

BEYOND BETA

INVESTIGATING THE SMART BETA, FACTOR & ESG INVESTMENT REVOLUTION

OFF THE ROPES

Value comes out fighting



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Hoshang Daroga, Copia Capital Management



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About us



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Tom is editor of ETF Stream. He joined ETF Stream as a senior writer in March 2019 before being appointed deputy editor in January 2020 and subsequently editor in March 2021. He started his career at Investment Week in August 2016 as an asset management correspondent covering ETFs.

BIG CALL: Thematic ETFs

Virtual event

31 March - 09:25-12:40

Thematic ETFs have captured the imagination of investors over the past few years by offering exposure to some of the biggest trends over the next few decades.

With thematic strategies such as clean energy and cloud computing producing some of the strongest returns in 2020 across all European-listed ETFs, it is no wonder the flows have followed.

This half-day virtual event will explore some of the key factors to look for when investing in thematic ETFs while also taking a deep dive into which trends will be the winners and losers over the next 10 years.

Register today at etfstream.com



UPDATE

COMMENT
MARCH 2021

Editorial

Hello and welcome to *Beyond Beta* – the one and only magazine dedicated to factor and quantitative investing. This issue focuses on the dramatic return of value following years of underperformance as well as why equal weighting may be the preferable approach especially when equity valuations are high.

After a decade in the wilderness, value is back. The beleaguered factor has been the trade of 2021 so far with value ETFs significantly outperforming their growth counterparts. Highlighting this, the Lyxor Russell 1000 Value UCITS ETF (RUSV) has climbed 13.4% since the start of the year, as at 18 March, versus just 0.4% returns for the Lyxor Russell 1000 Growth UCITS ETF (RUSG). The flows have followed with the iShares Edge MSCI World Value Factor UCITS ETF (IWVL) and the iShares Edge MSCI USA Value Factor UCITS ETF (IUVL) seeing over \$2bn inflows apiece over the past six months, according to data from ETFLogic.

Driving this outperformance has been the positive news around a successful coronavirus vaccine and the threat of inflation spiking higher. With oil prices jumping to pre-pandemic levels and interest rates threatening to move higher, cyclicals have been the main beneficiaries of this environment with sectors such as financials and energy rebounding from record low levels. At the other end of the spectrum, growth stocks such as Tesla – which were significantly impacting the performance of most factors barring momentum – have been hammered with the electric vehicle manufacturer, for example, down 26% since its yearly high on 26 January. The question remains is how long can the reflation trade continue before tech stocks begin their fightback?

Along with a deep dive into the return of value, a look at how factors have behaved over the past decade is also assessed in this issue which, as always, begins with a market overview, looking at the best performing and newly listed smart beta ETFs from around the world. It then moves to a series of interviews and essays with top experts from across the quantitative investing landscape. Highlights include an interview with Rayliant Global Advisors founder and CIO Jason Hsu on how factor investors can take advantage of the market inefficiencies in China, research from Chris Taylor, head of structured products at Tempo Structured Products, who analyses the value of an equal weight strategy while FactorResearch's Nicolas Rabener argues why the truth has many shades when it comes to factor investing.

As always, a quick note from us on definitions. We define smart beta as nonmarket-weighted rules-based ETFs. For us, smart beta ETFs do not have to be index-tracking. What matters is that they meaningfully deviate from the market weighted portfolio, while trading according to a set of rules. (Where those rules, preferably, have some basis in peer-reviewed literature).

This means, for example, that actively-managed ETFs with portfolio managers making ad hoc trades are not smart beta for us. While index tracking ESG ETFs that make consistent far-reaching exclusions can qualify as smart beta. Quantitatively, we would expect smart beta ETFs to have a correlation coefficient less than 0.95 with their broad market benchmarks. Smart beta ETFs that demonstrate a correlation higher than this, for us, count as “closet trackers”.

Tom Eckett, editor, ETF Stream

SMART BETA UPDATE
EDITORIAL

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Printed by

www.platinumpresslimited.co.uk

T: 0844 880 4722

Advertising and sponsorship enquiries:
info@etfstream.com

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The best performing smart beta & thematic ETFs of Q4 2020



Top performers
UK

The best performing smart beta and thematic ETFs in Q4 2020

Fund Name – 3 Month Total Return	% change
iShares Global Clean Energy UCITS ETF USD	52.6%
WisdomTree Battery Solutions UCITS ETF USD	51.4%
L&G Battery Value-Chain UCITS ETF	46.7%
Rize Medical Cannabis & Life Sciences UCITS ETF	45.9%
L&G US Energy Infrastructure MLP UCITS ETF 3	9.8%
Medical Cannabis and Wellness UCITS ETF 3	9.1%
WisdomTree Artificial Intelligence UCITS ETF USD	38.1%
iShares US Equity Buyback Achievers UCITS ETF	36.5%
Invesco Elwood Global Blockchain UCITS ETF	36.4%
SPDR® MSCI USA Small Cap Value Weighted UCITS ETF USD	36.3%

One of Europe's largest thematic ETFs also ended Q4 2020 as its top performer. According to data from Morningstar, the \$5.5bn iShares Global Clean Energy UCITS ETF USD (INRG) returned 52.6% during the three-month period, having capitalised on Democrat candidate Joe Biden winning the US presidency.

Between promising to commit \$2tn towards climate-related investments, make the power sector carbon neutral by 2025 and push the US economy towards carbon neutrality by 2050, Biden's platform offered a strong base of optimism for clean energy equities. With much of its basket made up of utilities stocks and 42.4% of its portfolio being US-based, INRG was in a prime position to go on a Biden bull run.

Energy transition momentum was also reflected in the fortunes of battery transition and future transportation equities, with EV companies such as Tesla and NIO posting headline-grabbing rallies through 2020.

In ETFs, this worked to the benefit of the WisdomTree Battery Solutions UCITS ETF USD (VOLT) and the L&G Battery Value-Chain UCITS ETF (BATT), which returned 51.4% and 46.7% during Q4, respectively.

This period was so upbeat for these strategies because many consumers chose to defer their purchases of new vehicles in 2020, but those that did go out to buy, increasing chose to buy into cleaner modes of transport. During Q4, hybrid and fully electric vehicles made up more than 30% of new car sales in Europe, according to Statista.

Another theme benefitting from the Biden effect was cannabis. Roughly doubling their returns in a year, the Rize Medical Cannabis & Life Sciences ETF (FLWR) and Medical Cannabis and Wellness ETF (CBDX) rose by 45.9% and 39.1% apiece in Q4 2020. Initially driven by further legalisation at a state level, cannabis equities have also been buoyed by Kamala Harris' promises during the election campaign and talks of reform at a federal level.

Other themes that enjoyed the limelight in Q4 include AI and digital assets. On the former, the

WisdomTree Artificial Intelligence ETF USD (INTL) led the way with a 38.1% gain during the three-month period. As the largest AI ETF in Europe, the strategy was in a prime position to benefit from the buzz surrounding future tech thematics – with WisdomTree's own research identifying that AI was the theme European investors found most compelling.

On the latter, it probably comes as little surprise that strategies linked to crypto assets did well in Q4. Highlighting this, the Invesco Elwood Global Blockchain UCITS ETF (BCHN) posted 36.4% returns in the last three months of the year, and 95% full-year gains on the back of the popularity of bitcoin and ethereum – both of which required more blockchain technology to expand their architecture.

Finally, the only smart beta strategy making an appearance in the top ten performers for Q4 was the SPDR MSCI USA Small Cap Value Weighted ETF USD (USSC), courtesy of State Street Global Advisors.

With smart beta products being somewhat outshone by thematics in 2020, USSC successfully married the two most popular exposures – small cap and value – to give investors the desired escape from mega cap growth stocks, amid the rotation to cyclicals.

The worst performing smart beta and thematic ETFs of Q4 2020

The major theme running through the worst-performing ETFs of Q4 was that the top ten hardest-hit were all smart beta strategies.

Leading the fallers by some distance was the Lyxor S&P 500 VIX Futures Enhanced Roll UCITS ETF EUR (LVO), which shed 25.1% during the final twelve weeks of the year. Switching between a short-term and mid-term VIX futures portfolios, the strategy offers investors exposure to volatility in the equity market.

Unfortunately, LVO has struggled since the beginning of the pandemic. Having posted returns exceeding 300% in March 2020, the product since dipped as markets came to terms with COVID volatility. In Q4, the product got a boost in November courtesy of the second wave of the virus – but this had already been somewhat priced in, with forward-looking optimism allowing equities to overcome short-term instability.

In a similar vein of thought, the UBS Bloomberg CMCI Gold USD ETC (TGCCI) fell by 0.5% during Q4. As a product tracking a popular inverse risk asset, TGCCI lost its footing as late 2020 welcomed a risk-on environment and confidence in the economic recovery narrative.

Following LVO with a more modest loss of 1.5%, the Amundi ETF iSTOXX Europe Multi-Factor Market



Neutral UCITS ETF (MKTN) offers investors the chance to invest in several overlapping beta exposures at once. While exposures like value and small-cap might be returns-conducive, other factors such as low volatility have underperformed.

Pandemic trading was only one of the four times since the inception of S&P Dow Jones data that the S&P Low Volatility failed to capture at least 90% of the main index's returns. A similar trend was seen in European low volatility exposures, meaning not only will it underperform during the economic recovery, but it failed in its primary directive – as a hedge during broad economic declines.

The Invesco Elwood Global Blockchain UCITS ETF (BCHN) posted 95% full-year gains on the back of the popularity of bitcoin and ethereum

The worst performing smart beta and thematic ETFs in Q4 2020

Fund Name – 3 Month Total Return	% change
Lyxor S&P 500 VIX Futures Enhanced Roll UCITS ETF EUR	-25.1%
Collateralized €H ETC RICI Enhanced Natural Gas TR	-5.4%
Amundi ETF iStoxx Europe Multi-Factor Market Neutral UCITS ETF	-1.5%
UBS FS CMCI Commodity Carry SF UCITS ETF USD	-1.2%
UBS Bloomberg CMCI Gold USD ETC	-0.5%
UBS ETF Bloomberg Barclays Euro Liquid Aggregate ex-Financial UCITS ETF	0.3%
BNPP E Energy & Metals Enhanced Roll UCITS ETF EUR C	0.4%
IndexIQ Factors Sustainable Sovereign EURO Bond UCITS ETF D	1.2%
IndexIQ Factors Sustainable Corporate EURO Bond UCITS ETF D	1.5%
WisdomTree EUR Govt Bond Enhanced Yield UCITS ETF €	1.7%

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New smart beta & thematic ETFs listings

Sustainability and tech themes finish 2020 in the spotlight

Following a swathe of product launches aligning with the Paris Agreement, some of the new ETF entrants in Q4 sought to offer new angles to sustainability exposure, a theme which was given a lease of life by Democratic candidate Joe Biden's election victory. A notable trend in 2020 was the forced expansion of the role of technology within everybody's lives, which spurred launches in specific product areas and the underlying components and infrastructure of a tech-enabled society.

BNP Paribas targets ocean sustainability

One of the new products offering a new kind of exposure to ecology and environmental conservation is BNP Paribas Asset Management's XU61 which targets companies that use ocean resources sustainably.

The new ETF replicates the ECPI Blue Economy index, which equally weights 50 constituents with positive ESG scores, that are involved in coastal protection and eco-tourism; renewables infrastructure and biotech; fisheries and waste management; or maritime transport.

Firms are excluded if they are involved in 'systemic violations' of the UN Global Compact and arms production, though companies deriving 10% or less of their revenues from tobacco, thermal coal and unconventional oil and gas are still eligible.

Global X makes Europe debut with double dose

Entering the UCITS framework for the first time in Q4 2020, US thematic specialist Global X offered investors two new tech sub-sector ETFs. Targeting the growing virtual healthcare space, EDOC invests in companies such as Nuance Communications, Illumina, and Guardant Health, in an effort to capitalise on the push to alleviate pressure on in-person healthcare services.

However, while focusing on the virtual health niche, it will no doubt be compared to iShares more broad Healthcare Innovation product (HEAL), whose fees are 28bps lower than EDOC.

Global X's other launch, HERU, does not suffer the same issue. Offering European investors exposure to the global videogames brands like Embracer, Konami and Zynga, the product's launch probably missed the peak of the pandemic tailwind for videogaming equities. Though, with VanEck's popular ESPO strategy being heavily focused on the US and having a weighting over 10% in Tencent, HERU offers a good alternative for those seeking to avoid such concentrations. Likewise, its fees are 5bps below those charged by ESPO, which will give it another edge.

HANetf launches cover all bases

The self-proclaimed 'delicatessen' of European ETFs was back in Q4 with launches in tech and sustainability themes. Offering unique exposures to popular trends, the white label provider's DIGI and CLMA products target more specialised sub-sectors, which appeal directly to the investment narratives of their respective themes.

DIGI moves away from the thematic tendency to invest in companies broadly involved in a sector, and instead makes a specific tech infrastructure play, investing in digital connectivity, infrastructure, transmission, and IP. Companies in the strategy include Intel, Mediatek, and Square.

Meanwhile, HANetf described CLMA as flipping traditional sustainable investment on its head, by focusing on companies directly enabling carbon dioxide avoidance solutions, rather than excluding the worst emitters. The strategy is based on the iClima Global Decarbonisation Enablers index and includes companies such as Applied Material, Eaton Corp, and Generac.



LGIM brings the heat in clean energy

With clean energy strategies being boosted by the Biden election win, Legal & General Investment Management (LGIM) decided it was time to enter the fray. RENW tracks the Solactive Clean Energy index, which features a strong tilt towards industrials equities. While following in the footsteps of BlackRock's popular INRG strategy, RENW's US concentration is 12.5% lower than INRG's. Also, its index currently has 44 constituents, 14 more than the S&P Dow Jones Indices index that INRG tracks. Finally, RENW's fee of 0.49% is 16bps lower than INRG's.

VanEck tracks in-demand tech component

VanEck's SMH strategy aims to give investors exposure to companies manufacturing and distributing semiconductors. These critical components are central to every computer in the world, used in laptops, phones, cars, data centres and more. Through the pandemic, the value of these silicon diamonds soared as consumers equipped themselves for working from home and virtual leisure. Coming out of the pandemic, semiconductor manufacturers are facing a backlog of orders from companies preparing for consumer demand to be unleashed once lockdown restrictions ease.

The difficulty is that, to-date, only two companies have spent the requisite tens of billions of dollars to build the factories needed to make the most advanced semiconductors, so supply will remain constrained in the near-term. One of these companies, TSMC, is the second-largest holding of SMH.

Tabula's innovative inflation hedge

Amid a period of heavy asset-buying driving inflation fears – and since, the spike in US Treasury yields – investors have been searching for a strategy that offers them protection as interest rate hikes loom.

Offering a worthy response to these calls was Tabula and the launch of TINF in Q4 2020. Tapping into the desire for an inflation hedge, the product features Treasury Inflation-Protected Securities. What sets it apart from its TIPS counterparts, though, is that it takes account of US inflation expectations using breakevens.

Legal & General Investment Management has entered the clean energy strategies market

New Listings		
Ticker	Fund name	TER
(DIGI)	HANetf Digital Infrastructure and Connectivity UCITS ETF	0.69%
(CLMA)	HANetf iClima Global Decarbonisation Enablers UCITS ETF	0.65%
(EDOC)	Global X Telemedicine & Digital Health UCITS ETF	0.68%
(HERU)	Global X Strategy of Global X Video Games & Esports UCITS ETF	0.50%
(HSTC)	HSBC Hang Seng TECH UCITS ETF	0.50%
(TINF)	Tabula US Enhanced Inflation UCITS ETF (USD)	0.29%
(JPCT)	JPMorgan ETFs ICAV – Carbon Transition Global Equity UCITS ETF	0.19%
(SMH)	VanEck Vectors Semiconductor UCITS ETF	0.35%
(SECD)	iShares € Government Bond Climate UCITS ETF	0.09%
(RENW)	L&G Clean Energy UCITS ETF	0.49%
(XU61)	BNP Paribas Easy ECPI Global ESG Blue Economy UCITS ETF	0.30%

BNP Paribas Asset Management's XU61 which targets companies that use ocean resources sustainably



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Off the ropes: Value's dramatic comeback

Guess who's back? Tom Eckett, editor at ETF Stream, examines the cyclical rebound since November 2020 as value silences the critics



Tom Eckett is editor of ETF Stream. He joined ETF Stream as a senior writer in March 2019 before being appointed deputy editor in January 2020 and subsequently editor in March 2021. He started his career at Investment Week in August 2016 as an asset management correspondent covering ETFs.

Rarely do using sporting analogies carry much weight in the world of finance, however, on this occasion the idea of the boxer on the ropes certainly springs to mind when it comes to the value factor and its woeful performance over the past decade.

Value took punch after punch by academics and investment professionals alike with some even calling the death of the renowned factor. Highlighting this, according to research conducted by Elroy Dimson, Paul Marsh and Mike Staunton, the value premium has delivered returns of -4% in the US between 2008 and 2020, the worst across all factors, with low volatility soaring 6.3% over the same period.

But what drove markets to this point? The low interest rate environment driven by the vast amounts of quantitative easing flowing through the global economy. And more recently, Rob Arnott, founder and chairman of Research Affiliates, said the underperformance, especially during the rapid spread of coronavirus in March 2020, was primarily sentiment driven. "Value stocks are much less shiny and glamorous compared to market darlings like Tesla. In the current COVID-19-driven environment,

the contrarian positioning of value stocks feels especially risky and scary," Arnott continued.

"Extreme underpricing of value stocks relative to their fundamentals, combined with much greater retail participation in momentum trading, has sharpened the contrast between value and growth stocks. This heightened divergence is likely a more reasonable explanation for the current deep discount rates than is the expectation of the lower profitability of value companies."

To take the boxing analogy a step further, the Pfizer vaccine was certainly the jab value needed to get it back into the fight and has been the catalyst for what has been a remarkable comeback over the past five months. Literally overnight, value stocks started to outperform amid positive news the vaccine would enable countries to emerge from nation-wide lockdowns. Following the vaccine news, the Russell 1000 Value index outperformed the Russell 1000 Growth index by 6% on 10 November, the highest daily excess return over the past decade, highlighting the dramatic rebound in the beleaguered stocks.

Since then, value has torn away with the Lyxor Russell 1000 Value UCITS ETF (RUSV) climbing

13.4% since the start of the year, as at 18 March, versus just 0.4% returns for the Lyxor Russell 1000 Growth UCITS ETF (RUSG). The flows have followed with investors piling some €4.3bn inflows in the four months to 25 February, according to data from Bloomberg Intelligence, a monster swing in sentiment following the €160m outflows seen between July and November 2020.

The reason behind the dramatic reversal in flows is relatively simple. The current prevailing sentiment is if the coronavirus vaccine is rolled out across the globe and inflation picks up then cyclical sectors such as financials and energy should outperform the market.

As Russ Mould, investment director at AJ Bell said: "If a COVID-19 vaccine is quickly and successfully distributed, then stocks which are seen as 'immune' from the pandemic may be less in demand and seen as less worthy of a premium valuation. Equally, if growth and inflation pick up, then investors may not be so inclined to pay such premium multiples for 'growth' companies, if rapid earnings increases can be acquired much more cheaply along downtrodden value, cyclical plays like industrials, financials and consumer discretionary plays."

But how long can value's outperformance continue? The answer most likely is value still has a long way to run simply due to the decade-long underperformance it has suffered. As a recent JP Morgan research note stressed: "Value, on the other hand, is still attractive, and trades not far from multi-year lows. We focus our longs on banks and on the consumer reopening trade, and would potentially look for a general fading of risk-on internals stance sometime nearer Q4, once the acceleration in

activity and in inflation is behind us, as well as when the bulk of the tailwind from fiscal stimulus is done."

So how should ETF investors play this ongoing rally in value stocks? It is well documented how not all ETFs are created equally and two strategies with the same "value" label can have very different drivers of performance. Taking RUSV which tracks the Russell 1000 Value index. As highlighted above it has delivered returns of 13.4% this year while the iShares Edge USA Value Factor UCITS ETF (IUVL) has jumped 21.8% over the same period.

While RUSV tracks a basket 849 stocks, IUVL has a far more concentrated allocation of 148 currently meaning it will have a more intense exposure to the value factor, especially during periods when value is rallying. On the flipside, RUSV will deliver stronger returns in periods of underperformance for value due its diversification benefits. For investors, understanding these nuances is crucial when assessing which strategy will best suit their portfolio.

As Athanasios Psarofagis, ETF analyst at Bloomberg Intelligence, said: "It is a two-step process. Investors need to get the factor right but also the individual right as well. Labels tell investors very little about the ETF. As you can see, there are stark differences in construction and methodologies."

The reason behind the dramatic reversal in flows is relatively simple. The current prevailing sentiment is if the coronavirus vaccine is rolled out across the globe and inflation picks up then cyclical sectors should outperform the market

Post-GFC factor premiums (%) in the USA														
USA	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2008-20
Highest	Low Vol	Size	Size	Low Vol	Value	Size	Low Vol	Momentum	Value	Low Vol	Low Vol	Momentum	Momentum	Low Vol
	90.4	28.6	13.5	38.2	10.8	5.4	11.3	42.1	16.9	6.5	14.1	8.9	3.7	6.3
	Income	Value	Momentum	Income	Size	Value	Income	Low Vol	Income	Momentum	Momentum	Low Vol	Size	Size
	20.3	-8.0	8.6	29.3	7.7	5.2	1.3	12.9	14.5	6.2	13.5	4.8	0.1	1.3
Lowest	Momentum	Income	Income	Momentum	Momentum	Momentum	Value	Income	Size	Size	Income	Size	Income	Income
	-2.3	-17.1	7.1	1.2	-0.8	4.5	-2.3	0.7	9.7	-3.0	3.8	-5.1	-24.0	0.8
	Size	Low Vol	Value	Size	Low Vol	Income	Momentum	Size	Low Vol	Value	Size	Value	Low Vol	Momentum
	-4.0	-32.9	-5.0	-3.5	-2.0	-8.2	-5.4	-9.4	-1.8	-9.5	-11.0	-5.9	-27.2	-2.3
Lowest	Value	Momentum	Low Vol	Value	Income	Low Vol	Size	Value	Momentum	Income	Value	Income	Value	Value
	-5.3	-50.6		-13.4	-7.9	-9.2	-6.9	-11.6	-22.0	-14.0	-14.2	-9.5	-28.5	-4.0

Source: Elroy Dimson, Paul Marsh and Mike Staunton, Triumph of the Optimists, Princeton University Press, 2002, and Global Investment Returns Yearbook, Credit Suisse, 2021.

A long-term random walk

David Stevenson, columnist at the *Financial Times*, argues why investors are taking a long-term random walk when trying to select factor risk premia

The latest edition of the Credit Suisse *Global Investment Returns Yearbook 2021* by Elroy Dimson, Paul Marsh, and Mike Staunton has just been released and as we have all come to expect it contains a veritable treasure trove of revealing financial data spanning more than 100 years in the case of most developed markets. As always, there is a detailed spin through the world of factor-based investing – with what I think are potentially disquieting conclusions. Take Table 1, a heatmap that shows returns for the usual spectrum of factors from 2008 through to 2020.

On an initial surface inspection, it backs the market consensus which is that low volatility has been a winning strategy both in the US and the UK. In the US, the average post-Global Financial

Crisis (GFC) risk factor premium for this strategy has been 6.3% compared to 5.2% in the UK (where it is the second most successful strategy behind momentum). Yet if we look at the heatmap, we see that low vol has, in reality, been all over the shop!

In four of these years, low vol in the UK was by a considerable distance the WORST strategy and has only been the best performing in four, obviously different, years. Again, in the US, low vol has been all over the shop. Value, by contrast, looks to have been consistently a dreadful strategy, with an average risk discount of -4% in the US and -3.4% in the UK.

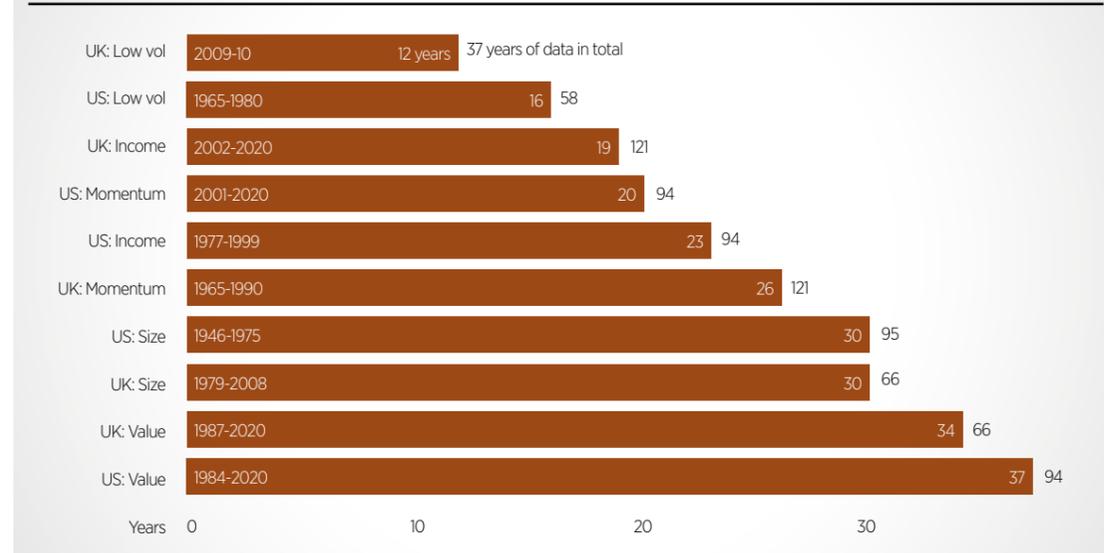
Yet if we look at the distribution of returns in say the US, we see that value has in fact been the best strategy in two of the 12 years and in second place

Table 1. Post-GFC factor premiums (%) in the USA and UK

	USA	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2008-20
Highest	Low Vol	90.4	Size 28.6	Size 13.5	Low Vol 38.2	Value 10.8	Size 5.4	Low Vol 11.3	Momentum 42.1	Value 16.9	Low Vol 6.5	Low Vol 14.1	Momentum 8.9	Momentum 3.7	Low Vol 6.3
	Income	20.3	Value -8.0	Momentum 8.6	Income 29.3	Size 7.7	Value 5.2	Income 1.3	Low Vol 12.9	Income 14.5	Momentum 6.2	Momentum 13.5	Low Vol 4.8	Size 0.1	Size 1.3
	Momentum	-2.3	Income -17.1	Income 7.1	Momentum 1.2	Momentum -0.8	Momentum 4.5	Value -2.3	Income 0.7	Size 9.7	Size -3.0	Income 3.8	Size -5.1	Income -24.0	Income 0.8
	Size	-4.0	Low Vol -32.9	Value -5.0	Size -3.5	Low Vol -2.0	Income -8.2	Momentum -5.4	Size -9.4	Low Vol -1.8	Value -9.5	Size -11.0	Value -5.9	Low Vol -27.2	Momentum -2.3
Lowest	Value	-5.3	Momentum -50.6	Low Vol	Value -13.4	Income -7.9	Low Vol -9.2	Size -6.9	Value -11.6	Momentum -22.0	Income -14.0	Value -14.2	Income -9.5	Value -28.5	Value -4.0
	GBR	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2008-20
Highest	Low Vol	127.0	Size 26.9	Size 13.8	Low Vol 35.0	Size 18.3	Momentum 32.4	Momentum 7.8	Low Vol 23.7	Value 20.2	Momentum 11.0	Low Vol 18.2	Size 6.6	Momentum 18.7	Momentum 8.1
	Momentum	78.9	Income 1.1	Value 3.2	Income 28.3	Value 14.8	Size 17.2	Income -1.3	Momentum 20.1	Income 15.3	Size 6.2	Momentum 6.6	Low Vol 6.3	Size 7.3	Low Vol 5.2
	Income	15.7	Value -6.9	Momentum 0.7	Momentum 20.6	Momentum -1.6	Low Vol 11.5	Size -2.6	Size 12.4	Size -5.4	Value 3.3	Income -2.4	Momentum -3.6	Low Vol -1.7	Size 4.3
	Value	-11.8	Low Vol -20.1	Income -13.7	Size -5.6	Income -8.1	Income 0.0	Low Vol -6.2	Income -11.2	Momentum -18.3	Income -0.6	Value -7.0	Value -7.7	Income -16.9	Income 0.6
Lowest	Size	-18.9	Momentum -25.4	Low Vol -22.9	Value -10.7	Low Vol -15.7	Value 0.0	Value -10.0	Value -20.9	Low Vol -21.2	Low Vol -9.6	Size -7.4	Income -7.9	Value -21.4	Value -3.4

Source: Elroy Dimson, Paul Marsh and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and *Global Investment Returns Yearbook*, Credit Suisse, 2021.

TABLE 2. LONGEST FACTOR DRAWDOWNS, USA AND UK



in another two years. This confirms the oft-quoted observation that value can be a brilliant strategy but most of the long-term gains come from making sure you participate in a few, short-lived rallies. Arguably, we are currently mid-way through another value surge.

If we step back from this surface-level analysis, one conclusion becomes very clear, or at least it does in mind – factors have not been terrifically reliable ways of delivering a premium since the GFC. The Credit Suisse report in fact concludes that only 48% of annual “premiums” were positive and that those premia vary greatly over time and also countries. One could in fact take a more radical view – that the distribution of premia returns is not that far off random.

And we also need to be honest that if you pick the wrong factor, you face the very real possibility that you could be stuck in a misfiring strategy for many years or even decades. Take the second table, also from the Credit Suisse yearbook, which shows the length of many factor drawdowns. Take value as the obvious example – in the 94 years of recorded data, their global dataset suggests a grand total of 37 years of drawdowns and systematic underperformance since 1984.

Step back from this data and an obvious dismal conclusion can be drawn – not only can a robust argument be made for a random walk in terms of successful factor premia but that the cost of picking the wrong risk premia could be many years of underperformance. If that is the case, why bother with any factor led strategies in the first place?

To which, of course, the optimist could point to

any number of arguments. That most value fund managers use a more complicated take on say value investing which extends beyond just say price to book measures. Or that many successful fund managers use a combination of factors to build a stock selection strategy, combining say value and size. A quant led justification might even embrace this random walk and incorporate all five of these classic Fama-French premia and then equal weight them (or a variation on active strategy selection).

These are all valid observations but they do not really quite answer my central concern – that the likely results of any selection of factor will likely produce highly variable results and that the costs of poor strategy selection can be ruinous in terms of wealth preservation.

And I would add one last thought. It is clear different factors can spectacularly underperform and test the patience of even the most determined long-term investor. At one stage value investing was the IN strategy, beloved of all the investing giants. And then it was not and in truth, it has not been for decades. What happens if a new variant on the factor strategy scene – ESG investing – starts to produce year after year, decade after decade, of terrible underperformance? Will we see, in this gloomy scenario, a wall of money exit strategies-based investing in carbon mitigation and reduction fund strategies, possibly short-changing our net-zero targets?

It is one thing for value not to work, annoying fund managers, but if the financial system collectively undermines a global push for decarbonisation, then the results could be very real.



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Is it possible to time factors?

Anna Fedorova assesses the practical implications of attempting to time factors and whether market timing is more conducive to some factors over others



Anna Fedorova is a freelance financial journalist, copywriter and editor with nearly a decade of experience, specialising in investment and sustainable finance. Before going freelance, she spent most of her career with Investment Week, latterly as news editor. Since then she has written for a wide range of titles, including Morningstar, What Investment and ESG Clarity.

Much has been written about the underperformance of multi-factor strategies during 2020, with much of the blame being attributed to the value factor, which experienced particularly strong underperformance as a result of the coronavirus pandemic. In fact, the value factor experienced its worst drawdown in 30 years, according to JP Morgan Asset Management, finishing 2020 with its worst calendar year return in the history of the firm's data¹.

As a result, the question of whether factor timing works in practice has cropped up once again, and opinions on the subject differ. For some, like Eric Shirbini, global product specialist at ERI Scientific Beta, the answer is a resounding 'no', while others are more optimistic about the potential benefits of timing factors. As Shirbini said: "Factors are related to risk premia and who can time that? It is very difficult to predict and respond to changing macro-economic conditions. The only sensible solution is to invest in a portfolio of factors with equal exposure to each."

Vitali Kalesnik, director of research for Europe at Research Affiliates, on the other hand, said successful factor timing is theoretically possible, based on research the firm has conducted: "I believe yes, based on the evidence that we have found, factor return is predictable over time."

However, all experts *Beyond Beta* spoke to agree that successfully timing factors is extremely difficult. While the strategy may work on paper, in reality it

is difficult to create enough "breadth" in a portfolio that is seeking to time factors, since there are not that many factors to choose from, Kalesnik said.

"You cannot diversify factor timing bets around that many factors," he continued. "This translates into a poor information ratio and as a standalone signal it doesn't allow the investor to benefit all that much in terms of gain per unit of risk."

The other downside is that factor-timing strategies can incur high transaction costs, especially when it comes to investing in the momentum factor, which requires high portfolio turnover. This "puts a limit on how aggressively you can benefit" from a momentum strategy, though Kalesnik noted that "adding a little bit of [momentum] will improve the overall information ratio, if you do not trade too much". He added, however, that this is "just one of the tools in an investor's portfolio, so do not expect it to do wonders".

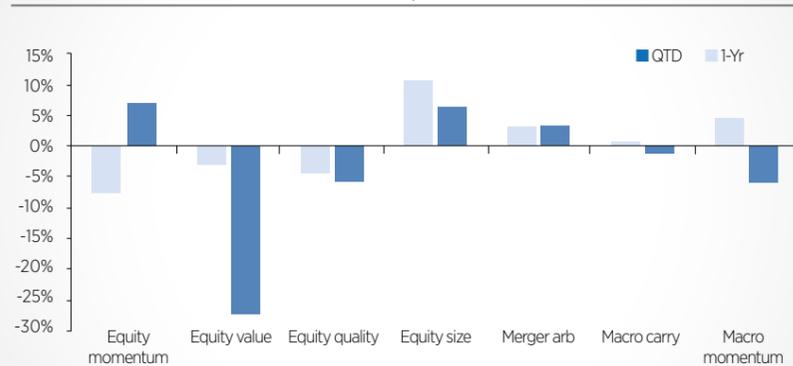
There are two main techniques for timing factors. One is based on valuations, the idea being to buy companies with the lowest P/E ratios relative to history or to the market average. The other is buying factors based on price momentum, which involves buying assets that have performed well in the recent past and selling them when the returns are deemed to have peaked in an effort to take advantage of market volatility.

However, Shirbini noted that using either of these strategies means an investor is no longer factor-timing, as employing these techniques automatically creates exposure to either the value or momentum factor. For example, "if you try to buy the momentum factor when it is cheap, then all you are doing is buying momentum when it overlaps with value" and so on.

Part of the issue also lies in the difficulty of constructing factors, Tatjana Puhan, deputy CIO at TOBAM, said. "When you have huge dispersion of factor returns, having construction issues might very badly backfire on you," she stressed. "This is what happened in 2020 to many multi-factor portfolios that were heavily exposed to value, for example."

When trying to construct, say, a value factor, the first question would be to decide what "the right proxy for value" is, Puhan said. Then, the challenge is to turn this into "an actionable factor". Given the breadth of different ways to measure value, the outcome in

TABLE 1. QUANTITATIVE SOLUTIONS LONG/SHORT FACTOR RETURNS



Source: J.P. Morgan Asset Management as at 31 December 2020

Table 2. Performance of long/short factors over Q1 2020

Region	Statistics	SMB	HML	MOM	VOL	PRO	INV	Avg
United States	Q1 2020	-13.6%	-16.1%	16.8%	6.6%	8.8%	-8.4%	-1.0%
	Avg. Rolling Quarterly Return	0.1%	0.0%	0.1%	1.8%	0.8%	0.2%	0.5%
	Worst 5% Rolling Return	-5.99%	-5.6%	-7.5%	-6.4%	-4.1%	-3.5%	-5.5%
	Best 5% Rolling Return	7.4%	6.0%	8.9%	10.5%	6.6%	4.3%	7.3%
Developed Ex-US	Q1 2020	-6.5%	-11.9%	15.2%	7.6%	4.1%	-1.8%	1.1%
	Avg. Rolling Quarterly Return	2.2%	0.4%	1.6%	2.0%	0.8%	0.0%	1.2%
	Worst 5% Rolling Return	-7.6%	-5.8%	-5.3%	-5.3%	-2.6%	-2.8%	-4.9%
	Best 5% Rolling Return	13.2%	6.0%	8.4%	9.8%	4.6%	3.3%	7.6%
Global	Q1 2020	-9.3%	-13.8%	15.6%	6.3%	6.2%	-5.5%	-0.1%
	Avg. Rolling Quarterly Return	2.2%	0.4%	1.6%	2.0%	0.8%	0.0%	1.2%
	Worst 5% Rolling Return	-4.8%	-5.0%	-6.1%	-4.7%	-2.4%	-2.8%	-4.3%
	Best 5% Rolling Return	6.6%	5.9%	7.6%	9.1%	5.0%	3.2%	6.2%

Source: Scientific Beta. Daily USD total returns from 21 June 2002 to 31 March 2020 on SciBeta US, Developed Ex-US and Global.

Table 3. Long-term analysis of the performance of long/short factors on US

Region	Statistics	SMB	HML	MOM	VOL	PRO	INV	Avg
United States	Q1 2020	-13.6%	-16.1%	16.8%	6.6%	8.8%	-8.4%	-1.0%
	Worst 5% Rolling Return	-11.0%	-11.9%	9.7%	-7.7%	-9.6%	-6.8%	-4.2%
	Conditional Mean (<worst 5%)	-16.99%	-16.9%	-12.2%	-16.4%	-15.7%	-9.4%	-6.5%

Source: Scientific Beta. Daily USD total returns from 31 Dec 1974 to 31 Dec 2019 on EDHEC-Risk US Long-Term Track Record

terms of performance could be "very positive or very negative" – and not necessarily predictable.

The other obstacle is the difficulty in predicting the macro environment – political risks, policy changes, idiosyncratic risks – which all feed into how well one single factor will perform in a particular environment. In addition, Puhan believes there is "a lot of data mining going on to show that the timing model works", when in reality any outperformance tends to be inconsistent.

Altaf Kassam, EMEA head of investment strategy and research at State Street Global Advisors, agreed: "You can go back through history and back-test for decades and you get some really nice-looking results as a lot of the noise gets cancelled out. But if you try to apply these results over the next week, month, quarter, it turns out the noise swamps out any signals."

BALANCED APPROACH

Kassam's advice for investors that do not have a strong view on any one factor is to hold a combination of factors, since exposure to a single factor naturally means exposure to more risk. However, this also means investors are likely to have to be patient and wait longer for outperformance to materialise. For those clients that already have a specific factor tilt in a portfolio, a better option might be to find complementary exposures that would balance out the risks.

In Shirbini's view, the best way to invest in factors is to create a "well-diversified factor strategy", which involves minimising stock-specific risks using a combination of equal weighting, equal risk contribution to each stock, and reducing correlations between holdings. This is the approach Scientific Beta takes to constructing multi-factor indices.

TOBAM is also an advocate of diversification and uses a maximum diversification approach to construct its Anti-Benchmark portfolios, which aim to maximise the number of sources of risk to which they are exposed. "We do not know what the future will bring – in that sense, we are the least insightful manager you can find," Puhan said.

However, Kalesnik argued that even though factor timing is difficult, investors can still look to time risks by "nudging" their weights in favour of factors with "good signals" and reducing exposure to negative signals throughout the cycle.

"At times when volatility is high, it is best to reduce your factor exposure, as that alpha is likely to come at a higher risk," he explained. "During times of low volatility, on the other hand, alpha comes at a lower relative risk. In addition, factors can go down much more than investors expect, and they tend to go down together. When these risks appear and investors start to see more correlation [between factors], it is better to reduce factor exposure and tilt towards cap weighting."

The merits of equal weighting indices

Chris Taylor, global head of Tempo Structured Products, shines a light on issues embedded in market capitalisation weighted indices which investors should consider, explains the merits of equal weight index methodology, and highlights that structured products can offer investable equal weight index propositions for investors

Talk to academics focused on factor-based research and the concept and merits of equal weight indices are clearly supported by academic evidence and seem incontrovertibly logical and rational. Equal weighting is one of the most obvious, simple and compelling ways in which indices can be constructed, theoretically. Back in the real

world, however, the vast majority of mainstream investable indices are market capitalisation weighted, and even amongst factor premia-based adaptations, equal weighting is rare.

As we'll explore in this article, the reason for this is that there are practical challenges that have made equal weighting difficult to implement and manage, for the mutual funds and ETF world. But



the structured products sector can and does offer investable equal weight index propositions for investors, as Tempo's product suite for professional advised investors proves.

GIVEN A CHOICE, WOULD INVESTORS CHOOSE MARKET CAP WEIGHTING?

Market capitalisation weighted indices have clearly become the most common passive investment approach for many investors around the world. This article is not seeking to challenge the fact that market capitalisation weighted indices rationally and incontrovertibly reflect the market as a whole, as 'market benchmarks', the merits of which are widely recognised, evidenced and accepted. However, it is important to recognise that market capitalisation indices effectively, implicitly embed some features, rules, factor exposures and potential issues as 'passive investments', which investors need to consider.

To highlight these points, it is interesting and thought provoking to imagine how market capitalisation weighted indices might be regarded, if presented and considered as smart beta propositions. Let us imagine that you are a professional adviser or investor who has happily been using an equal weight version of the FTSE 100 for many years: let's say, e.g., since 1984, imagine that the FTSE 100 index you've been using since its inception was always equally weighted.

FTSE Russell contact you, as a recognised expert on passive investing, and explain that they are thinking of launching a market capitalisation weighted version of FTSE 100. They provide you with detailed input and academic evidence, highlighting and explaining that market capitalisation weighting, as a rules-based index methodology, as an alternative to equal weighting, will result in some or all of the following:

- Stock (and usually sector) concentration in the larger, 'mega cap' companies in the index (eg., in the FTSE 100, the top 10 companies may typically account for 40%-50% of the index in total), despite academia evidencing the merits of diversification.
- Underweighting the smaller companies in the index (eg., in the FTSE 100, the bottom company may typically account for just 0.1-0.2%): despite academia identifying that these companies historically outperform, i.e., the small companies effect.
- Increasing the weighting in companies when their share prices rise and decreasing the weighting in companies when their share prices go down, i.e., buying high and selling low, despite academia pointing to the long term merits of value investing.

“It is important to recognise that market capitalisation indexes effectively, implicitly embed some features, rules, factor exposures and potential issues as ‘passive investments’”

- ... oh, and best point last, they highlight that historical analysis shows that market capitalisation weighting the FTSE 100 means that, more times than not, it underperforms the elegantly simple equal weight index.

They do, however, draw attention to the efficient markets hypothesis, which loosely states that markets are efficient; everything is in the price; the only thing that can move prices is unknown information, and that consistently beating markets is impossible ... which they suggest highlights the merits of market capitalisation weighting. Patiently listening, you, however, may counter that while it is, of course, interesting to consider the principles of EMH, there is no information value to knowing everything is in the price: it does not provide or improve the ability to actually forecast anything about future performance. Arguably, EMH does not point to market capitalisation weighting, it points to the agnostic and elegant case for equal weighting.

Put simply, if we started with a blank sheet of paper, and thought about the best ways to invest passively in the market, as opposed to the best benchmark for the market, we might not conclude that market cap weighted indices are the optimal passive investment methodology!

EQUAL WEIGHT INDICES MAKE SENSE

Equal weighting is generally considered to be the most obvious and straightforward alternative to market capitalisation weighting an index. The rules and factors which are explicit in equally weighted indices effectively reverse rules, factor exposures and potential issues which are embedded implicitly in market capitalisation weighted indices, including, but not limited to the following:

1. Concentration risk at company (and potentially also sector) level is immediately exchanged for diversification, eg., in the FTSE 100, 100 x 1% weights means that the top 10 companies account for 10% in total
2. Smaller company 'underweights' are equalised, eg., in the FTSE 100, 100 x 1% weights means that the bottom 10 companies account for 10% in total (as per the top 10 companies). In the FTSE 100, over 70 companies may increase weighting when equally weighted.

Chris Taylor is Global Head of Tempo Structured Products, which he founded and established in 2016, within the Alpha Real Capital family of companies. He has been involved in the asset management industry for 25 years, with senior executive roles spanning active and passive funds and structured products, including: Director, UK Structured Products Distribution, HSBC Asset Management; Chief Executive, Blue Sky Asset Management; and Managing Director, Incapital Europe.



Table 1. Year-on-year Index Performance (Total Return)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
FTSE 100	12.6%	-2.2%	10.0%	18.7%	0.7%	-1.3%	19.1%	11.9%	-8.7%	17.3%	-11.5%
FTSE 100 EQ	21.3%	-7.3%	17.9%	19.8%	4.5%	3.0%	12.6%	13.2%	-9.0%	23.1%	-2.2%

3. Periodic rebalancing to maintain equal weighting embeds a ‘buy low/sell high’ approach, as a rule, in contrast to market capitalisation weighting, which does the opposite.

It is immediately apparent that there is logic and investment merit to equal weighting.

Extensive academia highlights two factors which can contribute positively to portfolio performance, which benefit from equal weighting: size/smaller companies and value (attractive fundamentals) stocks. Let us look at each in turn.

Starting with the ‘size’ factor, in simple terms equal weighting increases exposure to smaller companies in an index. Academic studies have long identified that smaller companies have historically outperformed larger companies, over the longer term (even the major stocks in the world today were smaller companies at some point in the past). The higher return premium of smaller companies is usually associated with increased risk: less information, less certainty, lack of liquidity, etc. But it is worth noting that smaller companies in the FTSE 100 are still considered large companies. The increased weighting to smaller companies in equal weight indices can also be expected to lead to higher volatility. But again, the FTSE 100 analysis highlights that this may be less than might be anticipated, given that the smaller capitalisation end of the FTSE 100 is still considered large capitalisation.

The other key factor at work is the ‘value’ factor. In an equal weight index, re-balancing imposes a ‘buy low/sell high’ rule, which captures elements of value. Over recent years there’s plentiful evidence that value investing has been out of favour, while growth stocks have driven the performance of certain stock market indices. However, academia identifies the potential merits of value investing. I would cite a non-exhaustive list which includes Basu (1977); Rosenberg, Reid and Lanstein (1985); De Bondt and Thaler (1987); Fama and French (1992)

In academic theory, therefore, an equal weight

index should capture the returns premium of these two factors. But do the-real world facts bear out this academic observation?

The evidence is persuasive. Focusing on the UK, Tables 1 and 2 highlight analysis of the benchmark UK index, the FTSE 100, comparing the market cap and equal weight versions. As can be seen in Table 1, at least over the time period used in the tables, we can surmise that equal weighting can produce superior returns more often than it doesn’t; in this example, using the FTSE 100, in eight years out of the last 11 years. Table 2 highlights that the superior performance was achieved with slightly higher volatility and slightly larger drawdown (which was during the Q1 2020 COVID-19 sell-off).

Notably, it’s worth considering that this type of outperformance would be the making of an active fund manager aiming and claiming to offer ‘alpha’ against the market cap index benchmark. However, this is ‘smart beta’ in practice: the same index provider, with the exact same stocks, simply implementing a different, rules based weighting methodology, as a passive proposition, i.e., alternative beta, to deliver outperformance of the benchmark index.

Table 3 reminds us why the returns (and the underlying volatility) might vary: it compares the sector composition of the main benchmark market capitalisation weighted index to the equal weight version. What is obvious here is that the sector composition is noticeably different – currently, in the UK FTSE 100, equal weighting means lower exposure to resources and financial stocks, for example, and higher exposure to industrial goods and retail.

THE CHALLENGE FOR MUTUAL FUNDS AND ETFS OFFERING EQUAL WEIGHT INDICES

To be fair to mainstream index providers, they fully recognise the academic and real-world merits of equal weighting and offer both market capitalisation and equally weighted methodology options on the main indices, i.e., FTSE 100, S&P 500, MSCI World, Euro STOXX 50.

But given how compelling the evidence and rationale for equal weighting indices is, the question which arises is where are all the equally weighted index mutual funds and ETFs? The answer is that there are practical challenges for mutual funds and ETFs in implementing and managing investable

equal weighting. The increased weighting and trading in smaller companies – especially as a result of regular rebalancing to maintain the equal weighting – can present liquidity, trading costs and tracking error challenges.

In fact, in the UK, in respect of the FTSE 100, which I have used to draw attention to the merits of equal weighting, there isn’t a single mutual fund or ETF option available to investors.

However, these challenges do not affect all areas of the investing universe. In particular, these challenges do not affect structured products. Structured products are based on contracts, issued by banks, with product returns based upon the level of an index, without investing directly into the stocks in the index. Let us unpack that last statement. In a structured product, issuing banks may arrange to hedge themselves against the legal obligations upon them to deliver the terms of the bonds which they have issued, i.e., to deliver the returns they stated, but they do not necessarily replicate the index or need to do so in the way that a passive fund or ETF must.

Structured products do not, therefore, suffer the liquidity challenges, turnover costs or tracking error issues of mutual funds and ETFs replicating indices. This means that structured products can employ smart beta strategies, including equal weighting, in ways (and with risk-return profiles) which mutual funds and ETFs cannot.

STRUCTURED PRODUCTS CAN OFFER INVESTABLE EQUAL WEIGHT INDEX PROPOSITIONS FOR INVESTORS

In 2017, FTSE Russell launched an equal weight version of the FTSE 100, known as the FTSE 100 Fixed Dividend Equal Weight Custom Index (‘FTSE 100 FDEW’), which was developed in collaboration with Société Générale, which has an exclusive license for the index (with Tempo, in turn, having an exclusive arrangement with Société Générale to use the FTSE 100 FDEW in structured product plans offered to UK professional advisers).

Launched in March 2017 (with simulated data to 2001), with a starting level of 1,000, the FTSE 100 FDEW comprises the same 100 stocks as the FTSE 100, uses the same methodology regarding quarterly reviews and constituents, and adheres to the same FTSE Russell FTSE UK Index Series Ground Rules as the FTSE 100. But as its name suggests, it differs to the FTSE 100 in two important ways:

- The ‘FD’: the FTSE 100 FDEW is based on a total return index, including dividends paid by the companies: however, a fixed dividend of 50 points per year is deducted when FTSE Russell work out the index level.

Table 3. Sector Composition for FTSE 100 vs EW Version

FTSE 100	SECTOR	FTSE 100 FDEW
7%	Oil and gas	3%
7%	Banks	4%
15%	Personal and household goods	12%
12%	Pharmaceuticals	3%
10%	Basic resources	7%
9%	Industrial goods and services	16%
5%	Food and beverage	3%
4%	Insurance	6%
4%	Media	6%
3%	Travel and leisure	5%
6%	Financial services	10%
4%	Retail	7%
4%	Utilities	5%
2%	Telecommunications	2%
1%	Construction and materials	1%
1%	Real estate	3%
1%	Healthcare	1%
1%	Technology	3%
1%	Chemicals	2%
1%	Precious metals and mining	2%
0%	Aerospace and defence	0%

- The ‘EW’: the 100 companies in the FTSE 100 FDEW are all equally weighted, at 1% by FTSE Russell, instead of being weighted according to their market capitalisation.

The FTSE 100 FDEW captures the equal weight performance of the FTSE 100, including dividends paid by the companies in the index, without any tracking error. This is the ‘EW’ aspect of the index name. However, in addition to developing the index so that it could offer the benefits of equal weighting to investors, the ‘FD’ aspect was built into the methodology in order to optimise the terms of structured products linked to the index. The FTSE 100 FDEW is based on a total return index. This means that dividends paid by the constituent

“Academic studies have long identified that smaller companies have historically outperformed larger companies, over the longer term (even the major stocks in the world today were smaller companies at some point in the past)”

Table 2. Volatility and Drawdown

	Volatility				Drawdown
	1YR	3YRS	5YRS	10YRS	10YRS
FTSE 100	29.0%	-19.6%	13.6%		-34.2%
FTSE 100 EQ	29.8%	-21.1%	15.6%		-37.2%

Table 4. 2020 Index Performance

	2020	Drawdown	Recovery			Volatility	Sharpe Ratio
		17 January-23 March	3-Months Since Low	6-Months Since Low	Since Low to 31 Dec		
FTSE 100	-15.04%	-34.93%	26.56%	18.13%	29.37%	29.55%	-0.51%
FTSE 100 FDEW	-8.37%	-37.63%	32.11%	28.28%	47.05%	30.23%	-0.28%

companies are included in its calculation: however, a fixed dividend of 50 points per year is deducted in the calculation of its daily level. Specifically, it is this total return / fixed dividend approach of the FTSE 100 FDEW which addresses an issue which banks may encounter when structured products link to the FTSE 100, which provides the potential to improve structured product terms.

When structured products are linked to the price return of the FTSE 100, issuing investment banks may seek to hedge the dividends which are not accounted for within the index, which they can do by selling dividend futures in the futures market. However, future dividend levels are unknown and uncertain and thus the futures market typically discounts the levels that it expects to be paid out, particularly in the longer term. In addition, dividend futures are not very liquid and the swathe of structured product-issuing investment banks selling dividend futures, in the absence of many natural buyers, creates a supply / demand imbalance.

As a result, 'implied' dividend levels seen in the dividend futures market are often lower than 'realised' actual dividend levels actually paid by companies. This 'discounting cost', linked to the need for banks to hedge through the futures market, can negatively impact the terms of structured products linked to the FTSE 100.

The 'FD', i.e., the fixed dividend, of the FTSE 100 FDEW is designed to address this issue, avoiding the discounting costs of the futures market, and removing the hedging uncertainty, allowing issuers to improve product terms. However, it is important to understand that the FD operates in tandem with the 'EW', i.e., the equal weighting, in the FTSE 100 FDEW. So, without going into the minutiae of our products, how is the FTSE 100 FDEW performing, compared to the FTSE

100? Is the return profile of the index compelling, based on using equal weight methodology, modified with the fixed dividend?

We have now had these products in the UK market for professionally advised investors for a number of years, and we can also point to 2020 as a particularly good year in which to observe the index, given the market sell-off following the outbreak of the COVID-19 pandemic and the environment for company dividends which followed.

As already highlighted, equal weight methodology may lead to increased drawdown and elevated volatility. Focusing on 2020, Table 4 shows that this can be the case, during the Q1 market fall. However, the recovery since the drawdown low of 23 March may surprise many readers the equal weight FTSE 100 FDEW materially outperformed the market cap weighted FTSE 100 through the remainder of 2020.

IN CONCLUSION ...

While market capitalisation weighted indices rationally reflect markets as a whole, as a benchmark, it doesn't automatically or necessarily follow that market capitalisation weighted indices are also the best / optimal way to passively invest in markets. This is a subtle but important distinction and point to recognise and understand, because market capitalisation weighted indices effectively, implicitly embed rules, factor exposures and potential issues which passive investors should be considering.

It's certainly not the case that market capitalisation weighting is the only way to invest passively in markets. Advancing academic research and modern index construction capabilities offer various alternative index methodologies.

Equal weight indices offer one of the simplest and most straightforward alternatives to market capitalisation weighting, with academic and real-world evidence of their merits. However, the mutual funds and ETF world struggles to offer investable equal weight index-based propositions, due to implementation challenges.

Structured products, however, can offer viable, investable equal weight index propositions for investors ... with the added appeal of structured product features, which can optimise risk and return profiles, in ways that mutual funds and ETFs cannot.

“Equal weight indices offer one of the simplest and most straightforward alternatives to market capitalisation weighting, with academic and real-world evidence of their merits”



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Managing ESG risks in sovereign bond portfolios

Having an impact? Lionel Martellini, professor of finance at EDHEC Business School, analyses the effect of incorporating ESG factors within the sovereign bond segment of portfolios

Over the past decade, sustainable and responsible investing have gained momentum and continue to grow in popularity among investors, and it is increasingly recognized that the financial system has a particularly important role to play in the transition towards a low-carbon and climate-resilient economy. The integration of sustainability considerations into the decision-making process for investments, as measured by environmental, social and governance (ESG) indicators, has been driven by investor demands, fiduciary duty, climate change and the development of new regulations and values. Sustainability in the financial sector is becoming mainstream and is reshaping global markets.

Nevertheless, the integration of ESG factors into sovereign bond investment analysis and investment decision-making is not systematic due to a lack of understanding among investors of how to integrate

ESG issues into sovereign debt analysis, and a lack of consistency in defining and measuring material ESG factors. The absence of a coherent investment framework for integrating ESG indicators into sovereign bond investments is consistent with the relative scarcity of available academic research on the subject, which has focused more on ESG investing in equity markets. In a recent paper (Martellini and Vallée, 2021¹), we explore the impact of ESG factors on the risk and return of sovereign bonds from an investor perspective, in particular investigating how to measure and manage ESG risks in sovereign bond portfolios and their implications for sovereign bond portfolio strategies.

IMPACT OF ESG CRITERIA ON RISK/RETURN CHARACTERISTICS OF SOVEREIGN BONDS

We first provide an assessment of the materiality and impact of ESG scores² taken individually on

Table 1: Estimation results for developed and emerging countries of the impact of E, S and G scores of sovereign bond yield spreads

Developed Countries				Emerging Countries			
	Bond Yield Spreads <i>Spread_(i,t)</i>				Bond Yield Spreads <i>Spread_(i,t)</i>		
	1Y	5Y	10Y		1Y	5Y	10Y
<i>Spread_(i,t-1)</i>	0.713*** (0.065)	0.686*** (0.066)	0.661*** (0.067)	<i>Spread_(i,t-1)</i>	0.710*** (0.073)	0.852*** (0.079)	0.604*** (0.090)
<i>Eco_(i,t-1)</i>	-0.003 (0.003)	-0.002 (0.004)	-0.003 (0.003)	<i>Eco_(i,t-1)</i>	-0.003 (0.004)	-0.003 (0.003)	-0.005** (0.003)
<i>Env_(i,t-1)</i>	-0.013** (0.005)	-0.025*** (0.006)	-0.023*** (0.004)	<i>Env_(i,t-1)</i>	0.001 (0.006)	0.002 (0.005)	0.002 (0.004)
<i>Soc_(i,t-1)</i>	0.003 (0.003)	0.005* (0.004)	0.003* (0.003)	<i>Soc_(i,t-1)</i>	-0.007*** (0.002)	-0.004** (0.002)	-0.001 (0.001)
<i>Gov_(i,t-1)</i>	0.013** (0.005)	0.013* (0.006)	0.009* (0.005)	<i>Gov_(i,t-1)</i>	0.004 (0.003)	0.004 (0.002)	0.002 (0.002)
Observations	190	190	190	Observations	150	150	150
Countries	19	19	19	Countries	15	15	15
Fixed effects	Yes	Yes	Yes	Fixed effects	Yes	Yes	Yes
R-sq	0.651	0.629	0.633	R-sq	0.676	0.602	0.419

Standard Deviation in parentheses. Level of significance: *10%, **5%, ***1%.

Table 2: Estimation results for developed and emerging countries of the impact of E, S and G scores of sovereign bond returns

Developed Countries				Emerging Countries			
	Bond Returns <i>Ret_(i,t)</i>				Bond Returns <i>Ret_(i,t)</i>		
	1Y	5Y	10Y		1Y	5Y	10Y
<i>Eco_(i,t-1)</i>	-4.22E-06 (0.021)	-0.045 (0.033)	-0.030 (0.048)	<i>Eco_(i,t-1)</i>	-0.061 (0.041)	-0.052 (0.038)	-0.046 (0.049)
<i>Env_(i,t-1)</i>	-0.110*** (0.037)	-0.082 (0.058)	-0.051 (0.083)	<i>Env_(i,t-1)</i>	-0.012 (0.061)	-0.081 (0.057)	-0.125* (0.075)
<i>Soc_(i,t-1)</i>	-0.017 (0.0245)	-0.049 (0.038)	-0.078 (0.055)	<i>Soc_(i,t-1)</i>	-0.082*** (0.023)	-0.047** (0.021)	-0.017 (0.028)
<i>Gov_(i,t-1)</i>	-0.096** (0.038)	-0.139** (0.060)	-0.201** (0.086)	<i>Gov_(i,t-1)</i>	0.011 (0.035)	-0.022 (0.033)	-0.044 (0.044)
<i>6_0</i>	2.683*** (0.370)	3.378*** (0.577)	3.822*** (0.827)	<i>6_0</i>	1.835*** (0.434)	2.222*** (0.403)	2.439*** (0.530)
Observations	200	200	200	Observations	150	150	150
Countries	20	20	20	Countries	15	15	15
Fixed effects	Yes	Yes	Yes	Fixed effects	Yes	Yes	Yes
R-sq	0.118	0.102	0.074	R-sq	0.144	0.112	0.056

Standard Deviation in parentheses. Level of significance: *10%, **5%, ***1%.

key risk and return indicators of relevance to asset owners in both developed and emerging markets³. Our main goal is to analyse whether cross-sectional differences in the risk and return of sovereign bonds from various developed or emerging issuing countries can be explained partly by cross-sectional differences in E, S or G scores.

Regarding the impact of cross-sectional differences in each score (E, S, and G) on sovereign bond yield spreads, our estimation results allow us to extract two key conclusions (see Table 1).

First, we find that for developed countries, after controlling for economic⁴ scores and other fixed effects, the E dimension has a significant and negative impact on bond yield spread. These results mean that a higher E score is associated with a lower spread for one-year, five-year and 10-year bond maturity, and this impact is more pronounced in the medium run.

From an issuer standpoint, better E scores can therefore lead to reduced borrowing costs, everything else being equal. From the investor standpoint, this result suggests that a lower yield is to be expected

when investing in countries with higher environmental performance, which tells us that a negative premium is associated with this reduction in environmental risk.

On the other hand, for emerging countries, after controlling for economic scores and other fixed effects, we find that the S dimension has a significant and negative impact on bond yield spread, meaning that a higher S score is associated with a lower spread for five-year and 10-year bond maturity, and this impact is more pronounced in the short run. Hence, from an investor standpoint, a lower yield is to be expected when investing in countries with higher social performance, suggesting that a negative premium is associated with this reduction in social risk.

We then turn to the impact of cross-sectional differences in E, S and G on the performance characteristics of sovereign bond returns (see Table 2). We find that for developed countries, after controlling for economic scores and other fixed effects, both the E and G dimensions have a significant and negative impact on bond returns, meaning that a higher E and G score is associated with lower bond return, and the

Table 3: Benchmark results over the sample period 2010–2020 for developed and emerging countries

	Developed Countries				Emerging Countries			
Annualized Return (%)	7.46				12.60			
Annualized Volatility (%)	8.76				6.68			
Sharpe Ratio	0.85				1.89			
Max Drawdown (%)	71.66				42.20			
Benchmark Score (mean)	Eco	E	S	G	Eco	E	S	G
	6.15	7.00	7.68	7.83	6.04	5.47	4.55	5.84



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impact of the G dimension on bond returns is more pronounced in the long run.

On the other hand, for emerging countries, and also controlling for economic scores and other fixed

effects, we find that the S dimension has a significant and negative impact on bond returns, meaning that a higher S score is associated with lower bond return, and the impact is more pronounced in the short run.

Table 4: Results of the negative and positive screening strategies over the sample period 2010–2020 for developed and emerging countries

	Negative Screening								Positive Screening							
	Developed Countries				Emerging Countries				Developed Countries				Emerging Countries			
	Economics															
	Developed Countries				Emerging Countries				Developed Countries				Emerging Countries			
Annualized Return (%)	7.20				11.54				5.77				11.37			
Annualized Volatility (%)	9.32				7.15				9.22				8.15			
Sharpe Ratio	0.77				1.61				0.63				1.40			
Tracking Error (%)	1.40				1.36				2.69				1.36			
Max Drawdown (%)	70.88				46.62				56.97				41.90			
	Eco	E	S	G	Eco	E	S	G	Eco	E	S	G	Eco	E	S	G
Score (mean)	6.45	7.15	7.88	8.04	6.37	5.47	4.58	5.90	7.19	7.47	7.78	8.16	6.89	4.96	4.39	5.78
Diff Score/Benchmark Score (%)	4.92	2.18	2.64	2.71	5.51	0.17	0.56	1.03	16.93	6.68	1.28	4.19	13.97	-9.18	-3.52	-0.97
	Environment															
	Developed Countries				Emerging Countries				Developed Countries				Emerging Countries			
Annualized Return (%)	7.78				12.80				6.55				9.49			
Annualized Volatility (%)	9.14				7.69				6.71				11.05			
Sharpe Ratio	0.85				1.66				0.98				0.86			
Tracking Error (%)	1.11				1.96				6.58				1.96			
Max Drawdown (%)	63.50				50.32				50.78				61.96			
	Eco	E	S	G	Eco	E	S	G	Eco	E	S	G	Eco	E	S	G
Score (mean)	6.27	7.30	7.92	7.94	5.91	5.92	5.01	6.02	6.98	8.00	8.26	8.49	6.49	6.46	6.27	6.55
Diff Score/Benchmark Score (%)	1.90	4.31	3.19	1.44	-2.13	8.39	10.11	3.08	13.41	14.28	7.58	8.51	7.38	18.21	37.76	12.12
	Social															
	Developed Countries				Emerging Countries				Developed Countries				Emerging Countries			
Annualized Return (%)	7.48				11.92				8.19				8.73			
Annualized Volatility (%)	9.60				7.63				10.00				10.85			
Sharpe Ratio	0.78				1.56				0.82				0.80			
Tracking Error (%)	1.15				1.89				2.67				1.89			
Max Drawdown (%)	74.20				46.57				65.95				64.94			
	Eco	E	S	G	Eco	E	S	G	Eco	E	S	G	Eco	E	S	G
Score (mean)	6.33	7.24	8.08	8.16	6.03	5.71	5.15	6.19	6.55	7.57	8.52	8.64	5.96	6.27	6.83	6.60
Diff Score/Benchmark Score (%)	2.98	3.39	5.24	4.22	-0.13	4.47	13.15	5.94	6.41	8.11	10.89	10.35	-1.33	14.72	50.03	13.03
	Governance															
	Developed Countries				Emerging Countries				Developed Countries				Emerging Countries			
Annualized Return (%)	7.23				12.05				8.58				10.31			
Annualized Volatility (%)	9.05				7.96				10.39				9.02			
Sharpe Ratio	0.80				1.51				0.83				1.14			
Tracking Error (%)	1.47				1.98				3.39				1.98			
Max Drawdown (%)	62.59				47.15				59.62				38.70			
	Eco	E	S	G	Eco	E	S	G	Eco	E	S	G	Eco	E	S	G
Score (mean)	6.32	7.22	8.00	8.22	5.99	5.78	5.09	6.24	6.60	7.67	8.46	8.70	6.43	5.72	5.05	7.00
Diff Score/Benchmark Score (%)	2.74	3.14	4.14	4.96	-0.78	5.78	11.65	6.76	7.21	9.60	10.11	11.12	6.42	4.65	10.93	19.86

In the second step, we explore the portfolio implications of these findings, investigating the impact of integrating ESG criteria at the selection and portfolio construction stages. In particular, we analyse how to measure and minimise the opportunity costs associated with the introduction of ESG constraints with respect to an otherwise comparable unconstrained sovereign bond portfolio strategy. Our main goal is to investigate how implementation choices regarding how ESG criteria are incorporated into a portfolio can have a direct impact on this opportunity cost. Finally, we also explore the benefits of ESG momentum strategies, defined as strategies designed to exploit time-series differences in ESG scores, as opposed to exploiting cross-sectional differences in these scores.

The first approach to the introduction of ESG criteria into the investment process is to include them at the selection stage. Our negative screening strategy consists of excluding the 25% lowest-ranked bonds (Q1), with the selected bonds corresponding to the 75% best-ranked bonds (Q2, Q3 and Q4). Our positive screening strategy consists of selecting the 25% best-ranked bonds (Q4). The selected bonds, for both strategies, are then equally weighted, and the portfolios are rebalanced on an annual basis⁵. We build separate portfolios of five-year maturity sovereign bonds for developed and emerging countries (see Table 4), and compare them to an equally-weighted benchmark with no selection (see Table 3).

Starting with the negative screening strategy, we find that increasing the sustainability (E, S and G criteria taken separately) of a portfolio using negative screening does not lead to substantially lower returns, and increases volatility by only 0.5% on average for developed countries and 0.9% for emerging countries. However, the corresponding increase in E, S and G scores remains quite limited, up to 4.8% on average for developed countries and 8.4% on average for emerging countries.

Regarding the positive screening strategy for developed countries, increasing the sustainability of a portfolio using positive screening comes at a cost for the E dimension, while it slightly enhances returns and increases volatility for the S and G dimensions. For emerging countries, increasing the sustainability of a portfolio using positive screening also comes at a clear cost, since for all dimensions it implies a lower annualized return and higher volatility. The higher the increase in the score (the more sustainable a portfolio is, based on our different criteria taken individually), the higher the cost. For each dimension, we confirm that the scores are systematically higher compared to the benchmark portfolios, and also with respect to the less aggressive negative screening strategy, which

makes sense since these portfolios only include the 25% best-ranked bonds.

We also investigate the impact of integrating E, S and G criteria into the optimization approach, which is to minimise the tracking error of a portfolio (see Table 5). We confirm that a dedicated focus on relative risk minimisation leads to a lower increase in tracking error with respect to other selection or optimization strategies for the same target level of improvement in ESG scores.

Finally, we explore the benefits of ESG momentum strategies (see Table 6). We find that for developed countries, regardless of bond maturity, the top 15% of bonds exhibiting positive changes in E and G scores outperformed the bottom 15% on average from 2010 to 2020. Moreover, the long-short ESG momentum strategy based on the E dimension offers attractive levels of performance, substantially higher than the strategy based on changes in G scores, while for

TABLE 5: TRACKING ERROR (BPS) OF E, S AND G CONSTRAINT PORTFOLIOS OVER THE SAMPLE PERIOD 2010–2020 FOR DEVELOPED AND EMERGING COUNTRIES

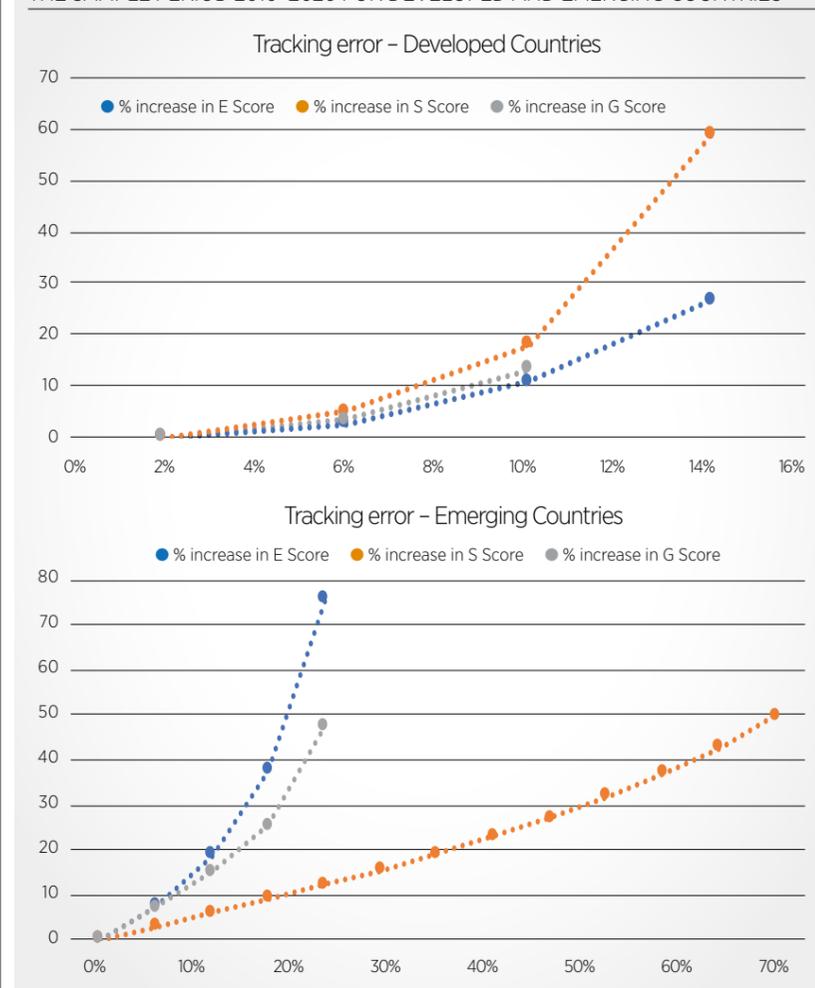


Table 6: Long-short ESG momentum strategy, based on Economics, Environmental, Social and Governance dimensions for developed and emerging countries

Developed Countries					Emerging Countries				
Long-Short Strategy 2010-2020					Long-Short Strategy 2010-2020				
	Eco	E	S	G		Eco	E	S	G
1-Year Maturity Bonds					1-Year Maturity Bonds				
Average Return (%)	-7.99	6.87	-2.08	5.35	Average Return (%)	-7.78	-4.57	4.45	12.01
Maximum Return (%)	13.07	29.11	13.65	22.09	Maximum Return (%)	63.08	31.61	50.82	52.43
Minimum Return (%)	-41.21	-17.63	-13.28	-9.96	Minimum Return (%)	-65.62	-44.67	-44.72	-14.34
5-Year Maturity Bonds					5-Year Maturity Bonds				
Average Return (%)	1.13	14.54	-2.48	6.75	Average Return (%)	9.66	-4.55	21.14	4.87
Maximum Return (%)	53.06	34.29	30.93	23.70	Maximum Return (%)	73.70	32.29	64.12	24.96
Minimum Return (%)	-38.47	-16.63	-27.35	-18.80	Minimum Return (%)	-62.10	-40.60	-17.03	-29.61
10-Year Maturity Bonds					10-Year Maturity Bonds				
Average Return (%)	14.55	20.24	-4.53	8.13	Average Return (%)	22.52	-4.46	37.30	-2.28
Maximum Return (%)	102.92	39.02	32.26	48.77	Maximum Return (%)	66.44	22.18	92.09	50.26
Minimum Return (%)	-39.33	-13.86	-49.68	-28.91	Minimum Return (%)	-57.43	-34.28	-23.52	-69.82

emerging countries, regardless of bond maturity, the top 15% of bonds exhibiting positive changes in S scores outperformed the bottom 15%. Regarding G, the top 15% of bonds exhibiting the highest differences in scores outperformed the bottom 15% for one-year and five-year bond maturity only.

These results suggest that additional value can be added by implementing portfolio decisions informed not only by cross-sectional differences in ESG scores, but also by variations in these scores over time, suggesting the presence of some form of under-reaction to news related to changes in ESG scores.

MANAGING THE OPPORTUNITY COSTS OF ESG INVESTING IN SOVEREIGN BOND MARKETS

The integration of ESG constraints into investment decisions can be assumed to involve an opportunity cost with respect to the outcome that would be optimally achieved in the absence of ESG considerations. This opportunity cost can be measured in terms of a possible increase in risk and reduction in performance (particularly meaningful for the benchmark-free investor) and/or in terms of an increase in tracking error with respect to the benchmark (particularly meaningful for the benchmark-driven investor).

The main contribution of our analysis is that it demonstrates that several competing implementation choices exist with respect to how ESG constraints are incorporated into a sovereign bond portfolio construction context, and different choices have different impacts on these opportunity costs. In particular, we find that higher environment scores

for developed countries and higher social scores for emerging countries are associated with lower costs of borrowing for issuers and consequently with lower yields for investors. We also confirm that negative screening leads to more diversified portfolios and lower levels of tracking error, while positive screening leads to higher levels of improvement of ESG scores, at the cost of an increase in absolute and relative risk budgets. In an attempt to alleviate some of these concerns, we find that a dedicated focus on absolute or relative risk reduction at the selection stage allows investors to reduce the opportunity costs along the dimension that is most important to them. Finally, we provide evidence that ESG momentum strategies in sovereign bond markets can be used to further reduce some of the aforementioned opportunity costs.

Overall, our results suggest that sound risk management practices are critically important in allowing investors to incorporate ESG constraints into their investment decisions at an acceptable cost in terms of dollar or risk budgets.

¹ Martellini, L. and L.-S. Vallée, 2021, Measuring and Managing ESG Risks in Sovereign Bond Portfolios and Implications for Sovereign Debt Investing, EDHEC-Risk Publication.

² We use the Verisk Maplecroft database for ESG indicators.

³ Our sample comprises annual observations for 20 developed countries, of which the US will be used as the reference country when a risk-free rate is needed, as well as 15 emerging countries from 2010 to 2020, resulting respectively in 200 observations for developed countries and 150 observations for emerging countries.

⁴ We prefer to use the Verisk Maplecroft Economics index rather than credit ratings, since credit rating agencies might already incorporate ESG criteria into their analyses.

⁵ Consistent with the fact that Verisk scores are updated on an annual basis.

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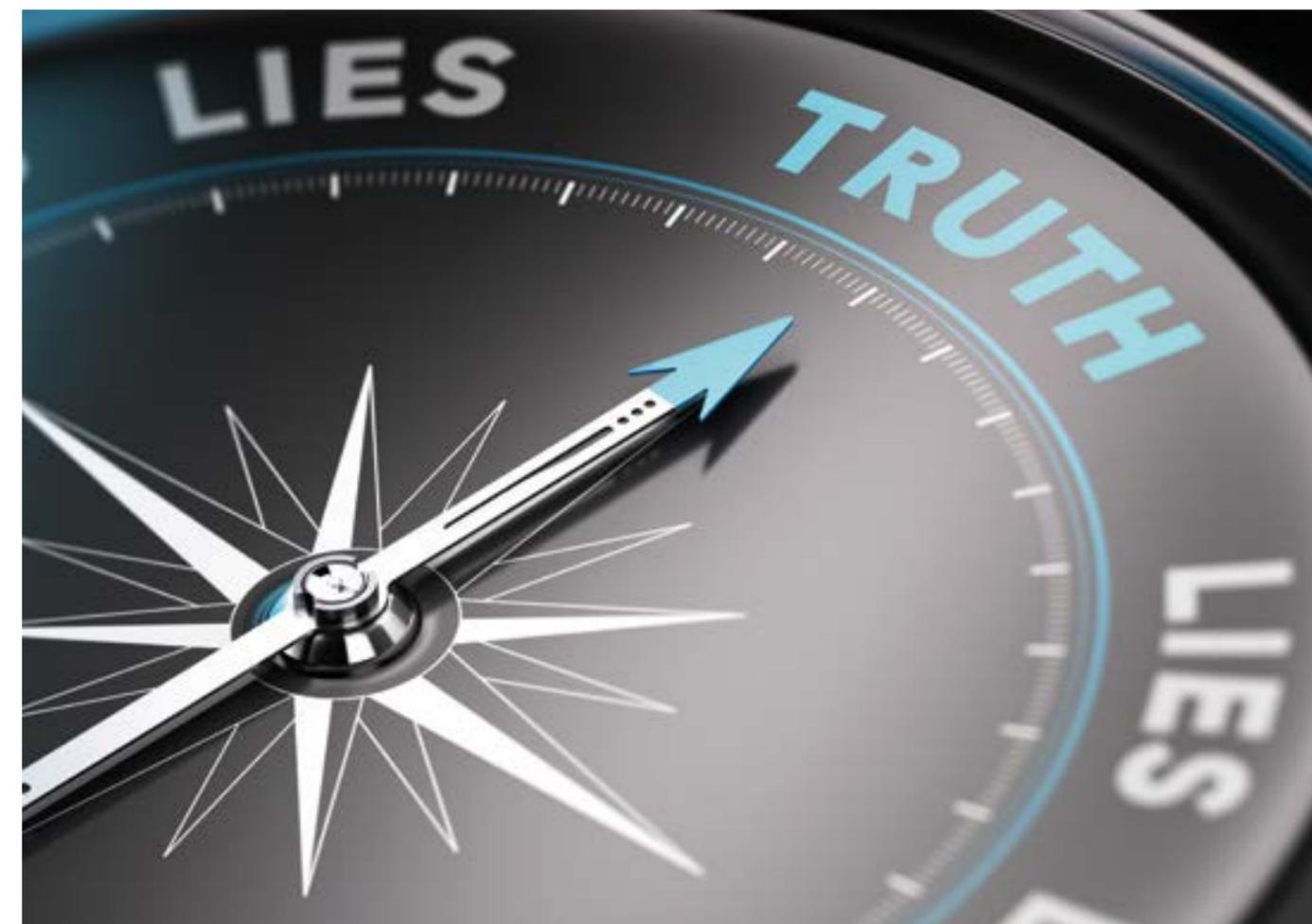
Factor investing: The truth has many shades

What data metrics should investors study? Nicolas Rabener, founder and CEO of FactorResearch, argues the truth is very much in the eye of the beholder when looking to decipher factor returns

When I was growing up, one of my favourite TV shows was *The X-Files*, which followed FBI Special Agents Fox Mulder (David Duchovny) and Dana Scully (Gillian Anderson) exploring paranormal events. For our younger readers, it was about aliens that had infiltrated human civilisation, especially the military and security complex of the US government.

Almost every episode ended with the tagline “The Truth Is Out There”. Today, I am spending a considerable amount of time conducting quantitative research and finishing my days thinking the same, “the truth is out there”, somewhere.

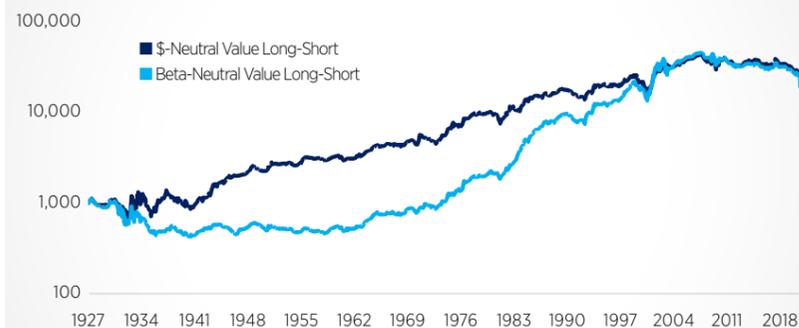
Unfortunately, investing is as much an art as it is a science. For example, today there is no standard definition for cheap stocks when pursuing factor investing. For some investors, it will simply be the



price-to-book ratio of stocks, while others combine several metrics. Which one is right?

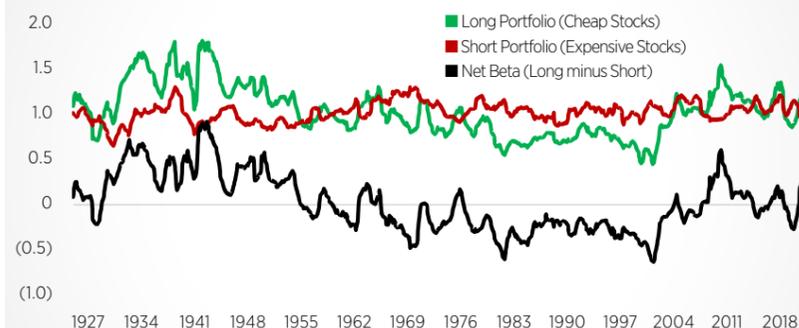
It is interesting to note that a significant amount of the foundational literature of factor investing is based on data provided by Professor

GRAPH 1. VALUE FACTOR (LONG-SHORT) IN THE US: DOLLAR VS BETA-NEUTRAL



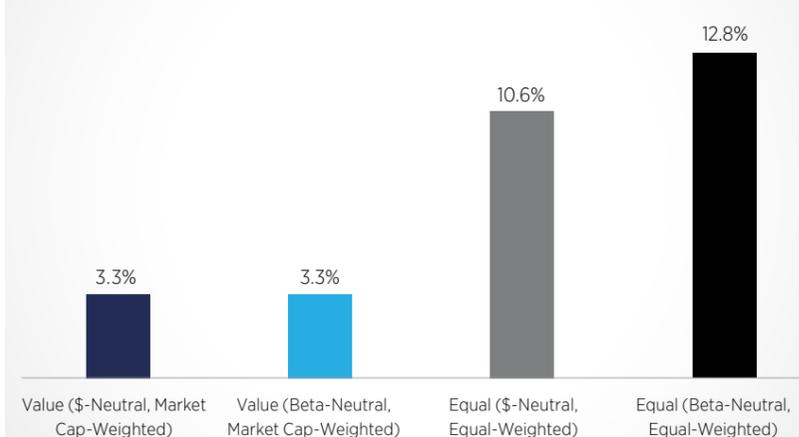
Source: Kenneth R. French Data Library, FactorResearch

GRAPH 2. VALUE FACTOR IN THE US: BETA OF LONG & SHORT PORTFOLIOS



Source: Kenneth R. French Data Library, FactorResearch

GRAPH 3. DIFFERENT METHODOLOGIES FOR MEASURING THE VALUE FACTOR (LONG-SHORT): CAGRS (1927 - 2020)



Kenneth R. French, which is freely available on his website. Almost every research article, including many of our own, and marketing pitches in this space feature his data. The factor returns have been replicated by other researchers, which highlights a robust methodology. It can be considered almost like the truth on factor investing, and we are very grateful for it.

But even this truth has several shades to it, which we will explore in this research note.

THE COMPLEXITY OF CALCULATING FACTOR RETURNS

There are many nuances when calculating factor returns, where the primary considerations are transaction costs, the universe of stocks and the portfolio construction.

First, transaction costs are usually ignored in academic research, which represents a significant issue, as many strategies lose their profitability when commissions, cost of financing and market impact costs are included.

Second, the definition of the universe matters immensely for achieving realistic returns. All stocks should be included, especially the ones that were delisted, as otherwise the analysis is subject to survivorship bias. It might also make sense to impose a minimum market capitalisation to avoid including illiquid stocks, as these are more expensive to trade.

Investors who use the data from Professor French should be aware that this data excludes transaction costs and includes micro and small-cap stocks, which results in the returns being overstated. Return expectations should be lowered when viewing the historical performance of a factor like value or momentum.

Finally, portfolio construction is a complex topic with many nuances. It comprises the stock selection process, rebalancing frequency, weighting methodology and portfolio sizing. We can highlight how sensitive factor returns are to changes in portfolio design by creating two versions of the long-short value factor in the US stock market: one comprising a dollar-neutral portfolio, which is how the data is presented on Professor French's website, and the other designed to be beta-neutral, which we calculated based on his data.

We observe that the total return over the period from 1927 to 2020 was almost identical, but there was a significant difference in performance for multiple decades (see Graph 1).

Investors might ask why the portfolio construction had such a large impact in this case. In both versions, the portfolios feature the same

stocks, only the weights are different. In the period between 1932 and 1957, the cheapest stocks had significantly higher betas than the most expensive ones, which means the net beta was positive. Stated differently, the dollar-neutral portfolio had stock market exposure, and stocks were rising during that period (see Graph 2).

So, what was the true performance of the value factor in the US throughout this 90-year period? Should investors use the dollar- or beta-neutral returns? From an academic perspective, beta-neutrality is preferred, as these returns have zero exposure to the stock market.

However, the implication of that choice is that the performance of the value factor was significantly less attractive than in the minds of most investors. Between 1932 and 1972, a 40-year period, buying cheap and shorting expensive stocks generated zero excess returns. And this excludes transaction costs. Would not this make value a rather unattractive and risky strategy?

MORE CHOICES ON PORTFOLIO CONSTRUCTION

It is easy to demonstrate how other, seemingly minor changes can have a dramatic impact on returns. Most researchers select the market capitalization-weighted returns of Professor French for their analysis. However, he also offers returns, based on equally weighted stocks, which is perhaps a purer representation of factor returns as it reduces the influence of the size factor.

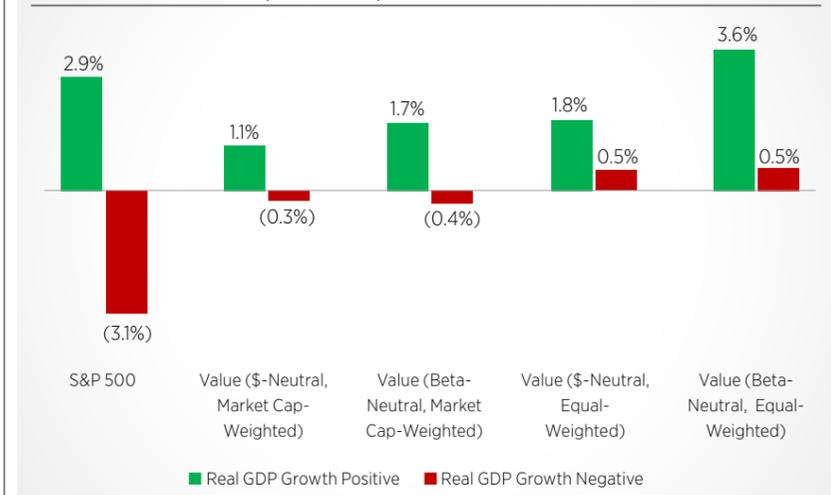
We observe that equal-weighting stocks would have generated significantly higher returns than weighting them by market capitalization. Which returns are more representative of true returns for factor investors? Should investors prefer equal-over market cap-weighting?

Theoretically yes, but practically this data set includes illiquid stocks which would make equal weighting almost impossible to implement. Historically, market cap-weighted had an edge since long-only benchmarks like the S&P 500 are also using this approach (see Graph 3).

IMPLICATIONS OF PORTFOLIO DESIGN

Having more options is usually better than having fewer options. However, in quantitative research, implementing varied methodologies leads to more data sets, which leads to different outcomes. This makes it challenging to decide on what is the truth, or the closest approximation to the truth. Ultimately, we want to reduce finance to simple binary relationships, as we are not good at coping with multiple variables simultaneously.

GRAPH 4. VALUE FACTOR RETURNS (LONG-SHORT) & REAL GDP GROWTH: POSITIVE OR NEGATIVE (1947 - 2020)



For example, we can evaluate the relationship between the long-short value factor and US real GDP growth, which highlights positive returns when the economy was growing, but negative when the growth was declining, thereby highlighting its pro-cyclical characteristics.

However, this largely again depends on the portfolio construction of the value factor. When using market cap-weighted returns, investors should be reducing their exposure when they expect the economy to decline (assuming this is possible). In contrast, when using equal-weighted returns, the value factor returns were low, but not negative, which is an important distinction (see Graph 4).

It is worth highlighting that we just discussed two aspects of portfolio construction. We have not simulated the impact of including transaction costs, removing illiquid stocks or changing the stock selection process. Each of these will have a significant impact on returns.

Some scenarios will make value investing far less attractive than commonly assumed, for instance, country, sector or industry neutrality, and the use of multiple value metrics.

FURTHER THOUGHTS

Most investors who subscribe to a factor investing philosophy base their decision on data they have seen or analysed themselves. After all, it represents an evidence-based approach to investing. So, which returns should be considered as the truth when considering factor investing?

Unfortunately, there is no easy answer. The truth, much like beauty, lies in the eyes of the beholder.

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Diversify your titan risk

The concentration risks developing in many market cap-weighted indices are well documented. Joe Steidl, senior vice president, and Tiffany Su, senior associate at Research Affiliates, examine why investing in the world's biggest companies – the titans – does not pay over the long term

One of the most defining moments in Greek mythology is Titanomachy, the decade-long battle between the older generation of gods, the Titans, and the younger generation, the Olympians. As is true of all great stories, at its heart is an important lesson: never underestimate how drastically the playing field can change, even in the most unlikely of circumstances, and that against all odds, even the most powerful can fall. Investors in cap-weighted indices would do well to heed the lesson of this fable.

TITANS FALL

A market-cap index is dominated by the companies with the largest capitalisations. Arnott et al. (2018) found that from decade to decade the top 10 holdings of a global market-cap index experienced significant turnover. Regardless of how outlandish it might seem at the time of their dominance, these stock titans inevitably lose their stature. In the late 1980s, big oil took centre stage, only to be completely overthrown in the 1990s by the Japanese conglomerates. Technology and communications companies were the titans of the 2000s yet yielded to the rise of Chinese multinationals a decade later (see Chart 1).

Investors know all too well the remarkable domination by growth stocks of the US and China markets that materialised over the 2010s. Today, however, only Microsoft and Apple remain from 2010 in the top 10 holdings. All other stocks in 2021 are new to the list and are concentrated in the technology and communications sectors. Our history lesson suggests the next decade will bring more turnover. Will any of the current titans still rule in 2030?

The concentration, or the combined weight, of the top 10 holdings in a market-cap index fluctuates over time. In August 2020, concentration reached a historical peak of 15.4% in the Morningstar Global Markets Large-Mid index, matching the 15.5% concentration level present in March 1999 at the height of the tech bubble. A level this high is not what most investors prefer in a diversified portfolio, because the portfolio's performance becomes hostage to the performance of these dominant stocks (see Chart 2).

When the top names only go in one direction – up – as they have for so long, the downside risk of concentration tends to be overlooked. Today, the performance of these titans appears to be overextended. In 2020 alone, the top 10 delivered a staggering 58.5%, contributing roughly 5% of the

global markets' 17.2% annual return. If (and we would say, when) prices correct, investors could be in for a painful ride down (see Chart 3).

Most of these top stocks are great businesses. The question is more about whether market hype has overinflated their prices. Although history never repeats itself, it can be a useful guide for understanding investor behaviour. One approach to analyse market exuberance is to compare a company's clairvoyant value to its historical cap-weight, as was done by Arnott et al. (2009a,b).

Nobel laureate William Sharpe coined the term clairvoyant value in 1975. He defined the term as ex post realised value, or value that can only be determined after the fact, or measured ex ante only with the perfect foresight of a clairvoyant. Arnott et al. used discounted realised cash flows going back 50 years to calculate clairvoyant value.

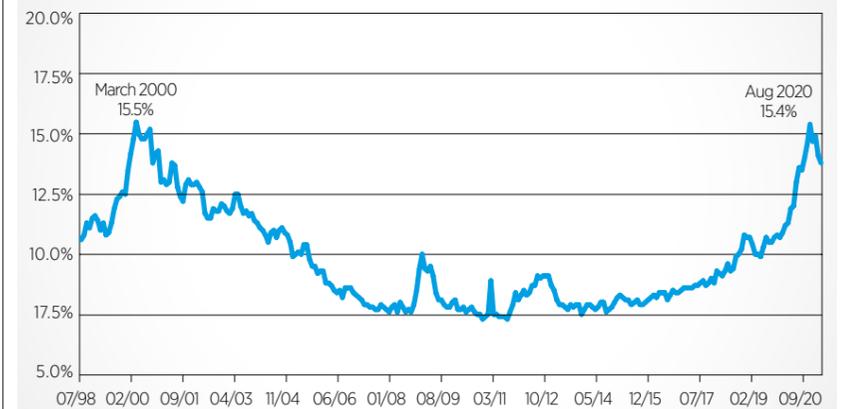
To bring more colour to their analysis, Arnott et al. categorised companies using a range of growth to value segments to determine if the market's predictive ability was consistent across the spectrum, regardless of whether a company was a popular growth company or a traditional value company. With clairvoyant value as a yardstick, they found that investors tend to overly discount value companies and overpay for growth companies. Given that today's titans are heavily skewed towards growth companies, coupled with the concentration issue of their dominating a large part of a market-cap-weighted portfolio, the potential for future underperformance of these (likely overvalued) stocks and the portfolios that hold them has merit.

We are all well aware of the exuberance of capital markets and investors' willingness to overpay for assets versus their perceived intrinsic value. In 2020, however, we witnessed a new twist on the potential for a popular stock's market price to deviate from its intrinsic value. As Arnott, Kalesnik, and Wu (2021) observed, the 2020 pandemic-related lockdowns contributed to a tremendous rise in retail participation, leading to some very interesting asset-price trajectories over the last 12 months.

Particularly in the US, a growing cohort of "Robinhooders" (nicknamed after the commission-free trading platform Robinhood) have the ability to trade fractions of shares at extremely low – if any – cost. The percentage of shares traded in the US market by retail participants has increased substantially over the last decade, jumping from 15% to 20% in 2020. The real concern is a meaningful rise in the use of options, which are ultimately levered positions and serve to exacerbate the inefficiencies in the market.

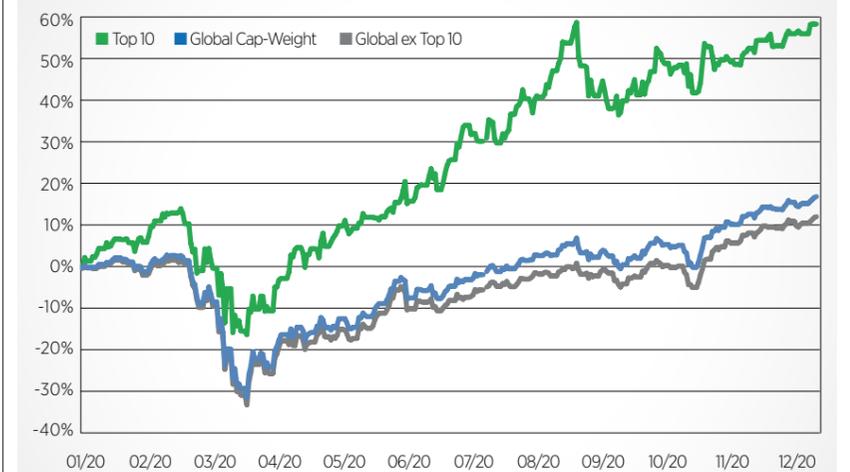
A number of examples are readily at hand that illuminate the effect of increased retail participation in

CHART 2. WEIGHT OF TOP 10 HOLDINGS IN GLOBAL MARKET-CAPITALISATION-WEIGHTED INDEX JULY 1998-20 DEC 2020



Source: Research Affiliates, based on data from Morningstar

CHART 3. PERFORMANCE OF TOP 10 HOLDINGS IN GLOBAL MARKET-CAP-WEIGHTED INDEX VS INDEX, JAN-DEC 2020



Top 10 refers to the top 10 largest market-cap companies: Alibaba, Alphabet, Amazon, Apple, Berkshire Hathaway, Facebook, Microsoft, TSMC, Tencent and Tesla. The market cap-weighted index is represented by the Morningstar Global Markets Large-Mid Index. Source: Research Affiliates, based on data from FactSet

the markets. In the early part of 2020 as offices closed due to COVID-19, the video and web conferencing platform Zoom benefited from the rapid transition to virtual meetings. Unsophisticated investors rushed to buy the stock with the ticker ZOOM, not recognising the Zoom Video Communication's ticker is ZM. ZOOM was Zoom Technologies, a Beijing-based company that had zero to do with virtual meetings. The surge in demand sent its stock price up 1000%! Once the realisation kicked in for investors that they had bought the wrong stock, Zoom Technologies' price quickly collapsed (Wieczner, 2020).

Another recent buying frenzy occurred after Elon Musk tweeted in January that his followers should move from WhatsApp to the new messaging app

Chart 1: 10 Largest Market Capitalization Stocks in the World at the Beginning of Each Year

2021	2010	2000*	1990	1980
Apple Inc.	PetroChina	Microsoft	Nippon Tel and Tel	IBM
Microsoft	Exxon Mobil	General Electric	Bank of Tokyo-Mitsubishi	AT&T
Amazon.com	Microsoft	NTT DoCoMo	Industrial Bank of Japan	Exxon Mobil
Alphabet Inc.	ICBC	Cisco Systems	Sumitomo Mitsui Banking	Standard Oil
Facebook, Inc.	Wal-Mart	Wal-Mart	Toyota Motors	Schlumberger
Tencent	China Construction Bank	Intel Corporation	Fuji Bank	Shell
Tesla, Inc.	BHP Billiton	Nippon Tel and Tel	Dai-Ichi Kangyo Bank	Mobil
Alibaba Group	HSBC	Exxon Mobil	IBM	Atlantic Richfield
TSMC	Petrobras	Lucent Technologies	UFJ Bank	General Electric
Berkshire Hathaway	Apple Inc.	Deutsche Telekom	Exxon Mobil	Eastman Kodak

Legend:	New Addition to List	Drops off List Next Period	Flip-Flop: New Then Drops
Black = US Company	Red = Emerging Markets	Blue = European Company	Green = Japan/Australia

* List from end-March, three months late, all other years represent holdings as of 1 January Source: GaveKal Research

Chart 4. Valuations of the 10 Largest Market-Cap Stocks in the World, December 2020

Name	% Weight*	WAMC (\$bn)	PE	PB	PCF	PS	Average Valuation
Apple Inc.	2.5%	2,232	35.9	33.7	28.8	8.5	26.7
Microsoft	1.9%	1,682	33.1	12.9	28.2	11.9	21.5
Amazon.com	1.9%	1,634	95.4	19.8	42.6	5.9	40.9
Alphabet Inc.	1.3%	1,105	35.0	5.6	22.5	7.6	17.7
Facebook Inc.	0.7%	657	27.1	6.6	20.4	9.2	15.8
Tencent	0.8%	698	39.5	8.2	32.0	12.5	23.0
Tesla Inc.	0.8%	669	1410.2	41.7	259.7	25.4	434.3
Alibaba Group	0.7%	649	34.1	5.2	24.5	8.5	18.1
TSMC	0.6%	489	26.5	7.7	16.5	10.3	15.2
Berkshire Hathaway	0.4%	318	15.4	1.3	14.7	2.2	8.4
Top 10 Weighted Average		1,365	134.1	17.8	43.8	9.9	51.4
Mstar Global Mkts Large-Mid Index		271	23.8	2.6	11.6	1.9	10.0

*Percent weight is based on estimated total market cap based on a global ranking of companies.
Note: WAMC is weighted-average market capitalisation. PE is price-to-earnings ratio. PB is price-to-book ratio. PCF is price-to-cash flow ratio. PS is price-to-sales ratio.
Source: Research Affiliates, based on data from FactSet and companiesmarketcap.com. Saudi Aramco excluded from list due to low free float.

Chart 5. Popular Factors Through the Economic Cycle

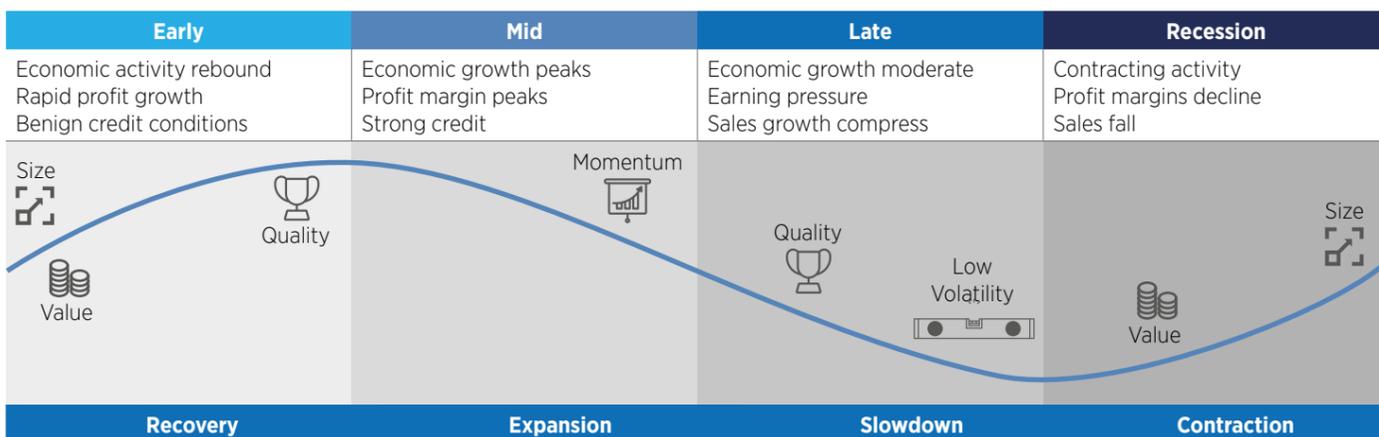


Chart 6. Portfolio Characteristics of Blended Multi-Factor and Cap-Weighted Strategies, June 1992-Dec 2020

Blends*	Full Period (June 1992 - December 2020)						As of December 2020				
	Return	Excess Return	Volatility	Sharpe Ratio	Tracking Error	Info Ratio	Top 10 Holdings	Top 20 Holdings	Active Share	Effective N	WAMC (US\$bn)
25% Multi-Factor Dev; 75% MCAP	8.9	+0.5	14.4%	0.4	0.9%	0.6	14.4%	19.9%	15.2%	237	264.4
50% Multi-Factor Dev; 50% MCAP	9.4%	1.0%	14.1%	0.5	1.8%	0.6	11.9%	17.0%	22.5%	323	218.0
75% Multi-Factor Dev; 25% MCAP	9.9%	1.5%	13.8%	0.5	2.7%	0.6	9.6%	14.9%	33.7%	419	171.7
Cap-Weight Benchmark	8.4%	-	14.8%	0.4	-	-	17.5%	23.3%	-	-	310.8

*Cap-Weight Benchmark is represented by MSCI World Index. Multi-Factor Dev is represented by RAFI Multi-Factor Developed Index
Note: WAMC is weighted-average market capitalisation Source: Research Affiliates, based on data from FactSet

Signal. Signal was developed by the nonprofit Signal Foundation and is not a publicly traded company. Not to be deterred, Musk's followers charged headlong into speculating in shares of a company called Signal Advance, which focuses on healthcare tech and has absolutely nothing to do with the messaging app. The episode caused a 1500% meteoric rise in the Signal Advance share price (Ho, 2021).

Overall, the increasing numbers of retail investors are gravitating to the success stories of the popular growth stocks, putting even more pressure on the titans' prices. As of December 2020, top 10 companies had a weighted average valuation multiple of 51.4, five times higher than the rest of the global equity universe (see Chart 4).

Some market participants argue that low (and even negative) interest rates can justify higher equity valuations. Nevertheless, valuation multiples that are so out of line with the market average, combined with the growing market influence of unsophisticated investors, is cause for concern.

THE OLYMPIANS? FACTOR INVESTING

Investors worried about the implications of concentration in overvalued stocks and pricing inefficiencies have options that tend to mitigate these concerns. Smart beta multi-factor strategies can improve portfolio diversification across both asset holdings and investment styles and do so in a transparent manner and at a cost-effective price.

Factor investing strategies have been around for decades and are supported by a substantial body of academic literature. A factor is a company attribute that has been shown over time to deliver a return premium to investors. A very popular factor and one hotly debated today is value. The value factor essentially selects the cheapest companies based on one or a combination of valuation ratios to form a portfolio of value stocks. Periodically refreshing, or rebalancing, the portfolio by adding newly cheap stocks and discarding appreciated stocks helps retain the attractive value exposure.

Other popular factors are quality, low volatility, momentum and small size. Each alone has more-volatile performance than when combined with other factors in a portfolio because a factor's performance tends to ebb and flow through economic cycles (see Chart 5).

Over the long term, however, these popular factors have shown an ability to deliver a superior risk-adjusted return over the market's return. A multi-factor strategy aims to capture the return premiums from each factor, while smoothing out the performance ups and downs through diversification. A multi-factor strategy is less prone to severe crashes

when compared to a factor in isolation. The top 10 holdings of the market benchmark, which can be thought of as a traditional passive allocation, totaled 17.5% as of 31 December 2020.

Blending in a 25% allocation of a multi-factor strategy reduces the concentration to 14.4% and increases expected long-term excess return by 0.5%. Increasing the allocation to 50% reduces concentration risk to 11.9% and improves the expected-return profile by 1.0%. In both of these blended portfolios, tracking error is below 2.0%. A more-aggressive allocation of 75% to a multi-factor strategy drops the concentration to 9.6%, keeps tracking error below 3.0% and raises the historic excess return by 1.5% (see Chart 6). Investors who incorporate a multi-factor strategy in their passive allocations not only reduce their dependency on these large titan stocks but can harness the return premiums from well-researched investment factors. The result is a better-diversified passive core allocation with the potential for generating return in excess of the market over the long term.

CONCLUSION

The top-dog stocks today in a market-cap-weighted index have healthy cash flows, so that envisioning they may not stand the test of time can take a healthy imagination. Nevertheless, in the same way the Greek Titans believed their rule was safe, the tables can turn.

A half-century's history shows that the market's titan stocks constantly change. Investing in today's titans is especially risky because their concentration is at the same level as during the dot-com bubble and their valuations are five times that of the market. These concentration risks can end in tears. For investors who prefer to remain well diversified and to mitigate these high and dangerous concentrations, a blended smart beta multi-factor approach can be an attractive solution.

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Postcard from China: Exploiting the market with factors

Jason Hsu, founder, chairman and CIO at Rayliant Global Advisors, speaks to ETF Stream's editor Tom Eckett about the fundamental differences in investing in China, the huge retail market and how to take advantage of state-owned enterprises (SOEs)

The investment landscape in China has the potential to be a logistical nightmare with political risks abound and an extremely high proportion of retail investors that can cause huge swings in share prices. However, with the potential risks come some very exciting opportunities, according to Jason Hsu, founder, chairman and CIO at Rayliant Global Advisors, who claims the inefficiencies in the market should be viewed as a professional investor's dream.

According to Hsu, there has been an influx of quantitative investors into China over the past decade with exponents of smart beta looking to replicate the success of the Fama-French models on Chinese shores. This, Hsu, described as factor investing 1.0 – effectively repeating what has already been done in developed markets and trying implement similar factors such as value, momentum and size in China.

While there has been some success, the Rayliant Global Advisors founder said the Chinese market has started to move away from the US-centric constructs of what factor investing should be. This, he said, was factor investing 2.0 in China and focuses on risk premia that are specific to the Chinese market alone. In particular, there are two

key factors at play that if exploited correctly can lead to consistent outperformance over the long term. The first is around the high level of retail investors in the Chinese market. According to FTSE Russell, over 80% of trading on the China A-Shares market is done by retail investors. While biases rarely differ between US and Chinese retail investors, their dominance in China creates huge opportunities for professional investors in the same market.

According to Hsu, textbook strategies such as value, quality and growth remain powerful in China as retail investors lack the skill to take advantage of these fundamentals. The behavioural biases such as the propensity to gamble and use extreme leverage when investing along with their short-term investment horizons are there to be exploited.

One example Hsu gave was creation of a factor that is based on whether a company is owned mainly by large shareholders or retail investors. When looking at this data, companies that are owned by institutional investors tend to deliver significantly higher returns than those that retail investors have bought. "Alpha is a zero-sum game," Hsu continued. "Retail investors are similar across the world, however, there are simply more in China. They tend to confuse what they read online with private information, for example, and tend to take on huge leverage with their investments."

The second factor specific to China is on SOEs. Hsu said an extremely common misconception among western investors is "all SOEs are bad companies" and a company will never be considered as a viable investment option if it is state owned.

For example, WisdomTree created a China index that excludes SOEs, the WisdomTree China ex-State-Owned Enterprises index, which is defined



as government ownership of more than 20% of a company. While there is logic to this on the surface as SOEs are open to government influence and have the potential to not act in the best interests of shareholders, Hsu stressed that there are ways to take advantage of SOEs, instead of simply removing all of them from a portfolio.

In particular, Hsu made the distinction between regional SOEs such as manufacturing companies involved in steel or mining and central SOEs which have more of a tech focus. The regional SOEs, he added, fit the imagery western investors have of SOEs in general in that they tend to be poorly run, give top positions to family members and can be susceptible to corruption. As a result, investors should avoid provincial SOEs when looking at the A-Shares market.

However, central SOEs are companies considered nationally important and therefore can reap the rewards of being in such a position, Hsu said. In

fact, central SOEs tend to have a political tailwind as the government has named them as nationally important in order to catch-up with the rest of the world, be it in tech or sustainable development. As a result, these companies tend to have top management drafted in and they can be the beneficiaries of government grants and incentives.

"Western investors tend to throw the baby out with the bathwater when it comes to SOEs," Hsu said. "However, it is important to make the distinction between provincial and central SOEs. While provincial SOEs are open to corruption and are tied in with regional politics, central SOEs are focused on catching up with the tech leaders of the world such as the US and Japan."

Overall, Hsu stressed the idiosyncratic nature of the Chinese market means there are countless opportunities for professional investors as long as they understand the subtle differences in culture and behaviours.



Jason Hsu is the founder and chairman of Rayliant Global Advisors. Throughout his accomplished career, Jason's commitment to academic rigor and investor advocacy have led him to research, develop, and bring to market investment strategies that create significant value for investors. At Rayliant, Jason is continuing that commitment by educating investors and offering products to transform the investment ecosystem in Asia and beyond. Prior to his current role, Jason was the co-founder and vice chairman of Research Affiliates.

"Retail investors are similar across the world, however, there are simply more in China. They tend to confuse what they read online with private information, for example, and tend to take on huge leverage with their investments"

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60 seconds with the buy-side: What fund researchers look for in factor ETFs

Hoshang Daroga, quantitative investment manager at Copia Capital Management, speaks to ETF Stream's editor Tom Eckett about the rise of thematic ETFs, best practices for selecting factor ETFs and why his allocation to smart beta would increase if there were long-short strategies launched

Do you use smart beta or factor products within your clients' portfolios?

We use factor-based ETFs and its use very much depends on the investment mandate. We have primarily used these products to increase diversification and away from passive (market cap index tracking) funds or adjust overall risk exposure for a specific asset class.

How much of your portfolios does smart beta typically make up?

The proportion of factor ETFs has historically varied between 0% and 10% and depends on the investment objective of the portfolio as well as market conditions. We have been comfortable with the current level of use as well as selection and are not looking to increase or decrease these exposures.

How do you view smart beta/factor-based ETFs?

We view these products as tools to diversify away from passive (market cap index tracking) investments but also a rules-based active investment. Being rules-based gives it the predictability, making it ideal tools to express specific views and gain targeted exposures in a cost-efficient manner.

Which parts of the smart beta/factor-based spectrum (including thematic ETFs) interest you most at the moment?

For wealth preservation mandates we really like having a strategic exposure to minimum volatility factor. It has

My personal favourite for alpha generation has always been momentum. It may have some skewed downside over short time periods but over the long term I believe momentum will eventually outperform as it is a behavioural anomaly

consistently shown to have a better risk characteristics compared to benchmark indices. My personal favourite for alpha generation has always been momentum. It may have some skewed downside over short time periods but over the long term I believe momentum will eventually outperform as it is a behavioural anomaly.

When you focus on a particular smart beta product to invest in what factors do you take into account?

Once we have identified a factor that we would like exposure to, we follow our systematic screening process of identifying all ETFs that could provide the required exposure. The screening system looks for a number of parameters, such as assets under management, total expense ratio (TER), bid/ask spreads, domicile, replication methodology – we prefer physical replication, for example.

Alongside smart beta and factor based investing, we have also seen the rise of thematic based investing using ETFs – does this interest you?

Thematic investing has gathered much more interest in the last few years over factor-based strategies. This is mainly due to the strong performance of thematic strategies compared to factor-based products as well as the fact that thematic investing is much easier to comprehend. We have been using thematic like cybersecurity, healthcare innovation and clean energy in specific portfolios which have all delivered excellent returns over the last year. Although the long term outlook remains strong, we find valuations extremely stretched and may lighten up on some of them.

Are you concerned by the recurring accusations of hacking and data mining levelled at all factors and smart beta strategies? Are the identified premiums really that robust?

Data mining is a serious issue and investors need to be very careful when investing in such strategies. Due diligence and research are key to understanding how the index is constructed to ensure that the factor exposures are genuine and academically proven. Having seen the quant hedge fund world, data mining is a much bigger issue out there than compared to ETFs which track indices from reputed index providers.

Thematics like cybersecurity, healthcare innovation and clean energy in specific portfolios which have all delivered excellent returns over the last year



How do you engage with clients about smart beta – is there any interest and if there is interest do clients raise any concerns?

Frankly, it has been very challenging explaining smart beta to our clients, but since our usage is limited it is not something that clients raise concerns about. Given the current environment interest has been limited.

Are there any specific areas where you would like to see new products emerge?

The biggest gap in my opinion is the lack of long-short strategies. Smart beta ETFs have typically been long only and if you look at performance a lot of it comes from market beta exposure. Factors essentially are long-short portfolios and would be good to have products that do not carry market risk and are able to capture pure alpha from a factor. These can potentially act as absolute return strategies that would fit extremely well in a multi-asset portfolio.

Does multi-factor investing interest you?

Multi-factor products are great for investors wanting to simply add factor-based strategies to the portfolio mix but we normally prefer single-factor products. We consider single factor ETFs as precision

tools to adjust the overall factor exposure in the portfolio. With single factor ETFs we can target specific factors that a portfolio may be missing out on. Multi-factor ETFs on the other hand tend to simply increase factor exposure across all factors and in some cases, portfolios can end up overexposed to a specific factor by doubling up on it from elsewhere. Therefore, our preference has mainly been for single factor products as they tend to give us more control during portfolio construction compared to a multi-factor strategy.

By 2025 do you think you will be making extensive use of smart beta products and factor ETFs?

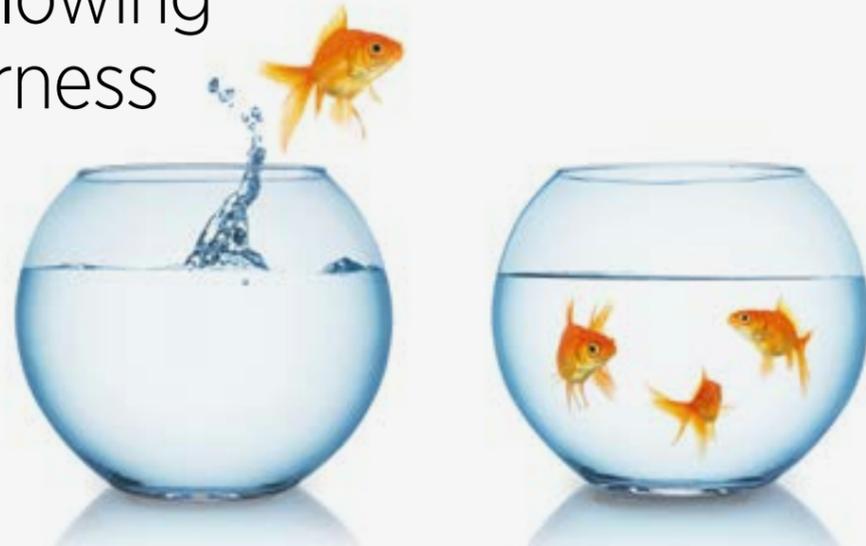
We believe our usage of thematic products may increase over the coming years but factor-based strategies would mainly be driven by market conditions. Our adoption would increase if we saw more of long-short type products in the marketplace.



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Value and size back in business following years in wilderness

ETF Stream reporter Jamie Gordan examines the huge rotation from growth to value stocks over the past four months



Value and size have been the factors in vogue in recent months with investors rotating out of large-cap growth equities into cyclical stocks. According to data from Bloomberg Intelligence, value ETFs saw inflows of €4.3bn between the start of November 2020 and 25 February, a stark turnaround in fortunes from the €160m outflows seen in the previous four months.

Likewise, during the trailing four-month period, size factor inflows came to €3.5bn, building on the consistently positive flows booked during previous months. After a decade of underperformance, value stocks made a dramatic comeback last November after Pfizer's coronavirus vaccine was approved.

The shift to cyclical equities is expected to continue as growth stocks continue to be hampered by fears of a spike in inflation combined. Furthermore, investors remain positive about a broad economic recovery – which will involve stronger consumer demand and further dividend reinstatements.

According to data from ETFLogic, the iShares Edge MSCI USA Value Factor UCITS ETF (VLUE) has benefitted from this trend, with inflows of \$1.7bn and returns of 10.5% during the year-to-date, as at 26 February. Similarly, size ETFs have benefitted from an uptick in demand for small-cap exposure with inflows during February hitting €1.2bn. Much like value, small-cap investors are looking to capitalise on the coronavirus recovery with dovish monetary policies from central banks expected to bolster an asset class which currently stands at its lowest level versus the Nasdaq since the nineties.

Furthermore, small caps remain a promising alternative for growth investors looking to move away from large-cap plays such as the FAANGs. In fact, between March 2020 and January, the Dow Jones Small Cap Growth index outperformed the equivalent value Index by around 30%. This bullishness in small cap products has been demonstrated in the iShares MSCI World

Month	Value	Size	Low Volatility
May 20	-198.1	4.4	-110.5
June 20	615.1	193.3	-376.5
July 20	-281.4	113.3	-177.6
August 20	-178.6	159.5	-476.0
September 20	266.9	162.3	-381.1
October 20	33.1	340.0	-254.8
November 20	2,393.6	796.8	-122.2
December 20	830.6	907.1	-216.5
January 21	804.7	563.1	-287.4
February 21	270.0	1,243.1	-79.4

Source: Bloomberg Intelligence

Small Cap UCITS ETF (WSML), which has seen \$244.3m inflows, alongside 7.1% returns during the year-to-date.

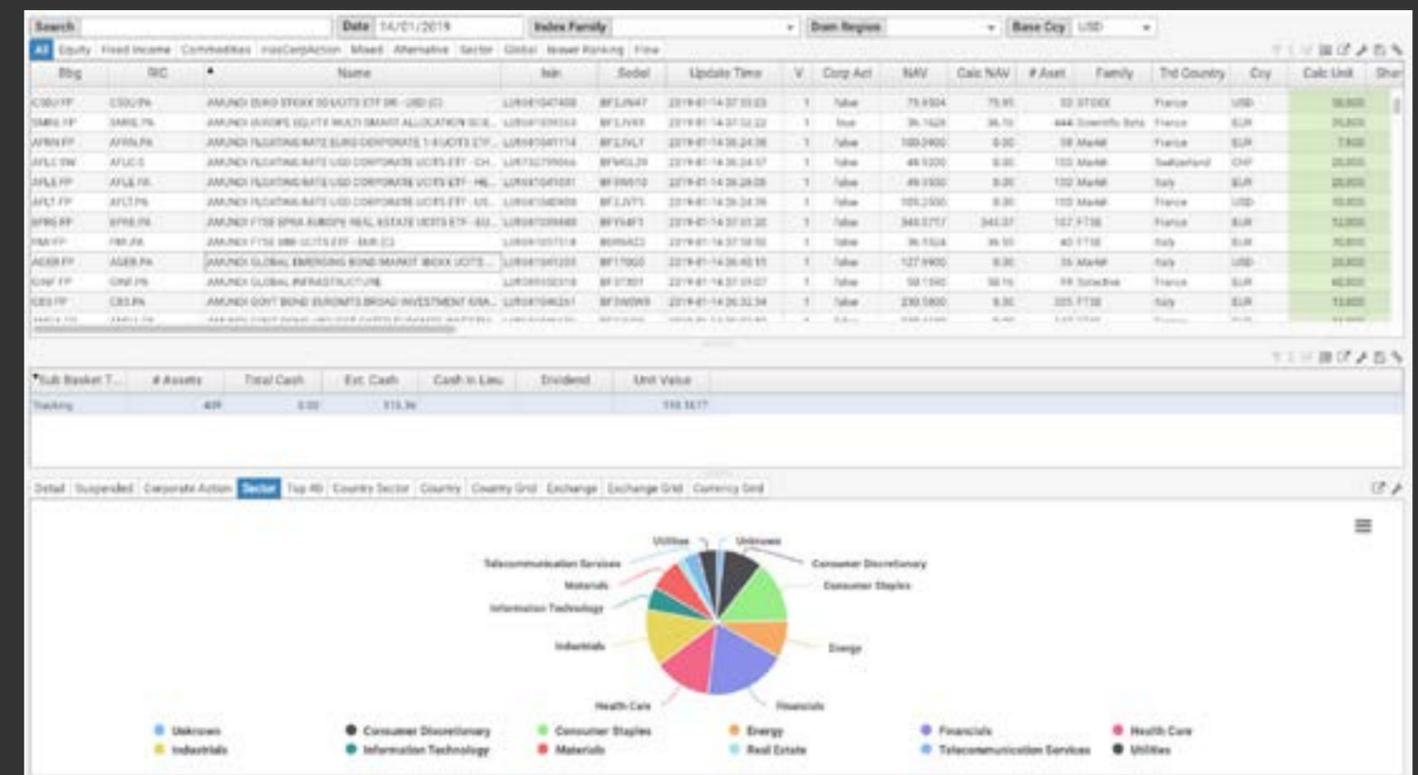
While these factor exposures have proven popular among investors, the same cannot be said for low volatility products. Bloomberg Intelligence cited €705.5m outflows for the factor over the trailing four months, up from €1.3bn outflows for the four months prior to that. The reason for this factor exposure falling out of favour is simple: it failed in its *raison d'être* as a hedge against volatility. On only four occasions since the inception of S&P Dow Jones data has the S&P 500 Low Volatility index failed to stay capture at least 90% of the main index's returns – 2020 was one of these occasions.

Now, amid expectations of a generally upward economic trajectory, price volatility is expected to be to the upside, which limits the role of a low volatility exposure. Reflecting this, the Invesco S&P 500 High Dividend Low Volatility UCITS ETF (HDLV) has seen returns of -0.2% during the year-to-date with outflows to the tune of \$558.6m, according to ETFLogic.



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