

**From:** Esma Gregor <esma.gregor@quantzcap.com>  
**Sent:** Tuesday, September 21, 2021 3:10 PM  
**To:** Milind Sharma  
**Subject:** QMIT by QuantZ presents - Aug 2021 factor update on flagship signals up over 50% YTD & the Evergrande Contagion episode

Hi Milind, 2021 is turning out to be **an unusually good year** for us in the quant equity factor space. One truly for the history books – nothing like this has been seen since the Nasdaq crash years. Hence, likely to invite skepticism from those not involved in the space. Please stay tuned to for more on the extraordinary opportunities presented by the resurgence of Value & alpha in the quant equity factor space.

**Chinese contagion selloff** – The Evergrande episode on 09/20/21 was a good example of how our QMIT heatmaps (especially real-time) can be indispensable for keeping your finger on the pulse of factors driving the market. A quick glance shows that **Risk OFF factors led Risk ON by 1.13%** as one might expect in a defensive tape. In particular, the most defensive ESBs like CSU, Leverage, Stability, Prof & Risk [aka Low Vol] really stood out. Small Caps & Growth were the noticeable Risk ON laggards. On a market neutral basis it was a pretty strong day for our signals across the board with **Sizzling 7 up +2.9%**.

QMIT	Intra-day %				Risk ON/OFF
	Long	Short	\$Neutral L-S	Beta N L-S	
<b>ESB</b>					
Deep Value	-2.7%	-2.9%	0.2%	1.0%	ON
Relative Value	-2.8%	-3.8%	1.0%	1.1%	ON
Analyst Revisions	-2.3%	-3.5%	1.2%	1.2%	OFF
Analyst Ratings	-2.7%	-3.1%	0.4%	0.7%	OFF
Enhanced Momentum	-2.8%	-3.1%	0.2%	0.1%	OFF
Momentum	-4.3%	-4.0%	-0.3%	0.6%	OFF
Growth	-2.9%	-2.3%	-0.6%	-0.3%	ON
Capital Structure & Usage	-2.1%	-5.1%	2.9%	1.6%	OFF
Efficiency	-2.3%	-4.7%	2.4%	2.7%	ON
Earnings Quality	-3.6%	-3.4%	-0.2%	-0.2%	OFF
Leverage	-1.9%	-5.0%	3.0%	1.9%	OFF
Stability	-1.3%	-4.3%	3.0%	1.6%	OFF
Profitability	-2.5%	-4.5%	2.0%	0.8%	OFF
Risk [Low Vol]	-0.4%	-5.2%	4.8%	1.3%	OFF
Short Interest	-1.7%	-2.6%	0.9%	0.3%	ON
Dividend	-2.0%	-2.4%	0.4%	-0.1%	OFF
Reversal	-2.1%	-3.5%	1.4%	0.9%	ON
Size	-4.0%	-1.7%	-2.3%	-1.9%	ON
<b>Composite Signals</b>					
Sizzling 7	-1.8%	-4.7%	2.9%	1.2%	
Fabulous 14	-2.1%	-4.6%	2.5%	1.3%	
Famous 5	-1.7%	-4.2%	2.5%	1.3%	
Enterprise 18	-1.8%	-4.7%	2.9%	1.7%	
Val + Mo	-2.8%	-4.5%	1.7%	1.6%	
Qual + Val	-1.9%	-5.2%	3.3%	2.0%	
Value composite	-2.5%	-5.1%	2.6%	2.1%	
Qual + Mo	-1.8%	-4.3%	2.5%	1.8%	
Quality composite	-1.4%	-5.0%	3.6%	1.9%	
Momentum composite	-2.4%	-3.3%	0.9%	1.0%	
<b>ESB Risk ON/OFF Classification</b>					
ON	-2.6%	-3.1%	0.4%	0.6%	ON
OFF	-2.4%	-3.9%	1.6%	0.9%	OFF
		On vs OFF	-1.13%		

**2021 QMIT YTD factor update:**

- After a challenging 2020 for many quants, 2021 YTD has turned out to be one for the history books in a good way. Q2 2021 continued the

YTD trend of stellar across the board double alpha amongst our various MFM hedge fund signals & constituent ESBs [ML enhanced smart betas] while Q3 has seen them meander after such outsized gains. In 2020, prominent market neutral factor based funds at AQR & RenTech were reportedly down anywhere from -22 to -33%. While we saw the collateral damage in our Value related themes last year, it's noteworthy that our stat arb proxy [Reversals ESB] finished 2020 at **+109%**, Enhanced Momentum at **+40%** & our flagship Sizzling Seven MFM (multi-factor EMN hedge fund) signal in double digit territory.

- August was a good month for indices such as QQQ at +4.21% & SPY at +2.91% while our flagship signals like **Fab 14 & Sizzling 7 were flattish in Aug** after a strong July.
- YTD stellar performance of our signals across the board is proof positive that factor investing across a diversified & judiciously chosen spanning set of factors (based on our ensemble learners) can pay off in spades even amidst the tumultuous hand off from Growth to Value just as it did during the years of Value underperformance..
- Our **Value** composite is up **+49.38%** YTD thanks to **DV at +57.12%** & **RV at +26.89%**, both of which have staged dramatic turnarounds after multiple years of underperformance.
- The stellar YTD performance of our flagship Fab14 signal was driven by **Consumer Discretionary** followed by **Industrials** and **Healthcare** as per the attribution chart below.
- The Growth-Momentum complex which was the leader last year has lagged other composites this year at **+17.91% (except for Quality at 13.72%)** particularly due to EnMom which was 2nd on the leaderboard last year clocking in at **+40%** but is now at **+19.55%** YTD & ARS which is at **+13.12%** YTD.
- **Quality** is the **YTD laggard at +13.72%** due to Profitability at -8.44% as consistent with the frothy Risk-On tape YTD – again in stark contrast to last year.
- From a **Long Only** perspective the YTD performance has been even more impressive with **Value** leading the charge at **+49.09%** followed by our flagship **Val-Mo Composite at +47.58%** & **Fab14 at +38.8%** trouncing the **SPX at 22.82%** YTD. Given that the vast majority of investors are Long Only and many others are questioning the wisdom of shorting single names, it's worth acknowledging the high octane nature of the Long side of our signals which have consistently delivered but been hamstrung by the shorts in recent years as a result of the Fed's QE inspired melt up.
- The differential performance across our flagship signals is largely attributable to the differential weighting of key ESBs like DV, Size, Efficiency, Risk & Prof which have had a disproportionate contribution YTD.
- ESB standouts YTD are **DV +57.12; Efficiency 55.81%; & RV 26.89%** (\$ Neutral; monthly rebal). Given that we provide live ex-ante Top/Bottom picks by ESB at month end, one can not only see the sorts of names that are driving Efficiency vs Profitability spreads etc but also independently verify the spread returns from those live position files at the end of the month.
- A consequence of thematic & factor plays dominating this year has been that our **REVs** (aka stat arb) ESB - which more than doubled last year to ring in **+109%** - has lost some steam but is still at a very impressive **+16.03% YTD** (\$ neutral).
- Larger firms are often justifiably skeptical about their ability to monetize our daily rebalanced spreads which are more amenable to smaller & nimble hedge funds. To drive the point home about the attractiveness of returns even at the low **monthly rebalancing frequency** we highlight that the record outlier results we have been discussing above are based entirely on monthly rebalancing where transactions costs are de minimus at today's institutional commissions. In fact, our longer term LTD spreads for the first 19y from 2000-18 (which are still quite impressive) are based entirely on monthly rebalancing which is fairly consistent with out-sample live data published since 2019.
- Shockingly, our *out-sample* live results are often *significantly higher* than in-sample for ESBs because higher turnover ESBs such as ARS, ART, EnMom & Reversals are significantly disadvantaged at the monthly rebalancing horizon. Take for instance **EnMom which compounded +40% last year or Reversals at +109% last year** but for which we only show LT mean returns of +5.6% & +10.5% respectively.
- **Beta vs \$ neutrality** continues to be topical in a generally bullish tape & we shall continue to harp on that particularly since for ESBs like Risk [aka Low Vol] & Stability it makes no sense to look at it any way other than in terms of Beta neutrality given the substantial beta mismatch. Indeed, while the **\$ Neutral - Monthly heatmap YTD** shows Risk [aka Low Vol] to be -24.55% YTD (misleading) it's actually up +8.90% Beta Neutral (daily) because by construction this ESB is designed to maximize the spread between Low vs High Beta names.
- **Sector rotation based on QMIT's Combo Signals:** We used to show the Sector ranks based only by ESBs before & leave the more explicit sector rotation based on combo signals to the imagination. With the addition of this latest feature it's now easy to visualize how one may implement a Sector Rotation model based on our flagship combo signals. E.g., Sizzling 7, Fabulous 14 etc now show Financials percolating up to the top as result of the rate rise reflationary environment while IT & Healthcare have moved down several notches to the bottom in quite the reversal of fortunes from last year. IT at the bottom reflects the change in sentiment as regards long duration growth equities since the mid-Feb rate rise episode. Clearly, the bottom up aggregation of model scores seems to capture the zeitgeist.
- **RORO spreads:** By tracking the mean returns of the 7 Risk On vs 11 Risk Off ESBs we can succinctly capture the sentiment spread YTD which went against **Risk ON by -0.42% in August to +20.84% YTD** thereby embodying the frothy tape in contrast to the what we saw during the Covid crash last year. A regime based approach has always been the holy grail of factor investing & the litmus test for our ex-ante RORO labels came about during the Covid crash when our Risk Off vs On ESBs registered **~+20% spread**. Double validation of this approach was provided in the subsequent rebound (following the Fed's actions on 3/23/20) during which period the RORO spreads rather predictably flipped strongly in favor of Risk On vs Off.

**\$ neutral - Monthly heatmap YTD as of 2021-08-31:**

	DTD Long	DTD Short	DTD Spread	MTD Long	MTD Short	MTD Spread	YTD Long	YTD Short	YTD Spread
DV	0.4%	1.03%	-0.63%	2.05%	0.84%	0.97%	49.05%	-10.72%	57.12%
RV	0.09%	1.53%	-1.44%	3.8%	3.9%	-0.43%	50.3%	15.44%	26.89%
Size	0.75%	-0.53%	1.28%	1.05%	2.4%	-1.26%	16.96%	18.4%	-0.71%
Profit	-0.05%	1.91%	-1.96%	3.66%	3.81%	-1.01%	20.82%	23.37%	-8.44%
CSU	0.36%	1.5%	-1.14%	2.8%	4.6%	-2.37%	32.0%	18.89%	4.93%
Efficiency	-0.28%	0.67%	-0.95%	3.48%	0.55%	2.64%	51.21%	-6.22%	55.81%
Leverage	0.09%	1.34%	-1.25%	2.57%	5.11%	-3.06%	15.68%	3.82%	4.3%
Reversals	0.78%	-0.12%	0.9%	2.52%	3.61%	-1.04%	35.74%	16.06%	16.03%
EQ	0.87%	0.67%	0.2%	3.57%	2.23%	1.37%	29.8%	13.42%	13.96%
Growth	-0.15%	0.85%	-1.0%	5.21%	3.14%	1.83%	42.66%	28.65%	9.66%
ART	-0.05%	1.01%	-1.06%	3.17%	-0.3%	3.47%	29.33%	15.15%	12.42%
EnMOM	0.37%	0.43%	-0.06%	4.64%	-0.49%	5.24%	21.72%	2.81%	19.55%
ARS	-0.49%	1.2%	-1.68%	3.04%	1.64%	1.09%	29.91%	13.16%	13.12%
Stability	0.04%	1.57%	-1.54%	1.7%	2.85%	-1.88%	23.18%	16.77%	-1.31%
SIRF	0.17%	0.41%	-0.24%	2.11%	2.05%	-0.03%	18.11%	23.66%	-7.04%
PMOM	0.87%	1.26%	-0.39%	6.42%	0.55%	5.9%	25.57%	15.16%	10.28%
Risk	0.17%	1.22%	-1.05%	1.39%	3.19%	-3.19%	12.59%	31.95%	-24.55%
Dividends	0.32%	-0.01%	0.33%	1.22%	2.29%	-1.26%	30.72%	25.67%	3.21%

**\$ Neutral - Monthly heatmap YTD as of 2021-08-31:**

	DTD Long	DTD Short	DTD Spread	MTD Long	MTD Short	MTD Spread	YTD Long	YTD Short	YTD Spread
Fabulous Fourteen	-0.24%	1.19%	-1.43%	3.28%	2.76%	0.07%	38.8%	-7.88%	44.56%
Sizzling Seven	0.21%	0.72%	-0.51%	2.62%	1.9%	0.31%	30.32%	-4.85%	30.66%
Famous Five	0.06%	0.72%	-0.66%	2.47%	2.46%	-0.4%	28.35%	-0.38%	22.97%
Enterprise Eighteen	-0.02%	1.33%	-1.35%	4.24%	3.38%	0.28%	37.63%	-4.18%	36.75%
Value Momentum Composite	-0.28%	1.35%	-1.63%	3.19%	3.19%	-0.47%	47.58%	-5.74%	51.32%
Value Composite	0.0%	1.35%	-1.35%	2.51%	5.35%	-3.41%	49.09%	-7.89%	49.38%
Quality Momentum Composite	-0.44%	1.66%	-2.09%	4.22%	2.33%	1.22%	35.46%	1.61%	29.55%
Quality Value Composite	-0.29%	1.23%	-1.52%	3.39%	4.44%	-1.79%	37.25%	0.77%	24.68%
Quality Composite	-0.28%	1.14%	-1.42%	2.62%	3.51%	-1.54%	29.87%	6.18%	13.72%
Growth+Mom Composite	-0.22%	1.0%	-1.21%	3.87%	2.23%	1.47%	33.78%	13.0%	17.91%

**Sector ranks based on QMIT Combo Signals:**

	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	5	2	9	1	4	2	5	7
Financials	2	1	2	1	5	3	3	4	7	6
Consumer Discretionary	3	2	1	4	1	2	1	1	4	2
Industrials	4	4	3	5	3	4	2	5	6	4
Materials	5	5	4	3	4	5	5	3	2	3
Utilities	6	9	10	8	10	10	10	10	8	9
Communication Services	7	7	7	6	8	7	8	7	3	5
Energy	8	6	6	7	2	9	7	6	1	1
Information Technology	9	8	8	9	6	6	6	8	9	8
Health Care	10	10	9	10	7	8	9	9	10	10

**Sector ranks based on QMIT Enhanced Smart Betas**

	Sizzling Seven	ARS	ART	CSU	Dividends	DV	Efficiency	EnMOM	EQ	Growth	Leverage	PMOM	Profit	Reversals	Risk	RV	SIRF	Size	Stability
Consumer Staples	1	7	9	3	5	2	3	8	9	9	4	10	2	4	2	7	3	9	1
Financials	2	4	5	1	2	8	7	7	3	5	1	2	1	5	3	2	6	2	9
Consumer Discretionary	3	1	4	2	8	5	2	6	2	1	2	4	3	2	9	3	9	8	5
Industrials	4	3	2	4	7	7	4	3	6	6	3	5	8	3	6	6	5	6	2
Materials	5	5	3	7	4	3	5	4	8	3	5	3	5	6	7	4	7	3	4
Utilities	6	6	10	10	1	6	10	1	10	10	10	9	6	1	1	10	1	10	3
Communication Services	7	9	8	6	6	4	6	9	7	7	7	8	4	7	4	5	2	4	6
Energy	8	10	1	9	3	1	1	2	1	2	9	1	10	10	10	1	4	1	10
Information Technology	9	2	6	5	9	9	8	10	5	4	6	7	7	9	8	8	8	7	8
Health Care	10	8	7	8	10	10	9	5	4	8	8	6	9	8	5	9	10	5	7

**C-S Rank correlations for QMIT Enhanced Smart Betas:**

	ARS	ART	CSU	DV	Dividends	EQ	Efficiency	EnMOM	Growth	Leverage	PMOM	Profit	RV	Reversals	Risk	SIRF	Size	Stability
ARS	1.0	0.34	0.26	0.1	0.07	-0.03	0.17	0.22	0.28	0.3	0.33	0.32	0.24	-0.11	0.12	-0.0	-0.3	0.26
ART	0.34	1.0	0.08	-0.01	-0.01	0.0	0.07	0.29	0.16	0.1	0.44	0.07	0.09	-0.12	-0.06	-0.01	-0.03	0.06
CSU	0.26	0.08	1.0	0.2	0.16	0.13	0.37	0.19	0.3	0.46	0.14	0.46	0.54	0.03	0.25	0.08	-0.2	0.32
DV	0.1	-0.01	0.2	1.0	0.23	0.03	0.61	0.17	0.12	0.07	0.09	0.08	0.5	0.13	0.01	0.14	-0.05	0.35
Dividends	0.07	-0.01	0.16	0.23	1.0	0.04	0.13	0.15	-0.06	0.14	0.06	0.31	0.27	0.01	0.29	0.08	-0.16	0.17
EQ	-0.03	0.0	0.13	0.03	0.04	1.0	0.25	-0.03	0.04	-0.12	0.05	-0.16	0.13	-0.03	-0.1	0.0	0.09	-0.1
Efficiency	0.17	0.07	0.37	0.61	0.13	0.25	1.0	0.12	0.18	0.1	0.18	0.07	0.5	0.06	-0.1	0.09	0.04	0.33
EnMOM	0.22	0.29	0.19	0.17	0.15	-0.03	0.12	1.0	0.19	0.24	0.76	0.3	0.21	0.19	0.16	0.0	-0.25	0.23
Growth	0.28	0.16	0.3	0.12	-0.06	0.04	0.18	0.19	1.0	0.38	0.28	0.31	0.55	-0.02	-0.04	-0.0	-0.08	0.07
Leverage	0.3	0.1	0.46	0.07	0.14	-0.12	0.1	0.24	0.38	1.0	0.13	0.7	0.44	0.02	0.32	0.05	-0.35	0.34
PMOM	0.33	0.44	0.14	0.09	0.06	0.05	0.18	0.76	0.28	0.13	1.0	0.19	0.22	-0.08	-0.17	-0.09	-0.09	0.06
Profit	0.32	0.07	0.46	0.08	0.31	-0.16	0.07	0.3	0.31	0.7	0.19	1.0	0.43	0.05	0.37	0.06	-0.4	0.28
RV	0.24	0.09	0.54	0.5	0.27	0.13	0.5	0.21	0.55	0.44	0.22	0.43	1.0	0.03	0.07	0.11	-0.1	0.28
Reversals	-0.11	-0.12	0.03	0.13	0.01	-0.03	0.06	0.19	-0.02	0.02	-0.08	0.05	0.03	1.0	0.08	0.1	0.01	0.08
Risk	0.12	-0.06	0.25	0.01	0.29	-0.1	-0.1	0.16	-0.04	0.32	-0.17	0.37	0.07	0.08	1.0	0.13	-0.34	0.38
SIRF	-0.0	-0.01	0.08	0.14	0.08	0.0	0.09	0.0	-0.0	0.05	-0.09	0.06	0.11	0.1	0.13	1.0	-0.04	0.11
Size	-0.3	-0.03	-0.2	-0.05	-0.16	0.09	0.04	-0.25	-0.08	-0.35	-0.09	-0.4	-0.1	0.01	-0.34	-0.04	1.0	-0.34
Stability	0.26	0.06	0.32	0.35	0.17	-0.1	0.33	0.23	0.07	0.34	0.06	0.28	0.28	0.08	0.38	0.11	-0.34	1.0

**Fabulous Fourteen YTD Sector Attribution as of 2021-08-31:**

Sector	Long	%	Short	%	Spread	%
Communication Services	0.83	2.43%	-0.02	0.24%	0.85	1.98%
Consumer Discretionary	14.32	41.84%	-2.35	26.19%	16.67	38.59%
Consumer Staples	1.69	4.92%	-0.61	6.77%	2.29	5.31%
Energy	-0.03	-0.10%	1.27	-14.10%	-1.30	-3.01%
Financials	5.88	17.19%	0.49	-5.48%	5.39	12.48%
Health Care	2.26	6.61%	-4.23	47.15%	6.50	15.04%
Industrials	4.87	14.23%	-3.17	35.24%	8.04	18.60%
Information Technology	3.22	9.41%	-1.06	11.75%	4.28	9.90%
Materials	1.12	3.27%	1.38	-15.38%	-0.26	-0.60%
Utilities	0.06	0.18%	-0.68	7.62%	0.75	1.73%
Arithmetic Return	34.23	100.00%	-8.98	100.00%	43.21	100.00%
Geometric Return	38.80		-7.88		44.56	

**QMIT's LBO Top100 model beat the R2000 Value index by +20.48% last year finishing at +24.28%. It's up another +37.06% YTD & it has more than TRIPLED since the Covid lows of 2020!**

Small-cap deep value names are clearly en vogue. As suggested in Q4, this would be the year to run the LBO Top100 net long or against a SPY or IWF hedge to the extent that one buys into the Small Cap Value vs Large Cap Growth resurgence thesis. Certainly, that call has turned out to be rather prescient thus far. The spectacular tripling of the LBO Top100 (long only) portfolio from the Covid lows of March 24th 2020 is reminiscent of the +84% return in 2009 and consistent with numerous k-baggers off of the covid lows LTM. Conditions remain quite favorable for their continued rally as such stocks should continue to benefit from the tsunami of stimulus forthcoming, monetary policy as well as the re-opening of the economy.

**S Neutral - Weekly rebalanced YTD [daily geometric chain-linked returns as of 2021-08-31]:**

	DTD	MTD	YTD
LBO100 Hedged	-0.60%	0.68%	9.57%
LBO100	-0.39%	3.20%	37.06%
IWN	0.21%	2.53%	25.08%

See QMIT's upcoming presentation at the Trading Show in Chicago, October 6th:

<https://www.terrapinn.com/conference/trading-show-chicago/agenda.stm>

For a replay of our May 11th webinar on "Taming the Factor Zoo & The Great Rotation of 2021" with IBKR please see:

<https://ibkrwebinars.com/webinars/taming-the-factor-zoo-the-great-rotation-of-2021/>

For the Risk.net article on "Factor woes prove need for better timing – QuantZ's Sharma" please see:

[https://9142e41d-2625-4614-87f6-f169dac3d260.filesusr.com/ugd/062c61\\_c26d9000da704b72b63a8cbe5ecb6366.pdf](https://9142e41d-2625-4614-87f6-f169dac3d260.filesusr.com/ugd/062c61_c26d9000da704b72b63a8cbe5ecb6366.pdf)

For a replay of our April webinar with Sigma Sandbox please see: <https://www.youtube.com/watch?v=I2IixkYNVas>

QMIT is a signal provider spun out of QuantZ's award winning statistical arbitrage hedge fund which provides highly customized ML enhanced signals to democratize access to hedge fund alphas. Combining machine learning with a spanning set of equity smart betas & alternative data allowed investors to express any linear view on equities. Milind has 25 years of market experience running prop desks as well as hedge funds & mutual funds at Merrill Lynch (now BlackRock), RBC & Deutsche Bank before starting QMIT. His funds have won many awards over the years (Morningstar, Lipper, BattleFin etc) and his publications have appeared in Risk, JoIM, Wiley, Elsevier etc. His educational background includes Oxford, Vassar, Carnegie Mellon & Wharton. He has also lectured, presented and/ or taught Capstone courses at Columbia, Carnegie Mellon, Courant, Georgia Tech, Johns Hopkins, Rutgers, NYU Tandon, UCSD, UCLA etc.

#### EXPLANATORY FOOTNOTES:

- Sector Ranks are aggregated bottom up average ranks for each of the ESBs. Enhanced Smart Beta (ESB).
- ESB portfolios are not sector neutral.
- Generated weekly as of previous trading day's close, this report shows the DTD, MTD, YTD and LTD spread returns for our ESBs.
- ESB spreads are long-short based on top vs bottom 5%-tile (~125x125) of the largest liquid US traded stocks (usually ~2,500 depending upon market capitalization & minimum \$ price criterion for stocks listed on NYSE & Nasdaq).
- Certain industries like Biotech and REITs are excluded due to event risk or because a generic quant model is not appropriate for those industries.
- Daily vs Monthly rebalancing - Our Monthly Heatmaps are based on a T-1 month end optimization to solve for the optimal factor weights. While we use optimal factor weights based on month end optimization, in Daily Heatmaps, we refresh individual Factor Ranks on a daily basis therefore resulting in an intra-month varying Long/Short Portfolio. The optimal factor weights & selection of the "Best Flavor of the Month" is still static intra-month in order to prevent excessive turnover & unnecessarily noisy ESBs.
- Dollar neutral vs Beta Neutral - Beta-neutrality implies daily de-levering of the higher beta side of the Long/Short factor portfolio. Indeed, the beta neutrality has to be enforced via daily rebalance since the factor ranks (& top/ bottom portfolios) are being refreshed daily.
- MTD spread returns are geometrically chain-linked DTD spread returns where both are based on ESB portfolios formed at the prior month end close in the case of Monthly Heatmaps and formed at the prior trading day's close in the case of Daily Heatmaps.
- YTD & LTD returns are based on geometric chain-linking of monthlies without transaction costs or fees as is customary in the factor literature.
- Multi-period spread returns are not the difference of cumulative top vs bottom returns. Instead, they represent the daily geometrically compounded rebalancing of the market neutral "active return" differential of the top vs bottom portfolios which is a more realistic representation.
- Both Max Sharpe & Risk Parity optimization routines are based on a Hybrid methodology where we 1] find the optimal factor mix within the Smart Beta cohort based on signal blending/ "mixing" but 2] subsequently run the combined ESB spreads outsample on a fully "integrated" basis not just as the linear combination of factor returns.
- Since liquid equity commissions are now de minimus for both the institutional & even the retail world and market impact is really a function of the investor's AUM we simply leave out the impact of TCOSTS as is customary in factor research.
- LTD data commences January 2000.

#### Enhanced Smart Beta Definitions

**ARS:** This smart beta composite shows our **Analyst Revisions** cohort based on measures of estimate revisions, dispersion, Standardized Unexpected Earnings surprise (SUE score) & consensus change in both earnings as well as revenues which can outperform traditional metrics like a 1mo consensus change.

**ART:** This smart beta composite shows our **Analyst Ratings & Targets** cohort based on measures of analyst recommendations, target price, changes & diffusion which can outperform traditional metrics like a 1mo consensus change.

**CSU:** This smart beta composite shows our **Capital Structure/Usage** cohort based on measures including Buybacks, Total yield, Capex, capital usage ratios etc which can outperform traditional metrics like Cash/MC.

**Dividends:** This smart beta composite shows our **Dividends** related cohort based on measures including Yield, payout, growth, forward yield etc which can outperform traditional metrics like Dividend Yield.

**DV:** This smart beta composite shows our **Deep Value** (or intrinsic value) cohort based on measures including tangible book & sales which can outperform traditional Book yield.

**Efficiency:** This smart beta composite shows our **Efficiency** cohort based on measures including Asset Turnover, Current Liabilities, Receivables etc which can outperform traditional metrics like Asset Turnover.

**EnMOM:** This smart beta composite shows our **Enhanced Momentum** cohort which can outperform traditional 12 month price momentum in both return & risk adjusted terms particularly at market inflection points.

**EQ:** This smart beta composite shows our **Earnings Quality** cohort based on a variety of Accrual measures which can outperform traditional metrics like Total Accruals.

**Growth:** This smart beta composite shows our **Historical Growth** cohort based on a variety of Earnings, Sales, Margins & CF related growth measures which can outperform traditional metrics like 3yr Sales growth.

**Leverage:** This smart beta composite shows our **Leverage** related cohort based on measures of Balance Sheet leverage which can outperform traditional metrics like Debt To Equity.

**PMOM:** This smart beta composite shows our **PMOM** related cohort which can outperform traditional 12 month price momentum using a variety of traditional momentum factors.

**Profit:** This smart beta composite shows our **Profitability** cohort based on measures like ROA, ROE, ROCE, ROTC, Margins etc which can outperform traditional metrics like ROE.

**RV:** This smart beta composite shows our **Relative Value** cohort based on measures of EPS, CFO, EBITDA etc which can outperform traditional Earnings yield.

**Reversals:** This smart beta composite shows our **Reversals** cohort which is comprised of metrics like short term reversals, RSI, DMA & other technical factors which can outperform traditional metrics like a 1 month total return.

**Risk:** This smart beta composite shows our **Risk/ Low Vol** cohort which is comprised of metrics like Beta, Low volatility etc.

**SIRF:** This smart beta composite shows our **Short Interest** cohort which is comprised of metrics related to Short Interest and its normalization by Float, trading volume etc.

**Size:** This smart beta composite shows our **Size** cohort which is comprised of metrics related to firm size including market capitalization.

**Stability:** This smart beta composite shows our **Stability** cohort which is comprised of metrics like Dispersion of EPS/ SPS estimates as well as the stability of Margins, EPS & CFs etc.

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Best Regards,

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