TATA

TCS BαNCS

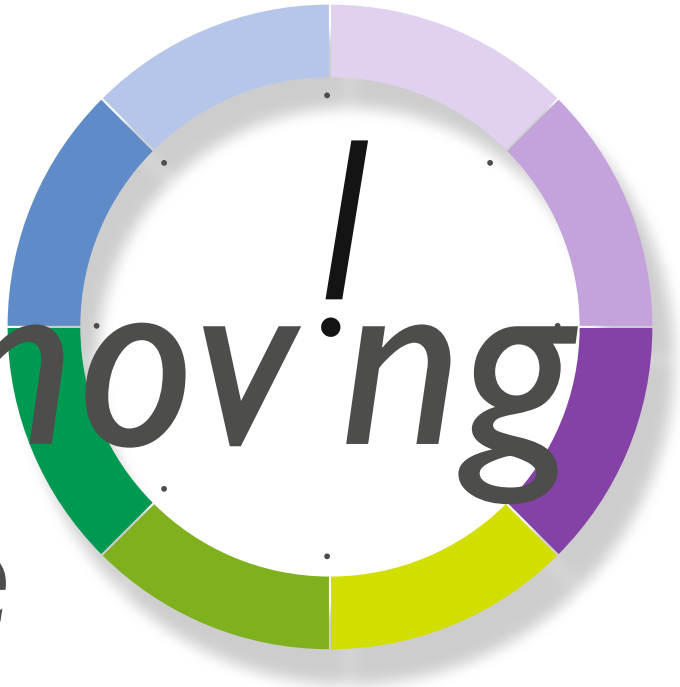
TCS BαNCS Research Journal

Volume 2

Issue 1

Sustaining the momentum in a

fast-moving landscape



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Seeking Speed in an era of competition, consolidation and evolution

A shifting regulatory landscape and a conservative approach together are changing priorities in the capital markets space today. Agile business models, increased operational efficiency, and, interestingly, at times, a move to traditional trading strategies are a part of this new landscape. Irrespective of the changes in the environment, there is continued interest from both the retail and institutional investors, and volumes continue to reflect the 'Last year's peak becoming the current year's 'new normal'. Consolidation of trading venues is seen in the context of greater standardization as well as specialization. The quest for 'alpha' perseveres amidst a high-frequency and e-trading scenario, while trades are being crunched into electronic speeds. Tougher Basel III capital adequacy regulations, the Independent Commission on Banking report from UK, Dodd Frank, MiFID II and the SEC concept release on market structure punctuate this fast-moving landscape with speed breakers, whose ramifications are still being analyzed—and understood.

The role of the exchanges as they straddle the role of being profitable to shareholders while also facilitating market stability is changing with all this consolidation. Austerity measures such as fiscal and monetary tightening are almost mimicking a period of recession. The emerging markets, especially, are seeing the launch of new trading venues and market infrastructure. Smart order routing is picking up in Asia, although connectivity between exchanges in emerging markets is proving to be a challenge. Europe's multilateral trading venues are consolidating and contributing to greater efficiencies, with a more unified approach to trading strategies and liquidity. CCP's continue to surprise with their new approaches, products and services eliminating further settlement risks.

Relationships are being re-examined in trading. Restructuring has led to a new breed of market makers who thrive on offering more liquidity, moving away from poor execution quality and volatility in markets. How quickly can a trade execute? With the advent of Complex Event Processing (CEP), smarter, faster event-driven analytics, a nanosecond is all it takes to deliver—and destroy—competitive advantage today. The resultant liquidity in the market, enabled by High-Frequency Trading, has companies looking at reshuffling orders dynamically while they make complicated decisions that require more analytical guts even while they handle concomitant risks. In that sense, analytical barriers are being raised in the quest for liquidity.

Institutions are looking for single, integrated solutions to manage equities, exchange traded derivatives and foreign exchange. Multi-asset integration technology is definitely a core competency for firms today. An example of this lies in Deutsche Bank's evolved algorithmic suite for trading that has smaller hosting centers for algo trading, each making complex decisions on its own and at an increased pace, and subsequently, routing them to a central location.

The 'cloud' or the hosted model, earlier shunned by many firms for its perceived lack of security, is being aggressively pursued today. The main reasons are gargantuan levels of data. High performance trading has created a need for quality real-time data. Even as the amount of data to be recorded and archived is exploding, storing messages that follow compliance norms becomes imperative. Another reason for the capital markets moving to the cloud or ASP models are mounting costs, increasing regulatory requirements, the promise of low TCO and faster deployments. Forrester Consulting's survey of 187 respondents shows that more than half would move to the cloud in 2012. Some firms are building their own clouds, while others are selected specific trusted cloud providers in their own domains.

Dramatic improvement in execution speeds and frequency of price improvement has brought technology-driven market makers on to the scene. Power is shifting to the buy-side, which demands improved execution, accountability and value-added relationships. What value–added services are these firms looking for? The answer is custom-made solutions that deliver alpha to clients. This means brokers will partner with each other to gain access to new markets and connect to new venues. What does this mean for technology?

In the current scenario of consolidation and growing customer demands, firms are looking at transforming their businesses to improve efficiencies and enable transformation. Most businesses in their quest for speed are racing to make their businesses agile. When translated into technology, agility, or the ability to respond quickly to a dynamic environment—internal or external— lies in enterprise-wide process optimization. Business Process Management (BPM), long a favorite with the banking sector, has hovered around hesitantly in the capital markets space so far. STP and improved trading and processing have received due attention earlier, but true enterprise-wide process integration remained the domain of a few.

BPM is playing the role of aligning a business' goals, processes and IT architecture, primarily driven by SOA. This brings in a nature of reusability in processes and assets, equipping an enterprise to respond to challenges faster, manage risks better, and maintain a distinct competitive advantage.

Adapting to changing market needs also entails managing process exceptions. Efficient exception-based workflows and implementation of industry-leading best practices play a critical role in optimizing processes, operations and the ability to deploy new products to the market rapidly. With increased Straight-Through Processing in real-time, operational risks are reduced, thereby, decreasing the costs per trade.

Another buzzword in technology today is mobility. Alongside are flexibility, ease of interaction and accessibility. The new rage is the iPAD. 12 million. 40 million. Figures that Apple Technologies quotes for the number of iPADs they sold last year and the forecasted figures for the year to come. In a world thinking in laps on a race track, instantaneous reactions and decision-making can be a game changer. A few strokes of a screen, interactivity, security are what are redefining the landscape today.

The key is to offer differentiated offerings – be it an online brokerage platform acquiring the capabilities of a bank and thereby providing investors with better control of their assets, or sophisticated reporting capabilities, or asset management technology that can help grow assets and revenues, while improving investment performance and customer service.

Happy Reading!

NG Subramaniam
President – TCS Financial Solutions
Tata Consultancy Services

Dear Reader,

"The Times They Are a-Changing…", sang Bob Dylan in the 1960s. Set against a backdrop of challenging socio-economic conditions, this song grew to be an anthem of change. Today, the times are definitely changing—and, by the minute. The need of the hour demands that organizations remain flexible as markets, regulations and customer requirements change, while they also take strong roots, allowing for growth.

This edition of TCS BaNCS Research Journal depicts a few pages from this ever-changing scenario that every financial services organization is a part of today, and shares opinions on a range of topics – of managing liquidity and risk in a fragile environment, of understanding what new regulations and their impact could mean, and of the creation of new, agile business models and trends.

How can a firm sustain the momentum of growth amidst a fast-moving landscape? Read on…

Happy Reading!

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Market Dynamics in Clearing

ABN AMRO Clearing is a global clearing firm with offices in 10 countries. In the last few years, and also triggered further by the financial crisis, the function of clearing has become both more widely known as well as more appreciated. Guaranteeing exchange trades by market participants, ABN AMRO Clearing plays an important role in removing counterparty risk in trading. Even though this function is often referred to as ´the plumbing´ of the financial market infrastructure, it is no less dynamic or technologically demanding than, for example, the exchanges. Several major developments have occurred over the last few years that changed the business in more ways than one.

A few trends worth mentioning are: a push towards central clearing, MiFID 2, market infrastructure consolidation, trading hours extension and opening up of emerging markets

With the introduction of MiFID in Europe back in 2007, the door was also opened to competition on the exchange level. This saw the inception of a number of new trading platforms that started competing with the incumbent exchanges known until then. Even though starting out small, these platforms have accumulated significant market shares over the last few years, examples being BATS, Chi-X and Turquoise. All in all, there were more than twenty market initiatives, each of which required analysis of its structure, rules and procedures, the build of a business case and ultimately, a project to implement.

One of the other important developments is the increase in trading volumes over the last few years. Markets across the globe have gradually shifted from floor trading (with physical trading floors still existing for certain businesses) to screen trading (people sitting behind a screen and trading using an order management system) to automated trading (a computer algorithm performing trading strategies). Especially, the automated traders, or black box traders as they are often called, have brought enormous trading volumes, which instantly outdated any capacity models used until then. The markets have shown tremendous volume increases, both in orders and transactions, and certain infrastructure providers have struggled with certain events. ABN AMRO Clearing has put in substantial effort in improving performance and capacity of its systems in order to keep up with these developments as also in preparing for the future.

While all these events are taking place, there is no time to sit around as plenty of new products and markets are being introduced. Carbon and energy markets introductions have made an incredible evolution of the last five years in Europe. All these dynamics will not diminish over the next few years, making long term roadmaps less useful. A few trends worth mentioning are: a push towards central clearing, MiFID 2, market infrastructure consolidation, trading hours extension and opening up of emerging markets. The next few years will bring the same challenges and opportunities as we have seen over the last couple of years. One thing is certain, the financial market infrastructure is far from static and will continue to evolve.

The biggest challenge is in managing this change. How do you keep a balance between mandatory and new developments, whereby the latter become a growing part of both the project, and run budgets? How do you create a longer term roadmap without it immediately having passed its 'sell-by date'? There is no single answer and it will depend on each organization and how these items are addressed. Nevertheless, they impact our IT strategy, our view towards innovation and towards change cycles.

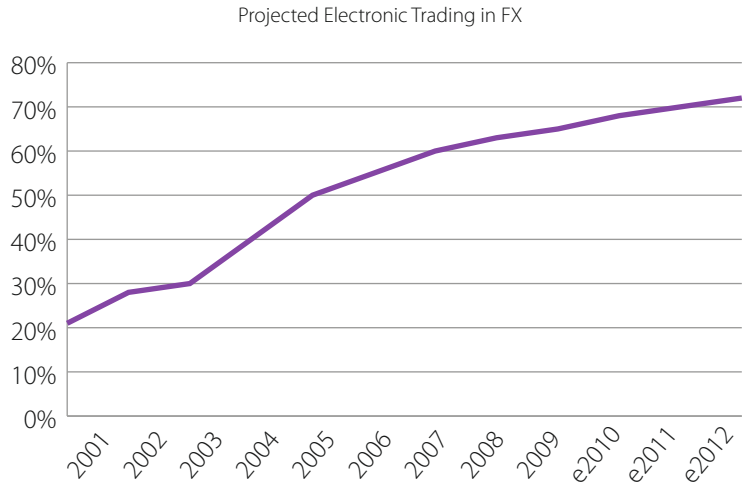
Andrej Bolkovic
CIO - Broker Clearing Custody division, ABN AMRO

High Frequency Trading in FX

While regulatory scrutiny continues to build in the U.S. equity market driven by populist-led political pressures, High Frequency Trading (HFT) has expanded well beyond the cash equity market. Over the last eight years, one area of expansion has been in the thriving foreign exchange (FX) market.

This article examines the presence of high frequency trading in the global FX market, providing details on the changing market dynamics of the last three years.

Figure 2: Electronic Trading Adoption in FX

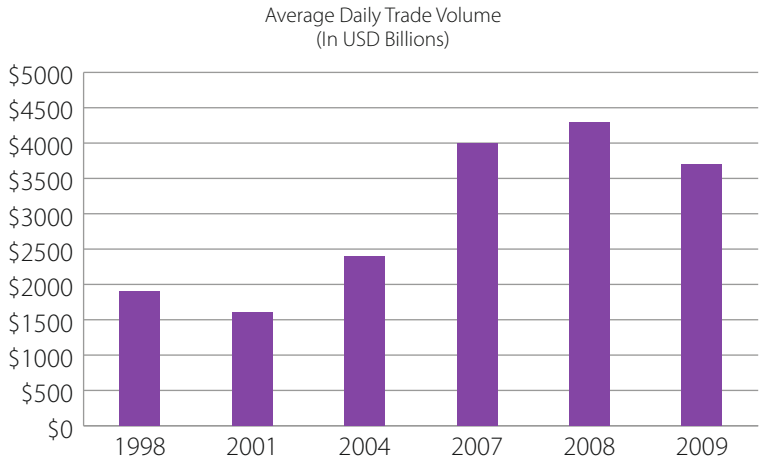


Source: Aite Group

Market Overview

Owing largely to high volatility, 2008 yielded historical highs in terms of overall trading volume, followed by an inevitable decline in 2009. The industry averaged approximately USD 4.3 trillion in daily trading volume in 2008 compared to about USD 4 trillion in 2007. During the latter part of 2008 and well into 2009, customers faced a much different market from previous years, marked by wider spreads and declining liquidity. Consequently, average daily trade volume declined in 2009, standing at approximately USD 3.7 trillion.

Figure 1: Trends in Global FX Volume

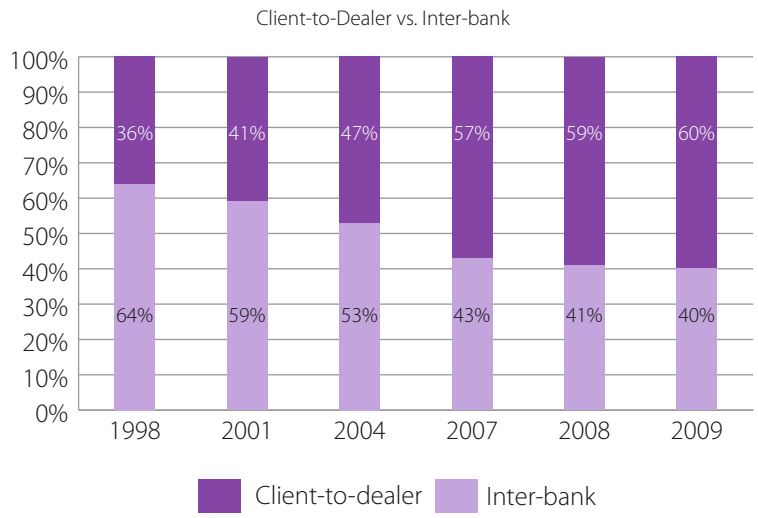


Source: BIS, Bank of England Foreign Exchange Joint Standing Committee (JSC), New York Foreign Exchange Committee, Singapore Foreign Exchange Market Committee, Canadian Foreign Exchange Committee, Tokyo Foreign Exchange Joint Standing Committee, and Aite Group

Adoption of Electronic Trading

Unlike other over-the-counter (OTC) markets, driven by early acceptance in the inter-bank market, electronic trading adoption continues to increase in the global FX market. Given that markets remain fragmented, the need to source multiple liquidity pools simultaneously has only strengthened the overall position of electronic trading. At the end of 2009, electronic trading accounted for approximately 65% of all FX trading. This figure is expected to reach more than 70% by end of 2012.

Figure 3: Client-to-Dealer vs. Inter-bank



Source: BIS, Bank of England Foreign Exchange Joint Standing Committee (JSC), New York Foreign Exchange Committee, Singapore Foreign Exchange Market Committee, Canadian Foreign Exchange Committee, Tokyo Foreign Exchange Joint Standing Committee, and Aite Group

Bank Internalization

Another key trend over the last few years has been the increasing effectiveness of large FX banks in managing their risk books when trading against customers. By utilizing sophisticated pricing engine and real-time internalization capabilities, large FX banks have become quite adept at showing varying prices to different types of customer segments as well as efficient at deciding when to internalize as against utilize traditional inter-bank markets to lay off their risk. In a way, the aftermath of the credit crisis of 2008 has only reinforced banks' need to internalize, particularly as regulators and politicians continue to emphasize banks' need to lower their overall risk profile. Consequently, the need to better segment customer flow has been on top of banks' overall client-facing trading strategy so that they can optimize their balance sheets and better manage their Profit and Loss (P&L).

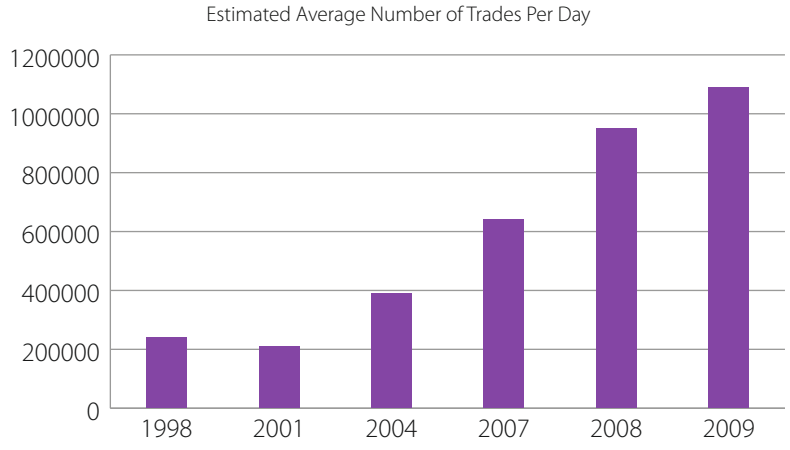
Increasing Presence of Client-to-Dealer Market

As banks continue to fine-tune their ability to manage their FX risk books in real-time, the client-to-dealer market has increased its overall market share over the last few years at the expense of the inter-bank market. By the end of 2009, the client-to-dealer market accounted for approximately 60% of overall FX trading while the inter-bank stood at 40%. In comparison, the inter-bank market represented close to 60% of the marketplace in 2001.

Historical Look at HFT in FX

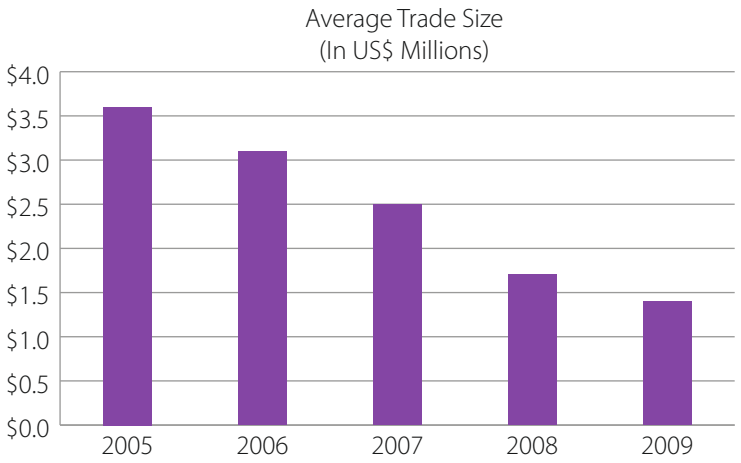
While the banks have gone through a series of consolidations, leading to fewer banks making markets, the FX market continues to evolve with new types of customer segments beyond the traditional corporate and asset manager customer base. Since 2002, actively trading hedge funds and proprietary trading

Figure 4:



Source: BIS, Bank of England Foreign Exchange Joint Standing Committee (JSC), New York Foreign Exchange Committee, Singapore Foreign Exchange Market Committee, Canadian Foreign Exchange Committee, Tokyo Foreign Exchange Joint Standing Committee, ECNs, and Aite Group

Figure 5: Declining Average Trade Size in Spot FX



Source: Aite Group

firms have made a huge impact in the FX market, driven by a robust IT infrastructure and development of automated trading strategies.

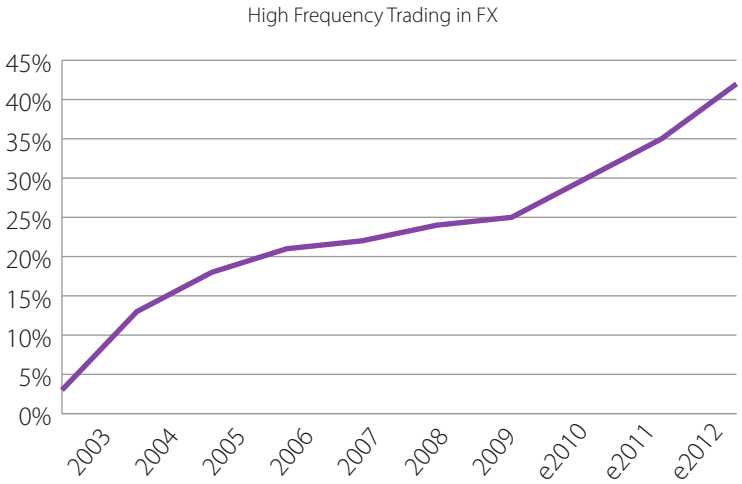
The presence of high frequency trading flow in FX has been increasing every year. In 2001, the global FX market averaged slightly more than 200,000 trades daily. At the end of 2009, average daily trade figure reached more than one million trades a day

In fact, some would argue that the large FX banks learned a painful lesson between 2002 and 2006, driven by latency arbitrage strategies in the first wave of high frequency trading firms. As a direct consequence of this experience, the banks initiated massive overhaul of their trading infrastructure, not only focusing on drastically lowering latency levels within the single bank platforms, but also on developing more efficient pricing engine and internalization capabilities to better manage their risk books against different types of customer segments. It was also during this time that the banks decided to kick out those high frequency trading firms whose relationships they deemed unprofitable.

Since 2008, however, banks and certain segments of the high frequency trading community are attempting to peacefully co-exist. As banks continue to increase their internalization efforts, potential liquidity from high frequency trading firms has become more attractive. On the other hand, high frequency trading firms have come to realize that banks have a vital position in the FX market; in order to ensure continued success, co-opetition has become a competitive necessity.

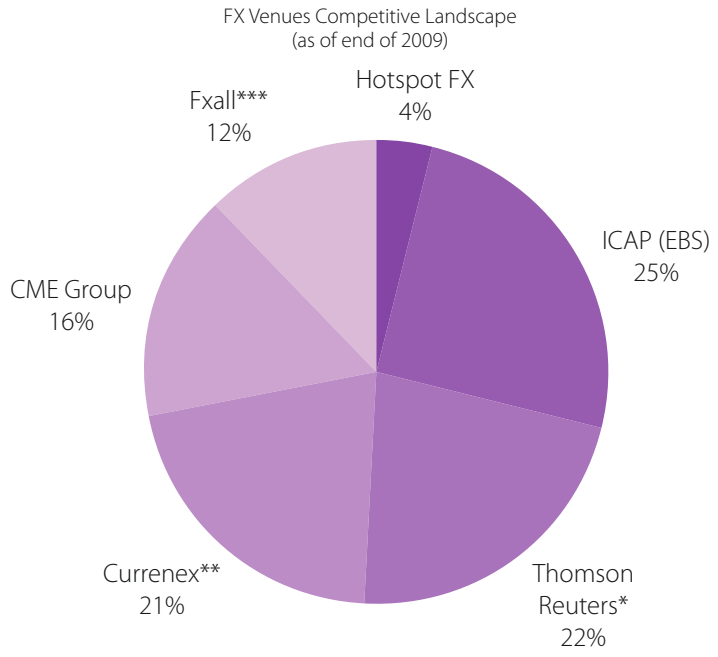
One potential change that could alter the balance in the market is successful implementations of centralized clearing in the OTC marketplace. If non-bank high frequency trading firms can become direct clearing members for OTC products, and also illustrate their commitment to taking more risk as a legitimate liquidity provider, banks' stranglehold in the FX market could be weakened and hence open up a new phase of intense competition.

Figure 6: High Frequency Trading in FX



Source: ECNs, Interviews with bank and high frequency trading firms, Aite Group

Figure 7: FX Venues Competitive Landscape



Source: ECNs, Aite Group

* Thomson Reuters volume includes Reuters Dealing, Matching and Reuters Trading for FX.

** Currenex volume includes all Currenex volume including volume from white label business.

*** FXall volume includes non-ECN volume.

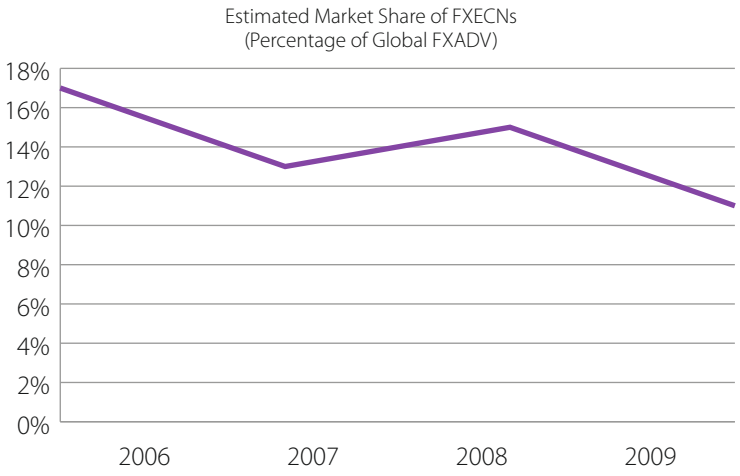
Projected Presence of HFT in FX

The presence of high frequency trading flow in FX has been increasing every year, even through the rough-and-tumble 2008 to 2009 time frame. Their presence can be felt in many different ways. Similar to the cash equities market, one good indicator is the total number of daily trades. In 2001, the global FX market averaged slightly more than 200,000 trades daily. At the end of 2009, average daily trade figure reached more than one million trades a day.

Another good indicator of high frequency trading's impact in the marketplace is the overall trend in average trade size. In addition to the explosive growth in average daily trade number, the FX market has also seen a decline in average trade size. In 2005, the average trade size for spot FX stood at close to USD 4 million. By the end of 2009, the average trade size had shrunk to USD 1.4 million.

FX high frequency trading is poised to grow quite rapidly over the next few years, as the first-generation high frequency trading firms are joined by an influx of next-generation equity and futures high frequency trading firms looking to capture uncorrelated alpha in FX. In addition, new high frequency trading firms have emerged in recent months, formed by FX quants and traders who have left large banks looking to capture new opportunities on the other side of the market. At the end of 2009, high frequency trading accounted for approximately 25% of overall trade volume. This figure is expected to hit more than 40% by the end of 2012.

Figure 8: Estimated Market Share of FX ECNs



Source: BIS, Bank of England Foreign Exchange Joint Standing Committee (JSC), New York Foreign Exchange Committee, Singapore Foreign Exchange Market Committee, Canadian Foreign Exchange Committee, Tokyo Foreign Exchange Joint Standing Committee, ECNs, and Aite Group

Leading Execution Venues

The CME Group represents the only exchange active in the FX market, and has a dominant presence through its highly popular FX futures product. Two of the largest execution venues are ICAP (EBS) and Thomson Reuters, representing the inter-bank market. Currenex and Hotspot have been pioneers in the active trading FX market, implementing the prime brokerage model and providing access to streaming executable prices. FXall, the most diversified FX venue profiled in this report, entered the ECN competitive landscape through the introduction of Accelor, and added Lava FX in early 2010. The combination of Accelor and Lava FX represent FXall's ECN Order Book.

At the end of 2009, High Frequency Trading (HFT) accounted for approximately 25% of overall trade volume. This figure is expected to hit more than 40% by the end of 2012

Examining the overall FX ECN market, EBS currently holds the top spot with 25% market share followed very closely in second place by Thomson Reuters. Currenex also showed very strong growth in 2009, and currently occupies third place with 21%. While the CME Group is an exchange with its FX futures product compared to the OTC products of the other FX ECNs, it is clear from a trading value perspective that the CME Group has become a major player in the global FX market.

Driven by economic crisis and as a result of increasing bank internalization, the market share trend of FX ECNS has not been favorable in recent years. After a slight increase from 2007 to 2008, 2009 was not a good year for most of the FX ECNs; overall market share declined to approximately 12% of average daily volume at the end of 2009.

Conclusion

After close to a decade of existence characterized by novelty, euphoria, anger, denial, and acceptance, high frequency trading has carved up a significant presence in the global FX market.

The introduction of EBS Prime and Ai into the non-bank community triggered the floodgate to high frequency trading in FX. Despite the influx of high frequency trading flow, the banks still maintain enough market clout to hold onto their competitive edge. In fact, the FX market remains very much a two-tiered market; single bank platforms tend to interact against customers who can be perceived either as less sophisticated or less sensitive to explicit transaction costs (i.e., willing to take wider spreads to get the trades done). On the other hand, most high frequency trading occurs on FX ECNs. While the liquidity ultimately comes from banks, this two-tiered approach has enabled banks to be more efficient in trading against different types of end customers.

The introduction of EBS Prime and Ai into the non-bank community triggered the floodgate to high frequency trading in FX

Another important thing to note is that high frequency trading in FX is not driven entirely by independent low latency proprietary shops or hedge funds. In fact, most of the global FX banks have either acquired or developed robust low latency FX prop desks to compete in the marketplace and account for a significant percentage of the overall high frequency market share.

In recent months, several traders from major banks have left to start their own firms, taking with them not only their quantitative skills, but also their market structure knowledge, which could potentially pave the way for the next phase in high frequency trading, in which non-bank trading firms play a larger role in liquidity provision. The first round may be over in FX high frequency trading, but many more remain before the real winners can be determined in this rapidly evolving marketplace.

Sang Lee

Sang Lee is a co-founder and managing partner at Aite Group, with expertise in the Securities and Investments vertical. He has advised many global financial institutions, software/hardware vendors, and professional services firms in sell-side and buy-side electronic trading technology, market structure, retail brokerage technology evolution, and wealth management.

BLACK SWAN Events – Impetus for the South African Market to Adopt Global Best Practices

The proverbial 'black swan event' can and does happen more frequently than predicted and can have dire consequences on the investment industry. In 2008, the failure of Lehman Brothers set off such a chain reaction that led to various role players in the South African industry re-thinking their current infrastructure to meet the demands made by local and international clients.

Two main themes that are now receiving attention are the move from a T+5 settlement cycle to T+3 (On the JSE (Johannesburg Stock Exchange) radar of projects since 2007) and the introduction of the client segregated depository accounts.

T+3 Settlement Cycle:

The JSE (Johannesburg Stock Exchange) has broken this project into three phases, which are:

Conducting workshops for all market players that would result in a document detailing out the barriers to T+3, and high-level activities involved in overcoming such barriers with agreed nominated parties to continue the investigations, and an estimated timeline for completion.

This led to the creation of workgroups by the concerned parties to further the investigations, and the combined output being the creation of a 'Blueprint for a T+3' document and the delivery dates of such outputs; and finally, the implementation plan for T+3.

The JSE has successfully completed phases one and two and identified ten obstacles/challenges to T+3, which are listed below:

Dematerialization

The main drive is to ensure that a high level of dematerialized stock is achieved to enable settlement to take place. This is not seen as a major barrier and the JSE will continue with market education and marketing.

Straight-Through-Processing (STP)

This challenge focuses on the adoption of uniform messaging standards. It has been agreed that the standards will be vanilla SWIFT messages. Again, this is not seen as a show-stopper.

Securities Lending and Borrowing

The objective here is to prevent failures in a shorter settlement cycle. The initial focus was on same day initiation and return of loans, but further discussions and investigations have led to a decision that this is not feasible due to corporate action processing and will, therefore, remain on a S-1 cycle. In Phase three, the JSE will continue with market education and marketing.

Corporate Actions

The impact of a T+3 settlement cycle is a shorter corporate actions cycle. This shorter process is linked to the enhancement project of Strate, and the various enhancements identified will be implemented prior to this project. It has been agreed that all developments need to be aligned to global best practices.

System Availability

This will be discussed in Phase three as an impact analysis on Business Continuity Plans and can only be conducted after all developments and enhancements have been made.

Moving Shares between Registers

The process of moving shares between registers for dual listed securities needs to be automated. The impact, though not very significant, could affect higher volume of rolling settlements. In Phase three, the JSE will continue with market education and marketing.

Providing Settlement Assurance

The main driver here is to prevent failures in a shorter settlement cycle. The focus will be on the reviewing of cut-off times and processes. On the process side, the following issues have been identified: allowing automated rolling of the settlement process, automation of deal allocations as well as the loading of new accounts, and revisiting the creation of back-to-back links. This barrier places a huge emphasis on South Africa to continue and maintain a high settlement rate and will, therefore, necessitate

discussions on the refinement of the 'how to' aspect.

Central Securities Register

It has been agreed that this is not a requirement to move to a T+3 settlement cycle and therefore is out of scope as far as this project is considered.

By effecting this CSD rule change, clients can in the future elect to have their account at the CSD through their chosen Central Securities Depository Participant (CSDP) thus ensuring a complete ring-fencing of their assets, and in the case of participant failure, the client can move more fluidly to another CSDP

Off-market Transactions

This is not seen as having a huge impact on moving to a shorter settlement cycle. The main focus will be the enhancement of off-market exception handling and the matching criteria.

Real-time Trade Processing

All market players agreed to a real-time messaging process where required. This is not seen as a dependency to move to T+3 or a potential show-stopper.

As can be seen from the afore mentioned barriers, the project is focused on reducing settlement risk without creating any additional operational risk for the various market players. The next phase will focus on the commencement of market testing, scheduled for the first quarter of 2012, as most market players have already embarked on enhancing or replacing their current custody or accounting platform to be market ready.

Client Segregated Depository Accounts

In the financial meltdown of 2008, it has been cited that certain investors waited up to nine months after the collapse to extract their portfolios from their failed service providers. Strate has been approached by Euroclear to offer a service that permits the opening of client accounts at the CSD level.

The changes in the Companies Act, 2008 (Act 71 of 2008) (effective May 2011) allows for the legal record of ownership at the CSD. Based on this amendment, Strate has revised the CSD rules to enable clients to directly open Client Segregated Depository accounts at the CSD.

By effecting this CSD rule change, clients can in the future elect to have their account at the CSD through their chosen Central Securities Depository Participant (CSDP) thus ensuring a complete ring-fencing of their assets, and in the case of participant failure, the client can move more fluidly to another CSDP.

The current focus of this initiative is the finalization of the directives that govern the processes and procedures. Workshops are held to iron out the details surrounding the directives and the administration post a participant failure.

In conclusion, the above two initiatives discussed in this article strive to ensure greater investor confidence, adherence to BASEL II and regulatory requirements, as well as emulating global best practices.

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What is End-to-End Collateral Management all About?

Collateral Management

Regulations are Driving Demand for more Sophisticated Technology

The recent global financial meltdown has placed the spotlight on risk management practices, especially in the way counterparty credit risk and exposure is monitored and managed.

The last decade has witnessed a phenomenal rise in the number of complex and exotic financial products being traded.

While OTC traders were in a constant race to launch new products, the inherent risks associated with these products were ill understood by most players, especially, the end clients. This problem was further compounded by the lack of regulatory oversight that failed to govern operations across all the players in this space, including hedge funds, brokerage houses, investment banks, custodians, insurance companies and non-banking financial companies.

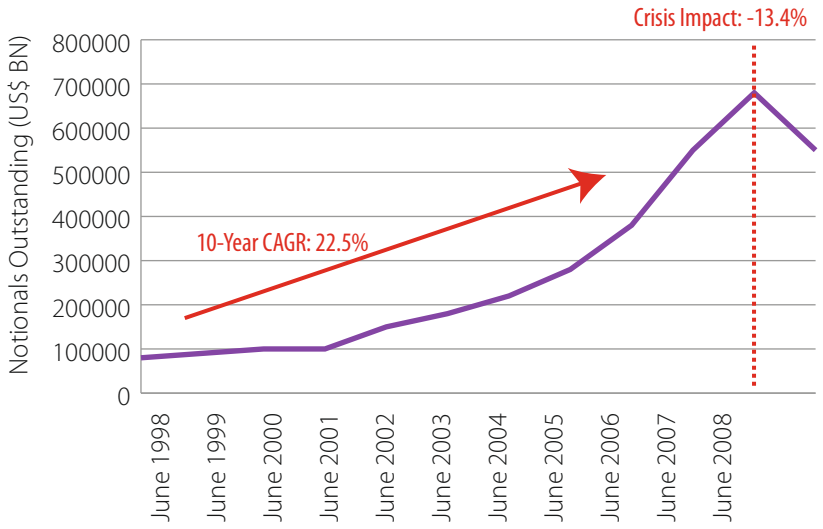
Governments across the globe have been forced to take measures, including enforcing regulation, particularly on OTC markets, with clear deadlines for compliance in order to restore confidence in financial markets. Not surprisingly, there is a fair degree of convergence in the regulations being prescribed by both developed and developing nations, though the level to which these markets use these products vary. In some ways, there is also an opportunity for emerging markets to put regulations in place before exotic financial products are introduced so that they can create a safer financial environment.

The Dodd Frank Regulations in the US in particular, prescribe the following:

- Mandatory execution of cleared swaps on a regulated exchange or Swap Execution Facility (SEF)
- Mandatory central clearing for swaps designated as 'clearable'
- Mandatory reporting to a trade repository
- Public access to transaction and pricing data
- Higher capital and margin requirements on uncleared swaps.

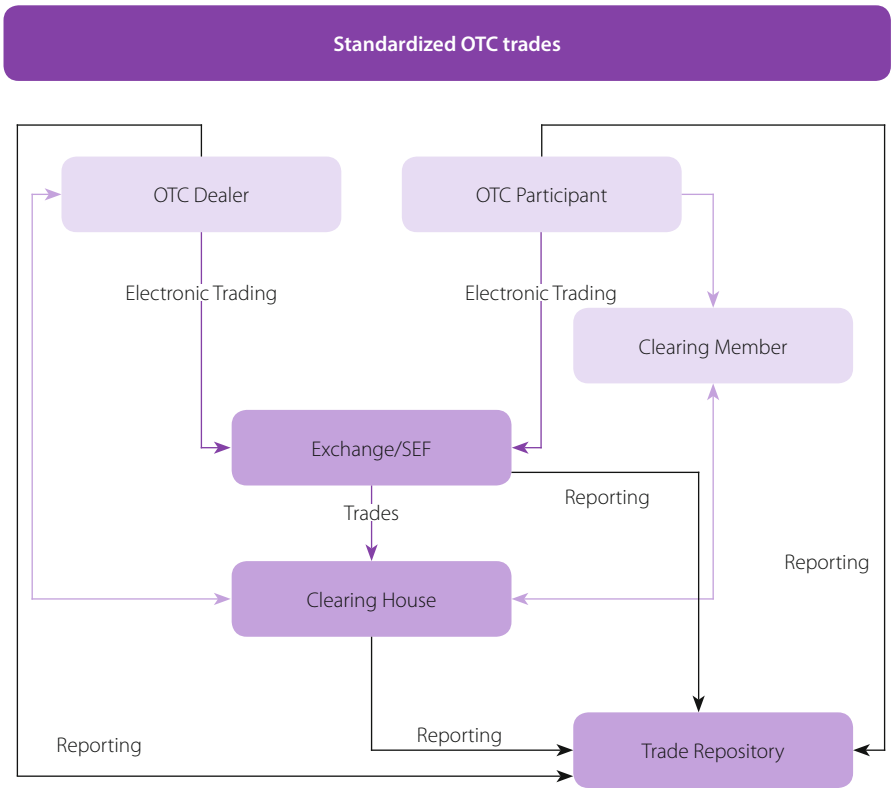
Since these measures, particularly the one related to mandatory central clearing and higher margin requirements directly impact Central Counter Parties (CCPs) and dealing firms, risk and collateral managers at these institutions are strengthening their internal risk policies and creating fail-proof mechanisms that protect against counterparty credit risk, operations and settlement risk. Collateral Management is, therefore, fast gaining importance as one of the primary

Figure 1: Notional Amounts Outstanding



Source: BIS, Celent estimates

Figure 2: OTC Trade Processing Flow



pillars for managing counterparty credit risks; a critical function that can not only allow the organization to stand up to increased scrutiny of risk management processes but also, more importantly, ensuring 'business as usual' operations in times of high market volatility.

Collateral Management Outlook

Some of the key challenges faced by collateral managers stem from the following areas:

- Ability to cover risk across various business lines such as Repo, securities lending and borrowing and OTC derivatives.
- Widening the range of asset classes that can be classified as 'Approved Securities'. These include assets in the form of cash, government securities, equities, covered bonds, corporate bonds, letter of credits, metals and other commodities.
- Ability to deal with complex documentation, in the form of Credit Support Agreements (CSAs). The complexity arises from the fact that these CSAs need to be drawn up for each counterparty that an organization is dealing with, and typically differs based on the type of transaction. Organizations frequently end up managing thousands of such documents.
- Ascertaining the quality of collateral notwithstanding the ratings given by external agencies and ensuring that collateral haircuts truly reflect market valuation. This is a big challenge given the erosion in confidence in credit ratings after the financial crisis.
- Support for multi-geography operations, and ensuring margins are collected on time, across currency time-zones.
- Enabling higher STP levels, for example, how effectively the organization monitors transactions across the collateral lifecycle, that includes lodgements, transfers, withdrawals and substitution. This directly impacts the ability to monitor close to real-time update of balances. ISO is also looking closely at this space to enable better STP.

Technology can play a significant role in centralizing Collateral Management, facilitating adoption of common messaging standards and delivering greater STP across the value chain

Implications on the CCP Business

The regulatory move to enforce clearing of OTC derivatives through CCPs has presented a number of challenges, but

also increased the importance of CCPs. While this signals a drastic reduction in the number of OTC bilateral agreements, the onus on CCPs has expanded from providing traditional clearing services to providing sophisticated collateral management services thus necessitating an overhauling of IT systems at most organizations.

CCPs clearing for multiple exchanges and markets are particularly under pressure to provide the benefits of cross collateralization to their members trading across multiple markets, so that they get the benefit of open, competitive, interoperable clearing.

Some of the issues that CCPs are grappling with include:

- Demand from investment banks/ OTC dealers for collateral optimization. This is to ensure that collateral placed with the CCP is put to the most efficient use, so as to cover risk arising out of multiple transaction streams including OTC derivatives, FX trading, Repo and stock lending operation, typically, across geographies.
- Expanding the range of asset classes that can be accepted as collateral. Members no longer want to lock up hard cash beyond the stipulated ratio – they are seeking to place assets such as bullion, warehouse receipts of commodities, and emission credits as collateral apart from traditional government securities. Pricing of these assets as well as ability to liquidate these in times of crisis, is one of the key concerns for collateral managers at most CCPs.
- Demand for robust portfolio reconciliation services that can detect trade population, position and valuation differences that could give rise to disputed margin calls.

Measures taken by CCPs

Some of the measures being adopted by CCPs include:

24x7 Collateral Management

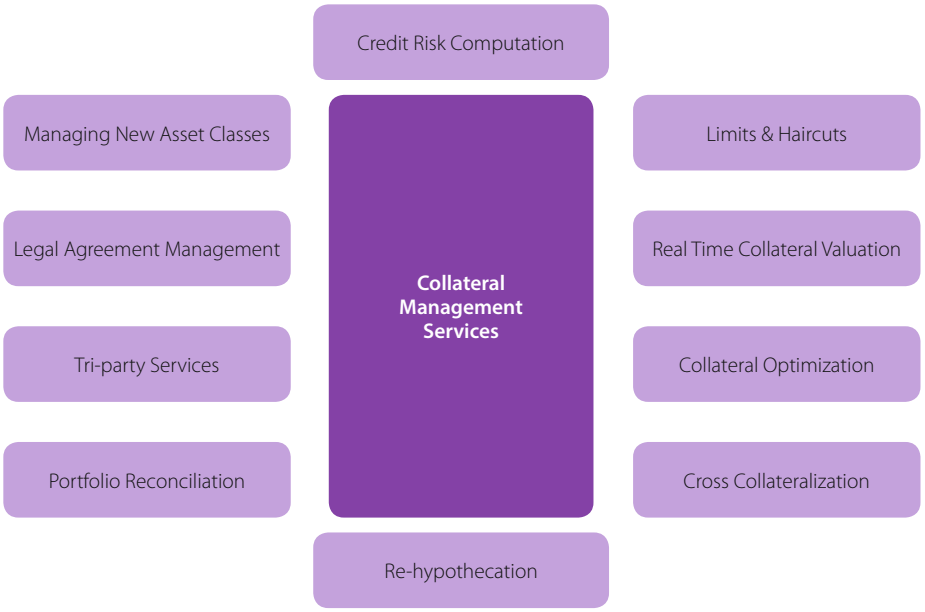
Ability to provide collateral management services across time-zones and geographies is becoming a key service differentiator for CCPs. Members trading across the globe, are being provided the option to meet margin requirements, leveraging their local banking and CSD arrangements with a view to allow them choice of currency and place of settlement in the case of securities.

The concept of asset servicing has undergone a paradigm shift in the last 2-3 years. The focus now is clearly on identifying ways in which idle portfolio balances can help generate incremental revenue from collateral management activities, and become a viable financing tool

Flexible Account Structures

CCPs are providing members flexibility in the way collateral balances are reflected,

Figure 3: Range of Collateral Management services



at various levels such as at the legal entity, market and end-client level. This also ensures compliance with regulatory measures that seek to ring-fence client activity from proprietary activity and also ensure proper segregation of client collateral balances.

Tri-party Services

CCPs are also evaluating leveraging tri-party services as yet another service differentiator. Tri-party service providers typically manage counter-party risk, exposure levels, as well as asset utilization, and counter-party risk in a more automated, consistent, controlled and transparent manner. There is clear recognition of the fact that the tri-party arrangement would remove many of the inefficiencies inherent in the bilateral collateral management process, such as disputes arising from collateral valuation, operational risk such as collateral transfers/margin calls not being made on time.

Tri-party service providers perform the daily collateral management functions on behalf of the collateral giver and taker, including managing and electronically storing legal agreements; calculating exposure and generating margin calls, as well as managing the collateral inventory across the transaction lifecycle; including acceptance and release of collateral, substitution, selection of collateral assets for pledging, and also re-hypothecation of received collateral positions; calculating and distributing interest on collateral, as well as portfolio reconciliation on a frequent basis.

Leveraging the services of specialized triparty service providers frees up CCPs from managing the collateral inventory, thereby, allowing CCPs to focus on core clearing and risk management operations. In some regions, CCPs and CSDs may also seek providing in-house triparty services, with a view to widen the scope of services provided and deliver greater value to customers. This also helps them create a more robust brand, recognized for dependability.

Implications for members and custodians

Members and custodians have likewise begun the process of enhancing their collateral management platforms with a view to ensure efficiency in the usage of idle collateral. The concept of asset servicing has undergone a paradigm shift in the last 2-3 years. The focus now is clearly on identifying ways in which idle portfolio balances can help generate incremental revenue from collateral management activities, and become a viable financing tool.

Custodians are, therefore, providing the ability for securities held in custody to be effectively collateralized and finance various operations, including Repo and securities lending and borrowing transactions.

Custodians also need to guarantee seamless execution of standard settlement instructions (SSIs), in the release, transfer and substitution of collateral. Service differentiation is expected to be achieved in the effectiveness of the STP experience that these entities provide their clients.

Regulatory agencies are evaluating ways to introduce greater automation by rendering OTC derivatives documentation in machine-readable format

IT as an enabler

Technology can play a significant role in centralizing collateral management across various business functions, facilitating the adoption of common messaging standards and delivering greater STP across the value chain. Systems need to be able to provide the following critical capabilities:

Multi-asset Class, Multi-market and Product Support

IT solutions for collateral management need to be flexible in the number of asset classes and markets that can be serviced. At a minimum, solutions need to support assets in the form of cash, government securities, equities, covered bonds, corporate bonds, letter of credits, warehouse receipts and warrants, metals and other commodities across multiple markets and products including cash, derivatives, OTC, securities lending and Repo.

Cross-collateralization

Support for cross collateralization ensures that collateral is optimized across various functions. The same pool of

collateral is available for managing cross-business exposure, freeing up assets that can then generate revenue through lending and Repo transactions. Margin management and corresponding collateral management across business lines, identification of free collateral and allocation becomes highly complex and error-prone, without the aid of technology and automation.

Process Specialization

The need of the hour is for sophisticated IT solutions that provide near 24x7 support for specialized processes such as real-time valuation of collateral, re-hypothecation, optimal utilization of the collateral across various markets, scenario analysis and simulation.

Cost Reduction

Robust IT solutions play a major role in helping organizations provide the benefit of cross-collateralization to their customers, by facilitating secure data integration between business lines, providing common messaging standards and procedures across financial products, and in supporting consolidated reporting of counter-party exposure.

Hence, IT solutions have a critical role to play in an organization's ability to drive down the per transaction cost.

Improved STP

Solutions need to deliver STP capabilities across the OTC derivatives value chain, including new trades, amendments, confirmations, innovation, termination, credit default event processing, collateral settlement and Corporate Action processing. IT solutions need to support messaging standards such as FpML and XML to ensure that maximum STP benefits are delivered to participants. ISO is also actively looking at an early implementation of message structures that can support the latest regulatory needs.

Regulatory agencies are evaluating ways to introduce greater automation by rendering OTC derivatives documentation in machine-readable format. A study conducted by the Securities Exchange Commission (SEC) and the Commodities Futures Trading Commission has very recently concluded that "current technology is capable of representing derivatives using a common set of computer-readable descriptions. These descriptions are precise enough to use both for the calculation of net exposures and to serve as part or all of a binding legal contract".

The need of the hour is, therefore, for specialized IT solutions that can truly support end-to-end Collateral Management functions in an effective and efficient manner, while retaining the flexibility to service new functions and regulatory initiatives.

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OTC Derivatives: Transition to a New Market Structure

On July 21, 2010, President Obama signed into law the Dodd-Frank Act heralding widespread reforms in the financial services industry. One of the key components of the new law - changes to how Over-The-Counter (OTC) derivatives, specifically, swaps are handled -- is extensive and will have a significant impact on swap dealers as well as other major players in this market.

The main purpose of the law is two-fold - transparency and risk control. Regulators say that these two parts are missing from OTC markets. Product and process standardization will reduce risk through well-defined processes and documentation. This will not only help market participant assess their market and counterparty risk, but also allow regulators to gain visibility into the impact this market has on systematic risk.

The Act requires the central clearing of all swaps that the CFTC or SEC has determined as can be standardized. All swaps that are subject to this clearing requirement shall be traded on a board of trade or a swap execution facility (SEF), unless no entity accepts the swap for trading. While most of these swaps, predominantly Interest Rate Swaps and Credit Default Swaps, are currently traded bilaterally dealer-to-dealer, the move is to standardize and centralize these wherever possible. Beyond standardization and automation, one of the risk control mechanisms is that dealers and swap participants must post capital and margin in line with their trading volume and exposure. This will impose initial and variation collateral requirements for all major participants, and additional stringent capital requirements.

Technology will enable the creation of repeatable processes, scalable platforms, and a nimble organization that can respond to client needs

At present, these products are processed manually throughout the transaction and event lifecycle.. However, the mandate has been given to automate the process: OTC products that can be standardized must be traded on a Swap Execution Facility (SEF), cleared through a Central Counterparty (CCP), and reported to a Swap Data repository (SDR). The impact of this more automated trading environment will be lower margins for dealers, higher volumes/more liquidity, higher clearing and trading costs due to more stringent collateral requirements.

New Market Structure

Presently, it is estimated that less than 10% of Interest Rate Swaps and Credit Default Swaps are traded fully electronically. The lack of automated trading is the core reason for manual post-trade processing for OTC Derivatives. However, industry analysts estimate approximately 75% of Interest Rate Swaps and Credit Default Swaps could be traded and cleared electronically, over the next 10 years. The shift to fully electronic trading and processing of these OTC products will have key implications for trading, clearing, risk management, and trade reporting, and, therefore, have deep impact on front-, mid- and back-office operations.

Central automated trading and clearing, pre- and post-trade transparency and capital requirements will force firms to adapt quickly to the following needs:

- Connect to the SEFs, CCPs, and SDRs
- Switch from dealer-to-dealer bilateral trading to multi-lateral trading, with inclusion of the buy-side and more dealer-to-client trading
- Handle each of the specific CCP requirements like new risk methodologies, and new collateral, margin and capital requirements

- Adapt to the new reporting and record keeping requirements such as:
  - real-time reporting within 15 minutes of an execution to SDR,
  - full audit trail throughout the trading lifecycle (communications, execution information, post-execution novations, amendments, and other swap lifecycle events).
  - New confirmation requirements due to new swaps or change in contract terms

A good amount of effort is required to build this infrastructure; some will be built on existing entities while others will be brand new entities. SEFs are new entities, and the list of companies proposing to be SEFs is growing rapidly. The estimate is that between 40 and 100 entities that will declare themselves as SEFs. However, this may be reduced over time as SEFs fail to achieve enough liquidity. In recent years, existing CCPs enabled dealer-to-dealer clearing, they are now getting ready for, or have recently introduced, dealer-to-client clearing. The other key initiatives on the CCP side with direct impact on their clearing members include reconciling daily to support daily clearing cycle, cross-product-margining (requires regulatory approval), and intraday novations.

Aside from the infrastructure/processing requirements imposed on firms, perhaps the greatest impact on this market will be the increased trading costs of these instruments. It will be more expensive to operate in the OTC market because firms will have to put up more collateral upfront. Further, there will be increased collateral fragmentation due to increased number of CCPs, and the clearing costs will increase. This will have a significant impact on collateral management - pricing/valuations of trades, validation of risk models, collateral valuations, netting and margining engines, reconciliation of all positions/activity, margin disagreements, and new or changed margin methodologies.

The path to automated OTC Trade Process Automation is unattainable without electronic trading platforms, and the mandate from regulators has been given for this automation to occur

Impact on OTC Processing

While processes have to be re-engineered to comply with regulations, there is also a greater need to increase operational efficiency to offset the additional trading costs. This will compel companies to improve their operations efficiently to handle new flows, and be flexible enough to manage new products, calculation methods, among others. Increased operational efficiency of both trading and post-trading processes is one of the benefits of increased electronic trading. Electronic trading is an imperative for smooth and safe post-trading processes, as it provides the basis for the quick and correct capture and further processing of trade details, with no or very limited manual intervention. Ultimately, straight-through processing (STP) is enabled throughout the lifecycle of the products.

Much needed modernization around OTC processing has been put on hold due to the recent financial crisis. The path to automated OTC Trade Process Automation is unattainable without electronic trading platforms, and the mandate from regulators has been given for this automation to occur. You can minimize failed trades and lower exception management costs through more seamless trade allocations, affirmation, and confirmations. This results in lower financial and operational risk due to maximizing transactions that are confirmed on trade date (due to T+0 confirmations).

While regulators are still working on the details of the new regulatory framework, early adopters are not waiting for the final regulation and are moving onto electronic trading, pre- and post-trade connectivity, and facilitating trading relationships. The business impact will be felt throughout front-, mid- and back-office operations. Flexible IT strategies and system/process consolidation will win over product-based silos. Solutions that can fit into the existing architecture of the enterprise and expand/adapt over time are needed. An event-driven

architecture will bring many of these components together into a single framework. New processes/systems will make these OTC product types more integrated than ever before throughout these firms' businesses and technical architecture. Technology will enable the creation of repeatable processes, scalable platforms, and a nimble organization that can respond to client needs.

Challenges involved in reforming OTC Operations

To handle the higher volume and complexity, firms must re-engineer and look at current architecture for listed derivatives, and see how much of that current architecture can support these new instruments. Straight-through-processing for OTC derivatives has always been difficult due to the complexity of the instruments and lack of standardization for data and messaging. However, the new regulations will be the push that firms need to move towards STP. Once an instrument becomes commoditized there is a great potential for automation. The three core challenges to reform OTC operations and achieve greater automation are:

Data

The companies that rationalize their data can respond quicker to real-time reporting and intraday valuations, and include these into risk management calculations. Well-managed enterprise data facilitates efficient risk management across assets and geography, and also enables efficient use of collateral.

However, the problem remains the same as it has always been: Data and messaging formats are not standardized. With the mandate from regulators, the aggregation of OTC derivative prices and valuations will facilitate the adoption of data and messaging standards and also reduce the prevalence of spreadsheets used significantly for pricing.

Fortunately, XML and web services are ideal mechanisms for integrations between entities and within a firm. XML and web services can drive an event-driven architecture and are independent of platform or language. FIX, FIXml, and FPML have been growing in acceptance in different parts of the trade lifecycle. Look for faster acceptance around these protocols, and around ISDA standards for Master Agreements, as firms must choose how to integrate, and these industry standards are natural mechanisms to do it. ISDA Master Agreement standards are already widely accepted for liquid OTC instruments.

OTC Trade Process Automation (TPA)

Lack of automated trading is the main reason why post-trade processing for OTC Derivatives is today manual intensive. The total costs for processing "standard", liquid OTC Derivatives can be 5-15 times more expensive than fixed income products. Additionally, confirmation solutions lack connectivity to both risk management and collateral management platforms.

The core needs are for real-time, efficient and accurate monitoring of exposures, and the timely movement of collateral

The goal of an ideal solution would be to improve operational efficiency, keep pace with growing volumes, reduce costly exceptions, and improve client service. All of this while allowing for new OTC derivative products. The ideal solution would include trade capture, affirmations/confirmations, trade storage, accounting information, reconciliation, and close connections to collateral management. Automated processing would receive and handle events electronically with an exception management piece that would include humans in the workflow, so items can be intelligently routed throughout the enterprise as well as externally.

According to ISDA, the following constitute events in the lifecycle: new trades, confirmable amendments, partial and full terminations, increases/decreases, and novations. Processing steps lie within three functional groups:

- Front-office : trade negotiation, execution, capture
- Mid-office : confirmation/affirmation, risk management

- Back-office: pricing and valuation, settlement, collateral management, and accounting

Same as was done for equities, firms that can fully modularize architecture/processes can envision Trade Process Automation for OTC. An end-to-end solution may be wished for, but point solutions that can fit into existing architecture, expand/adapt over time, and better integrate with other enterprise systems will fit the bill. The key enterprise systems to integrate to are risk management and collateral management systems. The rise of CCPs will force some of this integration to satisfy each of their associated requirements.

Collateral Management

Collateral management has become important to every market participant, and promises to be a big area where re-engineering is necessary in order to optimize liquidity, increase efficiency and comply with regulations. As with Trade Process Automation (TPA), collateral management improvements will require the above mentioned data rationalization, and also well-defined processes.

The core needs are for real-time, efficient and accurate monitoring of exposures, and the timely movement of collateral. These necessary improvements in efficiency will not only impact operational costs, but add significantly to opportunity costs and trading profits. Firms need to take into account the costs of a trade. Firms will increasingly see the need to optimize their collateral usage through factors like collateralizing exposures across market segments and wide range of counterparties, and cross margining across listed and OTC Derivatives (if allowed by regulators and CCPs). CCP-specific factors like the types of collateral CCPs will accept and how CCPs deal with excess margin must also be factored into the equation.

Collateral management is a daily process; and, complex and risky if performed manually. CCPs will be a major milestone towards automating collateral management as they will have real-time pricing data and will handle the matching of exposures, which are then netted. However, they also bring additional processing requirements that must be satisfied. To optimize the use of collateral and consequently the capital, both, benefits and challenges must be integrated into collateral management solutions.

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Gary has designed, built and sold solutions in the Financial Services Industry for over 13 years focusing primarily on Middle and Back Office Process improvements. His experience includes consulting and selling best-practice solutions Trade Processing Management, Cash Management, and Reconciliation Utilities for major investment banks, investment managers, hedge funds and hedge fund administrators.

Algorithmic Trading: An Asian Perspective

Algorithmic trading was once considered a radical proposition; one that was not applicable in a trading environment in a meaningful manner. Today, algorithmic (Algo) trading has come a long way with buy-side firms and sell-side proprietary desks equipping themselves with algorithmic trading capabilities. Traders are gaining in skills and familiarity with algorithms by trusting and depending on them to execute trades using complex trading strategies. Algorithms have become a necessity because of the changing market structure and market trades. While in the USA, market trades performed algorithmically account for 60% of the total traded volumes, the adoption in Asia is much lower.

Why is there a lag in adoption in Asia

As demonstrated below in the graph (fig1), Asian markets are laggards compared with the advanced markets in adopting algorithmic trading techniques and technology. The reasons are many - challenges related to the functionality and the technology itself.

When the world over is chasing millisecond and nanosecond speeds, Asian market infrastructures remain sub-standard and limited to a matching engine latency of 'seconds'

Functional challenges

The functional challenges like market microstructure issues such as liquidity, bid-ask spread and regulations such as exchange approval for algos are stifling the algo adoption in Asia.

Market Liquidity

The absence of sufficient liquidity in several exchanges in Asia-Pacific is a major barrier to electronic trading. Even among the larger exchanges, liquidity is often limited to some of the leading stocks, and as a result it is impossible for algo trading to be effective. As can be seen from the graph below, bid-ask spreads are also quite wide which makes algo trading difficult.

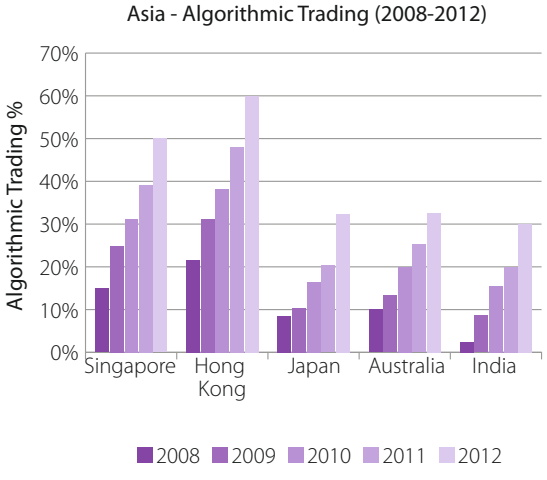
Regulations

Unlike the USA and Europe, the Asian markets are not regulated by 'best execution' rules for trading, while liquidity is the domain of the national exchanges.

Figure 1: Algo trading Adoption in Asia

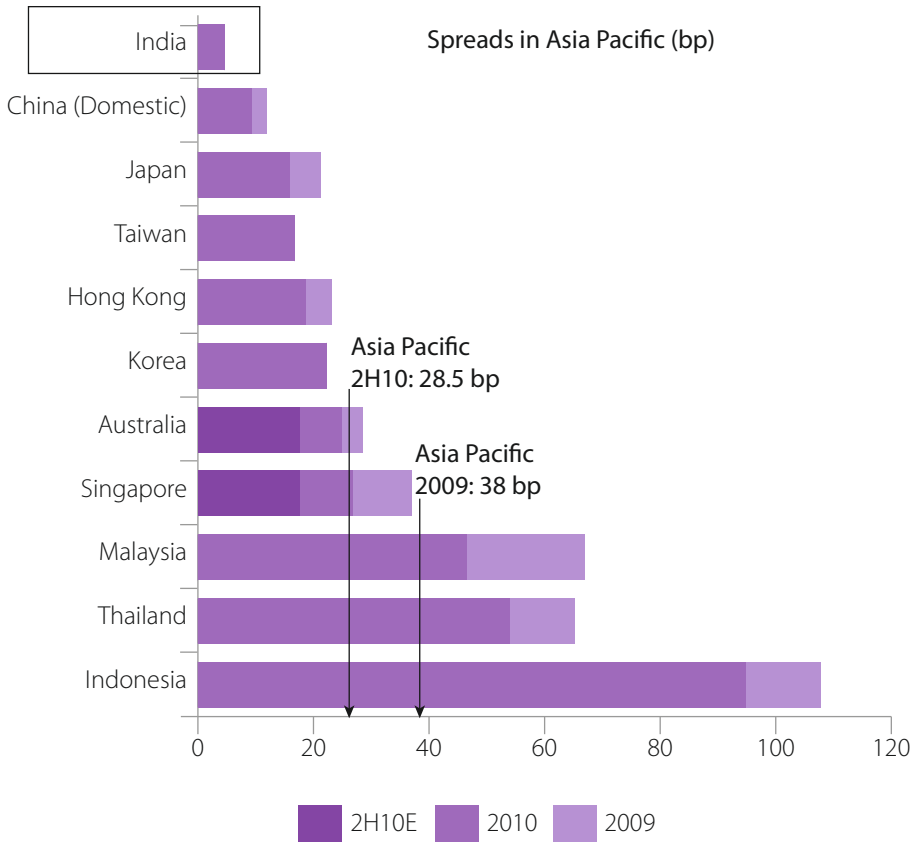
	United States			Europe			Asia		
	2005	2010	2015P	2005	2010	2015P	2005	2010	2015P
High-frequency trading	8	50-65	55-65	4	25-45	55-65	2	10-15	18-20
Algorithms	25	35	55	15	24	35	8	18	31
Direct market access	18	35	55	12	21	36	7	16	28
Smart order routing	9	19	25	6	14	20	3	9	16
Off-exchange (alternative trading system, crossing network, dark pool)	4	10	16	2	7	14	1	5	12

Source: Industry Sources, Tower group estimates



Source: Celent estimates

Figure 2: Bid–Ask spreads in Asia



Source: Credit Suisse

With retail participants playing a significant role in Asian markets, regulators want to ensure a level playing field for all. In many of these markets, the usage of algos has to be approved by the exchanges, while short selling is frowned at. Further, to compound this, many participants are not comfortable with sharing their algo logic with the exchanges.

A good number of markets impose taxes such as the Security Transaction Tax (STT) and stamp duty. This reduces the yields on arbitrage/market-making trades, making algo trading less attractive.

Technological challenges

Technological Challenges have the biggest impact on algorithmic trading systems; some of which are:

Poor Market Infrastructure

When the world over is chasing millisecond and nanosecond speeds, Asian market infrastructures remain sub-standard and limited to a matching engine latency of 'seconds'. Support infrastructures such as the network or media are also not very reliable. Also, many exchanges, because of trade capacity constraints, have limits on the order throughputs, which the algo applications need to factor in while trading.

Managing and Processing the Growth of Market Data

Investment firms are expanding the scope of their business lines, with new financial instruments being launched at regular intervals. This has increased the amount of market data that needs to be managed and processed regularly. Algo trading platforms also require historical tick-by-tick data for generating orders and benchmarking performance of algos. This requirement demands systems to have in-memory databases, and the need for managing and processing of large amounts of market data in real-time; large investments that are required by the Asian players, if they have to benefit from algo trading.

Trading desks have to dig into terabytes of information before generating a trade. Algorithms help address these concerns as they can monitor quotes and orders across multiple execution venues in multiple asset classes and work on their interrelationships

Access to Skills and Resources

Accessing the resources and people with the right skill set is also a constraint. Algorithmic trading platforms require people who have good programming skills, and the capability to use high-end analytics tools, alongside in-depth

knowledge of capital markets and financial engineering. Unfortunately, the right combination of resources having the required skill set is far and few.

The quest for speed—and Smart Trading

Large sell-side proprietary trading desks and buy-side firms are depending heavily on algorithms for faster trade executions in an environment of narrowing bid-offer spreads, fragmented markets, and the lack of large liquidity pools. The easing out of information asymmetry and availability of real-time quality market data has created an environment of information overload. Speed being the most significant driver for algorithmic trading, the other factors are:

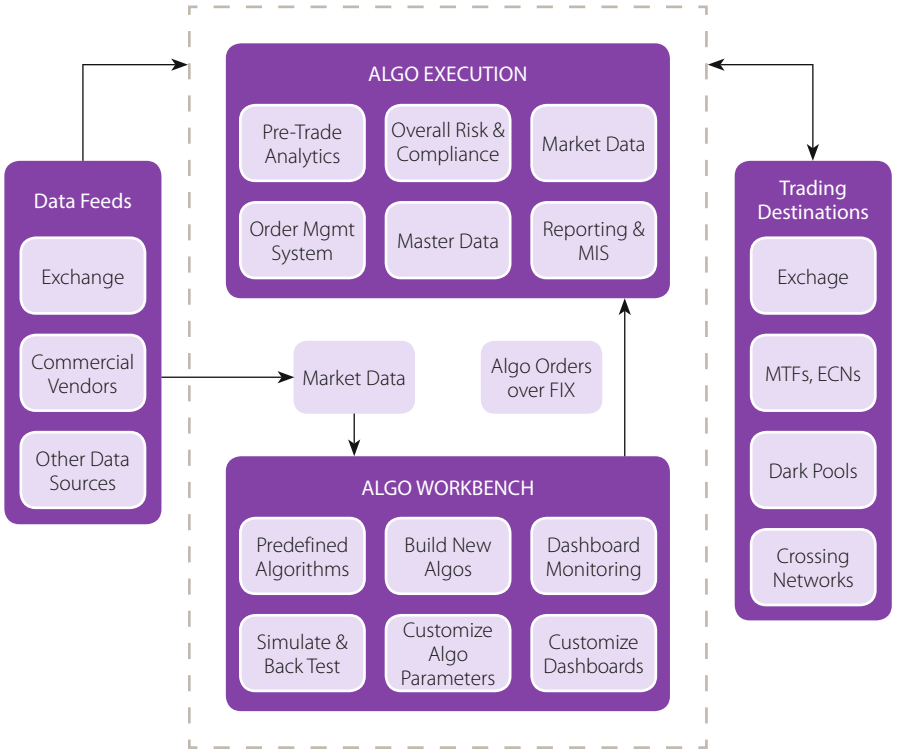
- Improving execution speed/price
- Additional control over execution
- Enabling new trading strategies
- Smart order routing, and
- Reducing trade commissions

At present, trading desks have to dig into terabytes of information before generating a trade. Algorithms help address these concerns as they can monitor quotes and orders across multiple execution venues in multiple asset classes and work on their interrelationships. Regulatory changes such as with MiFID in Europe, have also favored the adoption of algo trading by traders.

Algorithmic Trading Architecture – For better execution and informed decision making

As the securities markets have become more competitive, investors have started to turn to algo trading to achieve better execution costs. However, the utilization of algo trading alone does not guarantee better results. Traders need to become more proactive to ensure that the underlying strategy is consistent with their investment objectives. Prior to the selection of the strategy, traders first need to perform pre-trade analysis to assess the suitability of the order and/or trade for algo trading, since not all orders are appropriately handled via algorithms.

Figure 3: Algorithmic Trading- Business Architecture



Situational algorithms are more sophisticated, and are a recent evolution. They seek profit from changes in data, information, and events and generate Alpha

If algorithmic execution is deemed acceptable for the order, traders subsequently need to address macro and micro-level issues. The macro level decisions include specification of desired benchmark costs, and implementation goals (e.g., aggressive or passive executions). The latter, however, requires in-depth cost analysis to understand the complete consequences of a trade decision made.

Micro-level decisions include specification of any desired deviation rules, such as how the algorithm should deviate from the optimally prescribed strategy based upon changing stock prices, market movement, and/or changes in index or sector values, and as well as changing market conditions such as volume profiles and volatility. Micro-level decisions also include specification of order submission rules such as market or limit order, display size, wait period for new submissions, order revisions, modifications, and/or cancellations.

A typical algorithmic trading business architecture is as depicted in figure 3.

Types of Algos

There are two main types of algorithms that can be used for trading, namely, execution and situational. Execution algorithms were developed to minimize the market impact of large orders and therefore reduce the trading costs, and are used mainly by institutional investors. Some of the common execution algorithms are,

- VWAP
- TWAP
- Percentage of Volume(POV)
- Iceberg

Situational algorithms are more sophisticated, and are a recent evolution. They seek profit from changes in data, information, and events and generate Alpha. In contrast to an algorithm that executes a pre-existing order, a situational algorithm will create orders from a computer-generated strategy as well as execute the orders. Situational algorithms are used by traders of proprietary books. Some common situational algos are:

- Pairs Trading
- Cash-Futures Arbitrage
- Delta hedging

Trends in Algorithmic Trading

- At present, execution algorithms such as VWAP are extremely popular. However, as markets mature, implementation shortfall and liquidity seeking algos will gain in popularity.
- Algorithmic trading, though used more in the equity markets, will spread to other asset classes such as Forex and commodities

Algorithmic trading allows firms to trade stealthily and reduce explicit and implicit trading costs by offering lower trade commissions and reducing impact costs

- Cross-asset trading strategies are witnessing increasing growth. An example of this trend is a strategy that uses VWAP techniques for historic volume-based slicing, but simultaneously hedges each slice with an FX position if the instrument is in a foreign currency.
- Due to the intense competition among participants to offer new algorithms, there will be a huge demand for algorithmic workbenches based on complex event processing, which will allow users to create/modify algos, back-test and deploy.

In a nutshell…

The major drivers for the adoption of algo trading include the ability to focus on value-added activities and gain better control over the trading process and costs. Algorithmic trading allows firms to trade stealthily and reduce explicit and implicit trading costs by offering lower trade commissions and reducing impact costs.

Even in Asia, global bulge bracket brokers and asset managers are driving the emergence of alternate trading venues and dark pools. Mergers & Acquisitions in the exchange space, with groups such as NYSE Euronext, NASDAQ OMX forming partnerships with local exchanges, is leading to an improvement in the market infrastructure. Local brokerages will also step up their investments in technology to meet the competition from global brokerages, leading to the greater adoption of algorithmic trading.

Shekar Hegde
Head, Pre-Sales
TCS BaNCS Securities Trading

IT and Efficiency in Claims Processing

Claims processing addresses the singular, common goal of any insurance organization, which is: creating efficient work processes to reduce cost and improve efficiency while maintaining optimum service delivery.

Core philosophies and strategies form the basis of claims processing. Processes are the primary driver of claims performance while technology and organizations are the enablers. By ensuring that the right amount is paid at the right time, these processes optimize claims outcomes; by improving processing and operational efficiency, they minimize costs and manage the accuracy of reserves, while meeting the needs of customers and agents.

A successful insurer, typically, has a clear claims vision that provides the foundation upon which processes and technology are applied. It looks at the advancements in technology and how it can accordingly address pain points in claims processing but, beyond that, it address two key areas that have attracted much attention in the recent past because of technological advancements - fraud prevention and customer experience. The main challenges faced by claims organizations are:

- Maintenance of service quality throughout the market cycle
- Pro-active claims management
- Attraction and retention of talent
- Accurate assessment
- Process enablement with the right technology
- Fraud control

The industry is moving towards three significant trends, viz. centralization, to gain consistency and reduce costs; systems enhancements, to enable processes; and, the use of data analytics to improve segmentation and manage processes

To address the above challenges and to compete with changing trends, it is important that investments are made on the right technology. The current state of technology in organizations is as a result of:

- Legacy systems having roots in claim financials
- Aging systems that are expensive to maintain
- Shrinking availability of knowledgeable resources
- Business rules hidden deep in the internal code
- Limited investments in claims technology on a historical basis

To meet the strategic, operational and financial objectives, the claims organization has to navigate through a difficult course. The industry is moving towards three significant trends, viz. centralization, to gain consistency and reduce costs; systems enhancements, to enable processes; and, the use of data analytics to improve segmentation and manage processes. Centralization is a key criterion that improves efficiency, standardization of processes, economies of scale, resource optimization and change management.

In the past, insurers focused on adding capabilities to existing systems, but today organizations are increasingly investing in robust technologies. An in-house system was perceived to reduce costs but, in the long run, such an approach has proven to be more expensive from the perspective of business growth. With an ever-changing regulatory environment, the need for a robust, flexible and scalable system has become mandatory today. Some of the main disadvantages of enhancing an existing system in-house are:

- Base legacy system
- Batch interfaces to vendors
- Embedded business rules – deep in the software code
- Challenging document management
- Slower access of information to agents and customers through portals

- Difficulty in vendor integration

With systems replacement, some of the advantages accrued are:

- Excellent workflow management
- Self-service portals
- Enhanced data capture and reporting
- Virtual claims file
- Business rule engines, and
- Smooth vendor integration

There is an increasing tension between wanting to create the most efficient claims process and delivering the best customer experience

Impact of technology on customer satisfaction and business growth

- Improving claims processing to minimize costs and increase efficiency to deliver a better customer experience
- Balancing automation with manual handling – choosing the right areas to automate
- Managing claims overload and enabling rapid response in times of crisis
- Streamlining claims processes – tips, tools and methods to reduce the number of touch points
- Effective change management: How to ensure smooth and successful transition to new processing systems
- Detecting and investigating fraudulent claims
- Maintaining high quality of work while improving the customer experience

Quality of customer service is a clear differentiator in a price aggressive market

Though new claims management systems are not only able to automate routine tasks to improve efficiency of processes and minimize errors, they also come with the ability to identify fraud by analyzing information (data mining) and involving customers and intermediaries in the claims process through the online medium aka web portals. Quality of customer service is a clear differentiator in a price aggressive market, with its underlying risks. For this reason, investments in information systems are key from a claims perspective, where customers can measure service response, while they also begin to appreciate tools that offer effective alternatives in treating large volumes of claims in the case of natural disasters, or in the end-to-end monitoring of process controls from start to finish, clearly serving as a differentiator in terms of the service being offered.

There is an increasing tension between wanting to create the most efficient claims process and delivering the best customer experience. The trend is towards improving customer service but doing this may not shorten claims cycles. What is important, instead, is to:

- Examine the role of claims processing amidst the overall business objectives
- Determine the true impact of claims processing on customer retention
- Find the right balance between minimizing costs and improving customer service
- Utilize business information to merge the provision of good customer service and increase efficiency

Any organization that conducts a study to understand the aforementioned criteria and develop appropriate business rules by expanding the 'rules of thumb' for routing/escalation rules, resulting in process automation, will yield a substantial improvement towards customer satisfaction and business growth.

Ricardo Arroyo

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T2S: The Transformation in European Post-trade Processing

Harmonization – the catch phrase of the European Union. Target2 Securities (T2S), initiated by the ECB, is another element in this phase of developing a single financial market in Europe.

Despite the introduction of a single currency in 16 countries, European post-trade processing services remains fragmented across national lines. In 2009, there were 59 Central Securities Depositories (CSDs) in the Euro- and Non-Euro zone, leading to gross inefficiencies in post-trade Securities Processing.

T2S, envisioned as a system that would usher in an era of seamless post-trade processing in Europe, is perceived as a significant milestone towards achieving a Single European Financial Market. T2S is expected to change post trade market structure in Europe through a series of services that would fundamentally change the interaction among various market participants.

This paper intends to provide an overview of the structural changes required by T2S as well as changes to operating models of market participants as a result of changes in the market structure.

T2S and its impact on market structure may be gauged by an in-depth understanding of the T2S core services and its operating model:

Settlement services to CSDs

T2S is expected to provide securities settlement services to CSDs rather than itself taking on the role of a CSD, thus performing the role of an industry utility owned by the Central Bank to which CSDs outsource their securities settlement function. Since all participating CSDs will outsource their securities settlement functionality to T2S, the distinction between cross-border and domestic trade within Europe will dissipate resulting in a single pan-European trade.

Local market CSDs will route all their trades to T2S for settlement (both domestic and cross-border). Counter-party trade to cross-border trade would also have been submitted to T2S through the CSD of the counterparty's market

Real-time settlement services guaranteed by the Central Bank

T2S intends to provide real-time delivery-versus payment (DvP) settlement for all securities circulating in Europe. Securities settlement will be possible through a market participant's security account with one or multiple CSDs, whereas cash settlement will be possible through dedicated accounts of market participants with the central bank. Market participants will have dedicated T2S cash accounts with the central bank that would be used for securities settlement and asset servicing only.

Direct Connectivity to Market Participants

Market participants will be able to connect and send transactions directly to the T2S platform for settlement. This direct connectivity would allow participants to rationalize their back-office activity and centralize securities settlement operations for all European securities.

Impact on market structure

Currently, when a cross-border trade is initiated, the following activities are set in motion:

- Investment manager routes the trade to a custodian for settlement
- Custodian routes the trade to the agent in the country of settlement
- Agent settles the trade through their account with the CSD in the local market and confirms settlement back to the custodian in the initiating country
- Custodian then confirms the settlement to the investment manager and makes entries for the settlement in the account of the investment manager with the custodian.

Post T2S, custodians in the initiating market will have the capability to settle cross-border trade without routing

the trade to the agent in the market of settlement:

- Custodian in the initiating market will route the cross-border trade to the local market CSD just as a domestic trade is managed
- Local market CSDs will route all their trades to T2S for settlement (both domestic and cross border). Counterparty trade to cross-border trade would also have been submitted to T2S through the CSD of the counterparty's market.

Two scenarios may emerge. In the first, local market CSDs might start providing asset servicing for the local market assets for external investors who do not have a relationship with the CSD. CSDs can leverage the asset servicing capability they have at present and extend it to additional services like tax services, proxy voting, among others

T2S matches both the trade instructions and confirms the settlement status to both CSDs, which, in turn communicate to the respective custodians. On settlement of the trade, T2S also settles both securities and cash obligations of both counterparties pertaining to the trade through dedicated T2S accounts.

One of the fundamental changes to the traditional operating model of custodians will be the way cross-border trade is handled operationally. Post advent of T2S, the difference between cross-border and domestic trade, for custodians, would be minimal. It will not be obligatory for custodians to establish relationships with agents in various European markets for security settlements. Custodians would not be required to follow different operational procedures with respect to cross-border trades and domestic market trades. Both these changes will simplify securities settlement procedures significantly.

The second significant change due to T2S is the impact of direct connectivity. Direct connectivity will enable institutional clients with high transaction volumes to route trades to T2S directly through local market CSDs. This model enables buy-side firms with high trading volumes to centralize securities settlement operations at a single location for the whole of Europe. It also removes the necessity for firms to have custodial relationship for trade settlement. This also represents a significant change from the current operating model.

Direct connectivity and obliteration of the need for local market agents will have a significant impact on the European custody business. However, settlements may be considered as only a piece of the giant custody jigsaw. T2S will have no impact on the other side of the custody puzzle, i.e., asset servicing. T2S will take care of only settlements and will have no impact on asset servicing. So, if the necessity for local agents and custodians stands eliminated from a settlements perspective, then the obvious question that needs to be addressed is: who will do the asset servicing?

Two scenarios may again emerge from this. In the first, local market CSDs might start providing asset servicing for the local market assets for external investors who do not have a relationship with the CSD. CSDs can leverage the asset servicing capability they have at present and extend it to additional services like tax services, proxy voting, among others.

Another scenario is the emergence of independent stand-alone asset servicing agents. Independent asset servicing agents will provide specialized corporate event processing and tax services for local market assets to external investors and custodians.

Independent asset servicing agents will provide specialized corporate event processing and tax services for local market assets to external investors and custodians

Those investing in external markets will have to either use independent asset servicers or local market CSDs for their asset servicing needs.

Impact of T2S on the global custody business

The market participant whose business model will be most impacted by the T2S

changes is the global custodian. Global custodians will need to rethink their existing business models in Europe to align them with the new market structure created by T2S.

Let us examine the various options for global custodians to realign their business models in the post-T2S world.

Connectivity Through Local Custodians

Global custodians who believe that T2S will not impact their current business model significantly will most probably take this approach of connectivity to various local markets in Europe through their existing network of sub-custodians. A significant advantage of this approach is that there is no change to their current operating model and no additional investment or effort required.

Direct Connectivity to Local Market with Partial Support from Agents

Global custodians can connect directly to any local CSD participating in T2S and use local agents in various markets only for asset servicing. This approach enables global custodians to eliminate their dependence on sub-custodians for securities settlement and use the services of the local market agent only for asset servicing. This will, in turn, lead to a significant reduction in the cost of operations and enable global custodians to have better control over the settlement processes. Also, global custodians can centralize their settlement operations for entire Europe in the location of the connecting CSD.

Direct Connectivity to T2S with Partial Support from Agents

Global custodians can also leverage direct connectivity with T2S and use local market agents for asset servicing. Such an approach provides global custodians significant advantages such as faster transaction information flow, better liquidity management, and significant cost reduction.

Direct Connectivity to Local Market without Support of Agents

Global custodians can also connect to each of the national markets directly without depending on agents. This option enables global custodians to have control over both settlement and asset servicing, enabling complete control over the entire custody value chain.

This option is difficult to implement considering the fact that building full-service capabilities in each individual market is difficult to achieve and will require substantial investments. Large global custodians with high transaction volumes are most likely to adopt this option, though it might not be a good alternative for small custodians.

Impact of T2S on CSDs and sub-custodians

Settlement volumes processed by the CSDs will be a very important factor in deciding the survival of local market CSDs. Large ICSDs like Euroclear and Clearstream, which also have banking operations will leverage their existing infrastructure and, in all likelihood, offer custody services competing with local sub-custodians.

Survival of custodians not operating in multiple markets will be very difficult in the post-T2S environment. Options which exist for single country or small custodians is to either merge with a large multi-country custodian, or leverage opportunities arising out of T2S, such as specialist asset servicing providers. Leveraging T2S and their local client relationships, local custodians can start providing settlement services to local clients by investing in different European markets. T2S will accelerate consolidation among European custodians, leading to an environment with few multi-country custodians. Europe will increasingly be seen as a single market, and only service providers who can provide a wide range of services across Europe will survive and deliver results.

T2S is a significant change and like with any change, it brings along threats and opportunities to all market participants involved. Market participants who can adapt and realign their business models will emerge successful and strong. Though the challenges with respect to successful implementation remain, T2S will undoubtedly usher in a new era for the European custody business.

T M Sriram
Independent Contributor

Risk Accumulation

Perceptions, Challenges and Solutions

The prevailing fiscal crises, problems stemming from climate change, terrorism, and the rising number of natural catastrophes have made risk management an uncertain and tricky affair. In the endeavor to build larger portfolios, insurance companies are exposed to vulnerabilities of risk concentration and over exposure in both, urban as well as rural areas.

Accumulation refers to the risk that arises when a large number of individual risks are correlated (geographically or otherwise) such that a single event will affect many or all of these risks simultaneously. Figure 1 is an apt demonstration of the inter-connection, correlation and, subsequently, accumulation of risks across lines of business. Any major loss event, such as an earthquake, will impact multiple risks concentrated in a small area.

Inter-connected Risks across Lines

Any natural or man-made catastrophe, viz., terrorism, global warming, waste management (caused by floods) and epidemics (swine flu, bird flu), poses a major global risk for the insurance and reinsurance industry. A loss caused by any of the above, or any other large loss event, usually starts as a local phenomenon but has the potential to escalate into a global large loss event. 9/11 led to underwriters working on risk insurance programs related to terrorism, along with governmental support.

This does not suggest that the concept of terrorism cover did not exist earlier. Programs with varying degrees of government support did exist in many countries in response to their own unique situations. For example, Israel developed two programs: one in 1961 to cover property damage from terrorism, where the government compensates for such losses; another program in 1970 was set up to cover bodily injuries suffered in terrorist attacks, as well as to provide compensation to family members of the deceased. Similarly, the London market responded to threats from the Irish Republican Army by creating Pool Re in 1993 to provide insurers reinsurance on amounts in excess of their compulsory retentions of terrorism coverage.

Figure 1: Risk accumulation in the event of an earthquake

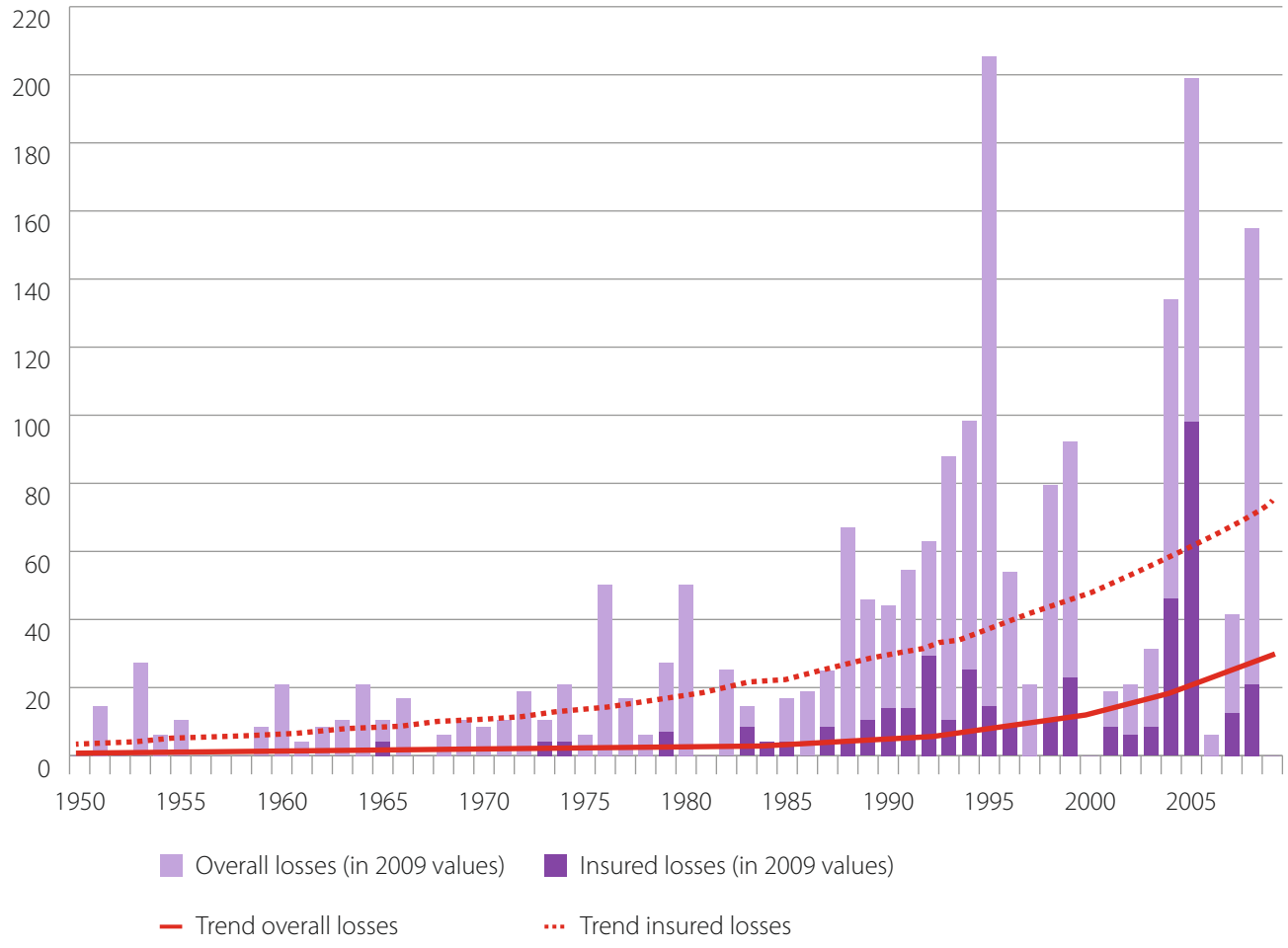
Irrespective of the cause or source of loss, insurers and reinsurers use various ways and means to monitor accumulation of risk across lines of business to manage their exposures and define underwriting guidelines to continuously assess the incremental impact from accumulation on their gross exposure.

Challenges in managing Risk Accumulation

Since the advent of retail in insurance followed by de-tariffication, the business dynamics have changed, resulting in manifold increase in exposure and risk accumulation. Therefore, an integrated approach towards precision analysis and management of exposures from accumulations has become the need of the hour.

Insurers and reinsurers have adopted methodologies and tools for identifying and mitigating the build-up of accumulated exposures in their portfolios. Insurers depend on various risk assessment models built to study and identify risk aggregation and accumulation.

Figure 2: Great Natural Disasters - 1950–2005 (Far exceeding 100 deaths and/or USD 100m in claims)



Source: © NatCatSERVICE, Geo Risks Research, Munich Re

While these analytical methodologies are quite effective and accurate in identifying areas of risk accumulation, predictive models are at best what we can refer to as "educated guesses". Moreover, existing measures are still largely reactionary rather than preventive in nature. Additionally, they require large investments and highly skilled research teams to interpret and translate outcomes into practicable solutions for implementation. Even today, small to medium scale insurers and reinsurers find it difficult to invest in this area due to high initial investments, and although access to such data is provided by certain niche agencies, it comes at a significant cost. Hence, such methods and processes lack the necessary penetration and have few takers.

In spite of these hurdles, insurers need to avoid and manage risk aggregation to minimize losses and control loss exposure. Wherever applicable, the acceptance decisions should be based on the accumulated sum insured or the accumulated probable maximum loss (PML) juxtaposed with appraising it at the individual risk level. This will cushion insurers from maintaining large retentions on correlated risks.

In the following sections, we share some insights into aggregation of risks, challenges, and their correlation. We shall also discuss some of the available solutions that can be adopted by insurers and reinsurers to mitigate and manage such accumulations.

Measuring and Managing Risk Accumulations

The statistical fundamental underlying the law of large numbers suggests that when the number of similar, independent exposure units increases, then relative accuracy of predictions about future outcomes based on those exposure units also increases. This spurs insurance companies to build the largest possible portfolio. In doing so, insurers expose themselves to direct or indirect accumulation of risks. In the event of a natural catastrophe or a terrorist attack the cost of claims for the insurer would be exceptionally high due to inter-connectedness or correlation of the risk portfolio across lines and products.

Today, insurers and reinsurers, alongside conventional methods, use statistical models to measure and manage loss severity exposure from both foreign and domestic catastrophes. More specifically, in terms of managing exposures, insurers can use loss severity models to:

- Identify multi-line concentrations within a radius or geographic region;
- Quantify the greatest potential loss to the insurers' portfolio (from policies with terrorism coverage);
- Assist in pricing decisions (advisory organizations also rely on modeling to determine loss cost loads);
- Evaluate new applications for insurance against existing exposure in the same area;
- Evaluate reinsurance coverage; and,
- Assist in underwriting decisions.

Monitoring and managing risk accumulations requires detailed data, models, and an underwriting infrastructure that spans across lines of businesses and units that write policies in potentially exposed locations. The key to this is the ability to monitor accumulations across businesses and locations, and to intervene when aggregate limit boundaries are breached. Alternatively, insurers may simply abstain from additional underwriting commitments (or not renewing existing commitments upon expiry) or buy additional treaty or facultative reinsurance for peak exposures. The critical element lies in having the infrastructure to identify unintended accumulations across multiple business units and all lines of business. The risk concentration for natural catastrophes arises primarily from exposure to earthquakes, floods and windstorms. Property damage and business interruption accumulations are typically modeled by using sophisticated commercial modeling tools (RMS, AIR, EQECAT, etc.). It is important to have processes that help in effectively identifying peak property exposures through name and location clearance systems in order to allow for the identification of significant exposures to non-property lines of business at the same location.

However, there is a fundamental model risk involved as there are few models used by too many players in the market. It is also possible that model risks affect all relevant market players simultaneously.

Accumulation can take place at many levels and under various circumstances: – a few examples specific to life and non-life insurance are cited below:

Life Insurance

When individuals:

- Buy covers across products
- Buy covers on the same product across group companies
- Have their own personal insurance policies and are also covered by the same insurer under group schemes purchased by their employers

Non-life Insurance

- Insurer issues several commercial property policies in the same location
- Multiple commercial risks underwritten from same customer
- Multiple vessels and voyages in the same route
- Multiple 'all risk' policies for the same contractor

Reinsurers

- Acceptance of risks from multiple insurers in the same region
- Reinsurers' inherent dependency on insurers' underwriting effectiveness
- Absence of aggregate limits in treaties
- Hidden aggregations within portfolio
- Multiple risks accepted on facultative basis in the same location
- Cross exposure in treaties covering multiple lines (non-marine treaty)
- Non-proportional treaties covering catastrophic claims
- Inadequacy of retrocession cover

CRESTA Zones

Founded jointly by Swiss Re, Gerling-Konzern and Munich Re, CRESTA (Catastrophe Risk Evaluation and Standardizing Target Accumulations) aims at establishing a globally uniform system for the

Figure 3: Map sample of the CRESTA system. It shows individual zones in the Gulf of Mexico region; within a zone the insurance risk is considered to be equal.

accumulation of risk resulting from natural hazards like earthquakes, storms and floods. CRESTA was formulated as part of a commendable initiative by leading reinsurers. Based on empirical data and current observations on seismic activity, droughts, floods and storms, CRESTA identifies risk zones known as CRESTA Zones. CRESTA Zones form the basis for reinsurance negotiation, portfolio analysis, and risk rating and pricing.

CRESTA Zones are determined based on the possibility of natural disaster and commercial valuation of any particular region. Both these factors directly impact the AAL (average annual loss).

CRESTA is one of the biggest and accurate information resources for risk evaluation from an accumulation perspective; however, this information is not available freely. CRESTA zone information can either be bought directly from CRESTA or bundled with map systems.

Core insurance or analytical systems can access and use CRESTA information systems (zone codes, exposure data and mapping services) through ACORD compliant interface exchanges with CRESTA source systems, or by subscribing to various mapping services available in the market.

Key Benefits from Technology in the Identification and Management of Risk Accumulations

To manage accumulations at an enterprise level, an integrated approach is required. Exposure data from different lines of business and operating units must be combined to understand the magnitude of total accumulations, and processes must be linked so that day-to-day underwriting decisions are consistent with portfolio level objectives.

These systems use catastrophic and terrorism accumulation models to identify accumulations at the portfolio and manage these accumulations during the underwriting process. These highly sophisticated systems use geoscientific information systems such as high resolution geocoding and advanced financial modeling techniques. The processed data assist underwriters and risk managers to evaluate accumulations from multiple financial perspectives including gross exposure, net retention and reinsurance. Once accumulations have been identified, risk specific underwriting guidance is used to finalize acceptance, pricing and ceding decisions. In brief, the system should be able to support the following analytical and guidance functions:

- Automatically identify and track portfolio level accumulations
- Provide geocoding for property risk aggregation
- Provide precision on gross exposure, retention capacity and reinsurance cession
- Provide exposure analysis based on terrorism zones and proximity of risk to such zones
- Assess incremental impact of new risks on the gross and net exposure
- Automatic validation and flagging of risks exceeding thresholds
- Provide loss footprint for the development of scenario-based underwriting guidelines

Once the risk has been booked, tracking the accumulation, performing ceding calculations and accounting for transactions emerge as the next level of challenges. Impact of multiple endorsements on large risk policies are quite common and further complicate computations. Involvement of coinsurance and fronting among insurers also tend to skew the calculations due to the spiral effect.

Factors that add to the complexities of computation around risk accumulation are:

- Varying inception and end dates of risks
- Large risks are often insured with packaged covers (package policies) hence impact multiple lines
- Multiple policies within the accumulation can go for endorsement simultaneously
- Some risks can be declined or policies can get cancelled
- Risks not in the same location but in the proximity may require attachment

If the entire accumulation process has to be managed automatically with retrospective impacts and pro-rata adjustments, which are common, then the insurer must have a highly flexible and scalable IT platform, which automates these cyclical calculations to a large extent, at the same time allowing manual adjustments and overrides.

Today, integrated systems have the capability to analyze and provide instantaneous guidance to underwriters and risk managers with the data, which aids them in viewing the accumulation of risks in a particular location using sophisticated geo-coding and other techniques. But what happens if an accumulation is identified while the underwriter is reviewing a quotation? It is obvious that a loading of the rate will be done, but before the underwriter can actually

Figure 4: Operational impact of risk accumulation on underwriting validations

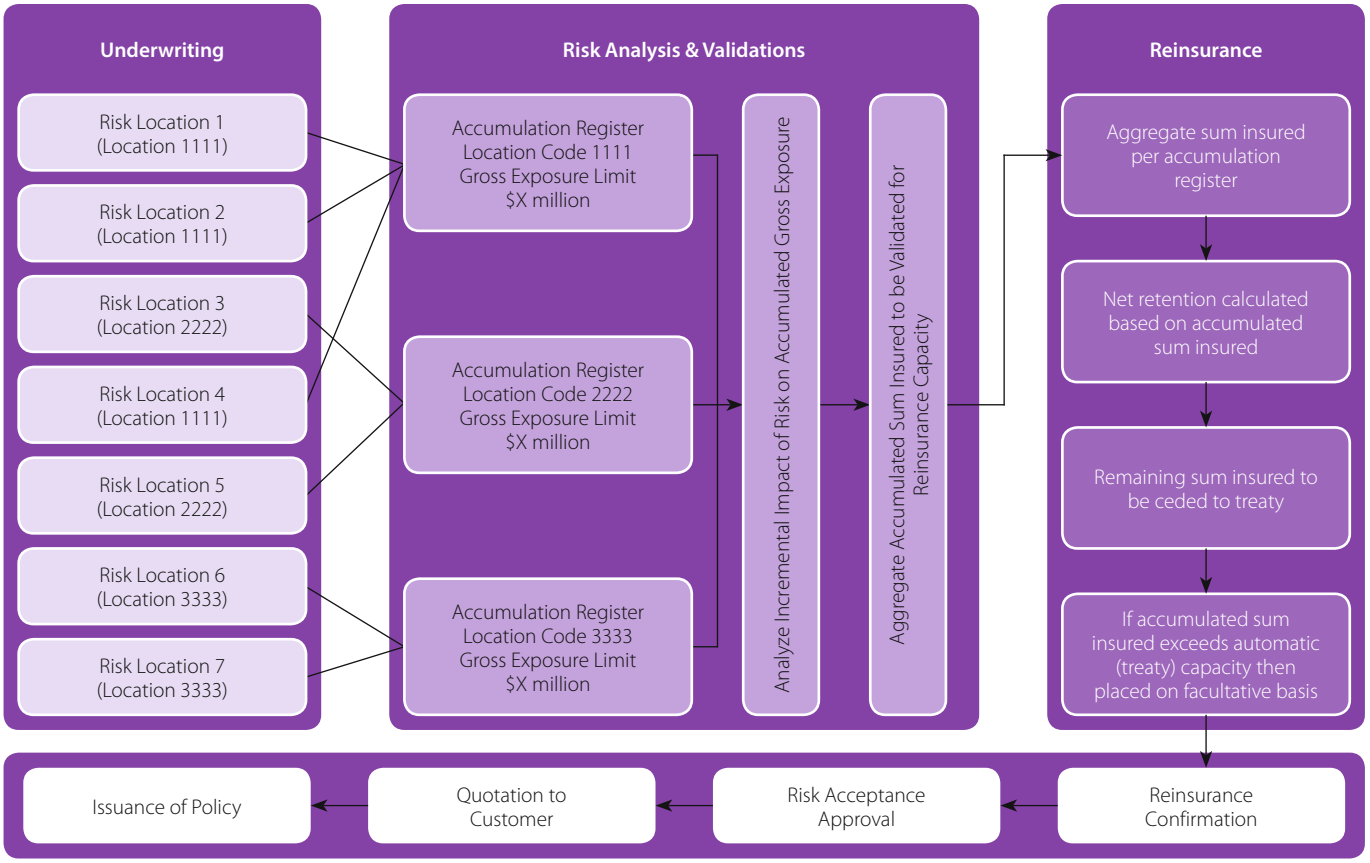
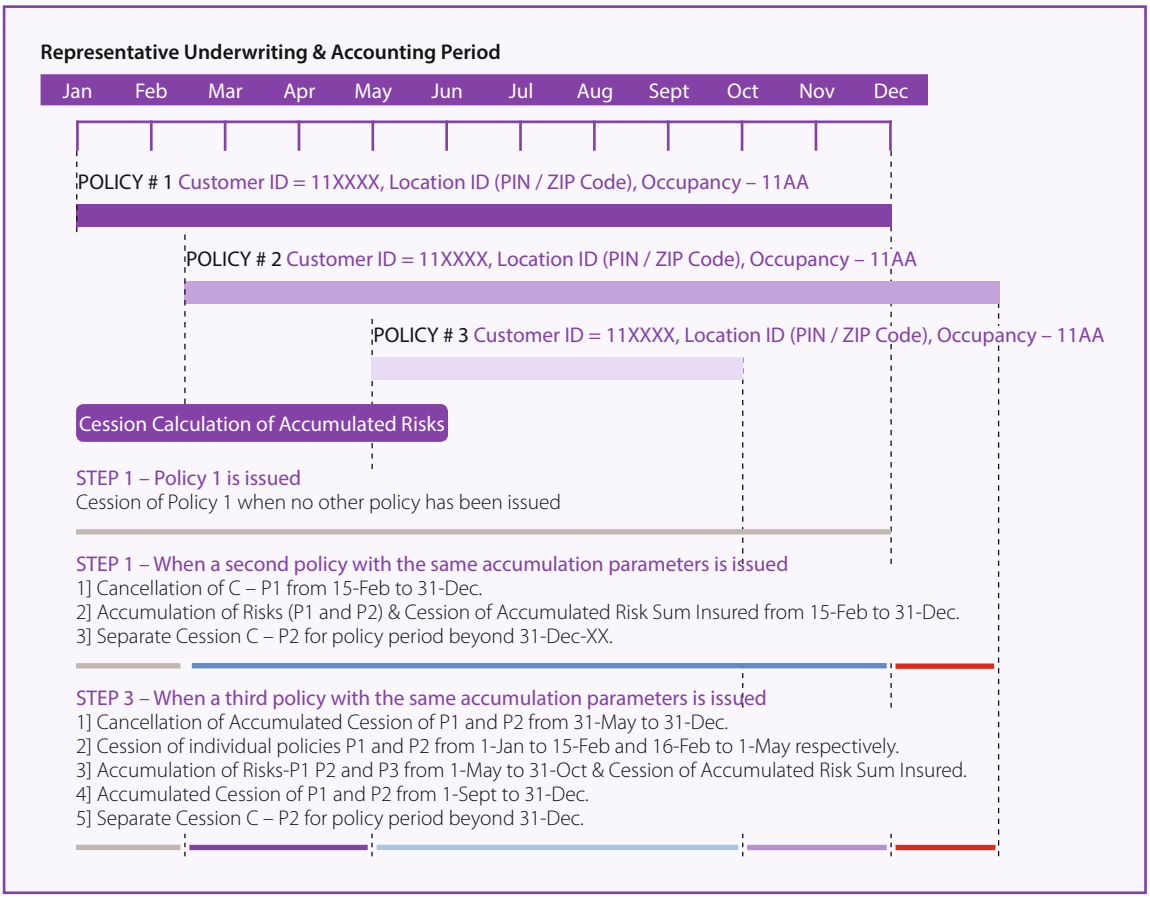


Figure 5: Impact of risk accumulation on retention and cession calculations on pro-rata basis



provide a quote, there are some important validations that need to be done:

- Whether the location-wise exposure limit allows acceptance
- Available reinsurance capacity on accumulated risk
- Requirement of facultative placement, if any
- If facultative placement is required, has that been confirmed with the reinsurer?

Once these validations are done and satisfactorily addressed the underwriter can go ahead and issue a quotation to the customer and await confirmation. This process is repetitive and gets complicated as more and more risks are added to the portfolio.

To take an example of property insurance, insurers decide on a parameter or a combination of parameters to analyze the accumulation of risks. Such parameter/s can be postal / PIN code, street name, block numbers and so on. Each insurance company chooses its own parameter/s. What is noteworthy here is that once such a parameter is established, they have to continuously keep a watch on how accumulation build up occurs at the parameter level. We can take an example where a location code (like PIN code) is used as a basis to study the accumulation of fire policies. Then for each PIN Code where the insurer operates (underwrites risks) the insurer has to set up what can be referred to as an Accumulation Register. Each policy having the same PIN Code will be accumulated under this register and with each additional risk, the incremental impact on its exposure needs to be tracked. Figure 5 explains a typical process used by insurers to track fire accumulations.

Integrated insurance solutions, whether off-the-shelf or homegrown, should be capable of handling the above cyclical

transaction and also allow the flexibility to perform complex calculations once the risks have been accumulated. The following section and Figure 5 explain the same, attempting a high level conceptualization of quite a complex risk accumulation process and its impact on accounting.

In a scenario where an insurer is underwriting four fire risks at the same location with a sum insured of USD 1 million each, and the maximum retention per risk at USD 2 million, we can see how creating an accumulation can actually help the insurers manage their exposure in case of such accumulations.

Case 1: The insurer does not have the means to track risk accumulation

In such cases, the insurer will underwrite each risk individually and end up calculating its retention at a risk level and not at an accumulation level. Hence, the insurer's retention across all four risks will be 100%, i.e., the entire USD 1 million will be retained. In such a case, the total exposure will be USD 4 million and in the case of a loss event, which is likely to impact all four risks, the liability of the insurer will be USD 4 million.

Case 2: The insurer uses risk accumulation techniques

The insurer creates an accumulation register at the location level and attaches all four risks to the same. The underwriter perceives the combination as a large risk profile and adjusts retention as if the gross insured sum of USD 4 million is from a single risk. It then computes the retention based on the maximum exposure limit of USD 2 million and hence reduces liability by half.

Risk accumulation is also an accepted term in automatic reinsurance the cession calculations will also be at the accumulation register level as opposed to the individual risk level.

Though pro-rata adjustment of gross, net retention and reinsurance placements is more accurate in a scenario where multiple property risks are being underwritten in the same underwriting or across multiple underwriting periods, insurers and reinsurers find it extremely difficult to administer, with risks originating and expiring at different intervals and having risks that are long tailed. This is true even with a fair amount of automation of such calculations as validation is in itself a humongous task. Hence, they do the same calculations as outlined in Figure 5 without considering the impact of time. Among the many insurers with whom we have interacted in the past years, most admit to the inability to streamline and automate this process of calculation and recalculation (with each incremental risk) due to inflexibility and other systemic constraints.

Conclusion

It can be concluded that the need of the hour for insurers and reinsurers is to have a real-time integrated view of exposure accumulations across multiple lines, allowing them to assess, accept and price risks with unprecedented precision. The industry, in partnership with technology players, should collaborate and innovate to gain access to accurate data and use technology to put in place more accurate underwriting and pricing mechanisms. This implies that concentrations of accumulation can be quickly identified and quantified, thus allowing the underwriter to take the steps that are required (reinsurance or retrocession, cession limits, limitations on liability, etc.).At the same time, the cost of the technology should be affordable even for new market entrants so that a larger market can benefit from these technical innovations. At the end of the day, the natural expectation is that insurance pays in times of trouble and for the financial stability of insurers, reinsurance gains paramount importance.

Siddhartha Banerjee

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Market Liquidity Risk – Impact on Security and Inter-bank Markets

Introduction

Market liquidity risk is the risk of being unable to liquidate a position in a timely manner at a reasonable price. In other words, market liquidity is defined as the cost of trading an asset relative to its fair value.

Market liquidity can be categorized into two types. The first is the liquidity in the inter-bank market, where liquidity is being traded among banks, while the second is the liquidity in the asset market, where assets are being traded among financial agents. These two types of liquidity are the main sources for any financial institution/bank to acquire funding liquidity from the markets and thereby explain the interactions between various liquidity types.

Generally speaking, market liquidity risk is the systematic, non-diversifiable component of liquidity risk. In other words, it suggests commonalities in liquidity risk across markets. The second implication of systemic risk is that it should be priced. It means that market liquidity risk has been typically regarded as a cost or premium, which affects the price of an asset.

Recent studies define market liquidity as the ability to trade an asset at short notice, at low cost, and with little impact on its price. Market liquidity should be judged on several factors, the most common of which would be the ability to trade. Market liquidity incorporates key elements of volume, time and transaction costs. Liquidity then may be defined by three dimensions which incorporate these elements: depth, breadth (or tightness) and resilience. Each of these dimensions ensure that any amount of assets can be sold anytime, within market hours, rapidly, and with minimum loss of value, and at competitive prices.

The 2007-08 market crisis caused by the sub-prime crisis led to an increase in interest rates in USA, real estate prices collapsed, the default rate in sub-prime mortgages went up significantly, leading to a downgrade of structured securities that originated from these sectors. As a consequence, special purpose vehicles (SPVs) which issued structured securities experienced significant difficulties

Figure 1: Recent regulatory responses to liquidity risk

Financial Service Authority (FSA)		
Oct 2009	PS 09/16	Strengthening liquidity standards
June 2009	CP09/14	Strengthening liquidity standards 3: Liquidity transitional measures
Apr 2009	CP09/13	Strengthening liquidity standards 2: Liquidity reporting
Mar 2009		The Turner review: A regulatory response to the global banking crisis
Dec 2008	CP08/22	Strengthening liquidity standards
Bank of International Settlement (BIS)		
May 2009		Principles for sound stress testing practices and supervision
Sep 2008		Principles for sound liquidity risk management and supervision
Feb 2008		Liquidity risk: Management and supervisory challenges
Feb 2000		Sound practices for managing liquidity in banking organizations
Australian Prudential Regulation Authority (APRA)		
Sep 2009		DP: APRA's prudential approach to ADI liquidity risk
Sep 2000		APS 210: Prudential standard liquidity
New Zealand		
June 2009	BS13	Liquidity policy

in raising funds in the money market as liquidity dried up in the system.

A major impact of the credit crunch was the contraction of liquidity in international money markets. As some banks and investment institutions encountered difficulties in raising short-term funding to support their trading and lending activities, counter-party risk heightened to the point of scaring away their business partners.

Market liquidity risk is the systematic, non-diversifiable component of liquidity risk. In other words, it suggests commonalities in liquidity risk across markets

Originally, Basel II neglected the issue of liquidity risk management in its endeavor to deliver an appropriate framework for regulatory oversight of banking capital adequacy, capital usage, and the efficient management of capital. The 2008 proposals from the Basel Committee failed to reinvigorate liquidity risk management. The pronouncements of the Basel Committee and national regulators reflect the acute awareness that previously ignored interdependencies that exist between risk types and the connectivity between trading centers globally, and that managing liquidity risk is fundamental to a sustainable recovery.

The following events reflect the collapse of market liquidity in securities markets. The US crisis, followed by the Russian default and the LTCM bankruptcy in 1998, the collapse of the FRN market in 1987, the junk bond crisis of 1990, the collapse of the Swedish commercial paper market also in 1990, and the difficulties of the ECU bond market in 1992.

Market liquidity should be judged on several factors, the most common of which would be the ability to trade

The immediate effect of the above crisis can be traced to debt securities markets, akin to a run on banks. In such a scenario, markets stop functioning resulting in illiquid securities or underlying significant price changes. This may lead to systemic risk in the financial system as a liquidity crunch affects investors, issuers and market makers. As more and more banks and financial institutions increasingly use securities markets for funding, trading and investment, the challenges faced tend to be more threatening in nature. Trading strategies and investments that yield high profits often invest in less liquid assets such as private equity, emerging markets or low capitalization stocks. In crash situations, those asset positions can more often than not be traded anywhere close to fair prices, because of scarce liquidity.

As some banks and investment institutions encountered difficulties in raising short-term funding to support their trading and lending activities, counter-party risk heightened to the point of scaring away their business partners

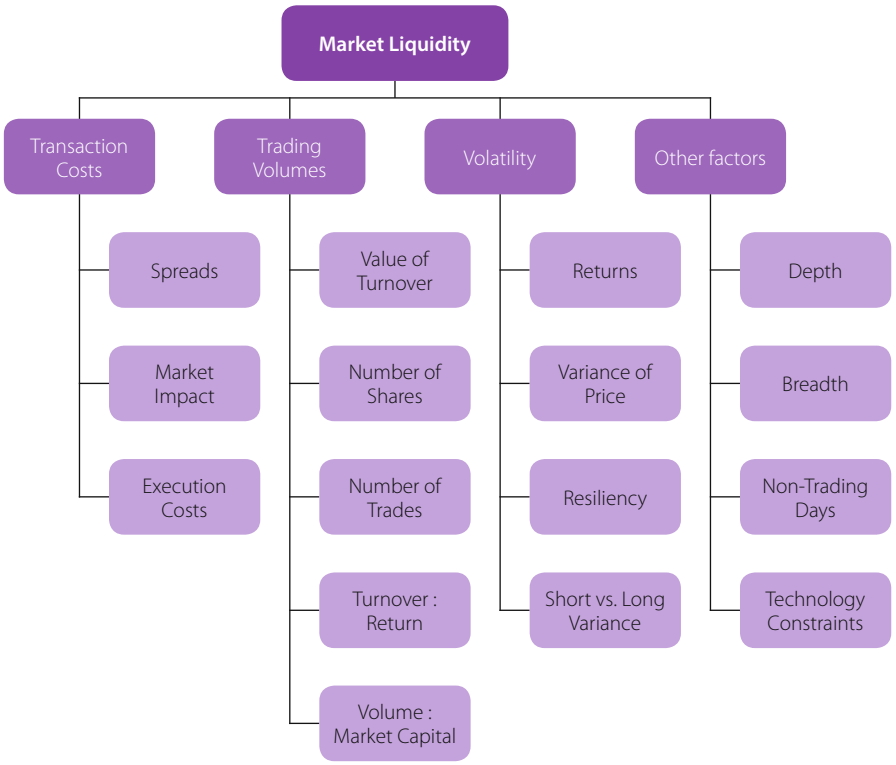
Just before the crises in USA and Russia, a large number of institutions and hedge funds invested heavily in Russia and other emerging markets. The contagion of the crisis across developed markets was mainly linked to the fact that the financing for these positions had been arranged in a leveraged manner in those markets (e.g., through series of margin investments, short sales, repos and derivative securities). Large number of investors tried to liquidate their positions in the backdrop of high leveraging leading to sharp price fluctuations and further widening of spreads. This, in turn, caused heavy losses for a significant number of large investors who had bought higher-risk and/or lower-liquidity assets such as junk bonds or mortgage-backed securities and off-the run treasuries. Such losses led to further margin calls, liquidation and hedging, putting further demands on liquidity.

Important factors that affect liquidity

Liquidity is affected by multiple factors prevailing in the market, key among them being resilience, depth and tightness.

- A market is deep when a large number of transactions can occur without affecting the price, or when a large amount of orders lie in the order-books of market-makers at a given time, i.e., the number of available buyers and sellers is large. In addition to large trades, which may drive pricing in a given direction, liquidity is needed to manage devious changes driven by smaller trades made in huge numbers, which can have a random effect on price.

Figure 2: Factors affecting market liquidity



- In a resilient market, price fluctuations from trades are quickly dissipated and imbalances in order flows quickly adjusted. Whenever banks overextend their leverage, they need to foresee and manage the risk of liquidity hurdles before an event completely stops trading activity, precipitating loss of confidence in the market, and consequent deterioration of market value.
- A tight market is one where transaction prices do not diverge from mid-market prices. In other words, tightness of a market indicates the availability of a supply of funds to match demand as well as the cost and time to execute a transaction. With global markets approaching real-time interconnectivity, liquidity pools may need to be managed in a way that enables early intervention to prevent disaster.

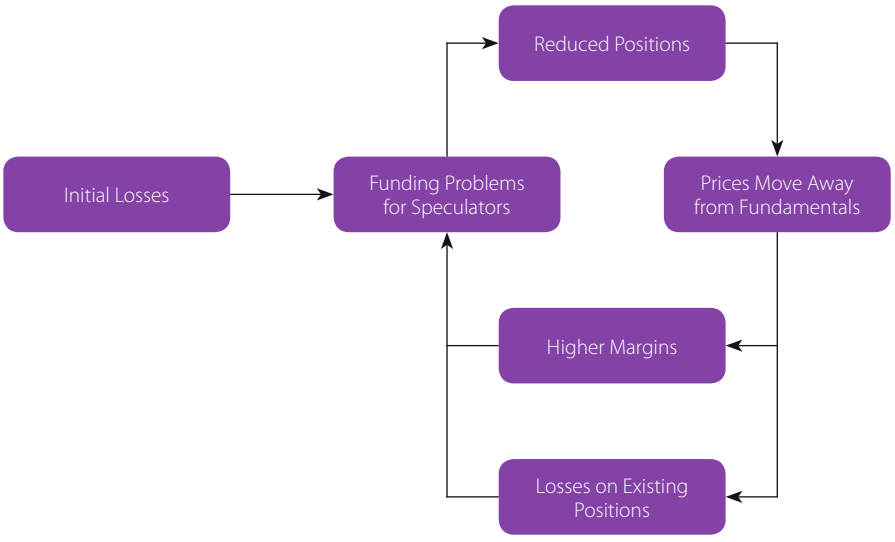
Dynamics of Liquidity Risk Management:

Market Resilience, Depth, Tightness

The transaction cost is measured by the bid-ask spread of securities' trading and the spread is a measure of the liquidity available at a given time.

The problem of the liquidity of financial instruments such as CDOs has been aggravated due to the fact that those instruments are traded on Over-The-Counter (OTC) markets and not in the organized exchanges

Figure 3: Loss spiral and the margin/haircut spiral



Source: Markus K. Brunnermeier, Lasse Heje Pedersen, The Review of Financial Studies/v 00 n 0 2008.

Liquidity Spirals

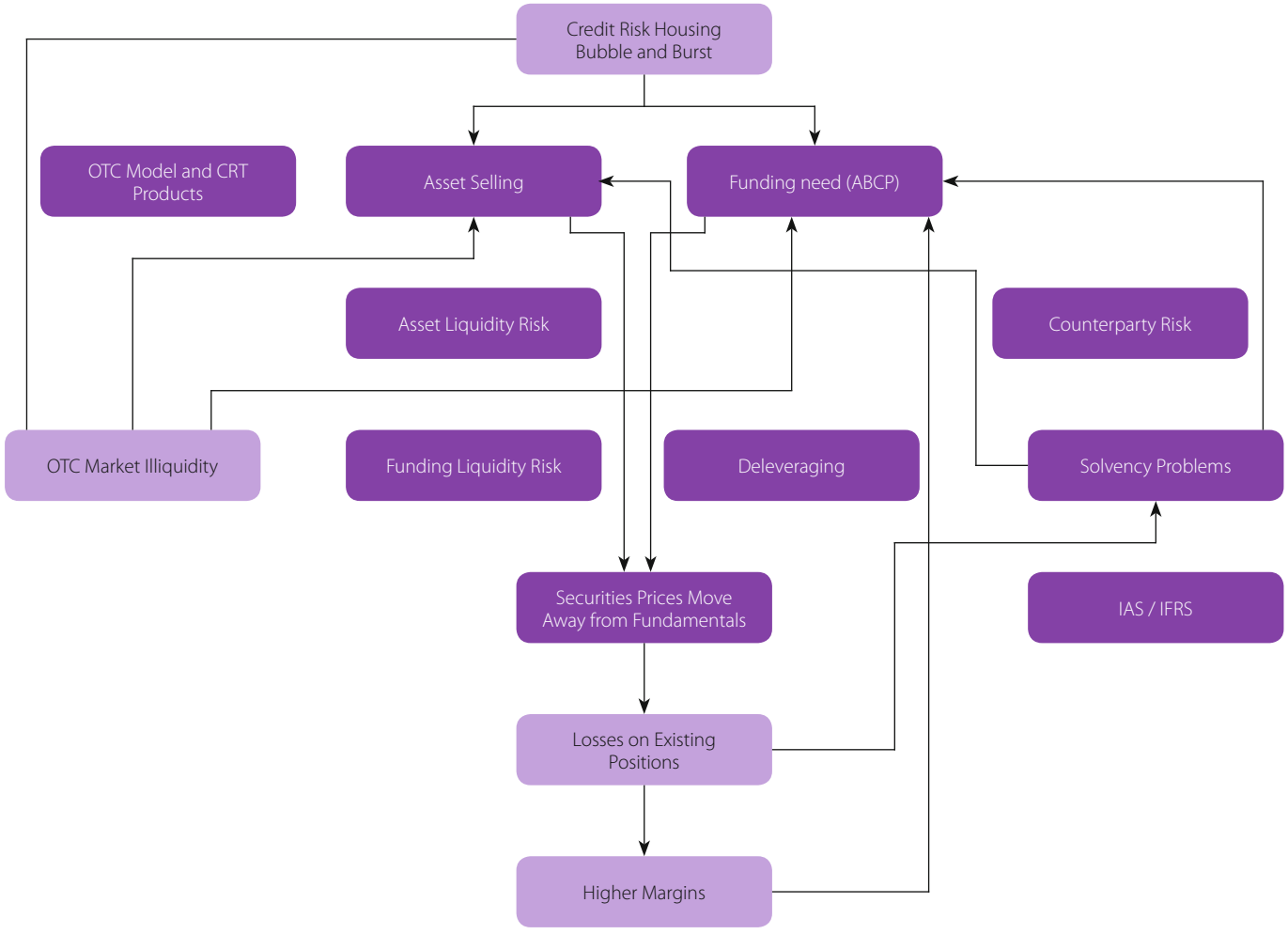
Generally, some traders are forced to reduce their positions due to margin constraints or risk limits, which in turn results in:

- Prices moving against them leading to further losses (for other traders with similar positions)
- Increase in volatility and decrease in market liquidity, leading to increased margins and tightened risk management controls

From a typical trader perspective, the liquidity spiral can be explained as below:

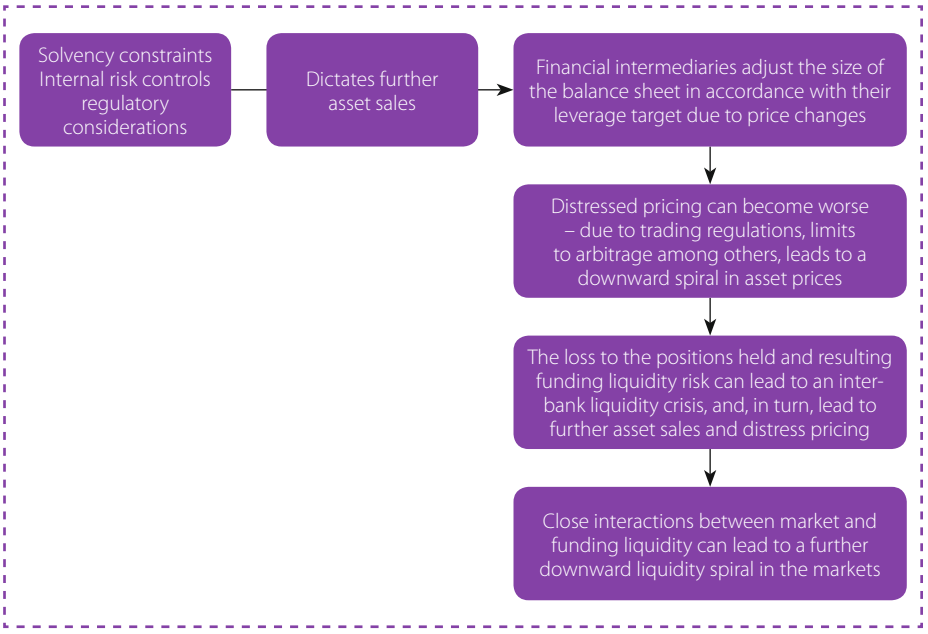
- A loss spiral arises for leveraged investors: a decline in asset value erodes net worth leading to a fall in the amount they can borrow.
- The investor is forced to reduce the overall position to maintain leverage ratio within the limit. Sales would bring down the price further inducing more selling.
- A margin spiral reinforces the loss spiral. As margins rise, the investor has to sell even more to reduce the leverage ratio.
- Margins spike in times of large price drops leading to a general tightening of lending.

Figure 4: Credit Market and Liquidity Risks



Source: Elisabetta Gualandri et al, Journal of Money, Investment and Banking ISSN 1450-288X, Issue 8 (2009).

Figure 5: Factors leading to a downward spiral in liquidity



The Vicious Spiral of Credit, Market, and Liquidity Risk

During the subprime crisis in 2007, investors pulled out of investment in Credit Risk Transfer (CRT) products and also from the commercial paper market, which backed Special Investment Vehicles (SIVs) and conduit activity. At the same time, the spreads for these products in secondary markets widened. SIVs and CRT products needed additional liquidity to support and fund Mergers and Acquisitions (M&As), and also comply with contractual obligations. The contagion effect of liquidity shortages spread to the inter-bank market as banks tried to fund unexpected exposures in the leveraged loan; subprime residential mortgage backed securities (RMBS) and collateralized debt obligations (CDO) markets. This way, the credit event turned into a liquidity event.

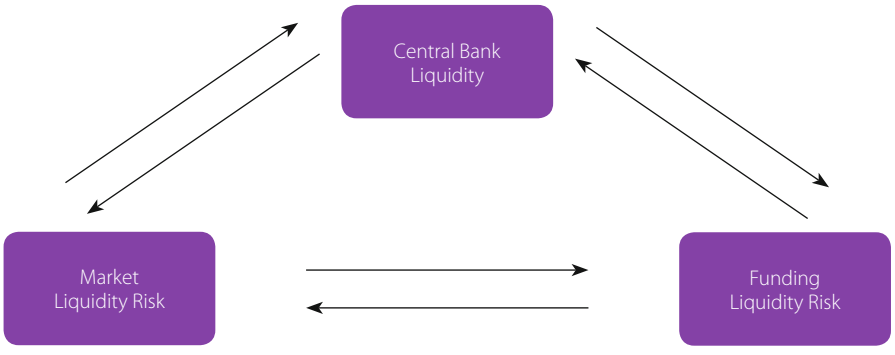
The problem of the liquidity of financial instruments such as CDOs has been aggravated due to the fact that those instruments are traded on Over-The-Counter (OTC) markets and not in the organized exchanges. The importance of OTC markets for these instruments has arisen from banks playing twin roles of the securities originators and of trading counterparties in OTC markets, allowing them to earn fees less likely in organized exchanges. Generally, in the event of a liquidity crisis, trading takes place smoothly in exchanges rather than in OTC markets. Moreover, in organized exchanges, participants need to hold margins to maintain positions, and the equivalent of capital requirement is kept aside for non-bank participants, while the provision of clearing houses reduces the counterparty risk.

As market and funding liquidity become increasingly inter-linked, the potential systemic consequences of liquidity problems become more important

The interaction between funding and market liquidity

The interaction between funding and market liquidity can have consequences that reach beyond the individual institution. As market and funding liquidity become increasingly inter-linked,

Figure 6: Interaction between Funding and Market Liquidity



Ref: ECB working paper series No.1008, February 2009.

the potential systemic consequences of liquidity problems become more important. The internationalization of wholesale markets and institutions increases the potential for cross-border and cross-institutional contagion.

The link between funding and market liquidity risks is becoming more noticeable among banks. Funding liquidity risk arises mainly because banks invest in illiquid and riskier assets in the absence of proper market information. This results in coordination failure among both depositors (e.g. run on a bank) and also among financial market participants (both inter-bank and the asset markets for structured products) leading to market liquidity risk. In such a situation, asset markets experience typical symptoms such as distress sales and trade frictions (due to margin calls, trader's risk limits, and thinning of trading volumes, among others).

During a normal scenario or periods of low liquidity risk, such linkages promote a smooth functioning of the financial system. In turbulent times (times of high liquidity risk) the strong linkages between market and funding liquidity may deepen market illiquidity. This can happen in a financial system where assets and balance sheets are marked to market and subject to financial regulations.

The three liquidity nodes of the financial system

The role of the central bank in times of liquidity crises is crucial to breaking the vicious cycle between funding and market liquidity through liquidity injections to the system. Central banks around the world responded differently to address the recent financial crisis by changing their operational framework or monetary policy stance or both. The measures included the provision of a large amount of liquidity to the system through a combination of long- and short-term open market operations.

The role of the central bank in times of liquidity crises is crucial to breaking the vicious cycle between funding and market liquidity through liquidity injections to the system

Stress Testing

Stress testing is a risk management tool used to evaluate the potential impact (e.g. asset quality, profitability and capital) of a specific event and/or movement on a firm in a set of financial variables. There are two types of stress test categories, viz., scenarios and sensitivity analyses. A scenario analysis measures the combined effect of adverse movements in a number of risk factors (e.g. equity prices, foreign exchange rates, interest rates) on the bank's financial position. Sensitivity tests are used to assess the impact of change in a particular risk factor or a small number of related risk factors on the bank's financial position.

Stress testing should be fully integrated with the banks' liquidity risk management framework. The liquidity stress testing provides the basis for the bank's contingency funding plans, which are approved by the management board. Stress testing analysis should assess the ability to generate sufficient liquidity under critical conditions and be a valuable input when defining the target liquidity risk position. The periodicity of the analysis differs from bank to bank (e.g. month, quarter).

Specification of liquidity stress tests

- Definition of stress scenarios and varying stress levels
- Identification and analysis of contractual cash flows
- Cash flow modeling to incorporate behavioral adjustments linked to stress event
- Calculation of funding gap by maturity

Stress tests results help review the institutions' limit setting with respect to its risk appetite

Stress testing should focus not only on expected and unexpected cash flows in a stress situation, but also on asset liquidity, since most institutions rely on generating liquidity from securities positions to generate liquidity in normal and crisis scenarios

Stress testing should focus not only on expected and unexpected cash flows in a stress situation, but also on asset

liquidity, since most institutions rely on generating liquidity from securities positions to generate liquidity in normal and crisis scenarios. Another relevant factor to be included in stress testing is the possibility that the institution will find it difficult or impossible to sell an asset or pledge it in a secured lending transaction within the necessary time horizon, due to a price decline in the relevant markets. This was a feature of the 2007-2008 market turmoil, which most institutions have not adequately addressed in their stress tests.

Contingency Funding Plans (CFP)

A Contingency Funding Plan (CFP) is the compilation of policies, procedures and action plans for responding to severe disruptions to a bank's ability to fund some or all of its activities in a timely manner and at a reasonable cost. CFPs should include a clear description of a diversified set of viable, readily available and flexibly deployable potential contingency funding measures for preserving liquidity and making up cash flow shortfalls in various adverse situations. The CFP should provide a framework with a high degree of flexibility so that a bank can respond quickly in a variety of situations. Typically, CFPs would involve:

- Adequate management and reporting framework
    - Acting upon the early warning signs
    - Building in buffers and/or haircuts
    - Avoiding or mitigating possible crises
- Clearly documented management action plans
    - Specified executives/clearly defined roles and responsibilities
    - Alternative sources of liquidity
    - Trigger levels for action
- Communication plans
    - Internal and external communications
    - Prevention of further escalations or contagion
- Regular sources of liquidity supplemented with contingent sources
- Board-approved and appropriate involvement of senior management

Triggering events for contingency plans should be aligned with stress testing results. Conversely, experience from stress tests could be incorporated into contingency guidelines.

Conclusion

Market liquidity risk became more prominent during the recent financial crisis. As a result, the unregulated structured securities market was quickly transformed into a solvency crisis which, in turn, affected the banking system. The need for additional capital requirement for banks became more urgent because of the downward spiral in the prices of market instruments causing write-downs of loans and securities portfolio and so also the adoption of fair value accounting. Banks' higher solvency risk, and the resultant greater counterparty risk, led to disturbances in the inter-bank market and financing in the bond markets.

More and more institutions are increasingly accessing securities markets for funding, liquidity management and asset sales by banks and non-banks as the recent liquidity crises are of considerable concern to the regulatory authorities. In this context, some of the issues such as how VAR can be extended to include such risks, how much further should stress testing be developed in the light of market liquidity crises, among others, need to be addressed.

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Exchange-Traded Funds 2.0

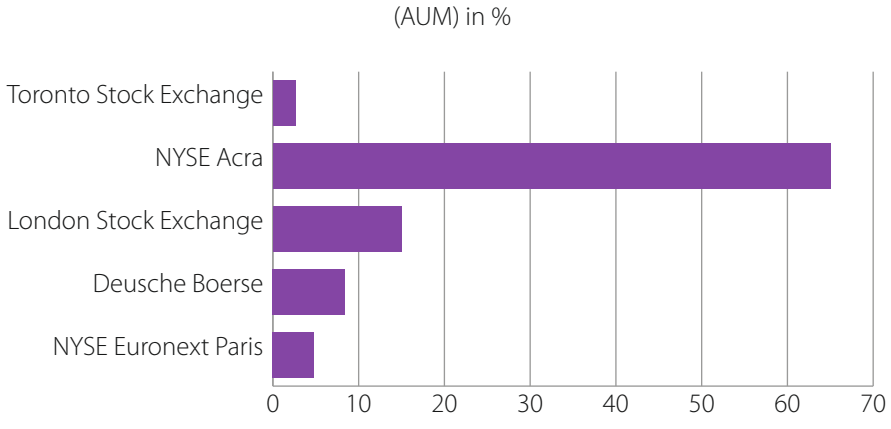
'Timing-the-market' takes over from 'buy-and-hold'

Nathan Most architected the launch of the first ETF in 1993 in USA. Since then, ETFs have grown to become one of the most traded and innovative financial instruments in the last two decades. Spectacular in their success, these funds, according to estimates by BlackRock, have shown a Compound Annual Growth Rate (CAGR) of about 56.3% globally.

The collapse of Lehman saw the world waking up to benefits of Central Counter Party (CCP) clearing and ETFs. The expansion is fueled by the rapid growth in asset-class such as equities, cash, commodities, currency, alternatives, shari'ah, among others; and also due to conducive technologies that made trading simpler and transparent. Today, we are in an era of regulatory reform where trading is expected to be electronic, centralized and more transparent. Therefore, future growth is anticipated to come from regulations that call for trading to be centralized, and on electronic format to ensure transparency. Under these circumstances ultra low-latency trade processing has become a key differentiator for investors undertaking ETF trading.

An ETF 2.0 environment has enabled investors to defy their age-old 'buy-and-hold' strategy and embrace 'time-the-market' strategy. Investors have realized that if they do not make instant profit, it goes away and therefore the need to be proactive with their portfolio.

Figure 1: Global ETF Exchange Market Share; Based on BlackRock ETF Landscape, Global Handbook Q3 2010, data from BlackRock and Bloomberg



1. ETF Landscape: Global Handbook, BlackRock, Q3 2010

This article delves into the realm of ETFs as part of ETF2.0 and explores opportunities pertaining to the exchange and changes in trading strategy enabled by technology.

The ETF Landscape

The ETF is a unique financial instrument that comes across as a flexible and transparent investment vehicle. Each ETF is a basket of securities that tracks an index, but trades on exchanges like a single stock. Here, the bid-offer spread is transparent or publicly available and it continuously reflects the current market outlook. It also allows investors the flexibility to buy a basket of stocks in a single trade from diversified segments of the market such as equities, bonds, real estate, currency, and commodity, among others.

The ETF landscape has evolved quite rapidly. As per the BlackRock ETF Landscape Report (2010), at the end of Q3 2010, the global ETF industry had 2308 ETFs with 4,922 listings and assets of USD 1,061.9 bn from 176 providers on 53 exchanges around the world[1].

There are many stakeholders in an ETF environment. However, this article will limit itself to the ambit of exchanges, a key stakeholder in the ETF trading process. Roughly, five exchanges account for about 95% of the market share (Figure 1)

– as per official listings published in the BlackRock ETF Landscape Report (2010) and they are based on both sides of the Atlantic. Though figures about smaller unofficial electronic exchanges such as Chi-X, BATS and Turquoise are not available in the BlackRock database, they too adhere to the above trend.

Popularity of ETFs

ETFs have attracted huge interest amongst HNIs, retail and institutional investors alike. In the early days, ETFs were marketed mostly due to institutional investors using sophisticated trading tools that facilitate hedging. However, the popularity of ETFs has increased among individual investors, who are leveraging the online trading medium to purchase ETFs at a lower cost.

If we compare the recent search volume index on Google as shown in Figure 2, we see a decline in search for mutual funds vis-à-vis ETFs. These are convincing statistics in believing that ETF, a relatively new financial innovation, is replacing mutual funds in the hearts and portfolios of many investors. Five significant features of ETFs have helped in their rising popularity: transparency, ease of trading, lower management fees, faster market exposure, and tax benefits.

Exchanges are the prime movers in the ETF trading process. ETFs are quoted on the exchanges by market makers post mandatory approvals and subsequently traded over the exchanges

Figure 2: Search volume Index of Mutual Funds vis-a-vis ETFs; Google trends (Accessed 20 February 2011)

Statistics do support such decline in the popularity of mutual funds. BlackRock ETF Landscape 2010 Q2 Report[2] indicates "Globally, net sales of mutual funds (excluding ETFs) were minus USD 220.3 billion, while net sales of ETFs were positive USD 57.4 billion in 2010 according to strategic insight."

Imagine driving an SUV with all possible safety features. With ETFs, you have the equivalent connotation in an investment market. It is akin to comparing a stock that loses USD 10 billion on a single trading day vis-à-vis the partial exposure from an ETF. In short, they gain a strategic as well as tactical significance from an investor's point of view. Attributes such as cost effectiveness, broad-based and diversified market exposure, tax benefits, multiple-liquidity sources, flexibility of trading timings and pricing have added to their popularity.

Technology has also aided market makers to adopt ETFs globally. Availability of faster low-latency trading platforms, regional connectivity among exchanges, robust monitoring apps, algorithmic statistical arbitrage apps, and high volume handling capacities at the electronic exchanges has brought in confidence among fund managers to invest more in ETFs. Further, co-location has enabled market makers to develop their own unique, automated trading strategies to ensure a risk-free hedging environment. The process has gained pace phenomenally, and now market makers are tying

2. ETF Landscape: A review of the Exchange Traded Funds (ETFs) and Exchange Traded Products (ETPs) industry, BlackRock, Q2 2010
3. http://www.sec.gov/Archives/edgar/data/1089044/000119312510058419/d10k.htm (Accessed 8th March 2011)
4. http://www.ft.com/cms/s/0/7b3304ae-0bdc-11dd-9840-0000779fd2ac.html#axzz1MEE8lYf3 (Accessed 8th March 2011)

up with exchanges to get faster access to the bid markets.

ETFs and Exchanges – Mutually Inclusive Growth

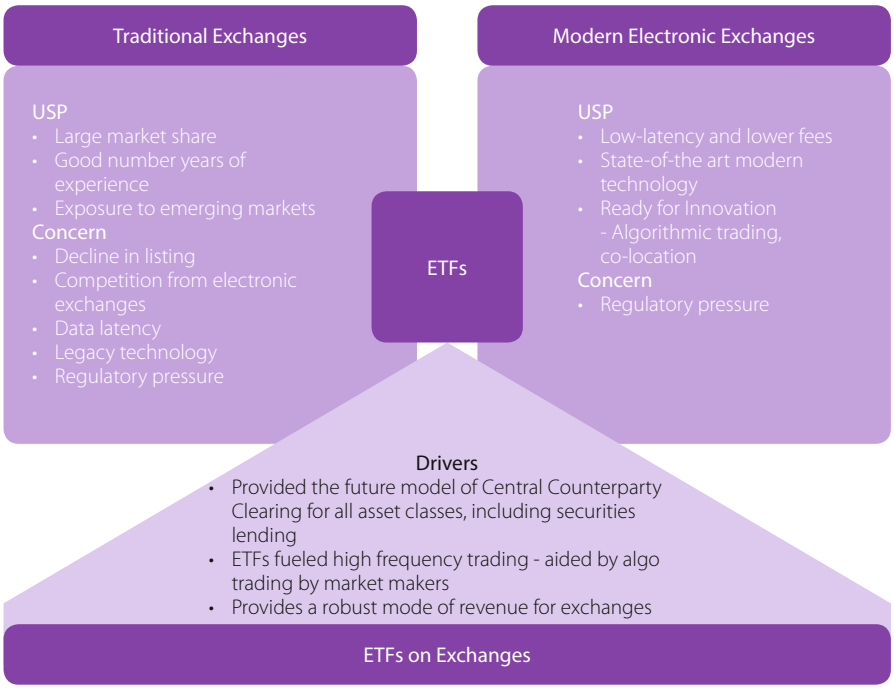
Exchanges are the prime movers in the ETF trading process. ETFs are quoted on the exchanges by market makers post mandatory approvals and, subsequently, traded over the exchanges. Documented evidence is available that ETFs listed on exchanges have had explosive growth and, today, the assets under management of ETFs is above USD 1.4 trillion. In synergy with this development, exchanges also have had their share of ETF-led growth. Though there is no established correlation, the recent LaBranche's 10k filing[3] with SEC suggests that ETFs have expanded the growth of high-frequency trading, triggered by 'algos' at exchanges. Reports suggest that new exchanges process orders in milliseconds – Chi-X, in about two, LSE, in about six[4] – as compared to notably slower cycles at traditional exchanges. Low latency capability has been critical for market makers such as LaBranche in exploiting short-lived market opportunities as they adopt a 'time-the-market' strategy. A recent report cites the entry of a technology that can facilitate trading at the speed of pico seconds.

Even as this article is being written, Deutsche Boerse, Nasdaq OMX Group and Inter-continental Exchange (ICE) are fighting it out for a controlling stake at NYSE Euronext; and Chi-X has been permitted to start its business in Australia. How does this affect the exchange environment? It is believed that in the long run, investors could see lower costs, increased liquidity, and greater access to investment opportunities. The possible merger would mean uniform technology platform and processes that should help reduce cost. The liquidity situation naturally improves as investors get access to emerging markets; and often such mergers help the small and medium sized firms gain access to capital and foreign investors.

It is not surprising that ETF issuers such as Vanguard and StateStreet are preparing to venture into the European market in 2011. Even HSBC is looking at expanding its ETF footprint globally. The revenue-starved traditional exchanges see ETFs as a major source for future sustainability. The resultant market order is expected to open up the robust Asia-Pacific market to investments from European and US-based financers, enabling Asia-Pacific markets to gain more exposure to capital outside their region.

As represented in Figure 4, ETFs are traded globally in traditional as well as modern electronic exchanges. While traditional exchanges assure global exposure and allow the investor to leverage this, modern electronic exchanges allow investors to trade faster to get the desired market pie. However, not

Figure 3: ETF Positioning in the Exchange Landscape



5. http://www.ifaonline.co.uk – "Trading in the Dark" by Helen Fowler
6. Statement No. 13, Leaders' Statement: The Pittsburgh Summit (September 24 – 25, 2009), available at http://www.g20.org/ Documents/pittsburgh_summit_leaders_statement_250909.pdf

all ETFs are traded on exchanges and over the counter (OTC) or off-exchange. Reports suggest that about 50% of the ETFs in Europe and about 10% in USA are traded OTC[5]. However, new regulations will drive these ETFs on to the electronic exchanges, thereby, helping ETFs gain prominence in a new exchange economy.

"In September 2009, the G-20 leaders stated (Basel III regulation) that all standardized over-the-counter (OTC) derivatives contracts should be traded on exchanges or electronic trading platforms, where appropriate and cleared through Central Counter Parties (CCP) by the end of 2012 in order to improve transparency, mitigate systemic risk, and protect against market abuse in the derivatives markets."[6] Since ETFs are already traded in the proposed format, it can safely be concluded that they provide an interesting microcosm of the potential impact of electronic trading platforms and CCPs. For example, ETF trading in the USA is mainly concentrated on one exchange, NYSE Arca, and there is a complete record of ETF trading known as the 'consolidated tape' that allows for an accurate assessment of liquidity conditions across all suppliers. Recently, European stock exchanges and data vendors together announced a similar framework for developing a consolidated tape of post-trade equity reporting data across Europe. Also, the Committee of European Securities Regulators (CESR) has recommended an extension of the MiFID transparency regime to include ETFs that will certainly help increase investor confidence on the ETF market. The world expects the ETF market to benefit from these regulations as trading shifts formally to the exchanges. And, as a strategy, Exchanges should also be allowed to promote ETFs, just like the market makers.

Evolution of the ETF Landscape

Post the subprime crisis, most of the dealers moved their assets from banks to exchanges. The industry is now moving towards an exchange-traded model to preserve capital, assure transparency and comply with the CCP clearing. Immediate access to emerging markets and also in some cases, wooing the market makers with a co-location trading option, low-fee listing of ETF products, and algorithmic trading support, has become the order of the day. Traditionally, individual investors were termed as people providing liquidity to the system using their buy and hold strategy. And, now, they have direct market access and they can automatically explore and execute trades through algorithmic trading.

Has this changed the ETF landscape?

ETFs have certainly evolved into more secure and mature instruments in the

Table 1: The evolution in the ETF landscape

Attributes	ETF 1.0	ETF 2.0
» Liquidity	» Stress	» Access to wider market will remove stress
» Bidding time	» In seconds	» In milliseconds
» Settlement	» T+3	» T+0, t+1, t+2 based on local regulation
» Role of market makers	» Liquidity providing and detection	» Statistical arbitrage, liquidity detection and liquidity providing strategies (market-making)
» Market focus	» Regional	» Global, emerging markets
» Pricing (tracking errors)	» Monitoring with limited option	» Real-time monitoring during auction
» Latency monitoring	» Real-time monitoring not an option	» Real-time monitoring in micro seconds

7. http://www.finextra.com – "Algorithmic trading to take majority share in 2010" research study by Boston-based research consultancy Aite Group.

transitioning landscape as depicted in Table 1. This has resulted in an environment where 'timing-the-market' has taken over from the 'buy-and-hold' strategy, which we are referring to here as ETF 2.0. The enablement in the ETF environment is illustrated in Table 1:

What leads to the ETF 2.0 Environment

ETF 2.0 was possible only through improved trading technology. Automation of trading strategies, support for multiple and diversified asset classes, global convergence, co-location; and high frequency algorithmic trading are some of the important investments seen as key. Globally, exchanges have been offering automated platforms that can support multi-asset algorithmic trading, smart-order routing and complex strategies. In this regard, investments on supporting global standards such as FIX, FAST, FpML have helped immensely in the transition.

Regulation has also helped. Exchanges based in the USA have invested in technologies related to immediate and automated execution of electronic orders in compliance with Regulation NMS. The idea is to trade equities and ETFs at the outset, and in some cases, the functionality is designed to trade multiple instruments electronically with dedicated liquidity. The National Stock Exchange (NSE) of India has also been facilitating algorithmic trading since January 2010, since it launched its co-location facility.

Market makers, too, have invested heavily in trading technology, especially on algorithms. The aim of each and every trading house is to possess technology that can identify favorable market conditions in multiple geographies and simultaneously execute complex strategies. The objective is to capture short-lived trading opportunities at minimum risk and operational costs to make instant profit. It is therefore important to note that the share of algorithmic trading in the global markets is on the rise—estimated to be more than 50% of all equities trading[7].

Exchanges based in the USA have invested in technologies related to immediate and automated execution of electronic orders in compliance with Regulation NMS

Conclusion

ETFs hold promise in the global investment markets as exemplified by the strong performance we have seen. The development in the last few years, especially, the demand to centralize and move all trading to exchanges will boost the ETF market. They may not be perfect, as they encounter challenges such as algorithms going collapsing, as they are not being tested on live environments before implementation at many exchanges, system glitches happening at the exchanges, unsecured data being used for analytics, and regulatory pressure to comply with the new reforms increasing, but ETFs have captured the imagination of investors and advisors. As we see further refinement in algorithms and analytics, investors are seeing value in being attracted towards ETFs. However, on the flip side, as ETFs are evolving, we see traditional ETF players issuing synthetic ETFs or swap-based ETFs, which may pose a new risk similar to the subprime housing crisis. The concern pertains to the fact that many globalized banks act as counterparty and provide debt security to such ETFs. And, in a possible environment of substantial collateralized debt obligation this will have a direct bearing on the creditworthiness of a bank.

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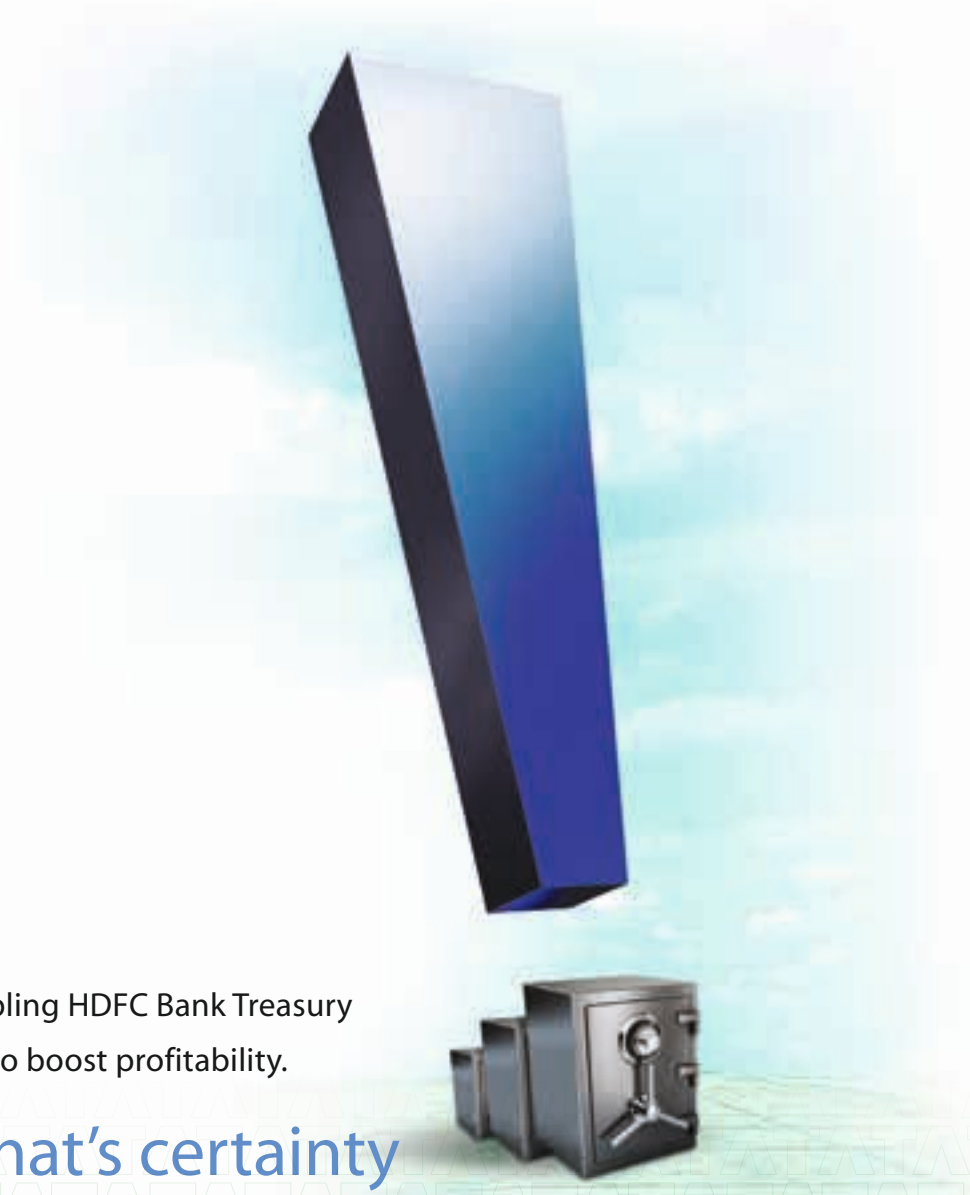

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