

Risk Management in Securities Trading



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Executive Summary

Financial institutions and financial services regulators are responding to the global financial crisis with a fundamental reexamination of the existing risk management principles, processes, and procedures. During 2009, financial regulators envisage strengthening financial regulations governing risk management of financial institutions, including capital requirements and liquidity risk management both enterprise-wide and by business and legal entity. At a global level, a number of generally accepted principles governing risk management will be agreed through supranational bodies, including the Group of 20 (G-20) and the Basel Committee on Banking Supervision. The principles will be translated into the more granular form of detailed rules and regulations by national financial regulators.

This thought leadership paper sponsored by Sybase examines the impact of the anticipated changes in financial regulation of securities trading in response to the current global financial crisis and risk landscape. It outlines the technology requirements to meet the risk and regulatory response. In profiling the risk landscape in securities trading, the paper sets out the drivers and advantages of accelerating risk analytics to a real-time or pretrade stage, integrating the function at the trading desk, rather than confining it to post-trade application.

Realities of the Capital Markets Trading Environment

The outlook for the capital markets trading environment in 2009 and 2010 will continue to be restrained by the reduction in available capital as financial institutions rebuild their balance sheets. Financial institutions will revise risk management processes and procedures and plan for the implementation of changes in risk management in response to anticipated changes in regulatory requirements.

Investors have displayed a loss of trust and confidence in financial institutions and the national and international financial systems during the current financial crisis. However, in global terms, securities transaction volumes showed remarkable resilience during the last quarter of 2008, with transaction volumes maintaining the same levels as in the preceding quarters of 2008 and even occasionally exceeding volumes of the previous quarters. The phenomenon is attributable to market and price volatility and deleveraging. Financial institutions reduced their financial risk and exposure in reaction to the reduction in lines of credit and availability of risk capital in response to the global financial crisis.

2009 is likely to be marked by reduction in securities transaction volumes as financial institutions complete their market operations to reduce their exposure to market risks and price volatility. Investors will view securities markets with caution as national economies, financial markets, and corporations all continue to deliver news of declining performances. Although volatility may

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decline, financial institutions will renew their focus on managing their own and their clients' reputational risk, which is heightened by news of declining financial performance.

Return to simplicity in longer-term investment by way of stock picking as a means of investing in recovery is likely to blunt the scale and acceleration of investment in technology to support developments of electronic trading. Simplicity will reduce the volume of securities transactions, including derivative instruments. Investors will reduce the frequency with which they turn over their investment portfolios. (Frequent turnover is a phenomenon that was enabled by technology developments that increased the efficiency of order and execution processes for securities transactions, turning investors into traders.)

The liquidity crisis will abate gradually. Financial regulators will strengthen liquidity standards and financial transparency over the next two to three years as a contribution to reconstruction of the global financial services industry. Mutual trust will be reestablished slowly among professional market makers and intermediaries, but over the next years, traditional liquidity sources for securities trading — including other brokers and dealers, collateralization, securitization, and repos — will be constrained. Liquidity will be available to institutions and specifically their individual legal entity subsidiary companies that have a high level of liquid assets, but even then the financial instruments will have to be marketable and of high credit quality as well being traded by or through a strong counterparty to eliminate counterparty risk.

The contrasting forces of market and exchange consolidation and fragmentation will continue to influence securities trading. One of the few successful outcomes of the European Union's Markets in Financial Instruments Directive (MiFID) has been increased competition among the established exchanges and the new forms of trading venues permitted under MiFID, which has resulted in some fragmentation of the equities markets in the top 600–700 European traded equity stocks. A combination of corporate debt markets and insufficient competition from new entrants has failed to stimulate competition in other securities markets. Reduced securities and transaction volumes will increase the competition among trading venues for transaction volumes. They will respond by reducing explicit and implicit trading costs, lowering the profitability of the venues, and contributing value-added services such as reduced cost of data; refined, analyzed, and repackaged data services; and access to a wider range of trading algorithms. It is likely that one or two of the newer trading venues will continue their competitive success. They will be acquired by one of the major exchange groups. Others may involuntarily find themselves acquired if they fail to sustain their business under the competitive pressure of reduced securities transactions over the next two years.

Cross-asset-class trading (or, to term it more precisely, conducting a series of related transactions in diverse securities by way of a complex transaction) will be constrained by the perceived risk profile and investors' desire to return to simplicity. However, arbitrage opportunities presented by increasingly volatile foreign exchange markets will lead to the majority of cross-asset-class trading being transactions in a financial instrument accompanied by simultaneous foreign exchange transaction.

Pricing and modeling (more accurately described as repricing and remodeling) are already reflecting the increase in market and price volatility. Anticipated reductions in the availability of risk capital, liquidity, and deployment of sophisticated derivative transactions have prompted financial institutions to operate more exacting and continuous oversight of their pricing and the risk models through which they constitute their pricing. In this era of electronic trading, the use of both standard and publicly available algorithms and proprietary algorithms has assumed a key role, especially in execution of equities transactions. Therefore, continuous oversight and review of algorithms are essential. Rapid and constant changes are required to these algorithms, leading some institutions to question the extent and validity of the role of algorithms. Financial

institutions are already reverting to telephone for trading, at least for less liquid securities. Although the telephone channel is technologically inferior to online systems, in illiquid markets it remains the channel of choice to detect market colour.

The Impact of Financial Regulation on Risk Management

Financial regulators are working at the supranational level and national level to revise and implement changes to financial regulatory oversight of risk management. The work proceeds against a vista where a significant number of financial institutions have been publicly bailed out or subject to involuntary consolidation because they were viewed as "too big to fail".

Supranational regulatory initiatives have been taken by the Financial Stability Forum (FSF), Basel Committee on Banking Supervision (Basel Group), and Group of Twenty (G-20) working groups. The G-20 is likely to eclipse the Group of Seven (G-7) as the authoritative collaborative body of world economic powers that will set the global financial and economic agendas because it is a more inclusive body that reflects the move of global financial and economic power from the West to the East. The initiatives have focused on formulating agreed and consistent global standards for financial regulators and fostering a more collaborative approach to financial regulation by national financial regulators. The standards must reflect the key objectives of financial regulation: sustaining financial stability, maintaining the safety and soundness of financial institutions, and protecting consumers.

The FSF has focused on recommendations to increase the resilience of markets and institutions for implementation over 2009. The Forum has made specific recommendations on strengthening capital, liquidity, and risk management; enhancing transparency and accounting and disclosure processes for securities valuations; revising the role of the rating agencies; and strengthening the banking and regulatory authorities' responsiveness to risks of a systemic nature. The implementation timelines for the proposals are extremely ambitious, given that financial institutions continue to face the challenges of deleveraging their positions and their exposure in selected asset classes and markets and addressing their toxic assets.

The Basel Group's principal focus has been on liquidity. Its initiatives on liquidity include consistent global implementation of the agreed Principles for Sound Liquidity Risk Management and Supervision, establishing agreed global standards for supervision on the appropriateness of cross-border management of liquidity, developing cross-border management of liquidity, and developing cross-border resilience benchmarking exercises on internationally active financial groups. At the same time, the Basel Group is conducting further review to understand and mitigate the intraday liquidity risks run by firms and exploring further moves towards consistency in the definition of liquidity asset buffers. Exploratory work is being conducted on internal models and methodologies for liquidity risk management. The UK financial services regulator, the Financial Services Authority (FSA), has adopted a sharp mandatory style in its own consultation paper on strengthening of liquidity standards among institutions within its jurisdiction. Industry and trade associations are likely to lobby for regulators to take a conciliatory stance towards strengthening of liquidity standards. The outcome may be a sharp clash of approaches between the Basel Group and the FSA.

Implementation of the recommendations at a national level is likely to lead to radical changes in operating models, particularly by international financial groups. Not only must risk management systems be effective and resilient at the enterprise level, but also they will be required by national regulators to provide an equivalent level of alarms, alerts, and efficiency at the national jurisdictional and legal entity levels.

In Europe, the initiatives of the Basel Group have been supplemented by the establishment of a Committee of European Banking Supervisors (CEBS), whose objective is to provide advice to the European Commission on areas not adequately addressed by the current EU regulatory framework. A framework has been agreed for delegating liquidity supervision of branches of credit institutions in host states of the European Economic Area (EEA). The framework consolidates European supervisory guidance on the use of the transfer pricing mechanism and common reporting for liquidity throughout the EEA. The work of the CEBS is unlikely to come to practical fruition until the Basel Group's recommendations receive broad acceptance for implementation at the national regulatory level.

As a result of its November 2008 meeting, the G-20 has assembled working groups to examine challenges to rebuilding trust and confidence in the global financial systems and financial institutions. The working groups are examining supervision of credit rating agencies, current accounting standards, and the risk-reward balance of executive pay in financial institutions. In April 2009, they will report their recommendations, which will form the framework for national regulation of these important foundations of transparency and confidence in the financial systems and institutions. If the framework is not consistent across national jurisdictions, regulatory arbitrage may restrain the collective regeneration of trust and confidence in the national and global financial systems and in financial institutions themselves.

The tensions between rules-based and principles-based approach to financial regulation will provide a challenge to national financial regulators as they seek to implement the principles agreed by their representatives in the supranational regulatory bodies and working groups. National regulators' primary duties are to their own jurisdiction. They must ensure that systemic stability of the national financial system and the safety and soundness of financial institutions under their jurisdiction are maintained while the consumers of financial services within that jurisdiction are protected. Within Europe, detailed implementation of new financial structures and their detailed regulations is likely to see conflict between the Anglo-Saxon and European corporatist approach to financial regulation. The Anglo-Saxon approach to financial regulation is principles based, while the mainland European approach tends towards prescriptive, rules-based financial regulation. The United Kingdom is likely to retain the principles-based approach to financial regulation even after the new wave of financial regulation anticipated in the aftermath of the current financial crisis. It is flexible, adaptive, and places greater onus on the institution and its directors. Principles-based regulation draws regulatory oversight closer to the functions of corporate governance because directors are required to exercise judgement on enterprise risks continuously. Where jurisdictions require liquidity risks management, directors of legal entities within a financial group will be obliged to exercise continuous oversight and judgement on risk arising within the legal entity.

Risk Management Challenges Associated with Trading Securities

The risks associated with securities trading have not changed as a result of the global financial crisis, but they have assumed new dynamics through their interdependencies. Risks and management of risks cannot be looked at according to their categorization as credit, market operational, liquidity, and counterparty risk.

Within the securities trading environment, credit risk processes have to evaluate credit quality of the instrument, the credit rating of the counterparty, the credit quality of the trading venue, and the credit quality of the entity used to clear and settle the transaction if that entity is separate from the exchange.

Market risk will remain a larger area for deployment of risk management than credit risk. Market risk is the summation of credit quality of counterparties and the instruments traded in those markets. The quality of instruments traded in specific markets and the quality of the counterparties in those markets reflect the quality of the markets and the prices and price volatility in the individual markets.

In securities trading, operational risk manifests itself where procedures fail to ensure that pretrade and post-trade risk assessment of transactions based on market and execution price are correctly entered into risk management and valuation systems. Failure by financial institutions to ensure that trading is conducted with relevant internal control and independence leads to substantial financial misstatement of trading profits losses and market exposure.

Counterparty risk and market risk heighten liquidity risk. Liquidity risk is the most emotionally fraught risk because it represents the reaction of financial institutions to a market event or series of events. Liquidity risk has two elements. The first is the risk that the financial institution will not be able to meet its cash flow needs and collateral needs (for secured lending) without affecting either its daily operations or the financial condition of the institution. The second element is the risk that a specific set of assets or market is illiquid. Appropriately referred to as "market liquidity risk", this second element is a particularly significant risk in securities trading. Increased liquidity risk is a response to the financial weakness of financial institutions, and it exacerbates market risk. Liquidity risk has become a significant risk since 2007 because all but the most high-grade credit, equity, and debt instruments have lacked immediate realization and because institutions trading in the securities market have become suspicious of each other's credit quality. Liquidity risk is unlikely to recede as a critical risk until financial institutions regain confidence in each other's financial strength and transparency.

Incorporation of Liquidity Value in the Future Pricing of Assets

Assets establish the strength of liquidity pricing through resilience, depth, and tightness. Resilience is reflected by the ability of the market to maintain or recover its equilibrium in response to large trades. Depth is the reflection of the volume of trading required to influence prices. Tightness reflects the ability of the supply to match demand and the cost and time to execute a transaction.

Work undertaken by the UK financial regulatory authorities indicates that firms fail to incorporate pricing for asset price liquidity or funding liquidity in their line-of-business activities. As a consequence, their liquidity risk pricing is not aligned with the firm's liquidity risk. In the securities trading environment, regulators will require firms to strengthen liquidity standards by quantifying liquidity costs, benefits, and risk in relation to their trading activities, both on and off balance sheet. Strengthened liquidity standards will have to be incorporated into the approval process of all new products, product pricing, and performance measurements. Moreover, these measurements will have to be incorporated in liquidity stress-testing scenarios. The costs and benefits will have to be attributed to the trading books or lines of business and accepted and understood by trading management.

Specific aspects of liquidity value that will have to be considered in the future pricing of assets include intraday liquidity, management of collateral positions, and management of liquidity across legal entities, business lines, and currencies.

Firms will have to ensure that in management of intraday liquidity, they are able to meet payment and settlement obligations on a timely basis under normal and stressed conditions and identify and prioritize the most critical items.

Collateral management is a critical lubricant to liquidity provision for securities trading. Collateral positions will have to be managed actively and efficiently so that collateral can be mobilized on a timely basis and comes from adequately diversified sources. Collateral should be managed and monitored for the impact that the funding arrangement may have on the ability of the firm to mobilize its collateral assets. Financial institutions will have to calculate collateral usage and value continuously by legal entity, regulated jurisdiction, and currency exposure. The calculations will be performed on an encumbered and unencumbered basis. Firms will have to assess collateral continuously by asset class for eligibility for secured funding by central banks and other funding sources.

Management of liquidity across legal entities, business lines, and currencies is critical in identifying operational, legal, and regulatory constraints on transfer of funds and collateral between entities within a financial group. The future management of liquidity risk throws into sharp relief the technology infrastructure to support risk management efficiently and comprehensively at the legal entity, regional, and enterprise level. The technology infrastructure should, in effect, stitch together the line-of-business risk management systems to produce an enterprise view. The new and diverse demands of liquidity risk management will require a fundamental reassessment of the interfaces among enterprise, legal entity, regional, and line-of-business risk management systems. The reassessment of the interfaces is likely to lead to rebuilding the risk management infrastructures to provide a cohesive approach to organization and distribution of risk management information. The information must be capable of access and simultaneous use by functions beyond the designated risk management functions within the enterprise, at line-of-business, legal entity, regional, and enterprise level.

The global financial crisis has uncovered the inadequacies of stress testing methods used by firms. These methods have consistently underestimated the severity and duration of liquidity stress. In the future, firms will have to stress test on a regular basis to ensure that they identify the sources of liquidity stress as well as maintain current liquidity exposure in line with the liquidity risk-tolerance levels established under the firm's and line-of-business governance.

As the speed of business and improvements in technology accelerate and if cyclical becomes more frequent, the securities industry will have to embrace self-policing principles rather than prescriptive rules that can be skirted when new opportunities arise. Self-policing must be the underlying theme in the development and maintenance of liquidity maintenance and stress testing because a regulatory approach will always be in catch-up mode.

Managing Risk in a Real-Time or Pretrade Environment

As Exhibit 1 shows, risk must be managed in real time or pretrade rather than from a post-trade perspective, and risk management should include measuring and monitoring stress testing.

Exhibit 1

The Risk Management Challenges of the Trading Desk



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The trading desk has to be equipped to incorporate and satisfy the requirements to manage risk functions, assessing risk on a pretrade basis where technically feasible in order to balance competition and prudent risk management in the trading function.

Firm-initiated and regulatory enhancements of risk management applied to securities trading increase the technology and operational challenges of the trading desk.

Although it is unlikely that detailed pretrade risk management will become prescriptive, pretrade risk assessment will evolve from principles-based regulation. The application of principles-based regulation places greater personal responsibility on the directors and senior management to manage the risk functions directly and continuously.

The key challenges in increasing the functionality of the trading desk are the deployment and management of data for analytical, risk assessment, and reporting purposes. Data has to be managed across the enterprise, not simply in business silos or operational silos. Data has to be managed in volume and on a scalable basis. It has to be capable of immediate access for analysis and must provide continual and dynamic stress testing. Therefore, operating procedures must ensure that measures are in place to oversee and ensure the quality and integrity of the data.

Future requirements to factor liquidity into the price of securities transactions and the continual demand for dynamic liquidity stress testing will impact algorithmic trading. Electronic trading algorithms will have to be calibrated and modified with greater frequency and responsiveness to liquidity variations.

Internal and external technology will have to manage data at high speed and volume on a scalable basis. Data will have to be dynamically managed internally across the enterprise, by line of business, location, and legal entity. Externally, data has to be subject to dynamic interchange across the enterprise to markets and trading venues. This is especially critical to detect short-term and market-wide dislocation in markets. Such dislocation can translate into long-term market-wide liquidity stress, arising for example from concerns about the solvency of certain financial institutions and heightened concerns about the value of financial assets. The efficiency of the connectivity and visibility of the data is a qualitative issue for evaluation globally as well as on a contained market basis by regulators and industry participants.

Institutions will increase their demands for low latency of data at the trading desk. Until now, the demand for low latency of data transmission has focused on trade execution. Demand for data low latency is likely to shift in focus to deployment in pretrade analytics, price modeling, and pretrade risk management so that these functions may be conducted efficiently in real time, consistently, and transparently. Financial institutions have invested in low latency to provide a competitive edge. Balancing the costs and benefits of delivery of data under increased low latency will be a challenge for smaller institutions. They are likely to conclude that a community of interests exists in delivering pretrade risk analytics and risk management through sharing the cost of the service.

To absorb, understand, and react to the increased amounts of data with a degree of immediacy, visualization services beyond the ubiquitous dashboard will be essential. Fractal measures for detecting choppiness, gaps, and uncertainty in liquidity, for example, are a likely candidate to underpin the delivery of data in heat map form.

The number of users who require access to risk management data will grow exponentially across the enterprise. Directors at the legal entity level as well as traders will require access to the information systems that provide relevant risk management data. Enterprises will have to ensure that their information systems have the capacity to expand the user base and permit simultaneous access.

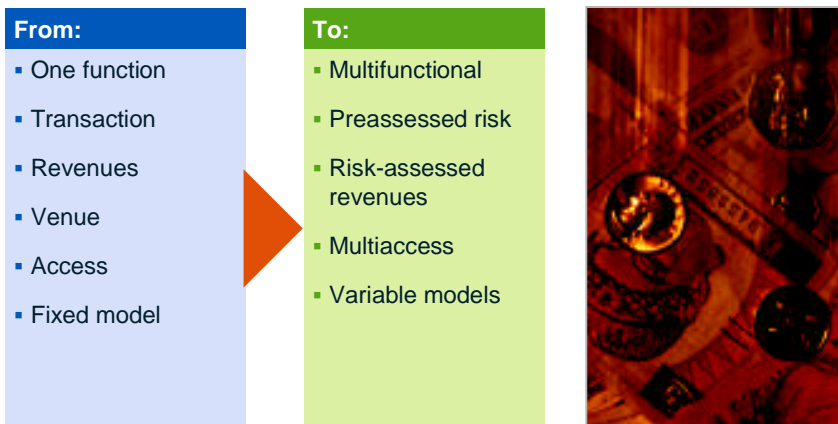
Attributes of Effective Risk Management of the Trading Desk

The trading desk will evolve functionally (as shown in Exhibit 2) as a result of responding to risk and the regulations demanded to strengthen risk management oversight. The middle office, located in or proximate to the trading room, historically conducted risk management functions up to the stage of transaction processing. Relocating these risk management functions to the trading desk so that they are performed prior to trade execution, where technically feasible, will take the trading desk to a new stage of evolution and added value to the lines of business (as shown in Exhibit 3). Moving risk management to the trading desk should deliver some increased efficiencies and reduced costs in headcount and location costs while adding value and enriching the functionality of the trading desk.

Exhibit 2



Evolving Functionality of the Trading Desk



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Exhibit 3



Evolving Attributes of Risk Management Technologies



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Each securities firm will select or buy the relevant technology to enable its trading desks to respond to the demands that they be embedded with risk management functionality and functionally evolve. When firms go through the process of planning for development, procurement, and integration of technologies to achieve those goals, they should be mindful of the attributes that the technologies should deliver to give some future durability and protection against obsolescence for business and functional developments of the trading desk.

It is ironic that the global financial crisis and the regulatory response that requires financial institutions to strengthen their liquidity risk management have combined to enhance the function, role, and value of the trading desk. The desk will become the centre of pretrade risk management and control, over time supplanting the middle office as the custodian of risk functional support for the trading room.



Sybase commissioned TowerGroup to conduct independent research and analysis of the current and future state of risk management in securities trading. The content of this report is the product of TowerGroup and is based on independent, unbiased research not tied to any vendor product or solution. Although every effort has been taken to verify the accuracy of this information, neither TowerGroup nor the sponsor of this report can accept any responsibility or liability for reliance by any person on this research or any of the information, opinions, or conclusions set out in the report.