Getting the basics right

Solutions aimed at informing decision-making, rather than making the decisions, will yield the best results, says Ed Cockram of 4sight

For those who have recently been asked to delve into their collateral management setup, it is quite often an eye-opener. As a back-office function, it has often been outsourced or under resourced. On closer inspection, it soon becomes evident that twentieth-century processes are leaving the firm open to significant and very real operational risks. In no other function would the location of large pools of cash and securities be recorded on Excel spreadsheets or moved around by faxes.

In contrast, a common vision proposes a future of state-of-the-art systems gathering up all the unencumbered assets and predicting all potential exposures. Collateral technology solutions can then allocate everything accordingly, in a way that minimises costs and maybe even turns a profit.

The reality that is achievable is somewhere in between. Most important to note is that building a collateral management function is a series of steps. You have to get the basics right to be able to do the final steps.

What are the basics?

This varies a little, depending on what aspects of the function might be outsourced, who has liability if processes don't go as planned, and whether or not non-cash collateral is involved. However, the basic principle is that collateral management happens at the junction of inventory management and exposure management. In order to know how to best cover an exposure, you have to collate your entire inventory together into a single system.

In order to know what exposures need to be covered, you have to bring all the relevant exposures and margining rules together into a single system. To then automate any of this process further, you need to be able to trust that both the views on inventory and exposures are correct, complete and up to date.

Inventory management then is more than simply listing securities and assessing how many the firm holds. In order to utilise assets efficiently, it is important to know where they are, why they are there, whether they are truly available for re-use and when they need to be returned. In order to move them, straight-through processing (STP) is required, as well as the tracking of settlement statuses. Collateral that is not received is not collateral. The hardest part is the collation of the inventory, given that both buy-side and sell-side firms tend to have assets held in many different places by a wide range of internal or external systems. The success of collateral management can often hinge on bringing these disparate sources together without losing fidelity on details such as location or settlement status.

Exposure management faces similar challenges, where different trade types might fall under a single contract but are maintained in different systems. Here, success hinges on being able to combine these exposures into the correct contractual groupings and apply the relevant margining rules. Although most trade types base margining on the positions and prices from the previous close of business, many involve intra-day updates and same-day margining. This requires a robust solution that can both handle the information flow and generate alerts when the process breaks down.

Once you have brought both inventory and exposure management together into a single system, then the automation of tasks comes into play, along with analytics to measure and refine performance. Essentially, the firm now has a consolidated view of its available assets and liabilities.

This can also provide a strong base for securities finance and synthetic finance. It allows the firm to leverage off the collateral management function to make a profit on spare assets or to work to minimise exposure liabilities.

Automating the basics

Once the collateral desk is confident it can see the complete picture of available collateral and match it off against all of the exposures, there are a few more steps before automation can begin.

Collateral schedules need to be soft coded into the system. You can't assign or accept collateral if you don't know what the schedule will allow. Sceptics of automated collateral management will quickly point out at this stage that unless you precisely model the schedule, it adds no value. This is indeed correct.

Passing an eligible security but not checking the concentration rules will still leave you with ineligible collateral. You don't get half points for missing the field goal by half an inch. It is vital to also apply haircuts correctly. Providing too much collateral bears the same risk as not receiving enough.

STP for settlement and static data starts to become essential as the scale of the operation grows. As volumes increase, manual verification and updating quickly become impractical. However, no algorithm can allocate collateral if it doesn't know what or where it is. Likewise, the collateral solution must update exposures and the system needs to know when margining is to occur.

At this stage, it is worth noting two further key points. Firstly, to optimise, you must assign a ranking to your collateral and exposures. Any automation in allocation of collateral must involve some methodology for selecting which types of collateral to pledge first. Likewise, for exposures, adjusting the order of collateral and exposures can greatly change the outcome.

A common methodology is to apply costs to the collateral, either as basis points or represented in a ranking system. Exposures may be ranked or grouped and ordered based on a secondary factor, such as the amount of margin the firm must pledge.

Secondly, any algorithmic setup must recognise different scenarios. Take, for example, handling the morning margin call for collateral the firm needs to pledge the following day against a likely stable exposure.

Given time and adequacy of collateral, it is appropriate to find the cheapest to deliver and attempt to settle in multiple shapes in order to keep costs down. This is opposed to a late day exposure with limited time left in the settlement cycle. In this scenario, the preferred collateral is that which is available and can be agreed and settled reliably and quickly.

Can I set up my optimisation engine?

With the basics set up correctly, and care taken to automate further detail, you can now start to implement algorithms to automate collateral pledging. Ideally, collateral inventory and exposures are in the same system, or the firm has tightly integrated the margining systems with the collateral optimisation engine.

In order to establish the algorithm, a set of rules need to be agreed, such as:

- When to run;
- Which exposures to include;
- How to treat these exposures;
- What pools of collateral to use; and
- What rules to use in allocating the collateral.

It is useful to also distinguish between short-term and long-term optimisation.

The objective of short term is to avoid obvious mistakes, which are more costly than any optimisation (for example, pledging cash when there is an alternative, or pledging a security you need in the future but will not get back).

The objective of the long term is to analyse your long-term collateral requirements and manage them better. Of course, not everyone has sizeable long-term exposures. In this instance, the asymmetry of the International Swaps and Derivatives Association's (ISDA) credit support annex (CSA) is important: limited right of substitution means you have to use recall/pledge. So, the volatility of the netting agreement portfolio drives the churn, ie, how quickly you can change how you collateralise an agreement. If you think what you are using to collateralise would be better used somewhere else in a month's time, and can only expect to change 5 percent of the collateral in the meantime, you are left with a sub-optimal solution you cannot change.

It is important to note that the ISDA CSA, derivatives central clearing margin, and specific structured derivatives creating collateral exposures make up most of the long-term exposures to consider.

Furthermore, the system needs to have exception handling built in. This includes rules around how to handle exposures that have not

been updated prior to the optimisation engine running. Such an exception highlights the crux of the issue: removing any outdated exposures from the engine can greatly alter the allocation of the collateral. This could also potentially leave the collateral manager without suitable collateral for a manual processing run later on.

Given that there are various types of exposure, it is likely that the firm will require several algorithms to run at different times against different groups of exposures. It is vital to employ a strategy to ensure that suitable collateral is available to cover each pool of exposures.

The collateral manager should also consider collateral stability and rehypothecation. It is operationally impractical and poor relationship management to switch collateral frequently where it is delivered bilaterally. In addition, the firm cannot pledge encumbered collateral and collateral whose recall period is inside that of the recall rate from a given exposure, without risking borrowing costs or short fees when the pledging counterpart recalls.

Questions to ask include how to treat pending collateral, and where shapes have been recalled or pledged to the firm but have not yet settled, should they be labelled as 'at risk of failed settlement' or excluded as 'at risk of under-utilisation of assets'? These steps, ie, segregating exposures and collateral pools, can result in a sub-optimal allocation, however. Full optimisation can only occur where the system knows all exposures and all collateral at a single moment in time. In practice, this only happens in two circumstances.

Both require a scenario in which collateral pledges require no actual settlement in order to re-allocate. The first would be where all collateral pledges by a firm occur in a single triparty agent. The second would be for a firm that only makes internal collateral pledges. An example of this is an agent lender allotting collateral pools between clients. Most triparty engines employ their own optimisation engines against their own specific static data. An optimisation engine here would need to be built around mimicking the triparty agent for little added value.

In practice then, outside the world of agency lending, the dream of a single click optimally handling the entire margining process is but a dream. The allocation of collateral tends to occur piecemeal throughout the day as exposures are verified or changed and settlement progresses.

Back to spreadsheets?

Not necessarily. Spreadsheets come in two flavors: simple and un-scalable manual-based tallies or complex automated arrays of nested worksheets. In reality, these are undocumented and unsupported systems. Neither method is sustainable in a growing business or in the event of high stress scenarios.

Just because optimisation algorithms cannot provide a single-click, all-dancing solution doesn't mean there is no value. In reality, there are groups of exposures to match against pools of collateral that, with a little manual monitoring and intervention, can still greatly benefit collateral managers if they can reduce the time spent on manual allocations. Further, there is great value in utilising optimisation-type algorithms to sandbox scenarios and monitor the effectiveness of the current processes. Indeed, any detailed stress test should not only show the results of stressing the exposure and collateral values, but it should also include what type of collateral the firm might need to make up for any shortfall.

One of the greatest challenges for a collateral management desk is to get a handle on the total collateral needs for the day ahead. It can then assess what collateral to hold back and which to use first. Output from collateral optimisation sandbox runs can provide valuable insight into such decision-making.

Where is the market today?

It would appear that most firms are still at various stages of sorting out the basics and improving the additional automation steps. The added demands of regulatory compliance and adapting to central clearing of derivatives are also placing a strain on IT budgets. On that note, it is perhaps a little early to predict where and how widespread use of optimisation engines will come into play.

The development of triparty, collateral services and inter-firm margining messaging services will lead to further changes in practical day-to-day operations. Small changes such as extensions to settlement and payment cycles will also alter the possibilities. Therefore, the value of any solution at hand today must consider its ability to adapt to future demands.

Luckily, there are plenty of well skilled and credit-crisis schooled collateral managers out there who have been managing this process with minimal automation for decades. Solutions aimed at informing their decision making, rather than attempting to make the decisions for them, are likely to bring the best results to the firm. **SLT**

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