

John Barret is VP, Risk, of a large clearing corporation, that clears trades between members of many different exchanges. These exchanges are varied in the type of instruments handled, and range from equities, equity derivatives, commodities, forex contracts and interest rate derivatives. Due to developing competition amongst clearing corporations for business, John is already facing pressure from his customers to collect as little margins are possible from members for their trades. John of course knows that maintaining the solvency of the clearing corporation is his prime concern, but he is keen to cut down on unnecessary flab and buffers in the computation of position margins.

Reflecting on the problem at hand, John realizes that there might be scope for improvement in some areas.

- Φ When a member trades multiple types of contracts, even if through a single exchange, John is aware that many of these contracts show statistically significant price correlations. By allowing for correlations between contracts, John could bring down the margin requirement of a member.
- Φ When a trader takes positions through 2 or more exchanges, and all of these exchanges clear through him, he could attempt to give portfolio hedge benefits for these trades, and collect lower margins from the trader.
- Φ When a trader takes positions through 2 or more exchanges, and these are cleared by more than one clearing corporation, then he could still bring down the margin requirements if he had a cross-margining arrangement with the other clearing corporations.

While counting his options, he realises, that even with any of these systems in place, he could still improve on capital usage if he could improve the margining scheme that margin the customer on worst case pre-trade situation.

Customer orders are actually validated at the time of placement of their order, which is before the trade takes place. All the three options outlined above, rest on the basis that the margins on a portfolio of positions is usually much lower than the sum of the margins on each position, due to diversification effect. But at the time of placement of order, the portfolio of the customer is uncertain it will depend on whether the order will mature to a trade, or on whether it will remain untraded at the exchange. And when an order is to be validated, it is possible that many of the previously received orders remain unexecuted. This makes the computation of portfolio risk a tricky task what is the portfolio to be considered?

Clearing corporations have generally tended to view unexecuted orders separately. For instance, a clearing corporation that John knew about, computed margins in 2 ways – first, on traded positions, leading to a margin figure, say A. Then the orders (those pending execution) were considered. These were margined on an order-by-order basis, without taking into account portfolio effects, and the only offset given was for square-off orders (that is, orders that sought to square-off a previously held position). John knew that this was an inefficient way to margin. After all, when a customer held a long position in a contract, and placed an order for a short position in a closely related contract, intuitively, there cannot be an increase in risk because of this order. If the order executes, the required margin would be much lower than what was already collected for the first order, and if it did not, the margin would remain unchanged. So why was this competing clearing corporation charging margins on this order? If he could do away with this, and charge margins on the worst-case resulting portfolio, not only is he covered for any eventuality, but also, his margins would be far lower than what the competition collects.

As another case, a Nordic clearing corporation that John was familiar with handled this problem in another way. This organization allows each member to define the maximum order margin size upfront. If an incoming order, on a standalone basis, requires a margin of greater than this level, the order is rejected. This margin size is deducted from the collateral placed by the member, and is not available for him for his traded positions. In other words, each member is required to keep aside a portion of his collateral to support his orders. Also, the clearing corporation defines a Control Mode Level (CML), set equal to the total collateral placed by the member less the maximum margin size. Moment a member enters the CML; he can only close open positions. The organisation will stop further orders from being placed, even if they are hedging in nature, and will reduce the overall margin requirement. John roughly computes that if one had a long position in a contract that required the entire CML, and wanted to hedge this position with a short position in a succeeding month contract for the same quantity, the Nordic company would have rejected the short order at the time of placement. In reality, the short order could only reduce the risk of the clearing corporation – it made sense to let the order go through, thereby increasing the trading space by almost double, and adding enormous flexibility to the member. And the clearing corporation gets more business (almost 100% more), with lower risk.

John thinks about his problem carefully, and concludes that if he had a margining system that collected margins on the worst case portfolio that can result, after taking into account the orders that lie unexecuted (including the incoming order that needs to be validated), he has the best of both worlds – he is covered for the worst case risk that might result due to some orders being executed and some not being executed, and at the same time, the trader gets much larger trading space.

Chella Software's FORMS Risk Management System is the only software that comprehensively handles John's requirement. By computing margins on the worst case portfolio on a pre-trade real-time basis, FORMS provides a solution for optimum margin computation. All of this is provided at real-time speeds with virtually

No delays being induced into the system

- Φ Compute Value-at-Risk of a portfolio over multiple entity levels
- Φ Serve as a real-time rules engine to regulate trades
- Φ Validate deal requests and orders before they are allowed to be executed, while providing the highest trading space
- Φ Provide real-time reports on exposure to different types of risks
- Φ Provide real-time risk analytics to traders and to risk managers including
  - What-if analysis
  - Stress testing
  - Sensitivity analysis
  - Incremental VaR
- Φ Supports a wide variety of instruments covering equities, equity derivatives, commodities, commodity futures, interest rate swaps, forex spot, forex derivatives, fixed income and exotic options.

## About Chella Software

Chella Software is a capital markets specialist. All of our business has come from this domain, since inception. The combined experience of the team in the areas of front, middle and back office operations is probably unmatched. Highly respected as consultants and solution providers, enterprises rely on our products to run their mission critical business processes.

For more information visit us at [www.chelsoft.com](http://www.chelsoft.com) or write to [subbu@chelsoft.com](mailto:subbu@chelsoft.com).



Intel and the Intel logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.