The rise of the machines

Nick Noble, Product Manager, Cash and Liquidity Management at SmartStream, explains how cutting-edge algorithmic techniques can revolutionise bank cash liquidity management and drive profitability.

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Banks can dramatically improve their bottom line by using a more analytical approach to manage their funding positions, reduce manual tasks and drive operational efficiencies within their liquidity management operations.

Consider intraday liquidity. Reserves are typically applied against banking organisations that are based on their ability to manage their liquidity. Clearly, for every amount of money that is set aside and not allowed to be applied from an operational point of view, there is a cost. There is, therefore, an advantage in minimising those reserves that are applied.

Furthermore, increasingly there are more charges being applied to banking organisations that consume intraday liquidity though their correspondent banks. Again, it is very much in financial institutions' favour if they can reduce their reliance on intraday overdrafts and thus reduce their costs.

And then there is the overnight funding requirements. If there is money left on the table that isn't being put to use, there is a cost to banks. Conversely, if they are taking loans out at the end of the day because they have got debit positions at their correspondent banks or at a central bank, then again they are going to be paying some fees to consume that overnight overdraft.

The more accurately banks can forecast their positions the more accurately they can utilise their cash and ensure that they are not overdrawn at the wrong times of the day, or ensure they don't have any idle money just sitting in a low-yielding investment, the further they can drive down costs.

And these are not inconsiderable savings. A large banking organisation may have $1 billion of available liquidity around on any given day. Saving 100 basis points by managing that more liquidity more accurately could translate into an annual saving of $10 million – there is in other words a big opportunity to increase P&L.

The challenge

Best of breed cash liquidity management at the moment is typically a process that looks at the contractual projections of a bank, so for every contract that is enacted within an organisation there are going to be some funds that need to be settled at the end of that process. That view is typically layered into an application so that a bank can see what money is expected to come in and out of the door on any given value date.

Also intertwined into that is a view of what is physically happening in real time at their settlement banking network level: what physical cash is coming into and out of the institutions accounts. This, therefore, gives a real-time actualversus expected view of the bank's liquidity position.

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things, a computer system can in theory look at a late booked trade, for example, understand what the product type is, understand what the settlement channel is, who the counterparty is, and by looking at what has happened to similar events in the past, then make some assertions and automatically predict if the late trade will settle today or the next working day.

The continual learning process means each time any of these events take place, it feeds back into the algorithm so that it can learn from that event, and continual improvement and refinement in the system can be achieved. These types of algorithms exist and are applied much more in the retail market from a sales and customer engagement perspective. In banking, the front-office is very often the first mover, but these approaches are not being used as much in the back and middle-office. That is where our efforts are concentrated and where we believe there are big advantages to be found for financial institutions.

An example of how these technologies could be used can be found if we consider a cash ladder based on the contracted settlements a banks expects. The bank could use patterns of previous payments and receipt activity, including those of corporate and retail customers, to create forecasts that respect any seasonal impacts and trends.

Different variations of these forward looking forecasts can be used as well. A bank does not have to make one prediction. It can have risk-based assessments and other variables that can be embedded into the system, so the bank could view different probabilities of what may happen based on the historical trends and the forward looking data as well. This gives users of cash and liquidity management systems much more insight about what may be happening.

The challenge with producing an accurate forecast from that process is there is a level of unpredictability around some client-led activity. For example, big corporate clients are normally required to give some warning when they are moving large quantities of money, but that does not always take place, and it is not always easy to capture that information. There is therefore a risk that big corporates are going to move money around and a bank won't have the chance to gain quick visibility of that and fund those movements. The aggregation of large numbers of smaller movements can also have a big impact.

In addition, there are trade breaks and other exception scenarios. Again, they are difficult to predict and they can have a big impact on the accuracy of funding.

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Leveraging technology

Technology can be used to mitigate these problems, however. Banks have a myriad of back-office applications that have immense detail regarding the flow of cash and expected debits and credits. There is definitely an opportunity to use more sophisticated computing capabilities such as analytical engines, predictive analytics, and machine learning to supplement the traditional approach with a more intelligent viewpoint of what is going to happen regarding liquidity going forward based on what has happened in the past.

Machine learning utilises visibility of all historic eventsto make assertions about any trends or variations in that data. Layered into that are actual things that are occurring in the present. By combining those

A wealth of knowledge

Bank back-office applications in financial services have an enormous wealth of information that has not really been tapped into before. That is because banks have focused on the mandatory steps in the process around liquidity management and have not necessarily looked back and realised that they have enormous insight into the behaviour of different business lines, different customers, and what is happening in the market.

Banks, after all, have a view of all the granular information with regard to every single trade, and every single payment and receipt that has left the bank. New, cutting-edge technology can leverage that information, giving a new, powerful resource that can improve their processes and decision making.

Ultimately, the more accurately a bank can make its cash forecasts, the more costs they can save and, equally, the less money they can leave on the table. By applying new technology in the middle and back-office, those improvements can now be achieved.

For further information: www.smartstream-stp.com