P1.T3. Financial Markets & Products

John Gregory, Central Counterparties: Mandatory Clearing and Bilateral Margin Requirements for OTC Derivatives

Bionic Turtle FRM Study Notes

By David Harper, CFA FRM CIPM
www.bionicturtle.com
Gregory, Chapter 2: Exchanges, OTC Derivatives, DPC’s and SPV’s

Describe how exchanges can be used to alleviate counterparty risk. .......................... 3
Explain the developments in clearing that reduce risk..................................................... 3
Describe how exchanges can be used to alleviate counterparty risk.

An exchange is a central financial center where parties can trade standardized contracts such as futures and options at a specified price. An exchange promotes market efficiency and enhances liquidity by centralizing trading in a single place.

An exchange performs several functions:

- **Product standardization**: An exchange designs contracts that can be traded such that most terms are standardized; e.g. maturity dates, minimum price quotation increments, deliverable grade of the underlying, delivery location and mechanism.

- **Trading venue**: Exchanges provide either a physical or an electronic trading facility for the underlying listed products. Access to an exchange is limited to approved firms and individuals who must abide by the rules of the exchange. This centralized trading venue provides an opportunity for price discovery.

- **Reporting services**: Exchanges provide reporting services of transaction prices (to trading participants, data vendors & subscribers) which creates a price transparency.

Explain the developments in clearing that reduce risk.

Clearing is the reconciling and resolving of contracts between counterparties. Clearing happens between trade execution and trade settlement (when all legal obligations have been made). A buyer or seller suffering a large loss on a contract may be unable or unwilling to settle the underlying position; two methods have developed for reducing this risk, namely **margining** and **netting**.

- **Margining** involves exchange members receiving and paying cash or other assets against gains and losses in their positions (variation margin) and providing extra coverage against losses in case they default (initial margin). Exchange rules developed to specify and enforce the mechanics of margin exchange.

- **Netting** involves the offsetting of contracts, which is useful to reduce the exposure of counterparties and the underlying network to which they are exposed. It reduces the costs of maintaining open positions such as via the margins needing to be posted. Netting can be seen in all of the three forms of clearing that have developed, namely direct clearing, ring clearing and complete clearing.
Direct clearing

Direct clearing refers to a bilateral reconciliation of commitments between the original two counterparties. The specified terms of a transaction may be performed directly; or alternatively if the counterparties have offsetting trades, they can reduce obligations as illustrated in Figure 2.1.

Figure 2.1 Illustration of direct clearing

In this example, counterparties A and B have offsetting positions with each other in the same contracts:

- A has an agreement to buy 100 contracts from B at a price of $105 at a later date. B has the exact reverse position with A but at a lower price of $102. Standardization of terms facilitates such offset by making contracts fungible.

- Rather than A and B physically exchanging 100 contracts worth of the underlying and making associated payments of $10,500 and $10,200 to one another they can use “payment of difference”. Payment of difference, rather than delivery, became common in futures markets to reduce problems associated with creditworthiness.

- In Figure 2.1, this implies that counterparty A pays counterparty B the difference (in the value of the contracts) of $300. This could occur at the settlement date of the contract or at any time before. In the OTC derivatives market, this form of direct clearing is now generally called netting.

Clearing rings

The fungibility created by standardization allowed direct clearing to extended to more than two counterparties. The development of “clearing rings” utilized standardization to ease aspects such as closing out positions and enhancing liquidity.

- Prior to the adoption of “complete clearing” at the Chicago Board of Trade, groups of three or more market participants would “ring out” offsetting positions. Clearing rings were relatively informal means of reducing exposure via a ring of three or more members.

- To achieve the benefits of “ringing,” participants in the ring had to be willing to accept substitutes for their original counterparties. Rings were voluntary but once joining a ring, exchange rules bound participants to the ensuing settlements. Some members would choose not to join a ring whereas others might participate in multiple rings. In a clearing ring, groups of exchange members agree to accept each other’s contracts and allow counterparties to be interchanged.
Clearing rings can reduce bilateral exposure as illustrated below (in Figure 2.2). Irrespective of the nature of the other positions, the positions between C and D, and D and B can allow a ‘ringing out’ where D is removed from the ring and two obligations are replaced with a single one from C to B.

**Figure 2.2 Illustration of a clearing ring. The equivalent obligations between C and D and between D and B are replaced with a single obligation between C and B.**

![Diagram of a clearing ring](image)

Clearing rings reduce counterparty risk. They also simplify the dependencies of a member’s open positions and allow them to close out contracts more easily, increasing liquidity. All members of the ring must agree a price for settling contracts, which may be facilitated by the exchange.

- Historically, exchanges (and courts) have generally upheld the contractual features of ringing. For example, if (via a ring) a counterparty had their original counterparty replaced via another that subsequently defaulted, then they could not challenge the clearing ring reassignment that led to this.

**Note: Not all counterparties in the example shown in Figure 2.2 benefit from the clearing ring illustrated.** While D clearly benefits from being able to offset readily the transactions with C and B, A is indifferent to the formation of the ring since its positions are not changed. The positions of B and C have changed only in terms of the replacement counterparty they have been given. If this counterparty is considered to have stronger (weaker) credit quality, then they view the ring as a benefit (detriment). A ring, while offering a collective benefit, is unlikely to be seen as beneficial by all participants. A member at the ‘end of a ring’ with only a long or short position and therefore standing not to benefit has no benefit to ring out.
Complete clearing

Clearing rings reduce but do not completely eliminate the counterparty-specific nature of contracts and the resulting risk in the event of counterparty failure. Members are still exposed to the failure of their counterparties. Contract failures can create a cascading effect and lead a string of seemingly unrelated counterparties to fail.

- A historical example is the 1902 bankruptcy of George Phillips which affected hundreds of clearing members of the CBOT (almost half of the total membership).

To remedy such problems, the final stage in the development of clearing is complete clearing where a CCP or “clearinghouse” becomes counterparty to all transactions. When trading a derivative, the counterparties agree to fulfil specific obligations to each other. By interposing itself between two counterparties (which are each clearing members) a CCP assumes all such contractual rights and responsibilities as illustrated below, see Figure 2.3. This facilitates the offsetting of transactions but also reduces counterparty risk further, as a member no longer needs to be concerned about the credit quality of its counterparty. The counterparty effectively is the CCP.

Figure 2.3 Illustration of complete clearing. The CCP assumes all contractual responsibilities as counterparty to all contracts.

Faced with counterparty risk, CCPs adopted rules to limit their exposures. In addition to the offset that this clearing structure facilitated, they used pre-existing margining rules to protect themselves from the risk of insolvency of one of their members.

- Initial margin covers the potential close-out cost of positions if a member defaults
- Variation margin evolved as a dynamic mechanism to enforce the daily settlement of profits and losses via daily mark-to-market (M2M) valuation.
- CCPs also developed a loss sharing model: All clearing members had to make share purchases, which entitled them to use the exchange. In the event of a clearing member failure, the clearing members were at risk of losing their equity investment. This equity is the basis of what CCPs define as default funds today.

All exchange-traded contracts are currently subject to central clearing. The CCP function may either be operated by the exchange or provided to the exchange as a service by an independent company. All derivatives exchanges have adopted some form of a CCP and central counterparty clearing was therefore the standard practice for derivatives markets clearing until the arrival of the OTC derivatives market in the last quarter of the 20th century.