

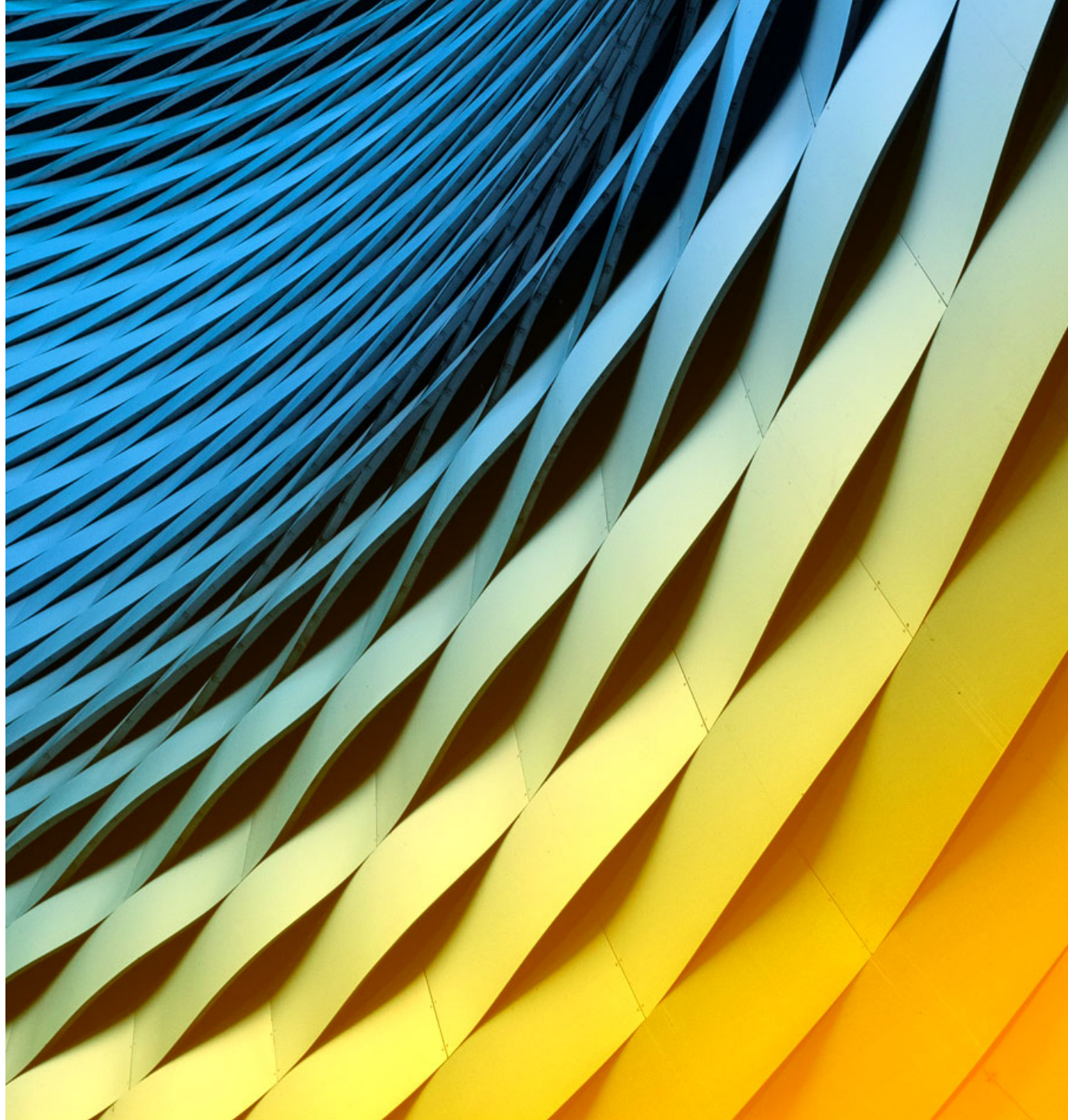
QuantZ/QMIT – Taming the Factor Zoo & the Great Rotation of 2021

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QMIT
QUANTZ MACHINE INTELLIGENCE
TECHNOLOGIES

Taming the Factor Zoo & The Great Rotation of 2021

Yesterday's Alpha is today's Beta

**Alpha decay => Active ripe for
disruption + migration to Passive**

**Disrupt traditional stock-picking
& 2/20 model**

DIY Smart Beta Investing

DATA IS THE FINAL FRONTIER

ML

+

Smart
Betas

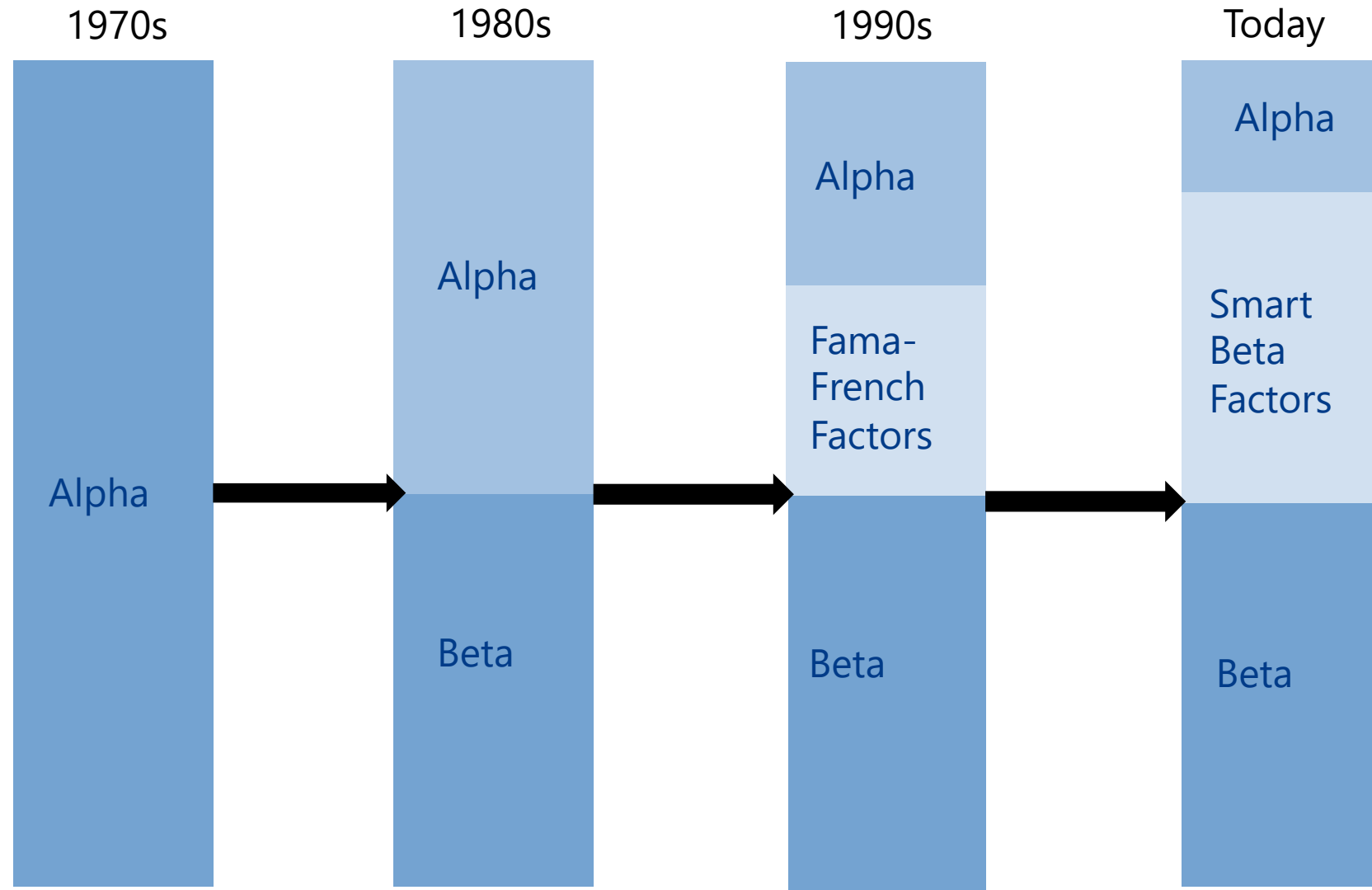
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Any Linear view
on Equities



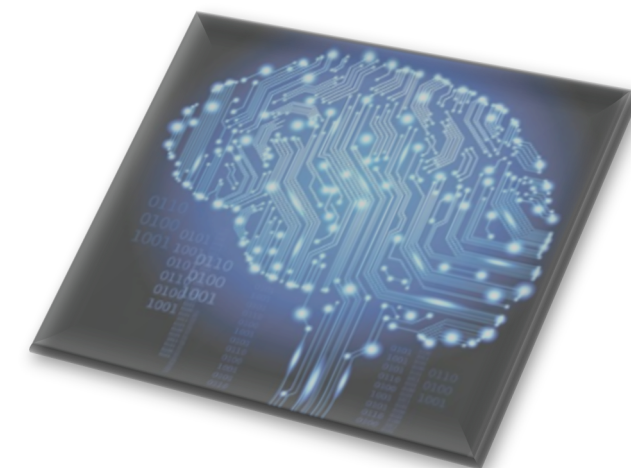
YESTERDAY'S ALPHA IS TODAY'S BETA

QMIT





- Over 600 factors including their sector neutralized versions
- ML-Enhanced Smart Betas: 18 Composites + 18 SN Composites
- Factors :=
 - [Long top 5% - Short bottom 5%] market-neutral performance spreads on ~125 x 125 stocks
 - Clear rationale grounded in trader intuition, fundamentals or technicals with some expectation of persistence
 - NOT data-mined; robust to minor tweaks & usually gross of TCost (like indices)
- Enhanced Smart Betas via:
 - Max Sharpe
 - Risk Parity
 - Equal Weighted or restricted subsets
 - Random Forests
 - XGBoost, Ensemble methods etc





ENHANCED SMART BETAS

1. DEEP VALUE (DV)
2. RELATIVE VALUE (RV)
3. DIVIDENDS (DIVS)
4. REVERSALS (REVS)
5. PRICE MOMENTUM (PMOM)
6. ENHANCED MOMENTUM (ENMOM)
7. ANALYST REVISIONS (ARS)
8. ANALYST RATINGS & TARGETS (ART)
9. GROWTH – HISTORICAL (GROH)
10. QUALITY - EARNINGS QUALITY (EQ)
11. QUALITY – LEVERAGE (LEV)
12. QUALITY – PROFITABILITY (PROF)
13. QUALITY – CAPITAL USAGE (CSU)
14. QUALITY – STABILITY (STAB)
15. QUALITY – EFFICIENCY (EFF)
16. SIZE
17. SHORT INTEREST (SIRF)
18. RISK (LOW VOL)

COMPOSITE SIGNALS

1. FAMOUS FIVE
2. SIZZLING SEVEN
3. FABULOUS FOURTEEN
4. ENTERPRISE EIGHTEEN
5. VALUE COMPOSITE
6. GROWTH MOMENTUM COMPOSITE
7. QUALITY COMPOSITE
8. VALUE MOMENTUM COMPOSITE
9. QUALITY MOMENTUM COMPOSITE
10. QUALITY VALUE COMPOSITE



	Spread Ann%	Vol	Sharpe	Sortino	MaxDD %	Hit Rate	Long Ann%	Long Sharpe
Quality - Profitability	20.77	16.81	1.24	3.50	18.42	67.58	11.77	0.65
Quality - Leverage	17.30	13.80	1.25	3.49	21.61	68.75	11.22	0.54
Relative Value	16.86	17.73	0.95	1.88	29.57	64.84	19.01	0.86
Deep Value	14.59	20.19	0.72	1.25	49.43	60.16	14.11	0.67
Quality – Capital Structure/ Usage	14.51	16.61	0.87	1.65	28.25	64.06	14.16	0.77
Safety/ Risk	11.85	9.63	1.23	2.12	28.43	69.92	12.34	1.18
Reversals	10.54	20.71	0.51	0.93	34.13	55.86	10.07	0.46
Growth	10.46	11.17	0.94	1.63	34.25	62.50	14.33	0.68
Quality - Stability	10.00	11.40	0.88	1.49	20.26	64.06	13.51	0.85
Size	9.68	12.08	0.80	1.61	45.29	55.86	13.85	0.69
Quality - Efficiency	8.87	19.29	0.46	0.84	51.05	56.25	10.01	0.48
Analyst Revisions	7.90	12.20	0.65	0.96	38.21	63.67	13.35	0.70
Analyst Ratings and Targets	7.82	12.18	0.64	0.96	29.37	63.67	14.01	0.75
Quality - Efficiency	5.68	9.96	0.57	1.05	23.20	53.13	7.38	0.34
Enhanced Momentum	5.61	18.88	0.30	0.48	44.27	56.25	9.29	0.46
Dividends	3.71	10.33	0.36	0.54	31.76	56.64	10.95	0.59
Short Interest	3.23	9.28	0.35	0.56	23.88	55.08	11.93	0.74
Price Momentum	3.03	23.40	0.13	0.19	63.01	54.30	4.38	0.18

NB – 19y monthly & 2.25y daily observations where the best flavor (not BFOM) highlighted is based on LTD monthly returns

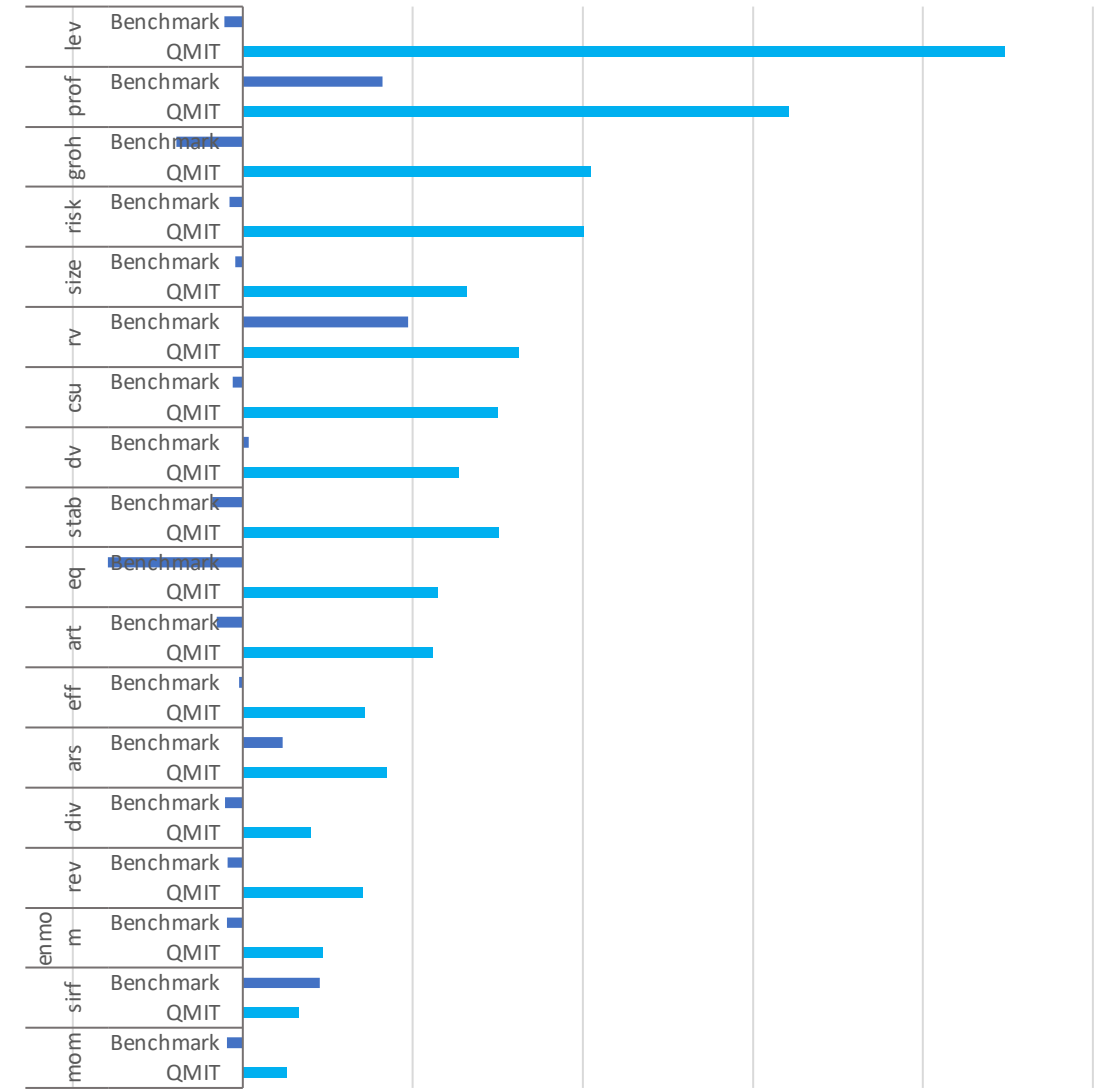
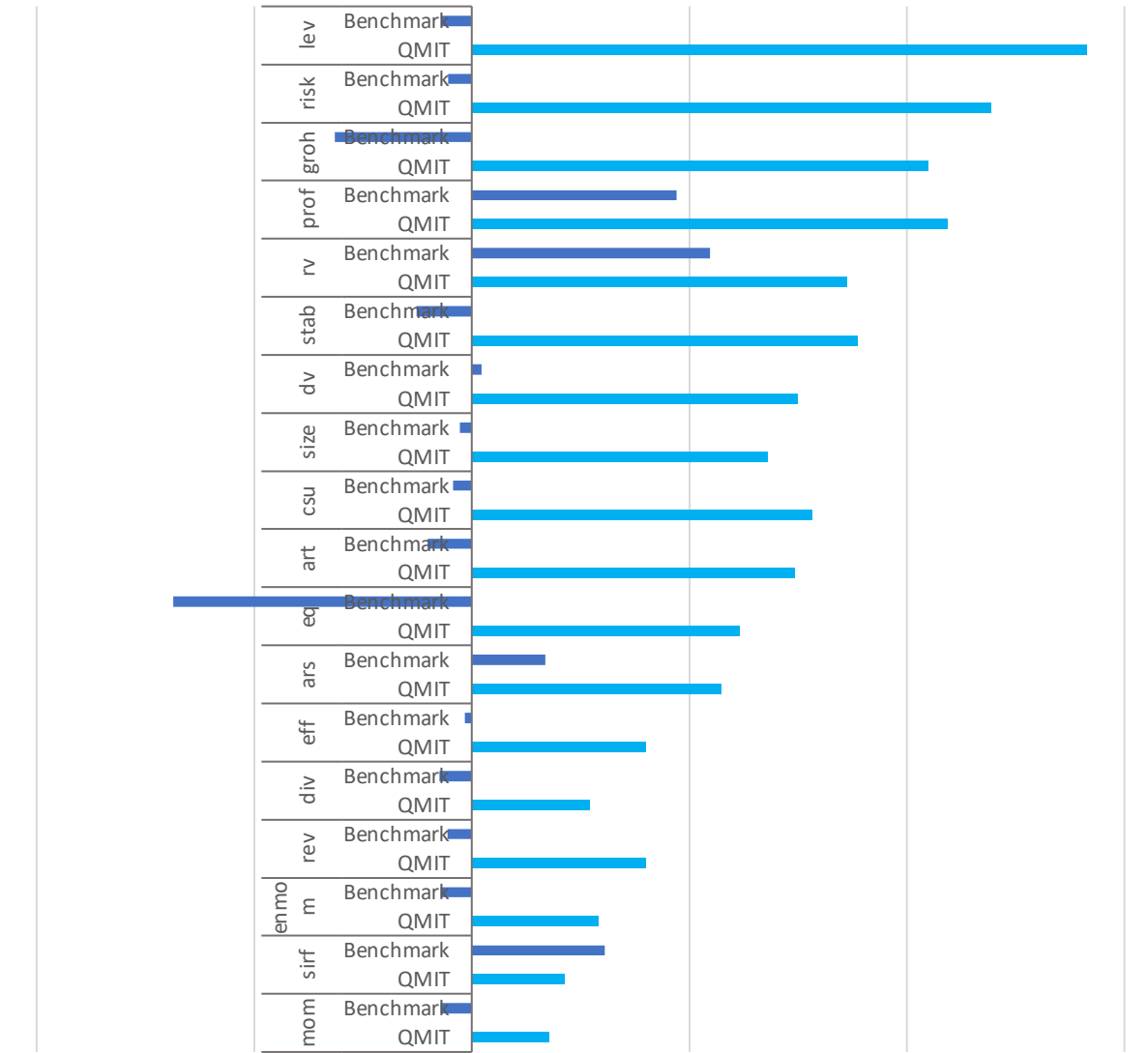


Sharpe Ratios

Sortino Ratios

-1.0 -0.5 0.0 0.5 1.0 1.5

-1 0 1 2 3 4 5

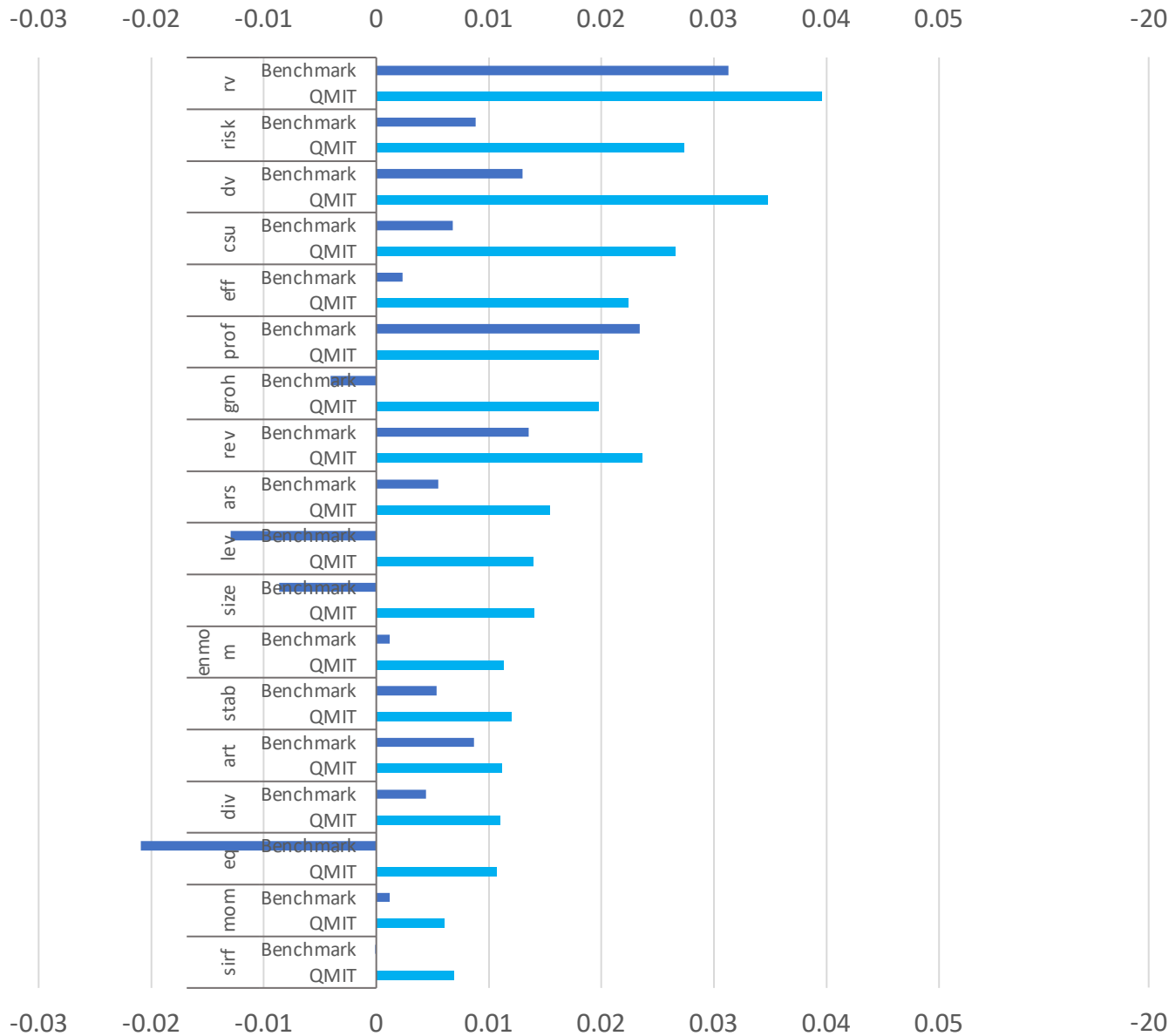


-1 -0.5 0 0.5 1 1.5

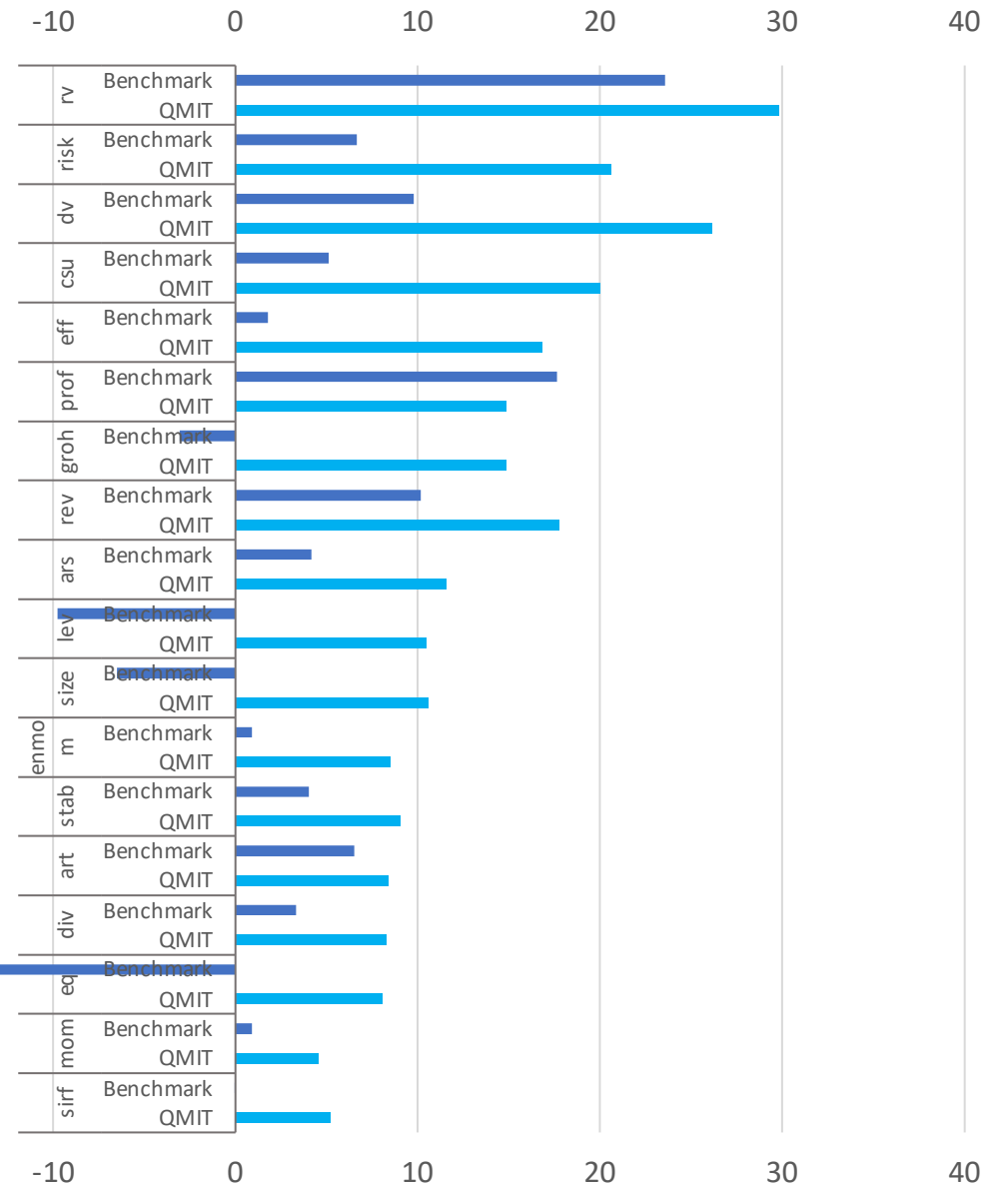
-1 0 1 2 3 4 5



Pooled Information Coefficients



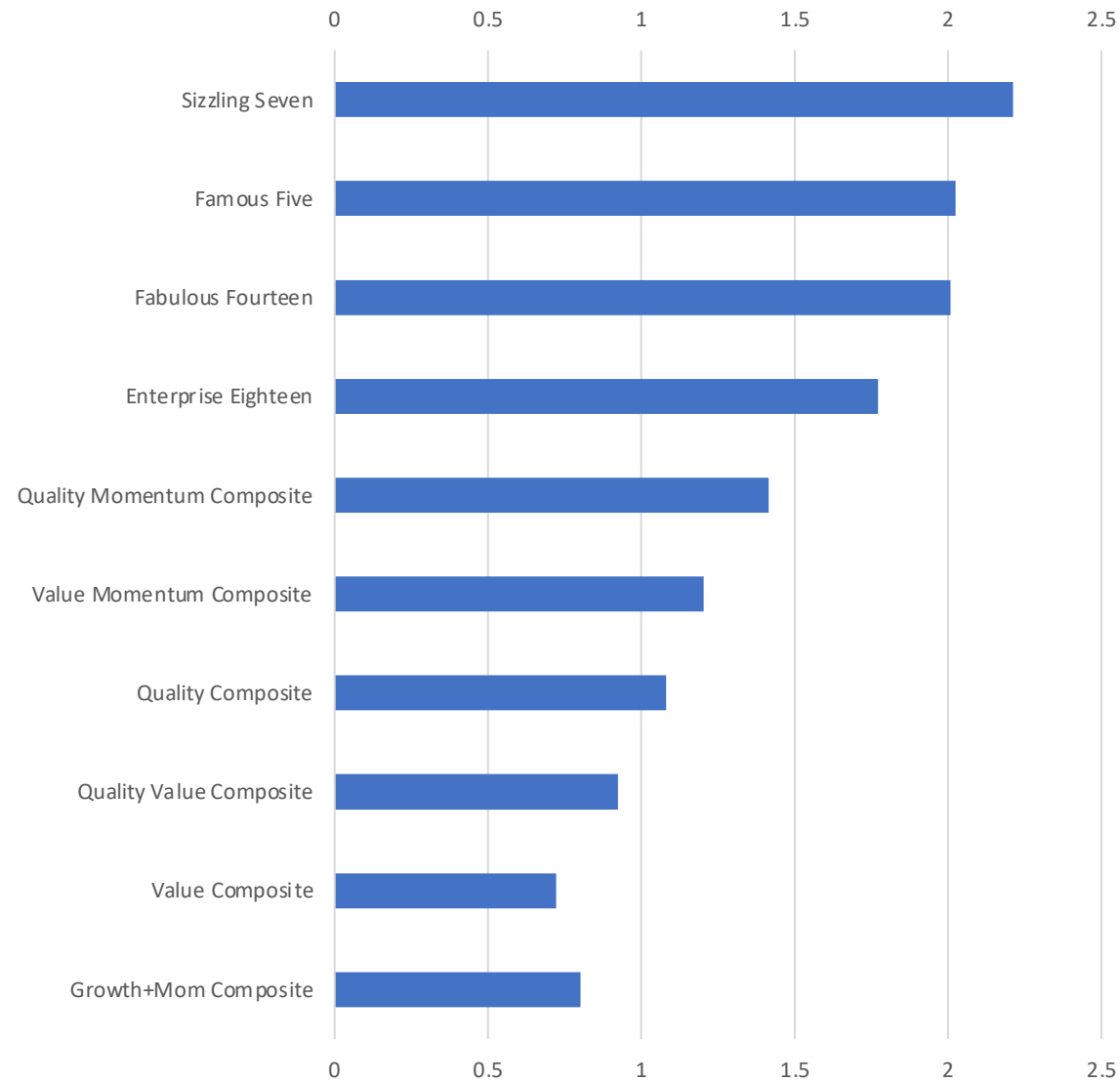
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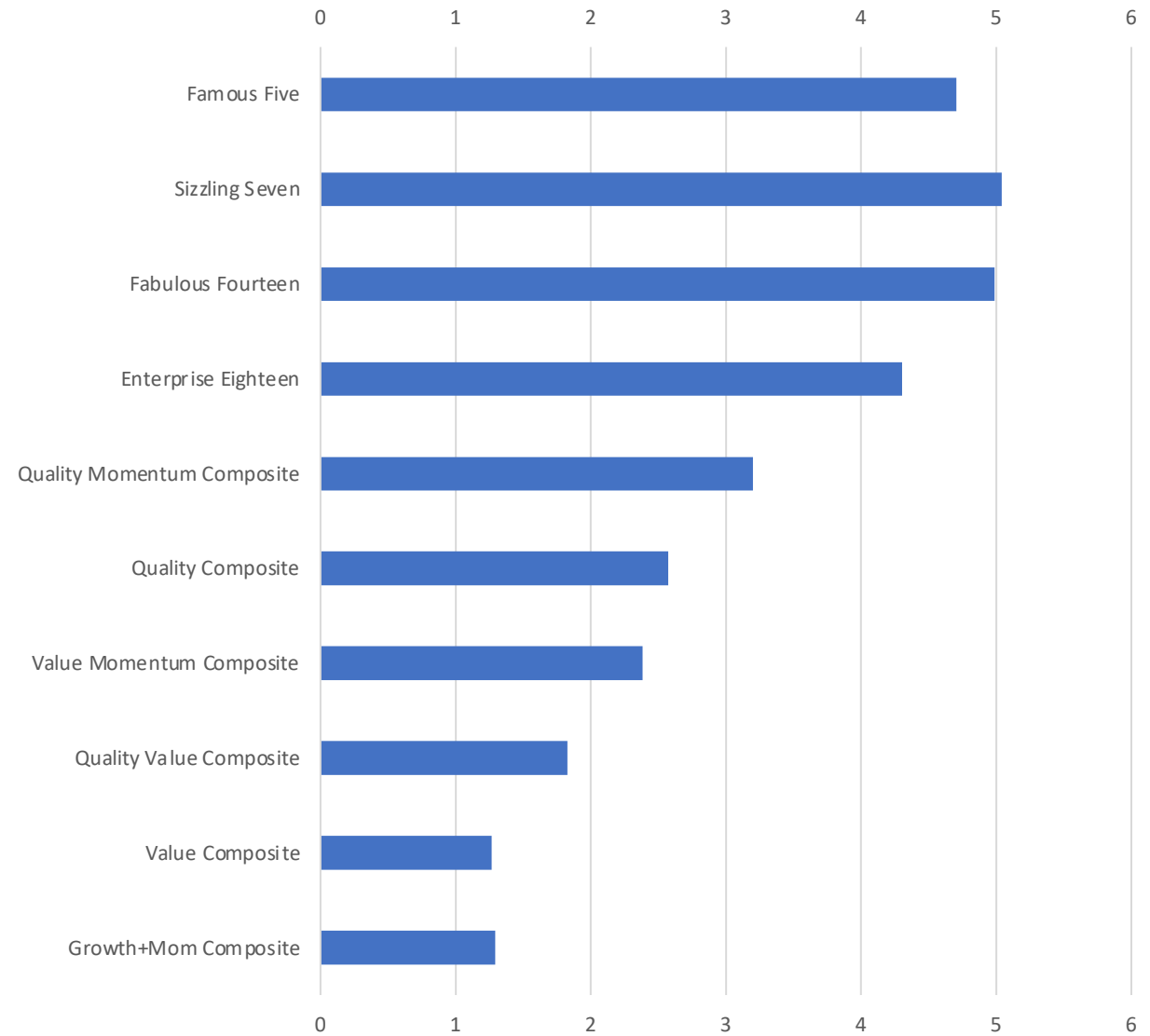
Benchmark factors are listed in the 1 pagers & the model handbook. All results are for BFOMs to avoid look ahead bias.



Sharpe Ratios



Sortino Ratios



* Monthly re-optimization of factor weights within ESB BFOMs which constitute the combos but with DAILY chain-linked returns & ESB factor re-rankings



ESB HEATMAPS – 2020 YTD (12-31-20, DAILY* RE-RANKED, BETA-NEUTRAL)



	DTD Long	DTD Short	DTD Spread	MTD Long	MTD Short	MTD Spread	YTD Long	YTD Short	YTD Spread
DV	0.18%	-2.3%	2.48%	6.07%	15.04%	-8.62%	22.05%	72.15%	-32.84%
Size	-0.5%	0.86%	-1.36%	11.64%	2.84%	8.54%	21.53%	41.09%	-15.17%
RV	0.72%	-0.75%	1.47%	7.96%	8.42%	-0.5%	30.34%	66.72%	-23.27%
Profit	0.37%	-0.39%	0.76%	7.62%	5.6%	1.87%	27.89%	-1.09%	24.37%
CSU	0.5%	-0.06%	0.56%	8.59%	10.05%	-1.47%	24.1%	21.87%	-1.22%
Leverage	0.53%	-0.26%	0.79%	7.83%	5.68%	1.98%	27.42%	41.79%	-11.03%
Reversals	-0.83%	0.45%	-1.28%	6.86%	5.2%	1.42%	104.86%	-4.36%	108.56%
Efficiency	-0.11%	-1.29%	1.18%	5.23%	9.22%	-3.99%	7.34%	62.26%	-35.93%
EQ	-0.18%	-0.41%	0.22%	7.39%	11.61%	-3.89%	17.62%	41.53%	-18.55%
Growth	-0.47%	-0.06%	-0.41%	6.55%	8.75%	-2.21%	24.07%	52.12%	-20.64%
ART	-0.05%	-0.12%	0.07%	9.66%	7.0%	2.4%	8.07%	12.24%	-5.94%
EnMOM	-0.09%	-0.09%	-0.0%	5.76%	8.84%	-3.08%	57.31%	7.8%	39.55%
ARS	-0.04%	-0.3%	0.26%	7.22%	8.66%	-1.44%	27.9%	12.64%	10.31%
SIRF	0.74%	-0.82%	1.55%	6.23%	6.69%	-0.56%	9.31%	19.16%	-7.58%
Stability	0.41%	-0.61%	1.02%	3.58%	6.96%	-3.27%	15.71%	-7.42%	21.62%
Risk	0.71%	-0.16%	0.87%	3.75%	1.18%	2.52%	6.32%	5.01%	1.86%
PMOM	-0.51%	0.13%	-0.64%	7.45%	10.28%	-2.97%	32.04%	7.83%	13.07%
Dividends	0.63%	0.28%	0.36%	7.02%	7.73%	-0.65%	-6.51%	26.71%	-24.26%

*Monthly re-optimization of factor weights within ESBs (best flavor not BFOM) but DAILY chain-linked returns & factor re-rankings



ESB HEATMAPS – 2021 YTD (04-30-21, DAILY* RE-RANKED, BETA-NEUTRAL)



	DTD Long	DTD Short	DTD Spread	MTD Long	MTD Short	MTD Spread	YTD Long	YTD Short	YTD Spread
DV	-0.69%	-1.11%	0.41%	1.94%	-4.12%	5.54%	30.53%	-4.19%	29.49%
Size	-1.12%	-0.97%	-0.15%	-0.6%	5.23%	-5.57%	14.64%	8.09%	6.01%
RV	-1.1%	-0.77%	-0.34%	4.85%	-1.35%	6.08%	41.55%	20.82%	16.14%
Profit	-1.51%	-0.62%	-0.89%	2.73%	-1.32%	4.07%	9.41%	11.94%	-2.5%
CSU	-1.06%	-0.66%	-0.4%	4.42%	-1.95%	6.21%	27.61%	13.33%	11.04%
Efficiency	-1.22%	-1.43%	0.21%	2.53%	-1.82%	3.92%	35.92%	-5.23%	39.63%
Reversals	-1.11%	-0.75%	-0.37%	2.41%	2.95%	-0.47%	15.69%	6.98%	7.04%
Leverage	-1.41%	-0.78%	-0.64%	2.74%	-2.55%	5.17%	7.56%	3.67%	2.92%
EQ	-0.93%	-1.21%	0.27%	1.08%	-0.72%	1.62%	26.93%	9.89%	13.87%
Growth	-1.24%	-0.8%	-0.44%	4.25%	-0.3%	4.56%	30.5%	23.82%	5.16%
ART	-0.72%	-1.66%	0.94%	4.23%	-0.38%	4.61%	18.48%	22.73%	-3.98%
EnMOM	-0.58%	-1.16%	0.59%	-0.52%	2.3%	-2.83%	7.65%	22.64%	-12.86%
ARS	-1.42%	-1.61%	0.19%	5.38%	-0.39%	5.65%	24.61%	22.2%	1.62%
Stability	-0.97%	-0.54%	-0.43%	3.36%	-2.15%	5.48%	18.0%	10.6%	6.02%
SIRF	-1.23%	-1.2%	-0.03%	3.59%	1.51%	1.97%	13.15%	11.8%	0.32%
PMOM	-0.46%	-1.03%	0.57%	-1.62%	1.83%	-3.46%	9.75%	28.7%	-15.2%
Risk	0.01%	-0.14%	0.16%	3.0%	-0.3%	3.3%	8.92%	3.14%	5.57%
Dividends	-1.11%	-1.11%	0.0%	4.04%	3.98%	0.05%	28.62%	27.09%	1.15%
RiskOn	-1.1%	-1.0%	-0.1%	2.71%	0.3%	2.29%	26.0%	8.87%	14.83%
RiskOff	-0.88%	-0.97%	0.1%	2.61%	0.09%	2.47%	18.0%	17.23%	0.47%
RORO Spread	-0.22%	-0.03%	-0.2%	0.1%	0.21%	-0.18%	8.0%	-8.36%	14.36%

*Monthly re-optimization of factor weights within ESBs (best flavor not BFOM) but DAILY chain-linked returns & factor re-rankings



ESB HEATMAPS – LTD (04-30-20, 19Y MO & 2.3Y DAILY*, \$-NEUTRAL)



	5Y Long	5Y Short	5Y Spread	Post-07 Long	Post-07 Short	Post-07 Spread	LTD Long	LTD Short	LTD Spread
DV	19.63%	19.91%	-1.47%	14.46%	0.68%	12.7%	17.21%	-7.43%	20.24%
Size	21.44%	20.78%	0.83%	16.94%	7.5%	9.43%	21.3%	3.43%	18.04%
RV	19.08%	22.97%	-3.59%	12.8%	4.52%	7.21%	18.96%	-5.16%	18.12%
Profit	21.42%	8.66%	5.98%	11.04%	-0.37%	6.15%	11.53%	-11.37%	15.2%
CSU	18.12%	9.87%	5.56%	11.77%	-0.15%	9.54%	14.12%	-7.22%	14.65%
Efficiency	15.21%	16.72%	-1.59%	10.08%	4.46%	5.45%	13.04%	-5.38%	13.27%
Reversals	33.43%	5.54%	25.77%	13.24%	0.89%	12.07%	12.8%	-3.51%	16.2%
Leverage	18.38%	20.34%	-4.34%	11.0%	3.12%	4.27%	11.05%	-8.46%	14.31%
EQ	23.05%	14.8%	6.91%	12.2%	2.93%	8.47%	10.65%	-2.58%	11.74%
Growth	19.04%	22.98%	-5.1%	12.24%	4.95%	4.78%	15.05%	2.1%	10.13%
ART	21.79%	13.96%	2.77%	15.74%	2.93%	8.09%	15.93%	4.02%	7.8%
EnMOM	24.22%	16.08%	4.23%	12.14%	4.71%	4.38%	11.31%	0.12%	6.92%
ARS	23.87%	9.95%	8.65%	14.6%	2.87%	7.81%	13.99%	4.06%	5.94%
Stability	15.86%	4.15%	7.32%	11.92%	2.95%	5.38%	13.63%	5.07%	3.64%
SIRF	16.87%	17.66%	-1.65%	9.99%	6.6%	2.7%	13.35%	8.89%	3.58%
PMOM	21.27%	16.79%	-2.8%	10.11%	3.13%	-0.32%	7.06%	-3.26%	0.83%
Risk	12.7%	16.06%	-14.62%	10.2%	4.05%	-6.31%	12.44%	-8.68%	1.57%
Dividends	13.79%	15.26%	-1.2%	8.97%	8.54%	-0.66%	11.66%	7.72%	1.2%

*Monthly re-optimization of factor weights within ESBs (best flavor not BFOM) but DAILY chain-linked returns & factor re-rankings in last 2y vs monthly prior 19y



COMPOSITE SIGNALS - YTD (04-30-21, MONTHLY REBAL*, \$-NEUTRAL)



	DTD Long	DTD Short	DTD Spread	MTD Long	MTD Short	MTD Spread	YTD Long	YTD Short	YTD Spread
Fabulous Fourteen	-1.5%	-0.91%	-0.59%	4.8%	-2.89%	7.53%	32.78%	-1.89%	32.78%
Sizzling Seven	-1.26%	-0.9%	-0.36%	4.26%	-2.44%	6.32%	26.52%	0.15%	23.33%
Famous Five	-1.17%	-1.28%	0.11%	3.98%	-2.38%	6.05%	25.47%	3.45%	18.33%
Enterprise Eighteen	-1.36%	-0.99%	-0.37%	5.74%	-2.51%	7.87%	31.13%	2.71%	24.65%
Value Momentum Composite	-1.45%	-1.14%	-0.31%	4.94%	-1.4%	6.06%	38.81%	1.41%	35.01%
Value Composite	-1.37%	-1.53%	0.16%	4.44%	-6.14%	10.13%	37.32%	-1.82%	32.5%
Quality Value Composite	-1.09%	-1.29%	0.2%	5.36%	-4.85%	9.71%	31.62%	8.46%	14.46%
Quality Momentum Composite	-1.54%	-1.02%	-0.51%	4.78%	-0.86%	5.47%	27.85%	9.48%	15.76%
Quality Composite	-1.3%	-1.12%	-0.19%	3.83%	-3.75%	7.08%	20.93%	11.24%	3.85%
Growth+Mom Composite	-1.67%	-1.15%	-0.52%	4.39%	2.37%	2.03%	25.65%	15.66%	8.82%

*Monthly re-optimization of factor weights within ESB BFOMs which constitute the combos & with MONTHLY rebalance of factor ranks



COMPOSITE SIGNALS - YTD (05-06-21, MONTHLY REBAL*, \$-NEUTRAL)



	DTD Long	DTD Short	DTD Spread	MTD Long	MTD Short	MTD Spread	YTD Long	YTD Short	YTD Spread
Fabulous Fourteen	0.88%	-3.1%	3.98%	2.86%	-9.43%	13.21%	36.57%	-11.14%	50.32%
Sizzling Seven	1.11%	-2.89%	4.0%	2.44%	-8.93%	12.18%	29.62%	-8.8%	38.35%
Famous Five	0.9%	-3.13%	4.02%	2.66%	-9.35%	12.89%	28.79%	-6.21%	33.57%
Enterprise Eighteen	0.88%	-2.72%	3.6%	3.18%	-9.39%	13.51%	35.3%	-6.94%	41.49%
Value Momentum Composite	1.0%	-2.56%	3.57%	4.65%	-8.42%	13.93%	45.26%	-7.13%	53.82%
Value Composite	1.22%	-3.1%	4.32%	4.93%	-9.41%	15.43%	44.1%	-11.06%	52.94%
Quality Value Composite	1.12%	-3.68%	4.8%	3.32%	-10.55%	15.04%	35.99%	-2.98%	31.67%
Quality Momentum Composite	0.58%	-1.8%	2.38%	2.62%	-6.99%	10.13%	31.2%	1.83%	27.48%
Quality Composite	0.96%	-3.51%	4.47%	2.93%	-9.28%	13.09%	24.48%	0.91%	17.44%
Growth+Mom Composite	0.28%	-0.67%	0.95%	2.66%	-3.36%	6.18%	29.0%	11.77%	15.55%

*Monthly re-optimization of factor weights within ESB BFOMs which constitute the combos & with MONTHLY rebalance of factor ranks

	Sizzling Seven	Enterprise Eighteen	Fabulous Fourteen	Famous Five	Growth+Mom Composite	Quality Composite	Quality Momentum Composite	Quality Value Composite	Value Composite	Value Momentum Composite
Consumer Staples	1	3	3	2	8	1	4	1	3	6
Financials	2	1	1	1	1	4	2	6	7	2
Materials	3	4	5	4	4	5	5	4	2	4
Industrials	4	2	2	3	2	3	1	3	6	3
Communication Services	5	6	6	5	7	7	7	5	4	7
Consumer Discretionary	6	5	4	6	3	2	3	2	5	5
Information Technology	7	8	7	8	6	6	6	8	9	8
Energy	8	7	8	7	5	9	9	7	1	1
Health Care	9	9	9	9	9	8	8	9	10	9
Utilities	10	10	10	10	10	10	10	10	8	10



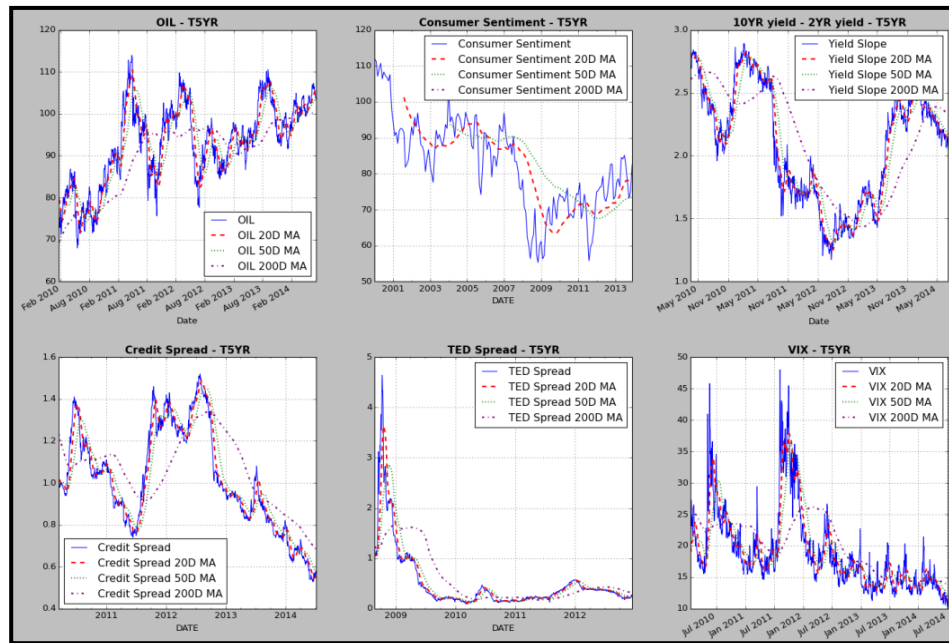
ESB – 20Y RETURN CORRELATIONS (04-30-21)



	ARS	ART	CSU	DV	Dividends	EQ	Efficiency	EnMOM	Growth	Leverage	PMOM	Profit	RV	Reversals	Risk	SIRF	Size	Stability
ARS	1.0	0.81	0.18	-0.35	0.03	-0.21	-0.12	0.56	0.52	0.29	0.68	0.49	-0.02	-0.47	0.51	0.19	-0.55	0.35
ART	0.81	1.0	0.11	-0.34	-0.04	-0.24	-0.14	0.59	0.5	0.29	0.72	0.41	-0.05	-0.35	0.45	0.21	-0.45	0.28
CSU	0.18	0.11	1.0	0.68	0.72	0.46	0.8	-0.06	0.41	0.69	0.02	0.74	0.86	-0.21	0.78	-0.16	-0.38	0.8
DV	-0.35	-0.34	0.68	1.0	0.59	0.49	0.88	-0.45	0.09	0.34	-0.46	0.28	0.79	0.17	0.32	-0.28	0.04	0.45
Dividends	0.03	-0.04	0.72	0.59	1.0	0.43	0.65	-0.22	0.27	0.44	-0.13	0.53	0.69	-0.11	0.64	-0.25	-0.29	0.57
EQ	-0.21	-0.24	0.46	0.49	0.43	1.0	0.53	-0.12	-0.1	0.15	-0.1	0.11	0.41	0.07	0.19	-0.22	0.11	0.26
Efficiency	-0.12	-0.14	0.8	0.88	0.65	0.53	1.0	-0.2	0.18	0.43	-0.18	0.41	0.84	-0.01	0.49	-0.24	-0.08	0.54
EnMOM	0.56	0.59	-0.06	-0.45	-0.22	-0.12	-0.2	1.0	0.22	0.07	0.9	0.12	-0.17	-0.23	0.18	0.24	-0.17	0.01
Growth	0.52	0.5	0.41	0.09	0.27	-0.1	0.18	0.22	1.0	0.57	0.39	0.65	0.46	-0.22	0.56	0.01	-0.39	0.39
Leverage	0.29	0.29	0.69	0.34	0.44	0.15	0.43	0.07	0.57	1.0	0.18	0.86	0.68	-0.31	0.75	0.08	-0.48	0.63
PMOM	0.68	0.72	0.02	-0.46	-0.13	-0.1	-0.18	0.9	0.39	0.18	1.0	0.28	-0.09	-0.39	0.34	0.23	-0.33	0.14
Profit	0.49	0.41	0.74	0.28	0.53	0.11	0.41	0.12	0.65	0.86	0.28	1.0	0.65	-0.34	0.86	-0.01	-0.62	0.75
RV	-0.02	-0.05	0.86	0.79	0.69	0.41	0.84	-0.17	0.46	0.68	-0.09	0.65	1.0	-0.07	0.63	-0.16	-0.23	0.6
Reversals	-0.47	-0.35	-0.21	0.17	-0.11	0.07	-0.01	-0.23	-0.22	-0.31	-0.39	-0.34	-0.07	1.0	-0.41	-0.2	0.47	-0.34
Risk	0.51	0.45	0.78	0.32	0.64	0.19	0.49	0.18	0.56	0.75	0.34	0.86	0.63	-0.41	1.0	-0.03	-0.64	0.8
SIRF	0.19	0.21	-0.16	-0.28	-0.25	-0.22	-0.24	0.24	0.01	0.08	0.23	-0.01	-0.16	-0.2	-0.03	1.0	-0.05	-0.07
Size	-0.55	-0.45	-0.38	0.04	-0.29	0.11	-0.08	-0.17	-0.39	-0.48	-0.33	-0.62	-0.23	0.47	-0.64	-0.05	1.0	-0.53
Stability	0.35	0.28	0.8	0.45	0.57	0.26	0.54	0.01	0.39	0.63	0.14	0.75	0.6	-0.34	0.8	-0.07	-0.53	1.0



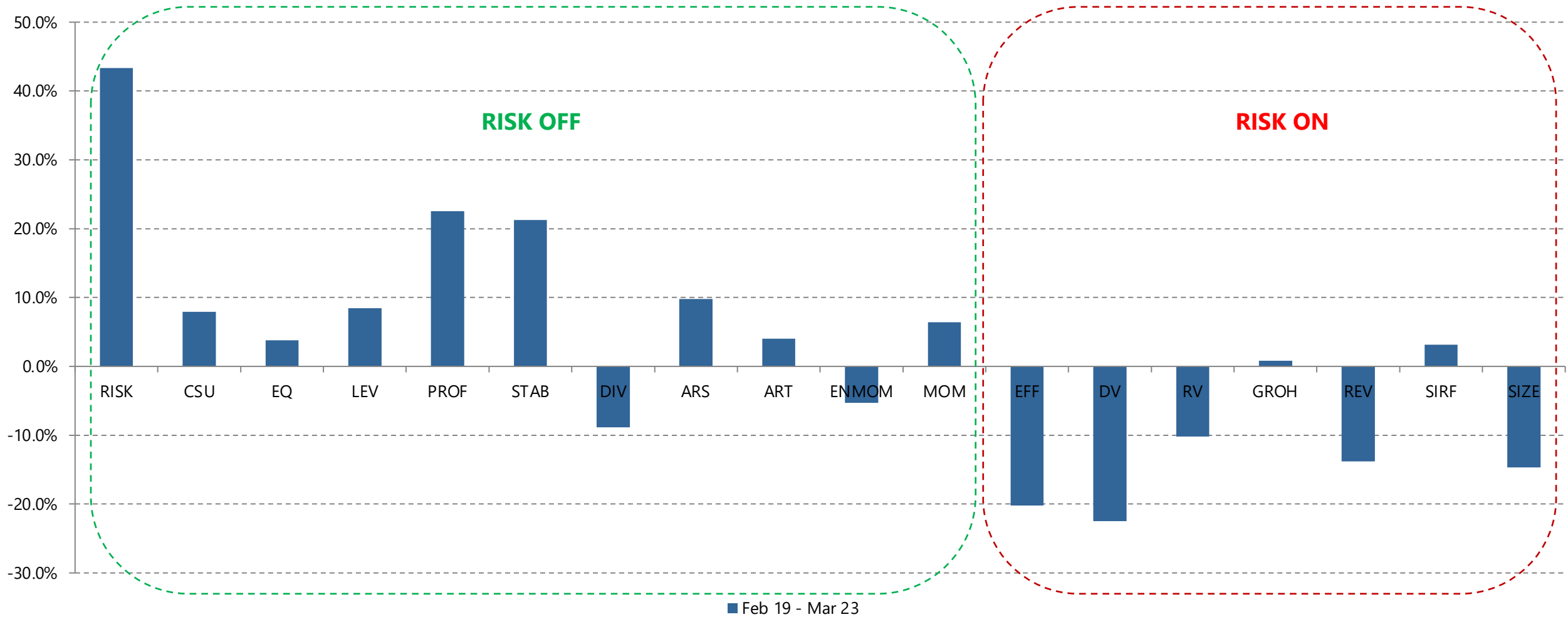
MACRO REGIMES VIA MACHINE LEARNING



	AUDJPY	EURJPY	GF5	choe	ch_econ	corr	crude	djmom	djqua	djval	fflowl	irisk	iskew	ita10	ita5	spa10	tit	us10	us5	vix	
2009-11-30	82.04	133.02	0.37	0.63	-9.18	0.00	78.14	0.01	-0.00	0.41	0.43	0.44	4.06	1.79	3.82	89.27	3.36	2.24	24.63	0.0	
2009-12-31	81.10	131.16	0.28	0.61	8.23	0.35	74.75	-0.00	-0.02	-0.01	0.77	0.34	0.44	4.03	2.69	3.85	82.98	3.59	2.33	21.16	0.0
2010-01-31	83.19	130.19	0.16	0.60	3.15	0.30	78.43	-0.01	-0.03	0.00	0.74	0.21	0.42	4.09	2.82	4.01	82.06	3.71	2.47	20.56	0.0
2010-02-28	79.59	123.35	0.32	0.68	26.10	0.21	76.34	0.01	-0.01	0.01	0.32	0.55	4.05	4.32	4.61	82.76	3.65	2.35	22.55	0.0	
2010-03-31	82.79	123.12	0.11	0.54	29.71	0.32	81.29	0.02	-0.02	-0.00	-0.49	0.15	0.18	3.94	2.76	3.85	82.24	3.72	2.42	17.77	0.0
2010-04-30	86.63	125.53	0.06	0.49	31.30	0.30	84.59	0.03	-0.03	-0.00	-0.71	0.14	0.28	3.99	2.74	3.91	82.01	3.82	2.56	17.43	0.0
2010-05-31	79.57	117.20	0.85	0.67	18.73	0.39	74.11	-0.03	-0.01	-0.02	0.40	0.81	4.00	4.00	4.00	81.40	3.84	2.61	21.84	0.0	
2010-06-30	77.43	110.89	0.97	0.65	-9.35	0.50	75.40	-0.00	0.02	-0.00	0.45	0.66	1.61	4.11	2.99	4.56	90.21	3.19	2.98	29.92	0.0
2010-07-31	76.87	112.09	0.66	0.61	30.33	0.57	76.19	-0.02	0.02	-0.01	0.87	0.48	1.37	4.03	2.87	4.47	92.43	2.98	1.75	25.77	0.0
2010-08-31	76.86	110.11	0.51	0.64	49.89	0.58	76.67	0.02	-0.01	-0.01	0.41	0.37	1.74	3.81	2.65	4.09	95.88	2.68	1.45	24.75	0.0
2010-09-30	79.21	110.47	0.41	0.58	-18.18	0.50	75.51	0.01	-0.00	0.00	0.12	0.40	0.81	3.87	2.75	4.13	96.59	2.64	1.40	22.46	0.0
2010-10-31	80.30	113.69	0.20	0.61	-2.31	0.38	81.97	0.02	0.01	0.02	-0.39	0.31	0.39	3.81	2.71	4.06	95.41	2.51	1.17	20.37	0.0
2010-11-30	81.64	112.61	0.17	0.58	29.95	0.28	84.29	0.01	0.01	-0.01	-0.58	0.30	0.37	4.20	3.22	4.69	90.93	2.74	1.34	20.07	0.0
2010-12-31	82.82	110.06	0.25	0.51	7.42	0.21	89.33	-0.01	-0.01	-0.00	-0.93	0.42	0.37	4.62	3.63	5.39	87.82	3.28	1.92	17.52	0.0
2011-01-31	82.32	110.49	0.17	0.52	32.95	0.21	89.67	-0.02	-0.02	0.02	-0.92	0.33	0.25	4.74	3.82	5.40	86.63	3.36	1.97	17.23	0.0
2011-02-28	83.32	112.61	0.12	0.57	65.44	0.11	89.57	0.02	-0.00	-0.01	-1.03	0.19	0.26	4.75	3.81	5.32	85.10	3.56	2.25	17.38	0.0
2011-03-31	82.59	114.45	0.32	0.61	67.22	0.20	102.98	0.01	0.00	-0.00	-0.44	0.19	0.78	4.81	3.84	5.29	87.24	3.40	2.10	20.72	0.0
2011-04-30	88.14	120.35	0.21	0.60	23.63	0.21	110.15	0.01	0.00	-0.01	0.08	0.11	0.62	4.75	3.92	5.36	87.76	3.43	2.15	16.17	0.0
2011-05-31	86.62	116.24	0.23	0.64	39.84	0.29	101.34	-0.00	-0.00	0.01	-0.11	0.19	0.62	4.70	3.94	5.32	91.23	3.15	1.82	16.87	0.0
2011-06-30	85.38	115.88	0.33	0.75	100.14	0.32	96.29	0.01	0.01	-0.01	0.49	0.25	0.59	4.82	4.05	5.49	92.44	2.99	1.56	19.15	0.0
2011-07-31	85.46	113.30	0.43	0.65	89.82	0.36	97.23	0.03	0.01	-0.03	0.36	0.37	0.75	5.49	4.88	5.85	92.14	2.98	1.54	19.07	0.0
2011-08-31	80.54	110.47	0.66	0.79	75.07	0.38	86.34	-0.01	-0.01	-0.01	1.09	0.81	1.53	5.28	4.54	5.21	102.73	2.29	1.02	35.03	0.0
2011-09-30	78.53	105.70	1.18	0.73	43.53	0.65	85.65	0.01	0.02	-0.02	0.85	1.11	1.70	5.54	4.95	5.22	111.57	1.96	0.88	36.41	0.0
2011-10-31	77.92	105.26	1.02	0.68	2.65	0.65	86.43	-0.01	0.01	-0.03	-0.53	1.13	1.35	5.78	5.41	5.28	112.77	2.13	1.05	32.83	0.0
2011-11-30	78.34	105.09	0.95	0.73	36.00	0.56	97.11	0.01	-0.01	-0.01	-0.57	1.09	1.39	6.09	6.08	6.08	115.65	2.06	0.90	34.03	0.0
2011-12-31	78.78	102.34	0.87	0.70	73.27	0.57	98.63	-0.01	-0.01	-0.00	-0.07	1.18	0.68	6.66	6.39	5.41	116.74	1.97	0.89	24.85	0.0
2012-01-31	80.13	99.33	0.52	0.60	72.25	0.50	100.18	-0.02	-0.01	0.02	-0.52	0.78	0.36	6.55	5.38	5.30	116.49	1.93	0.82	20.40	0.0
2012-02-29	84.32	104.06	0.24	0.61	64.10	0.44	102.31	0.01	0.00	-0.01	-0.44	0.51	0.20	5.84	4.28	5.12	115.09	1.96	0.83	18.39	0.0
2012-03-31	86.93	109.07	0.19	0.62	34.86	0.23	106.20	0.02	0.00	-0.02	-0.56	0.41	0.10	4.97	3.84	5.20	112.00	2.16	1.01	16.17	0.0
2012-04-30	84.13	106.99	0.27	0.62	5.99	0.25	103.34	0.03	0.00	-0.03	0.13	0.42	0.16	5.51	4.69	5.82	114.15	2.03	0.89	17.77	0.0
2012-05-31	79.42	101.98	0.46	0.74	24.40	0.32	94.55	0.04	-0.01	-0.01	0.98	0.47	0.54	5.66	4.89	6.15	120.14	1.78	0.75	21.03	0.0
2012-06-30	79.29	99.57	0.52	0.72	56.40	0.36	82.41	0.02	0.01	-0.00	0.78	0.54	0.59	5.92	5.45	6.63	125.28	1.61	0.71	21.13	0.0
2012-07-31	81.39	97.09	0.19	0.69	80.00	0.39	87.92	0.02	-0.01	-0.00	0.23	0.52	0.01	6.04	5.46	6.86	127.95	1.50	0.62	17.52	0.0
2012-08-31	82.37	95.56	0.02	0.66	19.15	0.42	94.16	0.02	-0.00	0.45	0.15	0.25	0.65	6.48	6.63	6.45	124.59	1.67	0.71	15.69	0.0
2012-09-30	81.28	100.62	-0.08	0.64	16.14	0.29	94.65	-0.02	-0.02	0.01	0.36	0.03	-0.36	5.16	4.01	5.92	122.92	1.70	0.66	15.39	0.0
2012-10-31	81.32	102.47	-0.15	0.69	43.40	0.23	89.57	0.01	-0.02	0.02	0.54	-0.04	-0.49	4.96	3.78	5.67	121.96	1.72	0.70	16.41	0.0
2012-11-30	84.34	104.06	0.21	0.68	86.76	0.20	96.76	0.00	0.00	0.00	0.53	-0.04	-0.64	4.85	3.68	5.69	127.63	1.65	0.66	16.64	0.0
2012-12-31	87.76	110.16	-0.32	0.64	47.10	0.27	88.26	-0.01	-0.02	0.02	-0.04	-0.04	-0.68	4.53	3.33	5.34	121.15	1.71	0.70	17.40	0.0
2013-01-31	93.55	118.53	-0.35	0.64	9.94	0.30	94.73	-0.01	-0.02	0.02	-0.14	-0.04	-0.69	4.23	2.98	5.09	117.48	1.88	0.79	13.66	0.0
2013-02-28	86.00	124.23	-0.31	0.63	-9.93	0.22	95.35	-0.00	-0.00	0.02	0.13	-0.04	-0.64	4.52	3.28	5.27	115.69	1.97	0.84	13.99	0.0
2013-03-31	98.19	122.93	-0.19	0.64	20.45	0.21	93.16	0.01	-0.02	0.01	-0.39	-0.04	-0.23	4.67	3.41	4.94	115.77	1.94	0.81	13.02	0.0
2013-04-30	101.49	127.35	-0.21	0.67	3.11	0.23	92.07	-0.00	-0.00	0.00	-0.09	-0.04	-0.46	4.27	3.03	4.61	120.88	1.73	0.70	13.97	0.0
2013-05-31	99.84	131.05	-0.31	0.60	11.65	0.29	94.71	0.00	-0.01	0.02	-0.42	-0.04	-0.62	3.97	2.84	4.24	117.31	1.92	0.83	13.52	0.0
2013-06-30	91.73	128.39	0.06	0.68	-19.25	0.28	95.80	-0.02	0.01	0.03	-0.20	-0.04	0.01	4.41	3.33	4.68	111.83	2.29	1.19	17.07	0.0
2013-07-31	91.33	130.47	0.00	0.62	-8.56	0.28	104.39	0.01	-0.00	-0.01	-0.11	-0.04	-0.12	4.42	3.26	4.69	108.26	2.56	1.39	14.07	0.0
2013-08-31	88.34	130.25	-0.11	0.58	31.30	0.28	106.54	0.01	-0.01	0.00	-0.29	-0.04	-0.20	4.29	3.15	4.50	105.08	2.73	1.51	14.21	0.0
2013-09-30	92.16	132.54	-0.09	0.58	46.80	0.28	106.30	0.01	-0.00	-0.02	0.15	-0.04	-0.23	4.41	3.25	4.42	104.51	2.80	1.59	14.80	0.0
2013-10-31	93.10	133.43	-0.22	0.59	28.05	0.28	100.55	0.02	0.01	0.01	0.15	-0.04	-0.32	4.25	2.93	4.21	106.56	2.60	1.36	15.41	0.0
2013-11-30	93.25	135.13	-0.39	0.57	8.06	0.28	93.85	0.01	-0.01	-0.01	-0.18	-0.04	-0.69	4.10	2.69	4.10	104.16	2.71	1.36	12.89	0.0
2013-12-31	92.99	141.96	-0.34	0.54	35.68	0.28	95.95	0.02	-0.00	0.01	0.02	-0.04	-0.54	4.12	2.70	4.15	102.78	2.89	1.58	14.11	0.0
2014-01-31	92.01	141.51	-0.25	0.55	60.12	0.28	90.00	0.01	-0.02	-0.01	0.58	-0.04	-0.30	3.88	2.45	3.79	104.95	2.85	1.63	14.05	0.0
2014-02-28	91.65	139.59	-0.18	0.60	9.95	0.28	90.60	0.00	-0.01	-0.01	0.34	-0.04	-0.05	3.65	2.18	3.60	107.04	2.70	1.50	15.37	0.0
2014-03-31	92.97	141.52	-0.20	0.59	30.39	0.28	100.51	0.01	0.01	0.02	0.10	-0.04	-0.03	3.99	2.07	3.34	107.88	2.72	1.63	14.84	0.0
2014-04-30	95.52	141.57	-0.31	0.59	32.95	0.28	102.14	-0.													



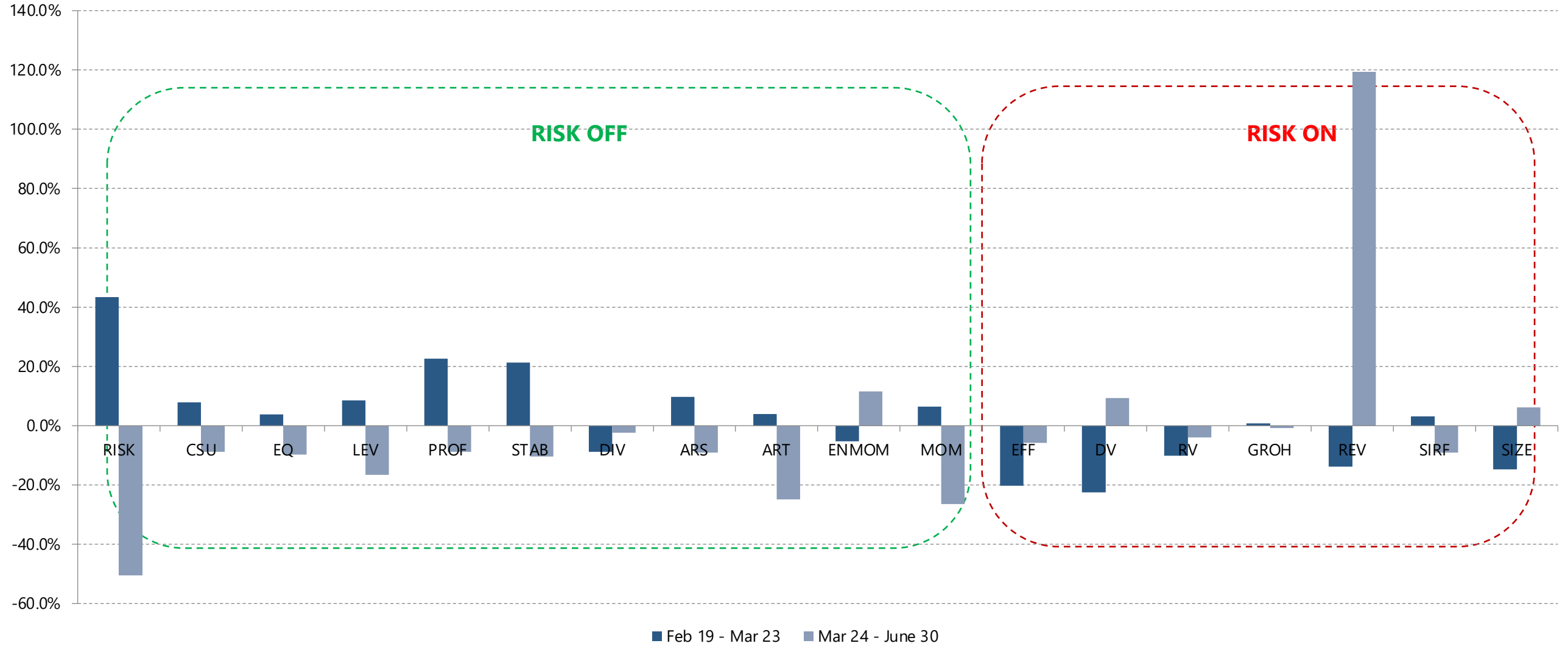
Covid crash ~ +23% RORO spread



*Monthly re-optimization of factor weights within ESBs with DAILY chain-linked returns & ESB factor re-rankings for \$ neutral smart betas



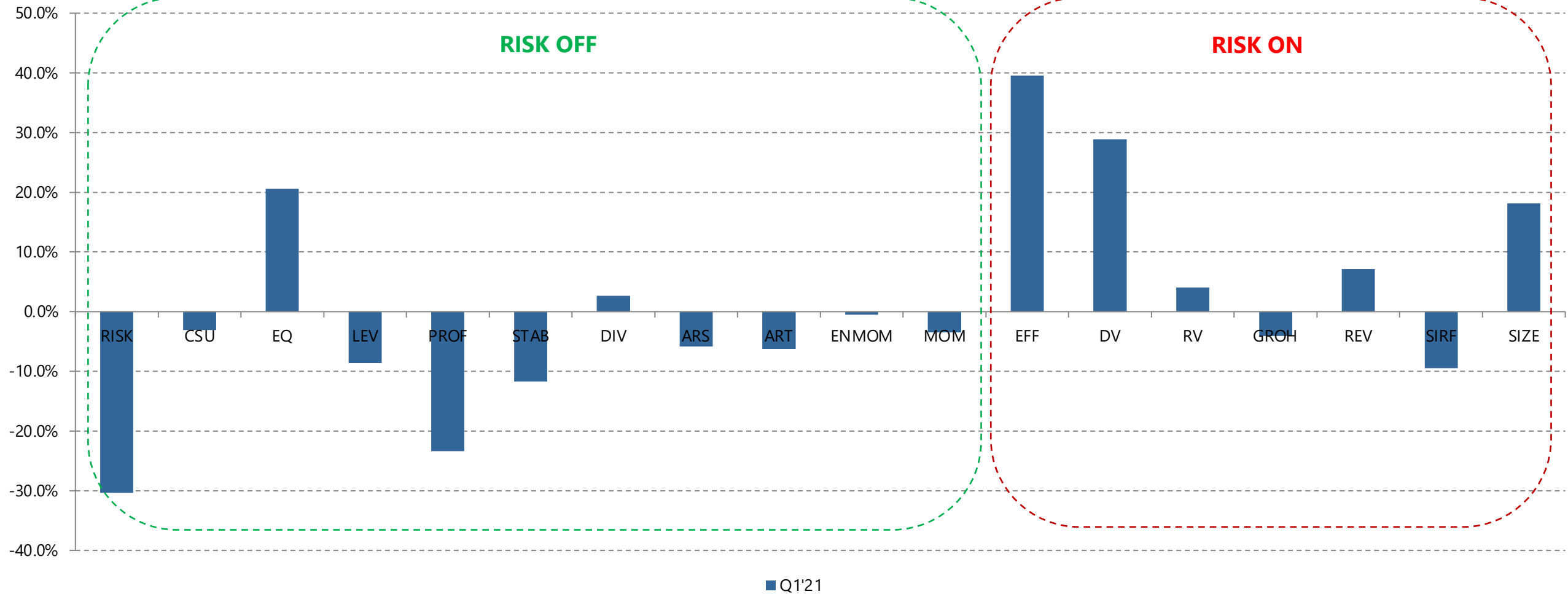
Covid Crash vs Rebound



*Monthly re-optimization of factor weights within ESBs with DAILY chain-linked returns & ESB factor re-rankings for \$ neutral smart betas



Q1 2021: +18.2% RORO spread

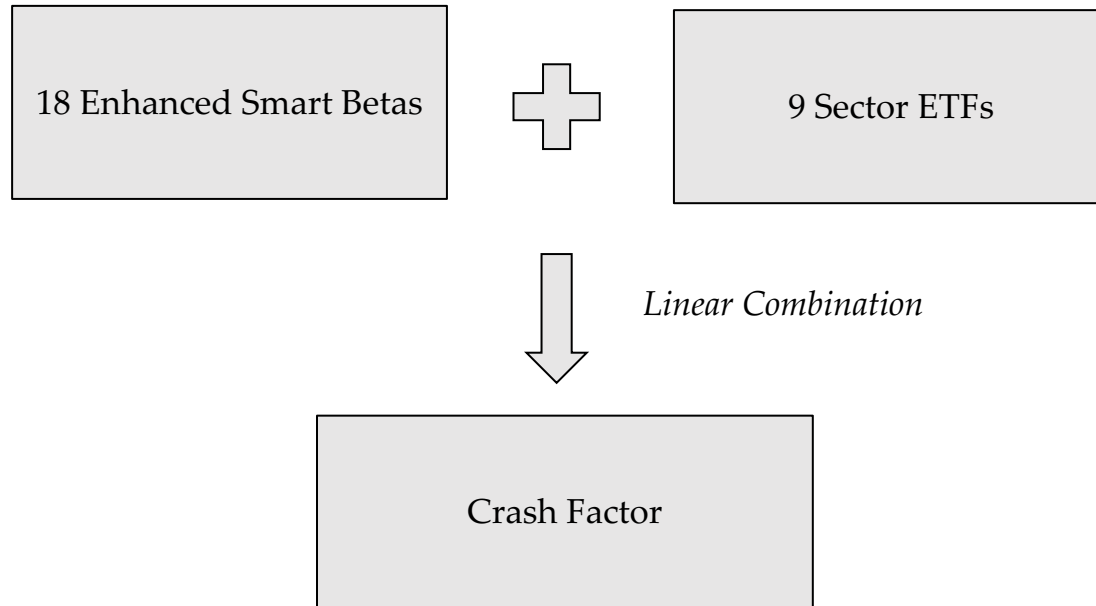


*Monthly re-optimization of factor weights within ESBs with DAILY chain-linked returns & ESB factor re-rankings for \$ neutral smart betas



QMIT		Intra-day %			
	Long	Short	\$Neutral L-S	Beta N L-S	Risk ON/OFF
ESB					
Deep Value	8.4%	0.0%	8.4%	8.4%	ON
Relative Value	5.3%	7.1%	-1.9%	0.9%	ON
Analyst Revisions	0.2%	10.3%	-10.0%	-8.1%	OFF
Analyst Ratings	0.6%	10.0%	-9.4%	-9.0%	OFF
Enhanced Momentum	-6.6%	11.2%	-17.8%	-14.5%	OFF
Momentum	-6.8%	17.4%	-24.2%	-23.1%	OFF
Growth	-0.7%	14.1%	-14.8%	-11.1%	ON
Capital Structure & Usage	6.6%	4.9%	1.6%	2.0%	OFF
Efficiency	4.0%	-0.1%	4.1%	4.1%	ON
Earnings Quality	5.2%	2.4%	2.7%	3.2%	OFF
Leverage	1.1%	3.9%	-2.8%	-0.6%	OFF
Stability	3.5%	4.8%	-1.3%	0.4%	OFF
Profitability	-0.2%	9.4%	-9.7%	-4.6%	OFF
Risk [Low Vol]	-0.2%	7.7%	-7.8%	-5.5%	OFF
Short Interest	3.5%	-0.1%	3.6%	3.6%	ON
Dividend	12.4%	4.1%	8.3%	6.4%	OFF
Reversal	2.3%	4.5%	-2.2%	-1.2%	ON
Size	5.4%	-1.5%	6.9%	3.7%	ON
ESB Risk ON/OFF Classification					
ON	4.0%	3.4%	0.6%	1.5%	ON
OFF	1.4%	7.8%	-6.4%	-4.5%	OFF
		Risk On vs OFF	7.0%		

*Monthly re-optimization of factor weights within ESBs with DAILY chain-linked returns & ESB factor re-rankings for \$ neutral smart betas



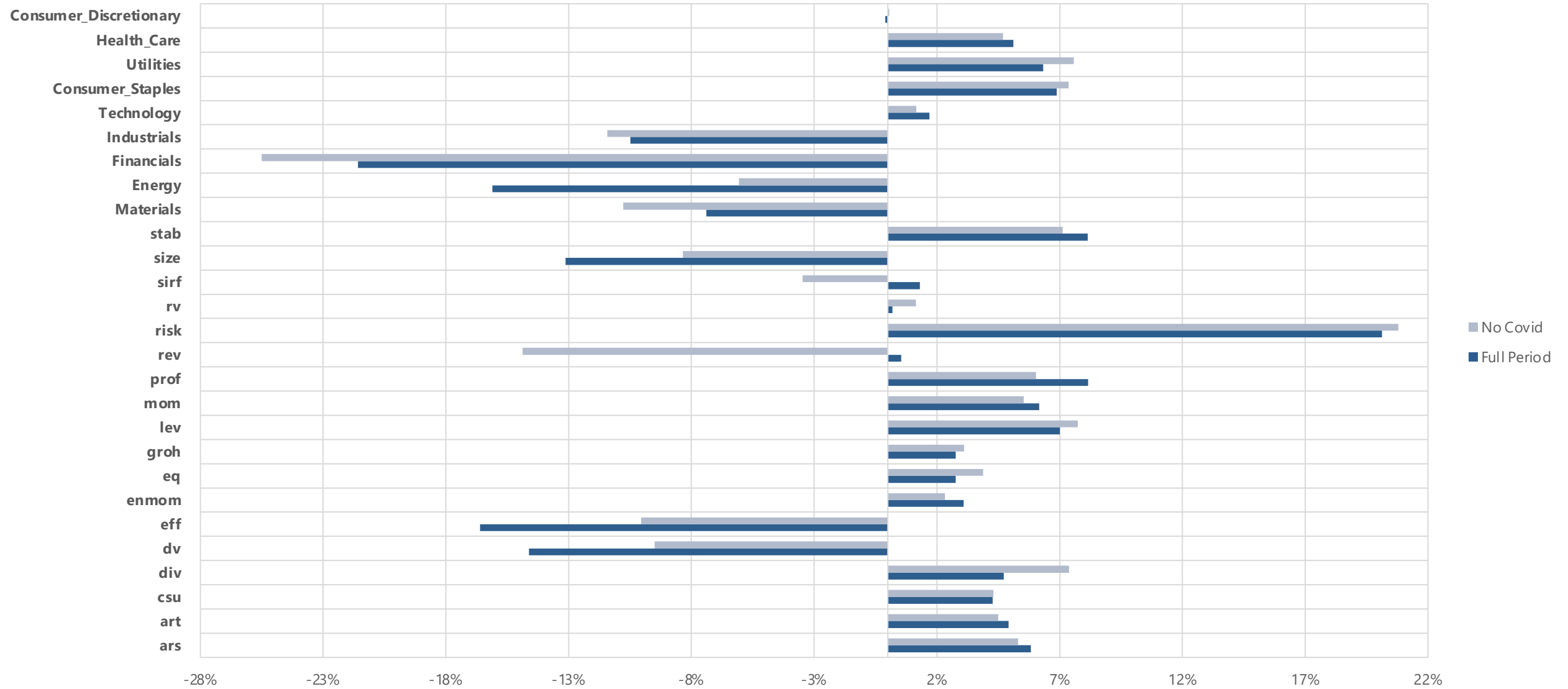
Historical Crash Periods

- Apr 2000 - Oct 2002 (Nasdaq Crash)
- Oct 2007 - Feb 2009 (2008 Financial Crisis)
- May 2011 - Oct 2011 (US Debt-Ceiling Crisis)
- Sep 2018 - Dec 2018 (2018 Stock Market Crash)
- Feb 2020 - Mar 2020 (Covid Crash)
- 30 months excl Nasdaq; 28 mos excl Covid
- Daily data – 24 TDs for Covid Crash

UCF Hedging portfolios

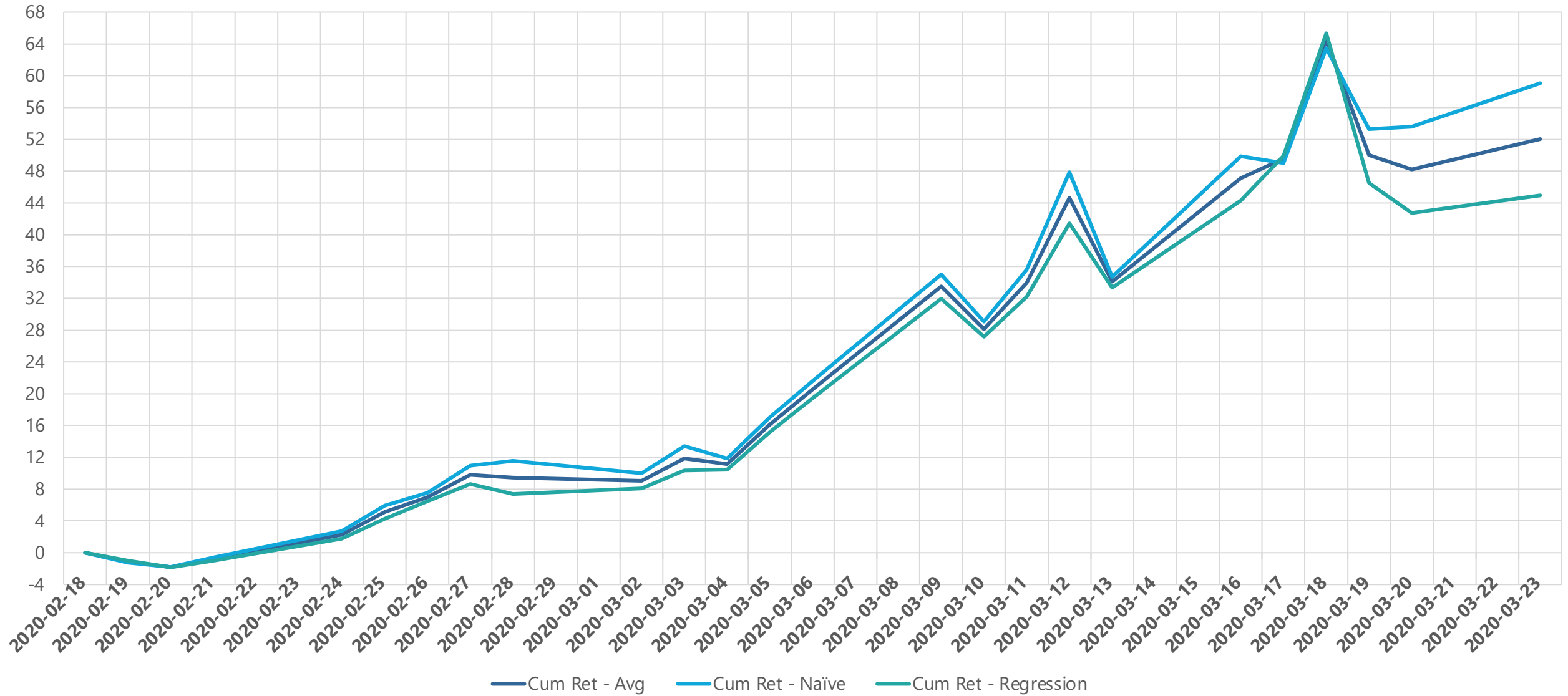
- Long Only
- Market Neutral

Crash Beta weights





UCF HEDGE OUTSAMPLE – COVID CRASH - EMN



Awards

- Founder has been involved with:
 - Morningstar Fund of the Year
 - Lipper top 1-3%
- QuantZ Capital – Multiple awards, including
 - BattleFin Elite
 - Battle of the Quants
 - Best Stat Arb fund

Media



- Bloomberg TV
- Asset TV
- CNBC, Bloomberg news, Hedge Fund Alert, WSJ, FT, AR magazine, HFMWeek
- “The Quants” by Scott Patterson



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MILIND SHARMA'S 25 YEARS OF MARKET EXPERIENCE SPAN RUNNING PROP DESKS AT RBC & DEUTSCHE BANK (SABA UNIT) AS WELL AS HEDGE FUNDS (QUANTZ) & MUTUAL FUNDS (MLIM). HIS FUNDS HAVE WON MANY AWARDS OVER THE YEARS INCLUDING THOSE FROM MORNINGSTAR, LIPPER, WSJ, BATTLE OF THE QUANTS & BATTLEFIN. HE WAS A FOUNDING MEMBER OF QUANT STRATEGIES/ RISK AT MLIM (NOW BLACKROCK) & MANAGER OF THE RISK ANALYTICS AND RESEARCH GROUP AT ERNST & YOUNG WHERE HE WAS CO-ARCHITECT OF RAVEN (DERIVATIVES VALIDATION ENGINE). HE ALSO CREATED THE AIRAP METHODOLOGY FOR HEDGE FUNDS.

HIS PUBLICATIONS HAVE APPEARED IN THE JOURNAL OF INVESTMENT MANAGEMENT, RISK BOOKS, ELSEVIER BOOKS, WORLD SCIENTIFIC, WILEY FINANCE ETC. HIS EDUCATIONAL BACKGROUND INCLUDES OXFORD, VASSAR, CARNEGIE MELLON & WHARTON. HE HAS ALSO LECTURED, PRESENTED AND/ OR TAUGHT CAPSTONE COURSES AT COLUMBIA, CARNEGIE MELLON, GEORGIA TECH, JOHNS HOPKINS, NYU UCSD, UCLA ETC. HE IS PRESIDENT OF THE QUANT SOCIETY <QWAFAXNEW> (FORMERLY QWAFAFEW NY).

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