

BEYOND BETA

INVESTIGATING THE SMART BETA, FACTOR & ESG INVESTMENT REVOLUTION

FIXED INCOME IN FOCUS

Bringing bonds to the
Smart Beta Party

Performance

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The top performing smart beta ETFs in the UK and the US

New Listings

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Editorial

Hello and welcome to *Beyond Beta* – the one and only magazine dedicated to smart beta and quantitative ETFs. Smart beta ETFs have mushroomed the past decade, drawing \$700 billion in assets from around the world. Yet fixed income smart beta ETFs have mostly been left out, seeing less than 10% of total global smart beta inflows.

As our contributors point out, the low inflows are strange given that smart beta approaches may make even more sense for fixed income securities than they do for equities. Market weighting equities means investors take large positions in issuers viewed favourably by the market (Microsoft, Johnson and Johnson, etc.). But market weighting fixed income often means leads to the opposite result: with investors taking large positions in issuers viewed unfavourably – like Greece. Add this together with the fact that companies and sovereigns are incentivised to serve the interests of shareholders and publics – not creditors – and you have a strong argument for alternatives approaches.

This issue 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, looking for proven smart beta fixed income ideas that investors can use. Highlights include a contribution from EdHec's professors, who argue that simple approaches, like targeting duration risk, work well and are easy to use. And JP Morgan and FTSE Russell, which show how smart beta fixed income strategies can be put to work with fallen angels and emerging market debts.

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”.

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Beyond Beta is published by



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www.PlatinumPressLimited.co.uk
T: 0844 880 4722

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The best performing smart beta ETFs in Q2 2019



Top performers UK
Volatility cuts both ways

Ticker	Fund Name - 3 Month Total Return	% change
SGDM	Sprott Gold Miners ETF	47.08%
GOAU	U.S. Global GO Gold and Precious Metal Miners ETF	46.89%
TAN	Invesco Solar ETF	20.63%
PSI	Invesco Dynamic Semiconductors ETF	12.33%
CNRG	SPDR S&P Kensho Clean Power ETF	11.32%
ROKT	SPDR S&P Kensho Final Frontiers ETF	10.75%
FPXI	First Trust International Equity Opportunities ETF	10.12%
EMTY	ProShares Decline of the Retail Store ETF	10.10%
DWTR	Invesco DWA Tactical Sector Rotation ETF	9.68%
FTXL	First Trust Nasdaq Semiconductor ETF	9.45%

3-month performance (end 30 June 2019)

Volatility is a double-edged sword. The volatility of Amazon's share price made Jeff Bezos the world's richest man in a remarkably short space of time. Fortunately for Bezos, Amazon had a very volatile share price – inclined to sudden sharp price jumps.

On the other hand, the volatility of bitcoin has made a lot of millennials and libertarian dreamers very poor the past two years. Bitcoin, like Amazon shares, has been very volatile. But the past 24 months, bitcoin's volatility has been on the down side.

When investors ask ETF providers for "low volatility products", what they're often asking for is Amazon shares: something inclined to upward volatility; downward volatility they're less keen on. And these understandably skewed preferences represent a challenge for ETF providers.

But to judge by the 3-month returns of UK ETFs, product manufacturers have done a decent job. Of the top 10 performing smart beta ETFs, seven were low volatility products, with almost every providers' product represented in the top 10.

That low volatility products would do well in today's macro environment makes sense. The Trump-instigated trade war has sent global stocks on a trampoline-like bounce. Every threatening tweet that drives the market down is met with a White House reassurance offensive, driving stocks back up. The back and forth has meant that there is plenty of volatility.

While volatility ETFs have done well, it can be worth putting their performance in context. A constant refrain for us here at *Beyond Beta* is that sector exposures and asset allocation are typically more important drivers of short-term performance than factor tilts.

And comparing low volatility ETFs to commodity ETPs and gold miners, which have shot the lights out with 50% returns (or greater) over the past three months.



Gold miners have produced 50% returns or greater over the last quarter



Top performers USA
Trump trade war fuels gold rally

3-month performance (end 30 June 2019)

The top performing US smart beta ETFs represent an interesting melange. The biggest hitters have been in precious metals, especially gold miners of various sorts. The gold rally owes to the Trump trade war, and investors' fears about the declining power of the US dollar. With Trump provoking China and Russia, investors fear the US dollar could lose its "exorbitant privilege", bolstering gold's de facto role as an alternative global currency. Gold miners have rallied, in tandem with the gold price.

The more interesting story may be solar powered ETFs, which have crushed it the past three months due to beaming earnings growth. The strong showing of CNRG and TAN owes in each case largely to the same three or four stocks, which both ETFs have concentrated holdings of. (For the curious, they are: Enphase Energy, SolarEdge Technologies and First Solar). On the factor front, both funds have a strong tilt towards smaller companies and techy momentum stocks.

Perhaps the most interesting pick of the litter is EMTY, which provides a way to bet against old school bricks

Ticker	Fund Name - 3 Month Total Return	% change
LUMV	Ossiam US Minimum Variance NR UCITS ETF 1C (USD)	10.97%
XMVU	Xtrackers MSCI USA Minimum Volatility UCITS ETF 1D	10.37%
FJSA	Fidelity US Quality Income UCITS ETF (Acc)	9.98%
UC95	UBS ETF (IE) Factor MSCI USA Low Volatility UCITS ETF (USD) A-dis	9.63%
DGRG	WisdomTree US Quality Dividend Growth UCITS ETF USD Acc	9.62%
IUMF	iShares Edge MSCI USA Momentum Factor UCITS ETF	9.47%
MINV	iShares Edge MSCI World Minimum Volatility UCITS ETF USD (Acc)	9.24%
XDEB	Xtrackers MSCI World Minimum Volatility UCITS ETF 1C	9.23%
USLV	SPDR S&P 500 Low Volatility UCITS ETF	9.21%
MVUS	iShares Edge S&P 500 Minimum Volatility UCITS ETF (Acc)	8.91%

and mortar high street shops. The fund is an inverse ETP – not an ETF in the traditional sense. It tracks an equally weighted index of companies that make 75% or more of their revenue from in-store sales. The fund gives -1x the performance of this index, using derivatives.

New Q2 smart beta listings

Clear trends in product innovation

Trend #1 – Marijuana

Marijuana ETFs are the headline grabber among new smart beta ETFs. Having been previously disallowed (in effect) in the United States due to federal law and custody issues, three new funds flooded onto exchange in very quick succession in July (TOKE, TCHX, CNBS all listed within a fortnight of each other). It's obvious why marijuana ETFs would be popular in the US: very similar products in Canada have gathered billions. Until very recently Americans wanting to buy in have been forced on to Canadian exchanges. Equally, it's obvious why it is smaller ETF providers targeting this niche: it's riskier and smaller providers are typically the ones hungrier for assets.

Trend #2 – Multi-factor

The financial planning guru Michael Kitces has a great podcast which tells how every product innovation in asset management has answered the questions: "how do advisors get paid?" and "how do advisors justify their fees with better services?" The mutual funds industry was driven by advisors wanting to outsource stock picking. The ETF industry was driven by advisors wanting lower fees. The great promise of multi-factor ETFs is they, like great product innovations before them, offer advisors

Marijuana ETFs have proven very popular in Canada with similar products now launching in the US



a way of offering a better service for their clients (or at least appearing to). We expect to see even more multi-factor ETFs coming to market going forward.

Products to watch

Star product #1 – zero fee cash ETF

The standout new listing for this edition is the Australian cash ETF Z3RO – which is zero fee. While other countries, like the US, have had zero fee ETFs listed already, these products have been somewhat gimmicky. For example, SoFi ETFs in the US charge zero fees – but only for the first twelve months of the fund's lifetime. (Management fees are then jacked up). Z3RO, by contrast, is zero fee forever. When we spoke to Pinnacle, to ask them why they built a free ETF, they said it was like cheap bread and milk in the supermarket: a loss leader.

Star product #2 – shariah compliant for robo advice

The Wahed FTSE USA Shariah ETF (HLAL) is also one to watch for us, and for two reasons. For one, it represents a type of ESG fund that is very common, very successful, but often overlooked: shariah-compliance. The other fact that makes this interesting is that the product issuer, Wahed, is a robo-advisor. Much has been made about the difficulties robo-advisors are having in hitting profitability. As robo-advisors invest in underlying ETFs, much of the margins they generate go to external ETF providers. By listing their own ETF, Wahed's robo platform will be able to bag more of the margin.

Ticker	Fund Name	Sector
USA		
(WCLD)	WisdomTree Cloud Computing Fund	Thematic
(ECLN)	The First Trust EIP Carbon Impact ETF	ESG
(ULTR)	IQ Ultra Short Duration ETF	Variance and Risk
(MOTO)	Smart Transportation ETF	Thematic
(PDEV)	Principal International Multi-Factor Core Index ETF	Multi-factor
(PLC)	Principal US Large-Cap Multi-Factor Core Index ETF	Multi-factor
(PSM)	Principal US Small-MidCap Multi-Factor Core Index ETF	Multi-factor
(CNBS)	Amplify Seymour Cannabis ETF	Thematic
(TOKE)	Cambria Marijuana Industry ETF	Thematic
(THCX)	The Cannabis ETF	Thematic
(HLAL)	Wahed FTSE USA Shariah ETF	Principles-based
(ACIO)	Aptus Collared Income Opportunity ETF	Fundamental
(QLV)	FlexShares US Quality Low Volatility Index Fund	Variance and Risk
(QLVD)	FlexShares Developed Markets ex-US Quality Low Volatility Index Fund	Variance and Risk
(QLVE)	FlexShares Emerging Markets Quality Low Volatility Index Fund	Variance and Risk
(HTEC)	ROBO Global Healthcare Technology and Innovation ETF	Thematic
(TBND)	Tactical Income ETF	Fundamental
(KLCD)	KFA Large Cap Quality Dividend Index ETF	Fundamental
(KSCD)	KFA Small Cap Quality Dividend Index ETF	Fundamental
(IHAK)	iShares Cybersecurity and Tech ETF	Thematic
(IDNA)	iShares Genomics Immunology and Healthcare ETF	Thematic
Australia		
(Z3RO)	Pinnacle aShares Dynamic Cash Fund (Managed Fund)	Fundamental
(SAVE)	Pinnacle aShares Global Dynamic Income Fund	Fundamental
Korea		
329200	Mirae Asset TIGER Real Estate Infra High Dividend ETF	Fundamental
UK		
(AIAI)	The L&G Artificial Intelligence UCITS ETF	Thematic
(DOCT)	The L&G Healthcare Breakthrough UCITS ETF	Thematic
(GLUG)	The L&G Clean Water UCITS ETF	Thematic
(ESGU)	Invesco MSCI USA ESG Universal Screened UCITS ETF	ESG
(ESGE)	Invesco MSCI Europe ESG Universal Screened UCITS ETF	ESG
(ESGW)	Invesco MSCI World ESG Universal Screened UCITS ETF	ESG
Canada		
(HERO)	Evolve E-Gaming Index ETF	Thematic

A promising start, but more work is needed

Market weighted bond indexes favour the interests of debt issuers over investors, argue professors, Martellini, Rebonato, and Maeso. Despite this, there has been relatively little research into what alternatives might look like. What research exists suggests that factor-based approaches – even simple ones like targeting the term premium – can help load the dice in investors favour



EDHEC-Risk Institute

Part of EDHEC Business School and established in 2001, EDHEC-Risk Institute has become the premier academic centre for industry-relevant financial research.

The abundance of theoretical and empirical research on factor investing in the equity universe stands in sharp contrast to the relative scarcity of research about how to efficiently harvest risk premia in bond markets.

From the investment practice standpoint, a similar contrast actually exists between factor investing in the equity space, which is a relatively mature subject, and factor investing in bond markets which still is in its infancy. That relatively little is known about the out-of-sample performance of factor investing in fixed-income is perhaps surprising given that a number of concerns have been expressed about the (ir)relevance of traditional forms of corporate and sovereign bond benchmarks.

EXISTING BOND BENCHMARKS AS ILL-DIVERSIFIED BUNDLES OF UNSTABLE FACTOR EXPOSURES

One of the major problems with bond benchmarks which simply weight the debt issues by their market value is the so-called “bums’ problem” (Siegel, 2003). Given the large share of the total debt market accounted for by issuers with large amounts of outstanding debt, market-value-weighted corporate bond indices will have a tendency to overweight bonds with large amounts of outstanding debt. It

is often argued that such indices will thus give too much weight to riskier assets.

While it is debatable whether debt-weighting really leads to the most risky securities being over-weighted¹, it is clear that market-value debt weighting leads to concentrated portfolios that are in opposition with investors’ needs for efficient risk premia harvesting, which involves holding well-diversified portfolios. In a nutshell, a good case can be made that existing bond benchmarks tend to be poorly diversified portfolios, regardless of whether or not the over-weighting applies to the wrong constituents. A similar problem has been documented for cap-weighted equity benchmarks – see for example Amenc, Goltz and Le Sourd (2006).

In addition to the problem of concentration, fluctuations in risks’ exposure (such as duration or credit risk in existing indices) are another source of concern – see Campani and Goltz (2011) for more detail. Such uncontrolled time variation in risk exposures is incompatible with the requirements of investors that these risk exposures be relatively stable so that allocation decisions are not compromised by implicit choices made by an unstable index.

For example, an asset-liability mismatch would be generated by changes in the duration of the bond index if the latter is used as a benchmark for a pension fund bond portfolio. More generally, it appears that traditional bond benchmarks can be regarded as more “issuer-friendly” than “investor-friendly”, in the sense that they passively reflect the collective decisions of issuers regarding the maturity and size of bond issues, with no control over risk factor exposures associated with such choices nor over the reward that investors should

Market-value debt weighting leads to concentrated portfolios that are in opposition with investors’ needs



deserve from holding a well-diversified portfolio of such factor exposures.

A FACTOR INVESTING APPROACH IS REQUIRED IN FIXED-INCOME MARKETS BUT MORE RESEARCH IS NEEDED TO CONFIRM THAT THIS APPROACH CAN LEAD TO ROBUST FORMS OF IMPROVED INVESTABLE BOND BENCHMARKS

The modern approach to factor investing (see for example Martellini and Milhau (2015)) first requires the identification of robust and economically motivated sources of risk in fixed-income markets.

An economic motivation is not just an academic

nice-to-have. Understanding the source and origin of the cross-section differential returns matters a lot from the point of view of a robust benchmark creation:

- If the origin of the excess returns can be traced to a source of systematic risk, then the attending compensation (the corresponding “market price of risk”) will not disappear by discovering it, but may decrease or increase in size over time with variations in the investors’ risk aversion;
- If the excess returns are due to a behavioral finance “irrationality” it could in principle be arbitrated away by rational investors, and revealing the behavioral anomaly

Our research confirms... that long-term bonds offer a positive unconditional excess return over short-term rates

could therefore be the first step towards its disappearance. However, its persistence or otherwise may be linked to the availability or scarcity of “arbitrage capital”;²

- If the excess returns are due to institutional frictions, they can be an easy source of profitability for investors who are not affected by the regulatory or institutional constraints. However, they can disappear at the stroke of a regulatory pen;
- If, finally, the excess returns are truly due to an anomaly, then it is likely to disappear after its discovery as it becomes exploited.

In this context, it appears that more analysis is required before we are able to see the emergence of improved bond benchmarks that will provide adequate answers to investors’ needs. In a recent paper (Maeso, Martellini and Rebonato (2019a)), we provide such a systematic analysis of the theoretical, empirical and practical challenges related to factor investing in sovereign bond markets.

Our research addresses the question of factor investing from the perspective of a single credit-risk-free issuer, which is a priori the purest and most difficult problem since neither time-series nor cross-sectional differences in risk and performance can be explained by differences in creditworthiness, as in the case of a multi-issuer universe. In other words, our focus is to explore whether it is possible to identify economically justifiable strategies which, after accounting for transaction costs and other forms of trading frictions, generate excess returns when investing in a relatively homogenous set of highly correlated securities.

CONDITIONAL FACTOR INVESTING STRATEGIES BASED ON SECOND-GENERATION RETURN PREDICTING FACTORS LEAD TO ROBUST BENEFITS FROM BOTH AN ASSET-ONLY AND ASSET-LIABILITY MANAGEMENT PERSPECTIVES

Our research confirms (using both yield curve and CUSIP-level data in the US) the well-

known finding that long-term bonds do appear to offer a positive unconditional excess return over short-term rates, an excess return which is also known as the “bond risk premium” or “duration risk premium”. It also confirms that the magnitude of the excess return generated by what is known as an unconditional carry strategy is relatively small (much smaller than the equity risk premium) and has been negative for extended periods.

On the other hand, it suggests that one can efficiently exploit the presence of state-dependencies in excess returns from the level factor to implement a conditional factor investing strategy. Using data on individual bond returns in the US over the 1975-2018 sample period, we find in particular that conditional versions of the carry strategy based upon second-generation return predicting factors can generate up to 210 basis points excess performance with moderate tracking error levels.

One particularly attractive feature of these conditional carry strategies is their ability to show particularly strong levels of outperformance with respect to the benchmark in increasing interest rate environments and also in bear equity markets, thus suggesting very attractive diversification benefits. Turning to an asset-liability framework, these conditional carry strategies can also be used to generate dynamic active duration bets with respect to the liability benchmark substantially, which leads to substantial outperformance a strict duration matching strategy with relatively modest levels of tracking error.

FACTOR INVESTING IN FIXED-INCOME MARKETS CAN EXTEND BEYOND TRADITIONAL FACTORS TO ENCOMPASS A NUMBER OF ALTERNATIVE FACTORS WHICH ARE EXPECTED TO CARRY A POSITIVE PREMIUM

In addition to the traditional fixed-income factors such as the level (and also the slope) of the yield curve, other factors have also been recently exposed in academic literature. In corporate bond markets, they include notably the credit risk and default risk factors (see Bai et al. (2019) for a recent reference), as well as the liquidity factor (Rebonato and Hong (2017)). They also include factors that have been adapted from the research on equity markets, in particular the momentum factor (Asness et al. (2013), Jostova et al. (2013), Rebonato et al. (2019b)), and the value factor (Asness et

al. (2013), Houweling and van Zundert (2017), Rebonato et al. (2019c)).

The recent discovery that generalised factors that used to “work well” for equities seem to be effective also in the fixed-income area does create, however, an outstanding explanation problem. As Asness et al. (2013) put it, “the strong correlation structure among value and momentum strategies across such diverse asset classes is difficult to reconcile under existing behavioral theories, while the high Sharpe ratio of a global across-asset-class diversified value and momentum portfolio

presents an even more daunting hurdle for rational risk-based models.”

Despite the suggestive labels attached to the factors, what has actually been studied in the recent literature are often proxies more or less loosely associated to the more fundamental quantities they “stand in for”. This can create not only ambiguity, but also ample scope for data snooping and overfitting. Needless to say, the cost of overfitting in-sample is poor performance out-of-sample. A principled and parsimonious approach to proxy analysis is therefore essential, especially in the nascent field of fixed-income factor investing.

Notes

¹ A higher weight for an issuer with a high market value of debt does not necessarily mean that the index is over-weighting issuers with a high face value of debt. An issuer with a high amount of par value debt outstanding will only get a high weight if the market value is relatively close to par value which implies that the issuer is not perceived to be very risky. It is therefore not clear why the market-value-weighted index should become riskier. In addition, loading onto riskier issuers should not be a problem if this risk is rewarded by higher expected returns.

² This clear distinction between ‘irrationality’-based and institutional-based source of differential cross-sectional returns can easily become blurred: the availability of the speculative capital that should arbitrage irrationalities away may, for instance, have become greatly reduce because of regulatory initiatives such as the Volker rule in the States, or the Likanen proposal in the EUR area.

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Bond indices: why smart beta is the way to go



Bond indexes pose a real challenge for index providers, Gareth Parker, the Chief Index Officer of Moorgate Benchmarks, tells ETF Stream's editor David Tuckwell. And until index providers come up with a compelling alternative to weighting by issuance, investors will continue turning to active managers for bond exposure

David Tuckwell: Market cap weighted indices can be pretty simple to build. I've seen 22-year-olds with two months' experience make them in spreadsheets. But building fixed income indices are a bit more challenging. What are the differences in index build between market weighted equity and bond indices?

Gareth Parker: The main challenge over the past few years is how you define for market cap in bonds. The closest you can get to a direct equivalent is the issuance, i.e. the total dollar value issued. The problem there is that it often leads to most heavily weighting the most undesirable corporates and sovereigns. (Editors note: this is often called the "bums problem"). So if you take a European market weighted bond index, you get more Greece than Germany and more Italy than Scandinavia. Who wants that?

But it also makes it easier for active managers to outperform purely passive bond indices. If you're an active manager, and you want to outperform that index, then obviously just avoid Greek bonds. In equity things are different. It's really hard to

beat market weighted indices, especially the broad ones. Years of evidence shows that. In bonds, lots of people can outperform because most of them are market cap weighted.

This has led index developers to head off in other directions and figure out how to weight them. I get the impression there isn't a clearly agreed replacement for doing it by issuance at this stage. There are alternative suggestions: issuer caps, equal weight, or GDP weight. But until there is agreement on how to do it or what the standard way to index it there's always going to be this problem.

So there are strong arguments for smart beta approaches when building bond indices?

Yes. There is a good reason to think smart beta is a good way to go. But very few people have made that jump to passive in fixed income. So while potentially promising, smart beta in fixed income could be a while away.

Critics argue that the bums problem is fake. They say market weighting works the same for debt and equity. That is, the market determines how debt and equity a company can issue. The market then sets the cost of capital for both. There's no distinction.

Maybe. But I don't think fund buyers have the same understanding of what this involves in debt as in equities. When people buy market weighted equity indices they understand that they're buying lots of large companies. They also understand that those companies are large for good reasons: your Microsofts of the world make a lot of money.

There is a good reason to think smart beta is a good way to go. But very few people have made that jump to passive in fixed income. So while potentially promising, smart beta in fixed income could be a while away

But do people understand that if they buy a bond index, your most heavily weighted issuers aren't Microsoft and Google – which are big for good reasons. Rather they're Greece, Portugal, that have a big footprint in that market for bad reasons? I'm not sure.

How easy is it to build a smart beta bond index? I know they can be hard for equity: when MSCI first launched a value index they had to pull it because it kept picking all the wrong stocks. Meanwhile, Vanguard has opted for actively managed ETFs for its quant products, thinking indices aren't up to the job.

They're easy enough to build. The difficulty to me is a lack of understanding between the index provider and ETF issuer as to what the index is doing and whether it's doing what it's meant to. When things have failed in the past it's often because index buyers haven't done enough due diligence on the risks involved in smart beta strategies. These risks include a tendency towards significant underperformance at certain stages of the market cycle although generally outperforming over the full cycle.

Where do you think the potential for innovation in smart beta bond indices is? For me it's most obviously on the corporate debt side.

I agree. You've got a bigger universe of entities and much more data. If I had a lot of data, I would be thinking of smart beta for corporate debt where I can use the same sorts of strategies and use the same data we have for equity in the fixed income side. So, I can put an ESG screen and use company fundamentals for the weighting methodology. It doesn't solve the problem at the sovereign debt side.

Am I correct in thinking we've seen less insourcing and self-indexing for bond index funds?

We've absolutely seen less of that. There is less indexing full stop as more people think active works. And to the extent that active outperforms the standard indices they're exactly right as the standard indices are dominated by poor performing countries. Most people start in fixed income with the assumption they'll have to build it themselves.

Gareth Parker

was one of the four founding staff of FTSE, and its Head of Index Research, Design and Development. He has also held senior roles at S&P, Russell Indexes and IPD. Gareth was responsible for the creation of or management of some of the world's best-known indices, including the FTSE 100, FTSE All-World, FTSE4Good, S&P Smart Beta Indices and IPD Property Indices, as well as many domestic indices, including the primary Greek, Cypriot and Belgian indices. Gareth is Chairman of the CBOE Europe Index Advisory Committee.



Fallen too far: what sets fallen angels apart

When US investment grade bonds are downgraded and cross the ratings threshold into high yield territory, they join the sector known as ‘fallen angels’. Robin Marshall, director of fixed income research at FTSE Russell examines how – and why – fallen angel characteristics and performance differ from the rest of the US high yield bond market



FTSE Russell is a leading global provider of benchmarks, analytics, and data solutions with multi-asset capabilities

WHAT ARE FALLEN ANGELS?

A fallen angel (FA) is a corporate or sovereign bond downgraded from Investment Grade (IG – a minimum rating of BBB- with S&P, Moody’s or Fitch – to a High Yield (HY) credit rating of BB+ or below. Since this downgrade represents a move from investment grade to speculative territory, it is far more significant than a downgrade for a bond staying within the same asset class.

Because FAs were issued as IG credits, they tend to have different characteristics than other HY issues. Most notably, by comparison FAs tend to have longer duration, lower coupons, higher credit ratings, weaker covenants (since they were issued as IG credits), and lower default rates. FAs are also generally more concentrated in sectors subject to specific shocks than HY issues.

FALLEN ANGEL PERFORMANCE

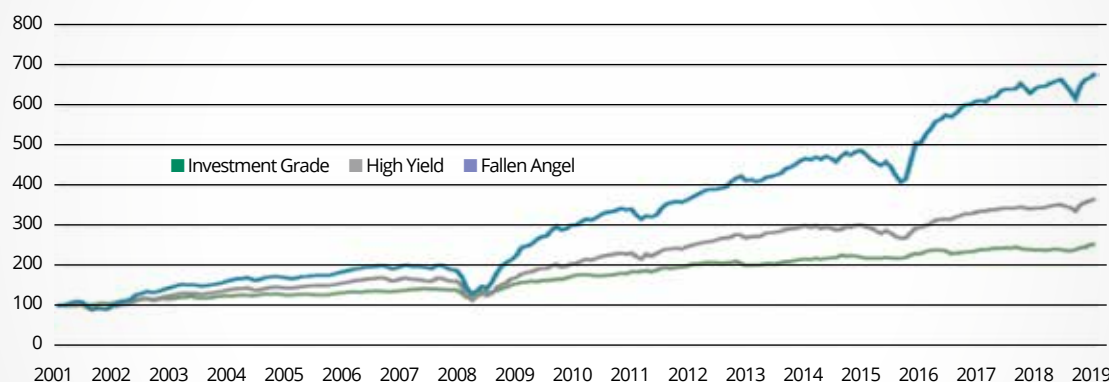
The number of FAs has often been negatively correlated with the economic cycle, expanding

during recessions. Rating agencies seek to capture these cyclical risks in their ratings, but sector-specific shocks, like the TMT bubble in 2000, or the oil price collapse in 2014/15, can cause a spike in the number of FAs. After the GFC in 2008/09 credit ratings may now be more defensive than in previous cycles.

Fallen Angel bond indexes, like the FTSE Time-Weighted US Fallen Angel Bond Index (FABI) measure the performance of FAs after they enter the sub-IG asset class. The FABI measures the performance of bonds issued by companies domiciled in the US and Canada. As shown in the graph below, this index outperformed market cap weighted HY issues in the period 2002-2016.

Since 2002, FAs have also posted higher returns on an annual basis relative to other fixed income classes, but with more volatility. The higher volatility can at least somewhat be explained by the time period immediately following the announcement of

US FALLEN ANGELS HAVE OUTPERFORMED US HIGH YIELD AND INVESTMENT GRADE ISSUES (USD)



Source: FTSE Russell as at 30 April 2019

TABLE 1: US FA PERFORMANCE AND CORRELATION CHARACTERISTICS RELATIVE TO OTHER US ASSET CLASSES (JAN 2002-APR 2019)

Monthly Returns	Fallen Angels	High Yield	Investment Grade	US Treasury (10 Yrs)	US Equity
Mean	0.98	0.66	0.46	0.33	0.72
Standard deviation	3.35	2.69	1.56	1.25	4.06
Risk adjusted	0.29	0.25	0.29	0.26	0.18
Annual Returns	Fallen Angels	High Yield	Investment Grade	US Treasury (10 Yrs)	US Equity
Mean	12.44	8.25	5.67	3.98	8.93
Standard deviation	11.59	9.33	5.41	4.32	14.05
Risk adjusted	1.07	0.88	1.05	0.92	0.64
Correlation of Returns	Fallen Angels	High Yield	Investment Grade	US Treasury (10 Yrs)	US Equity
Fallen Angel	1.00				
High Yield	0.93	1.00			
Investment Grade	0.49	0.53	1.00		
US Equity	0.61	0.69	0.21		1.00
US Treasury (10 Yrs)	-0.18	-0.20	0.60	1.00	-0.33

Source: FTSE Russell as at 30 April 2019

an FA's downgrade from IG, where empirical evidence suggests it will see the sharpest drop in performance. As such, FAs display higher standard deviation of returns than HYS (Table 1). However, FAs still reported higher risk-adjusted returns for the period not only relative to HY, but also to US Treasuries and US equities.

The correlation of returns with US equities (FTSE USA Index) is also lower for FAs than HYS more generally, illustrating the slightly higher credit quality.

It is important to note that FA performance can also be impacted by different market regimes. For example, FAs and other HYS have typically underperformed IG credits and US Treasuries during a cyclical downturn. This has occurred when liquidity effects become severe and the credit carry in HYS has become strongly negative. But FAs have outperformed during cyclical upturns when credit quality improved, as was the case from 2011-16.

Paul Syms, Head of EMEA ETF Fixed Income Product Management at Invesco, commented, "When we were developing our US High Yield Fallen Angels UCITS ETF that is now approaching its three-year anniversary, we selected the FTSE index to track. That is largely because we believed the innovative time-weighted approach would be the best way to capture the performance of this

asset class. Investors looking at the ETF may be attracted to both the growth potential of fallen angels and also the relatively high yields."

WHY FALLEN ANGELS HAVE HAD HIGHER RISK-ADJUSTED RETURNS

FAs' outperformance in the corporate bond market can in large part be attributed to overselling, which drives FAs to artificially low prices relative to equivalent credits in the HY asset class. This can occur for several reasons. First, after the downgrade to sub-investment grade, indexed IG funds and other funds that are not permitted to hold sub-IG issues are forced to sell the FA.

The other two factors driving the overselling of FAs relate more to behavioral finance. Institutional investors can overreact to the news

The number of FAs has often been negatively correlated with the economic cycle, expanding during recessions. Rating agencies seek to capture these cyclical risks in their ratings, but sector-specific shocks, like the TMT bubble in 2000, or the oil price collapse in 2014/15, can cause a spike in the number of FAs



Robin Marshall

is director of fixed income research at FTSE Russell and is the author of the flagship monthly publication *FTSE Market Maps – Fixed Income Insight Report*. He previously worked as director of fixed income at Smith and Williamson Investment Management in London for 14 years, and before that at JPMorgan/Chase as managing director for economic and policy research for 18 years. He is a graduate of Oxford University, and also completed the M.Phil in Economics at Oxford.

US FALLEN ANGELS AS A SHARE OF THE US HIGH YIELD MARKET



Source: FTSE Russell as at 30 April 2019

of a downgrade, further causing the bond to suffer a “cliff-edge” effect on departure from the IG asset class. And in some cases, the selling can start even before the downgrade is announced. Given the distinct nature of IG and HY, even the risk of an issue leaving the IG universe can cause advance selling of the bond, because an active IG portfolio manager wishes to avoid being caught with a sub-IG holding.

More generally, there is some evidence regulated investors can exploit sluggish adjustment in credit ratings to conduct regulatory arbitrage, taking advantage of the difference between actual credit risk and the risk implied by imperfect credit ratings. FAs also benefit from a higher proportion of subsequent credit upgrades than equivalent HY issues. This may be because previous spikes in the proportion of FAs have reflected temporary financial pressure on long-standing businesses.

FAs’ unique characteristics can also be performance drivers. As noted earlier, FAs tend to

have more duration than the rest of the HY asset class, since HY issuers may struggle to issue longer maturity bonds. This would have helped relative performance during the 2011-16 period, given very low interest rates and a benign credit environment.

HOW MARKET REGIMES SHAPE THE FALLEN ANGEL MARKET

The size of the fallen angels sector can largely be a function of market regime. Several indicators can help investors assess the potential changes in the number of FAs, including macro economic indicators like the credit cycle and monetary policy, as well as aggregate credit indicators like the ratio of upgrades to downgrades.

The risk of sector-specific market shocks is also a key indicator to follow when looking to gauge potential changes in the size of the FA market. When studying past sector-specific market shocks, the impact on the size of the FA market is evident. As shown in the graph above, the share of FAs in the overall HY market was much higher after the sector-specific shocks in 2014/15 (energy sector), 2008/09 (financials), 2001/02 (TMT).

Looking at the current FA market, both default rates (DRs) and the share of FAs in the HY market remains low by historical standards, despite weakening global growth and the general decline in the credit quality of market indexes. This may be due to a long period of stable US corporate earnings growth, a decrease in the use of key covenants for non-IG bonds, and the absence of a recent sector-specific shock.

Of course it is quite possible that the share of FAs in the HY market now increases as generally happens in a downturn, but credit ratings are already more defensive, and the build-up of BBB debt may be partly M&A driven. Companies

The size of the fallen angels sector can largely be a function of market regime. Several indicators can help investors assess the potential changes in the number of FAs, including macro economic indicators like the credit cycle and monetary policy, as well as aggregate credit indicators like the ratio of upgrades to downgrades. The risk of sector-specific market shocks is also a key indicator to follow when looking to gauge potential changes in the size of the FA market.



also have a strong incentive to avoid migration into the HY market, given the increase in the cost of capital that follows when credits lose their IG status.

CONCLUSION

While FAs are categorized as HY bonds upon crossing the ratings threshold into sub-IG, they can in fact be quite different with respect to both characteristics and performance. When studied as a distinct asset class, FAs have historically exhibited higher risk-adjusted returns than

HY issues. This is primarily due to overselling, where both forced IG fund sellers and general overreaction to news of the downgrade can drive FA bonds to artificially low prices relative to equivalent credits in the HY asset class.

The size and composition of the FA market can shift over time, and is largely a function of market regime. While the current share of FAs in the HY market is historically low, there are several key indicators that could reshape the FA landscape. Looking at these indicators can help investors assess the potential changes in the number of FAs.

Enough talk – putting machine learning into practice

Forget what you think you know about machine learning and the impact it can have on factor investing. Here, Société Générale’s quant strategist Andrew Lapthorne builds a quant model which picks outperformers and underperformers using a variety of factors to see how ML can aid investors

Every day we are bombarded with what machine learning (ML) and artificial intelligence (AI) can do and how they will re-shape our industry. To a large extent, this enthusiasm may be over-hyped. ML and AI cannot generate alpha on their own. They rely on good data. We know that there are certain company characteristics or factors that drive stock performance. We have been relying on them for decades to build systematic strategies and generally improve the investment process. Why do we need new technology then?

Quants have been trying for years to optimally combine various factors, model non-linear trends and bring out factor interactions. Many approaches have emerged, most of them, while intellectually intriguing, have not passed the test of time. Can ML help us do better? Potentially yes, as various ML algorithms offer a more robust framework and a better way to model such relationships. If that’s the case, we could extract more from our data. Such a systematic

framework can also make it easier for us to incorporate and evaluate new data, and there is plenty of that around these days.

In this note, we use one of the most popular ML supervised learning algorithms to build a quant model and pick outperformers and underperformers using a variety of common equity factors. We find our framework to add value over various standard factor combinations. Our ML model delivers very strong performance in our backtests. We also look beyond the model’s performance though and discuss some of the main challenges we faced in our analysis.

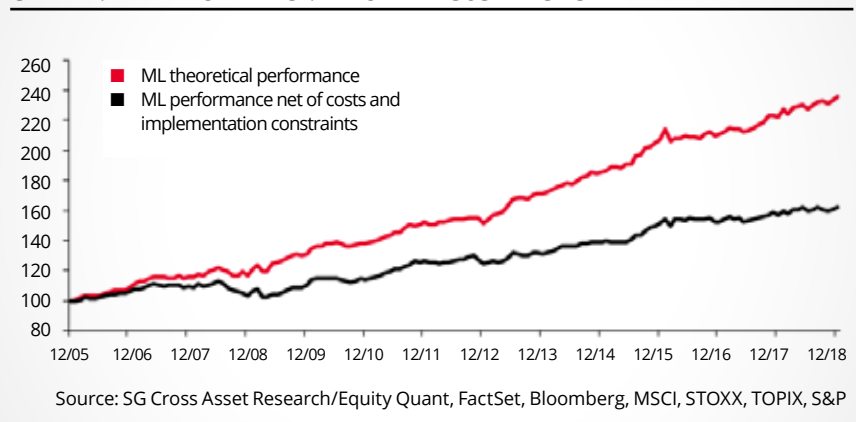
Given the very high turnover of our strategy, it is important to cost it properly to realistically assess its performance. We incorporate transaction costs and various other implementation constraints. Despite the significant performance drag when incorporating these, we still find our strategy to produce meaningful and consistent outperformance (see Chart 1 left).

MACHINE LEARNING CONCERNS

There are some key concerns when using an ML model in practice. We have spent a considerable amount of time examining various ML techniques and their ability to extract value from our data. There is no doubt that the main problem we came across was the model’s complexity.

For example, let’s visualise what we are doing here. We use a gradient boosting framework to predict stock performance. The starting point in our model is a decision tree which consists of up to 50 decision rules. Then we boost the single tree by adding up to 1,000 trees in our model. As we don’t know what the optimal structure of the model is, we test 1,200 different set-ups. So, we have 1,200 ensembles of up to

CHART 1: ML PERFORMANCE: THEORY VERSUS PRACTICE



1,000 trees of up to 50 decisions, from which we pick the best 50 ensembles. And we repeat this process every month.

SENSITIVITY

This is obviously a very complex framework, which will be sensitive to our training data. To illustrate this, we run a few tests where each time we randomly exclude just one percent of our training data. The overall performance of all models is very similar, but if we look at the relative performance of our tests to our original backtest, there are some notable variations over time. What is reassuring is that all simulations provide meaningful outperformance (see Charts 2 and 3 right).

INTERPRETATION

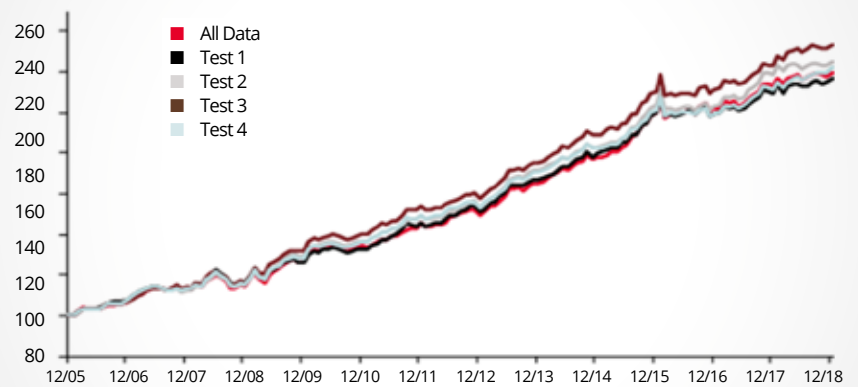
Interpretability is also a major concern. Can we tell what the model is doing? Which of the 80 factors does the model rely on most? We can go through and examine all individual trees, but the patterns will be too complicated to allow us to recognize anything meaningful. The good news is that in tree-based models, there is a straightforward way to measure the importance of any factor. Each time a tree makes a split by a certain factor, we can directly measure the improvement in the model's accuracy. Then, we can aggregate this across all trees and across all our selected models to assess the variable importance of all our factors. The left-hand side of the table below shows the top 10 factors in our most recent tree structure.

Unfortunately, there is a significant caveat to this method: it does not deal very well with highly correlated variables. The problem is that in the presence of two correlated variables, the algorithm cannot easily distinguish them, so in some cases it selects the first variable and in other cases the second one. This essentially means that the importance of each of the two variables will be halved in the presence of the other.

One way to deal with this problem is using a technique called Recursive Feature Elimination (RFE). The idea is to keep excluding the least important factor and re-training the model with the remaining features only. This way we eventually exclude correlated variables and arrive at a better assessment of the importance of the features. The downside here is that each time we exclude a variable, we have to repeat the whole training and tuning process.

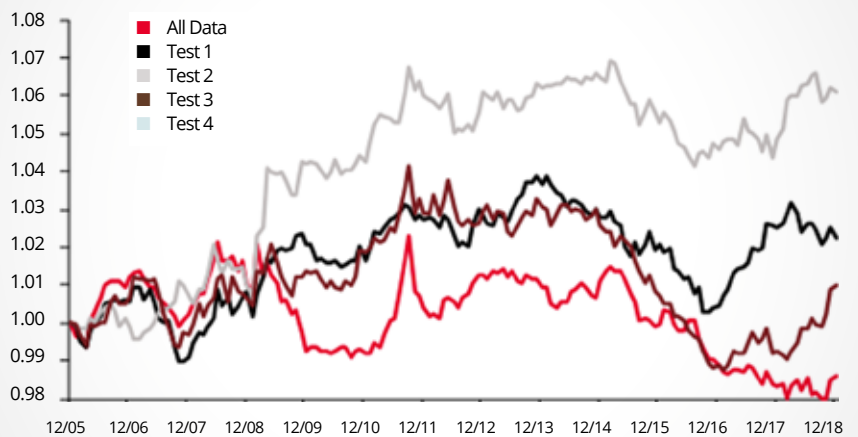
This is very time-consuming and also gradually moves us away from the original model. We prefer to use this method with an algorithm

CHART 2: LONG-SHORT PERFORMANCE



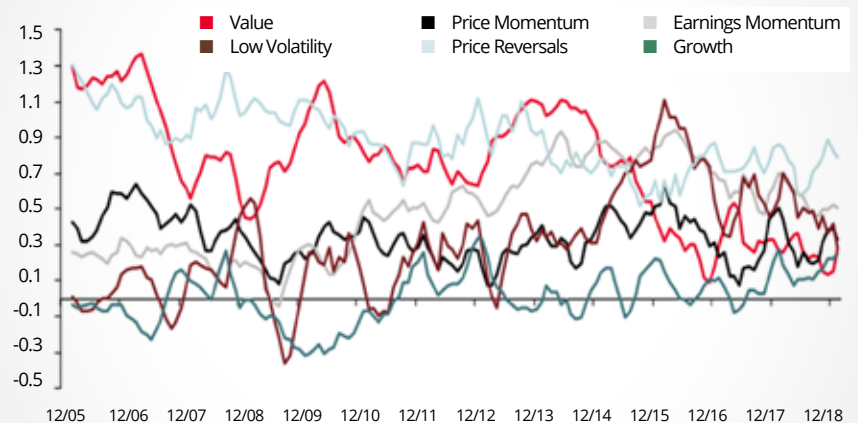
Source: SG Cross Asset Research/Equity Quant, FactSet, Bloomberg, MSCI, STOXX, TOPIX, S&P

CHART 3: RELATIVE PERFORMANCE



Source: SG Cross Asset Research/Equity Quant, FactSet, Bloomberg, MSCI, STOXX, TOPIX, S&P

CHART 4: AVERAGE ML EXPOSURES TO STANDARD QUANT FACTORS (3-MONTH ROLLING AVERAGE)



Source: SG Cross Asset Research/Equity Quant, FactSet, Bloomberg, MSCI, STOXX, TOPIX, S&P

Given the complicated and dynamic nature of the model, it is not surprising to see that our long and short portfolios have very high turnover

TABLE 1: WHICH ARE THE MOST IMPORTANT FACTORS?

	LightGBM's Feature Importance	Random Forest RFE
1	RSI 14 day	RSI 14 day
2	Size	Enterprise value to free cash flow
3	3-month earnings revisions	3-month earnings revisions
4	Current year EPS growth forecast	12-month idiosyncratic volatility
5	3-month lagged by 1-month price momentum	Size
6	Change in asset turnover	1-month Risk-adjusted Residual Reversals
7	Dispersion of current year EPS forecast	5-year ROE trend
8	12-month lagged by 1-month price momentum	6-month earnings revisions
9	Price to tangible book value	Price to free cash flow
10	Dividend yield	1-month Residual Reversals

that is less sensitive to tuning, like the Random Forest algorithm. The right-hand table above, shows the ranking of our factors based on this method. Enterprise value to free cash flow is now the second-most important variable, despite not making to the top 10 factors before. ML is not short of techniques that can help us understand our data better; in practice, combining information from different techniques will give us better insight.

It is also interesting to look at the average model's exposure to standard factors. Obviously,

this is not going to capture the non-linear patterns of our model, but it will give us an idea of the underlying factor bets. What is reassuring is that our strategy seems to generate positive exposures to the main factors. What is also interesting is that these exposures are volatile over time. This provides a good illustration of the very dynamic nature of the model (see Chart 4 on page 21).

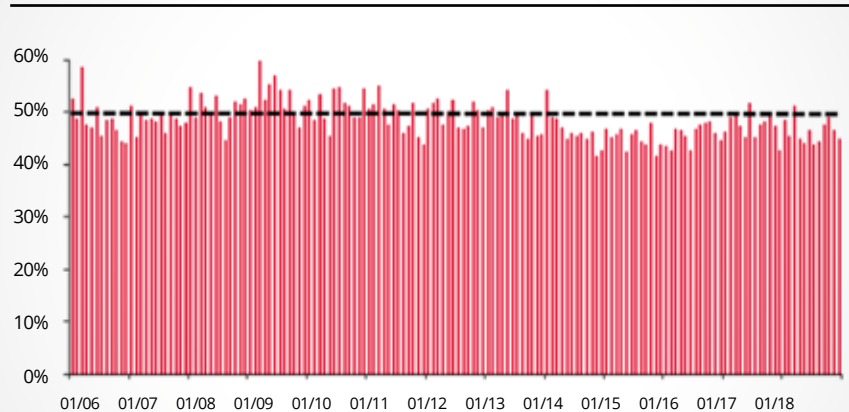
TURNOVER

Given the complicated and dynamic nature of the model, it is not surprising to see that our long and short portfolios have very high turnover. The 1-way monthly turnover is 50%. This is not only down to the model, but also because we try to predict the performance over a short horizon and use some very fast-moving factors. We could have certainly increased our horizon and used more stable factors as inputs, which would have considerably reduced portfolio turnover, but this would have resulted in extracting less from our factors. There is no doubt though that for such a high-turnover strategy, it is important to cost it properly to realistically assess its performance (see Chart 5 left).

ALPHA DECAY

Another concern is how quickly the model's performance decays. It is common when examining high-turnover factors to find a substantial part

CHART 5: AVERAGE MONTHLY 1-WAY TURNOVER OF LONG AND SHORT PORTFOLIOS



Source: SG Cross Asset Research/Equity Quant, FactSet, Bloomberg, MSCI, STOXX, TOPIX, S&P

of the return disappearing rapidly. For example, a large proportion of price reversals' factor performance seems to disappear overnight, from the close of the market to the next day open. This is obviously un-tradable.

Looking at the performance of the ML strategy with various lags from the implementation day, we certainly find some alpha decay, particularly over the first couple of days. That said, the returns remain meaningful over the following few days as well. There is no doubt though, that quick implementation is essential to extract the most from our model (see Chart 6 right).

DATA QUALITY

ML models are very good at picking up patterns from the data. Even if a small part of the data is leaking information about the future, the model will most likely find it and exploit it, resulting in great but meaningless backtests. If you have any doubts about the quality of some of the data, you are better off excluding it.

This is certainly more of a concern when dealing with new data (like most Big Data) with which we would naturally be less familiar. We would also be less confident about how it has been produced. In our case, we rely on traditional quant data, which fortunately we are very familiar with. Even in this case, making sure that, for example, fundamental data is point in time or properly lagged is essential.

Below, we show a couple of examples of how data leakage can improve the simulated performance amazingly.

We start with an extreme example in which the data for the month we try to predict is also included in the training sample. Our training window includes 120 months in total, but still, the 119 historical months don't do much to stop the model exploiting the data leakage. The result is a very good simulated performance without a single down month and an IR of 15.

Again, this is an extreme example, so let's say we only introduce a two-day data leakage. This time, the last month in training includes the performance up to two days after the day we will fit the model. Remarkably, this still leads to more than 50% improvement in the model's overall performance (see Charts 7 and 8 right).

FROM THEORY TO PRACTICE

Despite some of the challenges that need to be considered and addressed at implementation, we still find our model has shown very promising results. At the end of day, though, to prove any model's worth, we need to put it into practice

CHART 6: ML PERFORMANCE FOR VARIOUS IMPLEMENTATION LAGS

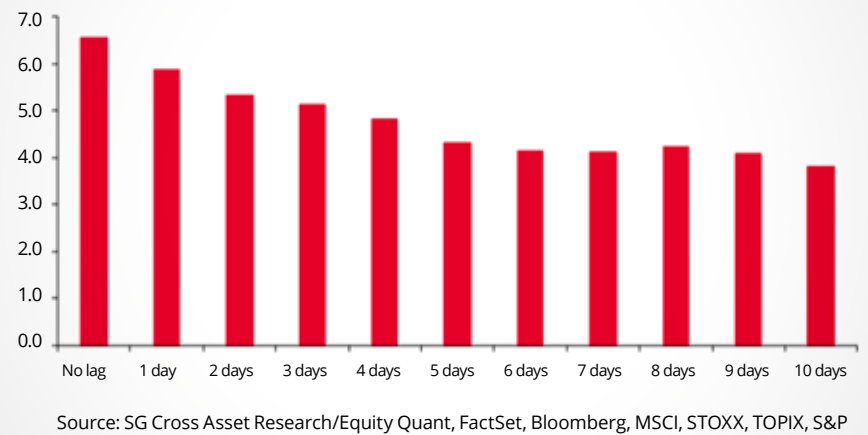


CHART 7: 1-MONTH FORESIGHT

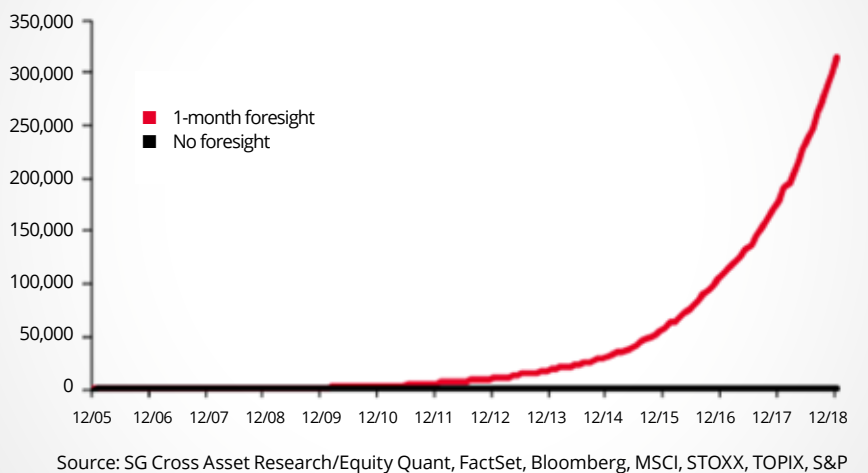
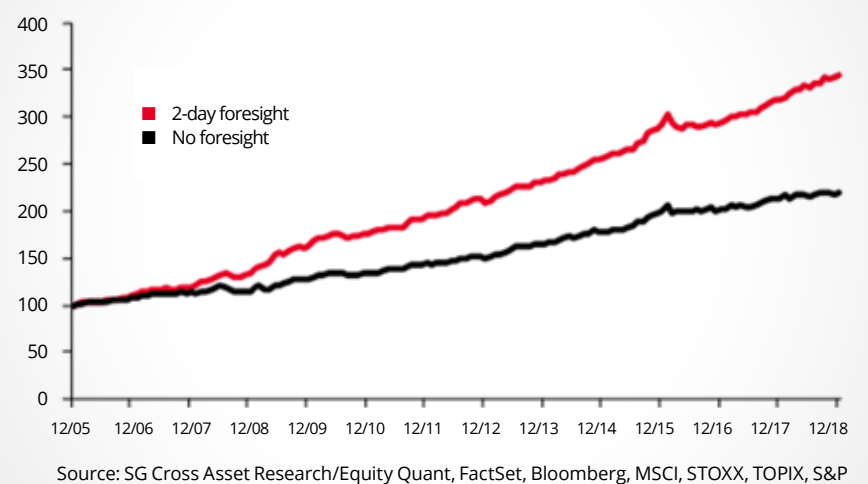


CHART 8: 2-DAY FORESIGHT



Despite some of the challenges that need to be considered and addressed, we still find our model has shown very promising results. At the end of day, though, to prove any model's worth, we need to put it into practice and track its live performance



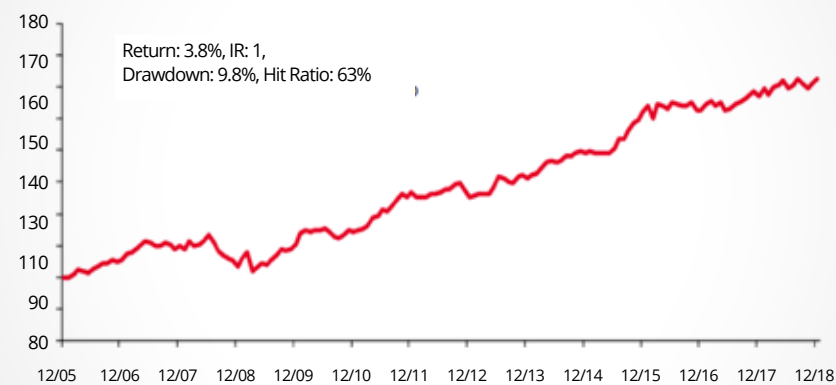
and track its live performance. We will do that by launching live versions of our strategy for different regions, which will soon be available on Bloomberg.

To go from theory to practice, we need to account for various implementation constraints, properly incorporate costs and consider the capacity of our strategy.

Our live indices will therefore:

- Target roughly the top versus bottom 20% in each region: 100 European, 150 US, 80 Japanese stocks. Given the small number of stocks in the Asia ex Japan universe, we will not have a live index for that region initially, but we hope to add one soon.
- Incorporate 1-day lag between the calculation of the scores and rebalancing.
- Smooth the rebalancing of the strategy over three days
- Exclude stocks with average daily volume (ADV) of less than EUR3m.
- Equal-weight stocks if ADV>EUR20m and ADV-weight if ADV<EUR20m
- Incorporate repo and other transaction costs
- Adjust for the dividend tax impact on the long portfolio total return

CHART 9: ML PERFORMANCE NET OF COSTS AND IMPLEMENTATION CONSTRAINTS



Source: SG Cross Asset Research/Equity Quant, FactSet, Bloomberg, MSCI, STOXX, TOPIX, S&P

Chart 9 left shows our updated backtests after incorporating all costs and implementation constraints described above. As expected, these have a significant impact on the performance of our strategy, reducing the average return of the strategy by c.3%. Still, even net of costs, we find our



global ML model offers an attractive and consistent performance profile, with an IR of c.1 and a monthly hit ratio of more than 60%.

FURTHER THOUGHTS ON ML'S POTENTIAL: WHAT ELSE CAN WE DO?

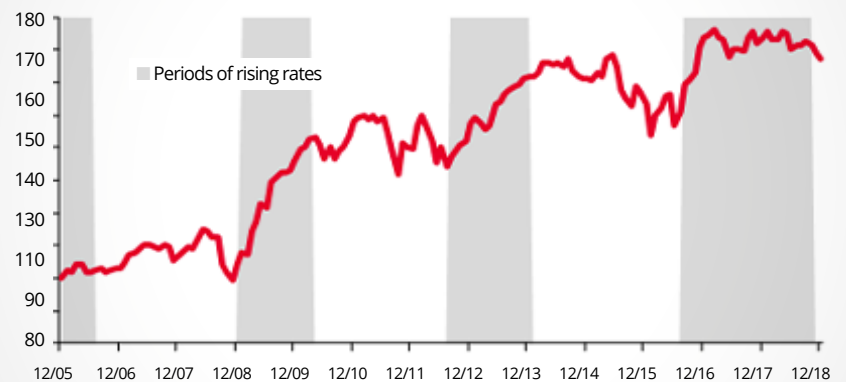
In addition to its promising performance, what we also find exciting about our ML framework is that it is easily adaptable to other strategies.

We have a set of data and a system that we can use to link our data to a specific target. In this note, we have focused on absolute performance, but we could have instead targeted risk-adjusted performance, fundamental growth, dividend cuts, etc.

We could also target performance in more specific periods, for example during certain market conditions or interest rate regimes. All this requires very little adjustment to our framework. Obviously, this doesn't mean that our data will bring value under all these scenarios.

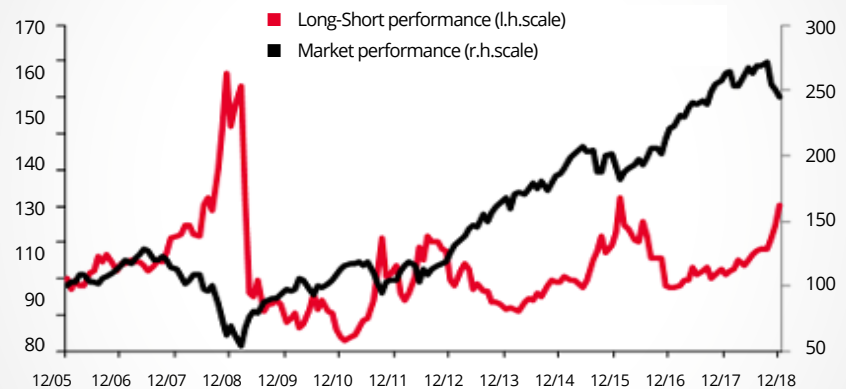
Above right, we show a couple of examples in charts 10 and 11. In the first example, we target stock performance in down markets. In the second, we target performance in periods of rising

CHART 10: TRAINING A MODEL DURING PERIODS OF RISING RATES



Source: SG Cross Asset Research/Equity Quant, FactSet, Bloomberg, MSCI, STOXX, TOPIX, S&P

CHART 11: TRAINING A MODEL IN DOWN MARKETS



Source: SG Cross Asset Research/Equity Quant, FactSet, Bloomberg, MSCI, STOXX, TOPIX, S&P

interest rates. In both cases, the only adjustment that we need to make is to filter our training data to only include samples from such periods.

The model then works out the probability of outperformance for all stocks in our universe. As we see, in both cases, we manage to learn a good model, which performs well in similar periods out-of-sample.

Andrew Laphorne joined Société Générale in London in November 2007 and heads up the Quantitative Analysis team. Andrew spent 11 years at Dresdner Kleinwort, beginning as Quant analyst in 1996. Prior to moving to Société Générale, he was Global Head of Quantitative Research. The team has created and runs a variety of systematic quantitative strategies, the most popular of being the Global and European Quality Income Strategies. His team were ranked #1 in the last Extel survey and he was also ranked #1 as individual analyst for the last six years.

A more thoughtful approach to emerging market debt

Investing in traditional debt-weighted fixed income indices comes with challenges, which can be particularly pronounced in emerging markets. J.P. Morgan Asset Management examines a rules-based approach to address these challenges while still providing a core exposure to the asset class

J.P.Morgan
Asset Management



Katherine Magee

is Investment Specialist,
Beta Strategies
J.P. Morgan Asset
Management

ALLOCATING TO EMERGING MARKET DEBT

Investors are increasingly allocating to emerging market debt, attracted by diversification, higher yields on offer compared to developed market bonds, and the improving credit quality and fiscal strength of many emerging market sovereign issuers. While the asset class was down in 2018, it has rebounded significantly and is one of the strongest performing fixed income asset classes in 2019. Through the end of August 2019, a traditional hard currency sovereign index, the J.P. Morgan EMBI Global Diversified Index, has returned 13.5% year-to-date.

Yet even in a market rally, emerging market debt investors still face many of the same challenges and concerns that are present throughout the cycle – namely idiosyncratic country risk and unstable credit risk exposure. As an example, in 2019, countries like Argentina and Venezuela have experienced challenges. The debt issued by these individual countries has lost between 35% and 45% of its value year-to-date through August. This has had a negative impact on performance of the market, even as the broader asset class has been positive.

Here we examine systematic ways to improve upon these challenges. The research outlined here underpins the development of a proprietary “smart beta” index, the J.P. Morgan Emerging Market Risk Aware Index (the EMRA Index), which is

tracked by J.P. Morgan Asset Management’s USD Emerging Markets Sovereign Bond UCITS ETF (ticker: JPMB). In developing this index, rather than simply weighting constituents by debt-outstanding, we instead considered the investor’s experience and sought to address a few of key considerations most relevant to them: country-specific risk, credit exposure, and liquidity, while still providing a core exposure to the asset class.

ADDRESSING COUNTRY-SPECIFIC RISK

When investing in emerging market debt, drawdown and tail risk can at times be substantial. This includes isolated country defaults as well as more systemic crises, where some countries significantly underperform.

In Chart 1, we compare the historical spread-to-worst of the broad EMBI Global Diversified Index with spreads for individual countries during times of stress. As shown, during episodes like the Argentinian Default in 2001, the Ukrainian Debt Crisis in 2015, and the Venezuelan Crises in 2017 and 2019, spreads on debt issued by individual countries can widen significantly and often abruptly. While these spreads often contract after action is taken (for example, a debt restructuring or changes in policy), these periods lead to a significant increase in volatility for investors.

To address this challenge, we consider a quantitative risk filter. We begin with the EMBI Global Diversified Index, a traditional and widely tracked USD-denominated sovereign debt index. Emerging market countries within that index are then ranked according to their relative risk level and the riskiest 10% of the index by market cap is discarded.

In determining relative risk, we use duration-times-spread (DTS) as a metric, which has a number of benefits:

- DTS incorporates both the country’s spread as well as its sensitivity to changes in spread

Yet even in a market rally, emerging market debt investors still face many of the same challenges and concerns that are present throughout the cycle – namely idiosyncratic country risk and unstable credit risk exposure. As an example, in 2019, countries like Argentina and Venezuela have experienced challenges

- DTS is a good forward-looking measure: it provides a good ex-ante spread volatility forecast and successfully identifies the highest risk countries based on both volatility and tail risk
- Using DTS, rather than a more momentum-based measure, ensures that turnover is contained, thereby limiting transaction costs that would be incurred by the end investor and could be significant in emerging markets

To illustrate the benefit of this risk filter in practice, Chart 2 shows the cumulative return of a portfolio invested in the 10% of market cap of the highest risk countries – those countries with the highest DTS. This portfolio is weighted by debt-outstanding and rebalanced semi-annually. We compare this to the returns of the J.P. Morgan EMRA Index. As shown, while the overall returns are similar, the volatility of the highest risk countries is nearly three times as high.

RECENT RESULTS: COUNTRIES IN CRISIS

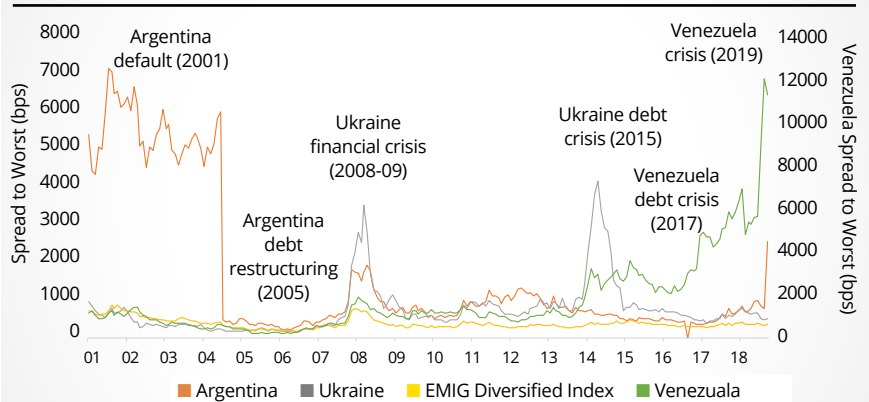
In 2019, even as the broad emerging market debt universe has rallied, this quantitative risk filter has added value. We examine two specific examples: Venezuela and Argentina.

Venezuela has been a dominant story in emerging markets in 2019, driven by political instability, sanctions, and humanitarian challenges. To begin the year, Venezuela made up roughly 1% of the traditional JPM EMBI Global Diversified Index. Yet with a duration-times-spread (DTS) more than three times higher than the next riskiest country, has been consistently screened out by our quantitative risk filter since 2010.

Systematically avoiding this country has improved performance, with USD-denominated debt returning -35.7% year-to-date through 31 August 2019. However, this has also come with a few key additional benefits, including:

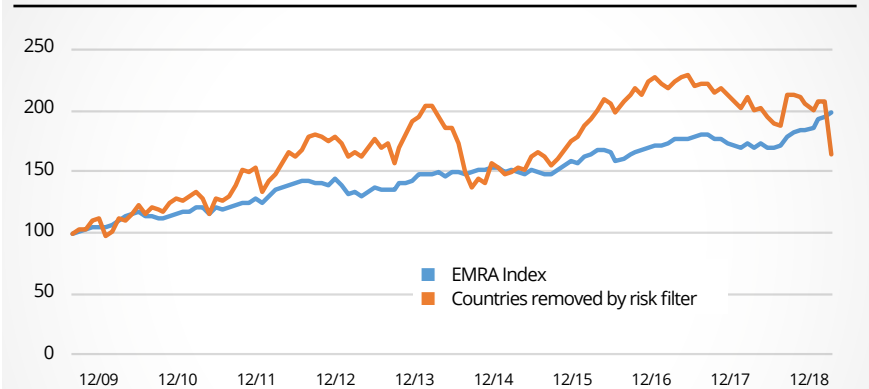
- **Liquidity:** following US sanctions, Venezuelan debt is no longer widely traded so owners of this debt will struggle to find buyers if they look to sell. After evaluating this lack of liquidity, leading index providers like J.P. Morgan have decided to phase Venezuela out of their indices over the course of the year. This means that in order to track the index, traditional passive asset managers may be forced to sell this debt at significantly lower prices.
- **Yield:** Venezuela is still included in the headline yield of the standard EMBI Global Diversified Index, despite the fact that the country is in default. For example, as at the end of May 2019, the country made up less than 1% of the index market weight, yet it contributed nearly 10% of the index's headline yield as Venezuelan debt "yielded" 62%.

CHART 1: INDEX RISK VERSUS INDIVIDUAL COUNTRIES AT TIMES OF STRESS



Source: J.P. Morgan Asset Management, Bloomberg, JPMorgan EMBI Global Diversified Index as at 31 August 2019

CHART 2: IMPACT OF COUNTRY RISK FILTER: GROWTH OF 100



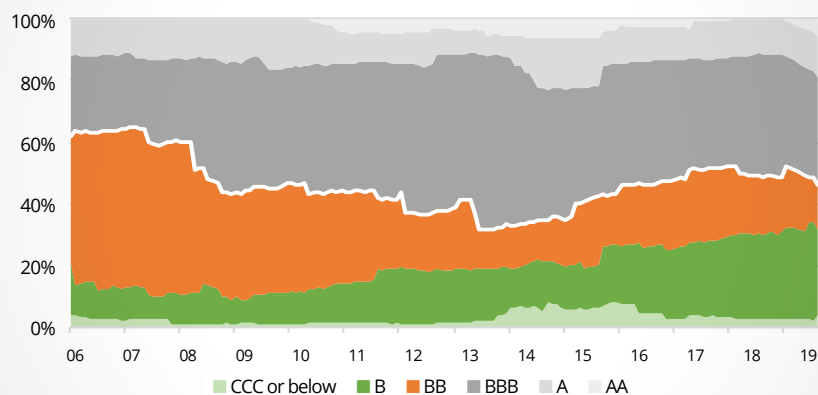
Source: J.P. Morgan Chase, J.P. Morgan Asset Management, as at 31 August 2019. "Countries Removed by Risk Filter" is comprised of countries removed via the risk screen in the EM Risk-Aware Index. They are cap weighted to illustrate returns and risk. Index inception date: 31 December 2009. Indices do not include fees or operating expenses. Past performance is not a reliable indicator of current and future results.

- **Volatility:** Since Venezuelan debt is not widely traded, for part of the year, indices that included these bonds simply rolled the price on this debt, artificially understating the volatility of the index and not reflecting the underlying market dynamics.

Argentina is another recent example of idiosyncratic country risk having an outsized impact on investor returns in 2019, with USD-denominated debt returning -45.5% year-to-date through August.

Following the surprising scale of the defeat of Argentina's incumbent president Mauricio Macri in the first round of Argentina's presidential election on the 11th of August, there have been significant and rapid moves in Argentinian assets. This reflects market perceptions of a likely shift towards a less market-friendly policy under a potential new government. Since then, the Argentine Peso has dropped in value by 22% vs. the US Dollar, CDS has widened by 270obps, and USD-denominated bonds returned -51.5% in the month of August alone.

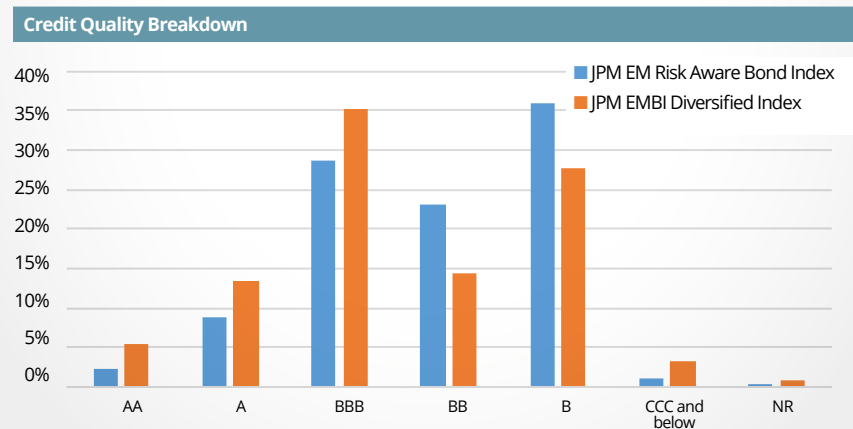
CHART 3: HISTORICAL CREDIT RATING BREAKDOWN:
J.P. MORGAN EMBI GLOBAL DIVERSIFIED INDEX



Source: J.P. Morgan as at 31 August 2019

CHART 4: J.P. MORGAN EMERGING MARKETS RISK-AWARE BOND INDEX SNAPSHOT

Key Statistics	EM Risk Aware	EMBI Diversified
Ticker:	JPEIRWTR	JPEIDIVR
Option Adjusted Duration	7.49 Years	7.23 Years
Yield to Worst	4.66%	5.17%
Option Adjusted Spread	316 bps	302 bps
# Holdings	403	751
Notional IG / HY Breakdown	40% / 60%	49% / 51%
Sovereign / Agency Breakdown	87% / 13%	80% / 20%



Source: J.P. Morgan Asset Management as at 31 August 2019. Yield is not guaranteed and may change over time

At the beginning of August, Argentina made up 2.3% of the traditional EMBI Diversified Index, yet has been excluded via our quantitative risk filter for more than nine years. Simply avoiding an allocation to Argentina led to more than 1.2% of outperformance at the index level over a single month in August. This represents another strong illustration of the strategy avoiding some of the idiosyncratic issues associated with the highest

risk countries, and thus reducing overall portfolio volatility for our clients.

ADDRESSING CREDIT RISK

Another challenge of investing in traditional, debt-weighted indices is that investors' exposure is driven entirely by debt issuance patterns, rather than a desired investment outcome. This can lead to unstable credit ratings, unwanted interest rate sensitivity, or concentrations in areas of the market that are under-rewarded – simply because certain countries issue more or less debt.

Chart 3 illustrates this challenge in the hard currency emerging market debt market. In 2008, roughly 65% of the traditional J.P. Morgan EMBI Global Diversified Index was rated high yield. Fast forward to today and about half the index is investment grade. This variation in credit rating has been entirely driven by debt issuance patterns and is out of the control of traditional passive investors.

To help to manage these fluctuations in credit exposure, we consider a credit stabilisation approach. After removing the highest risk countries as described above, we then re-weight the index toward higher quality high yield issuers, seeking to maintain a consistent 75% risk contribution from high yield bonds and a 25% risk contribution from investment grade bonds. This approach leads to a number of benefits, for example:

- It provides investors with a more thoughtful and consistent exposure to credit and duration
- It aligns risk exposure to higher quality high yield, an area of the market where investors have historically been more compensated, while allowing the strategy to be managed in a UCITS-compliant way
- It provides a yield that is similar to a traditional index. While removing the highest-risk countries improves an investor's volatility and risk/return profile, a standalone quality filter also reduces the strategy's headline yield. This second step can enhance the yield profile.

RECENT IMPLICATIONS: GULF COUNTRIES

Over the course of 2019, five new countries from the Gulf region – Saudi Arabia, Qatar, The United Arab Emirates, Bahrain, and Kuwait – are being added to the EMBIG universes and will eventually make up roughly 12% of the standard J.P. Morgan EMBI Diversified Index.

Inclusion of these countries will tilt the EMBI Global Diversified Index more towards investment grade, lowering its yield (with an overall yield-to-worst (YTW) moving from 6.86% as at 31 December to an

expected level of 6.59%) and giving investors even more exposure to US rates (duration moving from 6.55 years as at 31 December to an expected level of 6.77 years by the end of the year). Source: J.P. Morgan

There are many reasons for including these countries, whose share of debt has increased significantly over the last three years. That said, this change still has an important impact on investor outcome and the type of risk to which they are exposed. As an example, while investors have historically considered emerging market debt as a high yield asset class, as of June 2019, the inclusion of the Gulf countries has meant that the unconstrained, debt-weighted J.P. Morgan EMBI Global Index average rating has moved to Investment Grade, based purely on issuance patterns and methodology changes which are completely out of the hands of the investor. To contrast, while these five countries have also been added to the JPM EM Risk Aware Index, our approach has meant that the impact on credit exposure and duration has been smaller.

BRINGING IT ALL TOGETHER

As outlined, gaining exposure to emerging market debt through a traditional passive index fund can be challenging, as debt-weighted benchmarks frequently suffer from unrewarded credit risk concentrations, unstable credit ratings, and fluctuations in duration. In designing the JPMB strategy, we focus on the investment outcome and use a unique two-step process to improve on these characteristics.

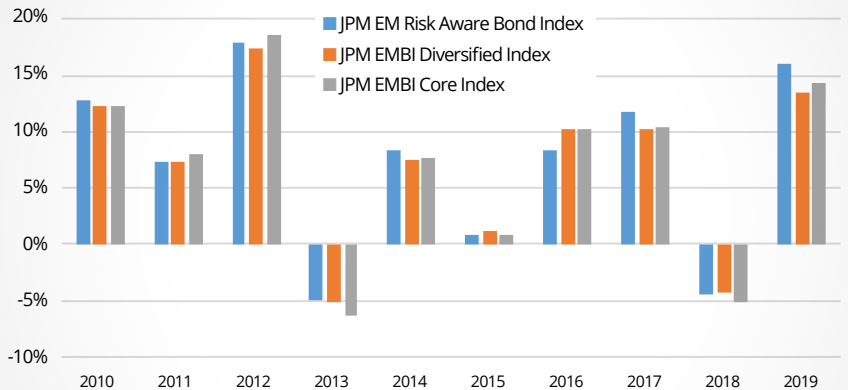
The end result is a core exposure to the hard currency sovereign emerging market debt asset class (the proprietary JP Morgan EM Risk Aware Bond Index has a historical tracking error to a traditional index in the range of 1-1.2%) but with the potential for better risk adjusted returns. Similarly, given the focus both on screening out the highest-risk names and then shifting of the credit allocation towards higher quality high yield, JPMB has a headline yield and duration that are similar to a traditional index, as illustrated in Chart 4.

Finally, Chart 5 shows returns of the index tracked by JPMB. Since inception of the J.P. Morgan EMRA Index on 31 December 2009, it has successfully provided a core exposure to the asset class while, generating an improved risk-adjusted return compared to a traditional index.

CONCLUSION

While there are benefits of traditional debt-weighted investing, a number of challenges remain. The JPM USD Emerging Markets Sovereign Bond UCITS ETF

CHART 5: YEAR BY YEAR PERFORMANCE OF SMART BETA INDEX



Source: J.P. Morgan Asset Management, Bloomberg. As at 31 August 2019. Index inception date: 31 December 2009. Indices do not include fees or operating expenses. Past performance is not a reliable indicator of current and future results.

(JPMB) seeks to address some of these challenges – namely country-specific risk, credit exposure, and liquidity – in a systematic and rules-based way to provide a core exposure to USD-denominated Emerging Market Debt.

INVESTMENT OBJECTIVE:

The Fund aims to provide an exposure to the performance of bonds issued by the governments or quasi-government entities of emerging markets countries globally which are denominated in US Dollars.

RISK PROFILE

- The value of your investment may fall as well as rise and you may get back less than you originally invested.
- To the extent that the Fund uses financial derivative instruments, the risk profile and the volatility of the Fund may increase. That notwithstanding, the risk profile of the Fund is not expected to significantly deviate from that of the Index as a result of its use of financial derivative instruments.
- The value of debt securities may change significantly depending on economic and interest rate conditions as well as the credit worthiness of the issuer. These risks are typically increased for below investment grade debt securities which may also be subject to higher volatility and lower liquidity than investment grade debt securities. The credit worthiness of unrated debt securities is not measured by reference to an independent credit rating agency.
- Emerging markets may be subject to increased political, regulatory and economic instability, less developed custody and settlement practices, poor transparency and greater financial risks. Emerging market currencies may be subject to volatile price movements. Emerging market and below investment grade debt securities may also be subject to higher volatility and lower liquidity than non-emerging market and investment grade debt securities respectively
- The Fund is not expected to track the performance of the Index at all times with perfect accuracy. The Fund is, however, expected to provide investment results that, before expenses, generally correspond to the price and yield performance of the Index.

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

ETF Stream's senior writer Tom Eckett speaks to Tilney's head of multi-asset Ben Seager-Scott on smart beta, the different ways he implements factors and his concerns around the rise of thematic investing

Tom Eckett: Do you use smart beta or factor products within your clients' portfolios

Ben Seager-Scott: I'll start, as always, by stating that I dislike the term 'smart beta' as it implies these strategies are somehow superior whereas I view such methodologies as simply different with their own sets of pros and cons, and different environments that favour or disfavour them. Though I do accept we seem to have lost the argument over nomenclature, so I'll use the term under protest!

In answer to the original question, we use a number of passive instruments in client portfolios depending on the particular mandate, which includes smart beta products where appropriate. They often provide a cost-effective way of implementing elements of an investment strategy that are more nuanced than simply seeking exposure to broad market beta.

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

It varies, particularly for our passive-focussed portfolios where they can make up quite a significant level of exposure depending on your definition. However, for a typical client portfolio, it is usually more limited – I'd say less than 10% in smart beta for a typical client portfolio.

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

For me, they are primarily tools in the toolkit for implementing an investment strategy. Often simple market exposure is best served by a plain vanilla tracker/ETF but there can be also be particular views that I want to express more precisely. Sometimes this can be on a medium-term view to fine-tune part of the investment strategy, but it can also be a position looking to

harness a longer-term and persistent factor-based risk premium. Whilst I don't tend to think of smart beta ETFs as substitutes for active funds, they can nonetheless be informative to identify active managers who are, in fact, closet factor-huggers, but that's a different discussion.

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

Call me old fashioned, but for me the most compelling factors are the simple, thoroughly-established and robust factors identified by Fama and French in the 1990s. If I had to pick one, I'd go with the value factor, which I think is growing more interesting the more out in the cold it appears. I'm less interested in some of the more recent, complex, multi-factor products which to me simply lack the robust grounding and long-term evidence that I need to have confidence in such a strategy.

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

This could easily be an essay question- so I will try to keep it brief! Fund structure is, of course important – including whether it is physical or synthetic, any securities lending, domicile, reporting status, an independent assessment of internal and external costs (not just OCF, but looking at rolling tracking

We use a number of passive instruments in client portfolios depending on the particular mandate, which includes smart beta products where appropriate. They often provide a cost-effective way of implementing elements of an investment strategy that are more nuanced than simply seeking exposure to broad market beta

difference where applicable and secondary market trading history). This is the same for a smart beta product as for a more traditional tracker.

Indexation methodology is also an important area to look at for most passives, but it is especially important for smart beta where you are typically looking for something more complex than broad market movement. It is important not only to understand the mechanics of the methodology, but also the consequences, including sector or country skews relative to the broad market, and how the methodology might behave in different market environments.

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

It's certainly of interest, though I usually have significant reservations about thematic investing, as there is the risk that investors are drawn into an attractive narrative without giving due regard to the full investment case and fundamentals, particularly valuations – which can get stretched when a theme is a hot topic – and diversification. Some of the newer thematic offerings that go into more granularity and explore a theme with a level of intellectual insight are certainly interesting, though, and will no doubt garner a lot of interest from investors. I think they probably have a place as a small part in appropriate mandates.

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

It's probably one of my chief concerns with smart beta strategies – unfortunately, many positive effects are purely historical statistical anomalies or are just simply variants or combinations of existing, established factors. I have a pretty high bar before

I will give serious credence to new strategies – I generally favour the factors that Fama, French & Carhart established in the 1990s. When considering factors and smart beta strategies, I focus on four key questions to frame my thinking:

- Is there established, peer-reviewed academic literature supporting the factor?
- Is there a clear rationale for why a factor premium exists (economic or behavioural)?
- Does the premium persist out of sample (ideally for a period of a decade or more)?
- Is there reason to believe that the factor premium will persist into the future?

If the answer is no to any of these, then it's unlikely to pass muster for me.

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

It depends on the mandate – as a general rule I will discuss with clients what is held in their portfolio and what the rationale is, be that active, simple passive or smart beta. Often this will be in the context of the broader investment strategy. Clients rarely raise concerns, but I think that is a function of trust in how we select funds and how we communicate our reasoning.

Are there any specific areas where you would like to see new products emerge? For instance, does the idea of factor-based fixed income ETFs interest you?

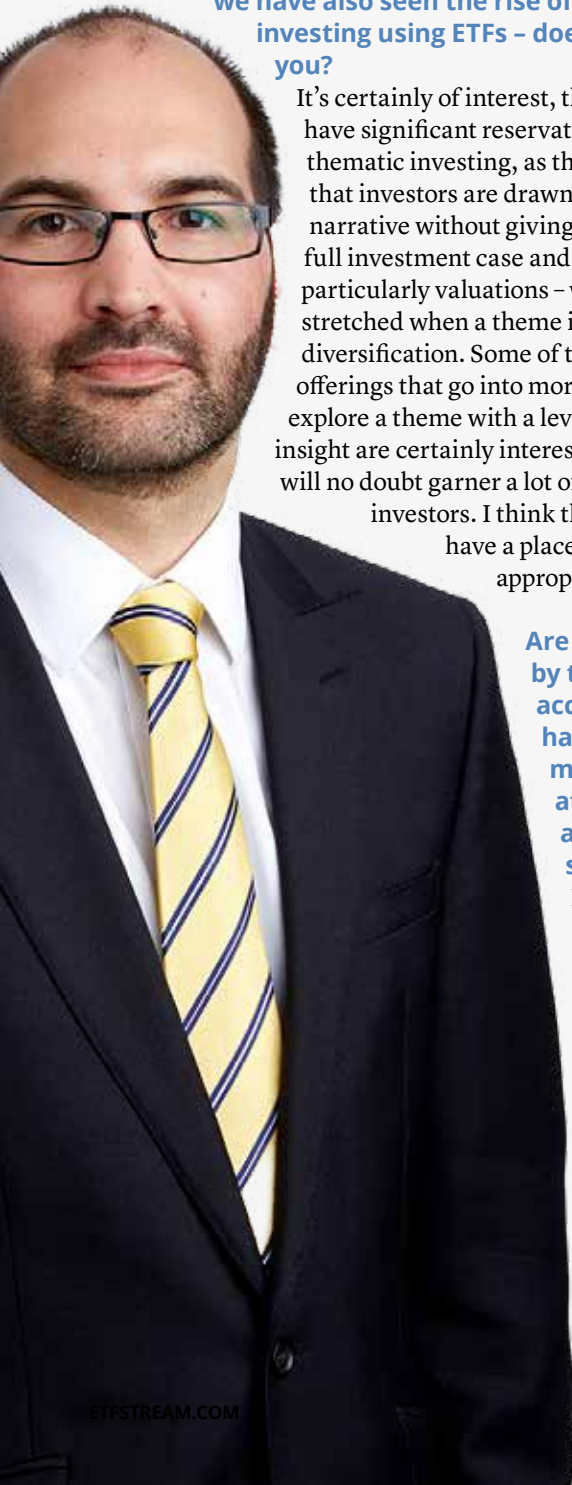
I think fixed income broadly is ripe for further development, particularly around credit and some sector exposures. It would be very interesting to start seeing some long-short equity products as well, though this is naturally a more challenging and complex area.

Does multifactor investing interest you?

Intellectually, yes – but I remain rather sceptical, as the literature and evidence is patchy at best; it tends to fall foul of my four key questions above. I believe there is a risk that some people see combining all the different factors as the holy grail of higher return with lower risk, which should always set off alarm bells. As well as potential return enhancements, multifactor products also come with more complicated risk, and it is essential that investors understand what additional risks they are exposing themselves to that justifies the higher potential reward. I remain to be convinced.

By 2025 do you think you'll be making extensive use of smart beta products and factor ETFs? What proportion of portfolios do you think they'll comprise?

I can see a growing level of demand in the market for these products, and by 2025 I think there will have been time for other robust strategies to emerge that satisfy my four questions above. Crucially, and a challenge for the industry, I think and hope we will see a culling of products whose reality doesn't end up meeting the initially hype, and this evolutionary cull will be needed for investors to have confidence in the remaining smart beta strategies that will have stood the test of time.



Bond ETFs see big inflows in 2019

Equity ETFs have provided a mighty return in 2019.

The S&P 500 and FTSE 100 – the two most popular benchmarks for British ETF buyers – have climbed 18.7% and 13.6% since the “correction” of late-2018. Yet if you looked at inflows, you wouldn’t know it, *writes George Geddes*.

Thanks to the Trump trade war, Boris’s botched Brexit, the Fed’s interest rate farragoes, and nagging fears around overstretched valuations, investors have voted leave on the equity rally. They’ve turned instead to bond ETFs, which have sailed on a cash ocean throughout the year.

Year-to-date ETF inflows across the US, Europe and Asia

	Equity (Mil)	Fixed Income (Mil)
Jan	-€ 12,382	€ 24,872
Feb	€ 27,193	€ 14,540
Mar	€ 17,876	€ 17,496
Apr	€ 28,206	€ 12,269
May	-€ 18,297	€ 11,459
Jun	€ 27,010	€ 36,045
Jul	€ 28,392	€ 16,813
Aug	-€ 27,604	€ 16,961

Source: Amundi

Bond ETFs in the US, Europe and Asia sucked up €146 billion in fresh cash between January and August, research from Amundi has found. More than double the figure (€70bn) brought in by equity ETFs. These numbers were particularly pronounced in H1,

where bond ETF inflows hit \$107bn and assets globally in bond ETFs hit \$1 trillion.

Equity ETFs had a weak start to 2019, seeing January outflows of -€12.4bn, despite the market’s upward trajectory. For the same month, bond ETFs gained €24.9bn in new assets. This trend for bond ETFs has continued for the remainder of the year, with bond ETFs clocking record monthly inflows of €36bn in June. While equity ETFs had to earn back what they’d lost in January.

Investment grade government and corporate bond ETFs received the lion’s share of yearly inflows. The reason being, Tabula’s CEO Michael Lytle suggests, is that investors want to diversify as geopolitical tensions bite. And investment grade bond funds offer better diversification than high yield bond funds, he suggests, as they have lower correlations to the broad equity market.

Yet bond ETFs might also be raking in money due to performing strongly in their own right. Indeed, the strong showing of equity ETFs has been matched – and in some cases even beaten – by bond ETFs. Top performers this year include the SPDR Bloomberg Barclays 10+ Year U.S. Corporate Bond UCITS ETF (LCRP), which has produced a YTD return of 20.5%. And the iShares USD Treasury Bond 20+yr UCITS ETF (IBTL), which have offered a return of 14.4% over the same period.

As more fixed income ETFs come to market in 2019 with fees in the single digits, it is understandable why bond ETFs continue to be a hit with investors. Especially in volatile periods like the present, where we see similar performances with a fraction of the risk exposure.





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Financial Data Management

Global ETF & Index Managed Data Service PCF-Calculation

Search Date: 14/01/2019 Index Family: Dom Region: Base Ccy: USD

Bbg	RIC	Name	Isin	Secol	Update Time	V	Corp Act	NAV	Calc NAV	# Aset	Family	Trd Country	Ccy	Calc Unit	Shar
CSGU FP	CSGU.PA	AMJNDI EURO STOXX 50 UCITS ETF DR - USD (C)	LU1881047400	EF2JW47	2019-01-14 07:55:08	1	false	75.9504	75.95	50	STOXX	France	USD	30,000	
SMRG FP	SMRG.PA	AMJNDI EUROPE EQUITY MULTI SMART ALLOCATION SCIE	LU1881039563	EF2JWV9	2019-01-14 07:52:22	1	true	26.1629	26.16	444	Scientific Beta	France	EUR	30,000	
AFRN FP	AFRN.PA	AMJNDI FLOATING RATE EURO CORPORATE 1-3 UCITS ETF	LU1881041114	EF2JVL7	2019-01-14 06:24:38	1	false	100.0900	0.00	58	Market	France	EUR	7,000	
AFLC SW	AFLC.S	AMJNDI FLOATING RATE USD CORPORATE UCITS ETF - CH	LU1732795046	EF2JWZ9	2019-01-14 06:24:37	1	false	68.9200	0.00	100	Market	Switzerland	CHF	20,000	
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FMI FP	FMI.PA	AMJNDI FTSE MIB UCITS ETF - EUR (C)	LU1881037518	EF2JW8Z2	2019-01-14 07:58:50	1	false	36.5324	36.55	40	FTSE	Italy	EUR	70,000	
AGBR FP	AGBR.PA	AMJNDI GLOBAL EMERGING BOND MARKET BDOXX UCITS	LU1881041205	EF2JW000	2019-01-14 06:40:19	1	false	127.9900	0.00	36	Market	Italy	USD	20,000	
GNF FP	GNF.PA	AMJNDI GLOBAL INFRASTRUCTURE	LU1389350210	EF2JW5T	2019-01-14 07:59:07	1	false	50.1590	50.16	99	Stoxx	France	EUR	40,000	
CB3 FP	CB3.PA	AMJNDI GOVT BOND EUR/COMTS BRDAG INVESTMENT GRA	LU1881046261	EF2JW9W5	2019-01-14 06:32:34	1	false	230.5800	0.00	305	FTSE	Italy	EUR	13,000	

*Sub Basket T... # Assets: 439 Total Cash: 0.00 Est. Cash: 116.35 Cash in Lieu: Dividend: Unit Value: 106.1677

Detail | Suspended | Corporate Action | Sector: Top 49 | Country Sector | Country | Country Grid | Exchange | Exchange Grid | Currency Grid

- Unknown
- Consumer Discretionary
- Consumer Staples
- Energy
- Financials
- Health Care
- Information Technology
- Industrials
- Materials
- Real Estate
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