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Change Is the Only Constant

There was a

time—admittedly quite a while back—when I was surprised by the announcement of a high-profile acquisition of a third-party technology vendor. One of the first such instances I remember was ITG's acquisition of Macgregor in July 2005, given that the buy-side order management (OMS) market at the time was where much of the action was happening. Asset managers on both sides of the Atlantic were looking to dilute their Excel dependencies by implementing their first ever OMS or simply replace their proprietary and rudimentary front-office technology with off-the-shelf platforms that offered better all-round performance, broader instrument coverage and connectivity to a wider range of venues.

Most of *Waters'* readers will have noted State Street's recent acquisition of Charles River, one of the firms vying with Macgregor, Advent, LatentZero and Bloomberg for control of the lucrative OMS market in the mid-2000s. Since then, just over three years ago, Advent was added to SS&C Technologies' ever-growing stable in one of the most noteworthy acquisitions to have occurred in our market, while Fidessa snapped up LatentZero in April 2007, illustrating the extent to which the vendor landscape is in a state of constant flux.

We at *Waters* are similarly not immune from change. The focus of my role, for example, shifted recently to become far more client-focused, working with all types of capital markets firms to help them shape and deliver their various messages to their target market, while Anthony Malakian, *Waters'* long-term US editor, has taken on a more "roving" role as editor-at-large, allowing him to do what he is best at and most passionate about: investigative journalism and speaking to his extensive list of contacts to understand the issues most affecting them. From next month, James Rundle assumes the editorship of this magazine, in addition to his news editor role, while Max Bowie has taken on the role of managing editor of *Waters*, having passed on the editorship of *Inside Data Management* to Jamie Hyman, a brand he built, shaped and managed outstandingly over the years.

Considering just how much change and consolidation has already transpired across the technology vendor landscape, it's fair to assume that this trend will continue unabated. To my mind, the only thing that will slow it is the dwindling number of tech firms ripe for acquisition. But perhaps Blackstone Group's acquisition of Thomson Reuters' Financial and Risk division in January this year—a mega acquisition by any measure, and which a few days ago received the European Union's blessing for the deal to go ahead—might become the norm?

That said, there are still a few tech gems that have already attracted and will no doubt continue to attract acquisitive eyes, chief among which are StatPro and Rimes Technologies. And just how long their resistance will last is anyone's guess. *W*

Victor Anderson
Editor-in-Chief

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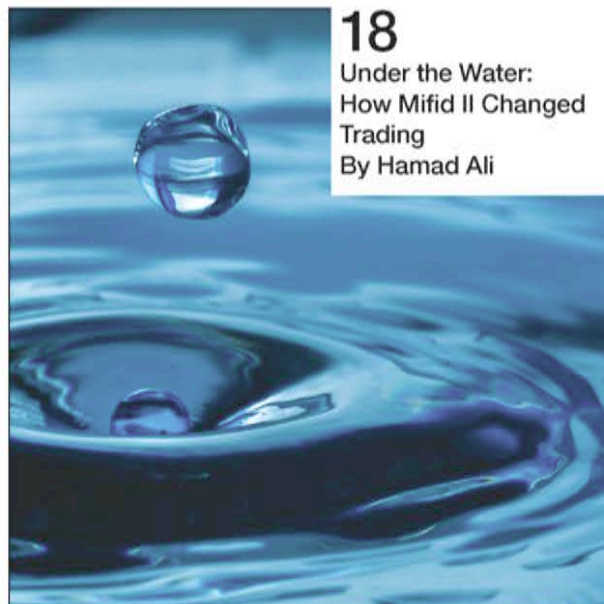
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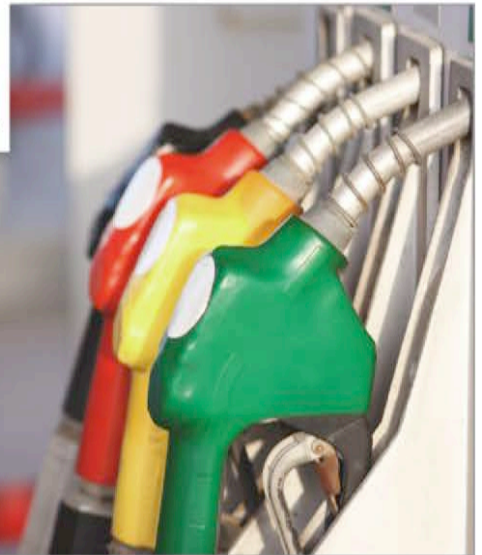
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Anthony Malakian:
A New Day

Northern Trust Re-engineers Post-Trade Compliance Platform

Chicago-based Northern Trust unveils new compliance monitoring capabilities that provide independent governance over external fund managers, with a focus on data-quality checks. *By Jamie Hyman*

New strategies require new tools. Over the past few years, Northern Trust has re-engineered its compliance monitoring platform in response to a growing number of clients investing in multiple asset classes, each with its own set of compliance monitoring requirements.

"The primary use case of the product is to provide independent governance over the external fund managers that the asset owners appoint," says Ian Castledine, global head of investment risk and analytical services product management at Northern Trust, adding that when clients employ its automated monitoring system, Compliance Analyst, and its online reporting and workflow tool, Compliance Radar, Northern Trust acts as a technology partner, enabling "the monitoring of individual mandate guidelines across portfolios or in aggregate across [the asset owner's] total plan."

Noting that investment managers generally adhere to a "very prescriptive set of rules" around the use of derivatives, Castledine says the platform supports a daily workflow through which Northern Trust and its clients share the responsibility of monitoring those rules, "often several thousand per client per day," while keeping an eye on reports and noting any trends.

"The real drive is the need to evidence both internally and externally to auditors that plan sponsors have adhered to their internal governance policies, which often include robust oversight of their portfolio of external fund managers," he says.

In response to client demand for a way to make sense of an ever-increasing volume of data, Castledine says



Ian Castledine
Northern Trust

Northern Trust has built automated data-quality checks into the foundational layers of the platform.

"We've got quality-checking data dashboards that are internal processes, which consultants use to assert and input data quality, define data-quality rules and, specific to the investment compliance monitoring use-case, flag exceptions in a data quality dashboard. All of that sits upstream, ahead of the client-facing compliance radar and the associated reporting tools," he says. The client management function sits with a specialist team at Northern Trust but is shared with the client, which "provides a very clean and simple experience with clients, many of whom focus across multiple investment domains and need sophisticated support to really be able to monitor the aggregate of their portfolios across multiple asset classes," he adds.

Castledine says his team has "put a lot of thought and detail into how we aggregate from a compliance perspective, the various rules that we offer." Wherever possible, he says, all of the data that sits across the bank is leveraged and integrated—for example, there

is a separate risk engine that provides Value-at-Risk calculations, stress testing, and measures market sensitivities.

"Now, what we've done is brought all of that data into this compliance platform. When it comes to daily exposures monitoring, we are looking at that as well, pulling out broader data coverage and supporting multiple data sources," he says, adding that Northern Trust prefers to use Bloomberg data wherever possible.

Castledine says this approach is an evolution of early compliance platforms that limited the mandate guidelines to a single manager and the legal agreement between the client and the underlying manager.

"What we're doing here, through the unique benefits that a custody bank can bring, is aggregate all of the moving parts—the equity, the fixed, the derivatives, the alternatives, and paint a broad, overarching picture of what's going on in the plan," he says. "So, global sensitivity analysis, global credit, global exposure analysis, and [managers can] really drill down into what's going on as various mandates aggregate up. From a top-down view—which is arguably the most important that a pension scheme manager or a chief investment officer would want to see on a true daily basis—it offers fresh insights into their world."

Northern Trust is gradually rolling out analytical products it already offers and integrating those into the platform. Castledine says the firm is migrating all of its existing business and has plans for further integration, with environmental, social and governance factors, as well as socially responsible investing factors, included in its next release. **W**

Thomson Reuters Partners with Finbourne for Cloud Investment Platform

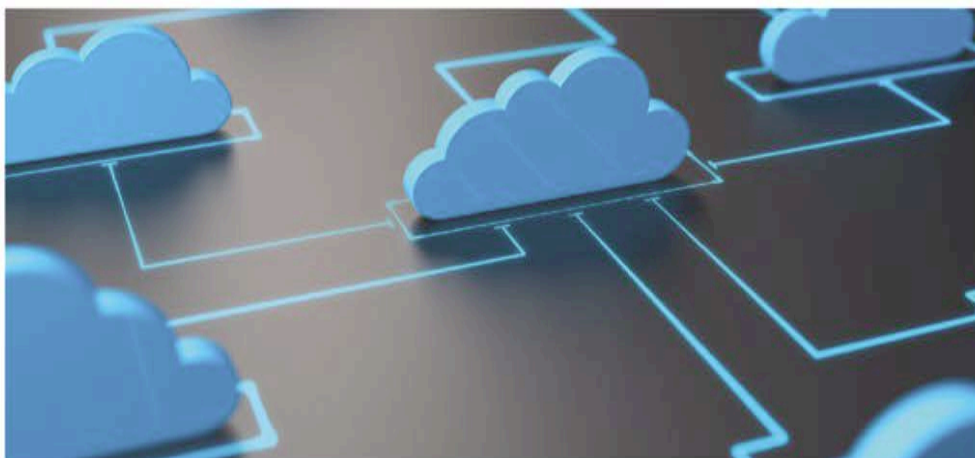
Startup signs major data deal for cloud-based portfolio management. *By James Rundle*

Information giant Thomson Reuters has announced that it will use Lusid, a cloud platform developed by London-based startup Finbourne, for client and transaction data. Thomson Reuters' clients will use the platform to manage their portfolio and transaction data, which will incorporate Lusid's event-based ledger system.

The platform has elements of investment book of record (Ibor) and connectivity-layer functionality. Part of its design ensures that data on the platform is stored bi-temporally, meaning that users are able to see information both as it is now, but also as it was at any point in the past. This has applications to all forms of investment data, ranging from pricing and reference data through to portfolio information, and can be used in compliance with record-keeping requirements.

At its heart, the platform ultimately aims to become a form of market utility. Hosted in the cloud, initially through Amazon Web Services, it has been built with an "Application Programming Interface-first" (API) approach, using the same approaches for APIs internally as externally.

Pradeep Menon, global head of investing and advisory at Thomson Reuters, says that "the technology and fit to our technical stack, the market experience of the team that started Finbourne, time to market and the scalability of the end solution" were all key factors in deciding to use Lusid, which will be "an integral part of the portfolio analytics solution" in the company's Eikon platform. Finbourne, founded by bank veterans



including senior technologists from UBS, Morgan Stanley and other institutions, has an existing relationship with Thomson Reuters, having been backed by the information and tech provider at an early stage after its incorporation in 2016.

Dermot Shortt, CEO and co-founder of Finbourne, and the former head of UBS Delta, describes Thomson Reuters as "a great partner" up to this point, but says the deal marks "a significant turning point" in the relationship. "We believe the investment industry has woken up to the fact that institutions need to save their IT firepower for technology which genuinely sets them apart from their peers, and not waste their clients' money on 'utility' functionality. Historically, the buy side hasn't been as good as the sell side when it comes to mutualising costs—banks were sharing back offices years ago," he says.

Finbourne has had a busy year to date, after releasing software development kits in various languages onto popular software community github,

and publishing its API documentation. Looking ahead, says CTO Tom McHugh, the firm is preparing to release a sandbox environment where developers are able to test various code packages.

In addition to Thomson Reuters, McHugh says, Finbourne is also working with "a large asset servicer and some vendors," which he says ties in with the firm's objective of Lusid being available on an open basis.

On a higher strategic level, the objective for Finbourne is "straight-forward," Shortt says. "[We want] to build an open platform to host investment data so that we can lower infrastructure and integration costs, and let more vendors offer their services into client portfolios. We publish all our APIs to make sure everyone can understand clearly how to interact with Lusid. To have an institution the size of Thomson Reuters acknowledge this as part of their 'open platform' strategy is a huge validation for our model." The integration of Lusid is expected to be in production by the first quarter of 2019. *W*

FCA to Tackle Big Data, Expects Firms to Act Ethically

Charles Randell says data and technology usage by firms should “liberate” not “disenfranchise” consumers, and regulation is “central to defining” ethical practices. [By Amelia Axelsen](#)

In his first address since being appointed chair of the Financial Conduct Authority (FCA) in April, Charles Randell warned that firms should act ethically when leveraging big data.

Speaking at a Thomson Reuters Newsmakers event, Randell said principles-based regulations and a center for data ethics may be on the horizon to maintain the UK's leadership role in innovation and ethics. “The UK already has a trusted legal and regulatory system and contributes to setting global standards of corporate governance and business ethics. We need to contribute to new standards for data efforts too. The FCA and PSR [Payment Systems Regulator] are fully supportive of the governance proposals to establish a center for data ethics and innovation to ensure that the UK sets the highest standards for ethical conduct in harnessing the power of big data,” he said.

In a world where rapid technological advances are allowing firms to compile enormous amounts of personal data, Randell said consumers are potentially at risk if the financial services industry uses data science and technological efficiencies—such as advances in artificial intelligence (AI) and automation—to target and discriminate against individuals, rather than for the purposes of financial inclusion. He painted a stark picture of a world where algorithms dictate how humanity should be governed by juxtaposing the prospect of firms using data unethically with a British science-fiction drama series from the 1960s, *The Prisoner*.



Charles Randell
Financial
Conduct
Authority

“I want to argue that we should be optimistic,” he said. “Advances in data science have already brought huge benefits to society, such as smarter ways of detecting financial crime and market abuse, cheaper and faster transactions, and greater access to affordable financial advice and guidance. The UK fintech industry is world leading, and bursting with new ideas—but there’s no room for complacency.”

Randell said that while the FCA supports financial innovation, it is mindful of possible harm to consumers. He signalled the importance of continuing collaboration with European Union regulators while maintaining EU standards, whatever the final Brexit deal looks like.

“We will remain very involved in the global standard-setting process in the area of data, the regulation and oversight of big data, and the role of big data corporations. It’s almost more necessary than in most other areas that there be an international standard developed, because I don’t think any country can go at it alone very easily,” he said.

When pressed for specifics on new regulation for data practices, he said UK firms should set their own standards and that he doesn’t expect a “15-page rule book,” but, rather, a set of principles. He anticipated more proactive supervision and enforcement for firms and individuals that use unethical and unfair data practices.

Behavior to Monitor

Innovation drives the industry in a positive way, Randell said, but there are areas that need to be monitored closely to ensure firms act with

ethical discretion when it comes to data. One such problem area is the vast amount of detailed datasets controlled by very few corporations, as well as the fact that AI and machine learning are delivering huge increases in analytical power, which means corporations can mine big datasets for patterns more effectively than ever before.

“Whereas in the past, firms could only target broad groups of consumers, these patterns can now be turned into conclusions about each one of us as an individual,” Randell said. “They can make predictions about our future behavior, and then decide what products and services we should be offered and on which terms.”

He also highlighted the use of behavioral science to exploit decision-making bias informed by big data as another potential problem area.

Randell championed the FCA as a global leader in incorporating behavioral science into a “regulatory toolkit,” but said that in order to act in the interest of “good innovation,” firms must have sustainable business models, in which “people, purpose, and trust” are at the forefront. He said that because the UK is a “global leader in both technological innovation and financial services,” ethics is an “important topic.”

“If we can combine these skills with fair standards and with public trust, we can maximize the opportunities for the UK finance industry to succeed in the global market,” he said. **W**

CAT Contract May Need Amendments to Protect Personal Data

If a House bill seeking to ban the gathering of PII data passes, plan processor says it will wait for guidance from the NMS committee. *By Emilia David*

With the revised implementation date of November 2018 nearing, parties involved in building the Consolidated Audit Trail (CAT) may need to amend the contract stipulating the gathering of personal data, should a law seeking its ban be passed.

The CAT NMS (national market system) plan committee said last week that it is working toward implementing the first phase of the CAT in November 2018. However, a bill awaiting debate in the House of Representatives that prevents the gathering of personally identifiable information (PII) could force the CAT processor, Thesys CAT, to stop taking in that data.

Andre Frank, president of CAT processor Thesys CAT, notes it has to wait for guidance from the CAT NMS committee in the event the law is passed. "Under the contract we signed, it was stipulated we had to gather PII data so we will have to get guidance if the bill passes," Andre says. "The contract tells us what data to take in so if we're not supposed to get PII data then it's the CAT NMS committee who tells us what to do."

Frank says the CAT, by design, already takes in data not previously reported to the current reporting platform so it can create a better picture of the trading lifecycle.

Devised after the 2010 Flash Crash, the CAT is expected to ingest around 58 billion records per day and is expected to become the world's largest database. But House Bill 4785, also called the American Customer Information Protection Act, seeks to prevent the Securities and Exchange Commission (SEC)—and by extension



Andre Frank
Thesys CAT

the CAT processor—from taking in PII including social security numbers, tax identification numbers, birth dates and account numbers. Politicians have become increasingly concerned about the information collected by the CAT since a number of high-profile incidents in 2017—including the admission of a breach at the SEC itself—exposed the personal details of millions of American citizens. The SEC, through statements made by its chairman, Jay Clayton, has previously said it is flexible as to what information should be gathered.

The proposed bill, sponsored by Bill Huizenga (R-Mich.), has already moved past the Financial Services Committee and is awaiting scheduling for debate on the House floor. Under the contract, the CAT processor is tasked to collect specific data, including PII but if the law is passed, it does not automatically supersede the contract.

The CAT NMS committee announced that it is working towards the November 15, 2018 implementation day. The CAT was supposed to go live on November 15, 2017 but was beset with issues including the lack of a chief information security officer to double check security protocols. Thesys and the SROs had asked the SEC to extend the implementation time frame.

The CAT NMS plan committee—which consists of self-regulatory organizations (SROs) like the exchanges—declined to comment. However, a source close to the matter noted the contract might need to be amended in order to comply with the law if it ever passes.

"If PII is deemed no longer to be a data element that can be collected via the bill, then my gut reaction is that it

will simply amount to an impossibility and the rest of the contract and the rule will still be valid meaning that all other required data elements will still be collected," the source says. "So probably not necessary to have a new contract—maybe an amendment or a new addendum."

"By the way, the bill is ridiculous and misses the mark—it's trying to fix a problem that doesn't exist and the unintended consequences will add inefficiencies and costs that will ultimately be paid for by the industry. This is what happens when a congressman tries to use the legislative process to try and make a name for himself," the source adds.

Even before the bill was discussed, CAT NMS and Thesys had already begun exploring alternatives to PII. CAT NMS said in an update on June 29 that it was considering allowing Thesys to retain social security numbers using non-reversible secure hashes instead of the actual number for an individual. The final details of this method have not been polished including what other information will be part of the hash.

The committee will decide by August 15 if it will use any of the PII alternatives.

Along with the November 2018 go-live date, the CAT committee is pushing for a phased-in reporting timeline for other industry participants. It is working with the trade associations like the Securities Industry and Financial Markets Association, the Financial Information Forum and the Security Traders Association to develop the phased timeline and figure out how to fold in existing industry reporting protocols. **W**

Dark Trading Caps Not Responsible for Periodic Auction Growth, Study Finds

FCA report finds that growth in periodic auction trading is not a result of dark-trading bans. [By Hamad Ali](#)

Industry experts believe that Financial Conduct Authority's (FCA) study is a positive step forward in understanding the changing market landscape, the impact of Mifid II and the reasons behind the growth of periodic auction trading.

On June 25, the UK regulator published a study on the surge in periodic-auction trading since the implementation of the revised Markets in Financial Markets Directive (Mifid II), and its continued growth following the introduction of double volume cap (DVC) data on March 12.

According to the DVC, if four percent of total trades in a single stock are conducted via a dark pool, that stock can't trade in that dark pool for six months. If the amount reaches eight percent of volume across all dark pools, then that name is banned from trading on dark venues entirely for six months.

Market participants and regulators have both queried whether an expanded use of periodic auctions, which allow batches of trades to take place with minimal market impact during specified periods, have become a means of circumventing the DVC and any caps on dark trading, which is typically used for large-in-scale orders.

The findings indicate that periodic auctions remain a small portion of the market landscape and that the most recent data fails to support the theory that DVC is the sole reason for its increasing popularity. Christian Voigt, senior regulatory adviser at Fidessa says that FCA's report acknowledges the shift in trading practices and that the recent results lay the foundation for further research.



Christian Voigt
Fidessa

"These analysis reports are the right way forward because it enables us to have a fact-based discussion, he adds. "As it stands right now and what the FCA report concluded is that they don't see any major concerns and that they [periodic auctions] indeed provide good liquidity. If anyone disagrees with that point then they should use this now to speak up."

The report outlines that, although there is some evidence to suggest that a small share of market participants have switched from dark trading to periodic auctions in response to DVC, there are multiple other explanations to consider. Periodic auctions have proven attractive in recent months due to their suitability for large-size trades, aligning with a growing trend in block trading.

Additionally, the trading venue removes the need for high-speed trading, by queuing orders and enabling market participants to make well-informed trading decisions.

This, in turn, reduces the burden of investing in costly high-speed technologies, such as servers located near exchanges and direct fiber-optic connections.

"One of the key reasons for the growth of periodic-auctions trading is that order size is prioritized over speed and many market participants really appreciate this feature," says Mark Hemsley, president of Cboe Europe. "It means that they don't need to have the fastest connections or latest technologies to get to the front of the order queue, they simply have to be willing to trade in larger size."

Following the adoption of Mifid II regulations this year, the market landscape has changed with the introduction of further trading venues. As some of these shifts have yet to be fully realized, the move to periodic auction trading is welcomed as a compliant and secure way of trading large orders.

"We find the quality of execution in periodic auctions to be increased over and above traditional dark pools, says Duncan Higgins, head of electronic sales at ITG. "And while fragmentation of liquidity across the various execution venues creates more complexity, it also allows for more choice and we welcome that aspect of the change."

The FCA outlined that this is the first of many reports, and as market participants adjust to the new regulatory environment further analysis will be carried out on the impact of Mifid II and the changing market landscape.

For more on the DVC and its impact on trading in Europe, see page 18. W

Digital Reasoning Readies Public Release of Model-Training Platform

To solve the old needle-in-a-haystack problem, Digital Reasoning is developing a tool dubbed Cognition to improve the training process for machine-learning models. [By Anthony Malakian](#)

Cognitive computing services provider Digital Reasoning is gearing up to release version 1.0 of its new platform, Cognition, which is still in beta. It is a lightweight app that enables domain experts to create and iterate custom machine-learning models. It is installed on-premises, ingests a firm's internal data, is industry-agnostic, and is being tested by companies in the healthcare, government and security industries, in addition to financial services.

Cognition is in its eighth iteration and Brandon Carl, head of artificial intelligence (AI) research at Digital Reasoning, says 1.0 will be released at the end of September. The vendor has been using the product internally on its own proof-of-concept (PoC) engagements with its data science teams, and on its own pre-trained models in order to eliminate any bugs. Carl says there are more than 10 participants using it, though some are on older versions, with a handful of "very active users" providing feedback—which the vendor plans to increase after the public release.

In May, the Bank of England completed a successful evaluation of Cognition. The vendor has global deployments at Goldman Sachs, UBS and Point72 Asset Management, and received \$30 million in March via a funding round led by BNP Paribas, which will, in part, go toward getting Cognition to 1.0, and expand Synthesys, its cloud-based computing platform.

Carl says Cognition helps firms solve the needle-in-a-haystack problem, in which a researcher, compliance expert, portfolio manager or trader is trying to find a specific piece

of information in a sea of data, by streamlining the training process.

"Our goal is to move toward democratizing model building and driving the cost of creating models down for custom use-cases, and driving down the time to create that," he says. "If we do that and do it well, it will be people's own imagination and creativity that is the limit."

Cognition, was built on academic research and incorporates two types of machine learning. The first is guided learning, or supervised learning, where, through a series of basic yes-or-no questions, a client can use the interface to indicate if the search result was applicable or not. The second type of learning is active learning, where, based on the user's input and learning from previous results it begins to make suggestions for additional words or phrases to search on its own. This process helps with the problem of imbalanced datasets, where classifications are not represented equally, such as positive responses compared to negative ones when evaluating customer experience.

"Active learning, which reduces the amount of data needed, doesn't really work on imbalanced data unless you employ guided learning first," Carl says. "When we started building Cognition, we took a look across all the analytics we offer in Synthesys and one of the things we discovered was that almost the gateway drug to analytics was text classification for very imbalanced datasets—essentially, finding a needle in a haystack. Once you had that, there were all sorts of things you could do."

The platform delivers results immediately—Carl says it was vital to make sure that there wasn't a lag time

in generating the results, or else users would become frustrated—and it cuts the model-training process down from months to days or even hours, depending on the data field in question.

With the release of 1.0, users will be able to take all annotations they've made, combined with everything they've searched for, to create a full-fledged machine-learning model that they can run across their data, whether for trading and portfolio-management purposes, for surveillance and compliance needs, for regulatory reporting requirements, or for other search-related processes. Cognition supports 10 languages, including English, Mandarin, Russian and Spanish.

Carl says the product does not aim to replace data scientists; rather, its aim is to provide that building-block layer in order to free up their time, so that skilled personnel can assemble a more sophisticated model. This is important, he says, because in building the platform it began to highlight how much disagreement there is even between experts about classifications when training a model.

"Part of the data annotation, the benefits there, is it begins to surface in the firms just how much inconsistency they already have in their process. What surprised me the most is annotation consistency, or annotator disagreement," he says. "We don't have this full-fledged in the product, but we've completed the initial research for it, which is simply how much two experts disagree about the same thing when you'd think it would be obvious to both of them. We intend to make this a very big part of the product going forward because we think it's rampant." **W**

IHS Markit Preps for Uptick in Index Admin Business

The vendor anticipates that many financial firms acting as “self-administrators” of proprietary indexes will choose to enlist a third party to comply with the upcoming BMR regulation. *By Max Bowie*

IHS Markit is bracing for a wave of new index administration business following approval by UK regulator the Financial Conduct Authority (FCA) to operate as an authorized benchmark administrator under the European Benchmark Regulation (BMR), which governs the ownership and management of financial benchmark indexes.

Mark Schaedel, managing director and head of index administration services at IHS Markit, says the vendor is currently onboarding its sixth client—where IHS Markit calculates, maintains and operates an index on behalf of but independently from its owner—in addition to existing clients HSBC, UBS and Standard Life Aberdeen, and other, unnamed firms. In addition, “several dozen” other firms are considering written proposals, he adds.

BMR, which comes fully into force by January 1, 2020, aims to bring more transparency to proprietary indexes run by banks and investment firms—in this instance, referred to as “self-administrators”—by separating index owners, operators and investors. So to be compliant and independent from the running of indexes in which they might invest, some firms are enlisting index administrators such as IHS Markit to take over the day-to-day operation of their proprietary indexes.

“Many asset managers are not prepared for the new requirements, so they are looking to exit that business,” Schaedel says. “Probably 90 percent of indexes today are provided by self-administrators, and we think that will all disappear.”



Mark Schaedel
IHS Markit

In other cases, a firm may simply want to hive off its index business altogether, rather than face the compliance burden associated with the new regulation, Schaedel says, adding that IHS Markit has been active in acquiring benchmarks from financial firms and index operators.

Another aspect of the FCA approval is that it enables IHS Markit to provide “endorsement” for index providers outside the European Union who want to sell and run indexes within the European financial markets, and Schaedel says IHS Markit is already seeing interest from providers outside Europe in working with the vendor to provide validation for their indexes.

“Seventy percent of the world’s benchmarks are from outside the EU. BMR reaches Asia and the US, and they are still getting their heads around how it will impact their ability to provide indexes into the EU, for

consumption by European investors. That’s where endorsement comes into play: an authorized benchmark administrator can provide endorsement for a benchmark—like a real-time audit. We wouldn’t be running the calculations ourselves, but we would be answering every question, and addressing every exception,” Schaedel says.

Index operators from outside Europe can operate within the region without endorsement from a partner by achieving “recognition” through their own existing local regulated entity—or by setting one up—though both options take time, whereas IHS Markit has been operating its index administration team for four years, and has doubled headcount every year so that it is now upwards of 60 people, Schaedel says. But even that may not be enough to meet the demand it expects.

“We’re talking to many providers ... who may have explored ‘recognition’ and found it too hard,” he says. “But they need to be willing to let us into their shop... and our index governance committee needs to be confident that we can perform that oversight,” to ensure the independence is genuine and that IHS Markit understands what it is endorsing.

In addition, IHS Markit provides a service dubbed Know Your Benchmark, which tracks and provides reference data on more than 300,000 indexes worldwide, including details such as which indexes are authorized to operate in particular regions, and who the administrators are for specific indexes, so that anyone trading those indexes can ensure they are compliant. **W**

State Street Launches News Insight Application

Named Verus, the application scores news articles based on their potential impact on a portfolio. *By Emilia David and James Rundle*

State Street has launched a new mobile solution aimed towards providing news insights and measuring their potential impact on client portfolios.

The application, called Verus, uses machine learning and natural-language processing to determine the relevance and impact news articles could have on a stock holding or a whole portfolio. It harnesses articles from Thomson Reuters and processes more than 1,000 articles per day, determining their relevance and comparing their probable impact on holdings.

Stephen Marshall, head of Verus at State Street, says the application was made to ensure hedge funds and asset managers were able to clearly see how news, such as the release of a new product, could impact a specific holding or the rest of their portfolio.

"Two years ago we were interested in building something transformational and get into mobile," Marshall says. "We spent time talking to clients and found that they suffer from information overload, struggle to filter news that is relevant to them and most importantly need to know how much exposure they could have when news hits."

Verus will take an article, and with machine-learning algorithms, figure out if it is newsworthy, and if so, how high a priority it should be given in the context of its effect. Then, through natural-language processing, it will extract information such as a company name, products, officials, and even the location of corporate headquarters before placing these into context within a portfolio, such as whether or not these key words correlate with a specific investment or set of investments. It will

"We spent time talking to clients and found that they suffer from information overload, struggle to filter news that is relevant to them and most importantly need to know how much exposure they could have when news hits." Stephen Marshall, State Street



then compare the news with third-party data, for example, supply chain data, and then come up with what the bank calls a "V score," signaling its likely relevance.

Marshall uses the example of a product launch article, say, a new iPhone released by Apple. The application will take into account the content of the article that covers this launch, and determines if holdings that include Apple will be directly affected by the news. It goes further by also considering if investments into either a competitor or supplier will have an indirect impact.

"It tells investors how much they should care about the article and even become an indicator of any systemic risk," Marshall says.

The algorithms are guided by an editorial team, which Marshall says essentially "replicates the mindset of CNBC, and acts as if you have a personal financial news team." He adds State Street has had to develop this new capability in the firm, by effectively building a newsroom, in order to develop and continue improving Verus.

Verus currently only processes articles on equities, but Marshall notes that State Street has already begun development on macroeconomic news insights for investors who focus

on specific sectors, as well as for passive investors. Eventually, the application will also have the capability to look at news around corporate fixed-income assets and Treasuries.

"Our goal is to build up Verus to cover all assets and provide the insights clients need," Marshall says.

The tool is similar to other machine-learning-powered projects at other institutions. Last December, JPMorgan Asset and Wealth Management told *Waters* that it too had been working for years on a platform, known as NewsFilter, which uses artificial intelligence to sift through unstructured information in news articles, identifying its relevance to the bank's investment activities.

"The NewsFilter picks up words from unstructured news articles in free text format and filters out uninformative components, forming a domain-specific vocabulary and transforming the input into a structured form," said Kent Zheng, head of global research technology for EMEA at the firm. "We use a distributed representation to translate the words in the text to predictive features."

While the asset manager does not also employ news staff, it is continually expanding its use of machine learning.

"On top of relevance, we are also expanding the classification framework to be able to distinguish between actionable news items versus rumors," Zheng said. "We are also looking to develop a novelty factor component that can verify whether a news article contains new deal information that was not captured by articles that preceded it." *W*



END OF DAYS DATA:

Climate Content Heats Up

While ESG data is gaining prominence, institutional investors are increasingly looking to incorporate climate change information into the portfolio construction process. **Anthony Malakian** explores how traders, portfolio managers and vendors are working with this information, and where room for growth still exists.

Hurricane season in the Atlantic Ocean typically lasts from June to November, with the brunt usually hitting in the months of August and September. In recorded history, there have been a total of 33 Category 5 hurricanes, which are storms that have sustained wind speeds of over 157 miles per hour, or 136 knots. Between 1924 and 2002, there were 22 Category 5 hurricanes recorded in the Atlantic. From 2003 through 2017 there were 11, with three coming in the last two years. In addition, since 2001, there have been 24 Category 4 hurricanes

(storms with wind speeds of 130 to 156 mph)—compared to a total of 47 over the previous 50 years. Whatever your political beliefs are relating to climate change, it's a proven fact that catastrophic storms have become bigger, more frequent, and more costly in the 21st century.

Led by Hurricanes Harvey, Irma and Maria, the 2017 hurricane season was the most costly in the history of the US, with damages exceeding more than \$200 billion, besting 2005—which included the single most costly storm in history, Hurricane Katrina—which,

all told, cost \$159 billion. And these calculations do not take into account the lives lost as a result of these storms.

Founded in 2012 after Hurricane Sandy crippled islands in the Caribbean and parts of New Jersey and New York, Four Twenty Seven—based in Berkeley, Calif., and taking its name from the state’s goal of lowering its greenhouse gas emissions to 427 million metric tons of carbon dioxide by 2020—is one of a growing number of data vendors looking to provide more concrete metrics around the effects of climate change and, specifically, on physical climate risk. Four Twenty Seven’s flagship product, Equity Risk Score, takes in an ensemble of climate models that are available via open-source tools and various other scientific agencies to produce forward-looking predictions for data points such as average precipitation, extreme precipitation or heat, sea-level rise, and hurricane, typhoon and tornado activity.

From there, it has more than 1 million facilities mapped around the world and provides an exposure score for a facility exposed to climate risk, based on its location and industry sector. A portfolio manager or trader would then use that information to determine if they have outsized risk, whether it makes sense to trim positions that are disadvantageously positioned to climate-change events going forward, or add positions where they feel like there is relatively less risk either in total space or relative to their benchmark, says Frank Freitas, chief development officer at Four Twenty Seven.

“The market is maturing to the point where it makes sense to focus a lot of energy on it. You’ve got Article 173 in France that mandates reporting of climate risk, you’ve got the Financial Stability Board’s task force for climate-related financial disclosure that’s very prescriptive about telling people that they need to be aware of, and reporting on, their climate risk exposure from both a transition risk perspective and a



physical risk perspective,” Freitas says. “So there’s a lot of demand for this information because regulators are telling people that they need to prepare to be able to discuss meaningfully what their exposure is, but also because as climate change intensifies, and as you go from one Hurricane Sandy every 50 years to three hurricanes in the Gulf of Mexico that cost over \$1 billion in damages in a year, people are beginning to realize that they really need to account for this.”

The climate change data space is growing. In addition to Four Twenty Seven and other specialists like TruValue Labs and RepRisk, data giants Bloomberg, Thomson Reuters and MSCI are also active in this environment, as well as Sustainalytics, which is 40 percent owned by Morningstar, and Trucost, part of S&P Dow Jones Indices.

The industry is expanding rapidly because investors in Europe, Canada, Australia, New Zealand, Japan, and the US are starting to ask more and more questions about climate risk and how it’s being incorporated into the investment process, says Rob Furdak, chief investment officer of Man Numeric, the quantitative equity management arm of Man Group. “Over the last

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“As investors, and especially as quants, we’re on the hook to really be forward-looking and thinking about how might the future look different than in the past. And we see climate change—and its ancillary impact on production, on human capital, on even big things like migration or economic participation—as being much more important going forward than it has been in the past.”

Kathryn McDonald, Axa Investment Management

three to four years, things have been ramping up in terms of investor interest on all ESG metrics, but particularly climate change,” he says. “If it’s on the top of asset owners’ minds, it’s on the top of investment managers’ minds.”

Kathryn McDonald, head of sustainable investing at Axa Investment Management’s Axa Rosenberg Equities unit, sees the same interest, and says that while ESG data has been around for decades, the climate risk space is growing in importance.

“As investors, and especially as quants, we’re on the hook to really be forward-looking and thinking about how might the future look different than in the past,” she says. “And we see climate change—and its ancillary impact on production, on human capital, on even big things like migration or economic participation—as being much more important going forward than it has been in the past.”

Risk/Reward

Climate change data falls under the “E” sector of environmental, social and governance (ESG) data. Over the past 15 years or so, investors have increasingly incorporated ESG information into their decision-making processes as numerous scientific

reports have shown that firms with superior performance on material sustainability issues outperform firms with inferior performance on these issues.

For instance, a 2015 report by the University of Hamburg, in conjunction with Deutsche Asset and Wealth Management, looked at about 2,200 individual studies to examine the entirety of research directed toward the field of ESG and financial performance. The report found that roughly 90 percent of studies find a “non-negative ESG-CFP (corporate financial performance) relation,” and that “the large majority of studies report positive findings.” In total, 47.9 percent of vote-counted studies and 62.6 percent of meta-analyses studies found a positive relation between ESG and CFP, while only 6.9 percent and 8 percent, respectively, found negative results, with the remainder falling between neutral and mixed results.

Still, most of the outperformance gains have been found in the “governance” arena, followed by “social,” with “environmental” traditionally pulling up the rear. ESG is, after all, a wide-ranging field, and the incorporation of physical risk factors stemming from climate change is still in its early days.

Craig Davies, head of climate resilience investments for the European Bank of Reconstruction and Development (EBRD), blames a lack of standardization for the slow rollout in this space. In May, the EBRD, along with the Task Force on Climate-related Financial Disclosure (TCFD)—a committee set up by the Group of 20 (G20) nations—released a set of recommendations for companies reporting on physical climate risks and opportunities.

Davies says that what became “very obvious” as EBRD put together the 50-plus page report was that carbon transition, as a topic, is much better understood by the markets because a whole system of metrics exists that can be used to quantify and assess those



risks, and the same system and metrics can be used to quantify the improvements that are being made—or not made—to manage those risks, such as for greenhouse gas accounting.

“They are very widely disbursed across the market, they’re very well understood by the market, and everyone is speaking the same language when it comes to measuring greenhouse gas emissions or reductions in greenhouse gas emissions. So whether you’re a bank, a business, or a regulator, you’re all talking about the same thing and we have a comparable and widely-understood system of methodologies and metrics behind carbon transition risk,” he says. “We don’t have anything like that for physical climate risk. As we see it, that’s a barrier on market action. That’s one of the reasons we’re not seeing the same kind of widespread market action on understanding and tackling physical climate risks as compared to carbon transition risk.”

One surprise, Davies says, is that the market doesn’t quite understand

that while there are clear and present risks related to climate change, it also presents opportunities. For example, he notes that farmers in the Chiltern Hills, about 35 miles west of central London, are starting to think about growing new crops and, specifically, stepping up cultivation of Chardonnay and Pinot Noir grapes in the assumption that within 50 years, the region will have a similar climate to that of central France today—ideal for making Champagne.

“Climate change is overall a bad thing, but we as businesses need to think about what the opportunities are so we can be more mobile than our competitors are, so that we can be more resilient,” Davies says. “I was quite surprised at how difficult it was for the firms and financial institutions that we engage with to understand how physical climate can present opportunities.”

Emissions Mission

As a result of increasing numbers of players in the climate change space as more vendors look to capitalize on

investor interest, firms often have to do their best to blend this information to obtain a useful signal.

Furdak says Man Numeric uses data from Sustainalytics, MSCI and Trucost, among others, and the quants take that messy data, synthesize it, clean it, then automate the incorporation of that data into its system to see where the sources are consistent and agree, where they disagree, and how they disagree. Then the quants try to incorporate that blended look into the quantitative equity manager's portfolio construction process.

So, for example, Man Numeric has a client with specific investment criteria that the amount of carbon emitted by companies in its portfolio must not exceed a certain level. Based on its holding in a stock, what percentage of the company it owns, and how many tons of carbon a company emits in total, the quants can imply how many tons of carbon the client's overall portfolio emits based on those third-party data sources.

"So, if we have two stocks that we like equally based on our models and one is a big carbon emitter and one isn't, we tend to favor the one that emits less carbon," he says. "You can apply a similar approach in terms of gallons of water used, or similar metrics."

The other way to incorporate climate data is to create more generic constraints by coming up with some combined measure of environmental scores from different data providers and then—say, if you're managing a long-only fund on a benchmark-weighted basis—try to beat the benchmark score by 10 or 20 percent.

Furdak says one of the bigger challenges still facing the space is that there are two segments of data to manage—slow-moving, long-term data, such as that produced by MSCI, Sustainalytics and Trucost, where the frequency of updates is quarterly or annually and the data is fairly static over time; and



Michael Lewis
Deutsche Bank

then shorter-term data, such as that of RepRisk, Four Twenty Seven or TruValue Labs, which provide much shorter-term information with more-frequent updates.

"For us, it's about trying to strike the right balance between the stability and constancy of the longer-term data and trying to marry it with a shorter-term signal that may be more dynamic to a specific event, such as a Facebook data breach or a big chemical spill, which will take a while to filter into Sustainalytics, where a TruValue or other shorter-term signal will pick it up the next day. But one also shouldn't want to be trading on every little story and rumor, because that will incur a lot of turnover," he says. "You need to be able to strike the right balance between being reactive to what's going on in the world, but not so reactive that you're spinning your portfolio based on things that aren't relevant."

Future Risk

In the carbon transition space, firms are able to take in public sources of information to create their own scores.

Last year, UBS Asset Management launched the Life Climate Aware World Equity Fund, which attempts to push CO₂ benchmarking a step further by accounting for the future risk of climate change over the next 10, 15, 20 or more years. For it, UBS created a "glide path probability score" that looks at the trajectory of CO₂ emissions reductions over time and compares that to the International Energy Association estimates of how much energy is used, and how much CO₂ needs to be reduced per industry and sector to be on a glide path of a two-degree carbon reduction scenario, says Chris Greenwald, head of sustainable and impact investing research at UBS Asset Management.

"That's a kind of proprietary scoring with a future-oriented approach," he says. "It takes a bit more work

than just looking at the current CO₂ footprint in a portfolio. So you have to be a bit more analytical to account for future climate change risk."

The fund is built around greenhouse gas emissions, and considers Scope 1 emissions (emissions that occur from pollution sources such as stationary combustion, mobile combustion or process emissions) and Scope 2 emissions (indirect emissions that occur through the use of purchased electricity, steam, heat, or cooling, according to the Environmental Protection Agency), and, to a far lesser extent, Scope 3 emissions (all other indirect emissions).

"Intensity levels, as well as the absolute levels, are the most important factors in reweighing the portfolio," Greenwald says. "But, again, we are looking at change over time compared to a standard benchmark of where the industry needs to get to in a two-degree carbon reduction scenario. There are—for certain industries, like oil and gas and utilities—other factors that we'll look into, like the energy mix, the percentage of energy coming from renewable sources versus fossil fuel sources, the exposure to fossil fuel reserves for oil and gas companies. There are some more granular datasets that we also look at for very carbon-intensive industries where we have additional information that can be used in the scoring process."

Francis Condon, a sustainable and impact investing research analyst at UBS Asset Management, says he expects even greater use of climate change data in the future, when coupled with another growing sector of alternative data, that of geospatial data. This will be particularly useful in the physical climate risk space.

"It's now possible for data providers to replicate the location of company assets. And they can place that on top of a climate-related grid or a water-stress grid and those sorts of things. That's one of the more interesting areas of development in the field that we're seeing," Condon says.

Greenwald concurs, adding that while no vendor has “cracked” this space yet, “using alternate data sources from a variety of different areas to account for physical climate change risk is something that is an emerging area that we’re quite interested in. And the strategy is meant to incorporate those new datasets over time. So as new datasets become available, we can incorporate them into the rules and how we rebalance the portfolios.”

In addition to geospatial information, another major factor in the proliferation of ESG datasets is improvements in—and access to—natural language processing (NLP) tools and other forms of artificial intelligence and (to a lesser, but growing, degree) machine learning.

Mauricio Bustos, a data architect at Axa Rosenberg Equities, says that not only is the number of data providers in this space growing quickly—the quality of their offerings is also improving quickly. Having data delivered in usable formats makes it easier for quants to incorporate that information into the investment process.

“When we talk about alternative data and, specifically the NLP techniques used, those are techniques that really only matured in the last few years. The availability of those techniques to be useful in our process only came around in the last couple of years,” Bustos says. “And so, quants can have this access to be able to piece out ESG data from things like 10-Ks and 10-Qs—it really is a very recent phenomenon.”

Building Resilience

Michael Lewis, head of ESG thematic research at DWS (previously known as Deutsche Asset Management), says that while sustainability has been top-of-mind for the better part of two decades, the climate arena has picked up pace in part because of the Montreal Carbon Pledge of 2014 and the Paris Agreement of 2016. The former is a commitment



“For us, it’s about trying to strike the right balance between the stability and constancy of the longer-term data and trying to marry it with a shorter-term signal that may be more dynamic to a specific event, such as a Facebook data breach or a big chemical spill.”
Rob Furdak, Man Numeric

by more than 150 investors worldwide to annually measure and publicly disclose their portfolios’ carbon footprint. The latter is a global effort to combat climate change with the aim of keeping global temperature rise in the 21st century to below 2 degrees Celsius above pre-industrial levels, and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius, according to the United Nations Framework Convention on Climate Change (UNFCCC). Though the US has backed out of the agreement, 178 other parties (including nation states and supranational entities, such as the European Union) worldwide have ratified the agreement.

While DWS has a multitude of data providers, such as MSCI, Sustainalytics and RepRisk to assess ESG risks, it uses Four Twenty Seven and Trucost to better understand

physical risk and transition risk as a result of climate change.

“The new innovation, I guess, is this physical climate risk mapping,” Lewis says. “We spoke to a number of clients and people and they’ve been trying to look at this topic for a while. So we were very fortunate to find Four Twenty Seven, really, because a lot of investors were interested and keen to get this sort of information. Four Twenty Seven has filled a very big gap, and we’re building on that data to embed physical climate resilience into investment portfolios.”

Lewis says that about 18 months ago, an insurance client came to the group. While the client was an expert on underwriting for catastrophic events and pricing climate risk and physical extreme weather events, it wasn’t as adept at doing that on the asset side. DWS’ job was to bridge that disconnect between the liability side of the insurance company and its investments.

This extends to oil and gas companies, as well. There have been advances in attribution science for measuring carbon emissions, and Lewis says that in the future, offending companies may well pay fines similar to those faced by tobacco companies in the US in the 1990s.

For a client looking to build client resilience into its portfolio, DWS starts by looking at a particular region, just to narrow down the risk involved. “From here, we can then start to solve the entire picture globally,” Lewis says.

“So, for example, we started by looking at an Asia-ex-Japan listed equity index, with Four Twenty Seven and Trucost data providing a physical climate and transition risk score to each company, respectively. We are then able to map those Asian companies in a quadrangle, or a matrix, with the top right being very resilient companies to both transition and physical risks, and the bottom left being less so. In terms of developing a passive index, we assigned a higher weight to the physical climate

risk score compared to transition risk because the former is happening right now, and we don't have much control over it, while the latter is more about risk over time, over which we have perhaps greater control."

What you find, he says, is that you can't use transition risk as a proxy for physical climate risk, as these data points are uncorrelated. So next, you look at the universe and start attaching weights to more resilient companies and, in a sense, overweighting the portfolio so you're weighting toward more physical climate-resilient companies, and underweighting less climate-resilient companies.

From there, you conduct your back-testing. The aim is to link extreme weather events and supply-side disruptions to financial market performance. So, for example, if a Korean manufacturer has the majority of its hard-drive production in facilities in a floodplain in Thailand, they are at risk of disruption even if the company, itself, is headquartered in a less susceptible location.

"So what your strategy is trying to do is to then take into account those operational and supply-chain risks and to minimize your exposure to companies that are going to suffer big draw-down events in the event of extreme weather events and the transition to a low-carbon economy. Consequently, this strategy is not to profit from extreme weather events. Rather, this is more of a risk management tool to build resilience into a portfolio so that when extreme weather events strike, your portfolio is more resilient to those events when they happen," Lewis says.

While it's still "early days," the asset manager has been onboarding Four Twenty Seven's dataset into its ESG Engine to improve its portfolio construction for the Asia ex-Japan index, and will use it to launch a family of passive indexes "during the remainder of the year," which would then lead to spin-off indexes optimized for regional climate risk for listed equities.



"So at the moment, we've gone from Asia to the listed equity in Asia, then we're building regionals of Europe, the US and global. And then we would move into fixed income. But that's some way off," Lewis says. "This way, though, we will have for a company [through our Aladdin system] information where any portfolio manager would be able to see the ESG risks—and specifically, climate-related risks."

The Beginning

While US President Donald Trump's decision to back the US out of the Paris Agreement came as a major blow to environmentalists, the whims of a government are unlikely to dissuade institutional investors from wanting climate risk incorporated into the portfolio construction process.

First, it is a manager's fiduciary responsibility to make sure a portfolio is resilient against catastrophic events. There is a growing consensus that it would simply be irresponsible not to factor in climate effects. Second, while the US might not be as keen to tackle the effects of climate change under the current administration, Europe and Asia

are. In addition to the Paris Agreement and the TCFD's voluntary framework for disclosing climate-related impacts and opportunities, the European Commission (EC) recently took its first concrete actions to push the financial sector "to throw its full weight behind the fight against climate change."

And in Asia, Japan's Government Pension Investment Fund (GPIF), the world's largest pension fund with about \$1.5 trillion in assets, has said that its asset managers "should give careful consideration to ESG issues" to raise its allocation of socially responsible investments from 3 percent in 2017 to 10 percent of its stock holdings, though it didn't give a deadline. And in Australia, the Responsible Investment Association Australasia says socially responsible investment in the continent is up 9 percent from 2015, pulling in \$622 billion in assets under management.

"Climate change is just undeniable now—you just can't ignore it," Davies says. "The market is really taking this issue seriously. When you get enough market action, it means that you don't have to rely on the government to give you the signals and instructions anymore." **W**



Policymakers hoped the double volume caps would bring more trading onto the lit markets. But measuring trades that have been impacted is not an easy affair. By Hamad Ali

If you pour a cup of water into the Atlantic, would the sea level rise as a result? Probably, yes. But because of the size of the ocean it would be almost impossible to measure.

This is the analogy that Christian Voigt, senior regulatory advisor at Fidessa, uses to describe the difficulties in measuring increases in trading on lit markets since the first data that governs the double volume cap mechanism (DVC) was published by European regulators on March 12. "The problem is that measuring any impact on the lit market is really difficult because the lit market is very large," he says.

Under the DVC, which was ushered in by the revised Markets in Financial Instruments Directive (Mifid II), if four percent of total trades in a single stock are conducted via a dark pool, that

stock can't trade in that dark pool for six months. If the amount reaches eight percent of volume across all dark pools, then that name is banned from trading on dark venues entirely for six months.

Trends in equity trading during 2018 have been indelibly changed by the introduction of Mifid II, with a rise in large-in-size, or block trades, the use of periodic auctions, and trading through systematic internalizers (SIs).

Questions have been asked about how much of this shift can be attributed to the enactment of the DVC. Periodic auctions, for instance, allow traders to move large orders during specified periods while minimizing market impact, and have emerged as a focus of this debate.

The European Commission defines a periodic auction as a "system



“In the old days where you only had humans, you know what a dark pool was? Effectively, it is a pocket of the traders. It was never written down anywhere. But in effect, it was very similar trading practices, because they know if they had a very large order they can't immediately disclose it to the market because it would harm the client.” **Christian Voigt, Fidessa**

that matches orders on the basis of a periodic auction and a trading algorithm operated without human intervention.” According to a source at a European regulator who spoke to *Waters* on the condition of anonymity, what seems to be happening now is some market participants are creating a “new hybrid of auction type” that can be called up on very short notice. The auction period itself can then just last for 100 milliseconds or so.

There has been a significant growth in these types of periodic auctions this year. “There does indeed seem to be a direct sort of association between the double volume cap coming into play, and then certain periodic auction systems being created and gaining some traction in terms of volume,” says the regulatory source.

According to data from Fidessa, this growth has been from under 1 billion shares traded to around 6 billion by the middle of July. Yet a recent report from the UK Financial Conduct Authority (FCA) found that dark-trading caps were not responsible for this, with growth in the use of periodic auctions observed in both capped and uncapped stocks.

According to the regulatory source, most European dark pools are based in London. Of course, those venues are also trading shares or

other instruments from, for example, France or the Netherlands. “There you can envisage that indeed different regulators may have different views on what to do with periodic auctions,” the expert says.

According to a UK-based market analyst at a brokerage, there are different schools of thought on periodic auctions emerging from regulators. “The FCA is the only one I have seen that has done a data-driven analysis like they presented in that paper. The other regulators haven't really looked at [it] deeply. They just look at certain features in the periodic auction and think they are copying or replicating what is going on in the dark pools that are capped,” they say.

Despite the findings of the FCA study, some say certain traders are trying to circumvent the DVC by creating these new types of periodic auction markets.

“The French regulator is kind of concerned about how these periodic auctions work, how the prices are formed within them, and they are kind of doing a further investigation into them,” the analyst says.

Yes or No?

According to Philippe Guillot, executive director of the markets directorate at French regulator Autorité des Marchés Financiers

(AMF), finding a definitive answer to this question would require a vast amount of analysis work.

“This answer is more subtle than a yes or a no,” he says. In order to properly analyze the impact, Guillot explains, he would need information on all trading flows prior to the original Mifid and then the ability to compare those with trade flows from after Mifid II's enactment in January 2018.

The European Securities and Markets Authority (Esma) is conducting a fact finding exercise on periodic auctions, checking how they are being set up and what the features are. The regulator is then expected to discuss its findings with member states and decide whether there are any additional regulatory or supervisory steps to be taken, and the outcome of that process at this point is very much open.

Another significant contributor to changing trading patterns has been the prohibition of broker crossing networks (BCNs), which have instead been replaced largely by SIs, entities used to transact client orders against a broker's own capital. According to Guillot, the reason for banning BCNs was to bring back on more lit venues those flows that have been increasingly confined to smaller and smaller crosses in those BCNs.

“It seems that some of those flows, moved from BCNs to SIs,” he says. “But I do not have the order books on SIs and so on, and I cannot tell you today with absolute certainty that the flows that were going to the BCNs yesterday, are now going to the SIs. If you wanted me to make that assertion, I would need proper pre-Mifid I data to compare to pre-Mifid II data. Mifid II gives me more data than Mifid I, so I will never have comparable data, but if I wanted to be able to do that, I would need comparable data from the order books, between Mifid I and Mifid II.”

It is also difficult to judge how much of the SI volume is actually

SALIENT POINTS

- Many analysts don't know how the 4 and 8 percent double volume cap thresholds were determined.
- The UK and Nordic markets have more capped stocks than France and Germany.
- Block trading, periodic auction and systematic internalizer (SI) trading volumes have all increased.

firm, addressable liquidity, traders say, meaning that even the data gathered under the enhanced requirements in Mifid II does not always paint a truthful picture.

"Under the SI regime, trades are often tagged as SI whether they are addressable or not. So while SI volumes have ostensibly increased, much of it may not be real, addressable liquidity," says Joelle Tarrant, global head of market structure at HSBC.

On the lit markets it would be even harder to tell what impact there has been, even if the complete Mifid I order books Guillot referred to were available, along with a computational platform powerful enough to accurately parse, compare and analyze the results. That's not to say data was missing under Mifid I, but rather, it was affected in a major way by one particular event—the global financial crisis.

"The same problem happened with Mifid I if you will remember," says Fidessa's Voigt. "So when Mifid I was done, after three years it was supposed to be reviewed, right? But the problem was that when the Mifid I review was supposed to take place, we had the global financial crisis. So all of a sudden nobody was able to do any statistical analysis anymore, because you had this massive financial crisis, which nobody blamed on Mifid I, but obviously anything done under Mifid I was heavily impacted by it."

Yet the answer to this puzzle—and indeed, the puzzle itself—is far more complicated than it seems. The very construction of the DVC is shrouded in a sense of mystery that makes judging its utility difficult.

Dark Forces

A key objective of the DVC is to move more trading from the dark to the lit markets, ostensibly for the sake of market transparency. But there are valid reasons for trading in the dark, with a long history attached.

"In the old days where you only had humans, you know what a dark pool was? Effectively, it is a pocket of the traders. It was never written down anywhere. But in effect, it was very similar trading practices, because they knew if they had a very large order they can't immediately disclose it to the market because it would harm the client," says Voigt.

But dark pools really began to take off in Europe when Mifid I was introduced in 2007. At that point, trading was largely confined to national exchanges and speed was less of an issue. Mifid I allowed for an explosion of trading venues, such as multilateral trading facilities, BCNs—and of course, dark pools.

"The fact that you see smaller trades in the dark pool is just a function of how electronic trading has developed," says the market analyst. "And you can use algorithms to look across a lot of dark pools to maximize access to liquidity and control market impact. So I think it is just the way that algorithmic trading has developed, which has adjusted how people trade within these dark pools. So rather than posting a large order there, you post lots of small orders across different dark pools, to make sure you can capture all the available liquidity."



Philippe Guillot
Autorité des
Marchés
Financiers

But even though the point of the DVC is to increase transparency, concerns remain about its construction. The DVC is not a very elegant way of trying to control dark pool trading, the analyst says.

"There was no real analysis done beforehand on why four percent and eight percent were the best numbers to use," they say. "I have never seen a European regulator stand up and say 'well we chose eight percent because we looked at how much dark trading would be detrimental to the market. They just seem to have picked those numbers out of thin air. I also looked at other regions—Australia and Canada—where they have taken a slightly different approach to controlling dark trading and it is all based around whether dark pools can provide you with a better price than you would with trading in the lit."

While that is not a perfect means of analyzing the impact of dark trading, the analyst suggests it is perhaps "a more thoughtful way of doing it," rather than simply introducing hard caps. The emphasis, he says, should be on execution quality rather than arbitrary numbers. Even the regulators agree.

"When the parliament voted on Mifid II, those caps of four percent and eight percent were written in the text of Mifid II. So it is not something that comes from Brussels nor from the regulators," says the AMF's Guillot. The regulatory source concurs, describing it as a political issue.

Indeed, few people seem to have an idea of exactly where the numbers came from, or why they have been widely accepted, outside of political diktat.

"I have asked this question a million times, and so far I have not gotten a satisfying answer," says Fidessa's Voigt. "It is an absolutely valid question. And for the life of me I don't know. All I can tell you is there was a draft document published that initially said, I think, in the beginning, 5 and 10 percent. And then it was miraculously changed to four and eight some time later."



Duncan Higgins
ITG

Some market participants are unhappy with the DVC because of the price they have to pay based on these seemingly arbitrary numbers. "You can imagine that certain trading venues that operate dark pools are very unhappy with this because it means the amount of volume they can do is effectively curbed," says the regulatory source. "And it is also curbed in a kind of unpredictable way because a suspension can hit at any given time. And then you have to adapt and then the volume that you do in the next month can be restricted."

Will the DVC Be a Success?

When it comes to the long-term impact of the DVC, Guillot says regulators have always been very bad at predicting the future. He says if he had been good at it, he would have worked in the stock market instead of being a regulator.

A theme that remains consistent is that most see the DVC as a political tool, rather than a means of ensuring best execution or enhancing transparency.

"I would say there was a policy objective for Mifid II and the dark caps to make more trading happen in the lit markets. And our data shows that has been achieved," says Duncan Higgins, head of electronic sales at ITG. "I don't agree with the policy objective, but that is another matter."

Fidessa's Voigt says the legislation has been a compromise. "I hope it is just going to be an annoying footnote. Because the way I see the DVC is that it was a political compromise done at a time when politicians were desperate to get a deal and an agreement across very diverse parties," he says. "If you compare the US with Europe, what you need to consider is in Europe effectively you have 28 countries at the moment that all need to agree on a financial market regulation. So you have 28 diverse views that you need to bring under one hat. And I don't think anyone really liked the DVC."

Despite grouching over the nature of how the DVC was put together, however, the regulatory perspective—leaving aside, perhaps, the hedging from the AMF—seems to be that the system as constructed is working well so far, inasmuch as the calculations are being produced consistently and the questions are being asked about the wider impact.

"From our discussions with regulators and from public dialogue at

conferences, regulators seem relatively confident that DVCs have been successful in their implementation," says HSBC's Tarrant. "They are now examining secondary ramifications, such as rises in periodic [auctions], and rises in SI volumes."

But from the markets perspective, there is still probably bit of a hesitation around the benefits that the DVC can bring. **W**

BREXIT'S DVC BLUES

The Nordics and the UK market have a high proportion of capped stocks, but France and Germany have only a few stocks capped. "You have many reasons for that," says the Autorité des Marchés Financiers' (AMF's) Philippe Guillot. "I will not be able to mention all of them, but I can mention one for instance: In France, retail investors have been less present in the equities market than in the UK. You have a different proportion of retail, and retail flows have been internalized in the UK for ages because of the way that market has functioned over the years. Because of that extra internalization of this retail flow, you would probably have different product mixes in the UK and France. Because in France, we have a rule concerning concentration of venues, which means that the retail investor generally goes on the centralized market."

Another development to watch is Brexit. There is uncertainty as to whether the UK will be a part of the single market, or how it will be able to access European investors. According to the brokerage analyst, it is difficult to tell with something as specific as the DVC whether that will be kept when the UK decides whether to simply gold-plate European Union rules to be 100 percent equivalent on the day of Brexit, or to pursue its own regulatory regime.

"If the UK wants to continue doing business with the EU it is likely that there will have to be some alignment in terms of rules, but one thing I would say is that Switzerland is obviously not in the EU. And they have equivalence. They have their own version of Mifid, and that doesn't include the double volume caps," he says.

The analyst notes that the Swiss exchange has a dark pool based in Zurich. It can trade Swiss stocks, but it doesn't have volume caps applied to it. A trader sitting in London can trade on this venue in Zurich because it has equivalence even without the double volume cap.

"I am not saying that means UK will get equivalence if they decided to scrap the caps, but it is just one example to look to. I imagine the equivalent discussions between Switzerland and the EU, and the UK and the EU will be very different and will take place also," the analyst says.

The double volume cap is certainly a "unique measure" that isn't found anywhere else, according to the regulatory source. In this respect, Brexit will be an important development to watch.

"Of course if we had a hard Brexit at the end of March of next year, we would then [have a] separate double volume cap system in the EU27 system," the source says. "And the UK would run its own double volume cap system. It of course leads to funny results, funny effects. That goes for the double volume cap but also for many other items in financial regulation if you then tear apart a very much integrated financial market. From then on markets would run next to each other, which for the time being operate on the same regulatory framework. It is something quite complex."

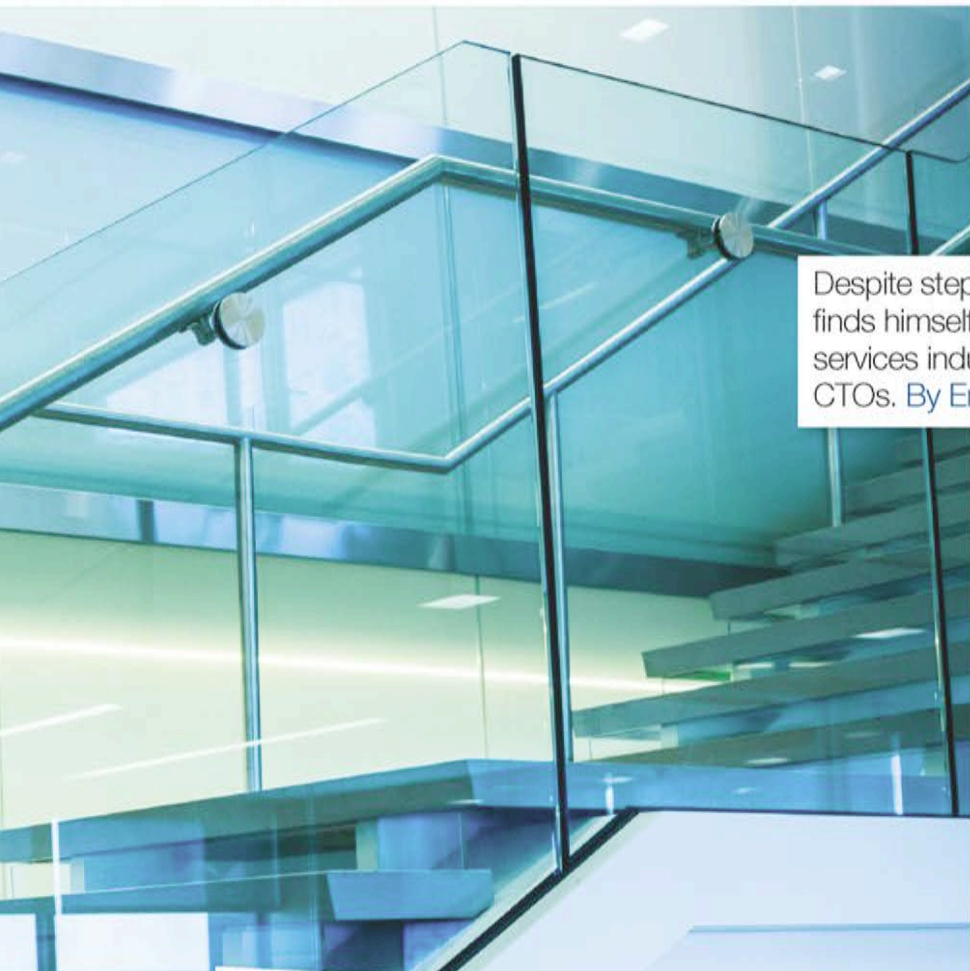
Would there be an incentive for the UK not to stay with the DVC? "It is difficult to speculate on that given how volatile the situation seems to be at the political level," the source says.

HSBC's Joelle Tarrant says other non-EU regulators have been watching Mifid II closely. "It's clear global regulators have been closely watching how Mifid II has unfolded, particularly in the areas that had cross-border ramifications. This will have included the double volume caps, but we're not aware of any who are planning anything similar in the near future."

She notes there is some regional variation as to how regulators view dark trading, and that the implementation of the DVC in Europe should provide "an interesting case study for them to review."



The MENTOR



Despite stepping away a number of times, Peter Noll finds himself constantly pulled back into the financial services industry to mentor the next generation of CTOs. By Emilia David

When Al Pacino said,

"I thought I was out, then they pulled me back in," in *The Godfather III*, you wouldn't think it could apply to financial technology. But Peter Noll, CTO of Boston-based Acadian Asset Management, thought he was already retired from the financial services industry when the pull of shaping the next generation of technologists hit him with full force.

"When I came back to Acadian, there were two things I missed: I missed leading people, and I missed developing people," Noll says. "Doing consulting, it's very much by yourself, providing advice, but development of people is something I always took very seriously, and I actually derive more satisfaction from developing talent than just about anything else."

Noll took on the challenge of mentoring employees with aspirations of becoming CTOs or chief information officers (CIOs) and bringing about greater change in the companies they work for as well as the financial services sector as a whole. And he did this on top of the myriad responsibilities he assumed as a top executive, including helping to lead a technology transformation at a major asset manager.

"I set a goal for myself about 15 years ago to develop 12 CIOs for the industry," he says. "I won't tell you who they are, but I've done nine, I've got three left to go, and I think all three are here in Acadian. So when I retire for good, my intention is that the company picks [the next CIO] from about three good choices," he adds.

Throughout his years of molding young talent, Noll says he has seen many people start to develop the traits of good leaders. And mentoring is something Noll knows is important in an industry that perhaps doesn't always provide the



Peter Noll, Acadian Asset Management



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“As our cloud adoption increases, we have the opportunity to put more of our staff to work solving business problems and providing solutions to the business, not just running hardware and software. We’re really trying to figure out how to train our staff in different things so that as time goes on our people become more adoptive of our future needs.”

opportunities to expand experience and knowledge sets. Over decades of working in the financial technology sector, Noll has dabbled in software, hardware and pure finance, developing an understanding of what exactly companies are looking for. This experience has shaped his view of financial technology and the work involved to get the industry to where it needs to be in the modern age.

Boston Born

Born and raised in Boston, Noll developed an interest in data and technology as a student of market research and advertising at the University of Rhode Island, at a time when, he says, not many colleges were even offering computer courses. Upon graduation, he started his career working in the minicomputer industry where he was able to get exposure to technology by working for Burroughs, now Unisys.

He says the experience helped him learn a lot about technology and, crucially, how businesses were beginning to use it. “When I was getting out of college, there were only a few choices for employment at the time,” he says. “You either worked for

Procter & Gamble to help sell soaps or something like that, or you ended up working for one of the phone companies or the minicomputer industry that was just starting up. So I ended up working for Burroughs, which was a dominant player in the electronic bookkeeping business back in the 1960s and 1970s.”

The job was to sell some of the first commercially available computers to small firms and “mom-and-pop shops,” he says. “It was a hodgepodge of different industries, so it was a great learning ground in terms of learning technology, how companies benefited from computers, how to implement them and how to train people to use them,” he adds.

Noll says he has always been hired by his customers, which is how he transitioned to working in the financial services industry from minicomputers. Following his stint at Burroughs, he moved first to Data Architects, then to Tandem Computers, before finally moving fully to finance when he started working for State Street, which hired him after he helped set up electronic wire transfer systems for the bank.

He spent the next 10 years at State Street as a senior vice president for client integration, before moving to MFS, where he was one of the senior managers remaining after then-New York Attorney General Eliot Spitzer alleged the firm had permitted trade abuses.

After MFS, Noll decided to take more time for himself and chose a “semi-retirement,” although it didn’t stick. Having always been an athlete, he could often be found playing golf, sailing, or spending time with his family, but this period out of work—by his own admission—led him to end up “playing more golf than I enjoyed.”

He therefore decided to re-engage with technology. In between rounds of golf, Noll and a friend founded a consulting business where they would advise companies on their technology strategies. Through this consultancy, Noll met with executives from Pioneer Investments where he ultimately came out of retirement by agreeing to work as Pioneer’s global CTO, the only US-based executive in the Milan-headquartered firm.

After seven years at Pioneer, Noll hung up his CTO hat to focus on consulting and went into semi-retirement

again. But once more he found the pull of working on transformation projects and mentoring the younger generation too strong to resist. It was through his consulting work that Noll first worked with Acadian. He was consulting with the firm on its IT strategy after it parted ways with its former CTO, when Acadian made the decision to take him on full-time in 2014.

Introducing Change

His strategy for identifying future leaders is relatively simple, he says. People within the industry don't often have the chance to gain experience in many of its parts. Either the opportunity is not offered or employees get comfortable and don't want to stray from their comfort zone, so Noll actively looks for people with the drive to gain more experience and lets them take the lead on certain projects. This strategy is not without its risks—one way he and his management team train potential leaders is by throwing them straight into the deep end on projects like datacenter migrations, things Noll says they may not be ready for but have the willingness to attempt.

For him, technology is the easy part of the job. What he wants to see from future technology leaders—and from people in the industry in general—is the institutional knowledge that comes with working closely with peers in a firm.

Once Noll was permanently hired at Acadian, he set about changing the development and technology culture of the company, as well as improving some practices already set in place.

"A lot of people up to about five years ago had always worked here and the experience they had to rely on was a little bit limited, so when I arrived I took a different approach," he says. "When I arrived there were about 35 staff and a single consultant; we're now about 70 staff and about 30 to 40 consultants, based on the project appetite we have on any given year."

Despite Acadian's reputation as being heavily invested in technology—after all, it was one of the first buy-side firms to start writing its own trading models and algorithms—Noll saw an opportunity to push the boundaries even further. Part of his plan for Acadian is to guide it on a multi-year transformational journey to improve its IT strategy.

As a quant firm, Acadian has two development teams: the investment team develops its own platforms and the technology team tests products. This setup allows the investment team to create platforms that meet its specific needs without the need for lengthy development times. Acadian relies on good quality data, much like the rest of the industry, so it has large demand

for data governance processes as well as strong data-gathering projects. At present, Noll has four priority projects for Acadian: improving data governance and management, streamlining trade processes end-to-end, overseeing a move to a new portfolio accounting system, and cloud adoption.

Priorities

Transformational projects bring with them attendant challenges, and these goals are far from complete. Noll says it became important for him to convince the asset manager to rely more on third-party software providers for non-core competencies like portfolio accounting. Before he arrived at Acadian, the firm wanted to build much of its software, even if it was not adding value for its clients. It is now in the process of moving to a new portfolio accounting system after its old one was mothballed by its provider.

Noll says Acadian, like many firms, is still in the process of moving to the cloud. He says the company was interested in migrating to the cloud as the technology allows it to scale up and down for each project or product it releases. Moving to the cloud also frees up technology staff to focus on projects within the company, rather than constantly having to maintain infrastructure.

Of course, this means a fundamental change in the workforce, not just for Acadian but also for the industry. "One of the factors that we also have to think about is how this changes the workforce and how we manage that over time," he says. "As our cloud adoption increases, we have the opportunity to put more of our staff to work solving business problems and providing solutions to the business, not just running hardware and software. We're really trying to figure out how to train our staff in different things so that as time goes on our people become more adoptive of our future needs."





The largest, most complex project Acadian has to undertake is its data governance, especially as it plays such a key role in how the firm identifies potential investments. Acadian uses data from commercially available resources but also develops its own by finding investment signals that can act as indicators of performance. There is an element of experimentation here, and not everything works, of course.

For example, in 2017, Acadian partnered with Microsoft Bing to try to create investment signals from social-media posts. The project failed to yield meaningful signals, however, and was dropped, although the firm continues to look for innovative ways to use data. Data, according to Noll, is an ongoing issue that all in the financial services industry must work on improving. The capital markets are still behind other industries when it comes to using, gathering and storing information.

"Data is this industry's Achilles heel actually; and it's not limited to Acadian," he says. "The invest-

ment industry is a little bit behind on that and ahead of many others, but the problem has not been solved systemically by any stretch of the imagination. It will continue to be an opportunity for firms that take it seriously and invest in their data."

Noll is also working with the team looking to improve the types of data Acadian uses as the firm embarks on extending its data stores. This includes moving away from a mainly equities-centric data model to support different products.

Acadian is also exploring projects around machine learning and artificial intelligence, though Noll points out that these also involve good data-gathering and governance practices at a foundational level. He estimates the transformation projects at Acadian will go on for at least three or four more years. After that, it's possible that he will not be leading the charge for the next phase of the company, but handing the reins over to the next team of people he has cultivated.

Stepping Back

Though Noll has done much to encourage the next generation of technologists, he says nobody in his family has followed in his footsteps. His two children are already grown: His daughter works in asset management and his son is a lawyer. His son-in-law is also in the financial services industry and works with his old employer, State Street. He jokes that he extends his CTO responsibilities at home because he still acts as his family's IT help desk, to the point where he set up a remote system—like the one that his team uses—to fix any technology issues on his family's computers.

But he doesn't mind being called up to address his family's technology issues. He's an engineer at heart and still likes to experiment with technology at home. Sometimes on his own time he plays around with the suggestions his colleagues give him to investigate how they got to the solutions and to gain a little bit of knowledge himself. "I'm an engineer by trade so I have a little lab at home and in [a vacation home in] Cape Cod, I play games with storage to see what works. It's the only way I keep shop and ensure that the people who work for me can't mislead me. The way my brain works, I need some engineering problem to solve," he says.

Once the transformation project in Acadian finishes, however, Noll says it will be time to move on and fully hand over the reins to one of the people he's mentored, perhaps finally retiring for good. "I will gracefully go off into the sunset when I'm finished here and I'll be happy to do it," he says. "I've developed additional hobbies, my kids are getting ready to start their own families, and there will be plenty for me to do. And I will still have a couple of my labs."

Of course, as Noll has demonstrated several times, it remains to be seen whether he'll be out of the game for long. **W**

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ETFs: Priming the \$5 Trillion Pump



Exchange-traded funds have seen extraordinary growth in recent years, thanks to a confluence of investor appetite for passive investment, a friendly regulatory structure and aggressive marketing from providers of these products. Now, technology may provide the fuel that will rocket them into the stratosphere. *By Josephine Gallagher*

Exchange-traded funds, or ETFs, are, to quote Derek Zoolander from the eponymous film, so hot right now. Something is definitely happening in this space, and it mirrors a wider shift in general investor behavior.

The reasons behind this are complex, including the relative simplicity of trading ETFs and the fee structure associated with them, as well as a desire for diversification in buy-side portfolios. But there's more.

"I think we've seen active managers on the back foot over the last few years because of industry-

wide outflows from their products into passive vehicles and ETFs," says Mark Fitzgerald, head of ETF product management, Europe at Vanguard.

Put simply, the growth of ETFs looks like it isn't going to run out of road any time soon, and that's thanks in large part to technology's influence over future generations of investors. Accessibility, user friendliness, cost and transparency are the key words for modern investors, and technologically suitable investments such as ETFs hit a sweet spot that traditional instruments struggle to find.



“I think we’ve seen active managers on the back foot over the last few years because of industrywide outflows from their products into passive vehicles and ETFs.”
Mark Fitzgerald, Vanguard

“It’s tough to deny the efficiency of technology,” says Steve Sachs, managing director and head of capital markets at Goldman Sachs Asset Management (GSAM). “Particularly as you know how certain generations—Millennials being a great example—love to interact with that type of technology for all aspects of their life, and financial services won’t be any different.”

The New Age Investor

Twenty-five years on from the first-ever US listing of an ETF, the passive product has grown staggeringly over the years, taking huge strides in the last decade. Globally, ETFs are now listed on 68 exchanges and across 56 countries worldwide and are expected to soar past \$5 trillion in assets under management (AUM) this year.

In 2017, the instruments—which provide exposure for investors by tracking indices, bonds, or a basket of assets without the need for direct ownership—grew by \$1 trillion in 2017, or 25 percent in terms of assets under management. Inflows into ETFs reached over \$460 billion, shattering the previous year’s record of \$288 billion, according to data from State Street Global Advisors.

Some of the core drivers of growth over the years have emerged

from a newfound awareness of the modern-day investor, relating to costs, asset allocation and alpha generation. Now, as younger investors are making more sophisticated portfolio decisions, appetites appear to be growing for products that allow for greater exposure to wide-ranging securities, guaranteeing profitable returns in a fraction of the time—in other words, fast, easy money.

According to a survey conducted by US bank and brokerage firm Charles Schwab, 91 percent of Millennial investors would select ETFs as their investment vehicle of choice and 80 percent would see it as their primary investment vehicle in the future.

“What we are seeing is many investors rationalizing where they can generate alpha themselves either through picking securities or buying active funds, or where they can’t, they are increasingly using ETFs to generate alpha through getting the asset allocation right,” says Deborah Fuhr, managing partner and co-founder at ETFGI, an independent research and consultancy firm. “Because asset allocation delivers about 90 percent of the variation of the returns you’re going to achieve and that’s something more investors are likely to get right.”

Unlike mutual funds, ETFs are listed products, meaning they can be traded on a stock exchange during trading hours. This enables investors to have access to thousands of securities at any one point through a single transaction. Vanguard’s Fitzgerald explains that new waves of investors are drawn to ETFs as they offer a level of exposure and efficiency that traditional products and asset managers are unable to replicate.

“So an institution, for example, might spend several hundred million dollars, euros or pounds on a given exposure, whereas individual retail investors could buy that same product and invest maybe a few hundred,” he adds. “And here’s the key thing: They pay the same amount, and that is very unusual.”

With wised-up investors honing in on price and performance, it’s difficult to deny the visible shift from active portfolio managers, who are paid large fees to outperform the market, into passive instruments such as ETFs, which are purchased to track an index at a fraction of the cost. The past several years has seen the flight to passive intensify, enriching the likes of ETF heavyweights such as BlackRock and Vanguard, and dragging the spotlight away from active portfolio managers.

“They’re going to have to try to be better at outperforming and I suspect many of them will not persist into the future, because now the cat’s out of the bag around costs,” says Fitzgerald. “These types of conversations are taking place every day and I don’t think people are going to wake up and forget the power of cost, transparency and understanding what you’re buying.”

But cost alone is not the only driver for modern investors. Transparency has claimed a front seat in recent months because



Deborah Fuhr
 ETFGI

regulatory steps taken in Europe. The revised Markets in Financial Instruments Directive (Mifid II), which came into effect on January 3, has been a champion for transparent pricing products and the disclosure of investor costs. In other words, the regulatory pendulum appears to be swinging in favor of products such as ETFs. Although the effects of regulations have yet to fully bed in, some say the latest shift has already nudged ETFs to the front of the queue for professionals seeking to make hassle-free investments.

"I would argue most regulation is favorable to ETFs because they are broadly distributed products. So anything that lowers the barriers to broader dissemination of information—when you use Mifid II to standardize how information can be disseminated and through what mechanism—actually makes it easier for someone who is trying to scale their business life," says Michael John Lytle, CEO of Tabula Investment Management.

Additionally, on the US front, the ETF industry has been given a green light in terms of relaxing of rules surrounding the approval of ETF products. In late June this year, the US Securities and Exchange Commission (SEC) voted to propose modernization of the regulatory framework around ETFs, which currently obliges creators of a new product to apply for an exemptive order under the Investment Company Act of 1940. GSAM's Sachs says the proposed ruling will help create a level the playing field for ETF providers in the US and enable a clearer understanding of the nuances between ETF and other traditional products.

"Broadly speaking it does help to turn a quilt into a blanket," he explains. "Before it was this patchwork of all these rules, regulations and interpretations, and [now] this

will help turn it into a cohesive framework for ETFs. It doesn't answer all the questions but it certainly is going to clarify a lot of things that has always be a bit of an issue for ETF issuers."

But new-age investors are not alone in their quest for quick, cheap and hassle free investments. Over the years developments in technology have been made to modernize the ETF space and drive this product into the 21st century.

Digital Advisors

With the newest generation of investors entering the fray, robotic advisors have been touted as one of the core reasons for growth in the ETF industry over the last decade. Following years of development, research has shown that Millennial investors have been keen to adopt automated advisory services to build portfolios and make important investment decisions. Using data and algorithms, the robo-advisors manage and fill portfolios, commonly using low-cost, low-risk products such as ETFs.

GSAM's Sachs explains that as far as technology advancements go, robo-advisors have played a key role in the uptake of ETF investments. He highlights that "current market conditions" coupled with "demographic trends" of new investors have been significant drivers in its success in recent years.

Since the advent of robo-advisors in 2008, following the financial crisis, demand for cheaper alternative to traditional advisors has grown steadily over the years. According to Statista.com, digital advisors currently have \$1.5 trillion in assets under management and are projected to reach a massive \$4 trillion by 2019, doubling that again by 2020.

ETFGI's Fuhr further explains that investors are using robo-advisors on a regular basis to make better informed investment decisions tai-



Gavin Nangle
State Street
Global Advisors

lored to their circumstances. The robotic platforms operate by processing vast amounts of data—often too difficult for a human to consume—to provide in-depth market knowledge and portfolio options.

"So they go to a robo to think about asset allocation and what kind of products they buy," she adds. "They may not give their money to the robo, but now they're in empowered to have conversations with someone about how and where they might invest and often they will use ETFs."

In a bid to modernize ETFs and streamline trading processes and practices, providers have also taken significant steps to update their technology to digital and automated systems. Struggling to keep up with the growth of the ETF space over the years, investment firms are only just getting around to upgrading their systems and transferring their data to modern technologies—to date, they have often relied on emails and Microsoft Excel spreadsheets.

Gavin Nangle, head of asset manager solutions at State Street Global Advisors, explains that the bank is currently in the process of automating its ETF technology across the wider business in an effort to improve efficiency and enhance transparency between issuers and investors. He says the firm is also developing an ETF portal that will enable investors to access their data through a State Street platform.

"The ETF products and our efforts toward digitization, automation, and provision of increased real-time transparency into the calculation process, the interaction with investors, and interaction with the community—all of that stuff is hugely important for what we're doing overall," he says.

But now, as asset management firms are just coming to grips with modern technologies and upgrading



Michael John Lytle
Tabula
Investment
Management

their systems, the onset of emerging technologies and the appetite for alternative products are flickering on the horizon.

New Tech Era

As dollars pour into ETFs at a furious pace, buy-side firms are fully aware of the opportunities that emerging technologies can offer. Smart algorithms and artificial intelligence (AI) have been widely deployed in multiple areas across firms to facilitate trading analytics, surveillance and regulatory compliance, to name a few areas. Industry experts believe that technologies such as machine learning can be used process vast amounts of ETF data and apply it to tasks such as trading analysis, asset allocation, the creation of indices and tracking securities.

Tabula's Lytle says AI technology works best in areas of the market that are already rich in robust data. One example is the equities market, where vast amounts of data on the underlying securities being traded are widely available on exchanges such as the New York Stock Exchange or Nasdaq, as opposed to less-liquid markets where patchy data and gaps in analysis are more likely to occur.

"The idea with AI is that you can actually give enough information to a machine so it can make a decision, and it can make a better decision perhaps eventually than a human being can," he adds "It is a tip-of-the-iceberg sort of thing; it's only possible in the most data-heavy environments."



Steve Sachs
Goldman
Sachs Asset
Management

Other emerging technologies which have dominated the industry's attention over recent years include blockchain or distributed-ledger technology (DLT). In the US, heavyweight investment firms such as Vanguard are currently experimenting with the use of blockchain to transmit accurate index data. Still in its nascent stages, the technology could be developed to create a global network connecting thousands of constituents and recording multiple calculations.

"Imagine all the calculations for all the characteristics of each of those constituents for that one benchmark and then imagine you've got lots of benchmarks in trying to transmit this data accurately, says Vanguard's Fitzgerald. "Blockchain could be very interesting for making that process hyper-accurate. So that's an interesting story developing—early stages, but that's out there."

In recent weeks, the prospect of a new type of ETF product has ruffled feathers across the industry. In late June, VanEck teamed up with SolidX to file their third bid with the SEC to list a bitcoin ETF on Cboe's BZE exchange, dividing opinions on whether the industry was ready for a new wave of digital products.

"I don't think from a regulatory perspective they have their heads wrapped around it enough," says GSAM's Sachs. "I think questions still remain in the crypto space in general."

The primary concerns surrounding an ETF product involve areas such as liquidity, price valuation and customer protection. The SEC is expected

to take eight months to decide its verdict on the latest application to allow for a thorough assessment.

"It's going to be pretty tough for me to buy a crypto ETF if I know that a certain amount of the value could possibly vaporize overnight due to theft, because that's not a problem that I have to think about as it relates to holding stocks, bonds, commodities or things of that nature," Sachs says.

(For an in-depth look at VanEck's efforts to kick-start cryptocurrency ETFs, see page 32.)

What's on the Horizon?

Now, as modern investor appetites, regulatory shifts, and technology advancements pave the way for further growth in the ETF space, some questions still remain unanswered. One concern relates to the flood to passive investments and the possibility of creating a bubble. As ETFs cover multiple securities it is yet to be seen how this may impact the wider market and regulators are keeping a watchful eye on the activity.

One of the most common perspectives from market participants is that education is key to trading ETFs and understanding its impact on the wider market.

"For many it's about becoming educated," say ETFGI's Fuhr. "With ETFs you have to learn about how when and where to trade them. I think that's an added thing—because there are so many different product benchmarks to understand. So I think you need to do your homework, you need to come up with a due diligence framework to compare and select ETFs just like you would compare in selecting a mutual fund."

As for whether some of the wilder predictions in the market, such as ETFs reaching an AUM of \$20 trillion in the next few years, come to pass, time will tell. But with the confluence of investor appetite and technology, they're clearly well on their way. **W**

SALIENT POINTS

- Key drivers of ETF growth are arising from the rising appetite of Millennial investors, regulatory shifts and technology advancements.
- Robo-advisors and digitization are also breathing new life into the ETF space
- Developments in AI and blockchain show promise for the future and the potential of a bitcoin ETF lurks on the horizon.

Bitcoin Advocates Seek TO NAVIGATE ETF MAZE

A new application to list a bitcoin ETF has reignited the debate over these products, but traders say the solution is far from easy. *By Anthony Malakian*

If at first, you don't succeed, try, try again.

In late June, VanEck, which has 57 US-listed exchange-traded funds (ETFs), applied for the third time to list a bitcoin ETF, its previous two proposals having been shot down by the US Securities and Exchange Commission (SEC). For this iteration, the money manager is partnering with SolidX and the product—the VanEck SolidX Bitcoin Trust, under the ticker XBTC—would trade on Cboe's BZE exchange.

The company is hoping to succeed where several others have failed by targeting the offering to institutional and accredited investors, with each share costing approximately

\$200,000, says Daniel Gallancy, CEO of SolidX, a blockchain provider.

"[The share price] was primarily to address the SEC's concerns around what they refer to as Main Street, mom-and-pop investors; the SEC is concerned about retail customers investing in bitcoin," he says. "We heard those concerns loud and clear, and the way that we addressed those concerns is by increasing share price to around a \$200,000 price level, bearing in mind the fluctuation in the price of bitcoin. Thereby, it becomes a product that is accessible to institutions and accredited investors. Does that mean that de facto retail investors are precluded? No, but it also increases the likelihood that only

investors that are accredited are investing in the product.”

Additionally, the product will be insured against the loss or theft of bitcoin by the trust, up to a maximum of \$10 million. The insurance will cover the loss of bitcoin in the case of theft, destruction, bitcoin lost in transit, certain hacks, and the loss of numerical codes known as private keys, which are necessary to access the bitcoin held by the trust, according to a regulatory filing with the SEC.

“By obtaining the insurance, what we’re doing is mitigating the operational risk around the trust ‘custodying’ its own bitcoin,” Gallancy says. “In our view, this is superior to anything else in the marketplace right now because the traditional custodians—along the lines of BNY Mellon, Northern Trust, US Bank, State Street—they’re not custodying bitcoin. That may change in the future—and that’s great; we would invite that—but currently, our position is that given the insurance that we’ve obtained, we provide a meaningful mitigation of the operational risk associated with holding the private keys associated with bitcoin.”

The physically backed fund will track an MVIS bitcoin index, which is monitored by VanEck subsidiary MV Index Solutions. BNY Mellon will serve as the administrator.

While VanEck has tried twice before to launch a bitcoin ETF, SolidX was also rejected by the SEC last year when it tried to launch its own exchange-traded bitcoin product. Gallancy says that with this application, the trust is also looking to quell the SEC’s concerns over pricing.

“We had been using a price index with constituent components from various bitcoin exchanges around the world,” he says. “Although that price index made a lot of sense, the SEC’s concern was that those bitcoin exchanges were not regulated in the traditional sense and that the consequence of that is that if there were manipulative activity



John Hyland
Bitwise Asset Management

on those exchanges and a lack of surveillance, and there’s no accountability, how do you protect investors from that sort of activity? We heard them loud and clear.”

MVIS, he contends, is a well-established index, comprised of pricing from various over-the-counter (OTC) desks that trade bitcoin, and those OTC desks are voice desks in the US, meaning they are very clearly under the jurisdiction of US regulatory agencies. “If ever there were any concerns about misbehavior in terms of pricing, it’s very, very clear as to who you would call,” he says. “There’s no ambiguity here. Desk A, Desk B, Desk C and those desks are trading as principal.”

The SEC did not respond to a request for comment.

Long Road Ahead

Even as VanEck and SolidX team up to strengthen their pitch, the application faces an uphill battle, and there are those who are skeptical as to whether this application will swing the SEC in their favor.

John Hyland spent 10 years overseeing the creation, launch, and rollout of the first and largest crude-oil ETF in the United States (USO), and natural-gas ETF (UNG), while serving as the chief investment officer of United States Commodity Funds. Earlier this year, he joined Bitwise Asset

Management, a cryptocurrency index fund, as its global head of exchange-traded products (ETPs). He described the \$200,000 threshold as being “a bit of a gimmick” and says that he’s “not sure the SEC goes for it as a major step forward.” But for him, the more curious addition is that of insurance.

“That will likely give the SEC even more pause,” Hyland says. “The details of the insurance in the filing do not inspire me with confidence and it is not exactly like VanEck could not just arrange for third-party custody—you know, like every single other ETF in the US. Sure, getting custody from a third party, regulated under either US bank law or brokerage law, is expensive since only a few firms qualify, but it is not impossible. I would give credit for VanEck thinking outside the box, but I don’t know that this materially improves their chances of being live any sooner than other [33 Act] filers looking to hold physical coins, [such as] the Winklevoss twins.”

Maxim Nurov, fund manager of Black Square Capital, a Washington, DC-based hedge fund that invests exclusively in the crypto space, says that while he thinks this application has a stronger chance to succeed than previous attempts, he believes that the nascent bitcoin futures market needs further time to mature before the SEC will pull the trigger on bitcoin ETFs.

“Compared to previous applications, this application has a higher chance [of approval] for sure, but it’s probably too early to approve [this ETF product],” Nurov says. “For gold, oil and stocks, it took like eight to 10 years for the SEC approval of the ETF product after the futures were approved. So it’s probably too early.”

Dmitri Nemirovsky, a co-founder of SolidX, on the other hand, says it will take the SEC about eight months to decide on their application—and he expects the regulator to take the full eight months—so that by the time the agency issues its verdict, it will be February 2019.

"By the time the SEC rolls around to making its decision, in our view there will be a significant derivatives market for bitcoin," he says.

There are also those in the crypto space who believe that traditional Wall Street practices will not be appropriate in the crypto space, or will yield disappointing results, thus hampering the industry in the long term. For example, Zach Hamilton, managing partner at Airfoil Capital, an investment firm focused on crypto assets, says smart contracts serve the same purpose as that of an ETF.

"Dragging traditional finance back into the crypto universe is counter-productive," he says. "Smart contract solutions can do exactly what ETFs do but with tiny fees, no custodian issues, perfect transparency and instant liquidity. I see a lot of Wall Street trying to play the same old game when in reality the world is changing around them. Crypto is new, so it's not going to fit neatly into existing boxes; it's like trying to put traffic lights in the sky for airplane traffic."

Counterpunch

Many have tried to get the SEC to embrace their vision of a bitcoin ETF, and many have failed. VanEck filed its first application in August 2017, before withdrawing it because bitcoin futures had yet to be launched. That situation was resolved when, at the end of the year, both the Chicago Mercantile Exchange Group (CME Group) and Cboe Global Markets launched their futures contracts on bitcoin. As a result, VanEck put forth its second attempt, but withdrew the application a month later—along with several other ETF providers—at the request of the SEC as the agency tried to assess the marketplace after the launch of futures.

For SolidX, it attempted to launch an ETP on NYSE Arca and filed for a rule-change in February 2017, but the SEC denied that application, "because it does not find the proposal to be consistent with Section 6(b)(5) of the Exchange Act, which requires, among other things, that the rules of a national securities exchange be designed to prevent

fraudulent and manipulative acts and practices and to protect investors and the public interest."

And one of the more headline-grabbing applications was that of Cameron and Tyler Winklevoss—otherwise known as the Winklevoss twins, who are the founders of Gemini, the digital asset exchange. Winklevoss Capital attempted to list an ETP that tracked bitcoin on what was then Bats Global Markets' BZX exchange in early 2017, and Bats subsequently filed a rule amendment to allow the listing with the SEC, which was rejected on March 10. The regulator cited concerns over the sophistication of bitcoin's market structure and its vulnerability to abuse.

However, the SEC announced on April 24 that it would reconsider its initial decision, following a petition by Bats. In that appeal, the exchange described the SEC's concerns as "overstated and largely theoretical." The issue is still under consideration.

Adding to the ETF woes, in various public statements, SEC officials have mentioned concerns over the burgeoning asset class's high volatility and liquidity concerns around redemptions.

The crypto space, as a whole, has largely been the domain of the Commodity Futures Trading Commission (CFTC) in the US, after it determined that bitcoin fit the definition of a commodity in 2015. The SEC has not looked to push back on this so far, but it holds jurisdiction over listed products such as ETFs, and has weighed in on how it regards cryptocurrencies in the past.

Despite hesitancy to license products, both agencies have been generally bullish on the potential applications of digital currencies. In fact, while speaking at a conference in San Francisco in June, William Hinman, director of the division of corporate finance at the SEC, made it quite clear that, at this point, bitcoin and the other big cryptocurrency, ether, are not securities in their own right.

IN THE ETHER

While bitcoin is likely to serve as the underlying instrument for what will eventually become the first crypto ETP to be launched in the US, the door will be open for others to follow—whether that happens in 2018, 2019, or beyond. The favorite to follow bitcoin, according to sources, is ether, which was—as noted previously—boosted by the SEC's William Hinman's statement that "the present state of ether, the Ethereum network and its decentralized structure, current offers and sales of ether are not securities transactions."

One source at a US exchange says that while Hinman's statements on bitcoin "were interesting," the company was "more engaged with his discussion of ether."

Airfoil Capital's Zach Hamilton said he's looking to Gemini for what would come next, beyond bitcoin. "Any asset liquid enough could conceivably work," he says. "I would look at Gemini for what could come next. They are leaders in the space, in my eyes, especially with their ZEC listing."

The key to seeing other cryptos becoming appropriate for the exchange-traded product world is whether or not they fall under the SEC's definition of decentralized, says Bitwise Asset Management's John Hyland.

"Assuming that coins other than bitcoin are, or become, decentralized enough and have enough volume and interest, yes there will be ether ETFs and ripple ETFs and litecoin and bitcoin cash and on and on," he says. "There are already both bitcoin and ether ETPs listed in Europe. We, in fact, currently operate a private crypto index fund that holds 10 different coins and we have plans to have a listed version in Europe and elsewhere."

The key from Hinman's remarks, says Hyland, was that a coin that could be deemed a security at inception and, in particular, an unregistered security, but it "could, in fact, stop being a security. This has a lot of impact for many other coins such as ether and ripple."

"Putting aside the fundraising that accompanied the creation of ether, based on my understanding of the present state of ether, the Ethereum network and its decentralized structure, current offers and sales of ether are not securities transactions," he said. "And, as with bitcoin, applying the disclosure regime of the federal securities laws to current transactions in ether would seem to add little value."

Hinman did, however, add that this determination did not necessarily apply when cryptocurrencies were packaged into investable instruments or funds, in which case the *Howey Test*—a fundamental piece of case law that determines the status of investments as securities—would need to be reapplied.

Chris Concannon, president and COO at Cboe Global Markets, noted at the time that the decision "clears a key stumbling block for ether futures, the case for which we've been considering since we launched the first bitcoin futures in December 2017."

(For more on the potential for other crypto ETFs in the US outside of the bitcoin sphere, see box on page 34.)

Cboe and CME's attempts to create a bitcoin futures market were major steps forward in the push for the eventual launch of a bitcoin ETF. But it's still early days, traders say, and there are still hurdles.

Is It the Right Time?

Barring a catastrophic event in the crypto space, it's not a question of "if" bitcoin ETFs become a reality, but "when." Bitwise's Hyland, while skeptical of the VanEck filing, handicaps the odds of a US ETP in the crypto space launching as such: 15 percent in 2018, 60 percent in 2019, and 25 percent in 2020 or later.

Back in 2013, while at US Commodity Funds, he considered building a bitcoin ETF. He decided against it because the ETF ecosystem would not support it, but that has changed, he says.



Maxim Nurov
Black Square
Capital

First, he says a number of major ETF market-making shops are setting up crypto trading desks, while some of the biggest stock exchanges are, at the very least, considering opening their own digital currency exchanges. Even the incumbents, long stereotyped as being cowboy operations run from dorm rooms and garages, have stepped up their game in recent months by deploying institutional-grade trading tools and surveillance software.

"Thus, a crypto ETF, and its market-makers, will be able to transact on platforms that have similar regulatory status to what they do with equities. This will all happen this year, or next year at the latest," he believes. "This also means that reliable third-party pricing will be available for setting indicative net asset values (iNAV) and NAVs."

He also says advancements have been made in the custody space.

"The 'big five' ETF custodians are looking at—but not yet jumping into—offering the service," Hyland says. "However, I spent half an hour last month talking to one of the three largest ETF custodians, and I think the way forward for them will be to hire existing regulated custodians, like ours, as 'subcustodians' while they build up their own expertise. That solves one major issue for the SEC. Of course, any ETF that holds futures or swaps on the coins, and not the coins themselves, could already be 'custodied' by any one of the ETF custodians that also handles futures-based commodity or currency ETFs."

Finally, he says products outside of the US will serve as the proving ground for crypto ETPs in the US. The SEC's Division of Trading and Markets has expressed concerns over how these instruments will behave in real life situations, and Hyland notes that four already exist in Europe with \$500 million in assets

under management, the oldest being an exchange-traded note listed on Nasdaq Nordic by XBT Provider.

"Unless these funds have some sort of major failure to function as ETPs, this will actually be the SEC's live experiment," he says. "So I think we get them sooner rather than later, but I also think that if we don't see any action by the SEC in the next month or so, we'll jump to 2019 and beyond. I don't see the SEC going from red light to green light anytime near the [US November] midterm election. It will make them gun-shy." As this issue went to press, Bitwise filed its own application to list a bitcoin ETF.

Chris Yoo, portfolio manager for Black Square Capital, says that whether or not VanEck and SolidX are successful, their application will be important in pushing the industry toward the realization of a bitcoin ETF in the US.

"If it passes, it can be applied to other assets, but even if it fails, it can show what needs to be improved," he says. And to Hyland's point about Europe embracing these products, Yoo says that "what we see in the US can also be replicated from the lessons learned from other countries, so that it's not just a national phenomenon, but it goes to a global level."

But even while bitcoin ETFs are seemingly inevitable, it will be important to avoid irrational exuberance, Airfoil's Hamilton says.

"I think whoever gets the first ETF through the process is going to see a huge swell in AUM, but hopefully the investors know what they are investing in, and that the entire purpose of the crypto market is to move past these ivory towers that people have worked so hard to preserve," Hamilton says. "I think Main Street investors deserve access to this asset class, but they need more education, rather than more financial products." **W**

A New Day

As environmental, social and governance data is finding a home on Wall Street, Anthony believes the next wave of useful information will come from climate change data.



The problem with talking about climate change is that it's hard to keep people from darting to their particular political corners. This is a subject that demands hard analysis and the removal of emotion, even if the effects of climate change are emotional. Perhaps that's why it's a subject that can work well on Wall Street, which, by design, is cold and calculating.

While many in the industry don't like to be so blunt about it, the entire objective of trading is to make and protect money. The reason why environmental, social and governance (ESG) data is increasingly being incorporated into the investment decision-making process is because there's a litany of academic research out there that shows that companies with superior performance on material sustainability issues outperform firms with inferior performance on these issues.

So it is that climate change data—which falls under the “E” category of ESG—is being incorporated into the investment process at more and more investment houses. I wrote a feature on this and spoke with representatives from Man Group, UBS, Deutsche Bank, Axa and the European Bank of Reconstruction and Development (see page 12).

They're all using climate change datasets from an increasing number of vendors in myriad ways. They use this information to both manage a portfolio's risk exposure to climate-related events and to seek

out companies that could stand to benefit—yes, benefit!—from climate change.

Forget the Politics

One thing that I didn't hit on in the feature but talked to each source about was whether or not investors need to worry about changes in political regimes across the world.

“While Trump's about-face on the environment has been disheartening, there's more climate change data available and, thus, investable.

As an example, in the US, President Barack Obama pushed for clean energy, raised fuel efficiency standards and formally entered the Paris Agreement. Meanwhile, President Donald Trump has backed the US out of the Paris Agreement, dismantled Obama's Clean Power Plan and has pledged his support for the coal industry. One election led to a 180-degree turn.

Rob Furdak, the chief investment officer of Man Numeric, the quantitative equity management arm of Man Group, told me that no matter the politics, it's a provable fact that storms are becoming bigger and more costly, and drastic weather events—such as extreme heat, which leads to more forest fires, similar to what we're seeing right now in Greece—are leading to more catastrophic events. Investors aren't going to care as much about the whims of politi-

cians as they are about managing risk in their portfolio.

“It's generally our experience that investors have two priorities: They want to generate superior excess returns and they want their investments to make a difference in the future. I think ESG tries to marry those two,” he says.

Craig Davies, head of climate resilience investments at the European Bank of Reconstruction and Development, says you just can't ignore the effects of climate change anymore. “It's just undeniable now,” he says. He notes that even as the Trump administration has repealed some of the environmental gains made under Obama, the private sector, along with some cities and states, are taking the reins.

“The market is really taking this issue seriously. So the political signal of whomever happens to be in power at the time matters less. The US is a really good example of this,” Davies says. “When you get enough market action, it sort of means that you don't rely on the government to give you the signals and instructions much anymore.”

While Trump's about-face on the environment has been disheartening, there's more climate change data available and, thus, investable. I'm not naïve enough to think that Wall Street wants to do what's good for the planet by investing in companies that are green or pushing boards of directors to change policies and embrace material sustainability practices, but every now and again the hunt for alpha can have positive side effects. **W**

Will money trump politics on climate?
For more information and readers' feedback please join the discussion at waterstechnology.com

Never Mind the Brexit

Even as the political front collapses in the battle over Brexit, companies are quietly making preparations for when (or, perhaps, if) the UK leaves the European Union. James finds, from those he talks to, a mix of exasperation and resignation.

Will tech amplify Brexit's bite?

For more information and readers' feedback please join the discussion at waterstechnology.com

"Right, boys, what is the plan then, really?" a senior ex-UK government official asked recently, when invited to come back to the Home Office fold to help the UK with its impending divorce from the European Union. "And don't tell me it's a blank piece of paper with 'Brexit' written at the top."

The story, as relayed to me, had the panel of three civil servants who were interviewing this particular person looking at each other with nervous grins in lieu of an answer. Needless to say, the person in question declined the invitation and instead took a sensible private-sector job, far from the madness currently engulfing Whitehall.

Outside of the Home Office, the UK financial sector is more or less doing the same, albeit quietly. Few inquiries to media relations folks seem to generate as much irritation as those seeking confirmation that company X has registered new entities in country Y, even though they have perfectly serviceable facilities in London. It's become a tiresome little dance between journalists and press officers—everyone knows that you're going to have to be in the EU27 come March 2019, but few want to admit that they're jumping ship.

Not that the UK negotiating team has done much to inspire confidence, of course, initially making wild promises that the country will somehow be allowed full single-market membership without any of the other electorally unpalatable freedoms of the EU, like unrestricted migration. Then, just as England prepared to lose spec-

tacularly to Croatia in the World Cup semi-finals, the UK's Brexit minister unceremoniously quit, followed by the foreign secretary, both of whom could be called architects of the Brexit vote, and have once again run away after setting fire to the house.

Clear favorites are beginning to emerge among firms, and none of them are located within striking distance of

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It's possible that a sad future awaits London as little more than a commuter belt to Brussels, Amsterdam, Paris and Dublin.

the Home Counties. The Depository Trust and Clearing Corp., for instance, recently announced it was setting up shop in Dublin. Bloomberg, MarketAxess, Tradeweb and others have all picked Amsterdam as their *bestemming van preferente*, while Frankfurt and Paris are eagerly dancing around London's dinner table, ready to catch whatever falls their way.

London's position as a financial center existed long before the UK joined the then-European Economic Community in 1973—10 years after the French scuppered its first application in 1963 and its second in 1967. But the situation seems somewhat bleak now—yes, English law is still the preferred jurisdiction under which finance is governed, and yes, English is still the international language of business. But there's no Imperial might to back London these days as a hub

of trade, no heavy industry that isn't reliant on foreign investment, and very little outside of the tertiary and quaternary economies to offer.

Spare a thought, too, for those locations outside of London that were once so important to big US firms—Bournemouth, Chester, Wrexham to name a few—which will surely be on the chopping block long before the UK headquarters goes.

The singular lesson that Brexit should have taught is that technology has made geography largely meaningless. Servers can be provisioned at a moment's notice, and office space can be moved overnight, assuming it has a strong enough internet pipe.

Indeed, it's possible that a sad future awaits London as little more than a commuter belt to Brussels, Amsterdam, Paris and Dublin—a little infrastructure here, a token office there, but the real action is happening in the destination, not in the terminus. And even if the final "deal" is put to a vote and the UK remains in the EU, there's likely to be a drive to diversify geographical concentration regardless. No one wants to be held hostage to the internal politics of a governing party again, not when the stakes are this high. And thanks to the wonder of cloud, the internet, and every other technological marvel we've created ... well, they don't have to be. **W**



Human Capital

Schwab, E*Trade, TD Execs Join SIP Advisory Committee

The Securities Information Processors' Operating Committees, which govern the CTA and UTP consolidated tapes of US equities data, have added three new members to their advisory committee: Charles Schwab's Chris Nielsen, E*Trade's Todd Watkins, and TD Ameritrade's Matt Billings.

Nielsen has served as managing director of market data management at Schwab since 2015, prior to which he was a senior executive at SmartStream, and previously worked at Capco and Iverson.

Watkins is director of product management at E*Trade, responsible for market data products, prior to which he was head of risk data services at Thomson Reuters, and held senior data positions at NYSE and Nyfix.

Billings is managing director of market data strategy at TD Ameritrade, which he joined via the firm's acquisition of Scottrade, where



Eran Steinberg

he was senior vice president of trading services, prior to which he held senior roles at Automated Trading Desk, Envestnet Asset Management, and Web Street Securities. He was also CEO of Billings and Co., where he was a floor broker on the Chicago Stock Exchange.

The three join existing committee members from Thomson Reuters, Morgan Stanley, Goldman Sachs, BlackRock, Citigroup, Jordan & Jordan, and Glenmede Investment Management.

OptionMetrics Shuffles Management Roles

Options pricing and analytics provider OptionMetrics has reorganized its management structure to better reflect its growth and enable it to serve clients more effectively, according to officials. Founder and president David Hait becomes CEO, expanding his responsibilities for leading and managing the company and its technology direction, while vice president of sales and marketing Eran Steinberg becomes COO and chief of staff, responsible for project management and day-to-day implementation of business goals, in addition to his current responsibilities overseeing sales and marketing. Steinberg joined OptionMetrics in 2014 from S&P Global Market Intelligence, where he was vice president and head of account management for the Americas.

Garrett DeSimone was promoted to head of quantitative research. He joined the company last year as a quantitative research associate, after completing his PhD in financial economics at the University of Delaware, where he also served as an instructor on various financial and economic subjects.



Russell Read

Investment Vet Read Joins MSCI to Cement Client Focus

Index provider MSCI has hired Russell Read as managing director and global head of client solutions, effective from the beginning of September, to "strengthen MSCI's investment-focused culture," and lead the vendor's efforts to deliver integrated solutions to asset manager and asset-owner clients.

Read was previously chief investment officer at the Alaska Permanent Fund Corp., responsible for overseeing the investment teams running the state's \$65 billion Permanent Fund. Previously, he was a senior advisor to Bellvue, Wash.-based investment manager Mountain Pacific Group, and served as chief investment officer and deputy CEO of Gulf Investment Corp. in Kuwait, prior to which he was chief investment officer at CalPERS, and deputy chief investment officer for the Americas at Deutsche Asset Management. He also spent seven years as senior vice president of quantitative research and investment product design at OppenheimerFunds.

Based in London, Read will also sit on MSCI's executive committee, and will report to COO and chief client officer Laurent Seyer.



Todd Watkins

Style Analytics Appoints New Sales, Marketing Chiefs



Richard Son

Style Analytics, a London-based investment analytics provider, has appointed Richard Son head of sales operations. Son, who joined the London-based team in March, was previously sales operations officer for the investment management division at Finastra, which was originally Sophis UK before it was acquired by Mysis. He was responsible for enhancing Finastra's sales capabilities and supervised the implementation of multiple projects. Son also held the role of program manager for the Global and Strategic Accounts team at Mysis.

Style Analytics has also hired Sylvia Kwok as chief marketing officer. Kwok has more than 15 years' experience in the financial services industry, including roles at SimCorp, Markit and FactSet, formerly known as Vermilion Software.

TP Icap's Rising Costs Force CEO Ouster

Spiraling bills associated with Brexit, technology, and compliance have led TP Icap to fire its CEO, two years after the merger between Tullett Prebon and Icap Brokers made it the world's largest interdealer broker.

John Phizackerley has been replaced by Nicolas Bretau, the head of TP Icap's global broking business, and Robin Stewart has been named as the firm's CFO.

The firm warned that ongoing costs related to IT security and the implementation of the revised Markets in Financial Instruments Directive (Mifid II) would create "cost headwinds" of around £10 million (\$13.3 million) this year, and £25 million (\$33.1 million) in 2019.

"The evolving landscape is driving up costs across our industry. The acquisition of Icap has given us greater scale to withstand this pressure," said Rupert Robson, TP Icap's chairman, in a statement. "The potential for these combined businesses remains extremely compelling and this will be evidenced in the coming years. However, it has become clear that a change of leadership is required to execute our medium-term growth strategy and deliver the detail of the integration process."

Robson himself announced that he intended to retire by the end of the year on May 30, meaning the most senior ranks of the firm will be subject to full change by 2019.

Fenergo Taps Ex-RBC Asset Manager to Lead New Buy-Side Unit

Dublin-based client onboarding and data lifecycle technology platform vendor Fenergo has created

a new buy-side division focused on extending its onboarding and compliance services to asset managers, and has hired Kevin O'Neill, a former senior executive at Royal Bank of Canada, to run the division. O'Neill was previously managing director of US asset manager business and global client coverage at RBC Investor and Treasury Services, prior to which he was managing director of sovereign wealth funds and central banks at RBC.

Based in Dublin, O'Neill reports to Fenergo CEO Marc Murphy.

"The establishment of our new buy-side division will build on the extensive work we have done and continue to do with a number of leading asset managers. I am extremely confident that O'Neill will be a key contributor in successfully developing and expanding our buy-side presence," Murphy says. "We will be deploying the same innovative methodologies to the asset management sector that we have used in creating the global onboarding standard for the sell side. A significant part of that approach is our collaboration with our client com-

munity through our established set of Regulatory and Technology Forums. The inclusion of representatives from the asset management community will enhance our solution set even further."

Credit Benchmark Taps Pastorella for Product, Technology Roles

Consensus credit ratings provider Credit Benchmark has hired Nick Pastorella as chief product and technology officer, responsible for leading strategy and development of the vendor's data and analytics products.

Pastorella was previously global head of product and platform at Nasdaq's Corporate Solutions division, prior to which he was global head of product for the Investors division of Thomson Reuters, and held a similar role in the vendor's Investment Banking division. Before that, he was a senior vice president at Thomson Financial, where he oversaw product management for the vendor's I/B/E/S earnings estimates business.

"Having led product management, technology, user experience and content strategy teams, and driven



Nick Pastoressa

program integration initiatives across multiple businesses, Nick is ideally suited to help Credit Benchmark implement the next phase of our evolution," says Credit Benchmark CEO William Haney.

YCharts Adds TT President to Board

Chicago-based investment research provider YCharts has added Trading Technologies' president and CFO Michael Kraines to its board, pointing to his experience of building and scaling sales organizations. According to officials, Kraines' experience in investment banking, venture capital law, and his "extensive network" in the financial industry will allow him to "spearhead YCharts' sales growth," adding that he will "factor heavily into the development of large strategic opportunities."

Kraines joined Trading Technologies at the start of 2017 as CFO and chief commercial officer and became president and a board member in February this year. Previously, he

spent 12 years at Sandler O'Neill as managing director, prior to which he was a managing director at Wasserstein Perella, where he also spent 12 years. Before that, he was a venture capital attorney at Kirkland & Ellis.

FTSE Russell Names Latin America Head

London Stock Exchange-owned index provider FTSE Russell has hired Jesus Togno as regional director for Latin America, responsible for business development and for managing and growing client relationships in the region.

Before joining FTSE Russell in April this year, Togno spent eight years at index provider MSCI, most recently as vice president and head of Mexico and Central America for the vendor's equity index business. Prior to that, he was a strategic planning analyst at building materials manufacturer Cemex, and a process engineer at Jatco Mexico, a Nissan-owned manufacturer of car transmission components.

Based in Mexico City, Togno reports to Brian Rosenberg, managing director and head of Americas sales at FTSE Russell.

"FTSE Russell is focused on growing the business in Latin America, and ... [Togno's] industry and market knowledge, along with strong client relationship management experience, will be highly valuable as we expand our business in the region," Rosenberg says.

Davies Departs Avox, Thomson Reuters

Entity data specialist Mark Davies has left Avox and Thomson Reuters for an unannounced new project. "After almost six years leading the Avox business, I have decided to



Michael Kraines

move on to pastures new," Davies says in an article posted to LinkedIn. "I'm extremely proud of everything that we have achieved together during that time, delivering new data, services and technologies to help banks and investment managers navigate their various reg and reporting challenges."

Prior to the Thomson Reuters deal, Avox was a subsidiary of the Depository Trust & Clearing Corp. (DTCC), where it provided legal entity data on global financial entities and matched and maintained legal entity reference data. Thomson Reuters acquired Avox in March of 2017 for an undisclosed sum to bolster its know-your-customer and anti-money laundering services, alongside Clarient Global, a client data and document utility.

Davies' role evolved from general manager of Avox to head of RMS data services for Thomson Reuters.

Davies declined to provide further details about his upcoming role. W



Mark Davies

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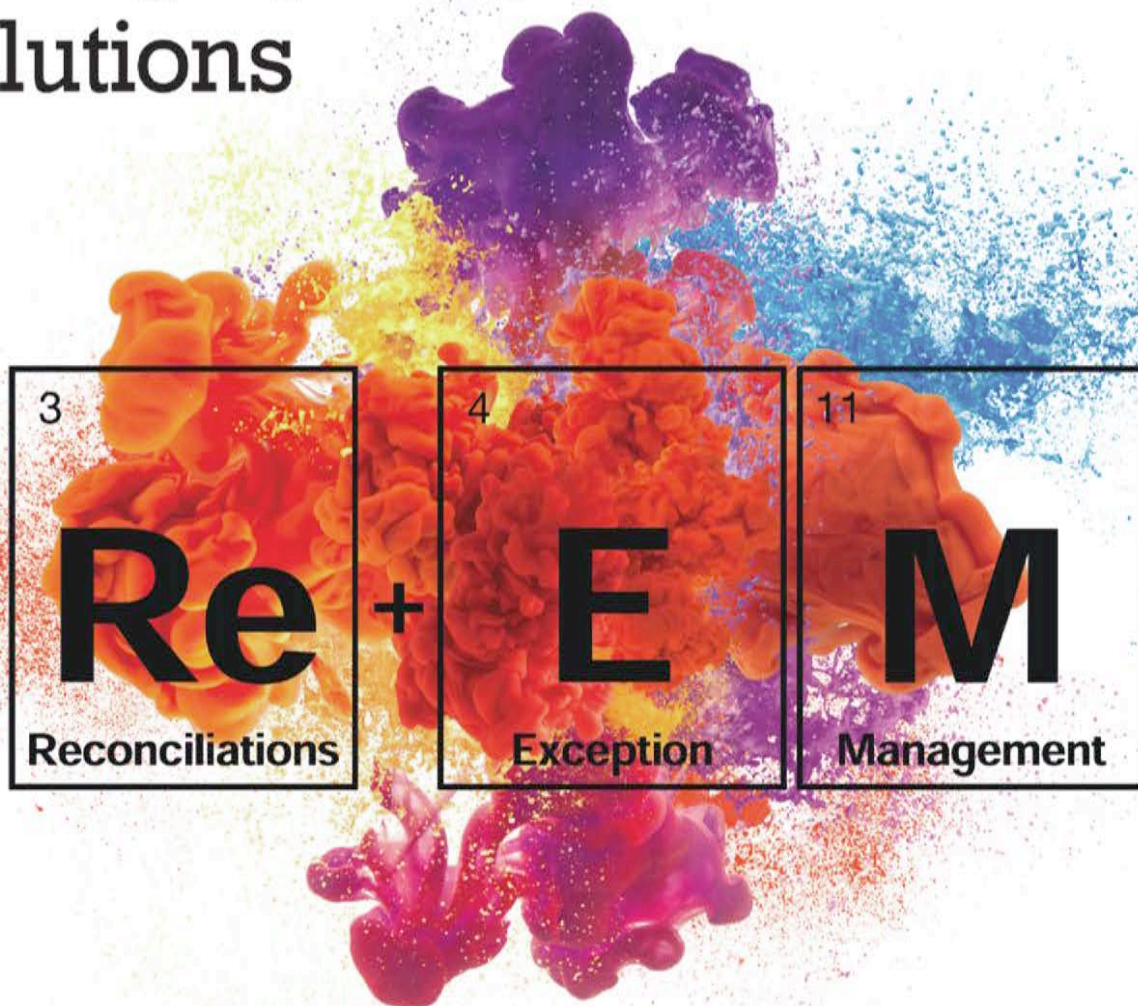
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