Role of Custodians in OTC Derivatives - A Critical Analysis

Over The Counter (OTC) Derivatives markets have witnessed phenomenal growth in the recent years, not only in terms of volume of transactions, but also in the universe of products that are traded and in the breadth of counterparties active in the market. The consequence of the rapid growth is reflected in the strained state of post trade infrastructure.

With automation taking the top priority for market participants, it has fuelled many opportunities for service providers in OTC Derivatives back-office. There are various service providers, who are rapidly rolling out services to Investment Managers, Hedge Funds and Broker Dealers, for addressing the upstream and downstream processing challenges in the OTC trade life cycle. Likewise, custodians also provide a range of post-trade settlement and collateral management services for Investment Managers.

This paper examines the role of custodians in the OTC Derivatives Trade processing and the functions they perform, the challenges faced that inhibit their ability to serve the growing demands of investment manager community. This paper analyses possible remedial measures. It also provides insights into the future-processing framework.

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Table of Contents

Introduction

Derivative securities, more appropriately termed as derivative contracts, are assets that confer upon their owners certain rights or obligations as the case may be. These contracts owe their existence to the presence of markets for an underlying asset or a portfolio of assets, on which such agreements are written.

Derivative securities are either traded in Exchanges or in OTC markets. The major differences between the two are provided in the following table:

Exchange Traded Derivatives	OTC Derivatives
1. Standardized in nature	1. Customized in nature. They are tailored financial products
2. Traded via derivatives exchanges	2. Traded between two parties - bilateral over the counter
3. The counterparties are anonymous to each other as the exchange facilitates the trading and the trades are cleared trough the clearing houses acting as Central Counter Party (CCP)	3. Being purely bilateral contracts the counter parties know each other and the contacts are settled bilaterally without the intervention of any Central Counter Party (CCP)
4. These are predominantly retail products, used and traded by retail entities	4. These are predominantly wholesale products, used and traded by large, sophisticated entities with large financial risks to manage
5. Futures, Options, Vanilla Swaps are examples of this type	5. Credit Default Swaps (CDS), Interest Rate Swaps (IRS), Forward Agreements are few examples of this type

Table 1: Differences between Exchange Traded and OTC Derivatives

In recent years, few of IRS and CDS varieties have become standardized contracts based on Indices or Benchmarks and are traded electronically much like exchange traded instruments. CDS Index based products are used to hedge credit risk or to take position on a basket of credit entities. CDX and iTraxx are the two main families of CDS Indices.

Based on the features of these derivative contracts, they may be classified as vanilla products and structured products. Vanilla products are run-of-the-mill contracts with no additional or unusual features. Structured products are customized products with additional features reflecting the financial risk of the individual entities of the deal.

Special features of OTC derivatives are as follows:

1. It involves, periodic cash payments made by one counterparty to the other or by both to each other based on the terms and conditions of the contract. A CDS contract would involve cash payment from one party to the counterparty on the occurrence of some event (like credit event in case of credit default swap), or payment on exchange of the deliverables by the counterparty on the day of maturity of the contract. In case of IRS it could involve quarterly payments based on rate resets. In short, OTC derivatives may require payments throughout the life of the transactions or on maturity or both.

2. Both the parties to an OTC Derivative contract would agree to the terms of agreement based on the clauses mandated by the International Swaps and Derivatives Association (ISDA) Master Agreement. These master agreements provide for the legal framework of the contract. It also provides for specific terms of bilateral netting, close-out
netting, definitions used by the market for 'credit event' and collateral arrangements.

Growing Volumes of OTC Derivatives

Volumes of business are burgeoning in OTC Derivatives. There has been very sharp growth in the OTC Derivatives market over the past 12 months. According to the Bank of International Settlements (BIS), the total outstanding notional amount is USD 298 trillion as of 2005. According to the ISDA mid-year market survey 2006, the notional amount outstanding, of credit derivatives has grown by 52% in the first six months of the year 2006 to $26.0 trillion from $17.1 trillion, that of interest rate derivatives by 18% to $250.8 trillion from $213.2 trillion and that of equity derivatives by 15% to $6.4 trillion from $5.5 trillion.

Growing volumes of business has raised concerns about the processing of these contracts. The automation of trade execution and post-execution of OTC Derivatives has not been able to keep up with the pace with which the market is growing. This explosive growth has created a backlog of unconfirmed trades. Such backlogs have raised the regulatory concern about the situation. During September 2005, Federal Reserve of US called the meeting of major players to discuss the risk management measures for the growing CDS trades. Federal Reserve authorities highlighted the need for urgent effort by market participants to clear the backlog of unconfirmed trades and update back office plumbing to deal with the complex new instruments. ISDA Operational Benchmarking Survey 2006 indicates improvement in backlog of confirmations. Automation facilities like DTCC Deriv/Serv and SwapsWire have been able to improve the confirmation ratio to an extent by providing automated matching and confirmation services.

The Players

OTC Derivative markets have different types of players. They include

- Industry Participants
- Liquidity Pools
- Service Providers

The following figure (Figure 1) gives an overview of the key entities in the OTC Derivatives space and their respective roles.

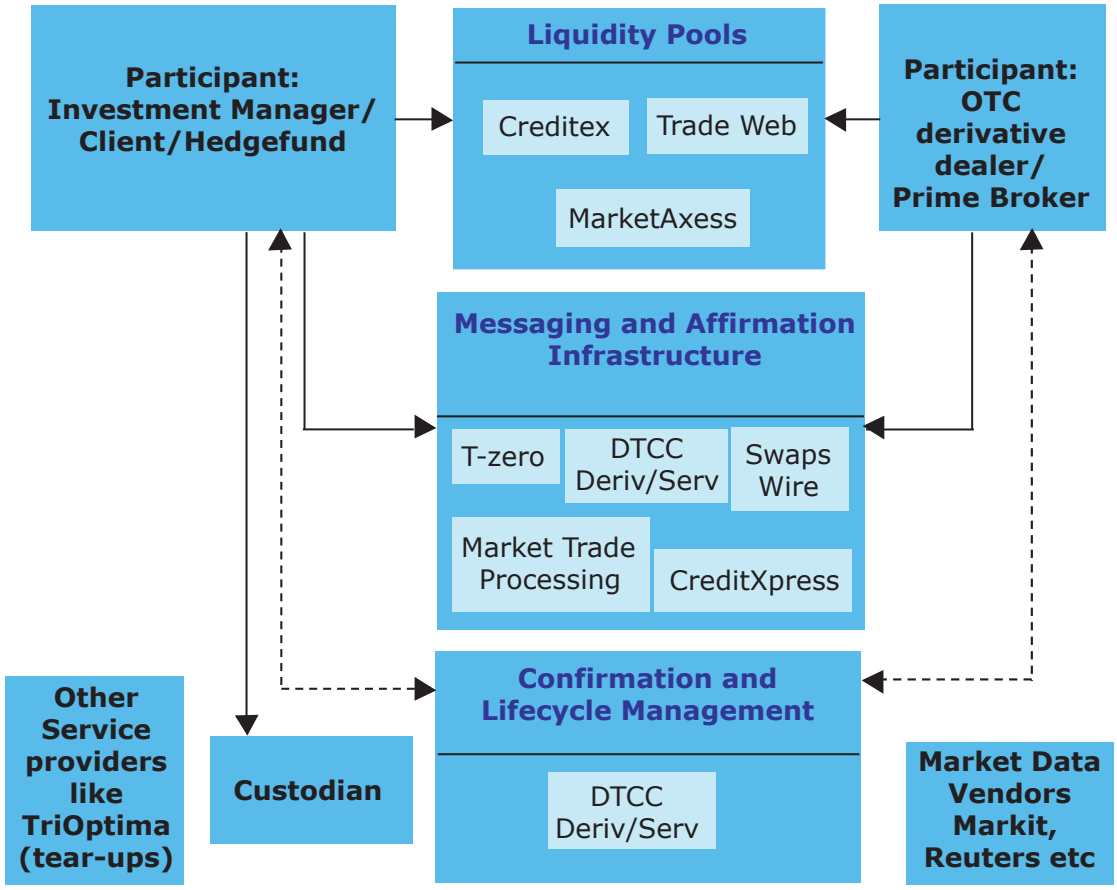

Fig 1 OTC Derivative Market Place

- **Industry Participants**: OTC Derivatives, being bilateral contracts, are customized in nature and may be unique, reflecting the specific financial risk-management needs of individual entities at a given moment. The players involved in these kinds of deals are the Asset / Investment manager (one of the counterparties to the deal), the dealer (the other counterparty) and the global custodian - the custodian of the investment manager.

    - The Investment Manager is typically a buy-side firm who is buying thecontract to protect itself from credit risk of a reference entity. End users include Banks, Insurance Companies, Special Purpose Vehicles, Corporates, Re-insurers, Securitization Companies, Third party asset managers and Hedge Funds.

More recently, the growth in the usage of credit derivatives by hedge funds has had a marked impact on the overall credit derivatives market itself, where their share has increased to 58% over the year, according to research firm Greenwich Associates.[ii] Hedge funds have been regular users of CDS especially around the convertible arbitrage strategy. They have also been involved in many of the 'fallen angel' credits where they have been significant buyers of protection. Given their ability to leverage they have substantially increased their volume of CDS contracts traded, which in many cases has been disproportionate with their absolute size.

    - OTC Derivative dealer is typically a sell-side firm. In case of CDS such firm is ready to buy the credit risk of the reference entity. However, many deals could take place between dealers themselves trading on credit risk.

    - Custodian is the one who protects the interests of its clients who are predominantly the buy-side firms like investment manager, asset manager, and hedge funds and so on. Custodians provide various services to their clients in terms of collecting the trade details, valuing the contract, participating in the reconciliation and settling the trade. Prime Brokers provide similar service to hedge funds.

- **Liquidity pools**: There are some initiatives taken up by the industry in providing dealer-to-client electronic trading platforms such as TradeWeb, MarketAxess and dealer-to-dealer - inter-dealer trading platforms such as CreditMatch, Creditex and so on.

    - The Creditex platform provides complete price and trade transparency and operational efficiencies, allowing traders to easily place live, actionable orders. Clients are also able to receive intraday and end-of-day electronic feeds of live index prices and trade confirmations, thus eliminating some of the risks associated with the trade reconciliation process.[iii]

    - TradeWeb's dealer-to-customer online marketplace provides a view of the largest fixed-income markets in real time to the Leading Online Bond Trading at the marketplace.[iv]

    - MarketAxess provides an electronic trading platform which is multi-dealer disclosed counterparty model, which allows institutional investors to view multiple bids and offers from broker-dealer clients. Apart from that it provides; online trade execution with the majority of the world's leading dealers, Commingled inventory of U.S. domestic corporate bonds, Yankees and Globals; approximately 3,000 line items of inventory, $40 billion in indicative bids and offers.[v]

- **Service Providers**: Various types of service providers have emerged in the market. The types of services they render are Trade Confirmation and Matching, Payment Matching and Reconciliation, Documentation Management, Valuations and other services.

    - Markit is the pre-eminent source of data and valuations in the credit, equity, OTC derivative and structured finance markets. Markit owns the benchmark Reference Entity Database (RED) used

in the credit derivatives market. The company also offers a bespoke Portfolio Valuations service spanning all OTC derivatives products that meets investor requirements for best practice in independent valuations.[vi]

- SwapsWire is an electronic platform for capturing and agreeing swap. It has created a single secure network and hub, using Financial Products Markup Language (FpML) as the data standard.[vii]

- T-Zero enables financial professionals to affirm, allocate, novate and terminate trades with their counterparts in real time. When a trade is booked on a dealer system, it is collected by T-Zero, assigned a unique identifier for the life of the trade, and passed to the counterparty for affirmation. [viii]

- DTCC Deriv/Serv is an important service offering by the industry utility to provide strategic platform for market participants to avail of the automated matching and confirmation services provided for all Credit Default Swaps, Interest rate swaps including swaptions, and equity derivatives (stock futures and options) and the automated payment matching and settlement services provided by it for credit default swaps.[ix]

- TriOptima, a Swedish financial technology company, develops and delivers triReduce, the first and only multi-lateral mass termination service for the OTC derivatives market. The service currently targets IRS and CDS. The triReduce technology produces proposals to terminate a package of thousands of swaps.[x]

- CreditXpress connects dealers to hedge fund and institutional asset management clients to automate post-trade processing. The service affirms corporate bond and credit derivative trades, and allocates them to specified client accounts. Affirmed trades may be sent automatically to the DTCC's Deriv/Serv and Omgeo TradeMatch platforms. Users may also track positions in real-time and send notifications of trade novations to counterparties using CreditXpress.[xi]

- Markit Trade Processing enables fund managers and banks to affirm and confirm their OTC derivatives trades. Users may send notifications of novated or disputed trades through a secure instant messaging platform. Clients also use the platform to reconcile portfolios. It can pass STP trades on to the DTCC and SwapsWire automatically.[xii]

Growing volumes, increased regulatory attention and need for efficiency has resulted in various efforts by service providers in streamlining the OTC Derivative trade handling processes. Various service providers such as T-Zero, DTCC, SWIFT, and Omgeo have come out with several service offerings to meet the processing needs of OTC Derivatives products. These are discussed separately in this paper.

A Typical Trade Life Cycle

Figure 2 shows the message flow between the players participating in a trade lifecycle pertaining to an OTC derivative market. The boxes with red boundaries denote processes where there is scope for further automation in the flow of information between the custodian, investment manager and the dealer. The boxes with blue text denote the messages specific to CDS trading.

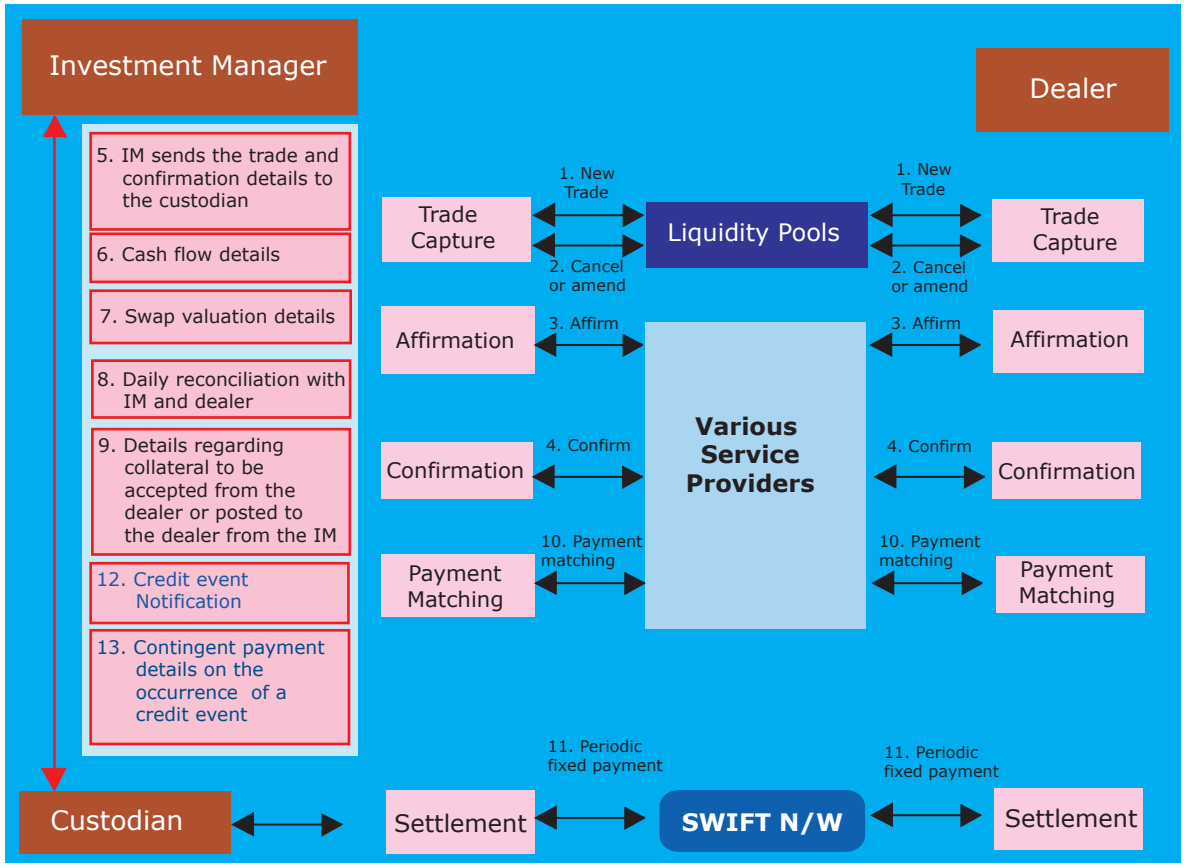

Fig 2 OTC Derivative Trade Process Flow

Functions of Custodians in OTC Derivatives Trade

Custodians provide various services to ensure the smooth settlement of OTC contracts in time. The functions of custodians are crucial for the success of the market considering the voluminous growth of these contracts in recent years. Custodians are currently facing operational challenge in ensuring that they have right kind of information such as contract data in time to prepare for the settlement.

Custodians perform various functions of Contract Maintenance, Event Processing, Valuation, Payment and Settlement, Collateral Management, Reconciliation, Account Maintenance and Reporting. The various functions provided by custodians to their clients are as follows:

Contract Maintenance

Custodians have to maintain the details of the contract through out the various stages of the contract. The primary functions include:

- Maintaining the trade details and confirmations sent by the client with respect to -
  - New Deals
  - Deal Modification (Amendment, Notional increase etc.)
  - Assignment
  - Exercise / Termination(partial or full)

- Sourcing the transaction details from the client/counterparty using
  - Manual Receipt or Data Feed (in FpML Format)
  - Confirmations may continue to be in paper form and hence may required to be manually updated
  - The trade data and confirmation may also be sourced from industry utilities such as DTCC, SwapsWire wherever transactions are matched by service providers.
- Contract shredding : Cancellation of off setting contacts using TriOptima services

Event Processing

Custodians have to manage the various events occurring throughout the life cycle of the contract. These events include:

- Periodic rate resets for IRS, TRS, and so on
- Receiving credit event notices
- Triggering collection of contingent payment from the counterparty
- Triggering appropriate action contained in contract on default of a counter party (for instruments like IRS, TRS etc)
- Processing corporate action events
- Processing requests like portfolio rebalancing, and tear-ups
- Processing of early termination and assignment events

Valuation and Payment Calculation

Custodians are responsible for the valuation of positions and collateral and calculation of the payment obligations throughout the life cycle of the contract. The various functions include:

- Calculating payments due on periodic intervals and quarterly rolls
- Bilateral netting of payments to be effected
- Payment matching with DTCC Deriv/Serv
- Valuing positions and collateral offered against each position for exposure monitoring
- Marking-to market individual positions and collateral securities regularly, with previously agreed-
  - Valuation model and parameters
  - Market data feeds (market prices for underlying assets and valuation for standardized Derivatives)
- Sending these inputs to collateral manager group

Payment and Settlement

Custodians are responsible for processing of payment and settlement instructions received from the client. The primary functions include:

- Effecting payment instructions with regard to :
  - Periodic cash flows and exchange of principal
  - Collecting the contingent payment on the occurrence of a credit event
  - Close-out netting in case of default by a counter party, premature termination of contract and so on
  - Accepting the delivery of collateral amount or posting collateral amount on behalf of the client
- Interacting with operations / back office personnel in client organization(s)

Collateral management

Custodians play a very important role in the OTC Derivative market by providing collateral management service throughout the life cycle of the contract. To provide this service, custodians have to perform the following functions:

- Evaluate the terms of ISDA Credit Support Annex
- Check availability of Initial / appropriate collateral cover at commencement / during life of contract
- Exposure monitoring- movement of value of collateral against position(s) held
  - Act upon instances of under collateralization or over collateralization as per contract / master agreement between counter parties
  - Process substitution of collateral securities by different (eligible) securities
  - Place Margin call in instances of under collateralization
  - Release collateral in case of over collateralization
  - Monitor receipt / delivery of collateral
- Trigger default in case of breach of collateral conditions
- Coordinate with credit / risk management teams in client organizations

Reconciliation

Custodians have to reconcile the cash/collateral movements throughout the lifecycle of the contract. The primary functions include:

- Monitoring and reconciling
- Periodic cash flow booking
- Collateral receipt/substitution
- Collateral release

Account Maintenance

The account maintenance function involves the maintenance of the client account starting from the negotiation through collateral management till the settlement of the trade.

- Maintains the details of the ISDA master agreement and specific master agreements, if any
  - Maintain details of steps to be taken on occurrence of specific events like partial termination and assignment.
  - Capture details of Credit Support Annex
  - Outline deviation from accepted practices; if any
- Execute bilateral / tri partite agreements with client regarding operation of accounts
- Communicate with client regarding rights and responsibilities of client and custodian under different circumstances
- Maintain cash and collateral accounts
  - Assign collateral to different trade types / individual sub accounts
  - Update collateral positions based on
    - Exposure calculated with each valuation
    - Trades on position
    - Create collateral with new counter party on assignment of positions
    - Release collateral on expiry / stepping out of position
  - Accept replacement of one set of collateral securities with another
  - Book periodic and contingent payments
- Effect instructions received in the course of event processing
- Client reporting

Miscellaneous Reporting Activities

Custodians provide other services such as:

- Policy and process documentation
- Regulatory reporting

Challenges in the Existing Process

OTC derivatives market is growing by leaps and bounds. New and non standard products are traded regularly. Market participants are facing the operational challenges in the area of trade capture, timely confirmation, valuation and collateral management. Lack of standard language, standardized processes and practices are adding to the inefficiencies in the processing. Many participants are yet to put in place suitable technology infrastructure to meet these challenges.

The need for improved automation in the OTC markets in particular, has been emphasized by the results of a recent JPMorgan poll of 20 asset managers and institutional investors who cited data management and systems infrastructure issues as the biggest challenges they faced. Three quarters of respondents said that their current infrastructure provided limited and insufficient support for the pricing and processing of derivatives.[xiii]

According to the ISDA Operations Survey, 2006 the confirmation backlogs are more prominent in case of structured products whereas for the vanilla products the confirmation backlog has been very minimal. The following table depicts the number of business days of the confirmation outstanding for various products across firms.

	All respondents				Large firms				Medium firms				Small firms			
	2003	2004	2005	2006	2003	2004	2005	2006	2003	2004	2005	2006	2003	2004	2005	2006
FRAs	7.1	6.0	4.6	6.1	7.0	6.1	7.4	9.1	6.2	6.4	2.8	4.5	8.5	5.3	3.6	4.6
Vanilla swaps	8.9	8.9	10.1	9.0	9.6	10.8	10.6	13.6	7.4	10.4	7.7	7.7	9.6	4.8	12.4	6.0
Non-vanilla swaps	12.1	11.3	11.6	11.3	12.9	12.4	16.4	18.0	12.4	12.6	8.5	7.2	10.9	7.7	9.8	8.1
Interest rate options	10.7	9.3	8.1	10.3	11.0	11.1	12.1	14.5	11.6	9.7	6.4	7.6	9.4	6.6	5.7	8.9
Currency-option	8.2	7.6	6.2	5.1	8.4	5.8	5.3	7.9	9.4	8.3	12.1	2.3	6.5	8.4	4.2	4.4
Credit derivatives	21.1	17.8	13.3	12.9	25.6	25.0	23.5	16.2	18.0	14.8	7.8	12.7	16.9	12.6	5.3	8.2
Equity derivatives vanilla	12.6	12.5	9.3	12.3	12.0	13.9	15.3	20.7	15.6	13.3	9.9	8.9	10.6	9.5	1.6	4.2
Equity derivatives non vanilla			11.6	20.4			20.6	30.5			8.4	17.5			1.6	10.7
Commodity derivatives	9.5	12.1	10.0	12.5	9.6	13.5	20.2	23.3	5.1	11.4	4.3	7.0	19.5	3.0	4.1	6.5

Table 2 Confirmation outstanding [xiv]

As seen from the preceding table, the most noticeable increases in backlogs are for non-vanilla equity derivatives for all firm categories; the result is consistent with the increases in volumes for the product.

Participants face the challenge of exchanging documentation for confirming the trade as required under ISDA agreement. The documentation process needs to consider the product specific terms and conditions resulting in manual / semi automated processes. However, in recent months, several firms have embarked on initiatives to automate the documentation process using standard documentation management tools such as Thunderhead.

Custodians' current processes have several gaps in terms of straight through processing of OTC Derivative trades. Communications to the custodians from investment managers have not yet been standardized - there is no Swift message that can be used for communicating to the custodians for swaps. According to Michael Wyne, the managing director of Fischer Francis Trees & Watts (FFTW) "You really don't have STP if you're sending it to the custodian in a format that they can't load into their system." [xv]

The challenges faced by the industry and custodian in particular can be classified on broad terms as relating to processes, standards and data. The challenges faced in these areas and the remedial measures and extent of readiness vary. While many industry initiatives will help in meeting the challenges on the data front, the processes are being addressed. However, lot of work needs to be done in the areas of standardization. In the following table various challenges associated with the OTC derivatives trade, the remedial measures taken up by custodians and other industry participants and the level of readiness of the industry participants in handling these challenges are highlighted.

Major Areas of Concern	Challenges	Remedial Measures	Level of Readiness in handling
Processes	Need for automation in the process of exchange of information between the client and the custodian	Developing interface with clients and third-party valuation service providers for accepting messages electronically	Though initiatives are taken up by the custodian, it's yet to catch up with the growing volumes
	Need for seamless interface between internal processes and third-party valuation service providers		
	Adherence to Novation protocol to avoid duplication of trade details during frequent assignments		
Standards	Need for industry accepted standards for the data elements of the contracts for the ever-evolving structured products market	The industry has to take further steps in developing standards for data elements of the contract and messages for exchange for the evolving structured products market. Agreement on Best Practices would set the benchmark.	Lot of work needs to be done in this area.
	Need for common messaging standards for structured deals		
	Need for standardized formats for exchange of valuation data		
	Need for clearly laid out policies for handling payment and settlement processes		
Data	Difference in valuation models and data provided by multiple vendors	Having a tripartite agreement on the valuation data and model to use and adapt industry initiatives taken up for providing infrastructure for maintaining trade details for the entire life cycle	Initiatives in providing infrastructure has been taken up by DTCC
	Need for robust infrastructure to maintain and monitor the entire lifecycle and trigger alerts		

Table 3 Challenges and Measures

Industry Initiatives

There have been many initiatives taken up to expedite the trade capture and post- trade settlement processes by eliminating the existing bottlenecks. These initiatives provide opportunities to various market players including custodians to improve their OTC Derivative trade processing capabilities.

Following are the few important and latest initiatives taken up:

1. DTCC Trade Warehouse: DTCC plans to provide a trade database or "warehouse" where trade data is kept until maturity. The warehouse will take matched trade records and expand those into the cash-flow schedule in DTCC's records. Where needed, the system will apply rate resets and calendars to generate those cash flows, which will automatically feed the payment system. This fully automated straight-through processing system will handle trades from execution through to settlement of the final maturity, lowering both cost and risk for participating firms.

2. T-Zero and DTCC Deriv/Serv Link : The T-Zero system electronically captures all trade details, assignments, allocations and other relevant details in the processing of credit derivatives, and allows counterparties to send affirmed trades to DTCC automatically for same-day (T+0) legal execution. Using T-Zero in conjunction with DTCC DERIV/Serv removes the entire drafting, checking and confirming functions for trades against counterparties who are also on the system.

3. Omgeo Connect Links with DTCC Deriv/Serv to automate processing of OTC Derivatives trades. In linking the two services, Omgeo Connect clients will be able to access Omgeo Central Trade ManagerSM (Omgeo CTM), Omgeo OASYS-TradeMatchSM and DTCC Deriv/Serv via a single hub. Omgeo Connect will extend its XML message specification to capture the data relevant to OTC derivatives, transform this data into industry standard FpML messages, and route these messages to DTCC Deriv/Serv via an MQ interface. Post matching, Omgeo Connect will receive status messages from DTCC Deriv/SERV, transform these messages, and pass them back to the investment manager via their Omgeo Connect interface.[xvi]

4. Swift has turned its attention to the post-trade OTC automation struggle, and entered into an agreement with the International Swaps and Derivatives Association (ISDA) to support FpML messaging services over SwiftNet. The two organizations have agreed to create a Swift FpML Closed User Group, which is expected to transport FpML messages before the end of 2006. The pilot phase will commence in the third quarter of 2006 and will involve a selected number of market practitioners representing the buy-side, the sell-side, and custodians. Swift will also roll out its affirmation service in the third quarter of 2006. This service will provide the benefits of automation to smaller institutions through the ability to affirm the matching results electronically. In Phase 2, Swift will add enhanced matching capabilities and central FpML validation service. SWIFT would further enhance its matching capabilities to cater for equity derivatives in FpML syntax and precious metals in MT syntax. In addition, SWIFT will provide central translation between MT and FpML syntaxes, as well as between various versions of FpML messages. Delivery of this phase would occur in 2008. [xvii]

5. DTCC has recently announced that it would create a link between the SwiftNet IP messaging platform and the Deriv/Serv platform of DTCC. The link between the two services allows Swiftnet users to deliver real-time, transaction data to DTCC Deriv/Serv for matching and confirmation without having to create a separate, direct computer-to-computer connection to DTCC.[xviii]

New Processes

The various developments listed in the preceding section will change the way OTC Derivatives will get processed in the coming months. This provides ample opportunities to market participants including custodians to revisit their current processes and system capabilities and to suitably change to the new scenario. The following diagram depicts how the future process flow would appear.

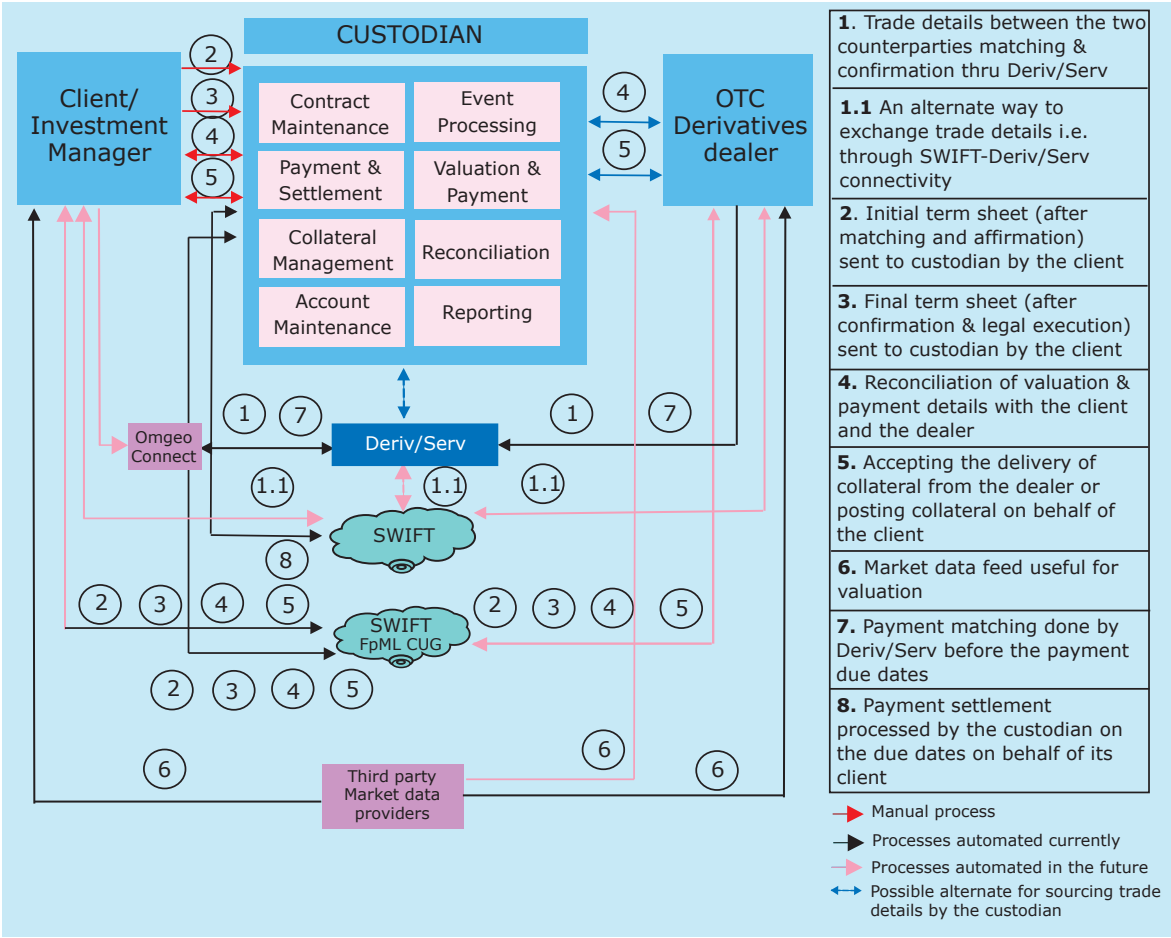

Fig 3 OTC Derivative Trade - New Process Flow

The Way Ahead for Custodians

Given the crucial role of the custodians in the entire process and the growing volumes and importance of OTC Derivatives, it is imperative for the custodians to strengthen their infrastructure for handling the OTC Derivatives. Custodians have to adopt emerging standards and participate in connecting to the various industry facilities so that they can serve their clients ably and efficiently and minimize their operational risks. Increasing the automation of processes and adopting industry best practices would meet their strategic needs. Certainly there are many challenges associated with these efforts but surely it is worth investing in the various automation possibilities such as participating in Swift Closed User group. Custodians need to build technology infrastructure and messaging capabilities to receive electronic messages from the client. Adopting the industry accepted FpML messaging standards and having a seamless interface with third-party information providers would help to improving the service levels and provide them an edge over competition. Building interfaces with client's back office processes would bridge the gap in straight through processing. Custodians also need to have a well-documented policies in place for handling payment and settlement processes, regulatory reporting, client and internal reporting. Building a robust processing architecture will open new opportunities to custodians to address the outsourcing opportunity of the difficult part of operations associated with OTC Derivative products. Custodians who take lead in these could emerge as the OTC Derivative administrators.

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About TCS Financial Services Practice

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