
Capital Markets Surveillance 2014: From Defence to Opportunity



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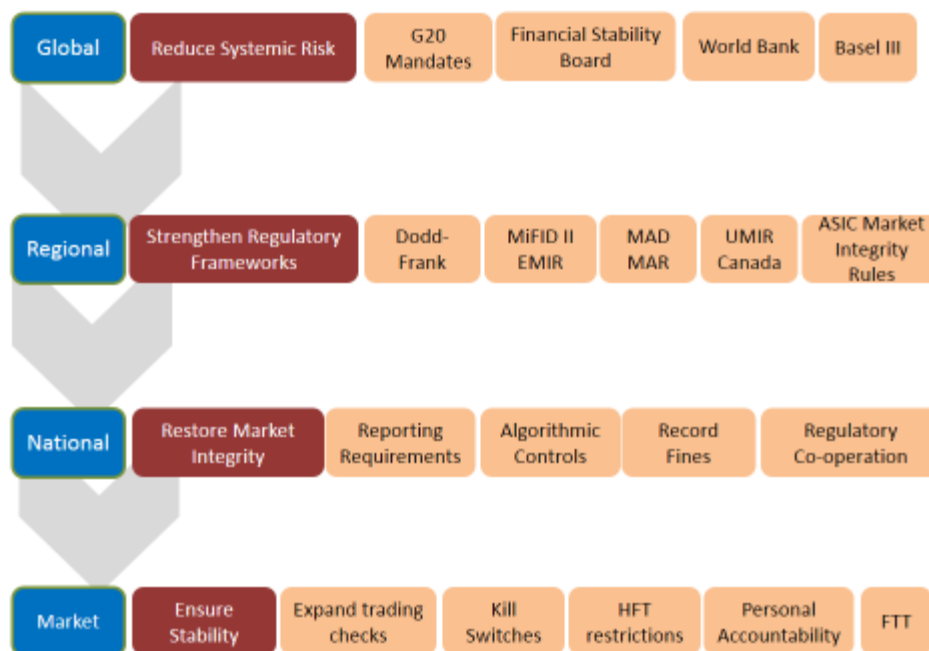
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Introduction

Until global market structures converge further, risk and surveillance requirements across the entire marketplace are evolving into a web of complexity, differentiated only by nuances of geography, asset class and timing of implementation. The growing weight of individual regulations and the functional silos across organisations mean many firms are so focused on satisfying the latest local regulatory requirements that they struggle to consider the larger picture of their aggregate business. As a result, valuable resources are consumed by the overall burden of compliance, at precisely the time when the price of non-compliance is rising and business opportunities are there for the taking.

By optimising a firm's knowledge base, regulatory necessity can be transformed into a business advantage. Those with strong data governance models and flexible technology platforms that can be re-tooled and re-calibrated will be well placed to manage their costs; but it will be the ability to delve into more effective and contextualised analysis that will unlock the true value in their hidden data. Taking risk and compliance requirements beyond regulation will be the difference between those who comply and those who succeed.

Exhibit 1
Regulatory Drivers for Change



Source: Bank for International Settlements / TABB Group

Systemic risk is on the radar of every international, national and regional regulator and the global thread is a top-down, bottom-up approach (see exhibit 1). Collectively, regulators resemble the Orpheus Chamber Orchestra, which plays without a conductor, as they increasingly co-operate, cross-reference and create local variations of similar regulations. In addition, regulatory mandates are being supplemented by principles and best practices

from organisations such as International Organization of Securities Commissions and systems such as the FIX Protocol.

The constantly moving regulatory environment not only requires firms to adapt and expand their in-house surveillance programmes, but also to deal with compliance requirements that are increasing in breadth, depth and complexity. Pre-trade checks, surveillance of trading activity and risk aggregation overlap both in function, geography and repeat across various asset classes. Key decisions now need to be made in real-time in a bid to hit moving targets. Only those who can monitor real-time trading strategies on a cross-product and global scale will satisfy their regulatory compliance requirements, and know where their boundaries of risk lie at any given moment in time.

Data relating to a host of products and asset classes from a variety of sources needs to be transformed into information and intelligence that can be acted on by both end users and machine learning tools. To be truly valuable, therefore, information needs to be real-time, contextual and relevant for individual use cases. Real-time and multi-purpose enterprise knowledge depends on optimal IT and data architectures that incorporate latency messaging with in-memory data to promote a constant and fluid stream of reusable knowledge throughout an organisation.

Regulators, compliance officers and risk managers increasingly ask for horizontal, global information that has traditionally resided in technical or functional silos. With the G20 setting the course, regulatory timelines are shortening, amid political pressure in Europe that is adding weight to the depth and breadth of the European Market Infrastructure Regulation (EMIR) and Markets in Financial Instruments Directive (MiFID) II. Regulatory tempers are also shortening. Extending the notion of market abuse, the EU Commission is also proposing to criminalize insider trading and market manipulation, all of which is set to usher in a new era of personal accountability for individual traders.

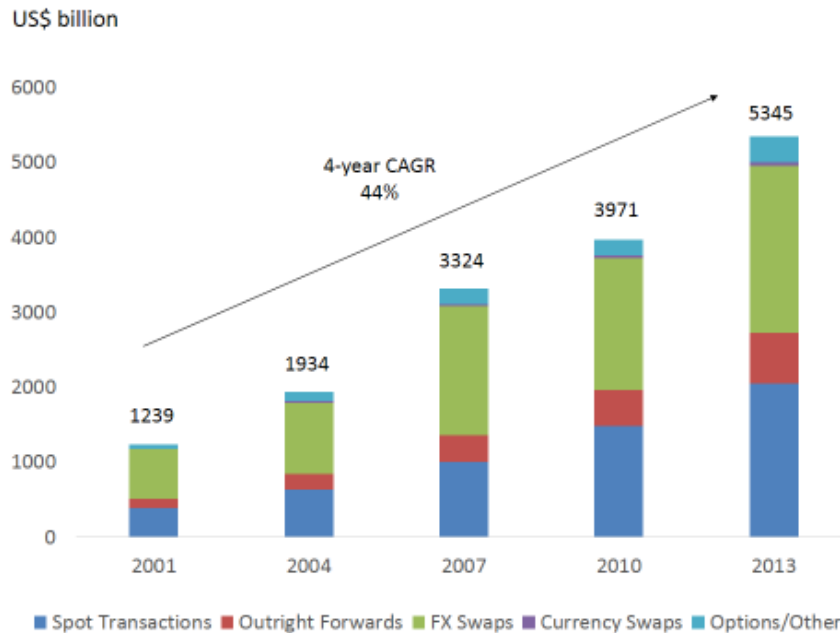
In recognition of the interconnectedness with the derivatives markets and possibilities of cross-border and cross-market abuse, Europe's new Market Abuse Directive (MAD) extends across all financial instruments. In addition, the current reporting of suspicious transactions extends to unexecuted orders and over-the-counter (OTC) transactions, creating the need to scrutinise order flow, even if it is never executed.

In this research, we look at the three areas of trade analysis, pre-trade risk and risk aggregation, and investigate how more effective and contextualised analysis will enable firms to not only safeguard against unnecessary risk and market abuse, but also to unlock the true value of the data that is hidden in plain sight. Turning bytes of data from a host of sources into information for use is a regulatory requirement; transforming this information into intelligence for use as a basis for new opportunities is a transformational advantage.

Forensic Trade Analysis

Never has it been more critical to spot trade errors and abuse - both as they occur and in retrospect. A global regulatory mandate to stamp out market abuse is expanding the surface area of trade analytics in multiple directions at once. The gaps are closing across markets, platforms, execution channels, assets and participants, while timelines are forcing deeper analysis in shorter timeframes. Of all the markets, the \$5.3 trillion-a-day foreign exchange markets highlight the complexity of and urgent need to have sophisticated tools to surveil holistically (see exhibit 2).

Exhibit 2
Global FX Market Turnover in \$ billion



Source: Bank for International Settlements / TABB Group

Fixing FX

A spate of market abuse and benchmark rigging is among the examples that are fueling the urgency to apply better forensics. After the Libor scandal, the brightest spotlight is now on the foreign exchange markets, with allegations of banks manipulating FX market benchmarks by 'banging the close', whereby order flow is concentrated in the sixty seconds up to the close in order to push the rate up or down. The ongoing investigation into allegations of price manipulation within the FX markets highlights the challenges that both market participants and regulators face in surveiling fast-moving global markets. The expansion of products, geographical distribution of trading and increase in participants trading are together forcing regulators to act in tandem (see exhibit 3).

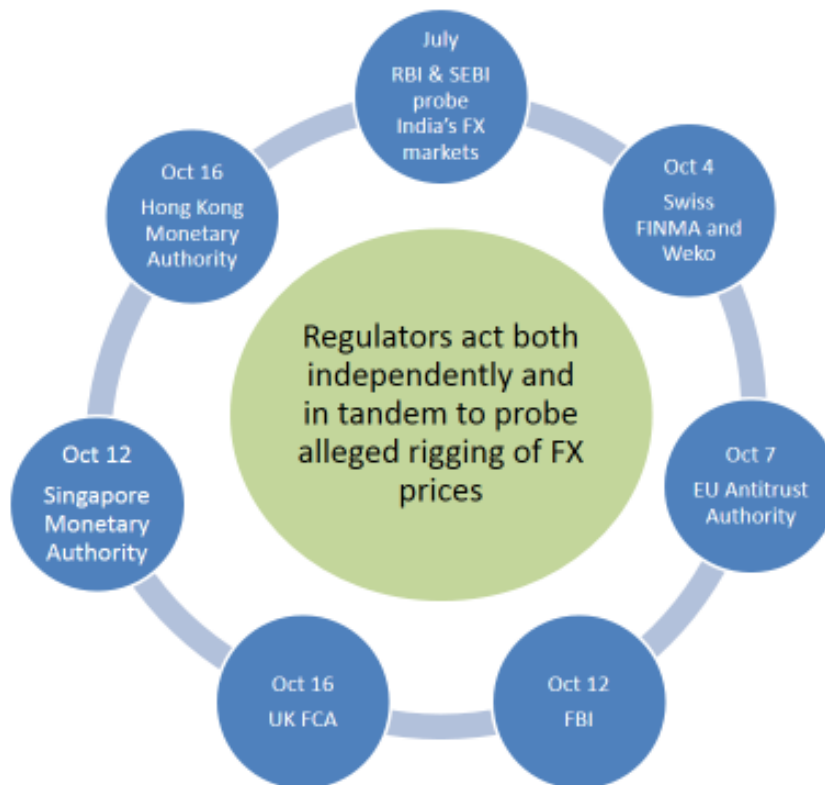
The process for capturing FX trading information and calculating spot fixings is highly automated, with multiple execution venues running through streaming processes. Yet, the

uneven levels of transparency in the FX market mean benchmarks constantly move and patterns of activity may throw up false positives against legitimate activity.

Unlike Libor, FX benchmarks are based on actual trades or quotes, but the global nature of this market and non-electronic trading component makes real-time surveillance more complex. Bans on personal mobile phones, chat rooms and social media depend on compliance within individual firms, but more robust surveillance can only occur in the mining of electronic data, constant probing for patterns and outliers in vast quantities of data, and the constant recalibration of what constitutes 'normal' or in-range trading activity. Without both a constant recalibration and the inclusion of all data that could influence the results, the view of normality is neither accurate nor complete and reduces the ability to detect abnormalities. The challenge being that anomalous behaviour is not only typically found in the most hard-to-capture data but that supposedly benign activity could take on new significance when placed in different contexts.

Although spot FX transactions are treated differently from stocks and bonds under MiFID – as they are not investment vehicles and fall outside the US Dodd-Frank Act's remit – anti-abuse laws exist on every continent and the MAD in Europe specifically bans the manipulation of benchmarks, as regulators seek to reduce damage to the reputation of global markets.

**Exhibit 3
Probing FX Price Manipulation**



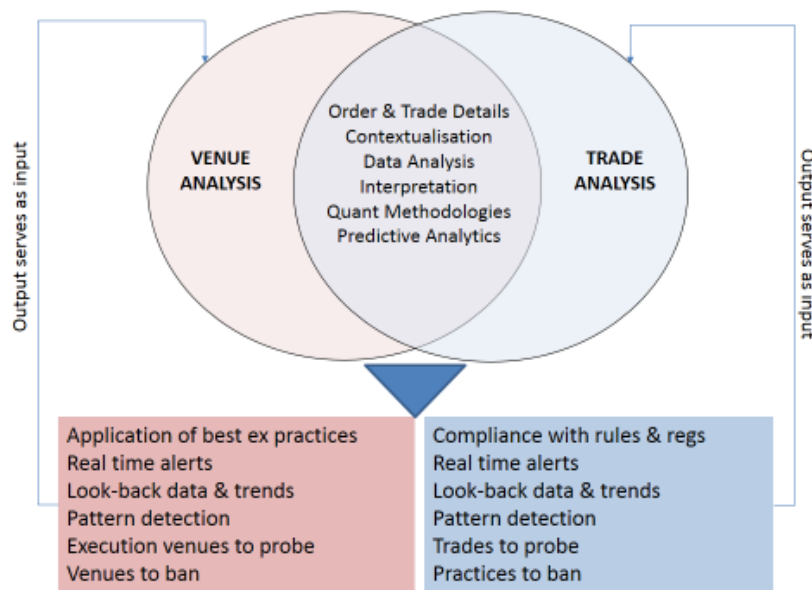
Source: Bank for International Settlements / TABB Group

FX trading is increasing in complexity as its market structure follows the path of other asset classes, with greater regulatory oversight, competition, fragmentation and more sophisticated technology. As fragmentation, algorithms and high-frequency trading come to the FX market, those with predictive analytics that overlay trade data will use this as input into their pre-trade and risk modules, which will allow sharper definition of the market, better control and the ability to spot trading opportunities or optimal coverage strategies.

Constant Recalibration of Normal

Forensic trade analysis requires the ability to probe into and across trades and surface patterns, however loosely linked the evidence is. The ability to determine whether errors have occurred, whether markets are being manipulated and best execution has been satisfied, reinforces the true value of venue analysis: determining whether algorithms need to be tweaked or venues blocked (see exhibit 4).

Exhibit 4
Overlap of Venue and Trade Analysis



Source: TABB Group

Predictive analytics enable large quantities of historical data to conduct what-if scenarios, enabling firms to understand what 'normal' behaviour means at any point in time. Within organisations, the availability, fields, formats and quality of data may differ widely, and this will have a high impact on the efficiency and effectiveness of surveillance capabilities.

Merely generating standardised alerts to monitor the quantity and quality of these over time is inefficient and leaves firms dangerously exposed to the possibility of either being flooded with alerts, or raising tolerance levels to reduce the noise. The most accurate assessment of ranges of normality at any given moment needs both historical as well as current activity. Each analytical output then becomes another input to recalibrate the picture of behaviour. The more factors that are fed into the forensics, the more accurate the output, especially since different parameters can create very diverse patterns – for example, institutional and

retail flow, electronic and voice trading; or exchange and OTC products. A constant re-establishment of norms allows outliers to be surfaced quickly and efficiently, and with greater relevance.

Calibration is a specialised challenge that should be considered unique to each firm and asset class. Yet the framework of parameters is common across differences – with local nuances. Therefore, the implementation of further regulatory requirements is challenging firms to re-use the same technology in different departments to spread the cost, in a bid to become smarter with less.

The Expansion of Pre-Trade Risk Checks

Regulations to protect the marketplace against systemic risk are converging globally and erasing the line between pre-trade and post-trade risk considerations, creating an urgent need to tear down the walls between legacy silo systems and the ability to incorporate post-trade risk into the real-time trading environment.

Traditionally, pre-trade risk checks look at the markets for exposure, financial risk and capture what is going on, while post-trade checks were designed to ensure that the firm was not breaking the rules and adhering to regulatory guidelines.

Dodd-Frank, EMIR and Basel III all require greater focus on managing client credit limits before and during the trading process, creating a requirement to aggregate risk exposure across an organisation. Yet the ability to identify concentration quickly and accurately at group level across business lines and between legal entities is a costly challenge for many firms. In addition, overnight or immediate changes in regulation – such as a temporary short-selling restriction – require on-demand switches and controls.

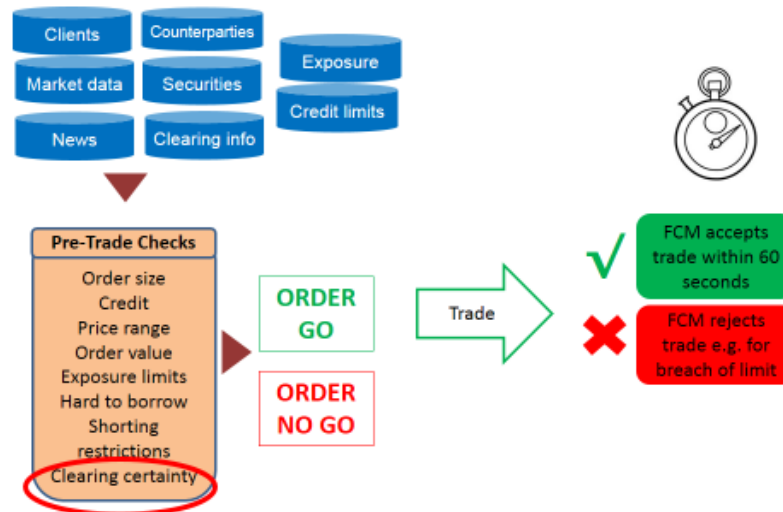
The faster and more electronic markets become, the greater the need to be able to act and react on the fly. Algorithmic trading applications may be increasingly sophisticated under the hood, but the net result of any algorithm is that orders are sent to the market. Early evidence that an algorithm is malfunctioning is contained in comparatively simple measures such as whether the price, order quantity, number of orders per second and total traded volume over a period are in line. As algorithms become more complex, it becomes more important to be able to perform simple checks that are quick to analyse, and able to be used as the basis of effective pre-trade risk for even the most sophisticated algorithms.

Pre-Trade Clearing Checks

The swaps market provides a good example of the expansion of pre-trade risk checks. Swaps dealers have a daunting responsibility to monitor client activity across multiple swap execution facilities (SEFs), clearing houses, exchanges and products at a time when the Commodity Futures Trading Commission (CFTC) is pushing for open access, order book trading and opening up the market. These changes, echoed in the European markets, come at a time when the execution revenue pool in vanilla, cleared interest rate swaps alone will collapse by 45% to \$1.8 billion in 2014, according to TABB Group estimates.

Now the CFTC 60-second rule is adding fuel to the pre-trade fire, as the ability to clear within a minute affects the right and ability to trade (see exhibit 5). From March 11, 2014, futures commission merchants must be able to accept or reject trades within 60 seconds. Relative-value strategies – where the risk-increasing trade must be submitted first, followed by a risk-reducing trade – may result in false-positive rejections if the strategy cannot be considered as a package, such as in the case of multi-legged strategies.

Exhibit 5
Business Process after Implementation of the CFTC's 60-Second Rule



Source: TABB Group

Insufficient technical elasticity will effectively dumb down trading strategies and reduce the competitive advantage. Possible credit hubs and aggregation of credit lines to ensure sufficient margin may provide working solutions but the crux is that real-time clearing checks are a vital input to trading.

From early 2014, a proposed limit monitoring system provided by the Depository Trust & Clearing Corporation will oversee broker-to-broker trades from electronic trading venues and alert firms nearing trading limits in equities, corporate, municipal bonds and unit investment trusts. While the initial warning will be a message that is independent of other tools, it is another harbinger of the need to ensure the post-trade environment is secure prior to trading. Clearing processes differ across markets, but the common objective of securing the post-trade process will lead to the faster adoption of such tools, requiring firms to either combine feeds and tools, or struggle to bring the information together. Aggregated client trading information, collateral checks and credit value adjustments will increasingly form part of pre-trade decisions, as regulators increasingly demand automated surety of clearance and settlement before orders hit the market.

Global Convergence

As emerging markets across Latin America, Eastern Europe and South Asia introduce direct market access and algorithmic trading, their rule books are also full of the lessons learned in the developed markets. The explosive growth of some markets – such as India's main equity derivatives exchange, and the global FX electronic marketplace – means every asset class and every geographic marketplace is individually moving along parallel lines towards a similar but slightly different set of compliance demands.

Legacy systems and silos make it difficult, if not impossible, for firms' risk and finance departments to operate cohesively. Miniscule variations in time stamps and reporting, and variations in the computation of risk-adjusted returns for different business units and client portfolios, add to natural differences in reporting across continents. Moreover, processing times and the inability to move quickly from batch to real-time reporting compound the difficulty of efficiently accessing data in real-time.

Concentrating on tactical, piecemeal technology solutions at the expense of implementing a full-blown, holistic strategy will quickly prove to be an expensive recipe for failure. Those who can perform the checks and controls without slowing down latency-sensitive strategies or devoting too many precious resources to meet changing regulations will gain a distinct competitive edge. The coordination and collaboration of silo-based teams make this challenging for even the most agile of firms but as the industry evolves to full cross border, cross asset activity, the mammoths that wait risk losing out to those who maximise their agility.

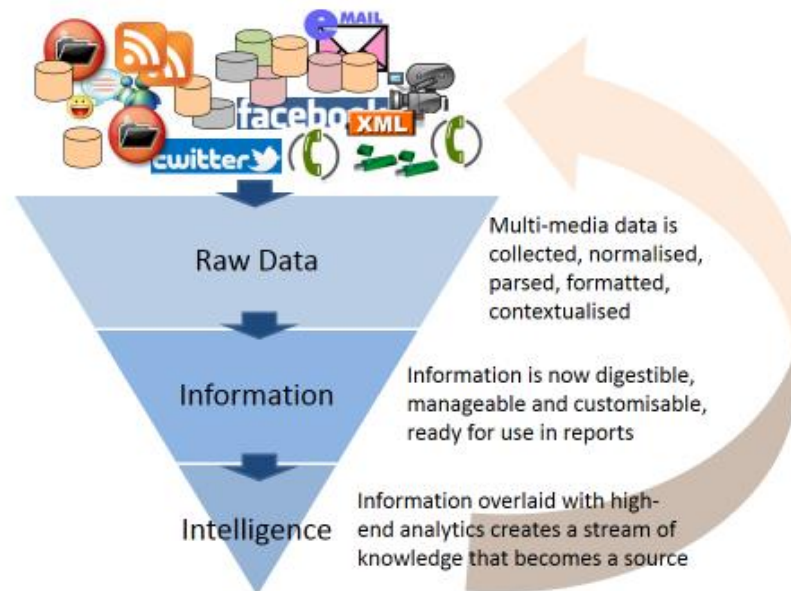
Enterprise Risk Aggregation

In risk management, the whole is always much bigger than the sum of the parts, and it is becoming bigger. Individual thresholds may be left intact, while in aggregate a company-wide alarm should be ringing. Trading is now more multi-region, multi-asset, multi-product and multi-strategy than ever before, intensifying the need to create a fluid data flow across silos and business lines to enable effective risk management decisions to be made instantly, while taking into account the demands of regulators in various regions, as well as to uncover new opportunities

Multi-Faceted Opportunities

From buy side to sell side, the new and potential uses of greater analytics will deliver unique value-add opportunities. As data becomes available to business users, they will expand their use of semi-structured data from XML files and RSS feeds, and unstructured data sets, such as text messages, emails, documents, audio, social media and eventually even video as specific technology becomes more accurate and mature, as they look to make faster and smarter decisions. While raw data will be the underlying gold mine, they will use more sophisticated analytical tools and techniques to pan for the data they need, so that the first level encountered is cohesive information (see exhibit 6).

Exhibit 6
Processing Raw Data into Intelligence



Source: TABB Group

With such large volumes of market data, combined with emerging use of Big Data to derive value from many different datasets—from news, social media to consumer trends—is the

underlying data itself still as important as the analytics, or have analytics themselves become the new source of “data” and signals?

For machines, raw data will continue to be the primary fuel, by default. But as raw data volumes have grown, they have become too unwieldy for productive human consumption, digestion and output. While machines will remain tethered to raw data and additional layers of derived data, or analytics, the human aspect will evolve to the visualisation of data. At some point – and maybe already – even the sheer volume of analytics will become too vast for regular human consumption. More and more, the “output” will be in pictures first, and then only upon a need to verify the details, will there be drilling down into the layers of that data structure.

The principles surrounding risk data aggregation laid out by the Basel Committee on Banking Supervision¹ necessitate data to be collated on a largely automated basis in order to be accurate and reliable. The identification, reporting and concentration of risk require views that cut across a variety of groupings, including business lines, legal entities, asset types and regions. Accuracy requires risk systems to be able to aggregate data at different speeds, and in particular, to surface critical risks that may indicate systemic risk in times of high stress. Banks that have sophisticated and holistic risk management capabilities will not only fare well under the scrutiny of regulators and shareholders but will be well positioned to maximise opportunities across the organisation because they understand their risk.

Hedging capabilities also broaden as more complex multi-leg strategies grow. But only those that can pull all this information together will benefit. These same hedging opportunities that allow standard hedging of exposure will underpin the sell side’s ability to offer risk capital that is more affordable and carries less potential for loss.

Portfolio managers expanding their asset allocation need more sophisticated portfolio heat maps that will uncover hidden insights/opportunities within large data sets. Hedge funds marketing alternative investment funds within the European Union will be required to comply with disclosure requirements to both investors and EU regulators, and adhere to the EU’s stringent regulations. In the US, impartial access to SEFs implies buy-side firms could also participate as liquidity providers, simultaneously creating opportunities and risk reporting obligations.

Buy-side traders under pressure to find alpha need to overlay good tools with years of expertise. Equity trading fragmentation and the increased need for venue analysis make it increasingly hard to distinguish where real liquidity lies, while buy-side execution desks are becoming more segregated and weighed down by their fiduciary responsibilities to end

¹ Basel Committee on Banking Supervision and Bank for International Settlements, *Principles for effective risk data aggregation and risk reporting*

investors. As swaps and FX become traded in an increasingly automated fashion, the demand for more timely assessment of client and execution risks is rising, together with the need for easy ways to visualise the information. The result is better performance and a higher chance of attracting new assets.

The challenge lies not just in the continued march of asset classes towards similar stages of automation, but also in the types of data that need to be incorporated. The growth rate of unstructured data – especially from social media outlets – is fast outpacing the growth of structured data, and there are unprecedented opportunities to harness this data and provide customer-centric solutions.

Enterprise-wide systems that monitor patterns and behaviour, and create a constantly recalibrated view of risk, will have the tightest handle on risk management. The ability to manage risk in real-time will deliver enhanced business growth, effective capital management and collateral optimisation in the process. By aggregating data into an intuitive, flexible and easy to process format, firms will develop the ability to analyse far greater quantities and types of data in a shorter span of time.

The Outlook

While regulators across the global markets differ with regard to the application and implementation of new regulations, they are unquestionably and collectively aiming at the same objectives: mitigation of risk, increased transparency restoration of integrity and eradication of abuse. As the markets continue to become more automated, global and complex, the development of surveillance programs must keep up to be effective. Pre-trade risk checks, risk management and trade analysis mean little if they occur in silos, and as new regulations come into force, those who cannot monitor across their enterprise in a holistic way will fall foul of compliance. Those that can transform the bits and (peta and tera)bytes beyond the next regulatory reporting requirement into a fire hose of intelligence for input into the next opportunity will gain the advantage.

Many details of new regulations are still out of focus, but regulatory objectives are aligning underneath the overarching goals of the G20 Commitments to reduce systemic risk in the marketplace and to stamp out abuse. Rogue trading, faulty algorithms and price manipulation are all fuelling the urgency with which regulators are acting. Risk and compliance have become two sides of the same coin.

Ultimately, whichever asset class you are trading and however it is being traded, the method and medium will be covered by regulation at a national, regional and global level. The requirement for ultra-fast access to data (messaging) from many varied sources – for real-time processing and on-the-fly calculations that require large volumes of data to be held in memory – will be essential to creating that single source of truth in both a consistent and robust manner.

Regulators are therefore acting in concert to demand more information, that more processes be tied together, and broader reach of asset classes and information – all in real-time. The objectives are the same: all else is subtext comprising subtle nuances that mask the geo-agnosticism of the environment and the timing of implementation. This collectivist regulation demands a common reference – whether it be pre-trade holistic views in real-time, kill switches or trade reporting.

The ability to harness synergies across the reporting requirements under new regulations offers tremendous opportunities if a holistic view is maintained. This is a time to technologically think global and act local. The evolution of geo- and asset-agnostic monitoring tools that can be leveraged into business growth will create a competitive edge over those for whom compliance is another technology project and a dead-weight maintenance cost.

Enterprise-wide surveillance requires a new and efficient architectural paradigm that enables a holistic view of data. Employing efficient architecture will provide consistent access to real-time, static and historic data, ensuring users do not have to navigate and reconcile more traditional architectures that only deal with one type of data, leading to more accurate analysis and easier validations and reconciliations. Visual analytics will become critical to the process of risk discovery. Users will be able to interact more with the

graphical user interface (GUI) to explore and visualise data in better ways. In this way, the presentation layer becomes the exploration layer.

From pre-trade risk, venue analytics to algorithms, the ability to aggregate risk exposures and identify concentrations quickly and accurately at group level across business lines and between legal entities will continue to remain challenging. A cross-organizational, proactive approach to risk and compliance functions at both a personal and corporate level has the potential to transform regulatory necessity into a definitive business advantage. Configuration-driven designs that make data accessible to the end user will create a fluidity of knowledge that permeates the organisation and fosters behavioural change, leveraging both the data and the collective human skill set.

About

TABB Group

TABB Group is a financial markets research and strategic advisory firm focused exclusively on capital markets. Founded in 2003 and based on the methodology of *first-person knowledge*, TABB Group analyses and quantifies the investing value chain from the fiduciary, investment manager, broker, exchange and custodian. Our goal is to help senior business leaders gain a truer understanding of financial markets issues and trends so they can grow their business. TABB Group members are regularly cited in the press and speak at industry conferences. For more information about TABB Group, visit www.tabbgroup.com.

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Rebecca Healey

Rebecca joined TABB Group in March 2011, bringing more than 15 years' experience in e-trading and financial services. Rebecca has held various sales and trading positions with Bankers Trust, Goldman Sachs, and most recently Credit Suisse, where as Vice President she was instrumental in launching the successful AES (Advanced Execution Services) product to hedge funds from its inception in 2002 until 2008. Prior to this, she was the first electronic trader at Credit Suisse to be registered for all electronic European cash equity markets and covered sales trading into Asia and then Europe between 1997 and 2000. More recently, Rebecca was based in the Middle East from 2008 to 2010. There she was employed by the British Embassy in Bahrain, where she successfully launched the UK Government's financial services strategy and set up the Bahrain Financial Services Roundtable, which remains a key source of information for the UK Government today, especially in relation to Islamic finance. Rebecca holds a Bachelor of Arts degree in Spanish & Latin American History & Politics from the University of London.

Miranda Mizen

Miranda joined TABB Group in March 2008, bringing more than 20 years' experience in the equity trading, product management and product strategy arenas. Her experience includes serving as Senior Vice President of Transaction Services at the American Stock Exchange, where she headed the group responsible for the functional development of the Exchange's hybrid trading platform for equities and Exchange-Traded Funds; as a Senior Analyst at TowerGroup, where she authored reports focusing on technologies used by institutional brokers; and time at Instinet, which she joined in the United Kingdom in 1997 as a product manager responsible for designing and implementing an order management system for cross-border business. She moved to New York in 1999 to work on front-end trading applications. From 1987 to 1997, Miranda held several positions at S.G. Warburg (later incorporated into SBC Warburg and ultimately UBS), including head of French equity trading. Miranda holds a Bachelor of Science degree from University College, Cardiff, Wales.



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