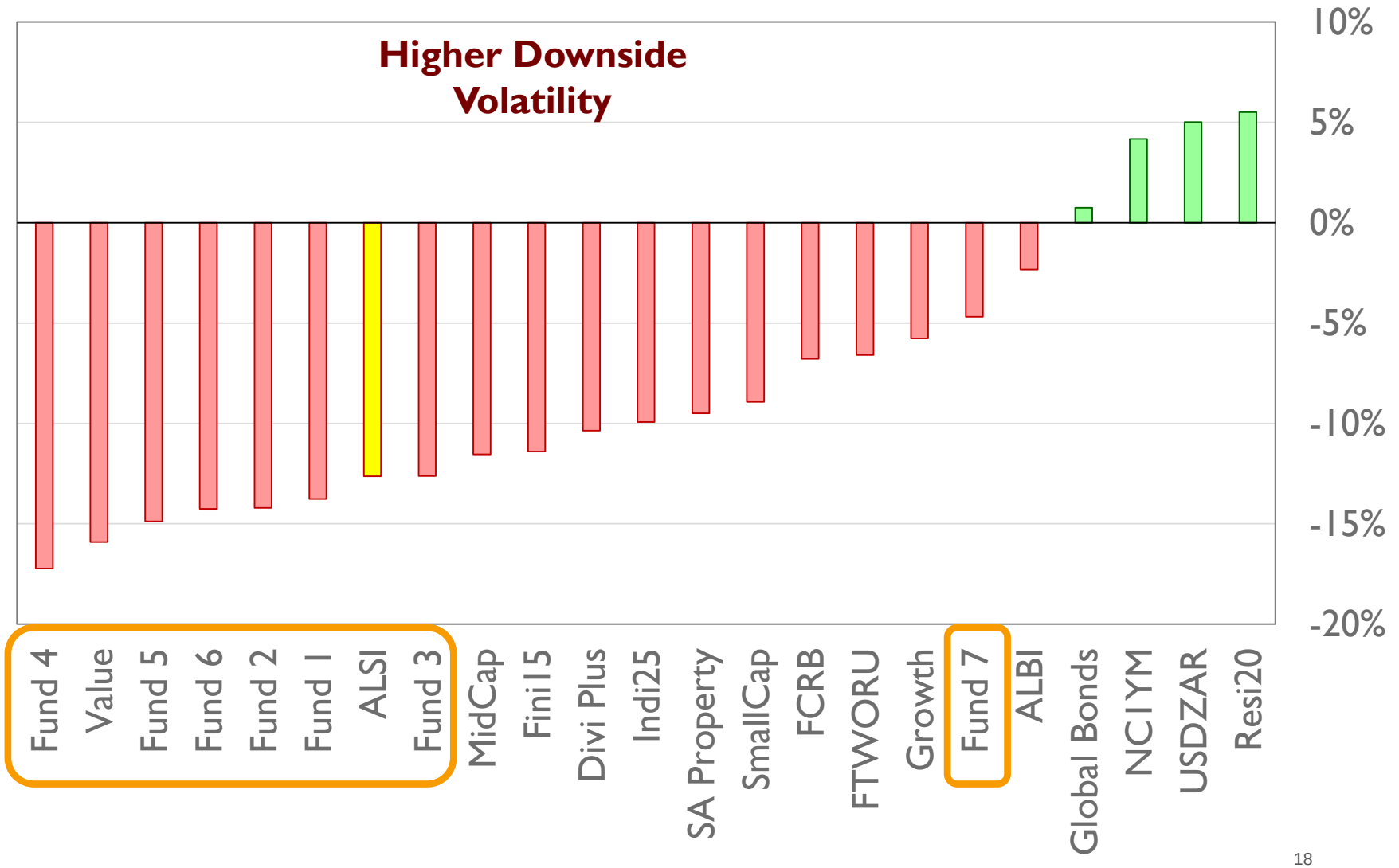
ALSI-Fund I Exc. Correlation



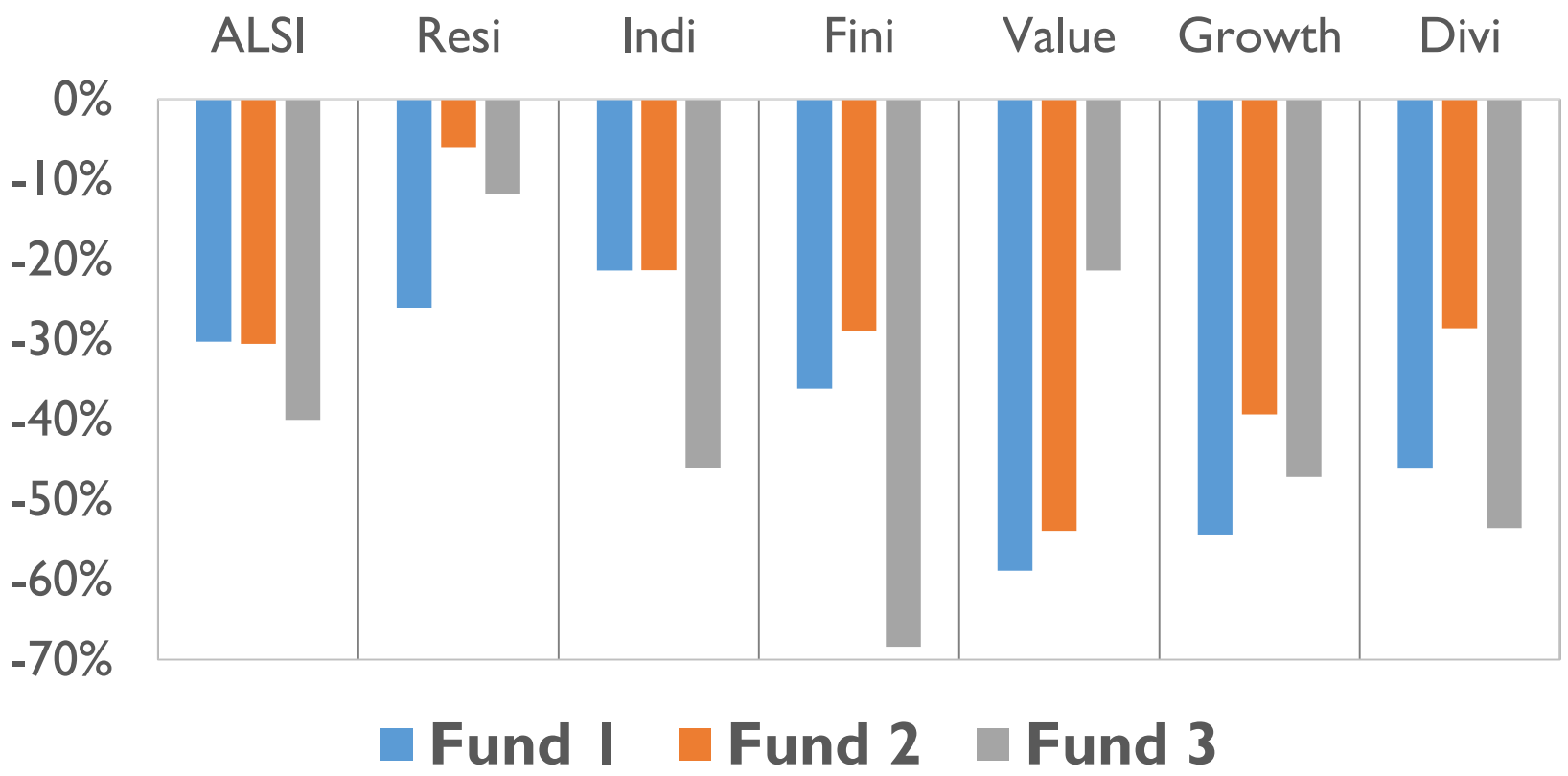
Excess Exceedence Vol Profiles



Volatility Asymmetry – α^V



Fund Corr. Asymmetry - α^C



Fund Average Up Corr. - μ_{up}

	Fund 1	Fund 2	Fund 3	Fund 4	Fund 5	Fund 6	Fund 7
Fund 1							
Fund 2	-29%						
Fund 3	-7%	-9%					
Fund 4	-1%	-21%	-4%				
Fund 5	3%	-15%	-10%	1%			
Fund 6	-17%	8%	0%	-11%	-11%		
Fund 7	-26%	4%	-10%	-24%	-27%	4%	

Ave. upside correlation < normal correlation for nearly all funds

Fund Average Down Corr. - μ_{dn}

	Fund 1	Fund 2	Fund 3	Fund 4	Fund 5	Fund 6	Fund 7
Fund 1							
Fund 2	16%						
Fund 3	14%	24%					
Fund 4	22%	27%	26%				
Fund 5	14%	23%	23%	24%			
Fund 6	17%	17%	27%	21%	22%		
Fund 7	21%	22%	28%	24%	27%	18%	

Ave. downside correlation > normal correlation for all funds

Fund Corr. Asymmetry - α^C

	Fund 1	Fund 2	Fund 3	Fund 4	Fund 5	Fund 6	Fund 7
Fund 1							
Fund 2	-45%						
Fund 3	-21%	-33%					
Fund 4	-23%	-47%	-31%				
Fund 5	-11%	-37%	-32%	-23%			
Fund 6	-34%	-8%	-27%	-32%	-33%		
Fund 7	-47%	-18%	-38%	-48%	-54%	-14%	

Ave. down correlation >> Ave. up correlation for all funds!

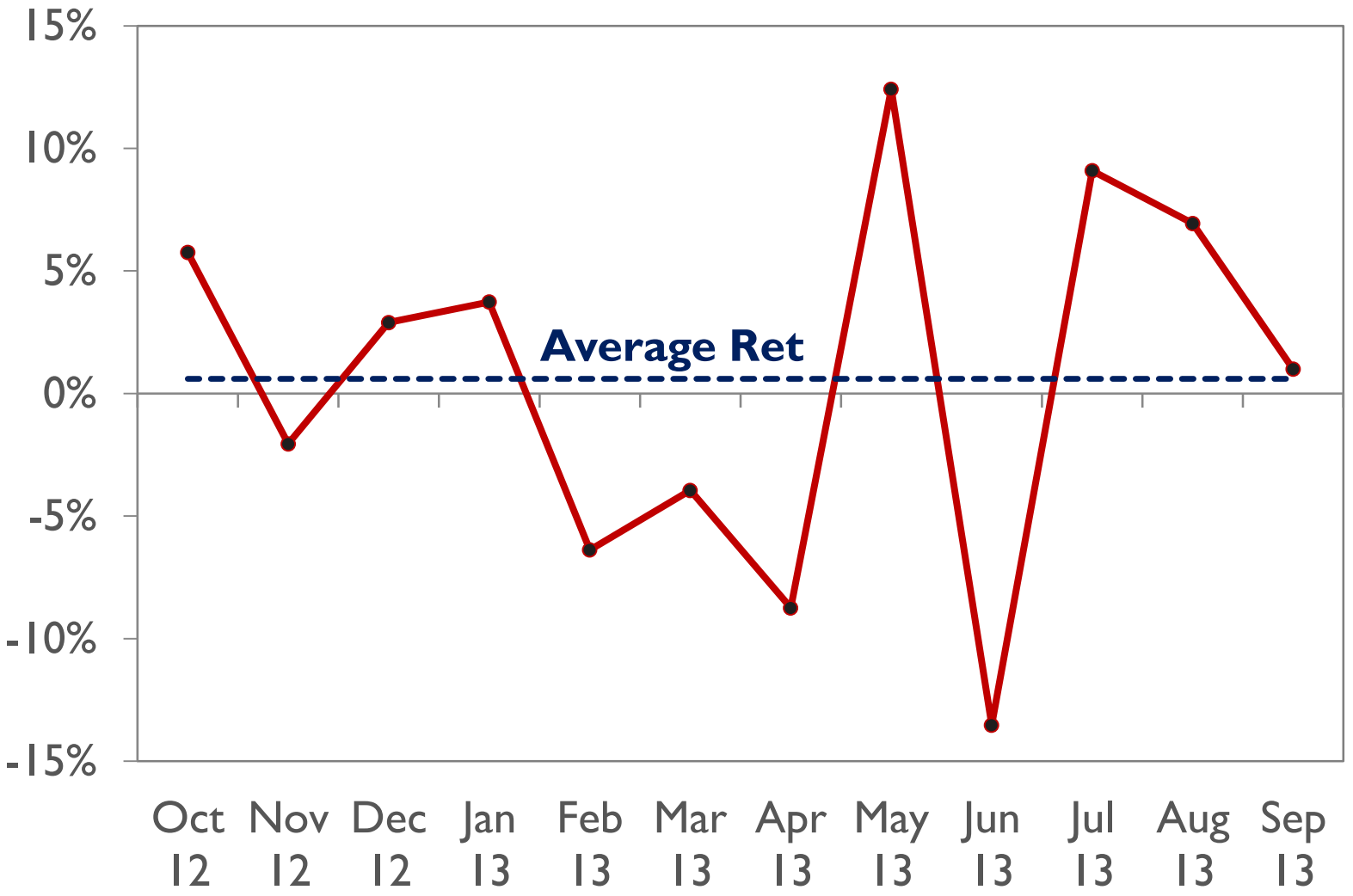
Contents

Cross-Sectional Volatility

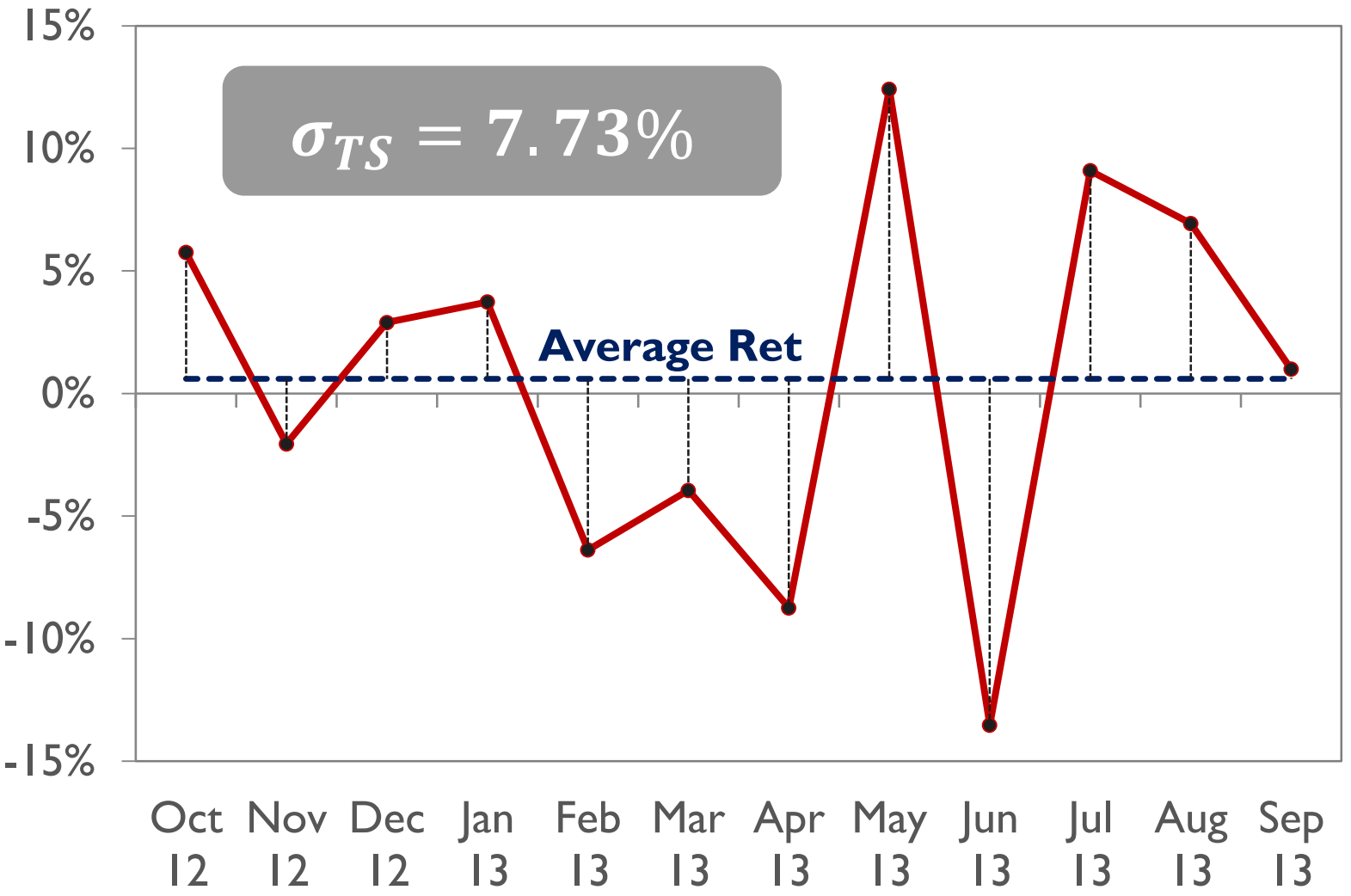
$$\chi_t(r) = \sqrt{\sum_{i=1}^{N_t} w_{it}(r_{it} - \bar{r}_t)^2}$$

where $\bar{r}_t = \sum_{i=1}^{N_t} w_{it} r_{it}$

Eg: Resi-10 CSV



Eg: Resi-10 CSV



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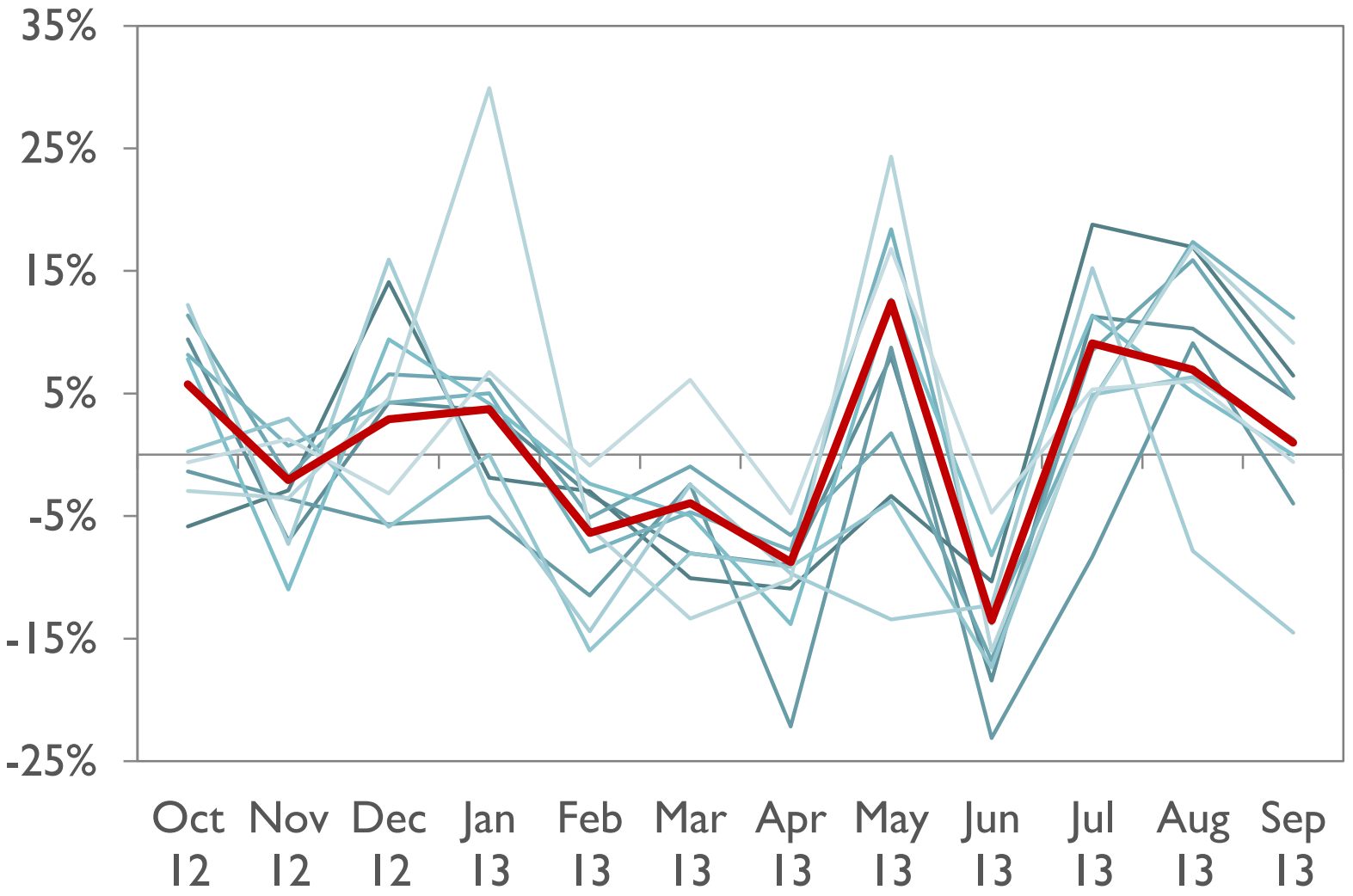

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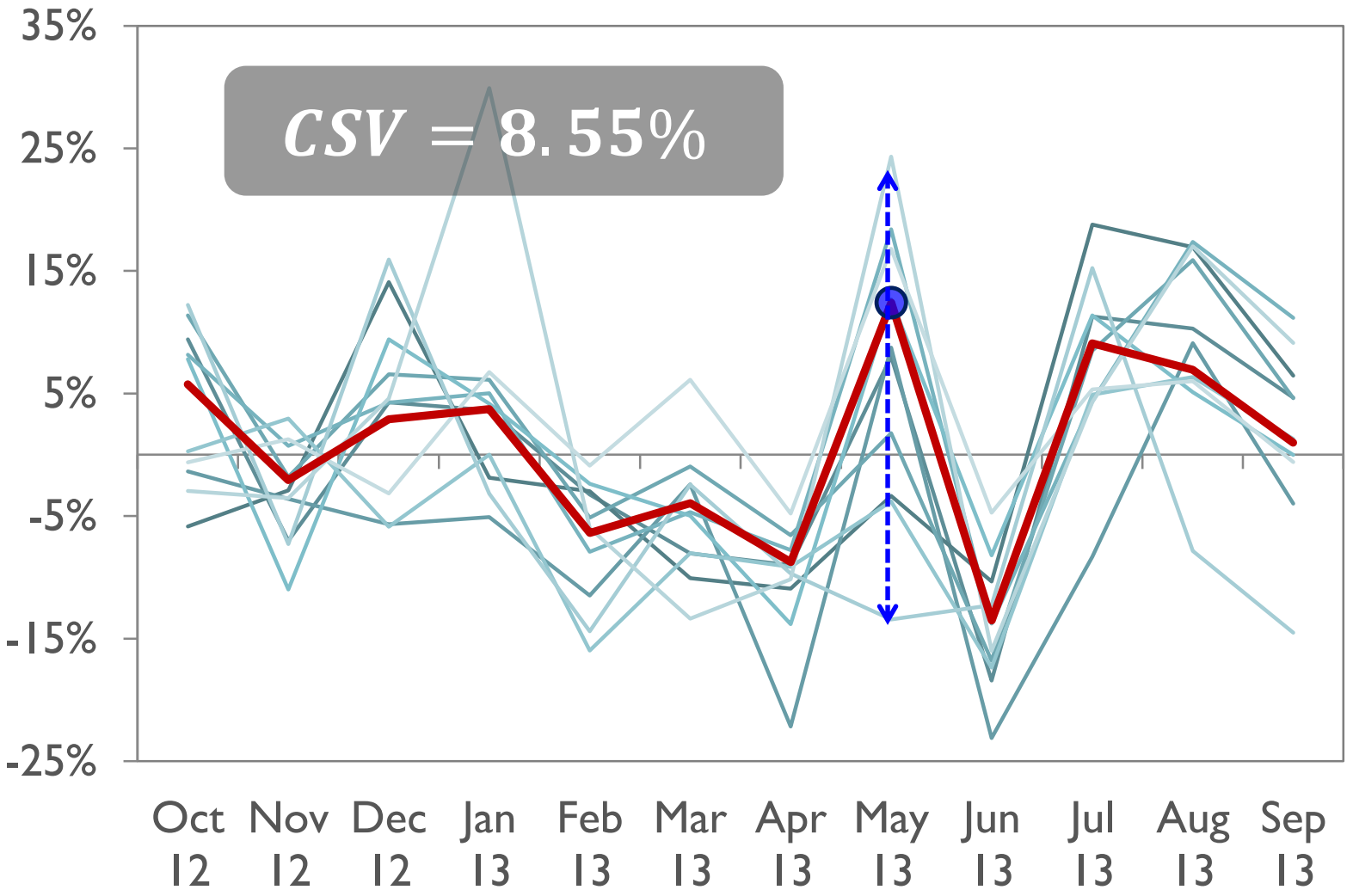

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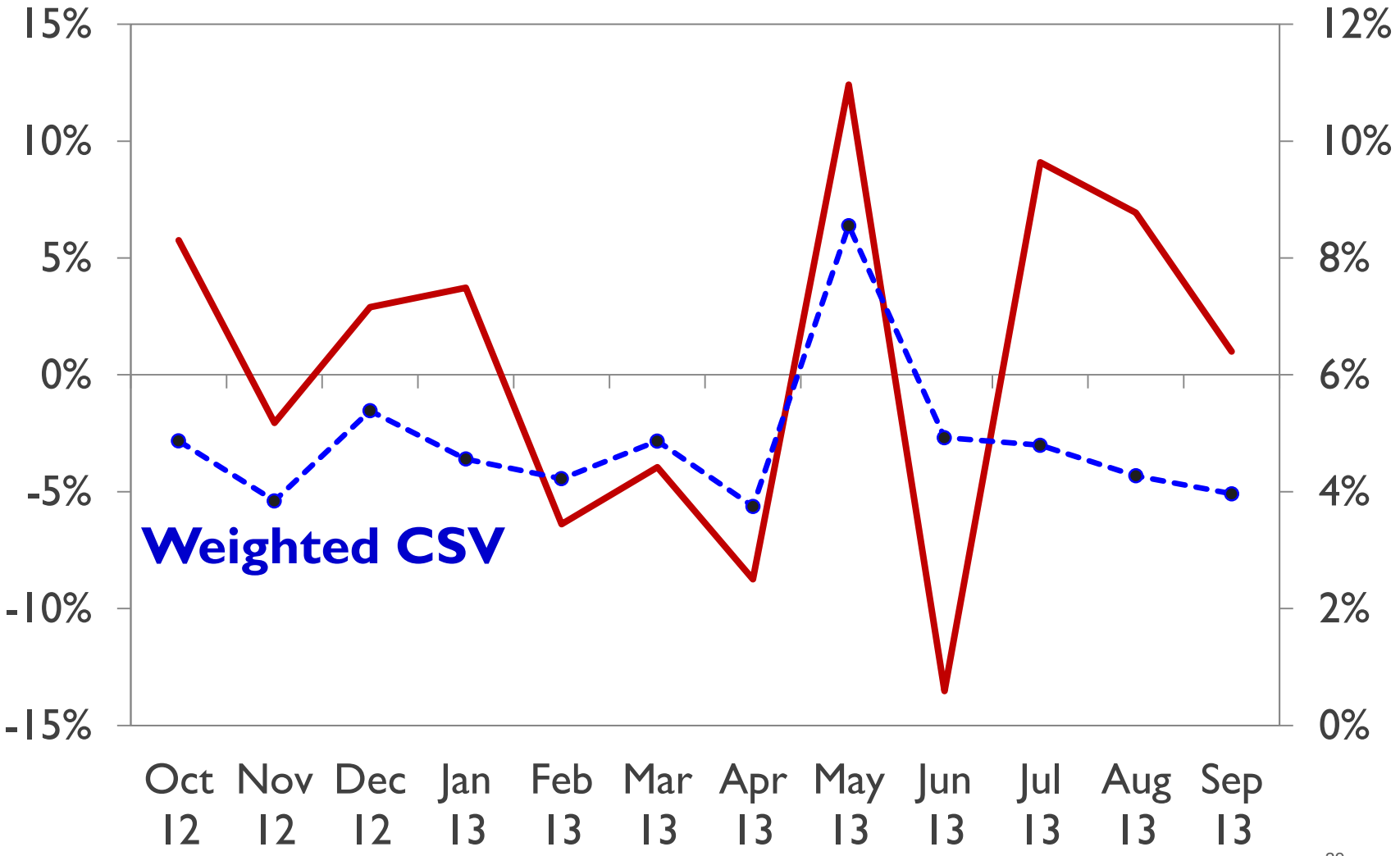
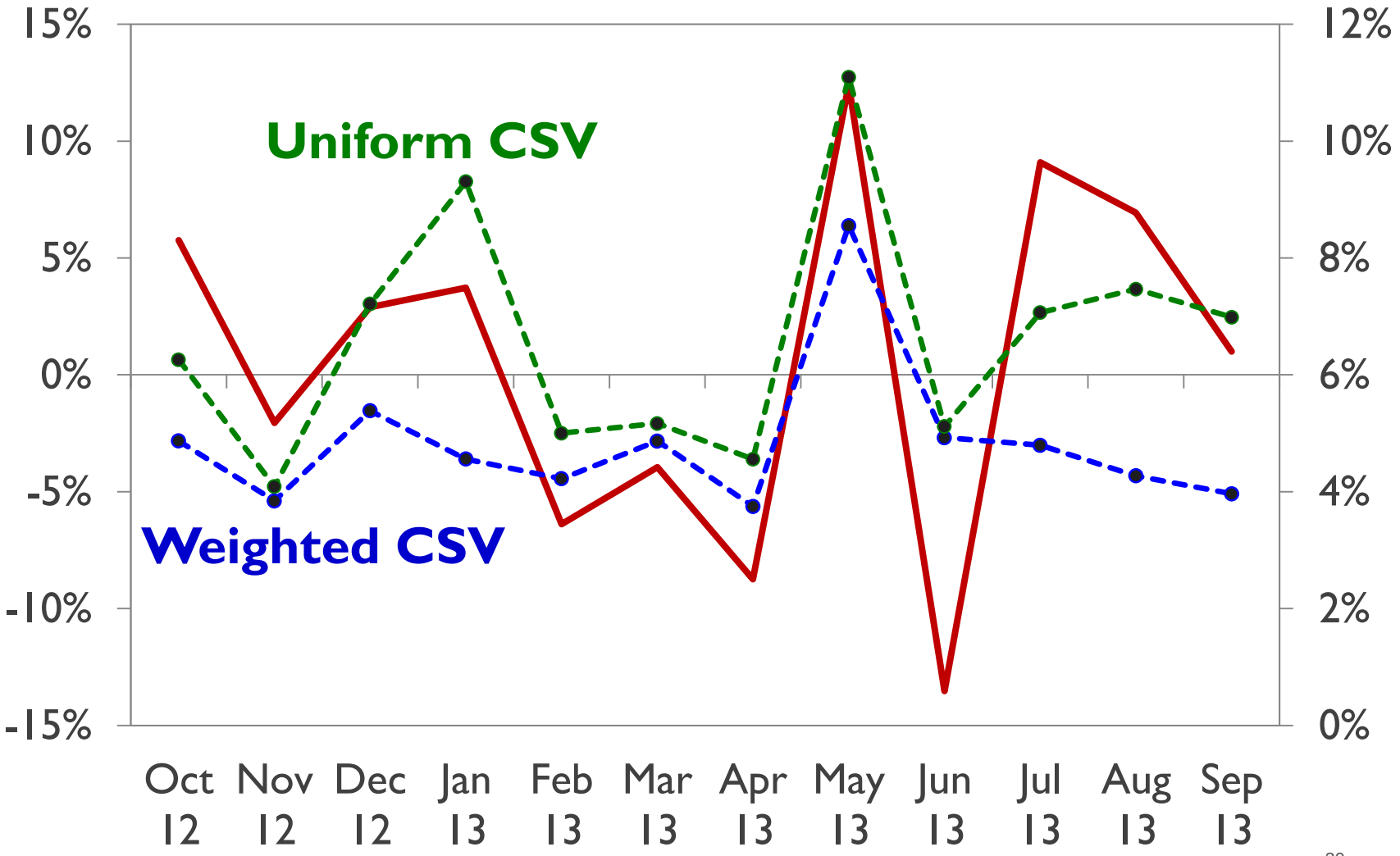


Eg: Resi-10 CSV



Why is it important?

Active Management

- CSV = alpha opportunity set
- Value, Growth & momentum strategies
- Active Weights & CSV

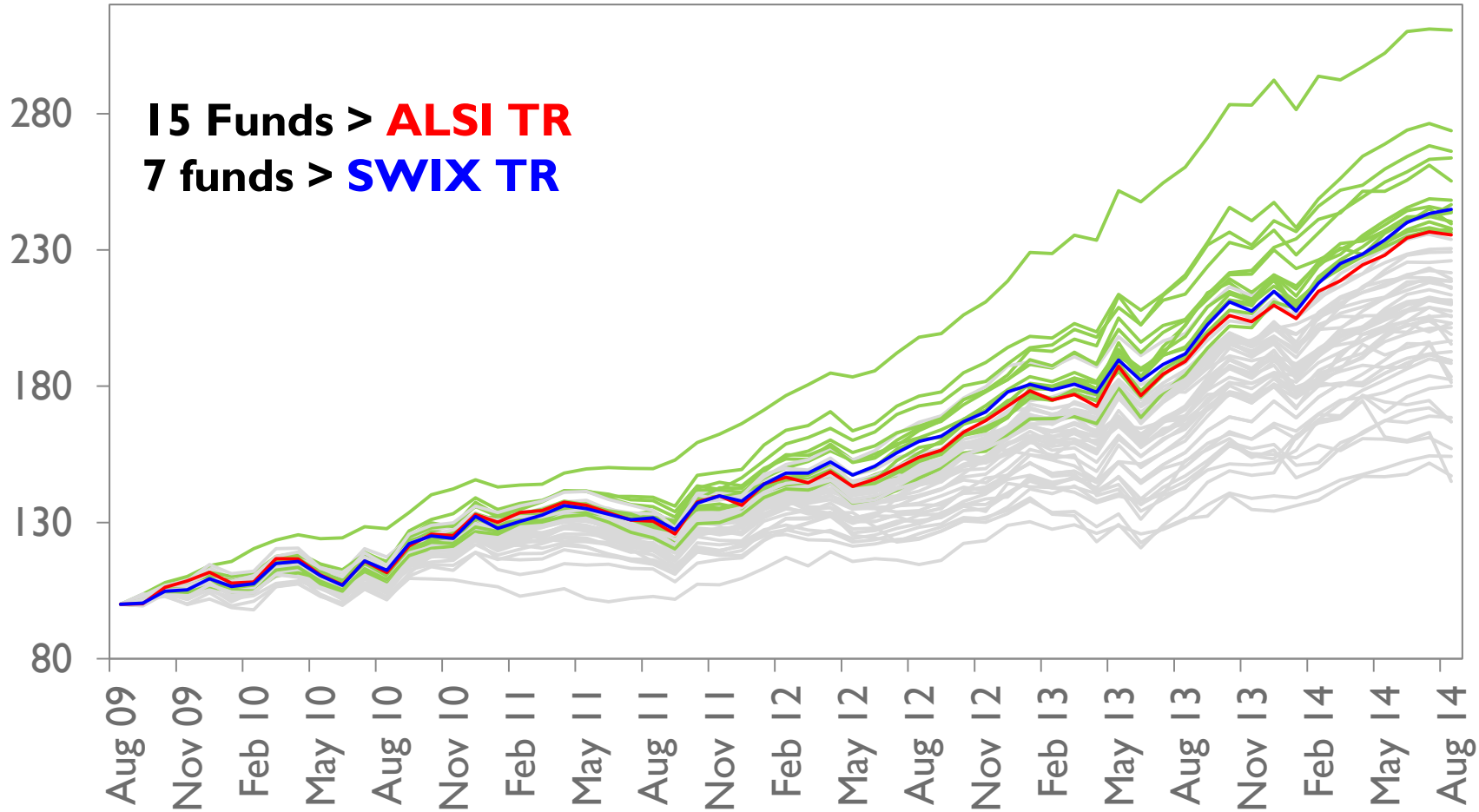
Performance Attribution

- Alpha, IR & CSV

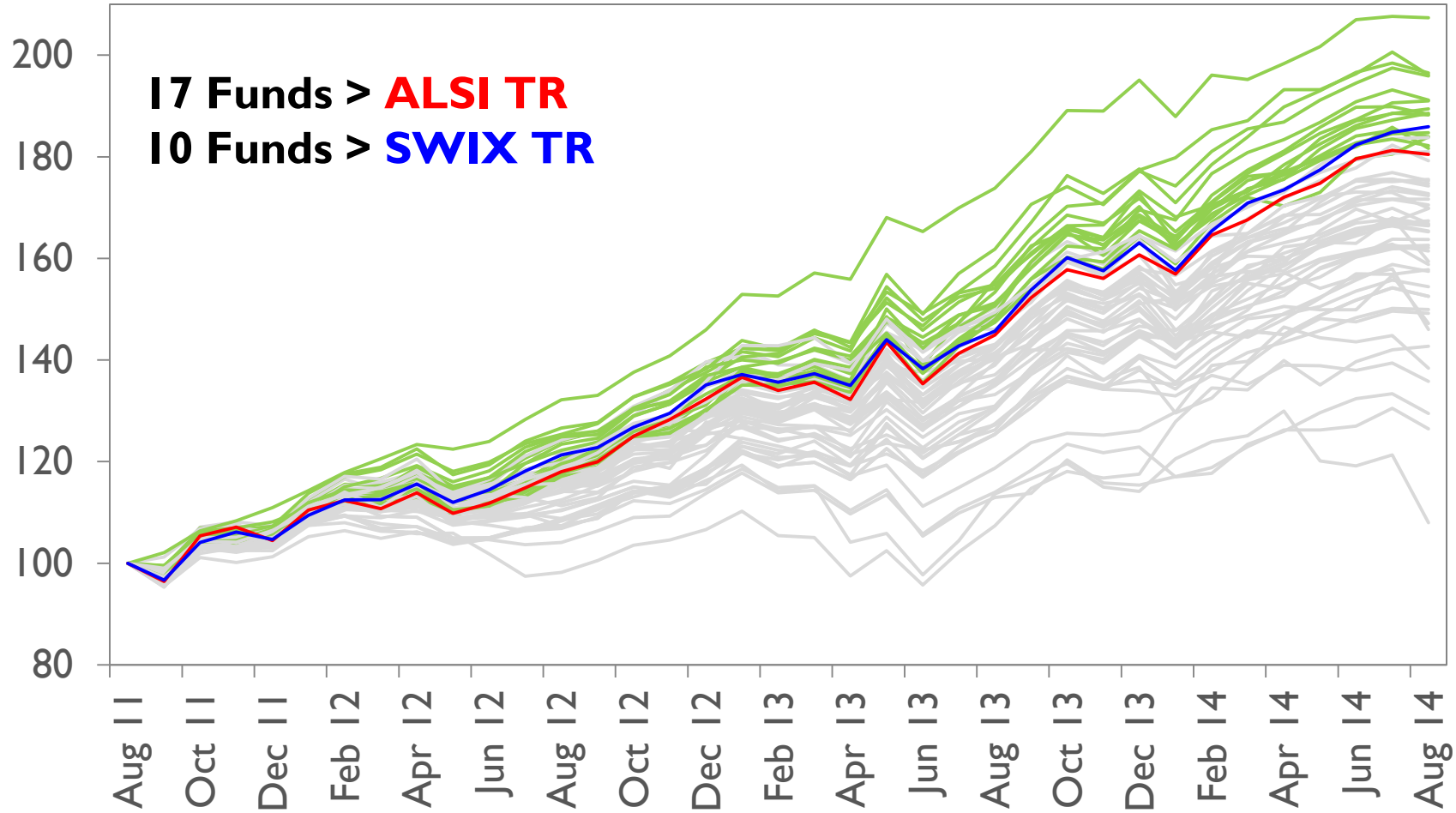
Risk Management

- Volatility, Correlation & CSV
- CSV ≈ average idiosyncratic vol
- CSV & Implied Vol Indices?

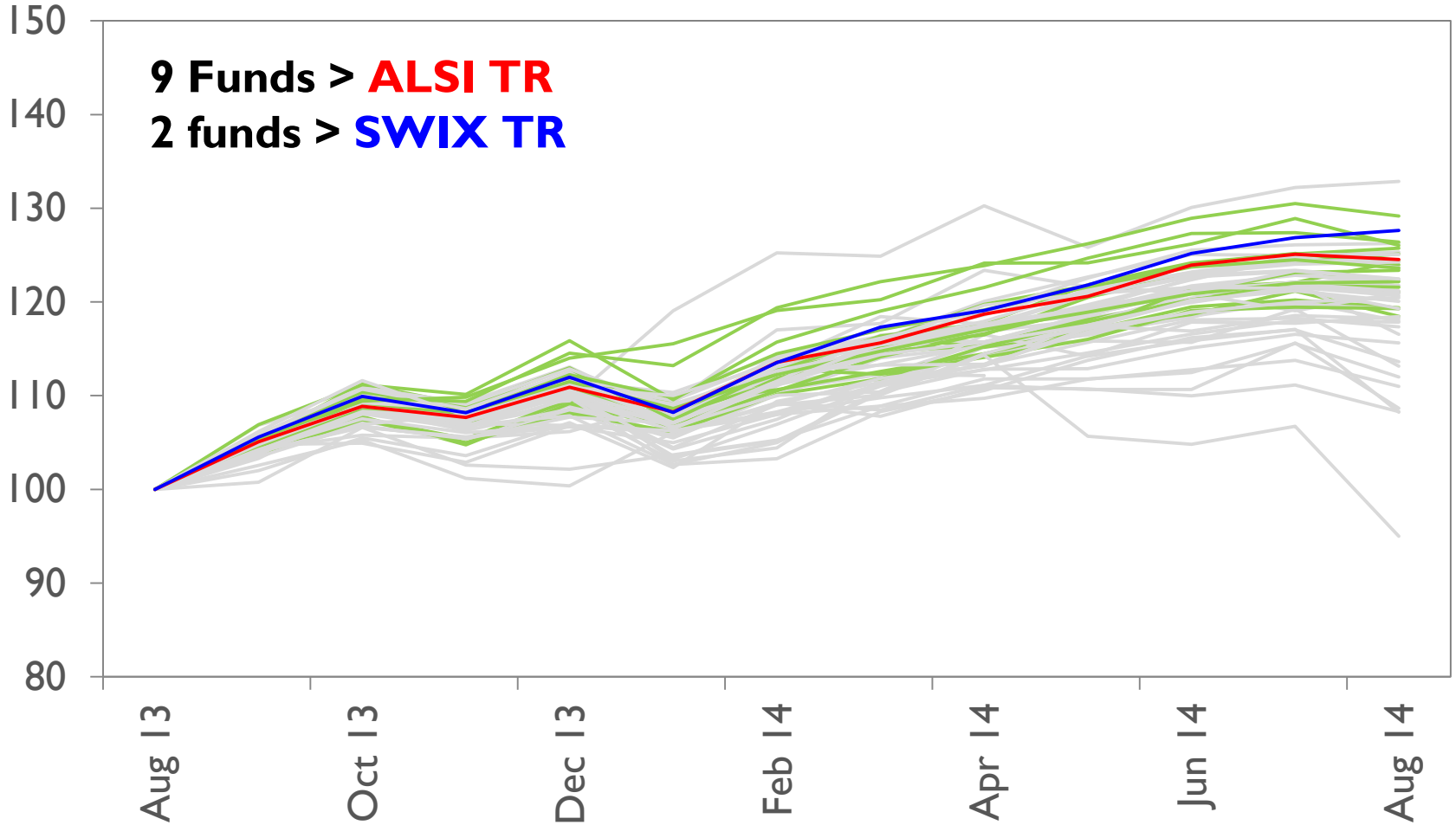
5yr Gen. Equity Performance



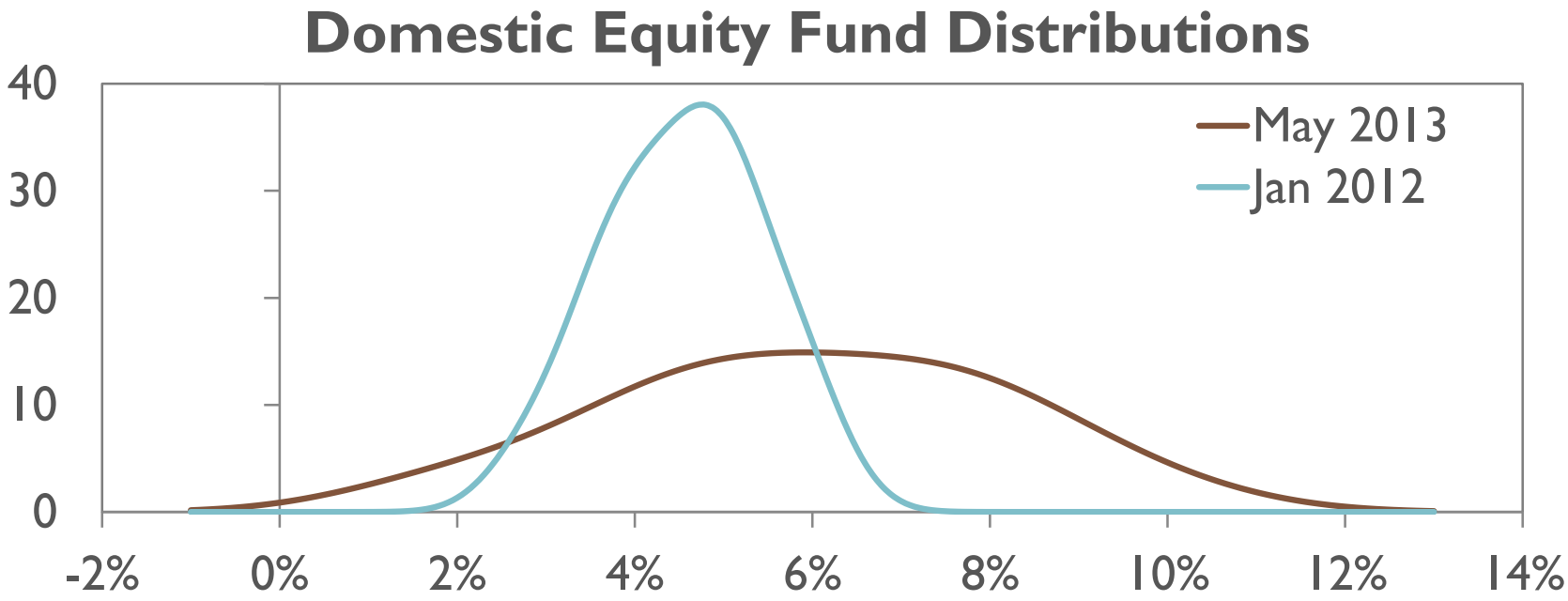
3yr Gen. Equity Performance



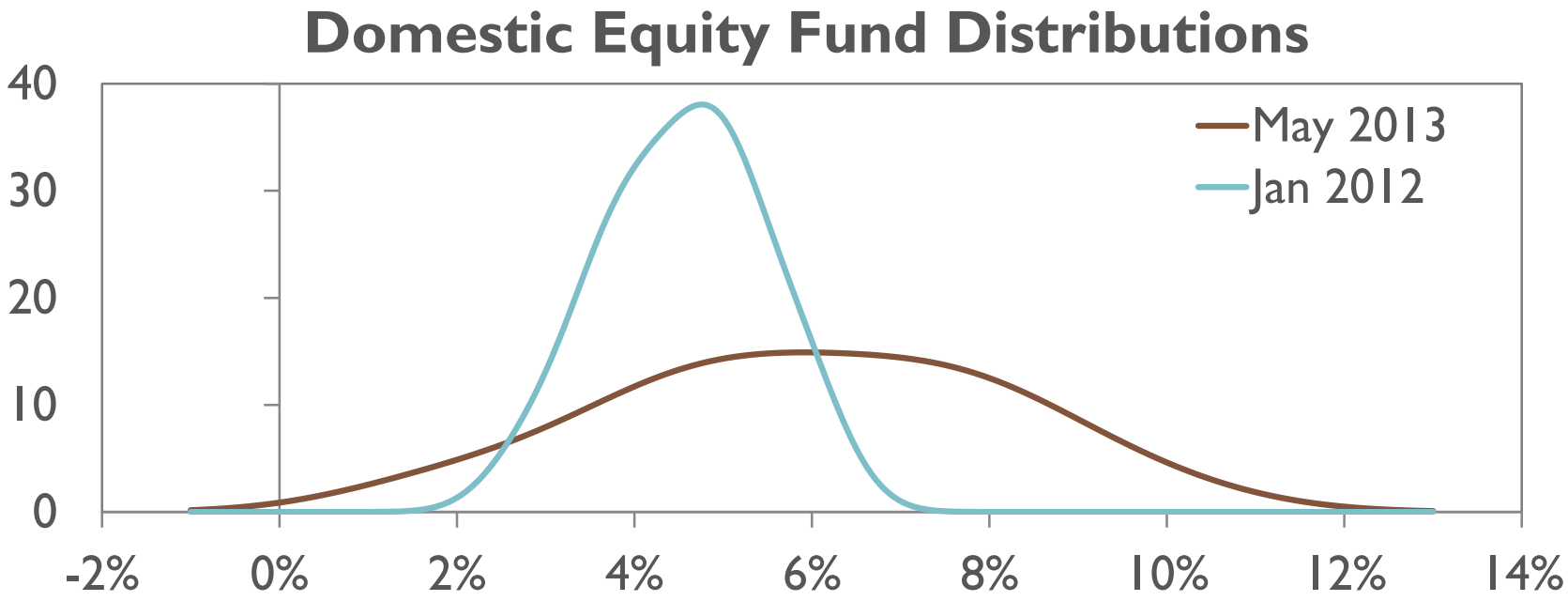
1yr Gen. Equity Performance



CSV and 'Skill'



CSV and 'Skill'



May 2013:

$$CSV = 2.1\%$$

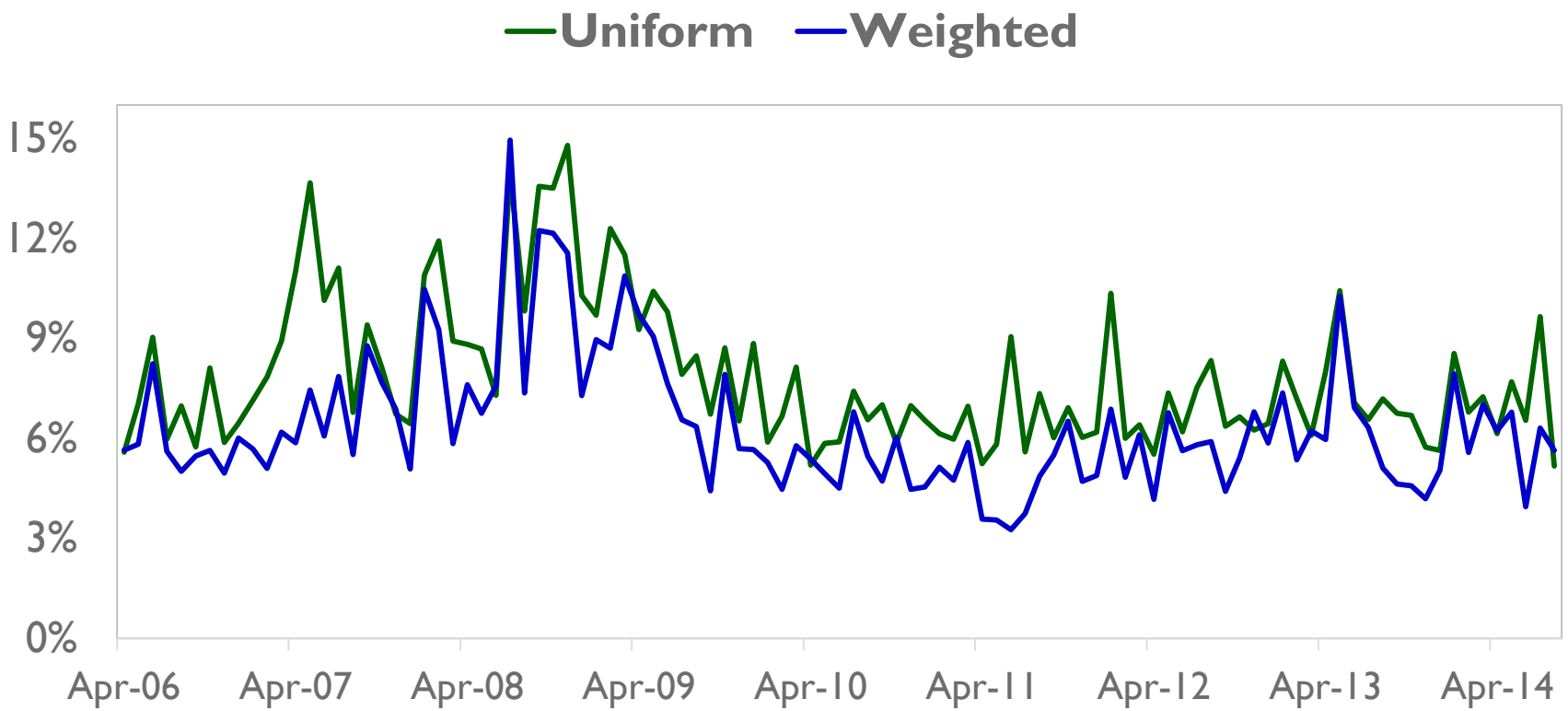
$$\mathbb{P}(R_F > R_B) = 46\%$$

Jan 2012:

$$CSV = 0.9\%$$

$$\mathbb{P}(R_F > R_B) = 38\%$$

ALSI Monthly CSV: 2006-2014



Fund Performance, 2006 - 2014

Absolute Fund Return Analysis

	Full Sample		
	Ave Ret	Med Ret	Vol
Full Sample	1.1%	1.5%	3.9%
Q1	2.7%	2.6%	3.7%
Q2	1.5%	1.9%	3.8%
Q3	0.7%	1.3%	3.9%
Q4	-0.7%	0.0%	4.1%
Q1 - Q4	**3.3%**	2.7%	-0.4%

Relative Fund Return Analysis

	Full Time Series		
	Ave Ret	SD	
Full Sample	-0.2%	-0.1%	1.2%
Q1	1.5%	1.3%	1.5%
Q2	0.2%	0.2%	1.2%
Q3	-0.6%	-0.5%	1.2%
Q4	-2.0%	-1.8%	1.4%
Q1 - Q4	**3.5%**	3.1%	0.1%

Fund Performance, 2006 - 2014

Absolute Fund Return Analysis

	Full Sample			Top CSV Quantile			Bottom CSV Quantile		
	Ave Ret	Med Ret	Vol	Ave Ret	Med Ret	Vol	Ave Ret	Med Ret	Vol
Full Sample	1.1%	1.5%	3.9%	-0.3%	-0.1%	6.1%	1.3%	1.5%	2.6%
Q1	2.7%	2.6%	3.7%	2.1%	1.7%	5.8%	2.5%	2.5%	2.7%
Q2	1.5%	1.9%	3.8%	0.3%	0.7%	6.1%	1.6%	1.7%	2.7%
Q3	0.7%	1.3%	3.9%	-0.9%	-0.8%	6.2%	1.1%	1.2%	2.6%
Q4	-0.7%	0.0%	4.1%	-2.9%	-1.7%	6.6%	0.1%	0.1%	2.5%
Q1 - Q4	**3.3%**	2.7%	-0.4%	**5.0%**	3.5%	-0.8%	**2.4%**	2.5%	0.2%

Relative Fund Return Analysis

	Full Time Series			Top CSV Quantile			Bottom CSV Quantile		
	Ave Ret	SD		Ave Alpha	Med Alpha	TE	Ave Alpha	Med Alpha	TE
Full Sample	-0.2%	-0.1%	1.2%	-0.6%	-0.9%	2.0%	-0.2%	-0.1%	0.7%
Q1	1.5%	1.3%	1.5%	2.0%	1.3%	2.6%	0.9%	0.9%	0.7%
Q2	0.2%	0.2%	1.2%	0.1%	-0.4%	2.0%	0.1%	0.1%	0.7%
Q3	-0.6%	-0.5%	1.2%	-1.2%	-1.5%	1.9%	-0.5%	-0.4%	0.7%
Q4	-2.0%	-1.8%	1.4%	-3.3%	-3.3%	1.8%	-1.4%	-1.2%	0.9%
Q1 - Q4	**3.5%**	3.1%	0.1%	**5.4%**	4.6%	0.7%	**2.4%**	2.2%	-0.2%

Contents

CSV-Weighted Alphas

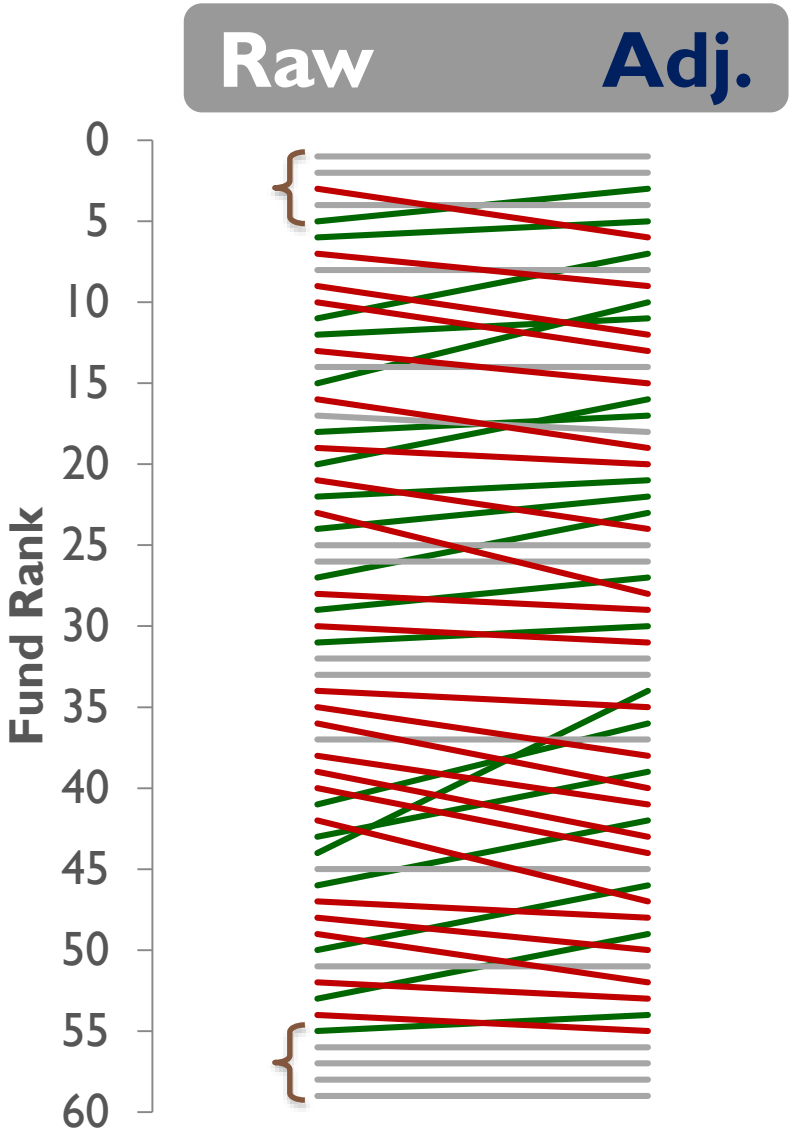
$$\alpha_t = r_{F,t} - r_{B,t}$$

$$\alpha^*_t = \left(r_{F,t} - r_{B,t}\right) \times \left({}^{1}/_{\chi^*_t}\right)$$

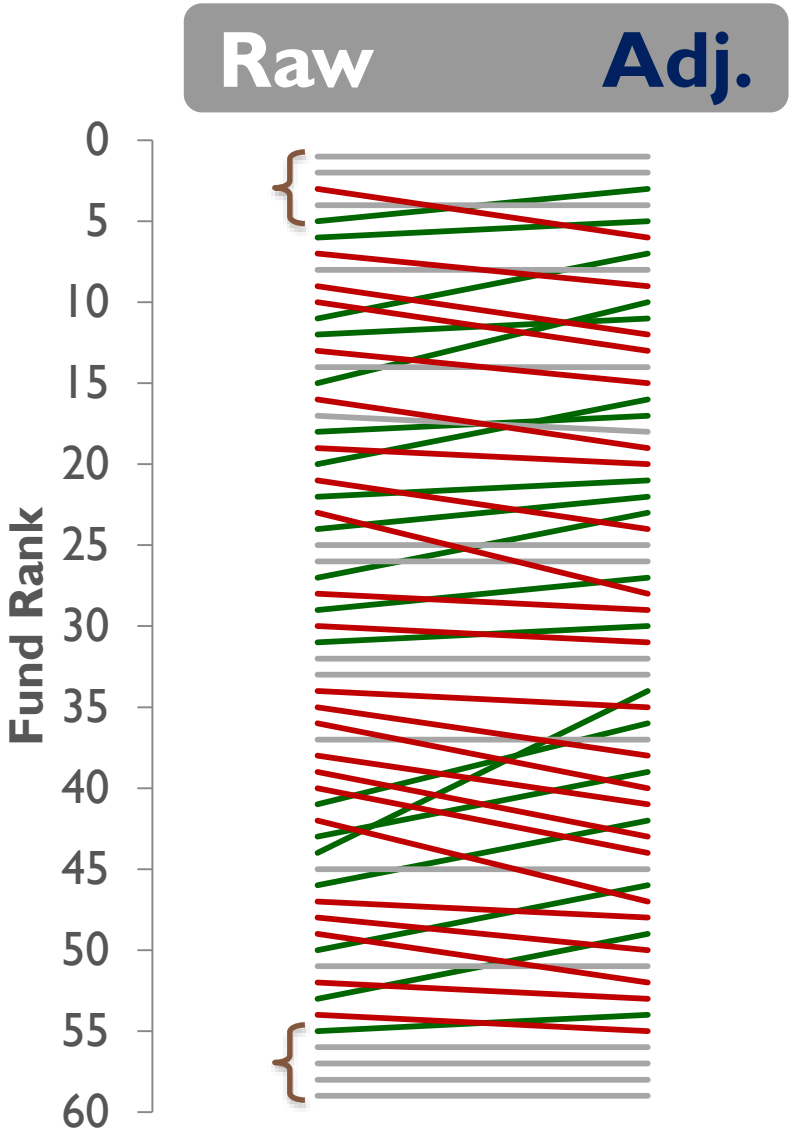
$$\chi^*_t = \left({}^{\chi_t}/_{\sum \chi_t}\right)$$

$$\bar{\alpha} = {}^{1}/_{T} \sum \alpha^*_t$$

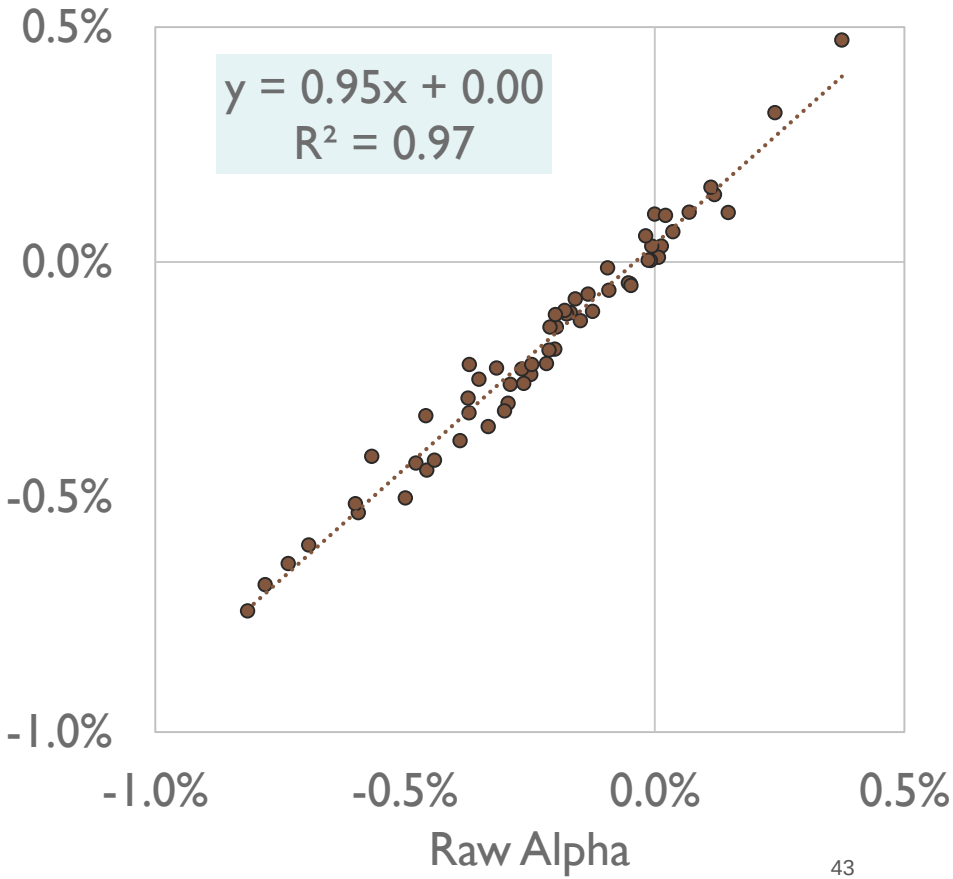
5yr CSV-Adjusted Alphas Ranks



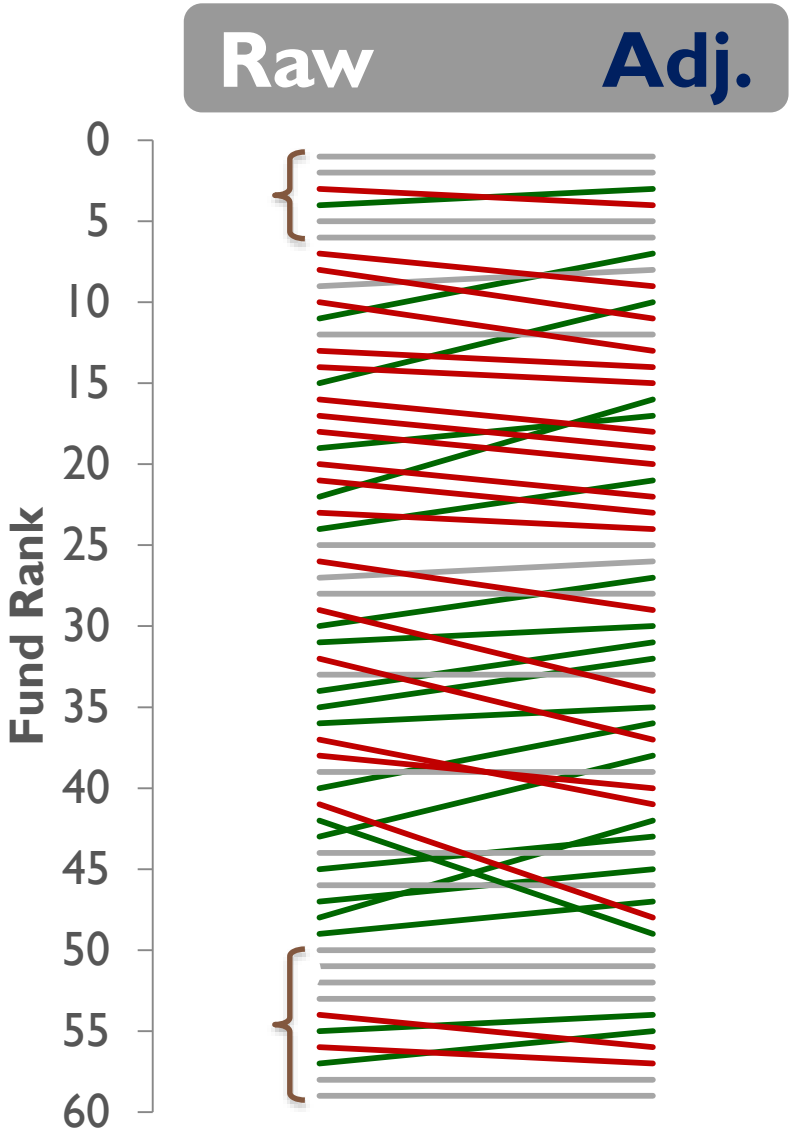
5yr CSV-Adjusted Alpha Ranks



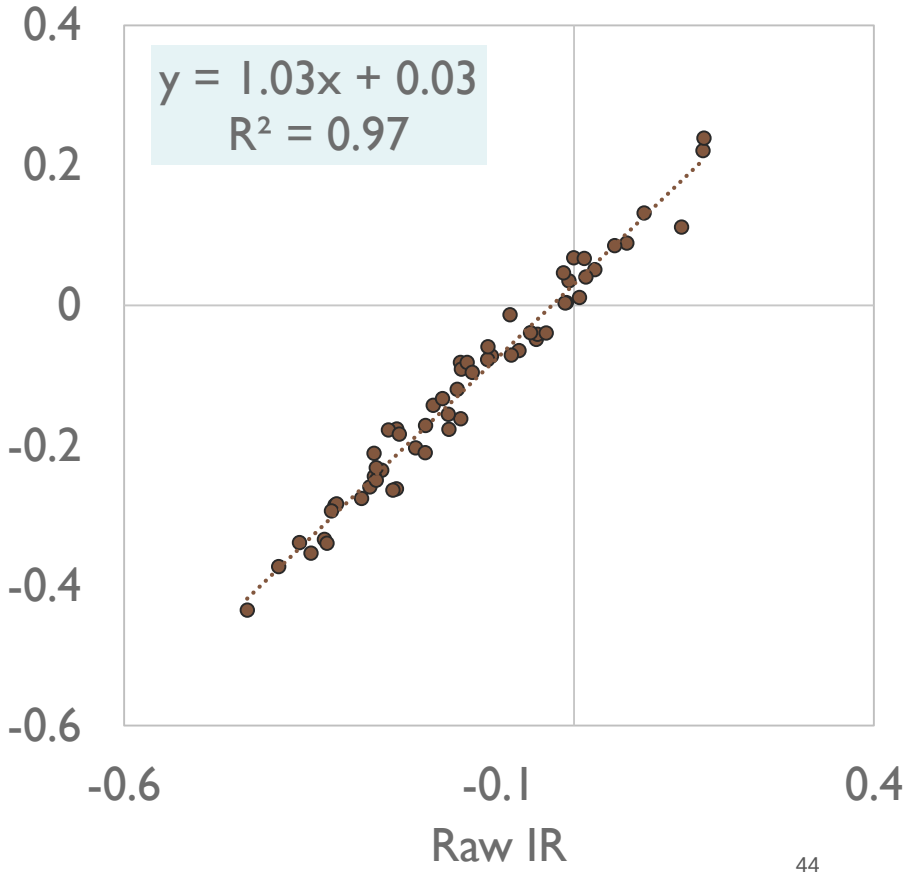
16.9% Positive α
25.4% Positive α^*



5yr CSV-Adjusted IR Ranks



Ave IR = -0.144
Ave IR = -0.145



CSV-Weighted Regression

$$r_{F,t} = \alpha + \beta r_{B,t} + \epsilon_t$$

$$\left(1/\chi_t\right) r_{F,t} = \left(1/\chi_t\right)\left[\alpha + \beta r_{B,t} + \epsilon_t\right]$$

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Thank You

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