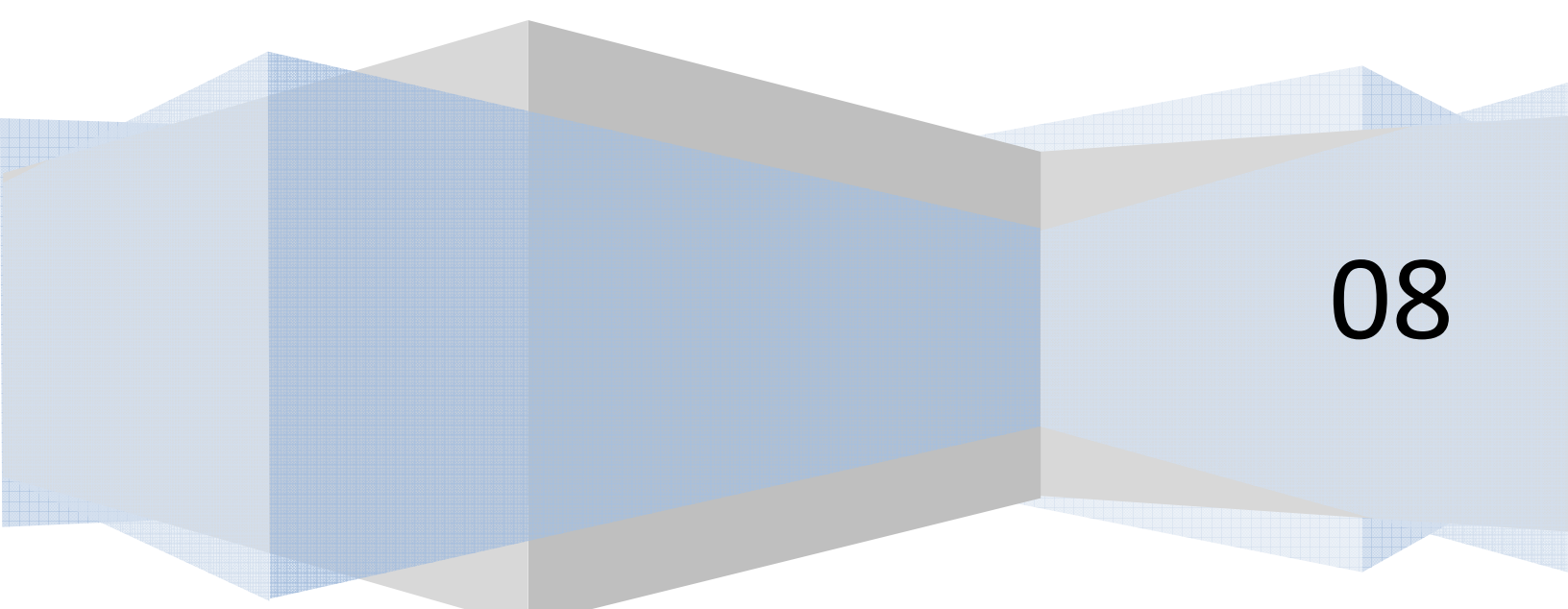


OTC Derivatives Market

Recent Developments

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About The Document

Purpose of the Document

The document outlines the characteristics of the OTC Derivatives market. The OTC derivatives market is growing exponentially in the recent times. With the growth they are also facing a lot of issues. In order to resolve these issues, there are developments happening in and around the market microstructure. The document focuses on the recent developments and concludes with the topic of debate i.e. whether there will be a unification of Exchange derivatives and OTC derivatives market.

Organization of the Document

The document is divided into four sections:

Section 1: Gives an overall picture of present OTC derivatives market

Section 2: Describes the traditional OTC derivatives market microstructure

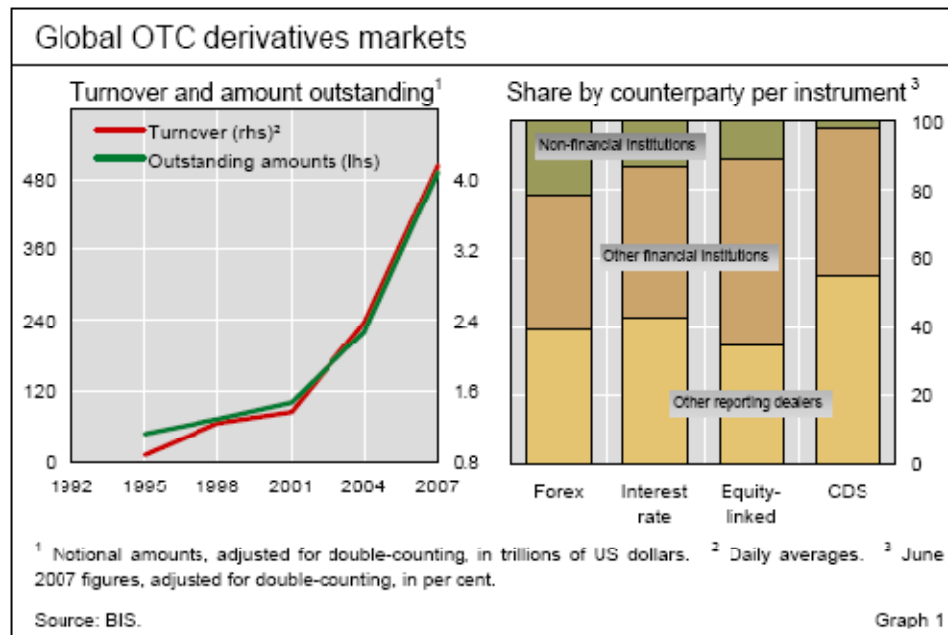
Section 3: Briefs about the recent developments happening in the OTC Derivatives market

Section 4: Concludes the document with the view of analysts on the recent developments

Finally ends with the list of references for the preparation of this document

1 Introduction

One of the recent landmark developments in the financial markets is the exponential growth in the global **Over-the-counter (OTC) derivatives** markets during the last decade. The OTC Derivatives markets have continued to expand and evolve rapidly. Between the year 1995 and 2007, the daily turnover of OTC foreign exchange and interest rate contracts has increased more than four folds and the outstanding notional amount of all derivatives contract has increased more than ten folds.



The growth in this market is led by the innovations happening in structured finance and other customised derivatives products. These innovations are driven by the investor's demands and the competition among the institutional brokers to cater to these demands. There are various reasons for which the investors look up to the OTC derivatives markets. Some of the advantages are:

Customized Contracts: Buyers and Sellers can negotiate the contracts as per their respective needs. These are also known as 'bespoke' contracts or 'make the market' contracts.

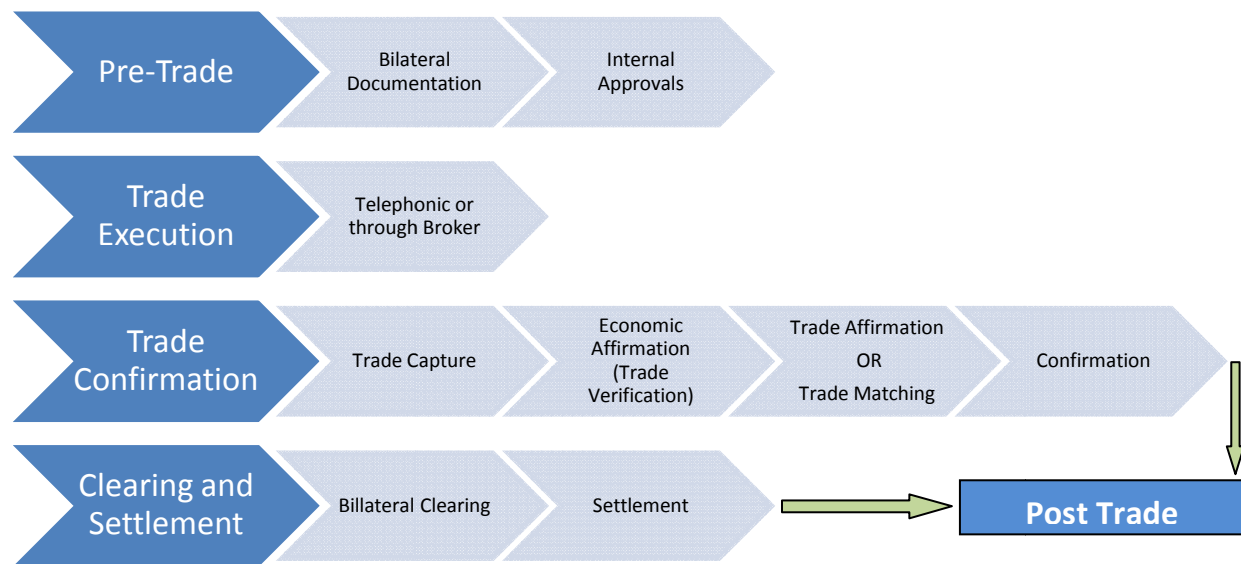
Cost Efficiency: Transaction costs can be reduced. The fees like exchange fees, clearing fees can be eliminated. The Dealer fees still remains.

Liquidity for Bulk Orders: OTC Derivatives Market can be used for executing bulk orders without the risk of market impact.

As a result of the above reasons and many others, OTC Derivatives markets have grown both in size and complexity. This is naturally raising concerns on, how to mitigate the risks evolving as a result of these contracts. One big area, where there is great amount of focus is the **Market Infrastructure**.

2 Traditional OTC Derivatives Trade Flow

An OTC Derivatives trade passes through various processes from the point two parties agree to trade to the point where the trade is confirmed and then finally settled. The same are depicted in the below diagram.



The lifecycle of an OTC derivatives transaction starts with the two parties deciding on the variables of the trade. As a result of this they come up with the bilateral documents and other supporting documents. In parallel, each of them does counterparty's credit check and in turn decides on the trading limits. All these activities need to be commenced **pre-trade**.

The **trade execution** happens when the two parties finally agree to do the transaction. Traditionally it happens through the telephone or through their brokers.

As soon as the trade execution is done, trades need to be stored in the internal system of each of the parties in order to do post trade activities and risk management. **Trade Capture** happens manually by feeding the trade files into the middle office systems or by entering the information into front office systems which automatically passes the same to the middle office systems.

The two parties do the needed validations as per the information captured in their system. The validations are more economics related and are done in order to mitigate the risks related to the transaction. This process is named as **economic affirmation** or the **trade verification**.

The final record which needs to be transacted is achieved either by affirmation or matching methodology. In **trade affirmation** methodology, one of the parties provides the trade details to the other, who then verifies and affirms the same. The affirmation leads to the final agreed trade. In case of **trade matching**, both the parties exchange the trade information. When both of them agree on the same, the trade is said to be matched and is the final agreed trade. The agreed trade is the **confirmed** trade.

The bilateral master agreements agreed between the parties have bilateral netting and collateral management clauses in built. The internal systems of the parties too are expected to have efficient risk management systems. This enables in the reduction of the counterparty credit risk. But still they are exposed to this risk as there is no one to guarantee these trades as in the case of exchange traded derivatives. Market reports indicated that still most of the bilateral OTC derivatives contracts are settled on gross basis.

Some of the concern areas with respect to traditional OTC Derivatives Market are:-

Lack of Centralized Reference Data: Since the deals are negotiated ones, the information related to price, risk, collateral are privately held by the counterparties. As it is an illiquid market, lack of a neutral counterparty who manages information related to trades and other reference data. Some of the problems arising due to this are:-

- As mentioned above, the trade information is generally not stored in one location and is maintained separately by the counterparties in their systems. The information stored by the counterparties, being consistent is a big question
- OTC Contracts by nature are bilateral contracts, so lead to an illiquid market and thus traders cannot be offset it easily. In order to solve this issue, the traders novate the trades, sometimes without taking the consent of counterparty. Even if the notification is sent, it may take weeks to reach the counterparty.

Lack of Central Clearing and Settlement: Due to lack of a central counterparty which ensures the clearing and settlement of the OTC Derivatives contracts, the market is exposed to problems huge counterparty risk and delay in the settlement of contracts. The below are some more concern areas with respect to clearing:

- The trading generally happens on multi-lateral trading platform, but the clearing and settlement normally follows bilateral model (i.e. BIS Model 2)
- Collateral Arrangements are one of the common means to handle counterparty's credit risk. If the maturity of the contract is long, large amount of cash gets blocked for that period. The amount is huge as the contracts are being cleared on gross or bilateral basis

Use of Legacy Technology Systems: The present market is really in need of technology solutions which cater to the present requirements and also can be enhanced easily to cater to future needs. Due to lack of adequate Technology solution, the market is facing issues like:-

- The trade information needs to flow into and from lot of internal systems (front office, middle office, back office) of both the parties. In case of any error during a process, results into discrepancy as the information is not being stored centrally at one common location
- Trade Confirmation sometimes takes a long duration due to contract being complex or sometimes verification getting delayed. The backlog in confirmations leads to counterparty's credit exposure and ambiguity related to exact terms of the contract.

3 Developments in the OTC Derivatives Market

The need is the mother of all inventions. The OTC Derivatives Market is having a lot of pain areas. These are getting resolved by bringing out changes in the reforms, providing better technology solutions and implementing new regulations, in a nut shell making the OTC market microstructure work more efficiently. Some of these developments are pointed out in this section.

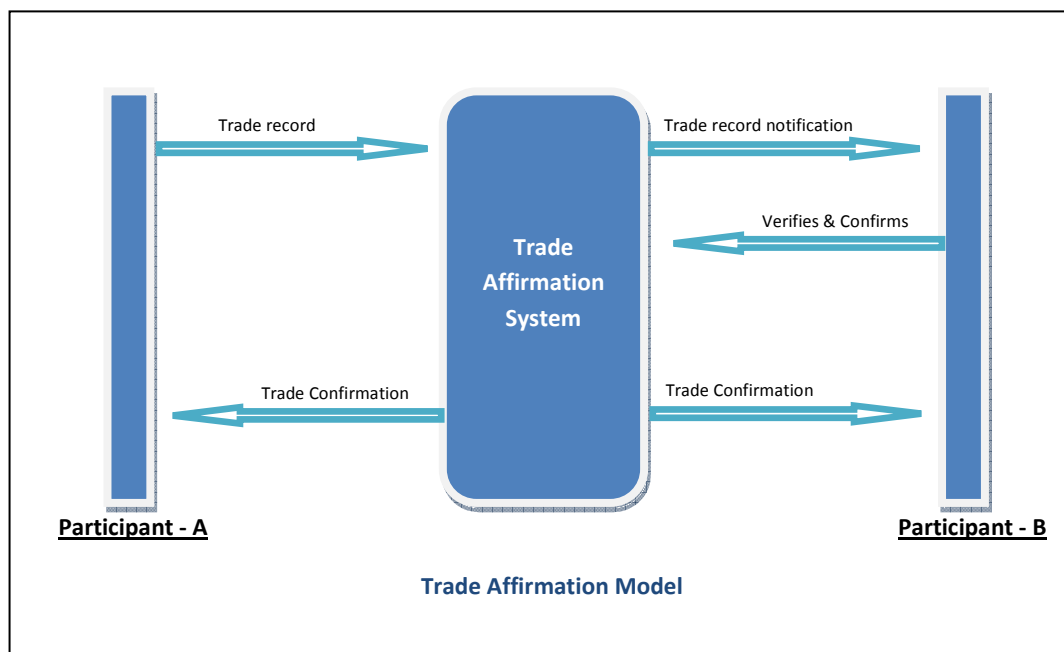
3.1 Use of Electronic Systems

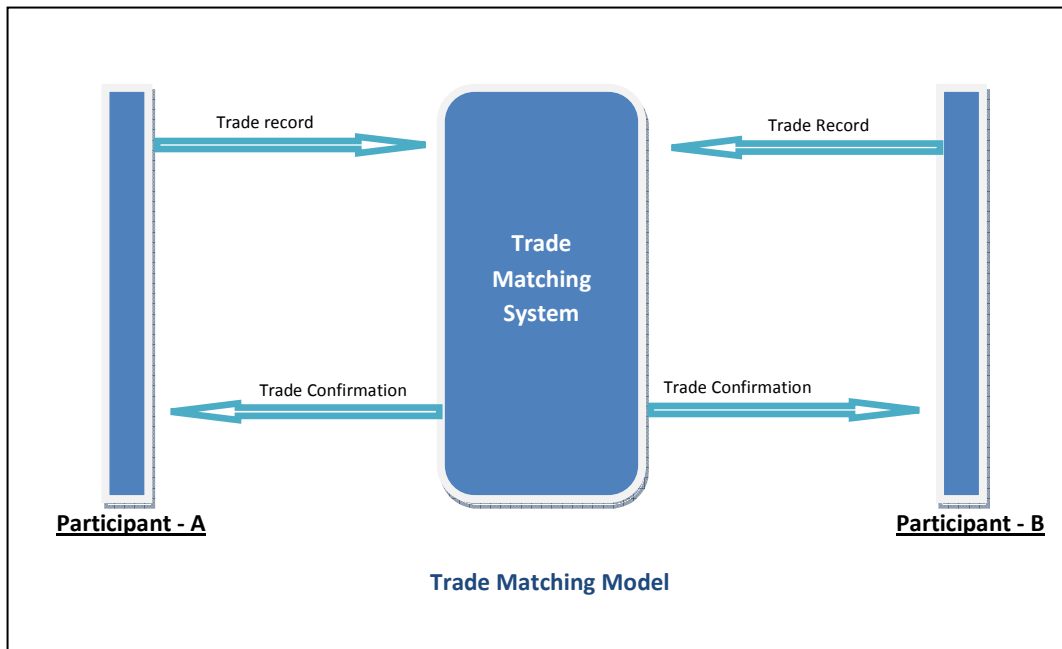
There has been an increasing use of the electronic systems which are automating the process of trading and post trading activities.

The **Electronic Trading Systems** are used in for more standardized OTC derivatives products. This has become quite common in interest rate swaps, credit derivatives and to some extent in the stock derivatives. The automating of trading systems improves the way OTC Derivatives market work. In traditional model, the trade information used to be stored separately in the internal systems of the parties. Moreover, this information was mostly entered manually into those systems, thus leading to lot of discrepancies and delays in trade confirmation. With the use of electronic trading systems, the trade information is centrally stored at one place. Moreover these systems can give an electronic feed to the internal systems of the parties, thus removing the possibility of any discrepancy. These systems are still facing challenges with respect to the lack of standardization, low liquidity and increasing difficulty in managing counterparty risks. Some of the systems for swap trading are trying to address the issue of credit checking by implementing dynamic pre-clearing credit checking systems, but it's still a long way to go. Some of the electronic trading platforms in the market are Blackbird, Bloomberg, MarketAxess, 360T, Swapstream etc.

The **Electronic Confirmation Systems** are used to automate the confirmation process. The OTC Derivatives market has always exposed the problem of delays in confirmation. Generally these delays arise due to OTC derivatives contracts being non-standard, with lot of manual interventions. Over the years, the backlog of outstanding confirmations has continued to grow. The delay in confirmations

opens up various risk areas. First, it leads to uncertainty of the exact terms of the trade and the exposure it brings the counterparties. The unconfirmed trades are still under most of the legal jurisdictions, and the potential disagreement about their precise terms can result in lengthy and costly litigations. The delay in confirmation also leads to the question of it getting netted against other transactions. The unconfirmed trades can lead to errors in the books of the parties, thus resulting in inaccurate of position and risk management. The market participants to tackle this problem mainly took two measures one being increasing the number of resources in their back office and the other being implementation of new technology solutions for the confirmation process. The automated **trade affirmation model** is more of a front-end approach, in which one of the parties enters the trade details in the system and the counterparty verifies the trade details in the system and confirms it. Since the trade details are confirmed in an electronic system, the chances of amendment and rectification is minimal. Moreover it reduces the chances of error in the process of passing of information from front office systems to middle office systems. This helps in reduction of trade lifecycle.

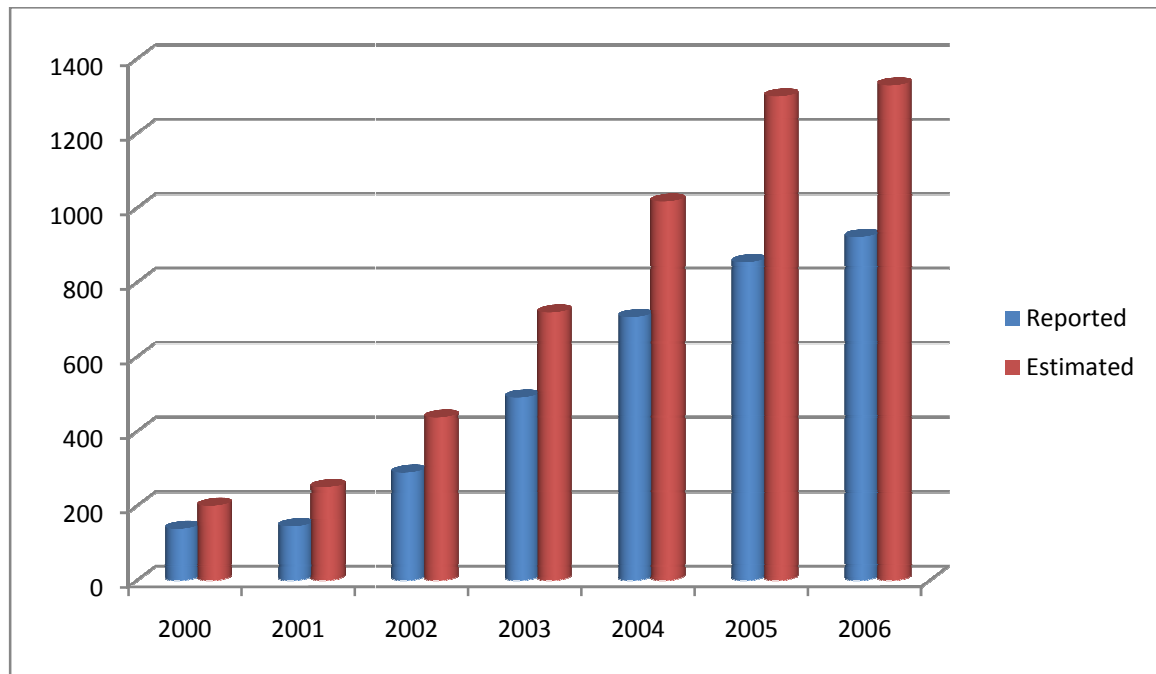




In contrast, the automated **trade matching model** enables the middle office and back office systems to enter trade details into the matching systems. The two records of the trade processed by each of the participants system are entered into the central matching system. The details if matched are considered as the confirmed trade. The accuracy of the information and the timings are the attributes which can lead to delays in the confirmation in this model. These systems have to be enhanced to support non-vanilla products and even vanilla products where confirmation gets delayed due to inherent attributes. The satellite systems which enable economic affirmations, information transmission services between the multiple systems are needed to increase the efficiency of the automatic confirmation systems. Some of the confirmation systems are Deriv/SERV of DTCC, SwapsWire.

3.2 Use of Collateral – Solution to Counterparty Credit Risk

The basic drawback of OTC Market with respect to Exchange market is the huge exposure to counterparty credit risk. In order to mitigate this risk, the market participants have opted for the usage of collateral. The trend of recent years show that use of collateral as a solution to the credit risk problem is being widely accepted. As per the statistics revealed by ISDA's Collateral Committee, around USD 1.33 trillion has been posted as collateral to cover the OTC derivatives exposure in year 2006, which is huge in comparison to USD 200 billion posted in year 2000. The below shows the growth in value of total reported and estimated collateral (unit being billion USD) between year 2000 and 2006.



Similarly the number of collateral agreements has increased from 12000 to 109,733 in this time frame. By year 2007, 60% of the trades by volume were supported by collateral agreements. Most of the market participants are opting for cash as the collateral.

Moreover market participants are going for two-way collateral agreements. By using the two-way collateral agreements, both the market participants agree to post collateral to the counterparty in case they generate exposure. The ways in which the margins are being calculated are also changing. The prime brokers have started to offer the option of portfolio based margining to their clients. Most of the dealers have centralized their collateral management systems i.e. the collateral deposited by their clients can be used to cover exposure across markets such as Security Lending & Borrowing, OTC Derivatives and repos. Some of the firms like Custodian banks; International Central Securities Depositories (ICSDs) have started offering services on collateral management.

There are still some concerns with respect to use of collateral in case of bilateral agreement as does not completely eliminate the credit risk. The risk can arise due to multiple reasons like delay in Mark to Mark Valuation and margin calls. Moreover it requires good amount of investments from participants in technology solutions enabling risk and collateral management. In case of illiquid and volatile market, disputes between the parties can arise due to counterparty default.

3.3 Introduction of Central Clearing

With the introduction of electronic trading systems, the very obvious next move for the market was towards central clearing. The **central counter party (CCP)** is the future of OTC derivatives market. CCP is an answer to various risks and issues related to OTC Derivatives.

The trading generally happens on multi-lateral trading platform, but without the CCP, the clearing and settlement normally follows bilateral or gross model (i.e. BIS Model 2 or 1). This model of clearing comes with inherent credit risk. With CCP in the picture, this risk can be mitigated to a large extent as it brings multi-lateral clearing (BIS Model 3). The CCP comes with a robust risk management system and regulations. It also reduces the liquidity risk by allowing the netting of payment. In a CCP market, the prime brokerage services have also taken a boom by offering clearing and settlement agent services to their clients.

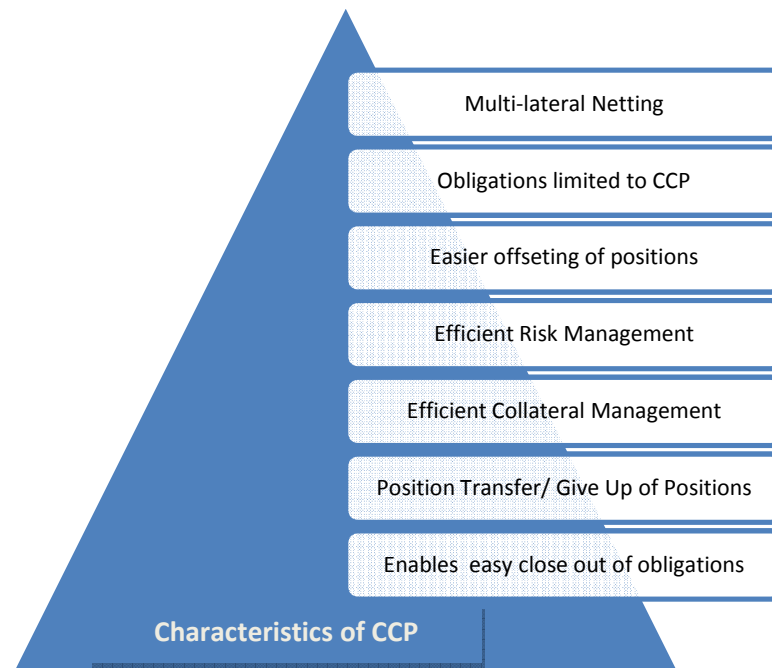
The CCP receives the trade information from the central trading system or directly from the participants. This information can be submitted electronically using Financial Products Markup Language (FPML) or SWIFT. After accepting the trade, the CCP novates the trade and becomes the central counterparty for both the sellers and the buyers. By this the bilateral counterparty credit risk is almost eliminated. As a result of this all the claims and obligations of the participants are against the CCP. The CCP manages its risk by accepting the collateral from the participants and also evaluates the exposure of participants with the collateral posted by them. If the collateral posted is less than the exposure, then the CCP raises a collateral call to the participant. The evaluation is done mostly on a daily basis. But with new technology and robust systems coming up, CCP have started doing Intra-day margining, some are even looking at continuous evaluation model. In case a participant defaults in the actual delivery, the collateral submitted by him is used to fulfill his obligations. As CCP comes with multilateral netting and the participant need to maintain collateral only with CCP, the collateral required to be posted is also less.

The role of CCP is not limited to credit risk mitigation and ensuring fungibility, they also play the role of central information center. It acts as the depository for all the information related to the trade, credit analysis of the participants and the collateral.

In a scenario where the participant wants to get out of a position have three options: it may terminate the contract, enter into an offsetting contract or novate the position to a third party. In a *non CCP* environment all the options are a big concern area for the market. Since there are legal implications, it was not easy for the participant to terminate the contract, sometimes even leading them to default. In case of bilateral agreement, getting into an offsetting position is also not easy. Position offsetting can be done by entering into an offsetting transaction with the same counterparty or with another participant. But getting into the exact reverse of the agreement is difficult and rare. Due to limitation of the two methods, the novation has become quite popular in recent times. By novation, the participant replaces himself with a third party in the contract, the other terms remaining the same. The novation requires consent from the counterparty. So participant sends a notification to the counterparty which is accepted or rejected by him. This process gets delayed due to lot of manual intervention. For speeding up this process, ISDA came up with a protocol, which has been widely accepted by the dealers. In *the CCP* model the participant can easily offset his position as it is multilateral netting and moreover the

contracts traded are more or less standardized. Even if the participant insists to go for transferring of his position to another transfer, he can opt for position transfer or give up of positions.

The close out of positions which in a non CCP environment was quite complicated as discrepancies used to arise in the valuation model. This is also easily enabled by CCP, as CCP is responsible for valuation of close out and the settlement of the same.



In a nut shell, the CCP mitigates the following risks:

- **Credit Risk** : Multilateral netting of transactions reduces credit exposures
- **Liquidity Risk** : Broadening the scope of payment netting reduces liquidity risk
- **Legal Risk** : CCP clearing the trades reduces the legal risk
- **Operational Risk** : CCP brings in high standards of operational reliability and also by establishing automated confirmation matching systems, laying strong guidelines with respect to various processes

There are some dealers who argue that the benefit of CCP is limited as no CCP clears range of OTC derivatives products. Thus still the dealers need to maintain efficient internal risk management systems to support the derivative products which are not supported by CCP. Moreover their systems need to be capable enough to split the position into two, bilateral and the multi-lateral, position. However the majority of participants feel that the above reason cannot undermine the advantage of having CCP.

The two main challenges faced by the CCP model are:

- Complex OTC derivatives contracts require the use of more complex pricing models
- Highly illiquid OTC contracts needs special adjustment in default procedures

4 Conclusion

In the recent times, one of the most significant developments in the global financial markets is the dramatic growth of OTC derivatives market. Though it is growing it is having a lot of constraints with respect to technology solution, risk management and delay in the various aspects of trade life cycle. These issues are being addressed by the new development in the market like introduction of electronic trading and confirmation systems, CCP clearing the trades etc.

With above mentioned developments happening, analysts have argued that it is actually leading to unification of the organized exchange market and the OTC market. With implementation of electronic trading and central clearing systems, the differences between the two markets have become smaller. If the both become the norm for this market, then the differences will hardly exist.

There are other sets of analysts who feel both the exchange and OTC derivatives market will co-exist as they cater to needs of different user. Moreover these markets are two competing market and each have unique characteristics.

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