SAFE AND SOUND?
Analysing smart beta during coronavirus turmoil

New Listings
New smart beta ETFs listed around the world

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Are we in a smart beta bubble?

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Hello and welcome to Beyond Beta – the one and only magazine dedicated to smart beta and quantitative investing. This issue will focus on the wider factor investing landscape amid what has been a tumultuous quarter for markets.

The black swan event that was COVID-19 sent markets into freefall towards the end of February as investors became spooked about the potential long-term impact of the virus. Stock markets suffered their worst performances since the Global Financial Crisis in 2008 with the S&P 500 plummeting as much as 34% between late February and 23 March when the Federal Reserve stepped in with the promise of “unlimited” quantitative easing measures.

It appears smart beta ETFs have behaved as they should during the heightened volatility. The MSCI World Minimum Volatility index, for example, returned -16.6% in Q1 versus -23.2% for the MSCI World highlighting the benefits of owning stocks with defensive characteristics during these periods. Conversely, the MSCI World Value index fell 29.2% over the same period as the factor continued to underperform the broader market. Somewhat interesting, the index also underperformed in April when markets bounced returning 2.2% less than the MSCI World index. Much has been made about value’s underperformance over the past decade with some commentators arguing the lacklustre returns during and after Q1 could be another nail in the coffin for the value factor.

How factors performed during the coronavirus turmoil is a constant theme throughout this issue which 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 research from Nicolas Rabener, managing director of FactorResearch, who examines how defensive strategies have performed this year while Cerulli Associates’ Fabrizio Zumbo studies if smart beta will continue to grow in popularity following the coronavirus turmoil.

As always, a quick note from us on definitions. We define smart beta as non-market-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, deputy editor, ETF Stream
The best performing smart beta ETFs in Q1 2020

**UK**

<table>
<thead>
<tr>
<th>Ticker</th>
<th>Fund Name – 3 Month Total Return</th>
<th>% change</th>
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<tbody>
<tr>
<td>RSGL</td>
<td>Lyxor Russell 1000 Growth UCITS ETF C-USD</td>
<td>11.61%</td>
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<tr>
<td>UC99</td>
<td>UBS ETF (IE) Factor MSCI USA Quality UCITS ETF (USD) A-dis</td>
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<td>ISJP</td>
<td>iShares MSCI Japan Small Cap UCITS ETF (Dist)</td>
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</tr>
<tr>
<td>XDGM</td>
<td>Xtrackers Mittelstand &amp; MidCap Germany UCITS ETF 1D</td>
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<td>DRA</td>
<td>WisdomTree Japan SmallCap Dividend UCITS ETF USD USD Acc</td>
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<td>XZMJ</td>
<td>Xtrackers ESG MSCI Japan UCITS ETF 1C</td>
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<td>Invesco MSCI USA ESG Universal Screened UCITS ETF Acc</td>
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</tr>
<tr>
<td>FJP</td>
<td>First Trust Japan AlphaDEX UCITS ETF Class A Acc</td>
<td>6.99%</td>
</tr>
</tbody>
</table>

The best performing smart beta ETFs in Q1 2020

The UK’s smart beta ETF market is relatively less interesting and less developed than the US. We tend to blame this on the fact that UK ETF issuers are making funds for other asset managers. These asset managers – such as discretionary fund managers and multi-asset managers – are conservative and do not like deviating from a/their benchmark. The retail ETF market in the UK is far smaller than in the US, and smart beta ETFs are ultimately retail products.

In the UK, the best performers held quality stocks. Quality is a bit of an allusive factor. What is it? Is it low debt levels? Is it higher profits? Is it more reliable and predictable cash flow? There is no universally agreed definition. Nonetheless, quality has performed well since the coronavirus outbreak as quality funds tend to hold more technology and health care companies.

For a similar reason, a lot of ESG funds made the cut. ESG ETFs tend to buy quality companies. This typically owes their sector concentrations, which we discussed on the listings page. ESG ETFs hold more technology and healthcare companies, which are often lumped in the quality bucket.

**Spotlight on: the Mittelstand**

The Mittelstand, or middleground, was often taken to be the beating heart of Germany’s postwar economic miracle. The Mittelstand referred to medium-sized family-owned companies that were passed down the generations.

These were businesses that employed several hundred, or a few thousand, people. They then had cultures that were different to big businesses. They promoted and rewarded loyalty, they often paid better too.

The Xtrackers Mittelstand & MidCap Germany UCITS ETF is meant to track these companies – or some of the publicly listed ones. Sadly, and in what may be a symbol of German society itself, the fund will be shutting shop soon. It has had a great run the past three months though.

The Mittelstand referred to medium-sized family-owned german companies that were passed down the generations.
Top performers
USA

The best performing smart beta ETFs in Q1 2020

Mining companies have been massively out of fashion the past decade. Since the commodities boom unravelled in 2012, the share prices of mining giants like BHP have retraced their peaks. But historically, miners have been some of the best performing companies out there.

If recent numbers are anything to judge by, it looks like the good old days might be back – however temporarily – for some in the mining industry. Of the top 10 performing smart beta ETFs in the US over the past three months, four have been funds that buy mining companies.

Gold miners have done well recently thanks to historically high gold prices. Gold miners tend to do better than the physical metal when gold rallies, as they have the ability to gear up – in effect. (Physical gold does better in bear markets, however.)

Very interestingly, the relatively new uranium mining ETF also made the cut. URNM buys companies that mine, explore for and store uranium. Most of its portfolio is Canadian mining companies. These companies appear to have been supported by recent supply cuts to uranium, which has boosted the uranium price. Uranium is a bit of an obscure area that does not get a lot of media coverage, analyst or investor attention.

Spotlight: The academic interpretation of smart beta

For us, the standout performer was the AGFiQ U.S. Market Neutral Momentum Fund (MOM). This fascinating ETF implements a smart beta approach in the way that academics suggest you should. It equally weights a portfolio of momentum stocks, and goes long on the high momentum stocks and short sells the low momentum stocks. MOM has performed simply brilliantly during the coronavirus rebound.

While recent performance has been good, MOM has struggled to attract many assets and all indications suggest that it will close soon. It has also underperformed the S&P 500, despite momentum having had such a good run the past several years. The underperformance likely owes to the high costs involved with short selling.

Academics that model factor performances almost never include transaction costs in their analyses. The result is that there is always a disjuncture between what works for academics in excel sheets and what works for fund managers in practice.
New smart beta listings

ESG hits the tipping point
Smart beta ETFs in 2020 have been all about environmental, social and governance (ESG) investing. A total of 14 of the 22 new ETFs to arrive on European exchanges were ESG in the past three months. The heavy listing activity suggests that ESG ETFs have hit a tipping point.

When the ESG ETF trend ignited in 2016, many writers – myself included – thought it was simply a fad, and reaction to the election of US President Donald Trump. We took evidence of this in both the timing of the launches and the substance of the products. They all seemed to emphasise the very things that Trump stood against – gender diversity, the environment, treating poor countries fairly – while they all started launching at precisely the moment that Trump took residence at the White House.

With this in view, some writers – again, myself included – suspected the trend would simply pass if Trump lost the White House in 2020.

Now, however, things look quite different. European ETFs are listing more than ever before. Investors continue to pour assets into these products with ESG ETFs seeing €730m inflows in Europe in March despite European ETFs suffering record outflows overall for the month.

The trend has potentially become a real investing movement and surpassed all cynics’ expectations. This year’s listings in Europe all give expression to that. With the strength of the numbers being put up, one suspects that ESG will outlive Trump.

Thematic listed too
Beyond ESG, there were some interesting listings in European thematics. Most thematic ETFs give various takes on the technology sector. This is partly due to the fact that the tech sector affords the most latitude for experimenting.

Tech has been the best performing sector – as is common knowledge. It is also known for being the most disruptive and unpredictable. As such, investors tend to give it more attention, afford it a bit more room to experiment and tolerate underperformance a bit more. Appreciating all this, ETF providers then roll the dice a bit on product.

Spotlight on: Battery ETF
Among the listings, one we noticed was the WisdomTree Battery Solutions UCITS ETF (VOLT). The fund invests in companies that improve battery technology and help with energy storage. The success of Tesla has helped propel
Investor interest in batteries well into the mainstream. You could also argue that VOLT is something of an ESG ETF itself. After all, transitioning away from fossil fuels and using clean energy – like wind, solar – requires electricity storage, which only batteries provide.

**Spotlight on: Millennial ETF**

Another listing we noticed was the Lyxor MSCI Millennials ESG Filtered DR UCITS ETF (GENY). This interesting ETF targets companies that sell things to millennials and benefit from their steadily increasing consumer power. This fund has performed very impressively during the coronavirus pandemic as millennial habits – online shopping, video gaming, social media use – all went uninterrupted.

**US smart beta listings – index investing has peaked?**

We noticed in the previous edition of Beyond Beta – and notice again now – that index ETFs appear to have been losing steam in the US of late. Two years ago, when we began this magazine, almost every new smart beta ETF tracked an index in the US. Whereas now, most seem to offer some kind of active management. Pari passu, fees on new smart beta funds have also gone up.

We suspect this owes to how the stock market rewards asset managers these days. A couple of years back – before Fidelity launched its zero-fee index fund – index ETF providers traded on high multiples. The market loved index ETF providers and index ETF providers loved the market. But after Fidelity did its zero-fee thing, those multiples collapsed. The result is that many quarters of the ETF industry are returning to active management – including actively managed smart beta funds – which command higher fees and margins.

Another trend we have noticed is that Bruce Bond’s structured product-style Innovator ETFs – which lock in defined outcomes for investors – have been picked up (i.e. copied) by competitors. They always carry a large footprint in new listings because they’re constantly being closed and relaunched.

**Spotlight on: Dividends from share prices**

Perhaps the most interesting new listing that caught our eye was the Qraft AI-Enhanced U.S. High Dividend ETF (HDIV). The IP for the fund comes from the Korean AI company Qraft. This fund takes a very unusual approach to picking dividend paying stocks. Most dividend funds pick shares based on yield and earnings growth. But HDIV does something near the opposite: it picks dividend payers based on the Qraft IP for the fund comes from the Korean AI company Qraft. This fund takes a very unusual approach to picking dividend paying stocks. Most dividend funds pick shares based on yield and earnings growth. But HDIV does something near the opposite: it picks dividend payers based on their steadily increasing consumer power. This fund has performed very impressively during the coronavirus pandemic as millennial habits – online shopping, video gaming, social media use – all went uninterrupted.

**Listing** | **Ticker** | **Fund name** | **TER** | **Style**
--- | --- | --- | --- | ---
USA | SQEW | LeaderShares Equity Skew ETF | 0.75% | Factor
USA | SIXA | 6 Meridian Mega Cap Equity ETF | 0.82% | Factor
USA | SIXH | 6 Meridian Hedged Equity-Index Option Strategy ETF | 0.81% | Factor
USA | SIXL | 6 Meridian Low Beta Equity Strategy ETF | 0.84% | Factor
USA | SIXS | 6 Meridian Small Cap Equity ETF | 0.97% | Factor
USA | THNQ | ROBO Global Artificial Intelligence ETF | 0.68% | Thematic
USA | TAAG | Trend Aggregation Aggressive Growth ETF | 1.87% | Factor
USA | TADS | Trend Aggregation Dividend Stock ETF | 1.87% | Yield
USA | TAEQ | Trend Aggregation U.S. ETF | 1.87% | Factor
USA | TEGS | Trend Aggregation ESG ETF | 1.87% | ESG
USA | ARB | AlShares Merger Arbitrage ETF | 0.75% | Alternatives
USA | BMYA | Innovator S&P 500 Buffer ETF | 0.79% | Risk-controlled
USA | PMAY | Innovator S&P 500 Power Buffer ETF | 0.79% | Risk-controlled
USA | UMAI | Innovator S&P 500 Ultra Buffer ETF | 0.79% | Risk-controlled
USA | STLC | iShares Factors US Blend Style ETF | 0.25% | Factor
USA | STMB | iShares Factors US Mid Blend Style ETF | 0.30% | Factor
USA | STSB | iShares Factors US Small Blend Style ETF | 0.35% | Factor
USA | BBMC | JPMorgan BetaBuilders U.S. Mid Cap Equity ETF | 0.07% | Size
USA | BKMC | BNY Mellon US Mid Cap Core Equity ETF | 0.04% | Size
USA | BKSE | BNY Mellon US Small Cap Core Equity ETF | 0.04% | Size
USA | NAPR | Innovator Nasdaq-100 Power Buffer ETF | 0.79% | Risk-controlled
USA | KAPR | Innovator Russell 2000 Power Buffer ETF | 0.79% | Risk-controlled
USA | WUGI | Esoterica NextG Economy ETF | 0.75% | Thematic
USA | HDIV | Qraft AI-Enhanced U.S. High Dividend ETF | 0.75% | Factor
USA | FFEB | FT Cboe Vest U.S. Equity Buffer ETF | 0.85% | Risk-controlled
USA | DFEB | FT Cboe Vest U.S. Equity Deep Buffer ETF | 0.85% | Risk-controlled
USA | ARMR | Armor US Equity Index ETF | 0.50% | Factor
USA | LDEM | iShares ESG MSCI EM Leaders ETF | 0.16% | ESG
USA | ESGN | Direxion MSCI USA ESG - Leaders vs. Laggards ETF | 0.40% | ESG
USA | FLYT | Direxion Flight to Safety Strategy ETF | 0.30% | Factor
USA | MARB | First Trust Merger Arbitrage ETF | 1.25% | Alternatives
USA | QMJ | Direxion S&P 500 High minus Low Quality ETF | 0.35% | Risk-controlled
USA | BFEB | Innovator S&P 500 Buffer ETF | 0.79% | Risk-controlled
USA | PFEB | Innovator S&P 500 Power Buffer ETF | 0.79% | Risk-controlled
USA | UFEH | Innovator S&P 500 Ultra Buffer ETF | 0.79% | Risk-controlled
The king is dead, long live the king

Fascinating dynamics have occurred throughout the factor universe amid the coronavirus turmoil. Here, ETF Stream’s strategic adviser and Financial Times columnist David Stevenson examines why value is not dead and COVID-19’s impact on the small-cap premia.

Until fairly recently, I, like many investment observers, was wondering whether value investing was dead. In the narrow sense, as defined by one of the founding fathers of the Church of Deep Value, Ben Graham, value has been dead for over a decade. Anyone searching around for deep value, Graham says, would have spent an inordinate amount of time on a plane to Japan or Vietnam. In fact, one could argue that value stocks were almost non-existent in the developed world (barring Japan), and that it was only in emerging markets where you could find them.

But over the decades, value has been refined and redefined and turned into a systematic strategy more generally, as part of an armoury of styles and risk premia. In this new reading, value investing is a focus on certain fundamental criteria that can be scored using say a Piotroski scoring system.

But fundamental scoring systems can either be complicated – lots of different variables fed into a ranking system – or simple, namely a cheap share price relative to the market. The former methodologies tend to be built around any number of measures but inevitably what tends to dominate is some form of ‘asset’ measure, usually but not always relating to price to book or price to tangible book.

This methodologically rigorous attitude towards value introduces an immediate challenge – namely that we need to use measures that sensibly capture actual tangible assets. However, what happens if those assets are being dematerialised as businesses – under pressure from private equity firms – sell assets and focus on intangibles and intellectual property.

Suddenly, over the last decade or so, we have seen a huge swathe of the public markets either vanish into private hands or become dematerialised stocks with huge intangible books but very little tangible value. In this new normal, anyone seeking true value ends up with either an increasingly small sample size or is required to redefine what value looks like. Which brings us to the second alternative which is to accept looser definitions and implicitly focus on stocks which look cheap relative to other stocks and are also a bit below average on measures such as PE or PBV.

This broader, simpler to understand methodology thus leads us into selecting cyclical stocks such as financials or energy/materials businesses which for various reasons are now ‘out of favour’.

This latter focus has of course landed investors in real trouble over the last few weeks as value stocks more widely interpreted had a tough time during the current market rout. According to quant analysts at Société Générale, their version of a value index, the SG Global Value Beta index (SGVB), was down as much as 33.6% in Q1, versus a 21.3% drop for MSCI World (net total returns in EUR).

Value stocks struggling as markets fall is hardly unusual, and as our analysis has shown, value can potentially be a bad thing to own. Going into the trough of a crash. This is likely because a typical value portfolio tends to include many cyclical stocks, with their prices potentially coming under pressure at the start of a crisis.

To add insult to injury we have also seen recently traditional value heroes, such as Warren Buffett (who has in reality in recent decades looked and felt more like a quality investor), turning against many classic value, cyclical sectors, worried about a lack of competitive moat. Cue his recent decision to dump airline stocks en masse.

At some point in mid-late March, it might have been possible to conclude that value investing really was as dead as a Monty Python parrot.

Except that it was not. Because in the last few weeks evidence has emerged that in fact value stocks, more generously defined, have in fact bounced uber aggressively. In fact, according to those analysts at SocGen again, we have recently seen “one of the biggest swings in US value/quality ever and stocks with the worst balance sheets were the best performing stocks during April. The Nasdaq which had been beating the Russell 2000 handsomely this year, saw a 10% relative
retracement “in a matter of days”. Chart 1 nicely sums up this astonishing turnaround.

Now of course we should always expect style rotations during a stock market cycle and thus this was, on one argument, inevitable, as investors bought into a relief rally. The world really was not ending, quite yet. The key point here is that value is not dead, especially when the alternative is to buy quality stocks – increasingly tech or brand focused – which trade at super aggressive valuations. Value lives to fight another day, although of course it also means you might end up in some sectors that would scare the average investor half to death.

There is another story potentially lurking in the weeds around style and risk premia – the size premia. Over the last few decades, investors have come to expect some form of premia for investing in smaller to mid-cap stocks. The extra risk and volatility has been rewarded by extra returns.

But over the last few years that premia has begun to fade away in core markets, as we have seen a form of winner-takes-all thinking take precedence. In simple terms, various structural factors have given mega large caps a distinct advantage which has flowed through into stronger share price strength, in relative terms. And that trend has been turbo charged in recent weeks. Charts 2 and 3 speak to this remarkable story. Chart 2 is from analysts at DWS, and shows that within the S&P 500, very large cap stocks have dominated returns.

Chart 3 is from Ben Luk, senior multi-asset strategist at State Street Global Markets, and examines the contribution of equity loss across key markets and its impact on the mega-cap stocks vs the rest of the Morgan Stanley Capital International (MSCI) index.

According to Luk, “the breakdown of the equity loss varied [in the last few weeks] widely between the constituents, with the mega-cap stocks (what we define as the top five stocks across key markets, which makes up to 20% of the index) showing little impact from COVID-19.

“In fact, the top five emerging market companies contributed less than 5% of the index’s loss, relative to its 23% weight within the index. This number becomes more extreme for European corporates at 1% and even more staggering for the US, in which the top five actually recorded a gain but the rest of the index was responsible for 100% of the entire loss.

“While most have suffered due to the virus, the virus has also solidified the mega caps!”

This is arguably the most interesting story of all. Could the size premia and the returns form small-cap investing be about to break down in a new normal of market concentration, post-COVID-19?
Are we in a smart beta bubble?

ETF Stream’s deputy editor Tom Eckett examines the possibility the smart beta industry has reached bubble territory given the vast amount of factors published by top journals and decade-long underperformance by value, the most academically-supported factor.

One of the first economic bubbles recorded in western Europe was during the 17th Century when tulip mania swept through the Netherlands. During the Dutch Golden Age, tulip prices reached extraordinarily high levels with one tulip being traded for 12 acres of land at one point, according to the British journalist Charles Mackay. The bubble dramatically burst in February 1637, however, when contract prices for the bulbs collapsed overnight.

Could this happen to the concept of smart beta? The answer is a firm no, at least not in such emphatic fashion, however, there are whisperings from corners of the investment landscape that the strong inflows into smart beta products over the past decade will not last forever.

Smart beta products have seen their assets balloon since the Global Financial Crisis in 2008 with investors disillusioned about the state of traditional active management. According to data from Morningstar, smart beta ETP assets under management (AUM) now total around $800bn globally with BlackRock predicting assets in factor strategies will reach $3.4trn by 2022.

It is easy to see why smart beta has grown in popularity. The products incorporate factors that have been ‘empirically’ proven by academic research to deliver outperformance over the long term. Factors such as value have been written about for over 50 years as a way of delivering superior returns to the benchmark. Along with the promise of outperformance, smart beta ETFs come at a cheaper rate when compared to active mutual funds.

AXES TO GRIND

The sharp rise in assets has led to the proliferation of factors with issuers looking to tie themselves to the latest piece of academic research in order to capture investor assets. The problem with this approach from the smart beta issuers, however, is academics have their own axe to grind.

Over the past 50 years, academics have faced increasing pressure to meet funding requirements by being published in top journals. This is evidently not achieved by doing a piece of research and finding a factor that cannot be supported by the evidence. This is not just a problem in finance but is rife across the whole of academia as research departments look to keep their head above water.

As a result of the pressure, a recent academic study conducted by Campbell Harvey, Professor of Finance at Duke University and Yan Liu, Assistant Professor of Finance at Purdue University, found over 400 factors had been published in top journals. “The rate of factor production in the academic research is out of control,” the paper stressed. “The backtested results published in academic outlets are routinely cited to support commercial products. As a consequence, investors develop exaggerated expectations based on inflated backtested results and are then disappointed by the live trading experience.”

Furthermore, David McLean and Jeffrey Pontiff in a 2015 study analysed the returns of 85 published factors and found they delivered in-sample returns of an annualised 7.2%. However, this number dramatically dropped to 4.9% out-of-sample – typically a 56-month period – and fell even further to 3.2% following publication.

It is certainly fair to say the “factor zoo” as it has come to be known is out of control with academics
publishing new findings without regard for the validation of the factor. And with smart beta issuers very quick to tie themselves to academic research when launching a factor-based product, it certainly brings into question the validity of these vehicles, especially when providers do not make money from investing in smart beta themselves.

**ACADEMIC EVIDENCE**

As Dylan Grice, co-founder of Calderwood Capital Research, said: “The academic evidence for factors is dubious at best. To the extent there was substance to the [factors], market participants soon eliminated them in their rush to capture them. In other words, there is little merit in this academic literature, and there is commensurately little merit in the vast array of financial products which are largely based upon it.”

The fact there are 400 academically published factors available for issuers to turn into products does highlight an overreach in the space. Value’s underperformance for over a decade now could be viewed as a key signal of the smart beta bubble slowly starting to burst.

Somewhat worryingly, value has underperformed in both rising and falling markets this year. Highlighting this, the MSCI World Value index returned -29.2% in Q1 versus -23.2% for the MSCI World. When markets started to rally the MSCI World outperformed its value relative by 2.3% in April. Although this is a tiny sample, it does highlight the structural problems facing “value” products.

But how will the smart beta bubble burst? Grice shares his predictions: “Probably not in the same dramatic fashion that the sub-prime bubble did. And probably not by being unpicked by the awkward questioning of probing academics. The financial products which are based on [smart beta] will ultimately return negative alpha as today’s army of supposed ‘value investors’ (i.e. those following the value ‘factor’ strategy) have already discovered. It will die a slow death, as the eventual realisation sets in several years hence, that poor performance is intrinsic to its shoddy research approach.”

**Investors develop exaggerated expectations based on inflated backtested results and are then disappointed by the live trading experience**
Defensive and diversifying strategies: What has worked so far in 2020?

As bonds lose their appeal as a traditional diversifying option, Nicolas Rabener, managing director of FactorResearch, examines which strategies have worked during the coronavirus turmoil.

“The best defence is a good offence” is frequently quoted in the military (George Washington), sports (Vince Lombardi), games (Risk, Settlers of Catan), as well as in business (ask any entrepreneur). Given the high valuations of stocks and low bonds yields in the US, which implies low expected returns for both asset classes, it might indeed be argued that “the best offence is a good defence” for the coming decade.

However, constructing a defensive portfolio is easier said than done. Let us start with the definition of defensive. A defensive long-only strategy is one that allows investors to achieve index-like returns with less volatility. Additionally, many defensive products highlight their ability to experience smaller drawdowns than their non-defensive counterparts.

Traditionally, bonds were the go-to defensive instrument, however, although they still constitute a large share of investors’ portfolios, they have lost much of their value in asset allocation due to low or negative expected returns. Alternatives like private equity or real estate are far less alternative than commonly marketed as both require economic expansion to generate positive returns, similar to equities.

Many investors are currently considering low-risk and high-quality stocks within their equity allocation given the opaque and gloomy outlook of the global economy caused by COVID-19. Some venture further and seek uncorrelated strategies in the hedge fund universe.

Fortunately, stock market crashes are rare. Unfortunately, therefore there are few data points in history for studying how well defensive strategies performed during such downturns.

Graph 1: Performance of Defensive & Diversifying Strategies in 2020

Source: FactorResearch
Certain investment strategies have protected capital. The stock market crash in March 2020 contributes some further evidence. In this short research note, we will evaluate the year-to-date performance and benefits of selected defensive and diversifying strategies.

**DEFINING DEFENSIVE AND DIVERSIFYING STRATEGIES**

We will focus exclusively on strategies in the US that provide daily liquidity, are available to all investors, either as mutual funds or ETFs, and include long-only as well as long-short strategies. Furthermore, we constrain ourselves to strategies that are supported by academic research, which reduces the universe dramatically to the following:

- **Multi-factor long-short investing**: Beta-neutral long-short portfolios, which provide exposure to a variety of factors like value, momentum, or quality.
- **Low volatility smart beta**: A long-only portfolio of low-risk stocks.
- **Quality smart beta**: A long-only portfolio of high-quality stocks, which are typically defined as companies with low leverage and high profit margins.
- **PutWrite strategy**: Employs a covered call approach that buys the S&P 500 and sells at-the-money calls on the index.
- **BuyWrite strategy**: Sells at-the-money S&P 500 puts and invests the cash in short-term Treasuries.
- **Managed Futures**: Trend-following across all asset classes, which includes long and short positions in futures.

**FACTORS IN FOCUS**

Many investors are currently considering low-risk and high-quality stocks within their equity allocation given the opaque and gloomy outlook of the global economy caused by COVID-19. Some venture further and seek uncorrelated strategies in the hedge fund universe.
Only two of these strategies, multi-factor long-short investing and managed futures, can be considered diversifying strategies as they feature low correlations to equities on average. The other four are more appropriately labelled as defensive strategies.

We observe that year-to-date in 2020 only managed futures generated positive returns. The performance of multi-factor long-short investing was consistently negative since the beginning of the year, which is primarily explained by the poor performance of the value factor, which is a core component of these portfolios.

All defensive strategies performed similarly to the S&P 500. The maximum drawdown year-to-date in the S&P 500 was reached in late March 2020 before stock markets globally recovered fuelled by fiscal and monetary stimuli. Diversifying strategies performed significantly better than defensive ones, which is to be expected as the latter are long-only portfolios.

Low volatility, particularly, disappointed investors in 2020 as low-risk stocks crashed as much as other stocks due in no small part to beta compression. Part of the heightened expectations surrounding its performance stemmed from the lower maximum drawdown it experienced during the global financial crisis in 2008, when compared to the index. This performance, which

When markets crash, correlations within and between all asset classes tend to spike. Many strategies that previously seemed uncorrelated, fail to provide investors with the desired diversification benefits exactly when most needed.
many investors perceived as a free lunch, explains its popularity thereafter.

**DEFENSIVE VS DIVERSIFYING STRATEGIES**

When markets crash, correlations within and between all asset classes tend to spike. Many strategies that previously seemed uncorrelated, fail to provide investors with the desired diversification benefits exactly when most needed. Calculating the correlations to the S&P 500, highlights that the defensive strategies, which are all long-only portfolios, were and are by design highly correlated to the stock market.

Long-short multi-factor portfolios are constructed beta-neutral, which implies lower correlations to equities on average. In March 2020, however, the correlation increased significantly, which is likely explained by some stocks falling more than others, e.g. cheap retailers versus expensive technology stocks. Portfolios do not typically get rebalanced on a daily basis and frequently pick up beta when markets are volatile.

In contrast, the correlation of managed futures became more negative, generating large diversification benefits. Managed futures became popular after 2009 as the strategy provided crisis alpha, but generated flattish returns since then, which made it challenging to hold an allocation to these managers. COVID-19 may be the redemption for the managed futures industry and investors will likely flock to the strategy again.

**ADDING DEFENSIVE AND DIVERSIFYING STRATEGIES TO A PORTFOLIO**

Finally, we simulate how much a 20% allocation to defensive or diversifying strategies would have reduced the drawdown of an all equities portfolio. Defensive strategies provided almost no risk reduction, which is a reflection of their high correlations to the stock market.

In contrast, diversifying strategies significantly reduced the maximum drawdown. It is interesting to note that the multi-factor long-short portfolio, despite generating negative returns in year-to-date 2020, still provided diversification benefits. Furthermore, we also show results for a 20% allocation to US 10-year government bonds, i.e. the traditional diversifier, which would not have been more effective in risk reduction than managed futures.

**FURTHER THOUGHTS**

Similar to products from Microsoft, no investment strategy works as consistently as expected. Low volatility disappointed in 2020 given a failure to reduce risk, however, it does not necessarily mean that the strategy will not provide better risk-adjusted returns in a future stock market crash.

However, investors should recognise that baskets of low-risk or high-quality stocks are long-only strategies that cannot defy the gravitational pull of the stock markets, i.e. beta exposures matter a lot.

Long-short multi-factor investing as well as managed futures are thoroughly backed by academic research and have become available as low-cost mutual funds and ETFs. Their recent performance in 2020, plus a growing body of academic evidence in favour with few arguments against, support their inclusion in asset allocation, especially in a world where bonds have lost much of their appeal as traditional diversifiers.
Will smart beta fail the pandemic test?

Will smart beta ETFs continue to grow in popularity post-pandemic? Fabrizio Zumbo, associate director, European asset and wealth management research at Cerulli Associates, analyses the appetite for different smart beta products among investors.

Smart beta exchange-traded funds have gathered market share in Europe over the past few years as investors have wised up to the attractions of the product. A hybrid of active and index strategies, smart beta ETFs offer various advantages compared to traditional market-cap weighted ETFs, including potentially better diversified exposure to portfolios and enhanced protection against volatility.

Wider adoption of such vehicles has, however, been hindered by financial advisers and investors lacking an in-depth knowledge of the product and the long-running bull market in which smart beta ETFs tend to underperform.

The fallout from the COVID-19 pandemic in providing smart beta ETF with the chance to shine. It is early days but so far the product is failing to exploit the opportunity.
The assets of smart beta ETFs domiciled in Europe have ballooned in recent years, from €28.9bn in 2015 to €71bn at the end of 2019, according to data from Morningstar. Last year, net inflows amounted to €9.3bn – the highest annual intake of the past five years, equating to a CAGR of 25% in the time period.

But that was then. In the first four months of 2020, which have been blighted by exceptionally high levels of volatility, smart ETFs domiciled in Europe have bled €3.3bn.

As a rule, these vehicles underperform in bull markets and excel when markets fall. With markets having boomed for the past decade, investors have understandably not seen the need to pay the higher fees charged by smart beta compared to other market-cap ETFs.

In theory, smart beta should be able capitalise on the pandemic. However, it is important to note that not all smart beta ETFs are created equal. The space contains a broad spectrum of varying strategies and factors. And the strategies have certainly not performed in unison during the first four months of 2020. For example, momentum, dividend, fixed income and commodities were the only strategies to gather new flows. Conversely, multi-factor and value were hard hit by the coronavirus-triggered volatility, suffering net outflows of €1.8bn and €1.5bn respectively.

The assets of multi-factor strategies had contracted 35% compared to the end of 2019, when they stood at €8.1bn. Value strategies’ assets shrunk 42% in the first four months of 2020, from €7.5bn to €4.3bn, whereas they have attracted net inflow of €1.7bn in 2019, bled €1.5bn in 2018 and ended 2017 with a net gain of €2.5bn.

When it comes to issuers, BlackRock with its iShares reign supreme in Europe, with a market share of 47% at the end of April 2020. It is followed by State Street Global Advisors with 9% and Lyxor with 7%. However, when it comes to sales, Vanguard led by an impressive margin — its smart beta product platform recorded net new flows of €1bn in the first four months of the year. Second placed was JPM Morgan with just (€191m) of net new money from investors.

A variety of smart beta products have been launched over the past two years. These included risk-oriented ETFs (including low-volatility strategies) at 18.9%. Multi-factor ETFs comprised 9.5%, quality 8.1% and value 7.7%. On April 30, dividend strategies AUM stood at €21.9bn, followed by risk-oriented ETFs with €10.5bn in assets and multi factor with €5.3bn.

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Franklin Templeton's five smart beta products, which started trading on Zurich’s SIX Swiss Exchange in February 2018. In the same month, JP Morgan listed two smart beta products in Frankfurt that primarily target institutional investors in Germany. DWS has rolled out a smart beta ETF that invests in high-yielding investment-grade corporate debt in Frankfurt and London. And in early 2019, French smart beta specialist Ossiam launched an ETF that harnesses a machine learning algorithm.

Overall, however, smart beta ETF launches have been slowing. In 2017, 51 new products were brought to market in Europe; this compares with 35 in 2018 and a mere seven the following year. In 2020, six smart beta ETFs had been launched by the end of April, according to Morningstar. Of the 51 products launched in 2017, 22 were multi-factor strategies.

Multi-factor was also the strategy employed in 10 of the 35 ETFs launched in 2018; another 10 of these were in the fixed-income strategy domain. In 2019, six of the seven new launches were multi-factor.

The future of smart beta will depend on how the products perform in the current highly volatile markets — it is still too early to conclude the outcome. An in-depth understanding of and comfort with the product will also be key factors. In this regard, Cerulli Associates’ research across Europe’s seven largest asset management markets — the UK, Germany, Italy, Switzerland, France, Spain and Sweden — shows that appetite for smart beta ETFs is on the rise among private banks, independent wealth managers (IWMs) and independent financial advisers (IFAs), and the knowledge and comfort factors are moving in the same direction. Some 61.8% of the private banks surveyed in January 2020 in the abovementioned countries expect significant demand for these products in the next 12 to 24 months. Another 32.7% anticipate moderate demand. Of the IWMs surveyed, 22% expect significant demand and 57% foresee moderate demand. Some 38% of the IFAs that responded to Cerulli’s survey expect significant demand for smart beta ETFs and 38% moderate.

Asset managers in Europe are under increasing pressure from regulators and investors to offer more cost-effective investment solutions.

As Europe’s ETFs markets have become increasingly crowded, with new players arriving and incumbents broadening their product ranges, entering or developing these markets with a standardised value proposition may no longer be enough to attract flows.
ETFs, as wrappers, are now used as buy-and-hold funds, tactical asset allocation vehicles, trading instruments and as transparent, lower-cost building blocks for portfolio construction. Specialisation within this sphere is giving users a larger array of options, which several of the ETF issuers and asset managers Cerulli spoke believe will fuel demand for smart beta.

There are, however, challenges to increased adoption, primarily a lack of knowledge of the products by financial advisers and investors. This is a major hurdle for managers seeking to enter the European ETF market with smart beta value propositions. Managers and ETF issuers need to keep up education programmes and marketing campaigns. Such programs can help to enhance trust in ETFs. ETF providers are already extending their educational programmes. Many are also partnering with local distributors in different European countries. For example, at the end of 2018, Vanguard agreed to sell its ETFs via German online broker Onvista Bank, which is part of Commerzbank’s listed German online broker, Comdirect. In early 2019, BlackRock launched a promotional campaign with Postbank, a German retail bank, whose clients can now buy iShares ETFs at a “special-offer” price. In addition, BlackRock and Franklin Templeton are to start offering ETF-based saving plans for free (without order fees) in Germany through partnerships with ING’s German arm.

As Europe’s ETFs markets have become increasingly crowded in recent years, with new players arriving and incumbents broadening their product ranges, entering or developing these markets with a standardised value proposition may no longer be enough to attract flows. ETF issuers should consider introducing a specialised and diversified offering that includes not only smart beta, but also thematic and environmental, social, and governance. New niche products are likely to be launched this year, further widening the product menu for financial advisors in Europe. Competing with vanilla product offerings or simply on price requires scale, brand and strong capital markets infrastructure.

The views of the asset managers Cerulli surveyed at the start of the year varied depending on the country being considered. Some 35% expect fast growth of smart beta ETFs assets in Switzerland and 32% share this view for Germany. On the other hand, slow growth was predicted for the UK and Sweden by 50% and 40% of the respondents respectively. Despite the growing appetite by wealth managers and financial advisors, the key question remains: are smart beta ETFs smart enough to navigate unchartered waters of a pandemic crisis?

**Fabrizio Zumbo** leads the European asset and wealth management research practice at Cerulli Associates in London. His research focuses on the analysis of European asset and wealth management industry trends, ranging from product development, operational, investment and marketing strategies to market and distribution dynamics, FinTech and regulatory developments. His team covers mainstream and alternative asset classes, exchange-traded funds (ETFs), environmental, social and governance (ESG) and responsible investing.

**Chart 3: European Asset Managers View of Smart Beta ETF Assets’ Growth Over the Next 12-24 Months, 2020**

<table>
<thead>
<tr>
<th>Country</th>
<th>Fast growth (greater than 10%)</th>
<th>Moderate growth (6% to 10%)</th>
<th>Slow growth (1% to 5%)</th>
<th>No growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switzerland</td>
<td>25%</td>
<td>40%</td>
<td>35%</td>
<td>4%</td>
</tr>
<tr>
<td>Germany</td>
<td>4%</td>
<td>36%</td>
<td>32%</td>
<td>28%</td>
</tr>
<tr>
<td>Spain</td>
<td>20%</td>
<td>60%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Italy</td>
<td>10%</td>
<td>40%</td>
<td>10%</td>
<td>50%</td>
</tr>
<tr>
<td>UK</td>
<td>5%</td>
<td>29%</td>
<td>8%</td>
<td>62%</td>
</tr>
<tr>
<td>France</td>
<td>60%</td>
<td>42%</td>
<td>62%</td>
<td>40%</td>
</tr>
<tr>
<td>Sweden</td>
<td>40%</td>
<td>5%</td>
<td>40%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Source: Cerulli Associates
Defining and exploiting value in US Treasury bonds

EDHEC’s Riccardo Rebonato, Jean-Michel Maeso and Lionel Martellini propose a definition of value in Treasury bonds that allows for statistically significant and economically relevant predictions of cross-sectional excess returns.

Value has been recognised as one of the most important factors for equities at least since the pioneering work by Fama and McBeth (1973). In equities, the ratio of book-to-market value has traditionally been used as a proxy for the value factor.

Natural as this choice is for this asset class, it is difficult to translate the concept of value to the fixed-income domain, and for this reason Fama and French (1993) argued that value does not apply to fixed-income instruments in general, and to Treasury bonds in particular. This seems to be at odds with recent literature, which claims to have found value (and momentum) ‘everywhere’.

The ‘problem with value in bonds’ is rendered more acute by the rather ad hoc definitions of value used for fixed-income instruments. For instance Asness, Moskowitz and Pedersen (2013) defined value for bonds as the (negative of the) five-year bond returns – a choice motivated by the observation that in equities this difference in returns is found to be positively correlated with the book-to-market ratio.

The factor thus defined may well predict future bond returns, but its interpretation as ‘value’ seems at least a stretch, and one, if not two, steps removed from the true latent underlying factor. At best, it plays the role of a proxy, and as a result labelling the chosen measure as value becomes rather arbitrary. In this article we provide what we think is a more intuitively satisfactory definition of value in US Treasury bonds, and we show that the value quantity we define has very strong predictive power of future cross-sectional Treasury returns.

More precisely, we identify ‘cheap’ (‘valuable’) and ‘expensive’ bonds using a dynamic Gaussian term structure model, and show that a systematic, no-peek-ahead strategy of investing in the cheap bonds and shorting the expensive ones has a strongly positive Sharpe ratio.

Our results are so robust that, before and after adjusting for duration exposure, the strategy we propose has positive Sharpe ratios for 14 of the 15 three-year periods from 1975 to 2017, a Sharpe ratio which is statistically significantly different from zero at the 99.9% confidence level in 13 of the 15 three-year sub-periods, and an average Sharpe ratio (before transaction costs) above 1.

DATASET

The data used for the study is made up of the daily close-of-business day prices of 1,562 US Treasury coupon bonds over the period 27 December 1973 to 29 June 2018. All these bonds are non-callable, non-puttable and non-inflation linked. We also excluded prices of individual bonds that were deemed to be erroneous from the dataset.

This was determined by setting a threshold in standard deviations for the price changes, and then excluding those bonds whose price move exceeded the threshold while the other bonds in the universe for that day did not show a similar move. We stress that this culling procedure is conservative because spurious spikes would generate fictitious profits: we therefore prefer to miss a true sharp price deviation/reversal than to include a fake one.
**INTEREST RATE MODEL**

The affine model we employ can be defined in the physical (P) and risk-neutral (Q) measures. Starting from the P measure, it can be written as:

\[
dr_t = \kappa^P_r (\theta^P_r - r_t) dt + \sigma_r dw_r^P \\
d\theta_t = \kappa^P_{\theta} (\theta^P_{\theta} - \theta_t) dt + \sigma_{\theta} dw_{\theta}^P \\
E[dw_r^P dw_{\theta}^P] = \rho dt
\]

The model can be interpreted as describing the actions of the monetary authorities who respond to deviations of the inflation and/or output gap from their desired target levels by adjusting the Fed funds rate (in our model, the ‘short rate’) towards the long-term NAIRU-compatible nominal rate (the ultimate reversion level \(\theta^*_T\)); they do so, however, with a degree of urgency (‘aggressiveness’) that depends on the economic conditions of the moment; the adjustment is therefore achieved by letting the short rate revert to a time-dependent reversion level, which in turn reverts towards the unchanging NAIRU-compatible long-term nominal rate, \(\theta^*_T\).

In moving from the physical to the risk-neutral measure we assume that investors only seek compensation for level risk (see, in this respect, Cochrane and Piazzesi [2005]; Adrian, Crump and Moench [2010]), and therefore modify the P-measure dynamics in equation (2) as:

\[
d\theta_t = \kappa^Q_{\theta} (\theta^Q_{\theta} - \theta_t) dt + \lambda (\theta_t, \theta^Q_r) + \sigma^Q_{\theta} dw_{\theta}^Q
\]

In general, the market price of risk could depend on both state variables. We make the assumptions:

- That the slope of the yield curve accounts for the degree of predictability associated with the business-cycle variation of risk aversion; and
- That the additional predictability afforded by the new-generation return-predicting factors (e.g., Rebonato and Hatano [2018]; Cieslak and Povala [2010]) is due to deviations from fundamentals, and not to non-level rewarded risk factors.

Since our approach tries to capture precisely these deviations from fundamentals, we do not add other contributions to the market price of risk other than its business cycle/slope-related component. If we want to retain the essentially affine formulation, the market price of risk must display, at most, an affine dependence on the state variables. In other words, it must have the following form:

\[
\lambda = \lambda_0 + \Delta \lambda x_t
\]

We assume \(\lambda_0 = 0\) (see Duffee [2002] for a justification of this choice). Cochrane and Piazzesi...
(2005), as well as Adrian, Crump and Moench (2013) document that investors only seek compensation for bearing level risk. Given the high reversion speed of the short rate, we therefore impose the condition that only the uncertainty about the reversion level, \( \Theta_r \), should attract a risk premium. This implies that the process for the short rate should be the same under P and Q. Finally, we require that the market price of risk should depend on the slope of the yield curve (Fama and Bliss [1987]; Campbell and Shiller [1991]). More details on the model formulation, the connection between the real-world and the pricing measure and the model calibration can be found in Rebonato, Maeso and Martellini (2019).

The model prices of the coupon bonds are calculated as:

\[
CP_{T_{\text{mod}}}^r = \sum_{n=1}^{N} \text{cashflow}_n \cdot F^n_r
\]

where \( CP_{T_{\text{mod}}}^r \) denotes the time-\( t \) price of a T-maturity coupon-bearing bond with N coupons still to pay, \( F^n_r \) signifies the time-\( t \) price of a discount bond of maturity \( T_n \), and the cash flows include both the coupons and the final repayment at maturity.

**CREATING THE STRATEGY SIGNAL**

After the calibration procedure has been carried out, for each bond we have a time series of pricing errors. One such series for a particular Treasury bond is shown in chart 1. To establish a trading strategy, we create a trading signal by setting the notional in each bond to be proportional to the strength of the signal for that bond on that day.

For each bond, the trading signal is formed by taking the difference between a slow-moving average and an adjusted fast-moving average of price errors. The adjusted fast-moving average is obtained by summing the last \( n_{\text{short}} \) price errors, and dividing the sum by \( n_{\text{long}} \), rather than \( n_{\text{short}} \), where \( n_{\text{long}} \) and \( n_{\text{short}} \) are the number of price errors in the long and short sum, respectively.

We use a slow-moving average, rather than the zero level, for the pricing errors because some bonds (perhaps for liquidity or other reasons) may have an unconditional average price error different from zero. The reason for using an adjusted fast-moving average, that is, for dividing the short sum by \( n_{\text{long}} \), rather than \( n_{\text{short}} \), is to make the signal more stable and to filter out high-frequency (quickly reversed) price errors, clearly visible in the time series displayed in chart 1, that can lead to overtrading.

The differences in signal using a proper and an adjusted moving average are shown in chart 2, which was obtained using a random walk to obtain the price errors, \( n_{\text{long}} = 20 \) and \( n_{\text{short}} = 5 \). It is clear that the adjusted signal retains the salient trends, but removes the high-frequency fluctuations, which is exactly what we wanted to achieve.

We took the number of days in the slow-moving average as equal to 22 business days (corresponding to roughly one month), and the number of days in the fast-moving average ranging from one to five business days (with the last choice corresponding to roughly one week)\(^5\).

We stress that the results we report in the following section were not obtained for any optimised combination of days in the fast- and slow-moving averages: as the round numbers (22 and one or five) and their simple interpretation (one month and one day/one week) indicate, we did not engage in a data-mining exercise of optimisation. The same applies to the cut-off maturities (two and 15 years).

Typical patterns for the two moving averages and the resulting signal are shown in chart 3. As this shows, the trading signals tend to display mean-
reverting behaviour, with reversion speeds implying half-lives of several weeks to a few months. This observation is important, because it suggests that the signal is practically exploitable, in that it neither requires excessively long strategies, nor overly frequent rebalancing.

On any given day, our strategy will consist of long positions in cheap bonds and short positions in expensive bonds. The resulting portfolio will not have a systematic long or short bias but, on any given day, it will not have exactly zero cost, nor will it be exactly duration-neutral. Because yields fell considerably over the period under study, we control for a possible residual duration exposure in our portfolio by calculating the net portfolio duration, and by subtracting the hypothetical profit (or loss) that a portfolio with that residual duration would make given the change in average yield from one day to the next. We note that subtracting the duration exposure this way would flatter the results from long positions, and penalise short positions, because achieving physical (as opposed to virtual) immunisation requires selling an actual bond.

Over the period under study, Treasuries have commanded an unconditional positive risk premium, and therefore physical hedging requires paying, rather than receiving, this premium. (To give an idea of the size of the effect, the magnitude of the unconditional risk premium for the 10-year point is over 200 basis points per annum.) To compensate for this, we increase the funding cost by an amount required to ensure zero realised return in each three-year period for a virtually duration-neutralised equal-weight long bond portfolio. We funded the difference between the proceeds from the short sales and the cost of the long positions by borrowing or lending at the Treasury Bill rate. Finally, we reinvested all coupons received in the same bond from which they originated.

**PROFITABILITY OF THE STRATEGY**

We carried out our analysis of the results by splitting the data into 15 blocks of three years (the last block is slightly shorter than three years). We have no return results for the first few days of each three-year block because of the need to build the moving average needed for the signal.

On any given day, the overall strategy will in general consist of long and short positions in different bonds. Chart 4 shows the cumulative profits for the duration-corrected strategy. The ratio of the strategy returns and volatility — i.e., the Sharpe ratio of the funded, duration-neutralised strategy — is shown in tabular form in chart 5.

We stress that the Sharpe ratio is positive in 14 of the 15 three-year blocks, is often very high, is never significantly negative, and is significantly greater than zero at the 99.9% confidence level in 12 of the 15 blocks. It is clear that the Sharpe ratio of the strategy is very high, but also that it has tended to decline over time. By far the most interesting observation, however, is the high correlation (75%) between the short-rate volatility (either as obtained from the fitting of the model, or as estimated statistically as the
volatility of the three-month Treasury Bill rate) and the profitability of the strategy, displayed in chart 6.

We also note that the strategy tends to produce high returns – but not necessarily high Sharpe ratios – when the market volatility is high; in these periods the volatility of the strategy is also high, and therefore the Sharpe ratios do not display this link with the market volatility. This finding is significant because it suggests a clear indication of the origin

of the profitability of the strategy. Our results can, in fact, be reconciled with the findings by Hu, Pan and Wang (2013), who establish a link between price errors (‘noise’ in their terminology, page 2341) for Treasury bonds and a general decrease in market liquidity. The explanation they offer is that the greater the decrease in liquidity, the greater the difficulty encountered by pseudo-arbitrageurs in carrying out the trades that should bring Treasury prices in line with fundamentals.

To the extent that an increase in volatility can be associated with a decrease in market liquidity, the findings of our study are consistent with the interpretation in Hu, Pan and Wang (2013), and provide a rationale for the source of profitability of our strategy. And if high returns are indeed achieved in periods of high market volatility, it is not surprising that in these periods the volatility of the strategy should also be high, as the deviations from fundamentals may well increase (giving rise to temporary losses) before eventually decreasing towards their reversion level.

**LONG-ONLY ANALYSIS**

We also explored a long-only version of our strategy by only investing in those bonds that, according to the model, were underpriced (cheap), and investing an equal amount in all the bonds in the universe (we call this the equal-weight portfolio). The market and strategy portfolios were sized to require the same outlay of cash, and both versions of the strategy were funded and duration-neutralised as explained in the previous section. We report the results in chart 7.

As mentioned, the funding rate was adjusted in each three-year block so as to give a zero Sharpe ratio for the long-only equal-weight portfolio. In terms of Sharpe ratio, the long-only strategy outperforms the market portfolio in 14 of the 15 three-year periods. The average Sharpe ratio for the strategy is significantly higher than that of the long-always strategy at the 99% confidence level. Although, from the theoretical point of view, these results do not add much to the results shown in the ‘Profitability of the strategy’ section, they are very important for the practical applicability of the strategy for many institutional investors, who often have long-only constraints.

**CONCLUSION**

In this article, we have proposed a definition of value in Treasury bonds that, we believe, displays more clearly the features intuitively associated with the term ‘value’ than what has recently been offered in the literature. In our definition, value is the difference between the market price of a Treasury
bond and its theoretical price, with the latter determined by a financially motivated dynamic Gaussian term structure model.

Using this definition of value, we construct long/short self-financing portfolios that load positively/negatively on our value factor. After controlling for residual duration exposure, we show that the portfolios thus constructed consistently earn a very attractive Sharpe ratio (average Sharpe ratio of 1.03, with a positive Sharpe ratio in 14 of the 15 three-year periods in our dataset). The Sharpe ratio of a long-only version of the strategy outperforms that of an equally weighted long portfolio by 0.822. We have shown that the profitability of the strategy is closely linked to the volatility of the three-month Treasury Bill. We can explain this finding if we establish a link between higher market volatility and poorer market liquidity. In this account of our finding, in periods of market turmoil (of high volatility), less arbitrage capital is forthcoming to bring prices back to fundamentals, and pricing errors temporarily appear. As market conditions revert to normal, the pricing errors are arbitraged away toward zero.

Our study did not try to account for trading costs, but, given the size of the Sharpe ratio, it appears unlikely that trading costs in the extremely liquid Treasury market could wipe out, or significantly reduce, the profitability of the strategy. Finally, it would be interesting to undertake a systematic study of the timing of the profitability of our strategy, compared with the returns from a diversified US equity index, or from the various equity factors that have been identified in the literature. We leave this as a possible future development.

Notes
1 "... explanatory variables like size and book-to-market equity have no obvious meaning for government and corporate bonds ..."
2 "...[we] show that individual stock portfolios formed from the negative of past 5-year returns are highly correlated with those formed on BE/ME ratios in our sample[...]. Hence, using past 5-year returns to measure value seems reasonable ...
3 We thank ICE for providing us with the dataset used for our empirical analysis.
4 The NAIRU is the non-accelerating inflation rate of unemployment – ie, the unemployment rate which produces neither inflationary nor deflationary pressures.
5 We analysed the robustness of our results using several values for the number of days in the slow and fast moving averages, and we found the results to be largely insensitive to reasonable variations from our chosen values.
6 In what follows, we omit the ‘duration-corrected’ qualifier unless required for clarity.

References

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

ETF Stream’s deputy editor Tom Eckett speaks to Sandaire’s investment director Oliver Smith on his approach to factor investing, smart beta within fixed income and the reasons for avoiding multi-factor products

Tom Eckett: Do you use smart beta or factor products within your clients’ portfolios?
Oliver Smith: Yes we do. We find them an effective way to diversify asset allocations and to target parts of the market with a focused lower-cost solution. Investors are now quite well served with competing products from a number of asset management businesses.

How much of your portfolios does smart beta typically make up?
Within the equity allocation we have around 20% in smart beta, which probably marks the highpoint.
However, factor exposures are a major determinant of how we allocate to managers and we can analyse this quite closely with both Morningstar style grids and factor analysis tools from software providers.

How do you view smart beta/factor-based ETFs?
I see them as a complement to our actively managed funds. Factor ETFs offer a low-cost way to get diversified stock exposure, and a purer factor tilt. For example, you could buy a value-tilted active manager but their stock risk may be higher than their factor risk when compared with a market cap benchmark. Combining both the active and passive managers can help to improve the portfolio’s overall shape.

If you had to identify one factor that is really compelling what would it be?
Everyone is waiting for the turn in value vs growth and whether you are overweight growth or value, the extent of growth’s outperformance has been astonishing over the past 12 months at almost 30%.
Much of this has been due to changes in valuation rather than earnings growth, but it is also true that growth stocks tend to have more robust balance sheets and in this economic shock businesses with balance sheets that are net cash or very lowly geared are going to emerge stronger than their competitors.
Value will have its day in the sun, and we have made tentative steps to reduce our growth overweight, but it will take an improvement in consumer confidence and an uplift in inflation expectations for market leadership to change.

What factors do you take into account when selecting a smart beta product?
First, you want to have a meaningful tracking error, otherwise there is little point in owning the product.
Second, both liquidity and ETF size are important areas of consideration. The latter is especially relevant for investors with tax considerations; the last thing people want is to be presented with an extra tax bill if an investment is wound down.
It always makes due diligence easier if a product is developed by an established provider, but we can and will make that effort to analyse new investments from less known houses.

Alongside smart beta and factor based investing, we have also seen the rise of thematic based investing using ETFs – does this interest you?
It is something we are looking at. The dispersion in returns amongst sectors has been great year-to-date and a thematic ETF that takes elements of those sectors could work. That said, the danger of buying thematic investments is the risk that you are

Post the March sell-off we have found that our active managers have been nimble enough to take advantage of the opportunities that have performed well during the lock-down, and their more selective approach can, I believe, be more effective than a broader-based ETF where often the top 10 holdings are quite concentrated
simply chasing the latest hot stocks. However, post the March sell-off we have found that our active managers have been nimble enough to take advantage of the opportunities that have performed well during the lock-down, and their more selective approach can, I believe, be more effective than a broader-based ETF where often the top 10 holdings are quite concentrated and you will inevitably end up owning businesses that you can feel uncomfortable with from a valuation perspective.

Are you concerned by the recurring accusations of hacking and data mining levelled at all factors and smart beta strategies? If you are continually trying to discover new factors, you are probably data mining. There is also a risk – which Research Affiliates and other strategists have identified – that longer-term factor outperformance can be substantially driven by valuation changes. This calls into question the robustness of factors. However, we do not own factors for this purpose; our view is that they can add diversification to portfolios and they are also a useful tool for looking opportunities within a market cap index.

How do you engage with clients about smart beta – is there any interest and if there is interest do clients raise any concerns? We would not refer to ‘smart beta’ per se, but clients are interested, and always have been interested, in the drivers of market performance, whether that’s small cap, momentum or value. We have conversations around this regularly.

Are there any specific areas where you would like to see new products emerge? Overall, we are very well catered for, but every economic cycle has new winners and there will be ongoing demand for new products as these start to emerge in this fresh economic environment. With regards to fixed income, to generate a meaningful tracking error, you need to take substantial active positions vs your index. Duration and credit risk have always been the two key levers of fixed income investing, and I think it is unlikely that we would be able to take large enough factor-exposed positions to make this worthwhile.

Does multifactor investing interest you? Not especially as these are usually based on the premise that a blend of factors will lead to sustainable outperformance of a market cap index. I worry this relies too much on back testing.

By 2025 do you think you will be making extensive use of smart beta products and factor ETFs? We already use them quite widely and they will continue to be part of the tool kit of market cap ETFs and actively managed funds. Ongoing financial innovation could lead to a transition of actively managed funds to the ETF wrapper – we will see!
What was the safe haven of choice for European investors in Q1?

George Geddes, senior writer at ETF Stream, takes a look at which asset classes investors turned to during the coronavirus turmoil

In Q1 2020, countries around the world gradually went into lockdown which resulted in factories, high street stores, travel companies and many other businesses temporarily shutting-up shop. Markets seemed relatively unaffected in January as coronavirus began to spread throughout the globe as all asset classes saw significant inflows. It was not until February when investor sentiment shifted dramatically and it appeared European investors would be a lot more reluctant to increase their equity exposures compared to the rest of the world.

January saw modest inflows into smart beta ETFs with €700m, according to data from Lyxor. However, this would be the only month with positive flows as the asset class went on to see outflows of €-300m in February. For other asset classes, February’s monthly flows into European-listed ETFs fell by two-thirds to €3.6bn, down from €11.6bn in January. The biggest contributing factor for this was the lack of investor interest in equities as flows fell from €7.2bn in January to only €900m in February.

BlackRock said the last week in February marked the worst week for equity outflows globally since records began in 2011 as investors sold off $31.6bn worth of equity ETFs. By this point, the lack of consumer purchasing was beginning to take effect. The Amundi MSCI Europe Consumer Discretionary UCITS ETF (CD6) plummeted 30.5% between the beginning of February and 18 March. Despite a respectable recovery since, it had a negative performance for the first four months of the year at -21.4%.

With markets in free fall, European ETFs saw €-25.6bn in outflows for March with smart beta ETFs accounting for €-2.1bn of flows. Equity and fixed income ETFs haemorrhaged assets with net flows of €-13bn and €-13.3bn, respectively. This was when the price of many fixed income ETFs became disjointed with the net asset value of their underlying bonds, causing the ETFs to trade at large discounts.

Instead, investors sought haven in gold as it was the only asset class in Europe that managed to maintain positive net flows in March, according to Lyxor. There was similar interest in the precious metal from the rest of the world as BlackRock reported global gold-backed ETFs gathered $7.7bn in asset, bolstering its year-to-date flows to $18.9bn.

Despite many equity and fixed income ETFs struggling to recover from the dip seen in March, the Invesco Physical Gold ETC (SGLD), which tracks the price of gold, managed to rebound quickly and continued to climb with a year-to-May performance of 11.8%.

European investors continued to remain bearish towards the equity market while investors around the rest of the world were beginning to take advantage of the cheap valuations of equity ETFs. European-domiciled equity ETFs saw outflows of €-13bn despite BlackRock reporting equity products saw inflows of $35.3bn, globally.

Markets appeared to begin recovering in April and European investors were still very reluctant to increase their exposure to smart beta and equity products. Smart beta ETFs had its third consecutive month of outflows with €-1.4bn, bringing its net total for the year to €-3.1bn. Equity ETFs only saw €300m for the month as fixed income reported inflows of €8bn. Commodities saw a second month of outflows at €-600m, meaning the region’s total net flows sat at €8.1bn.

For the rest of the world, significant inflows into fixed income and commodity ETFs offset a drop off in equity buying. Commodity ETF purchasing nearly doubled month-on-month to $21.4bn. Despite the price of oil falling into negative territory at the end of April, EMEA-listed crude oil ETFs saw assets grow by $2.3bn for the month. By April’s end, the WisdomTree WTI Crude Oil ETC (CRUD) had a YTD performance of -75% but has begun to recover in the early stages of May.

One of the few industries to maintain a positive performance for the year is cloud computing. Following national lockdowns and the need for company staff to work remotely, cloud technology usage has surged and so have the performances of ETFs with the exposure. The WisdomTree Cloud Computing UCITS ETF (WCLD) rose 12.3% in the first four months of the year. Between the 1 May and 21 May, it climbed another 15.4%.

<table>
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<th>Month</th>
<th>Smart Beta</th>
<th>Equity ETFs</th>
<th>Fixed Income ETFs</th>
<th>Commodity ETFs</th>
<th>Total</th>
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<td>€7.2bn</td>
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<td>March</td>
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<td>April</td>
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<td>€-600m</td>
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